



Tasmania's demographic context in advancing productivity and prosperity through education and work

TASMANIAN ECONOMIC FORUM

THE ECONOMIC SOCIETY OF AUSTRALIA – TASMANIA BRANCH

NOVEMBER 2023

DR LISA DENNY, WORKFORCE DEMOGRAPHER

WWW.LISADENNY.COM.AU

Overview

Demographic context

- Population change in Tasmania

Tasmania's workforce

- Workforce ageing
- New workforce entrants – population projections

PC Reform imperative - Building an adaptable workforce: education

- Improve schools' capacity to lay the educational foundations for the future workforce
- Support a culture of lifelong learning for an agile workforce
- Increase tertiary education teaching quality to underpin a well-trained workforce
- Better and more flexible matching between students and work opportunities

PC Reform imperative - Building an adaptable workforce: migration

- A better targeted skilled migration system
- Interstate migration from a Tasmanian perspective

PC Reform imperative - Creating a more dynamic economy

- Skilled workforce retention
- Utilisation

Key Messages

A child's drawing on a white sheet of paper. On the left, several colored pencils (yellow, red, green, blue, brown) are scattered. The drawing depicts a community scene: a grey house with a red roof and a chimney emitting smoke; a large orange sun with rays; three green trees with red fruit; and four children holding hands in a line. The children are drawn with simple faces and various colored clothing. The text 'Demographic context' is written in white over the drawing, with a horizontal line underneath it.

Demographic context



Demography

“The study of life, death and everything we do in between”

– David Bloom, 2020

At its core – the drivers of population change – fertility, mortality and migration and their interaction.

Plays a key role in our political systems, economies and societies at the local, regional, state, national, and global level.

The fabric of a place - social, political and economic - is fundamentally determined by its socio-economic demographics.

Public policy both shapes and (should) responds to demographic trends and directly, and indirectly, influences population change.

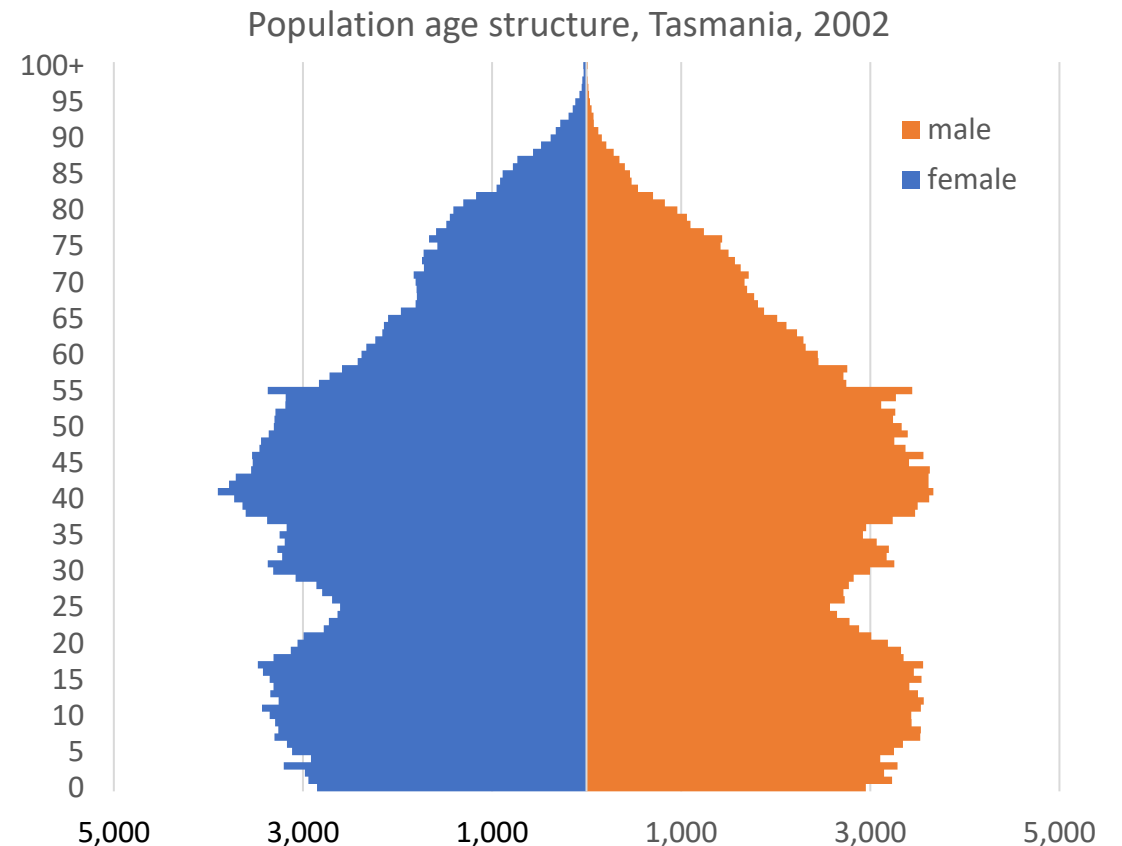
Population change in Tasmania

2002

- Population – 474,152
- Average annual growth rate – 0.51%

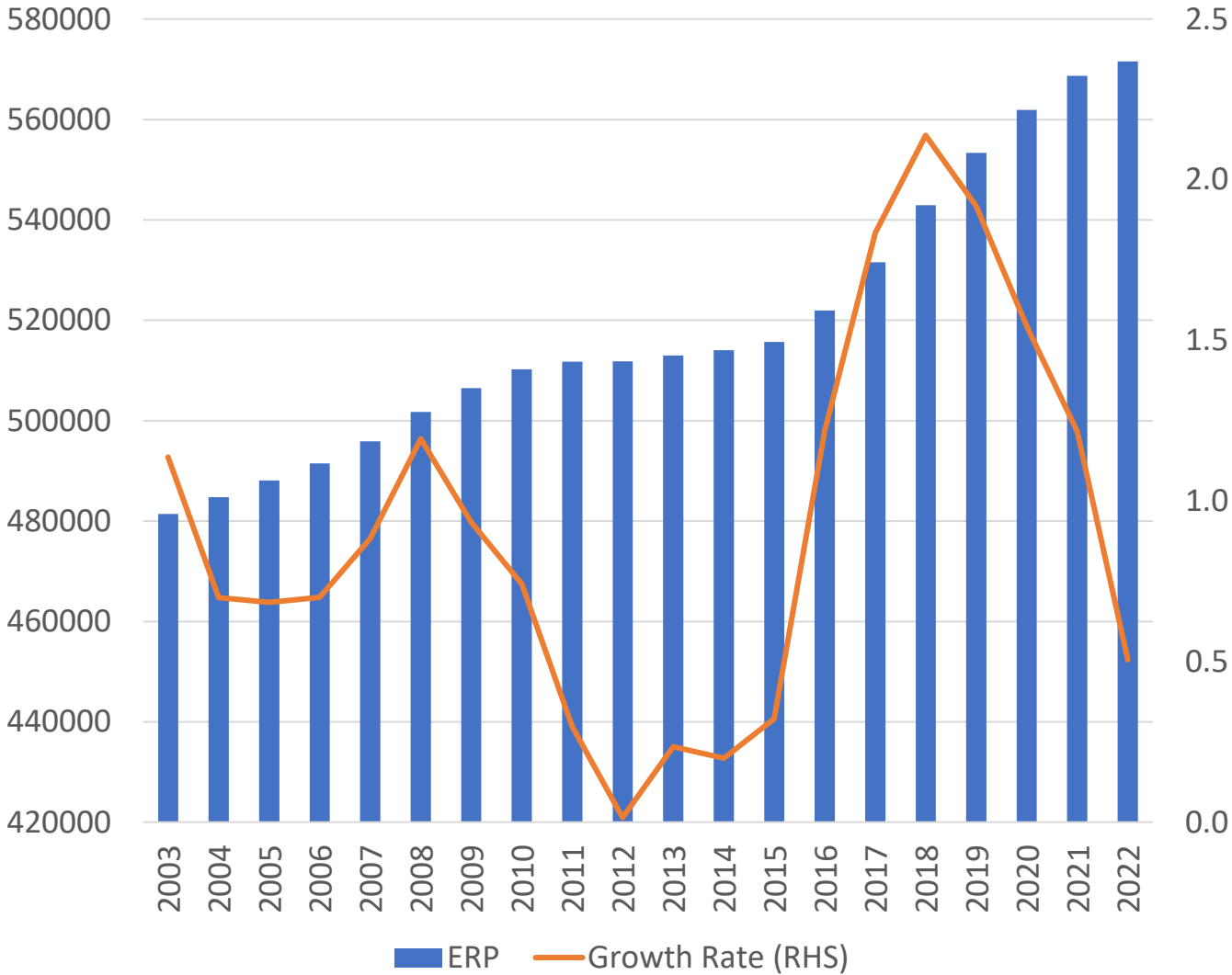
2022

- Population – 571,013
- Grew by 20.4%, 96,861 persons
- Average annual growth rate – 1.0%
- BUT – most of that growth occurred in the five years between 2016 and 2021 (56%) and has changed the shape of our population age structure



Source: ABS, National, State and Territory Population

Population size and growth rate



Source: ABS, National, State and Territory Population, December 2022



Population change

A function of:

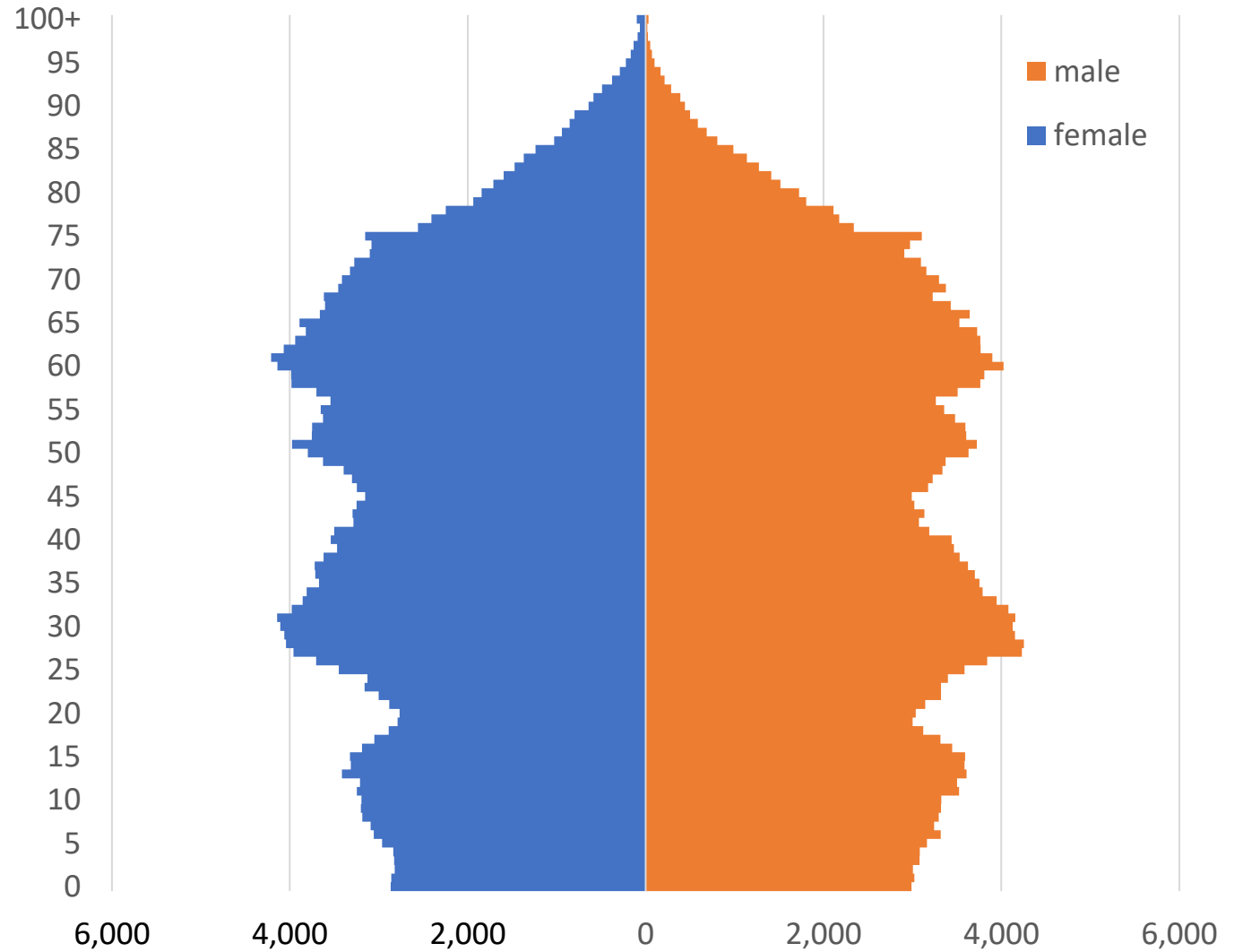
- population age structure
- migration

Driven by individual decisions:

- Whether or not to have a child, when and how many to have
- Where to live – opportunity, financial, personal factors

Population Age Structure - 2022

	2002 (%)	2016 (%)	2022 (%)
0-14	17.8	15.7	14.2
15-24	13.8	12.2	11.2
25-49	34.0	30.0	31.6
50-64	18.6	20.7	19.5
65-79	11.2	15.7	17.2
80+	4.6	5.7	6.4



Source: ABS, National, State and Territory Population, June 2022

ABS Undercount

The ABS identified a 26,000 person undercount following the 2021 Census of Population and Housing which changed the shape of Tasmania's population ageing structure.

- largely explained by young, working- and studying- age overseas-born people
 - Likely to be temporary visa holders (students or those on pathway to employment/residency visas)
 - Policy outcomes related to international student export market
 - Not eligible for Medicare or other public safety net services
- Not home-comers or sea-changers moving to Tasmania during the pandemic – 89% growth occurred prior to March 2020

See explainer [here](#)





The future?

Prior to the pandemic, highest population growth rates this century

- Over 80% of the growth came from migration

Since the pandemic:

- Population growth rates are now the lowest since 2012
- Net Interstate Migration is negative for the first time in 7 years
- Natural increase (different between births and deaths) is lowest on record

The future is uncertain...

The population age structure will continue to change regardless of growth rate or population size...

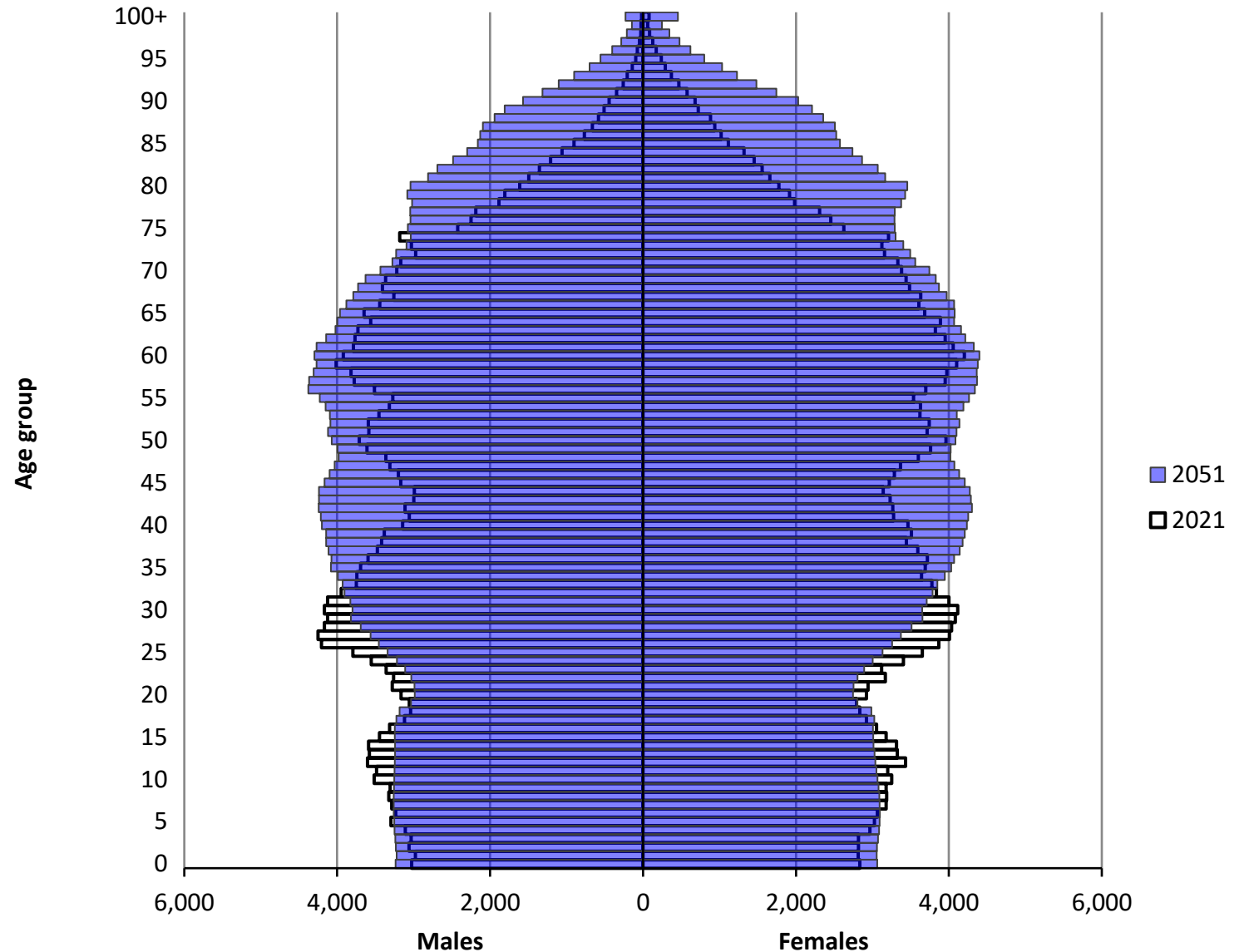
Population ageing is unavoidable....

This impacts the economy, workforce, job creation and productivity....

Age structure 2021 - 2051

Life-stage	%
Infants (ages 0-4)	4.8
Primary school (ages 5-11)	6.8
Secondary school (ages 12-17)	5.8
Tertiary education/labour force entrants (ages 18-24)	6.4
Younger workers (ages 25-34)	11.2
Established workers (ages 35-49)	19.1
Mature workers (ages 50-64)	19.4
Active retirees (ages 65-79)	16.0
Older population (ages 80+)	10.6

Average growth rate: 0.46% pa



Source: cepar (Tom Wilson)



Tasmania's Workforce

THE TASMANIAN ECONOMY AND WORKFORCE IS IN THE BEST STATE IT HAS EVER BEEN...

BUT...THIS IS NOT SURPRISING...

POPULATION AGEING = AGEING WORKFORCE

POPULATION AGEING WILL ONLY BE A PROBLEM WHEN THE LABOUR FORCE PARTICIPATION RATE IS HIGH AND INCREASING AND THE UNEMPLOYMENT RATE IS LOW AND DECLINING.

AS IS THE CASE IN TASMANIA CURRENTLY.

Tasmania's workforce by age and sex

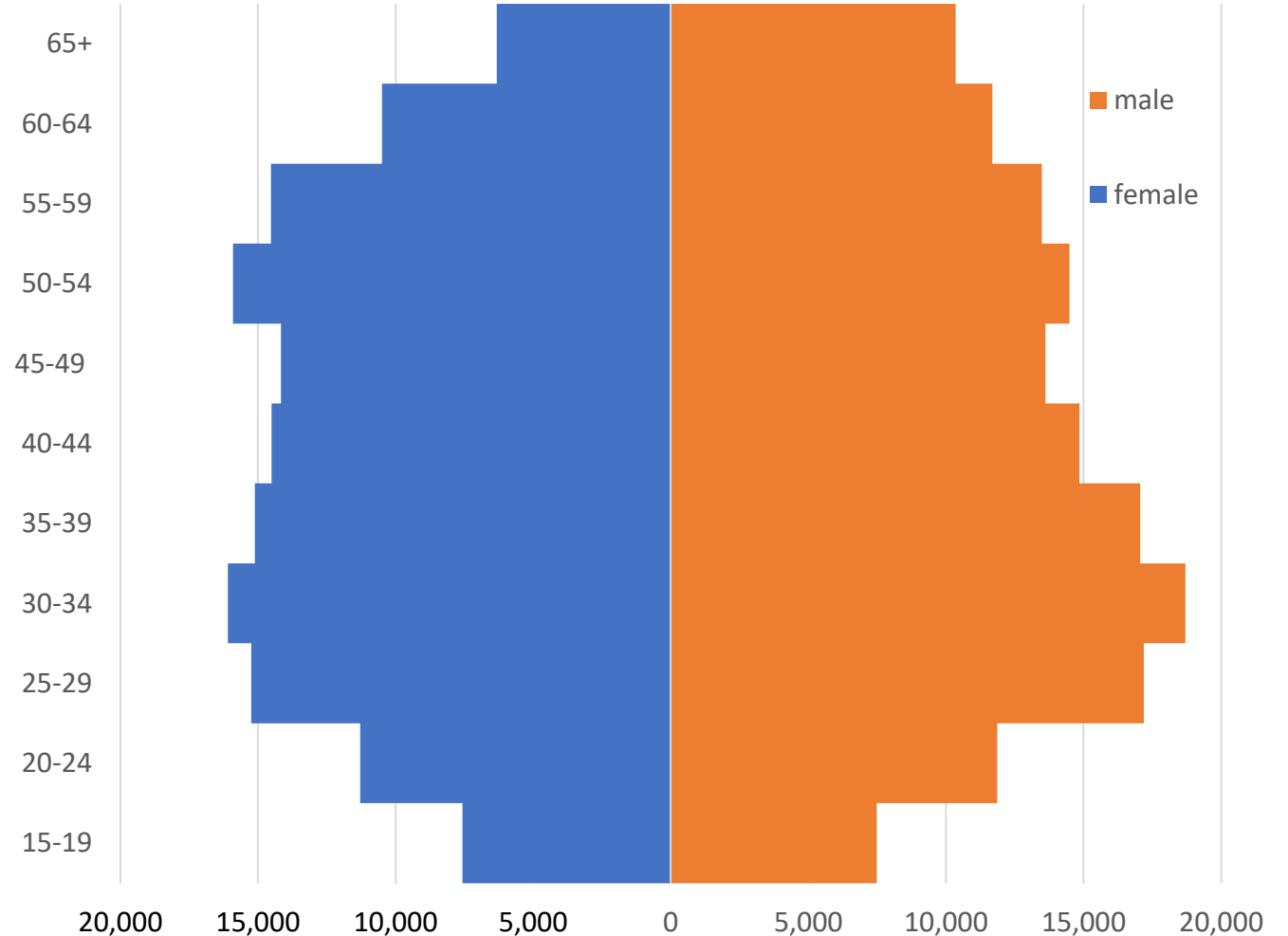
Around 290,000 workers

52% are male

Over a third aged 50 or older (101,000 people)

Over the next 15 years these older workers will exit the workforce due to retirement....

They will need to be replaced....



Source: ABS, Labour Force, Detailed, August 2023

The background features a grid of human silhouettes in various poses and colors. The top two rows consist of light gray silhouettes of people in different walking and standing poses. The middle row contains silhouettes in various professional and casual poses, including one holding a tablet. The bottom row shows silhouettes in profile, some facing left and some right. A solid orange horizontal bar is at the very bottom of the image.

Future workforce

Labour Market Entrants to Exits (15-24:55-64)

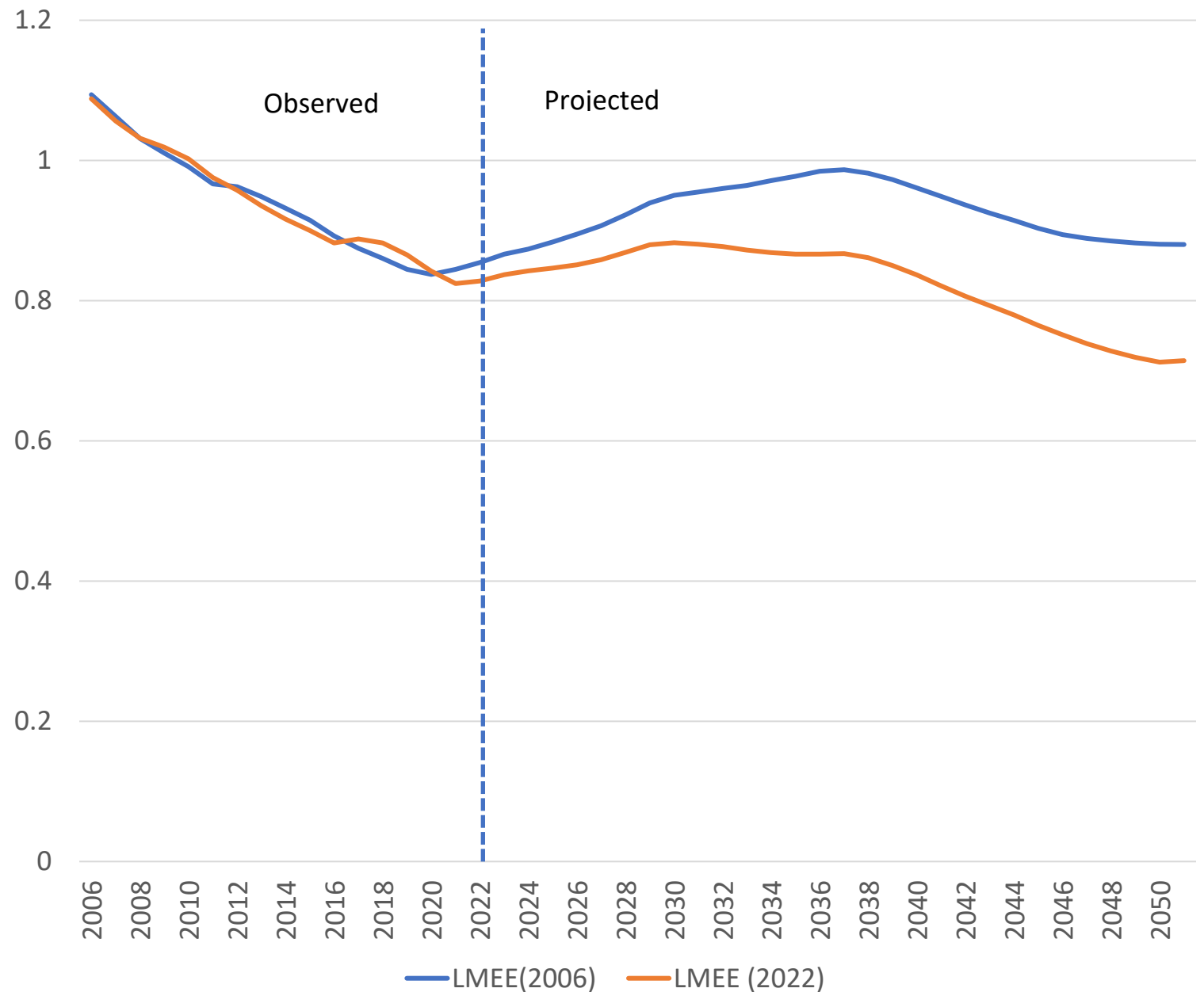
Shows the number of potential workforce entrants aged 15 to 24 years of age to potential workforce exits aged 55 to 64 years of age.

A ratio of more than 1 indicates more labour market entrants to exits.

A ratio of less than 1 indicates more labour market exits than potential entrants.

In Tasmania, the LMEE ratio shifted to less than 1 in 2010.

It is projected that there will be less potential labour market entrants than exits for the projection period.



Source: ABS National, State and Territory population; ABS population projections (2006); Advanced Demographic Modelling, population projections, Tasmania (2022)

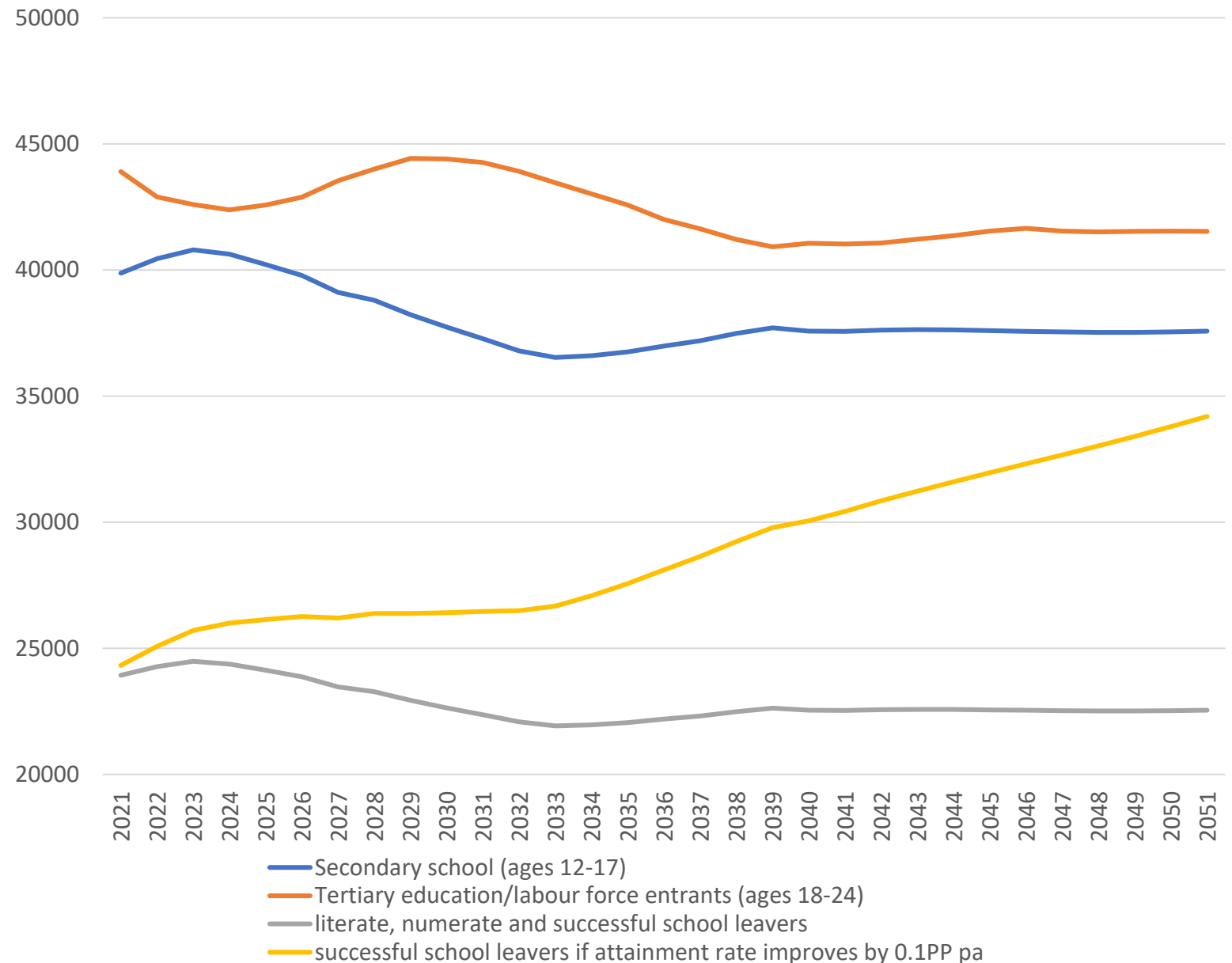
Potential new workforce entrants - projections by age group

The number of secondary school students aged 12 to 17 is projected to start declining from 2025.

The number of labour force entrants aged 18 to 24 is projected to starting declining from 2030.

If Tasmania's successful school completion rate remains at around 60% (3 in 5 students) then the potential supply of educated and skilled workers is further diminished.

If Tasmania's educational attainment rate improved by 0.1PP each year, the number of literate, numerate and successful school leavers would increase but the LMEE would still not exceed 1.



Source: Advanced Demographic Modelling, population projections, Tasmania (2022)



Educational outcomes

The economics of education

Human capital has become synonymous with educational attainment

Assumptions:

- economic growth and productivity determines the future economic and social well-being of a nation
- to measure the contribution of human capital to the economy using the production function, education - years of schooling or highest level of educational attainment - is used as a proxy

But:

This is a quantity measure of education.

Measurement should focus on the outcomes achieved through education (i.e. the quality of education) rather than solely the quantity of education.

In the past, investing in education and training has been a priority policy lever used by policy makers to improve the stock of human capital and productivity.

BUT: Increases in the **quantity** of education, measured by levels of educational attainment or years of schooling, has not resulted in a corresponding increase in productivity growth, as was expected.

Some have concluded that the contribution of education to economic growth may be overestimated.

Others argue that the lack of correlation relates to the measurement of human capital, rather than education per se.

> human capital is a constructed means of production and cannot be assumed to be homogenous.

Ignoring differences in the **quality** of education significantly distorts the picture of how education and economic outcomes are related.

Education – Quantity V Quality

- Measured by levels of educational attainment or years of schooling
 - **Incomplete and ineffective measures** of the relevant knowledge and skills in the economy
 - This may be because relevant data is readily observable, consistent, available and measurable.
 - **assumes that a year of schooling is homogenous** and that it delivers the same increase in knowledge and skills regardless of the school, sector or system.
 - **does not differentiate between the type or quality** of educational outputs.
 - **assumes that formal schooling is the primary source of human capital** and that variations in the quality of non-school factors affecting learning and improving human capital have a negligible effect on education outcomes
 - neglects the qualitative differences in the knowledge and cognitive skills acquired through the schooling experience and other sources of learning. **it distorts both the empirical analysis and resulting policy development.**
- **Quality education is a measure of knowledge and cognitive skills** demonstrated through standardised tests in literacy, numeracy and science.
 - When the cognitive skills of the population are included in the production function, a statistically and economically significant positive effect of the quality of education on economic growth is apparent.
 - This effect is far larger than the association between the quantity of education and economic growth.
 - Models that include direct measures of cognitive skills can account for about three times the variation in economic growth than models that include only years of schooling.
 - When cognitive capacity is included in the model, the association between years of schooling and economic growth turns insignificant and is reduced to close to zero.

The acquisition of quality education begins in primary school.

Predictors of educational outcomes

Several studies using multivariate analysis to predict academic performance conclude that prior achievement in primary school has the most influence on young people's overall educational outcomes

and that

Successful completion of year 12 is associated with prior achievement in literacy and numeracy throughout the schooling experience, more so than parental education or socio-economic background.

Empirical evidence:

Year 9 academic results predict year 11 and 12 performance¹

Writing skills are correlated with year 11 and 12 performance²

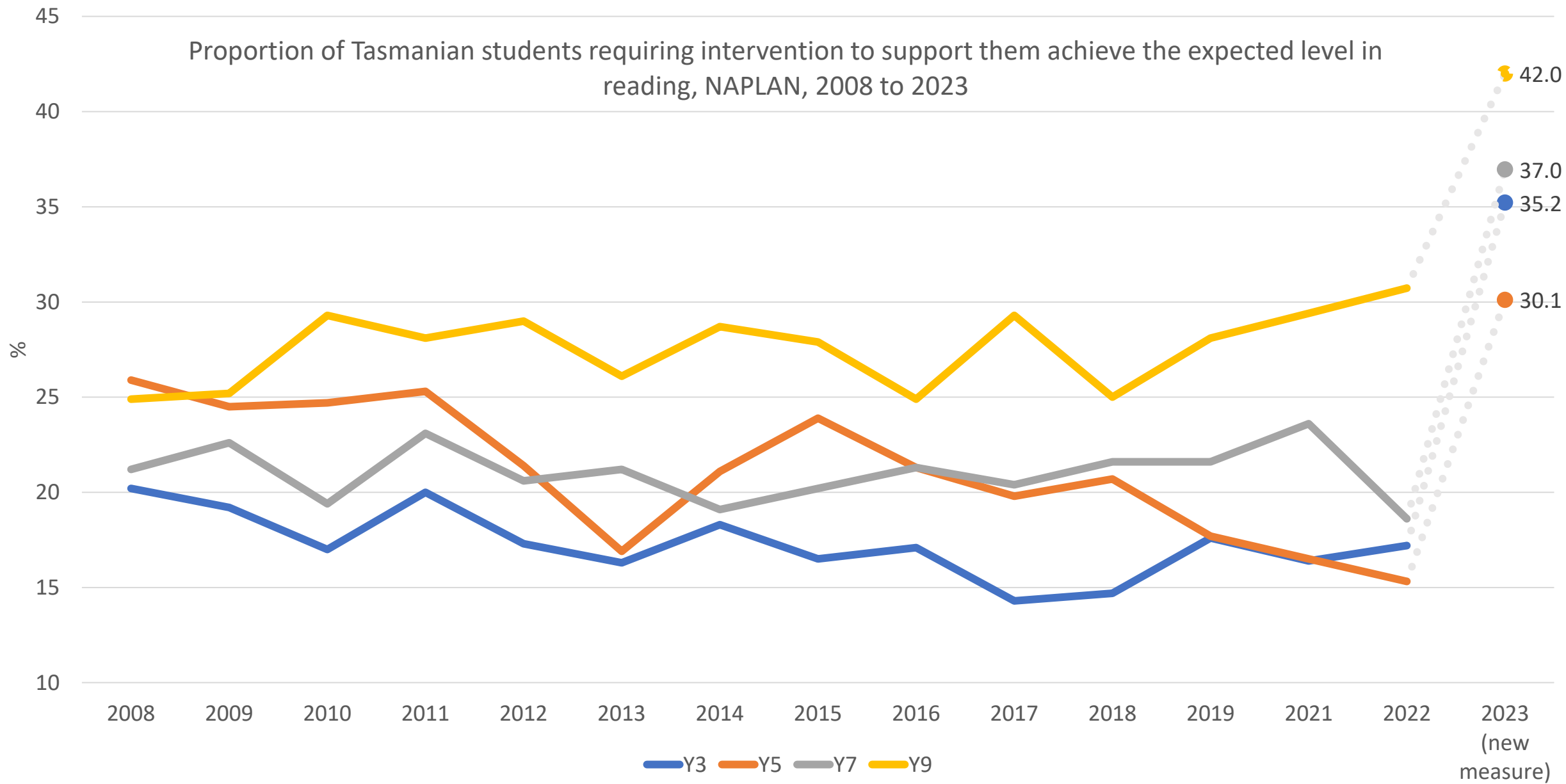
Year 9 NAPLAN writing results were the strongest predictor of year 11 and year 12 performance, more so than reading, spelling, grammar or numeracy³

Writing ability is predicted jointly by spelling, grammar and punctuation, with spelling being the strongest predictor⁴

Proficiency in English is a strong predictor of mathematical achievement⁵

At primary school, many children fail to achieve sufficient standards of writing to support their personal and academic needs at secondary school and beyond.

Proportion of Tasmanian students requiring intervention to support them achieve the expected level in reading, NAPLAN, 2008 to 2023



Proportion of Tasmanian students who need support and intervention to achieve the expected level, NAPLAN, 2023

	Reading (%)	Writing (%)	Spelling (%)	Grammar and Punctuation (%)	Numeracy (%)
Year 3	35.2	29.3	45.6	53.0	39.5
Year 5	30.1	41.4	38.6	42.7	38.6
Year 7	37.0	44.9	35.4	42.9	41.1
Year 9	42.0	47.2	36.0	52.3	43.8

Solution: improve primary school efficacy

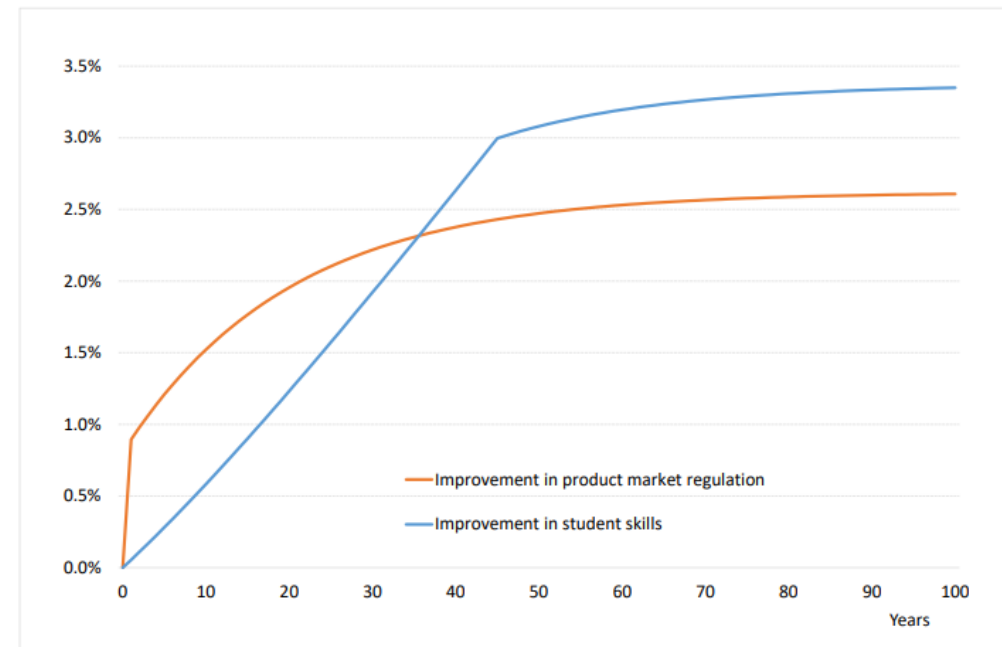
Improving the quality of educational outcomes of the population has a greater longer term impact on improving productivity than increasing years of schooling and/or regulatory reform.

A sustained improvement in PISA student test scores (cognitive skills) by 5.14% is estimated to increase MFP by between 3.4% and 4.1% in the long run (OECD).

Comparatively, an increase in mean years of schooling of 9.3% generates an increase in MFP of between 1.8% and 2.2% over the same period.

Another OECD study showed that a twenty-year reform plan to improve educational outcomes would yield a 5% increase in GDP (compared with an economy with no increase in cognitive skills).

Change in multi-factor productivity, per cent



Source: Egert, B., de la Maisonneuve, C., and Turner, D. (2022), A new macroeconomic measure of human capital exploiting PISA and PIAAC: Linking education policies to productivity, OECD Economics Department Working Papers No. 1709, OECD.

Long term
thinking
required



Profound impact is possible.

Improving primary school efficacy has a long-run macro-economic effect as productivity improvements will be realised once the student cohorts are engaged in the workforce.

To be reflected in the entire working age population, the OECD estimates it would take almost five decades before sustained improvements in student skills are fully realised in productivity improvements.

The model found that over the long run, improvements in student skills have a greater impact on improving productivity performance than improvement in product market regulation.



Migration

INTERSTATE AND OVERSEAS

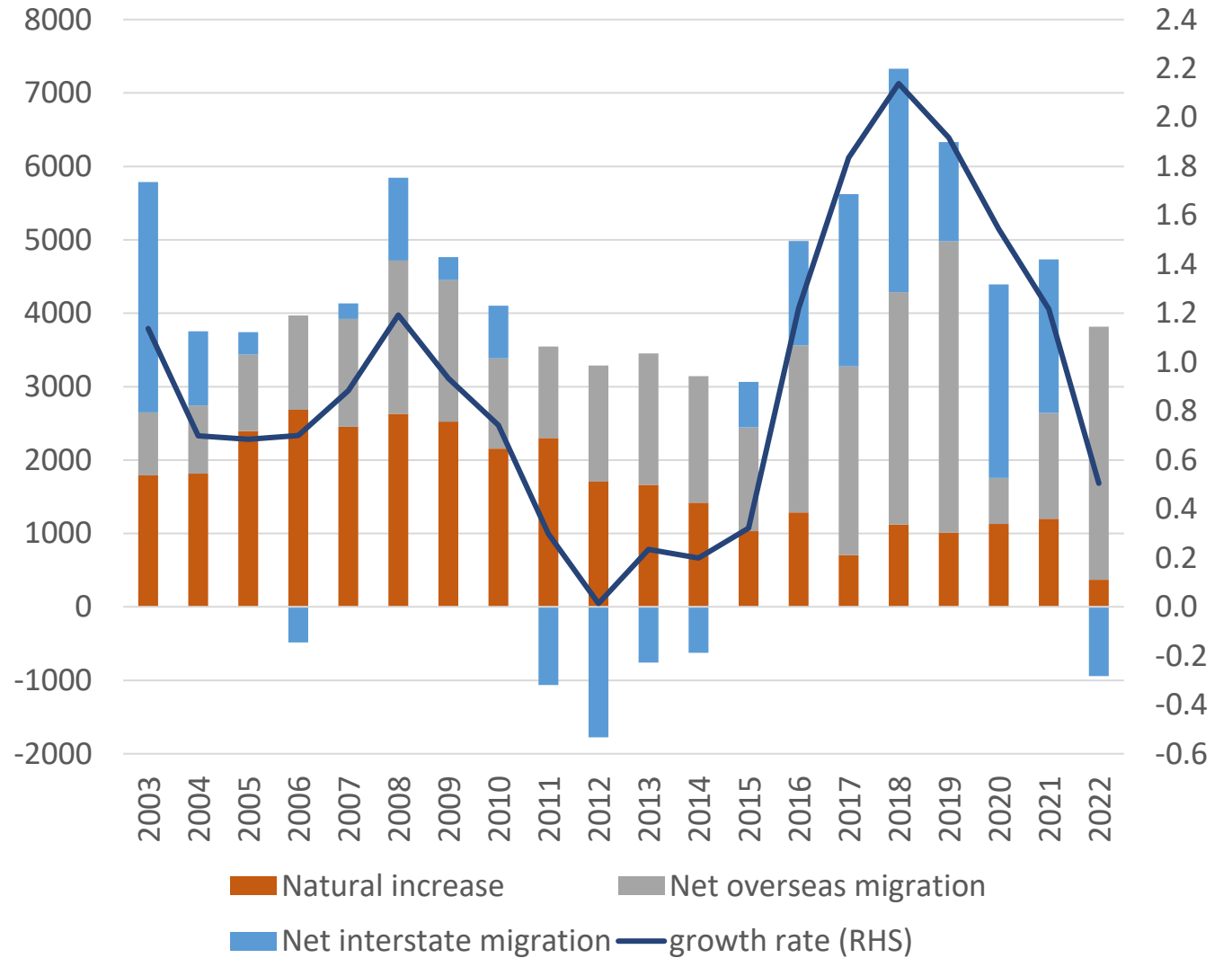
Components of Population Change

Natural increase (births – deaths)

Net Interstate Migration

Net Overseas Migration

- Temporary
- Permanent
- Humanitarian
- Australians returning or leaving
- Kiwis
- Visitors



Source: ABS, National, State and Territory Population, December 2022

Interstate Migration – arrivals and departures

10 year average

Arrivals – 14,446 pa

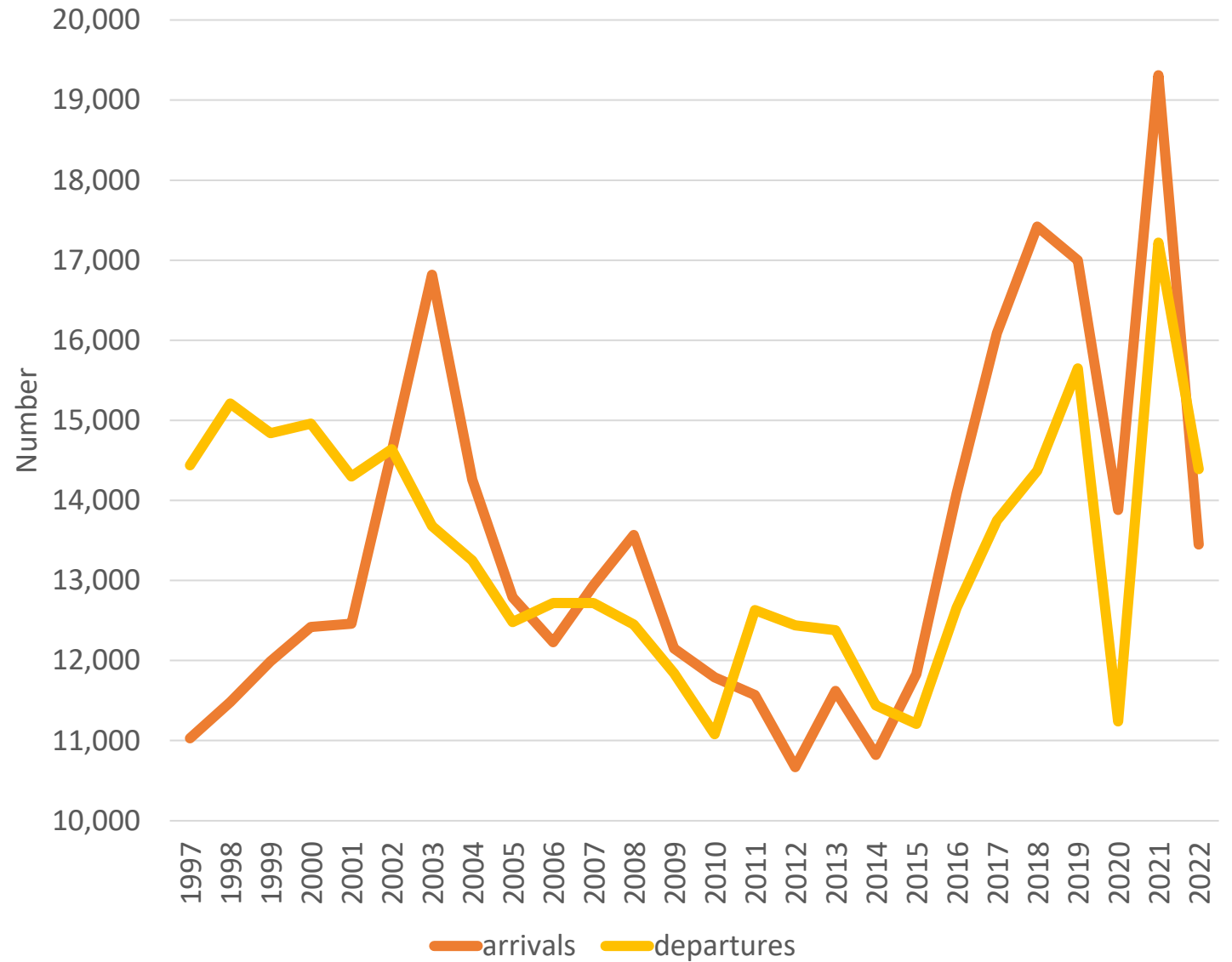
(March 23 12,880)

Departures – 12,427 pa

(March 23 14,874)

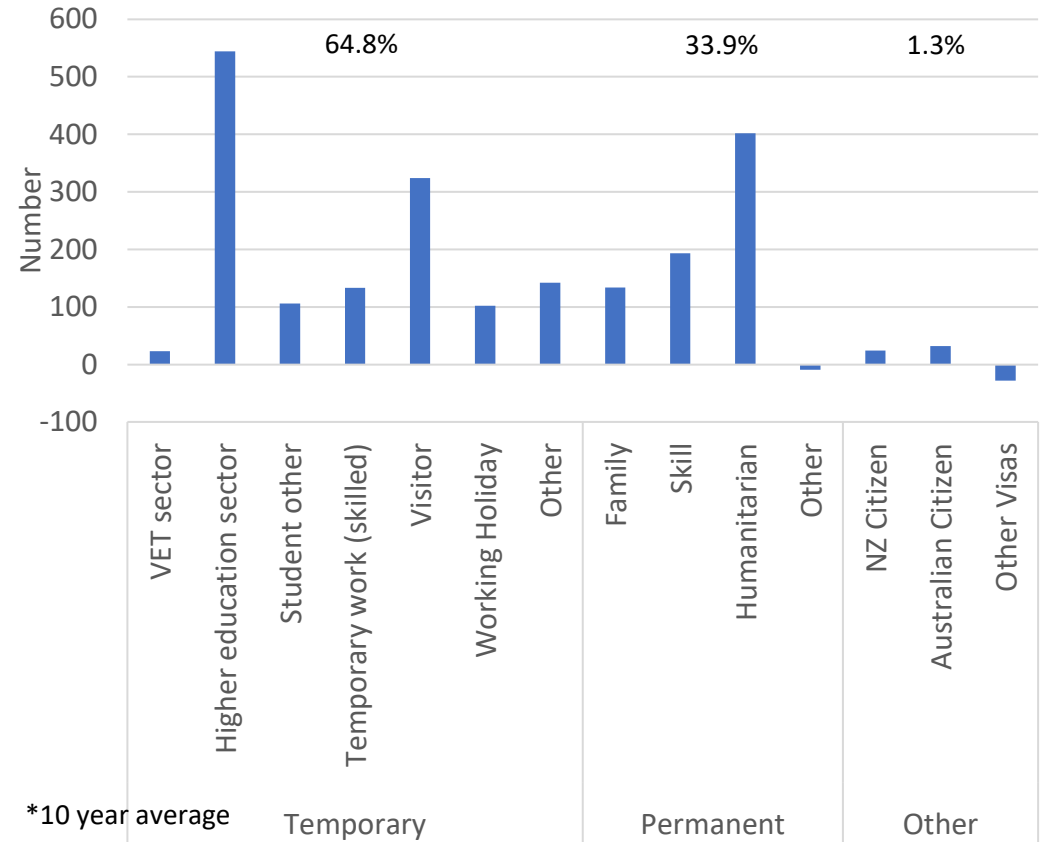
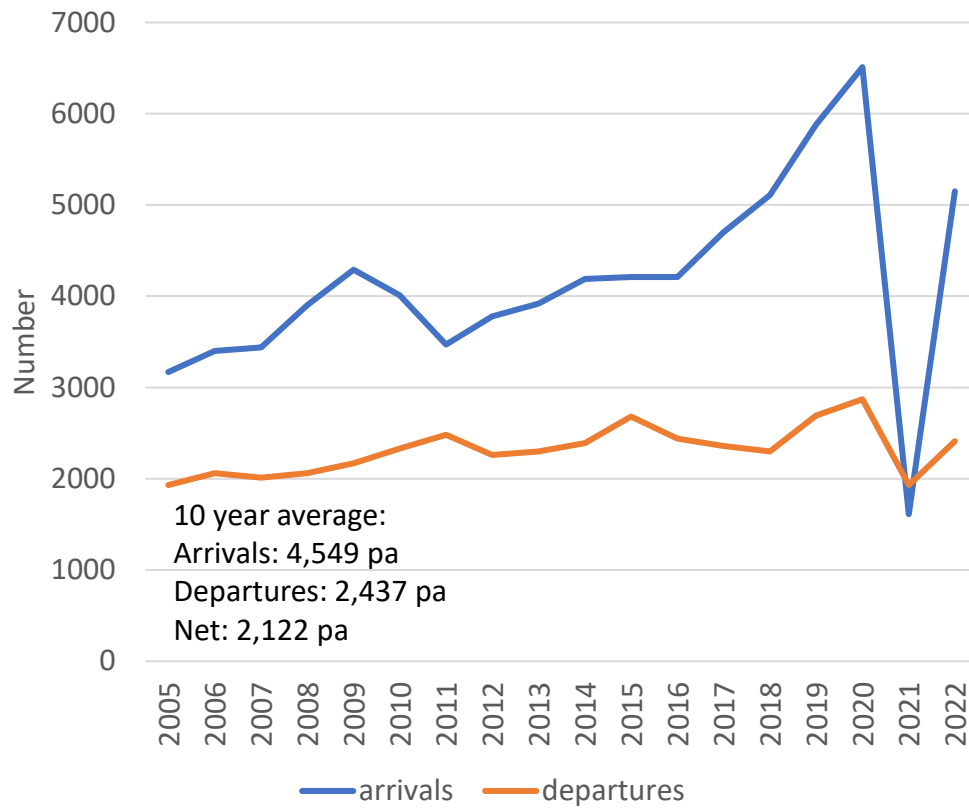
Net gain – 764 pa

(March 23 -1,995)



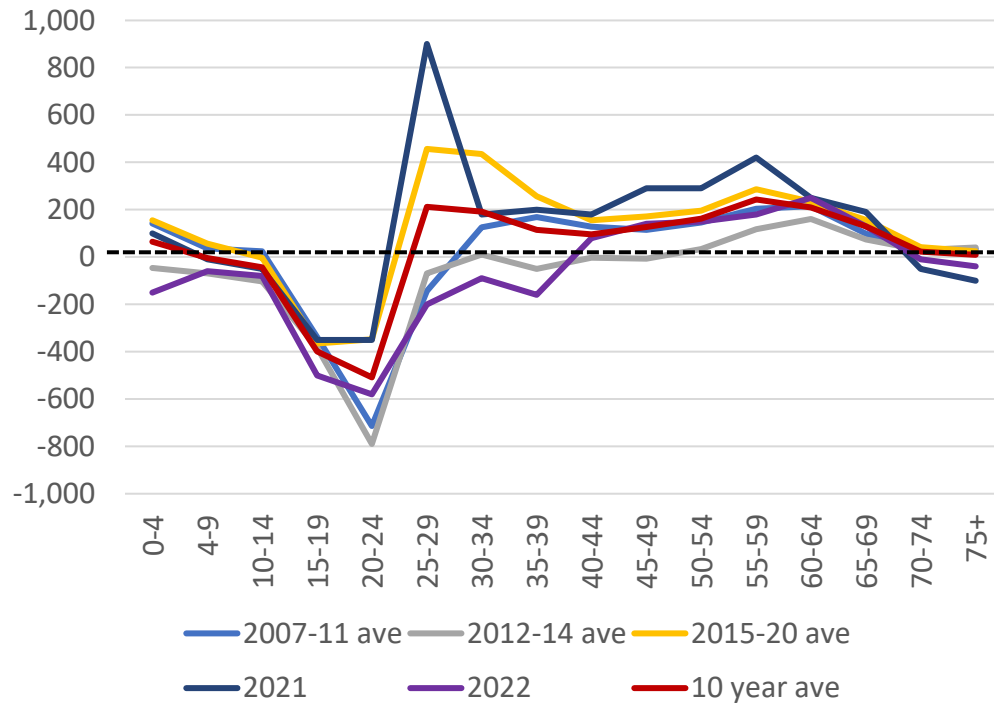
Source: ABS, National, State and Territory Population, December 2022

Overseas Migration



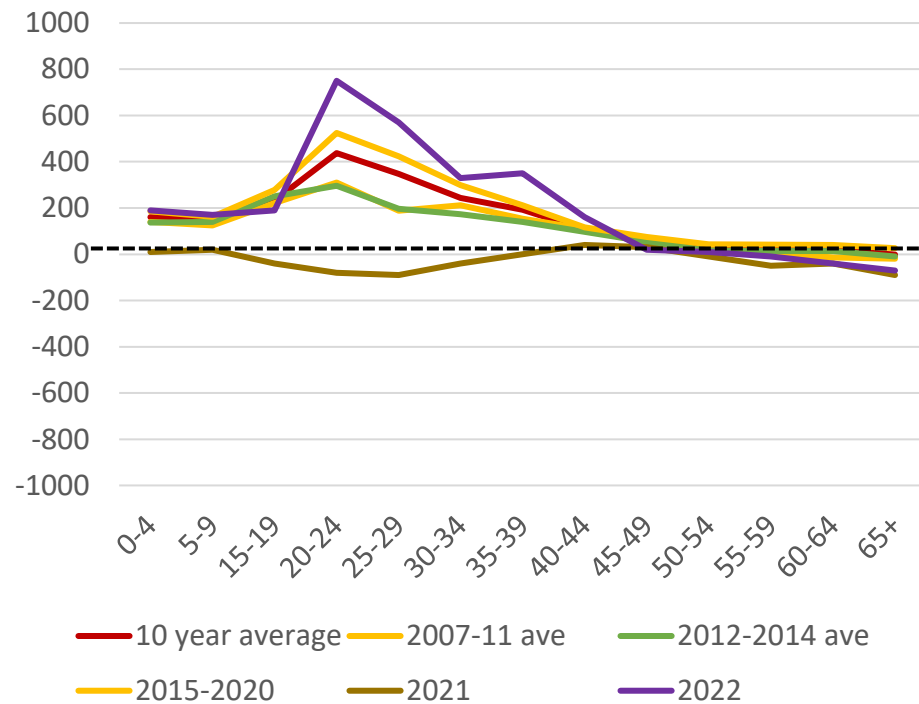
Net Migration – by 5 year age group

INTERSTATE MIGRATION

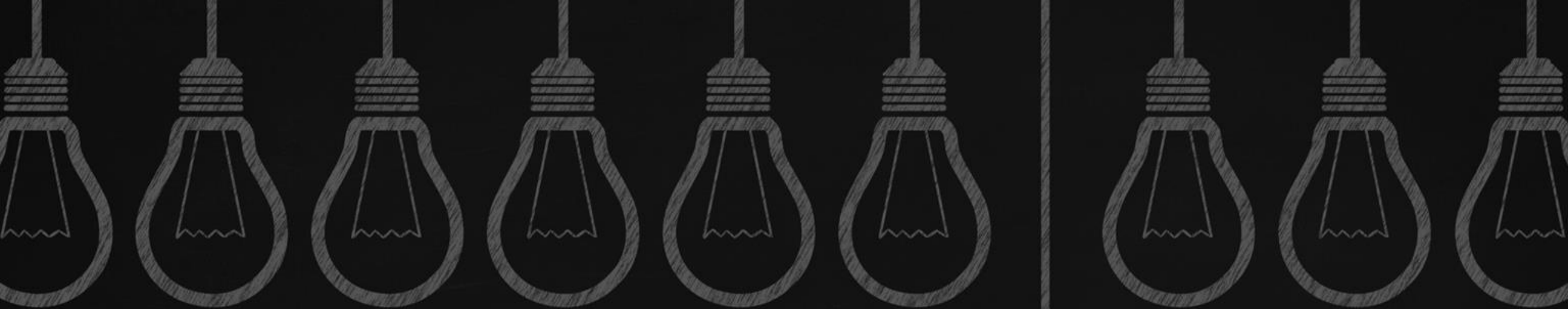


Source: ABS, National, State and Territory Population, December 2022

OVERSEAS MIGRATION



Source: ABS, Overseas Migration, 2022



Dynamic economy



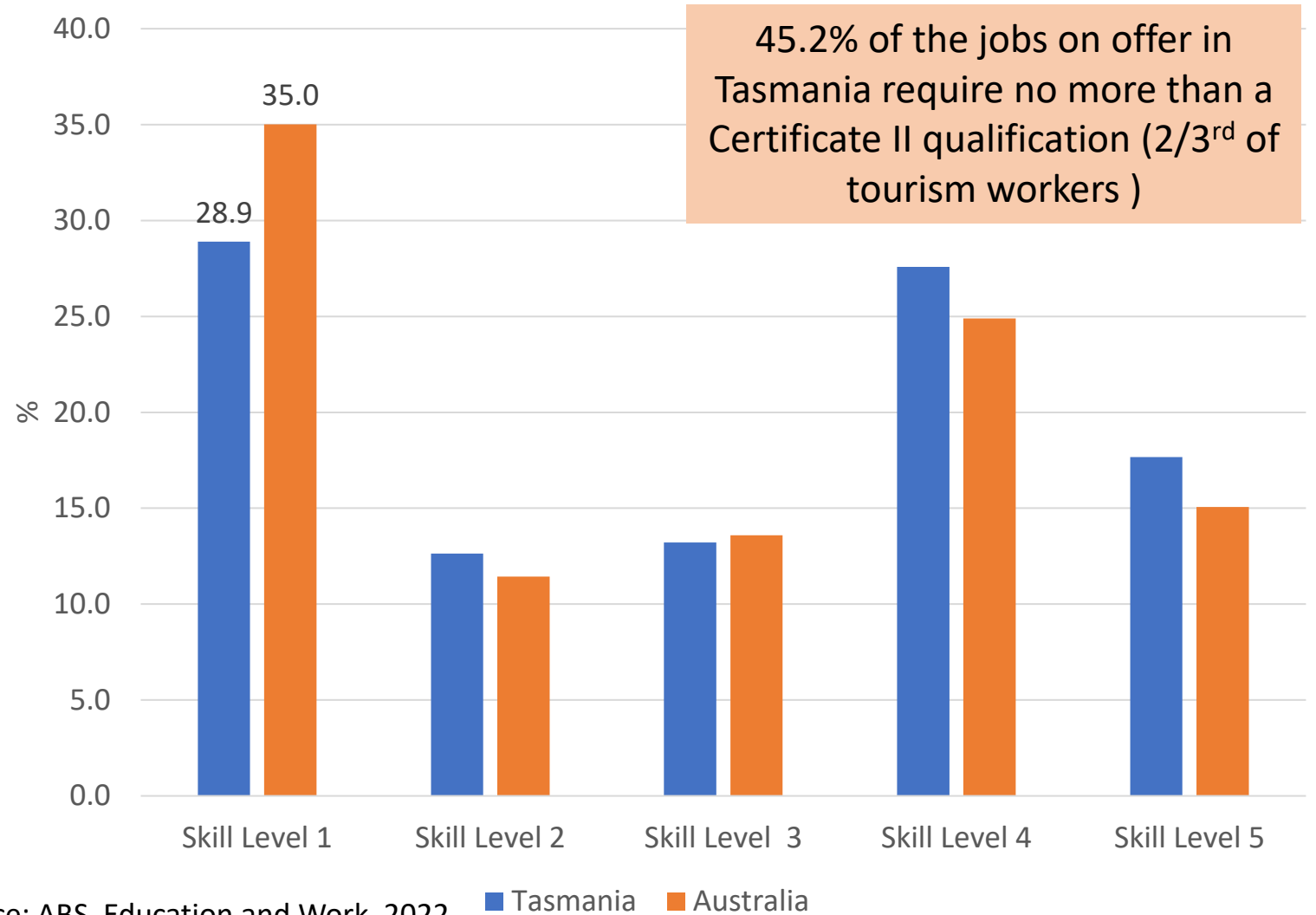
Workforce polarisation

Direct result of:

- ongoing industrial revolutions and the shift to services sectors
- economic development policy
- priority industry sectors
- socio-demographic profile

Due to our industry structure and resulting job offering Tasmania has

- a population retention problem
- a utilisation problem



Skill Level 1 is commensurate with a Bachelor degree or higher qualification
Skill Level 2 is commensurate with an Advanced Diploma or Diploma
Skill Level 3 is commensurate with a Certificate IV or III (including at least 2 years on-the-job training)
Skill Level 4 is commensurate with a Certificate II or III
Skill Level 5 is commensurate with a Certificate I or secondary education

Retention Problem – case study

Comparative analysis

2021 ABS Census of Population and Housing

20-29 year olds

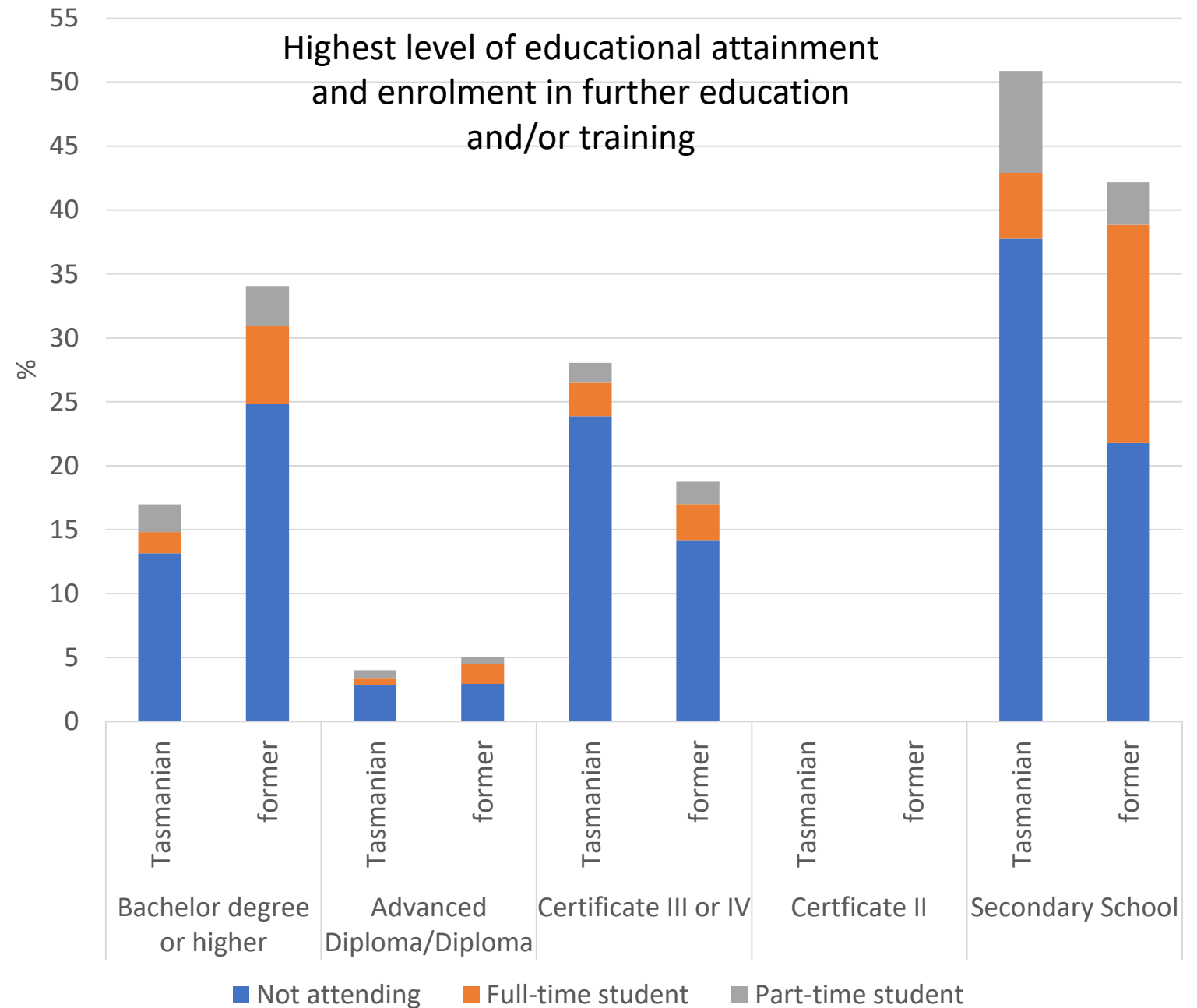
PUR 5 years prior – Tasmania

- 15 to 24 years of age

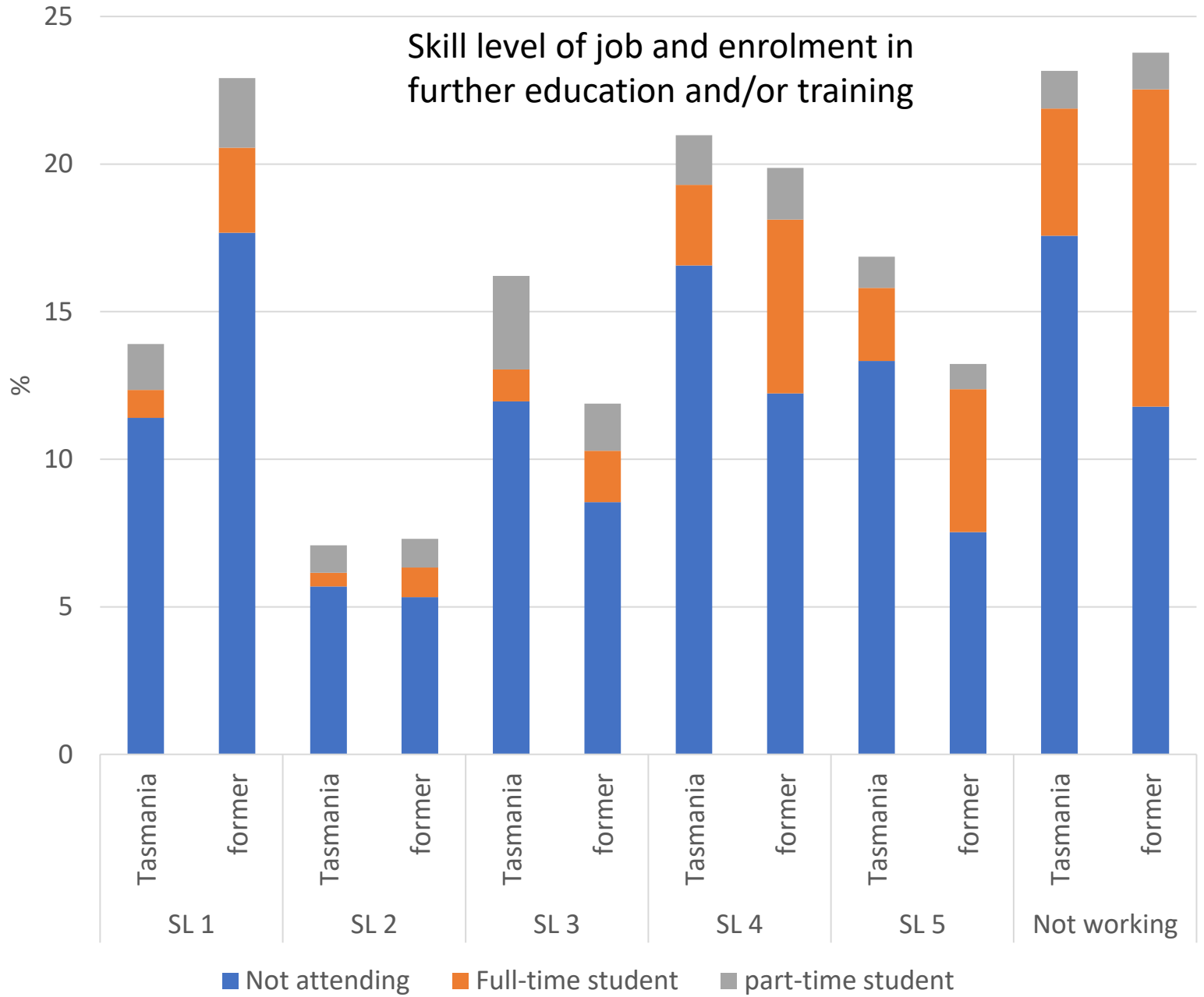
Tasmanians – PUR Tasmanian (48,466)

Former Tasmanians – PUR interstate (7,585)

Further reading: [Submission to Tasmanian Youth Jobs Strategy Discussion Paper](#)

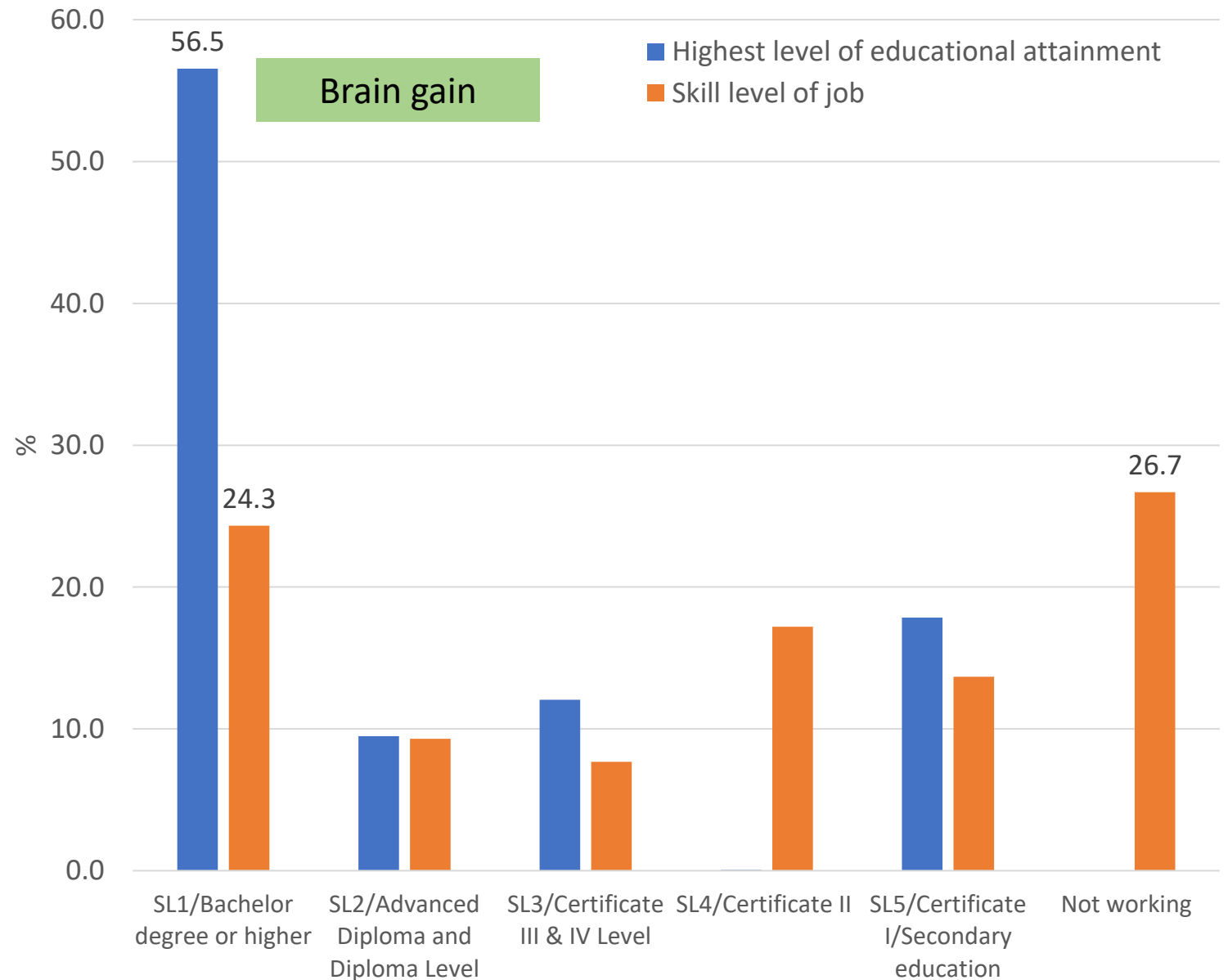


Participation in Education and/or Employment



Utilisation Problem – case study

- Migrants to Tasmania
- 20-64 years of age
- Lived interstate or overseas 5 years prior to the 2021 ABS Census
- Educational attainment
- Skill level of job
- 47,189 people



Further reading: [More people have been moving to Tasmania than in the \(long-term\) past, BUT...](#)

Utilisation Matrix – inward migration

Skill Level 1 is commensurate with a Bachelor degree or higher qualification

Skill Level 2 is commensurate with an Advanced Diploma or Diploma

Skill Level 3 is commensurate with a Certificate IV or III (including at least 2 years on-the-job training)

Skill Level 4 is commensurate with a Certificate II or III

Skill Level 5 is commensurate with a Certificate I or secondary education

	Skill Level 1 (%)	Skill Level 2 (%)	Skill Level 3 (%)	Skill Level 4 (%)	Skill Level 5 (%)	Not Working (%)	Total (No.)	Under-utilised (%)
Postgraduate Degree Level	32.0	7.9	4.8	18.7	15.2	20.3	11,625	67.6
Graduate Diploma or Graduate Certificate Level	50.5	7.3	6.1	10.8	5.5	18.9	1,607	49.5
Bachelor Degree Level	36.5	9.7	5.3	15.1	12.5	20.0	15,051	63.3
Advanced Diploma and Diploma Level	16.0	18.4	9.0	18.1	11.1	26.3	4,739	65.3
Certificate III & IV Level	9.2	9.9	21.1	19.7	10.7	28.5	6,033	59.6
Secondary Education - Years 10 and above	7.6	6.4	6.6	18.8	18.4	41.0	8,134	41.0

White = match, red = under-utilised, green = under-qualified, orange = over-qualified, yellow = not utilised

Key Messages




Key messages

Further reading:


www.lisadenny.com.au

Lisadenny.substack.com


Demographic context matters. Public policy shapes, and should respond to, demographic trends to influence population change as well as economic and social outcomes.




Tasmania does not have a workforce demand issue, it has a workforce supply issue which will continue into the future.



There is, and will continue to be, increasing competition for workers from a diminishing supply of labour.



The quality of education matters. It predicts educational attainment and the capability of future workers.



Industry structure matters. It determines the types of jobs on offer and the prosperity of a place. It is the key to achieving and retaining a productive workforce.



Dr Lisa Denny
Workforce Demographer
Adjunct Associate Professor, University of Tasmania
www.lisadenny.com.au