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BRIDGING THE GAP

Population, skills and labour market adjustment in WA

Michael Dockery, Alan Duncan, Astghik Mavisakalyan, Chris Twomey and Lili Loan Vu

Focus on Western Australia Report Series, No.16
September 2022

About the Centre

The Bankwest Curtin Economics Centre is an independent economic and social research organisation located within the Curtin Business School at Curtin University. The Centre was established in 2012 through the generous support of Bankwest (a division of the Commonwealth Bank of Australia), with a core mission to examine the key economic and social policy issues that contribute to the sustainability of Western Australia and the wellbeing of WA households.

The Bankwest Curtin Economics Centre is the first research organisation of its kind in Western Australia, and draws great strength and credibility from its partnership with Bankwest, Curtin University and the Western Australian government. The Centre brings a unique philosophy to research on the major economic issues facing the state.

By bringing together experts from the research, policy and business communities at all stages of the process – from framing and conceptualising research questions, through the conduct of research, to the communication and implementation of research findings – we ensure that our research is relevant, fit for purpose, and makes a genuine difference to the lives of Australians, both in WA and nationally.

The Centre is able to capitalise on Curtin University's reputation for excellence in economic modelling, forecasting, public policy research, trade and industrial economics and spatial sciences. Centre researchers have specific expertise in economic forecasting, quantitative modelling, micro-data analysis and economic and social policy evaluation. The Centre also derives great value from its close association with experts from the corporate, business, public and not-for-profit sectors.

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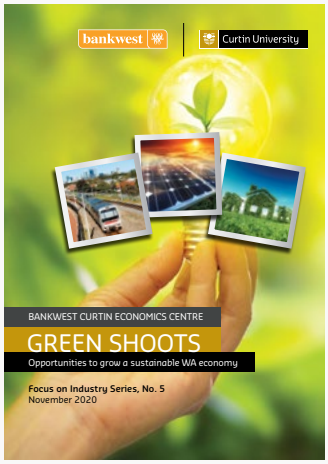

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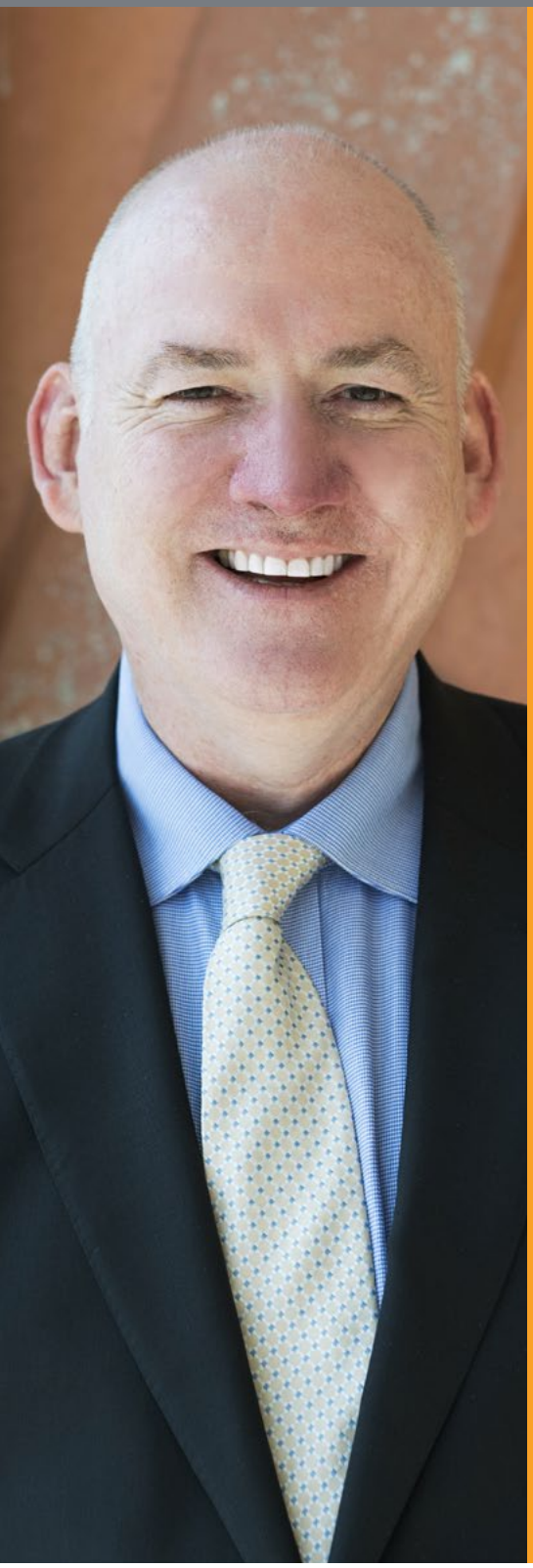


The Bankwest Curtin Economics Centre's *Focus on WA* report series has been established to give a Western Australian perspective on key economic and social trends and issues of particular relevance to this State. Few topics could have been more timely or well-suited to that charter than the one chosen for the sixteenth report in the series – skills shortages and population growth in WA.

With tight labour markets and unemployment rates at historically low levels, skills shortages have emerged as one of the most pressing economic issues at both the state and national level. They have been particularly acute for WA, as this state has led the country's economic growth over recent decades, and with shortages regularly exacerbated by WA's strong but volatile resource sector.

Much has already been written on skills shortages, and there are varying views on the immediate solutions from the business sector, unions, community sector and across the political spectrum. These debates appear and reappear with some regularity.

Rather than engaging on that same ground, this report offers a rigorous, conceptual reconsideration of skills shortages and new evidence with the aim of promoting improved longer-term policy settings.

Barriers to labour force participation, underemployment, underutilisation and worker immobility are all contributors to skills shortages, both in Western Australia and nationally. Many of these issues overlap strongly with other areas of social and economic concern including gender and diversity, migrant wellbeing, the future of work and housing affordability. These same issues feature among the priority research themes at the Bankwest Curtin Economics Centre.

This *Focus on WA* report suggests that the strength of the Western Australian economy makes it more prone to skills shortages than other states and territories.

Increasing immigration is often a first port of call, and immigration will continue to be an important part of WA's economic growth story. However, the evidence presented in this report highlights the imperative to combine this with complementary strategies that improve access to employment for existing groups who are disadvantaged in the labour market.

We hope that the insights provided in this report help to guide policy formulation in the longer term to achieve a more efficient labour market and better, fairer outcomes for all West Australians.

Professor Alan Duncan
Director, Bankwest Curtin Economics Centre
Curtin Business School, Curtin University

EXECUTIVE SUMMARY

The 16th report in Bankwest Curtin Economics Centre's *Focus on WA* series tackles the contentious issue of skills shortages in Western Australia. The state appears to be perpetually plagued by skills shortages, with regular reports of skills and labour shortages impacting upon sectors from agriculture to major resource and construction projects, to the childcare and aged care sectors; and extending throughout regional and remote Western Australia.

Skills and labour shortages – concepts and conditions

We are conscious that many previous reports have looked at skills shortages. In this report, we try to avoid going over same ground. Rather, the focus of this report is to provide empirical evidence on the nature of skills and labour shortages here in the West and nationally, as a basis to guide the formulation of policy to minimise the occurrence and impacts of skills shortages. Commencing with a conceptual reconsideration of skills shortages, we note that achieving the economic objectives of full employment and high real wages will inevitably create skills shortages. As labour market adjustment will never be immediate, skills shortages will inevitably be a feature of a growing and dynamic economy.

We argue that a condition for a skills shortage to warrant a policy response requires the establishment of the existence of some barrier to the efficient allocation of labour and skills. Consequently the report provides an in-depth analysis of the processes of labour market adjustment and where these can be improved. Rather than providing more projections of how many extra workers WA is going to need in this occupation or in that industry or region, we ask what stops the labour market from meeting those needs. Our aim is to provide evidence that can inform longer-term policies to improve the efficiency of the WA labour market, or to improve the state's allocation of workers.

Is WA especially prone to skills shortages?

Western Australia and Queensland stand out as the country's two fastest growing states in terms of economic output, population, and employment. The WA economy has more than doubled in size since the turn of the century, and this has largely been facilitated by overseas migration. For much of the past three decades WA's unemployment rate has been substantially below the national average. It experienced a particularly tight labour market from mid-2006 to 2008 and, with the unemployment rate trending around three percent, is currently in the midst of another period of acute skills shortages.

In addition to this rapid rate of growth, a number of unique features of Western Australia make it more prone to skills shortages: Perth's mantle as the most isolated capital city in the world, the remoteness of locations where workers are required by the agricultural and resource sectors, and high economic volatility. We find evidence of these effects in analyses of job vacancy data from 2001 to 2020. Compared to the national labour market, the WA market appears to be less efficient in matching available workers to vacancies – generally a much larger increase in the ratio of vacancies to employed workers is required in WA to achieve a given fall in the unemployment rate.

A number of previous reports have concentrated on the mismatch between the skills generated through the vocational education and training and higher education sectors and the skills demanded by industry. While there will always be room for improving that alignment, the low rate of unemployment of Western Australians with Certificate Level III or higher qualifications suggests it is the number of skilled workers available that is the major constraint, rather than the composition of skills of existing VET and university graduates. A recent sharp drop in unemployment rates for low-skilled workers suggest WA is now entering as such a labour shortage – a simple lack of people - as much as a skills shortage.

Underutilisation of talent – a hidden driver of skills shortages

A common response to skill and labour shortages is to call for more immigration, and this has been a focus of the national *Jobs and Skills Summit* held in Canberra on 1 and 2 September 2022. Estimates suggest the number of vacancies employers are currently seeking to fill in WA exceeds the number of unemployed workers available to fill them. However, there remain substantial pools of untapped sources of labour and skills. These include the disproportionate numbers of women, older persons and persons with a disability who are not participating in the labour market, underemployment among the existing workforce and the underutilisation of the skills of migrants.

For the June quarter 2022, WA's unemployment rate averaged 3.1 per cent, while 47,500 unemployed persons coexisted alongside 65,000 vacancies available to be filled. Against that context, we estimate there were 132,000 skilled persons – persons with a Certificate III level qualification or higher – of working age (15-64 years) who were not participating in the labour force, around half of whom held university degrees. In the prime working ages from 25-54 these non-participants are primarily women. Participation drops rapidly from age 55 years, with 39,000 skilled persons aged 55-64 years no longer participating in the labour force. Among existing workers, there was an estimated 78,500 full-time equivalent latent workforce in the form of additional hours that workers would like to be working.

Analyses of the most recent survey data from the Household, Income and Labour Dynamics in Australia suggests there were 24,000 migrants from a non-English speaking background in WA in 2020 working in jobs for which they are overqualified. That number is likely to have been temporarily lowered due to COVID. Adopting what we believe is an achievable target for improving inclusion for persons with a disability, would see further 10,000 persons with a disability employed in the state.

Barriers to women's employment

The report takes a detailed look at the causes of lower participation of women, relative to men, in the labour market. Family and childcare responsibilities pose significant constraints on female participation, while men's participation is relatively unaffected by those same factors. The cost of accessing suitable childcare is a major contributor: nearly 60 per cent of people thinking about using paid childcare see the cost as a problem to some degree. Low access to quality care is in turn exacerbated by skills shortages in the care sector, in which around 90 per cent of the workforce is female, and the low value society appears to place on care work.

We estimate that women working in the care sector typically earn 14 per cent less than men working in other sectors with otherwise similar characteristics in terms of age, qualifications and work experience. Gender biased norms on attitudes to women's work are an additional barrier constraining female labour force participation, suggesting closing the gender gap in labour force participation needs to start with addressing gender stereotypes that are formed from an early age.

The role of migration in addressing skills shortages

While overseas and interstate immigration will continue to be an important part of the mix in meeting WA's growing skills needs, relying on immigration to fill skills and labour gaps must be weighed against alternatives of investing in the potential sources of domestic labour. Unemployment and disengagement from the labour market by those who would like to work has substantial long-run economic and social costs, including negative mental health impacts and the atrophy of existing vocational and non-cognitive skills. There are significant positive externalities from drawing on periods of skills shortages to drawing the otherwise hard-to-place unemployed and discouraged jobseekers into the labour market, including a more efficient labour market in the long run. In the case of women and persons with a disability, there are also compelling equity and social justice considerations. Finally, drawing on existing, latent sources of labour does not add to pressure in the housing market.

Channels of labour market adjustment

This *Focus on WA* report includes two analyses of the processes of labour market adjustment: the first investigates the factors associated with individuals' interstate mobility, and the second a time series analysis of the factors affecting net interstate and overseas migration to WA. A key finding from our analysis of individuals' interstate mobility is that observed mobility patterns are reminiscent of 'poverty traps', in which the unemployed lack the means to move to states with higher employment opportunity.

Housing is important in two ways. Renters are two to three times more likely to move interstate than homeowners. More importantly, housing prices typically rise when a State's labour market is strong. For the unemployed, the incentives to move to a state or territory with a lower unemployment rate are largely negated by the disincentives created by rising housing costs.

Interstate and overseas migration are important element of WA's growth story, and provide complementary sources of skills and labour market adjustment. The composition of origin countries of overseas migrants to WA has been converging towards the national profile, with Asia becoming the dominant region as a source of migrants. Modelling indicates that increases in employment in WA generate a short-term net increase in interstate migration, followed by a longer–term increase in overseas migration. The state's current tight rental market and the lack of availability of affordable housing is likely to be hindering migration flows to the state to address skills shortages.

Key Findings

The concept of skills shortages

Any meaningful examination of skills shortages must be grounded in an understanding of how the labour market adjusts, the efficiency of those processes, and barriers to adjustment.

The nature of skills

Skills include knowledge, abilities and competencies that are embodied in people and that contribute positively to that individual's capacity to create wealth.

There is growing recognition in economics of the importance of non-cognitive skills - such as motivation, reliability and inter-personal skills - alongside cognitive skills in determining workers' employability and productivity.

What is a skills shortage?

Employer reports of difficulties recruiting skilled workers are not sufficient to establish the existence of a shortage. It also depends upon whether or not resources are allocated efficiently.

Identifying skills shortages cannot be divorced from the level of policy- or decision-making at which they are being assessed.

A condition for the existence of a skills shortage that warrants a policy response is the existence of some barrier to the optimal allocation of labour, or some evidence that such processes break down or operate inefficiently.

Labour market adjustment

Two things are required to set labour market adjustment processes in train: information and incentives. The relevant agents need information of the changes required, and the incentive to act upon that information.

Skills shortages are a persistent feature of a growing and dynamic economy.

Why is WA prone to skills and labour shortages?

Unique characteristics of the WA economy make it prone to skills shortages: the isolation of major population centres from the rest of the world; remoteness of locations where resource extraction takes place; and high economic volatility.

From 1990 to 2021, the WA economy had the highest variance in annual growth rates of all the six states, and three times the variance observed in the annual growth rate of the Australian economy overall.

The Western Australian labour market in context

WA had the highest growth rate of all the states and territories this century. From 2000 to 2021, the WA economy has more than doubled in size – grown by a factor of 2.3 – while the Australian economy as a whole increased by a factor of 1.7

There are long-run, persistent differentials in unemployment rates between the states. SA, Tas and Qld have consistently displayed high rates of unemployment. The ACT, NT, and WA have experienced consistently low unemployment. Labour market adjustment processes aren't working to close gaps.

There are four growth states: Queensland, WA, the NT, and ACT, with relatively high rates of employment and population growth. With the exception of Queensland, these growth states have also exhibited relatively low unemployment rates.

Queensland stands out as the only state or territory to have consistently seen net positive contributions from natural population growth, interstate migration and international migration.

The main source of population growth in WA has been international migration. Since 1980-81, international immigration had been contributing growth of just under 1 per cent to the State's population every year, peaking at over 2 per cent in 2008-09 and 2011-12.

Shortages and untapped labour supply in WA

Vacancies and unemployment

WA generally needs – or experiences - a higher level of vacancies, relative to the workforce, to drive unemployment down.

Persistently high numbers of vacancies per worker and per unemployed person suggest substantial skills shortages in WA and evidence of an inferior process of matching vacancies to available workers.

The unemployment rate falls when vacancies are above around 13.5 vacancies per 1000 workers for both WA and Australia, but a larger increase in vacancies per worker is required in WA to achieve a given fall in the unemployment rate.

A skills shortage or a labour shortage?

The current period of low unemployment has seen at least 40,000 Western Australians unemployed each month, while the number of vacancies employers are seeking to fill is running at over 60,000. There are substantially more positions available to be filled than there are unemployed persons.

Workers with a university education consistently experience unemployment rates below 4 per cent; those who did not complete Year 10 typically face unemployment rates in the vicinity of 14 per cent.

The sudden convergence in unemployment rates by level of educational attainment provides evidence that WA now faces a labour shortage as much as skills shortages.

Evidence on changes in workers' returns to extra years of education suggests very muted wage responses to skills shortages, particularly at the national level.

Untapped Sources of Labour

Relying on immigration to fill skills and labour gaps must be weighed against the benefits of investing in potential sources of domestic labour. Unemployment and disengagement from the labour market by those who would like to work has substantial long-run economic and social costs.

In May of 2022, there were around 132,000 potential skilled workers in WA – persons with a Certificate III or IV level qualification or higher – who were of working age (15-64 years) but not participating in the labour force. Almost half held a university degree.

There were 17,000 university qualified West Australians aged 55-64 outside of the labour market, and a further 22,000 with advanced vocational skills as at May 2022.

Typically, around 16 per cent of Australian workers report they would prefer to work more hours.

On average, full-time workers would like to supply just 0.7 extra hours per week (0.9 hours for men and 0.3 hours for women), and part-time workers an average of 4.4 extra hours (6.4 hours for men and 3.6 hours for women).

WA has an untapped labour supply of around 68,000 full-time equivalent workers in the form of additional hours the current labour force is willing to work. 52,500 of these potential full-time equivalent workers relate to the underemployment of part-time workers.

Around 35 per cent of employed migrants from a non-English speaking background in Australia and in WA are working in occupations for which they are overeducated.

There appears to have been surprisingly little upward occupational mobility for migrants from non-English speaking backgrounds during WA's 'skills crisis' of 2008.

There are substantial barriers in the labour market to the full utilisation of the skills and qualifications of migrants from non-English speaking backgrounds. There were around 24,000 such migrants in WA who were working in occupations for which they were overeducated in 2020, and that number is likely increasing post-pandemic.

There is a pressing moral and equity case for the promotion of inclusiveness of persons with a disability in our workplaces, as recognised in Australia's commitment to the United Nations' Convention on the Rights of Persons with Disability.

At around 4 per cent, the number of Disability Support Pension recipients currently exceeds the number of Western Australians classified as unemployed in the labour force survey.

The participation rate gap between persons with and without disability in WA now stands at 30.4 percentage points in 2020, little changed from the gap of 28.6 percentage points in 2001.

In WA, the proportion of persons with a disability in employment varies from around 9 per cent to 54 per cent as we move from the most disadvantaged to the most advantaged neighbourhoods.

An achievable target for increased participation and employment would see an additional 10,000 persons with a disability employed in WA..

Female labour force participation

Female labour force participation in Australia

Over 62 per cent of females aged 15 and over were in the labour force in 2022 compared to under 52 per cent participation in 1992.

As of 2022, the labour force participation rates were at 64.5 per cent for females and 74.9 percent for males in Western Australia – a difference of 10 percentage points.

The share of employed women has gone up by 4 percentage points over the past 5 years, reaching nearly 61 per cent in 2022.

As of 2020, labour force participation was the highest among university-educated females (90 per cent) and those who had completed year 12 (nearly 79 per cent). Among prime-age females holding a diploma it was down by 8 percentage points and among females holding a certificate it was down by 7 percentage points relative to a decade ago.

83 per cent of prime-age males with an educational attainment of Year 11 or below and only 57 per cent of prime-age females with the same educational attainment were in the labour force in 2020 – a difference of 26 percentage points.

At ages 25-44, potentially coinciding with child-rearing years, there is over 12 percentage points difference in labour force participation rates of males and females.

Nearly 30 per cent of females aged 45-64 are engaged in home duties while not in the labour force compared to 12 per cent of men who are doing the same.

Among couples with children, over 96 per cent of males and only 80 per cent of females were in the labour force in 2020 – a difference of 16 percentage points.

Among persons who wanted to and were available to work yet are not actively looking for work, 34 per cent of females are not doing so because of family reasons, compared to only 6 per cent of males.

Nearly 60 per cent of individuals who used or thought about using paid childcare consider meeting the cost of childcare as a problem to some degree.

Women make up around 90 per cent of workers in the care sector, and earn 14 per cent lower hourly wages compared to otherwise similar men of the same age, level of education and years of work experience working in other sectors.

Long held concerns of acute skills shortages in the care sector have not been sufficient to invoke a rise in wages to competitive levels for workers given their skill levels.

Cultural context of female labour force participation

Nearly 44 per cent of males and 33 per cent of females surveyed in 2019 agreed that a working mother cannot establish just as good a relationship with her children as a mother who does not work for pay.

The perceptions of work and parenthood trade-offs appear to constrain the labour force participation of females but not males.

Labour force participation is at 81 per cent for mothers who disagree with the statement that mothers seem to care more about being successful at work than meeting the needs of their children and at 68 per cent for those who agree with it – a difference of 13 percentage points.

19 per cent of university-educated females and over half of the females with with education attainment of Year 11 or below subscribe to the view that it is better for everyone involved if the man earns the money and the woman takes care of the home and children.

Labour force participation is at 87 per cent for prime-age females who disagree with the statement that it is better for everyone involved if the man earns the money and the woman takes care of the home and children, while it is under 75 per cent for those who support the statement.

Nearly 41 per cent of females whose mother wasn't employed support the statement that it is better for everyone involved if the man earns the money and the woman takes care of the home and children, compared to 25 per cent agreement rate among women who grew up with a working mother.

Individual labour mobility

A national model

On average, 1.7 per cent of 15-64 year olds are observed to change their state of residence each year.

People respond to employment opportunity. A one percentage point increase in a state's unemployment rate relative to the national rate, increases the chance a person will move out of that state by 14 per cent.

Because housing prices tend to fall when unemployment is high, this typically negates around 40 per cent of the incentive to move out of a state in response to rising unemployment rates.

Mobility declines steadily with age. People aged 55-64 are around one-quarter as likely to move as 15 to 34 year-olds. Mobility increases substantially with educational attainment.

Homeownership significantly limits mobility. Renters are 2-3 times more likely to move interstate than a homeowner.

The Northern Territory and Australian Capital Territory have the most fluid populations, with high interstate inflows and outflows.

The unemployed are more likely to move interstate than people in work, but there is limited evidence that they move to areas of higher employment opportunity.

Incentives for the unemployed to move to a state or territory with a lower unemployment rate are almost completely offset by the effects of higher relative housing costs in those areas.

The observed mobility patterns are consistent with 'poverty traps' in which the unemployed lack the resources to move in response to employment opportunity. The mobility of part-time workers is more responsive to interstate differences in unemployment rates.

Who moves to Western Australia?

Differences in employment opportunity are a significant 'pull factor' in people's decision to move to Western Australia.

Being single, male and having been born overseas in an English speaking country are associated with a higher likelihood of choosing to move to WA.

WA is particularly attractive as a destination for interstate migration for residents living in the Northern Territory.

The tendency for Australians to move from regions of high unemployment to regions of low unemployment is driven primarily by people relocating to the two growth states of Queensland and Western Australia.

Labour market adjustment – time series analysis

Migration into WA

WA was amongst three Australian states and territories having a positive net interstate migration in 2021.

Overseas migration reduced significantly in all states and territories after the COVID-19 pandemic.

WA ranked second among Australian states and territories in the size of net overseas migration relative to state population in 2019.

The composition of origin countries of overseas migration into WA has changed considerably in the last decade before the pandemic, with Asia becoming the dominant source region.

Migration flows into WA are associated with the differential between the state's unemployment rates, weekly wage earnings, and rental vacancy rates relative to the national average and with iron ore prices.

Dynamics of labour market adjustment
Net interstate migration into WA increases immediately in response to an increase in WA's share of national employment. The adjustment process takes approximately four years.

Overseas migration remains unchanged in the first year in response to an increase in WA's share of national employment, before increasing significantly in the years after that.

"FUELLED BY A **THRIVING RESOURCES SECTOR AND HIGH COMMODITY PRICES** WESTERN AUSTRALIA HAS BEEN THE NATION'S POWER HOUSE OF ECONOMIC GROWTH SINCE THE TURN OF THIS CENTURY."

INTRODUCTION

INTRODUCTION

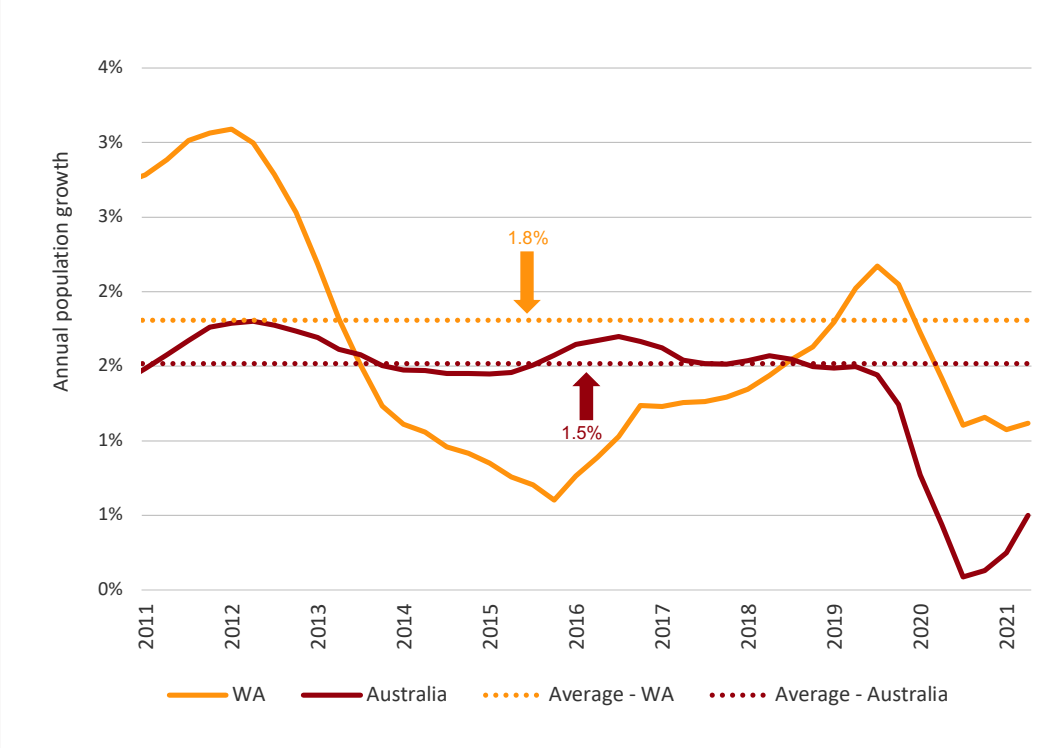
The WA business community consistently ranks difficulty in recruiting skilled labour as the main barrier they face.

Fuelled by a thriving resources sector and high commodity prices, Western Australia has been the nation's power house of economic growth since the turn of this century. With gross state product growing at around 50 per cent faster than national GDP, the WA economy more than doubled in size from 2000 to 2021. Over the last decade, the WA population has grown by an average 1.8 per cent per annum, compared to 1.5 per cent for the overall Australian population (see Figure 1). Current high iron ore prices, a global shortage of natural gas, and growing demand for the minerals required to transition to a clean energy future, all suggest the State is poised to continue on this trajectory.

With that success inevitably comes some growing pains, and the most prominent of these are labour and skills shortages. Proclamations of a 'skills crisis' now pervade reports from the media, employers, and government, as they have many times before in WA. Difficulty recruiting skilled labour persistently ranks as the main barrier facing the WA business community as reported in the WA Chamber of Commerce and Industry's Business Confidence Survey, with a record 82 per cent of businesses reporting this as a barrier in the most recent March Quarter 2022 survey.

FIGURE 1

Annual population growth, WA and Australia, 2011 to 2021



Source: Bankwest Curtin Economics Centre | Authors' calculations from ABS Cat No. 3101.0.

Filling certain highly skilled occupations is a constant challenge. The State Government maintains a Skilled Migration Occupation List (WASMOL) to prioritise workers looking to migrate to WA. Table 1 shows the 25 occupations that have appeared most often from 2005 to 2022: it can be seen that a range of specialist engineering and health occupations, including five separate nursing occupations, are consistently deemed to be in shortage. And this time around, WA is in stiff competition with the other states and territories for skilled workers. Both the national and state unemployment rates averaged below 4 per cent in the June quarter, 2022, with the national rate recently hitting a 50 year low. The National Skills Commission maintains a similar 'Skills Priority List'. In 2021, it listed some 50 occupations in shortage in WA and assessed as having 'strong future demand'. All but two of those were assessed as in shortage in every state and territory (National Skills Commission 2021).

Five separate nursing occupations appear among the 10 occupations most frequently appearing in the WA government's list of occupations in shortage from 2005 to 2022.

TABLE 1

Occupations by frequency of listing on WASMOL, occupation size and skill level, WA, 2022

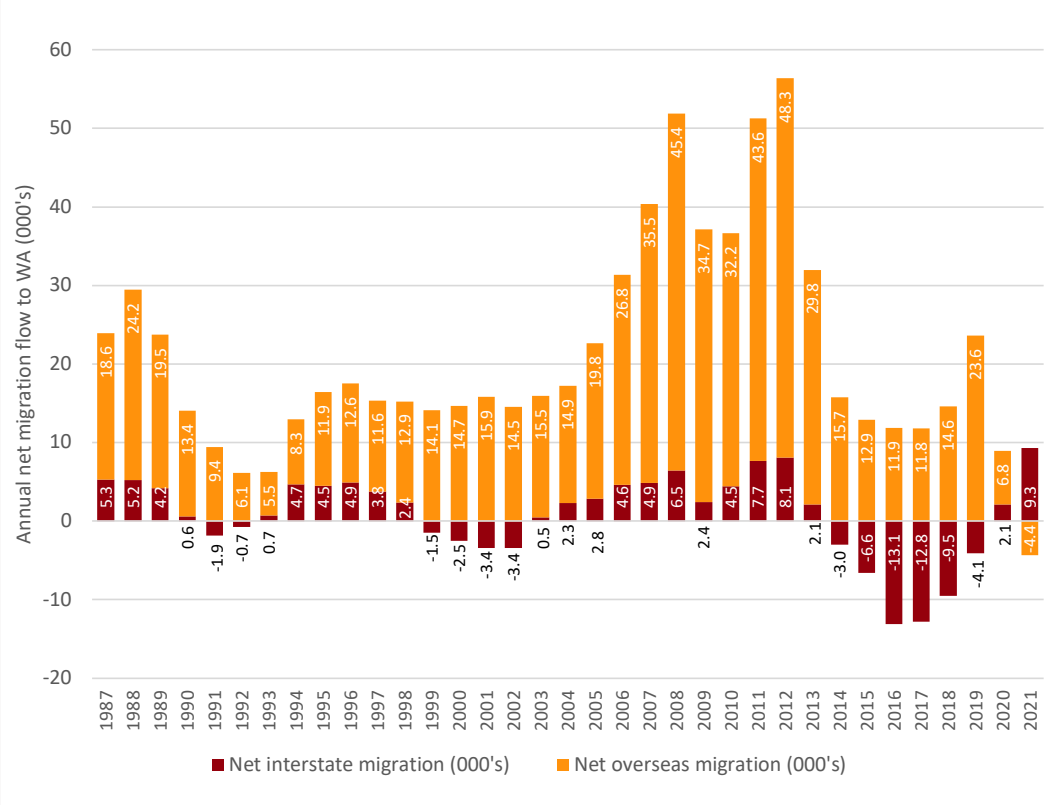
		WASMOL occupation data	Occupation Characteristics	
Rank	Occupation	WASMOL appearances (2005-2022)	Occupation Size (WA)	Skill Level
1	Sonographer	16	1,100	1
2	Psychiatrist	15	400	1
3	Audiologist	14	2,100	1
4	Obstetrician and Gynaecologist	14	3,100	1
5	Midwife	13	1,400	1
	Registered nurse		22,000	
6	Child and Family Health	13	-	1
7	Community Health	13	-	1
8	Critical Care and Emergency	13	-	1
9	Perioperative	13	-	1
10	Civil Engineer	12	9,500	1
11	Electrical Engineer	12	3,800	1
12	Mechanical Engineer	12	6,500	1
13	Chef	11	13,200	2
14	Chemical Engineer	11	700	1
15	Dentist	11	2,200	1
16	Gastroenterologist	11	2,300	1
17	Geologist	11	6,200	1
18	Neurosurgeon	11	1,100	1
19	Production or Plant Engineer	11	6,500	1
20	Quantity Surveyor	11	9,500	1
21	Vascular surgeon	11	1,100	1
22	Veterinarian	11	700	1
23	Construction Project Manager	11	5,000	1
24	Electrical Engineering Technician	10	2,100	2
25	Electrician (Special Class)	10	21,800	3

Notes: Historical data was compiled from archived webpages containing WASMOL data from 2010-11 to 2022. Occupations are defined at the 4-digit ANZSCO level.
Source: Bankwest Curtin Economics Centre | Authors' calculations from Government of Western Australia – Migration WA historical data, ABS Cat No. 6202 – Labour Force Detailed and Australian Government National Skills Commission State Priority List.

As this report headed to the printer, selected representatives from business, unions, government and the community sector gathered in Canberra for the national Jobs and Skills Summit. Lifting barriers to female labour force participation, addressing issues in the care sector and migration policy were flagged ahead of the summit as key areas in need of reform in response to acute skills shortages. Calls to increase the cap on skilled and permanent migration[1] have particular relevance to WA, given its reliance on overseas migration, as opposed to interstate migration, as a source of population growth (see Figure 2).

FIGURE 2

Annual net migration flow to WA, 1987 to 2021



Source: Bankwest Curtin Economics Centre | Authors' calculations from ABS Cat No. 3101.0.

1 See, for example, Business Council of Australia, 2022; Committee for Economic Development of Australia, 2022; Refugee Council of Australia, 2022.

This report, the 16th in BCEC's *Focus on WA* series, takes a timely, fresh look at the issue of skills shortages in Western Australia. The topic has been covered many times before, and the aim is not to produce more projections of how many extra welders or teachers or childcare workers we need. Rather, we take a conceptual look at what a skills shortage means, the unique characteristics of WA that make it prone to skills shortages, and what differentiates shortages from a desirable state of strong labour demand. This leads to a focus on the processes of labour market adjustment and identification of underutilised sources of labour for the purposes of formulating labour market policy.

The following chapters present extensive analyses of how the labour market adjusts to meet the competing demands for skills and labour. This includes the role of interstate and international migration, housing prices, and wage adjustment, as well as different underutilised groups of workers and the barriers they face to participation. Is there evidence of areas where labour market adjustment in WA is less effective than other states and territories? Does the presence of skills shortages represent a failure of policy and lost opportunities? Our aim is to identify areas where broader policy settings can make a longer-term difference to raise living standards and 'share the boom'.

"HOME TO **2.7 MILLION PEOPLE** THE STATE OF WESTERN AUSTRALIA ENCOMPASSES A LAND AREA OF 2.65 MILLION SQUARE KILOMETRES – A WHOLE SQUARE KILOMETRE PER PERSON - REPLETE WITH NATURAL RESOURCES IN HIGH DEMAND BY A GROWING WORLD ECONOMY."

UNPACKING THE CONCEPT OF SKILLS SHORTAGES

INTRODUCTION

Any meaningful examination of skills shortages must be grounded in an understanding of how the labour market adjusts, the efficiency of those processes, and barriers to adjustment.

Home to 2.7 million people, the state of Western Australia encompasses a land area of 2.65 million square kilometres – a whole square kilometre per person - replete with natural resources in high demand by a growing world economy and global population approaching 8 billion people. WA is estimated to contain around 28 per cent of the world's crude iron ore reserves, along with substantial shares of the world's identified reserves of gold (10 per cent), natural gas (2 per cent), lithium (21 per cent), and zircon (65 per cent), to touch on just some of the State's wealth of natural assets. It also generates substantial agricultural output, including just over 1 per cent of the world's annual wheat harvest, as well as services exports such as in tourism and education.

Contrast this wealth of marketable assets with a 0.034 per cent share of the world's population, and it is little wonder that there is high demand for workers in WA. From this perspective, a strong demand for workers can be seen as both a positive and expected norm for the West Australian labour market. Western Australians should expect an economy with full employment delivering high real wages. However, with businesses struggling to fill vacancies as the WA economy rebounds from the pandemic, this demand is more often framed as a problem of 'skills shortages' or, with the State's unemployment rate sitting at around 3 per cent in mid-2022, even a 'skills crisis'. It's a familiar story here in WA: each and every mining upturn brings with it the headlines proclaiming a skills crisis.

So how do we distinguish between the desirable state of full employment and the undesirable 'problem' of a skills shortage? This section provides a conceptual reconsideration of skills shortages. Any meaningful examination of skills shortages must be grounded in an understanding of how the labour market adjusts, the efficiency of those processes, and the barriers to adjustment. It automatically brings into ambit a myriad of potential adjustment processes, including interstate and international migration, firm mobility, education, training and professional development, labour force participation, and wage rates, to name a few; as well as regional co-dependencies between labour markets and housing markets.

For the purposes of this report, we develop a definition of a skills shortages purposefully formulated to be of most relevance to guide government policy and other coordinated responses across stakeholders. While the meaning of a skills shortage seems straightforward in common parlance, previous contributors have noted that the concept of a skills shortage is difficult to define or to measure (see Green, Machin, and Wilkinson 1998; Richardson 2007, Shah and Burke 2003). To set out our approach, we commence with a consideration of what we mean by 'skills' before setting out a definition of a skills shortage. We then discuss potential adjustments in the labour market – or lack of adjustment – that can contribute to or alleviate skills shortages.

THE NATURE OF SKILLS

Skills include knowledge, abilities and competencies that are embodied in people and that contribute positively to that individual's capacity to create wealth: that is, to create goods or services demanded by industry or for personal consumption. Skills can be gained through structured education and training courses, often associated with the conferring of a formal qualification to signal that the individual has gained a certain level of competency and knowledge in a particular area of skills. Equally as importantly, skills are gained through on-the-job experience and practice, as well as through life experience outside of employment.

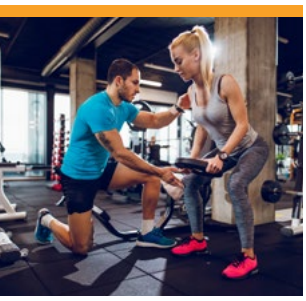
Some important attributes or dimensions of skills relevant to the ensuing analyses are as follows:

- Critically, under the definition used here, skills are embodied in people. They cannot be used in the production process without also engaging the people who possess them. It is true that an increasing range of functions once carried out by a combination of human labour and skills can now be replicated by automation and artificial intelligence (see Borland and Coelli, 2017). However, we do not consider those automated or programmed capacities as 'skills'. This inseparability of skills and people has important implications. First, it ensures a direct link between adjustments to meet skills demands and some form of adjustment within the population. Second, it can often be difficult to distinguish a skills shortage from a labour shortage – a simple shortage of people.

- A distinction is often made between cognitive and non-cognitive skills. Cognitive skills are those we commonly associate with acquisition through education and training, and include numeracy, literacy, and other 'technical' skills. Non-cognitive skills relate to a range of personal attributes and personality traits, such as motivation, reliability, persistence, and self-esteem, sometimes also referred to as 'soft skills' and extended to include inter-personal or social skills. Although this grouping of non-cognitive skills remains ill-defined, there is growing recognition in economics of their importance in determining worker productivity alongside cognitive skills that have traditionally been the focus of studies of worker employability and productivity (Edin *et al.* 2017, Heckman and Rubinstein 2001). The inseparability of people and skills means that technical skills required by employers must come bundled together with workers' non-cognitive skills. Reported skills shortages can readily conflate a lack of workers possessing particular technical skills with a lack of applicants possessing the non-cognitive skills that employers desire (Green and Ashton 1992, Green *et al.* 1998, Richardson 2007).

- Skills suffer from atrophy. To varying degrees, when skills are not practiced a person's level of competency can decay over time. This particularly affects people who experience extended periods of unemployment or absence from the labour force, as well as people working in jobs that make little or no use of their skills. Equally, skills can be reinforced and enhanced by ongoing application in varying work settings and with changing technologies; while the absence of this process for people outside the labour force contributes to their skills becoming 'outdated'.

Skills include knowledge, abilities and competencies that are embodied in people and that contribute positively to that individual's capacity to create wealth.



There is growing recognition in economics of the importance of non-cognitive skills - such as motivation, reliability and inter-personal skills - alongside cognitive skills in determining workers' employability and productivity.

- Skills are valued for the intrinsic experience of their execution and improvement in their execution, not only for the value of output generated. This is most apparent in leisure pursuits such as sport, music and other arts. However, it also applies to workers in many jobs. Self-determination Theory, for example, identifies three innate psychological needs underlying people's mental health and wellbeing: a sense of competence, relatedness and autonomy (Deci and Ryan 2000). Other models of the positive psychological impacts of work also point to a role for skills in promoting a sense of self-efficacy and self-esteem (see Dockery 2003 for a review).

WHAT IS A SKILLS SHORTAGE?

Employers naturally prefer to have more skilled workers available to them than less. Similarly, employers prefer to pay less, rather than more, for the services of skilled workers, other things held equal. This renders employer reports of difficulties recruiting skilled workers alone as insufficient to establish the existence of a shortage.

So, what exactly is a skills shortage? That judgement rests largely on the question of whether or not resources are allocated efficiently. Skills shortages are not a problem if they simply reflect a vibrant economy operating at its full potential. However, if they are symptomatic of policy or market failure and missed opportunities to improve living standards, then they can be seen as a problem. Existing literature has highlighted the complexity of objectively determining the existence of skills shortages, or of measuring their extent. However, few contributions have offered a conceptual definition of a skills shortage that delineates if and when a policy response is warranted.

At an aggregate level, we can consider a skills shortage to exist if investment in skills development, such as through education and training, or reallocation of existing skilled workers, such as through migration, offers above normal economic returns. That is to say, overall welfare would be increased by devoting additional resources to skills accumulation or to the reallocation of existing skills, after allowing for the opportunity cost of alternative uses of those resources and redeployment costs. This would imply some form of market failure preventing that efficient allocation of resources and net increase in welfare from being realised. An alternative statement might draw on the concept of Pareto efficiency: a skills shortage exists if an investment in or reallocation of skills was possible that would leave some people better off without making anyone else worse off. Hence, one employer being unable to fill vacancies in a particular trade would not constitute a skills shortage if the benefits of allocating such a tradesperson to that firm were completely offset by costs to other firms.

Typically, however, skill shortages are not viewed from the 'aggregate level' but from more localised perspectives of individual regions, industries, firms and occupations. Australia has benefitted greatly from its skilled migration program, and in recent decades the intake has been guided by a list of priority occupations deemed to be in shortage. From a national perspective, this implies Australia faced skills shortages following our definition, since the investment in attracting skills though this channel is generally seen to have provided a net increase in welfare for this country. Viewed from the aggregate level of the world economy, in contrast, the conditions for a skills shortage may not be met if losses to the source countries were at least as great as Australia's gains. Similarly, what constitutes a skills shortage from a Western Australian perspective may not constitute a skills shortage at a national level. In times of a tight labour market, efforts to attract workers from interstate may simply be a zero-sum game. Identifying skills shortages cannot be divorced from the level of policy- or decision-making at which they are being assessed.

Employer reports of difficulties recruiting skilled workers are not sufficient to establish the existence of a shortage. That also depends upon whether or not resources are allocated efficiently.

Identifying skills shortages cannot be divorced from the level of policy - or decision-making at which they are being assessed.

Skills shortages are most commonly defined as 'hard to fill vacancies', and measured in similar terms, such as the average time taken to fill vacancies in a particular occupation (Richardson 2007, Shah and Burke 2003). In a recent policy review, Eurofound adopts a localised definition of labour shortages as:

> "Labour shortages arise when the demand for workers in an occupation exceeds the supply of workers available who possess the required skills and are willing to work at a specific wage rate and in specific working conditions in a particular place and point in time." (2021: 7).

Although Eurofound use the term 'labour shortage' rather than 'skills shortage', the reference to 'required skills' in the definition makes clear that the concept is intended to encompass the skills dimension. A common distinction is between 'quantitative' and 'qualitative' shortages. A quantitative skills shortage is where there is an insufficient number of workers with the required skills to meet employers' demand. This contrasts with a qualitative shortage, in which the number of available workers with a particular skill roughly equals the number demanded, but significant numbers of vacancies coexist with a significant number of unemployed workers due to some form of mismatch (Eurofound 2021: 7-11).

Such definitions have limited value without clear reference to the level of decision- or policy-making from which skills shortages are under consideration, and are ambiguous without the added condition that the 'specific wage rate' (and associated conditions) is competitive. The Department of Employment and Workplace Relations use a more nuanced definition, seeing skills shortages as arising when:

> "... employers are unable to fill or have considerable difficulty in filling vacancies for an occupation, or specialised skill needs within that occupation, at prevailing levels of remuneration and conditions of employment, and reasonably accessible location." (National Skills Commission 2021: 25).

Even here, there is nothing to suggest such skills shortages are sub-optimal. A qualitative shortage does imply a superior outcome is possible, but still requires that the return to any investment in improving the matching of workers to vacancies exceeds the return to alternative potential investments.

Hence, a condition for the existence of a skills shortage - at least one that warrants a policy response – is the existence of some barrier to the optimal allocation of labour, or some evidence that such processes break down or operate less efficiently than they could. Accordingly, the next section provides a discussion of the main channels of labour market adjustment, while the analyses in the following chapters seek to examine the relative efficiency of adjustment processes for Western Australia, and to identify potential sources of untapped labour that would imply a sub-optimal allocation of resources. Hence, while we continue to use the term 'skills shortage' in the commonly accepted sense of 'hard to fill vacancies', the focus is on factors contributing to the more restricted definition aligned to a basis for justifying a policy response.

LABOUR MARKET ADJUSTMENT

An efficient labour market allocates labour to its most productive potential role from a societal standpoint, whether that is in a paid job, an education or training pathway, or an unpaid activity. When reallocation from one role to another role is optimal, there are numerous forms of labour market adjustment that may occur to help to achieve that outcome. Consider a situation of employers seeking to fill vacancies requiring a particular skill, which cannot be filled by available local workers, and meets our definition of a skills shortage. A range of potential labour market adjustments may take place to alleviate that skills shortage, as outlined in Box 1. They include investment in education and training, migration of people and firms, and changes in labour supplied within the existing population.

Those adjustments won't take place on their own. Two things are required to set those adjustment processes in train: information and incentives. The relevant agents need information of the changes required, and the incentive to act upon that information. When firms look to fill vacancies, even when there are suitably qualified workers in the local area available to fill those vacancies, some process of matching workers to job opportunities must take place, and this is not instantaneous. Mismatch occurs due to the lags in allocation of workers to job opportunities, and can occur because of imperfect information flows or other impediments to workers immediately taking up the opportunity, such as advertisement, application and appointment processes; licensing requirements; or arranging childcare. Mismatch that can be resolved relatively quickly and at little cost is referred to as *frictional* mismatch, and contributes to frictional unemployment.

When the causes of mismatch require a significant period of time or investment to be resolved, such as when significant retraining of workers is required, or available workers need to relocate and find housing, we refer to structural mismatch. Economists differentiate between frictional and structural unemployment when assessing full employment. Full employment is not defined as an unemployment rate of zero, because of the inevitable existence of frictional unemployment in a dynamic labour market. Rather, full employment represents a situation where unemployment and underemployment are predominantly frictional in nature. For the Australian economy, full employment currently appears to equate to an unemployment rate of 3-4 per cent (see Bishop and Greenland 2021).

Investment in education and training have long lead times, with three years or more typically required for workers to gain qualifications for entry to professional and trade occupations. Thus the matching of workers to job opportunities requires not only current labour market information, but robust projections of future demand. The efficiency of these matching processes for both existing qualified workers and the provision of and allocation to different courses in the school, vocational education and training (VET), and higher education sectors are critical to labour market efficiency, and the underlying levels of frictional and structural unemployment in the economy.

Consequently, improving projections of future skills needs to guide education and training enrolments, and stronger linkages between industry and education sectors are regularly highlighted as responses to skills shortages. In 2003, the Senate Employment, Workplace Relations and Education References Committee (SEWRERC) produced the *Bridging the Skills Divide* report, arising from an inquiry into national skills shortages and the effectiveness of related policies, programs and industry strategies.

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Its recommendations focused predominantly on the need for improved information and planning, including early assessment of the skills needs associated with major resource and construction projects, improved careers counselling and expanded roles of industry skills councils. Echoes of those recommendations can be heard in more recent reports, such as the 'Shergold Report' on secondary pathways to work (Shergold *et al.* 2020), the Australian Chamber of Commerce and Industry's *Overcoming Australia's Labour and Skills Shortages* (ACCI 2022) and the Committee for Perth's recent report *Race to the Top* (2022).

While there is always room for improvement, the efficacy and application of future workforce planning and other information flows to improve skills matching is not a focus of this report. There are a number of reasons for this: it has been extensively covered by others, there is limited evidence that previous attempts at future workforce planning have been particularly successful, and such processes can often be hijacked by vested interests. Evidence presented below of the low rates of unemployment for those with technical and higher level qualifications suggest there is only limited potential gain from such improved matching or more sophisticated forecasting of skills demand. Our focus on labour market adjustment reflects a belief that there is more to be gained from addressing barriers that limit adjustment in line with existing information, than from investing in more information.

Three broad types of labour market adjustment have been identified as price, quantity and quality. Price adjustment can relate to changes in wages or to firms adjusting the price of their goods and services as a means of matching labour supply and demand. Changes in relative wage rates is one of the key ways in which incentives are created to drive labour market adjustment and address skills shortages, including attracting workers to different firms, industries and regions, and to education and training pathways. That is, relative wage differentials solicit the quantity and quality forms of adjustment outlined in Box 1. However, for a number of reasons, such as wage inflexibility, the role of wages can often quite limited (Shah and Burke 2003).

Box 1: Forms of labour market adjustment

Meeting skills needs requires the availability of workers and for those workers to already possess or to subsequently gain the necessary skills. There are a range of adjustments that may take place in the labour force to partially or fully meet employers' requirements for skilled workers. These are sometimes categorised into three types: price (including wage), quantity and quality adjustments. The following are key forms of quantity and quality adjustments. Changes in relative wages will play a varying role in signalling information and creating the incentives to drive those adjustments.

- **Geographic labour mobility** – the physical relocation of workers from elsewhere to within a reasonable daily commuting distance that would enable them to take up the jobs on offer. This may take a number of forms:
  - Migration, which involves a change of where the worker lives (their place of usual residence), and usually of their family where applicable. Migration may be international, interstate or regional; and may be permanent or temporary. Importantly, labour market adjustment in the form of migration also requires housing market adjustments.

- Working schedules such as fly-in-fly-out (FIFO) or drive-in-drive-out (DIDO) which involve a change in where workers stay when on a shift, but not a change in their usual place of residence. As with migration, such arrangements can draw on workers from overseas, interstate, or surrounding intrastate regions.

- **Increased labour force participation** – people with the required skills and who are currently not participating in the labour force entering the labour force.
- **Hours** – increased hours of work by existing workers with the required skills.
- **Training or education** of potential and/or existing workers to increase the availability of workers with the required skills. This includes participation in the existing school, VET and higher education sectors, as well as firm-provided training. As noted above, while improving the match between completions from the education and training sectors and industry skills needs is potentially important for addressing skills shortages, such mismatch is not a focus of this report. We note, however, the emergence of 'micro-credentials' – short-form courses that cater to demands for upskilling and life-long learning - may be an important development in increasing the flexibility of the education and training sector to respond to industry needs (Department of Education, Skills and Employment 2021, ACCI 2022).
- **Reorganisation of work** to allow workers with the required skills to specialise in tasks requiring those skills. For example, providing skilled workers with more support, such as trade assistants, to enable them to focus on tasks requiring their skills.
- **Adjustment in the quality of workers** – employers typically have expectations about the qualities possessed by people they appoint to various positions, both in terms of their technical skills and other non-cognitive attributes. As workers become more scarce, employers will be willing to accept lower quality workers to fill positions than would have been the case when qualified workers are abundant. In a sense, this can be seen as a form of wage adjustment; with higher wages paid for a given quality of worker when labour is scarce (see Mitchell and Quirk 2005, Richardson 2007).
- **Capital or firm mobility** – rather than people moving to where firms are located in order to fill jobs, firms can move operations to geographic areas where there is a more plentiful supply of people with the skills they require.
- **Outsourcing** components of work that would normally be done by workers of the employing firm to an external firm. This is a partial form of capital or firm mobility, and the term 'offshoring' refers to that work being outsourced to firms and workers in another country (see Richardson 2007: 19).
- **Telework and 'working from home'** – where work can be organised so that it can be done remotely, typically facilitated by information technology and telecommunications, employers have access to an enlarged supply of potential workers due to:
  - A larger geographic reach.
  - Increased labour force participation by people who are limited in their ability to attend the workplace in person due to home obligations or other mobility restrictions.
  - Potential for more hours to be supplied by existing workers, such as during evenings and on weekends.

WHY IS WA PRONE TO SKILLS AND LABOUR SHORTAGES?

Unique characteristics of the WA economy make it prone to skills shortages: the isolation of major population centres from the rest of the world; remoteness of locations where resource extraction takes place; and high economic volatility.

From this conceptual consideration of skill shortages and processes of labour market adjustment, three unique characteristics of Western Australia can be identified that make the state more prone to skills and labour shortages. These are in addition to the relatively high rate of growth experienced by the WA economy over recent decades. Growth will always create at least temporary skills shortages as adjustment to demand is not instantaneous. Skills shortages are a persistent feature of a growing and dynamic economy.

- **Isolation** – remoteness presents challenges for attracting labour, and this affects the matching of labour demand and supply in WA in two ways. The first is simply the geographic isolation of the State, with Perth proudly claiming the title of the world's most isolated capital city. This negatively impacts WA's ability to draw on interstate labour, with high fixed costs associated with relocation to WA compounded by ongoing isolation from family and friends. Common borders and proximity allow for more integrated labour markets within the more populous eastern seaboard states, as well as between South Australia and Victoria, through the possibility of cross-border commuting and interstate migration. In regard to interstate migrations, our modelling results demonstrate that only Northern Territory residents appear to have a relative preference for moving to WA. New South Wales residents display a strong preference for relocating to Queensland when they do move interstate. Hence, of the two fastest growing states, Queensland's population has been boosted by significant net interstate and overseas migration, while WA has disproportionately relied upon overseas migration to underpin its economic and population growth (see Figure 7). Second, as discussed in the following point, is the challenge of remoteness of where work takes place within the state.

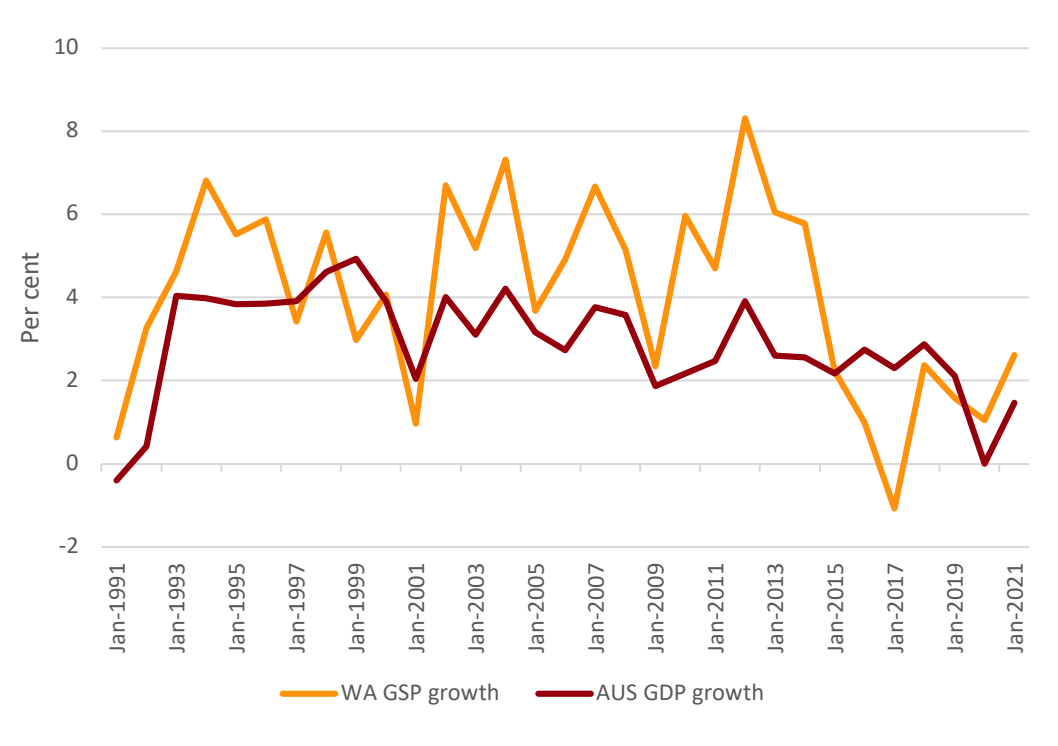
- **A resource-based economy** – an implication of WA's strong mining and agricultural sectors is that many jobs are directly linked to the land and location of natural resources. ABS estimates for the June quarter of 2022 show that the two industries of mining and agriculture, forestry, fishing and hunting accounted for 12.2 per cent of total employment in WA, almost 4 times the proportion for the rest of Australia (3.3 per cent). Workers in many of these jobs and associated supporting jobs, such as construction, need to be co-located with those resources to undertake the work. This contrasts with the vast bulk of other industries which locate in or near major population centres, either because they service those populations or in order to access the labour supply they offer. Place of enumeration data show that 8.5 per cent of WA's workers were in locations classified as remote or very remote on the night of the 2016 ABS Census. This was exceeded only by workers in the NT, and compares to 3.8 per cent for SA, the next highest state, and just 1 per cent in aggregate for the three large eastern seaboard states. It is true that the need for workers in the extractive industries to be co-located with those resources is slowly changing, with the development of remotely operated mining trucks, driverless trains and other developments in robotics, as well as remote operation of cattle stations. In the meantime, attracting workers to live remotely or to the fly-in-fly-out lifestyle contribute to challenges in matching labour supply and demand in WA.

- **Volatility** – structural change necessarily adds to mismatch in the labour market, both geographically and in terms of workers' skills sets. The intrinsic nature of WA's economy results in more regular shifts in industrial composition, due to the boom-bust cycle driven by swings in commodity prices, the immense scale of many resource developments, and fluctuating labour demand during the various stages of those developments. Indeed, for the period 1990 to 2021, the WA economy had the highest variance in annual growth in gross state product of all the six states, and three times the variance observed in the annual growth rate of the Australian economy overall.

From 1990 to 2021, the WA economy had the highest variance in annual growth rates of all the six states, and three times the variance observed in the annual growth rate of the Australian economy overall.

FIGURE 3

GSP and GDP growth, WA and AUS, 1991 to 2021



Source: Bankwest Curtin Economics Centre | Authors' calculations from ABS Cat No. 5220.0.

"SKILLS SHORTAGES DO APPEAR TO BE A **PERENNIAL FEATURE** OF THE WESTERN AUSTRALIAN LABOUR MARKET."

WESTERN AUSTRALIA'S LABOUR MARKET AND POPULATION GROWTH IN THE NATIONAL CONTEXT

INTRODUCTION

WA had the highest growth rate of all the states and territories this century. From 2000 to 2021, the WA economy has more than doubled in size – grown by a factor of 2.3 – while the Australian economy as a whole increased by a factor of 1.7.

Skills shortages do appear to be a perennial feature of the Western Australian labour market. As this report was being prepared there have been reports of labour shortages contributing to the deferral of major resource projects, farmers having to reduce crop plantings despite high prices, as well as a critical shortage of teachers. Launched in 2021 to attract workers from interstate, the WA government's 'Build a New Life in WA' campaign was extended in July of 2022 to target international workers to "... fill key skill shortages across a number of jobs." In August, an additional 100 occupations were added to the State's priority occupation list for skilled migration, bringing the total number of occupations on the list to 276, a response Premier McGowan attributed to "WA's strong economic growth, very low unemployment rate and high demand for skilled workers".[2] Nationally, the Federal government is convening the 'Jobs and Skills Summit' for early September 2022, noting ' ... a tight labour market has also brought challenges including widespread and acute skill shortages', and to be followed by an Employment White Paper (Treasury 2022).[3]

While some of the current labour shortages can be attributed to the loss of international sources of labour as a result of the COVID-19 pandemic, reports of skills shortages and 'skills crises' also abounded during the mining boom leading up to the global financial crisis in 2008. Reports of shortages for particular occupations and regions persisted in the periods between economic peaks, particularly in the health professions (and notably nurses), engineering professions, teachers, and a range of trades. As noted above, any time the State approaches full employment, there are bound to be industry reports of skills shortages. Is WA simply a victim of its own success? This chapter provides a backdrop to developments in WA's economy and labour market in recent decades in the national context.

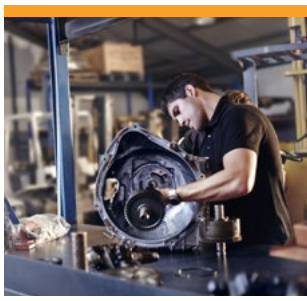
It is true that the WA economy has grown strongly. Since the beginning of this century, the WA's gross state product had grown by an average 3.95 per cent per annum, in real terms, up to 2021. This is the highest growth rate of all the states and territories, and compared to an annualised rate of GDP growth for Australia as a whole of 2.66 per cent over the same period. Put another way, from 2000 to 2021, the WA economy has more than doubled in size – grown by a factor of 2.3 – while the Australian economy as a whole increased by a factor of 1.7.

That pace of growth did result in periods of very tight labour markets across many regions and occupations, and sustaining it has also required significant labour market adjustment. As shown in Figure 4, since the recession of the early 1990s Western Australia has generally displayed a substantially lower unemployment rate than the national average for much of the past 30 years. That gap was particularly pronounced during the previous mining boom, when the state's unemployment rate averaged just 3.0 per cent for calendar 2008, and hit a monthly low of 2.3 per cent (seasonally adjusted) in October of 2008. More recently the monthly series fell to 2.9 per cent in April of 2022 as the labour market recovered from the effects of the COVID-19 pandemic.

2 WA Government Media Statements ' 'Build a Life in WA' expands internationally to attract workers to WA', 5 July 2022; 'New settings to make WA the most attractive state for skilled migrants', 21 August 2022.

3 A White Paper provides a statement of government policy presented to parliament, usually in the lead up to the introduction of a relevant bill. It often follows a Green Paper, which invites public debate and consultation on an issue, while the White Paper sets out the government's legislative intentions (Lundie and Horne 2020).

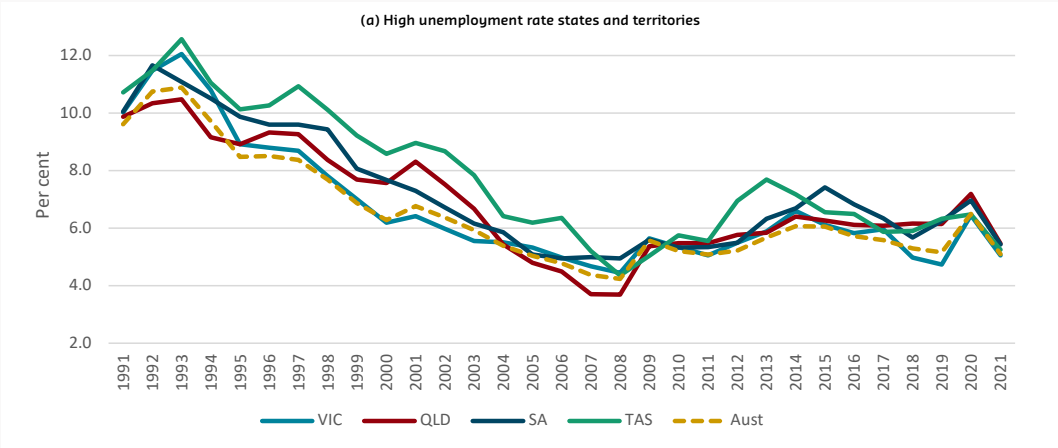
A noticeable feature of Figure 4 is the persistence of unemployment rate differentials between the states and territories. Partly due to the high proportion of the population living in NSW and Victoria, the unemployment rates of those states track closely with the national average. However, Tasmania and South Australia consistently display an unemployment rate well above the national figure. The annual average unemployment rate in South Australia exceeds the national rate in all 31 years from 1991 to 2021, while Tasmania's rate exceeded the national rate in 29 of those 31 years. To a lesser degree, Queensland has also exhibited higher rates of unemployment, surpassing the national rate in 23 of those 31 years (See Figure 4(a)).

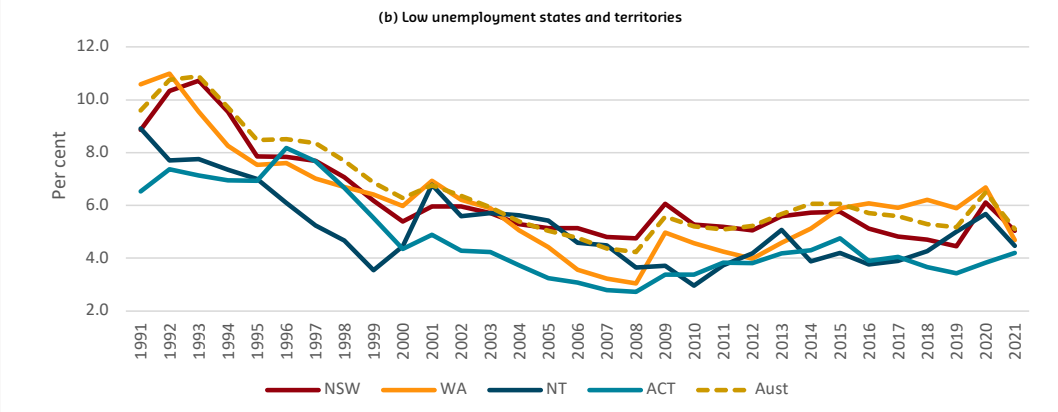


There is strong persistence of unemployment rate differentials between the states and territories. SA, Tas and Qld have consistently displayed high rates of unemployment. The ACT, NT, and WA have experienced consistently low unemployment.

FIGURE 4

Average annual unemployment rates, States and Territories 1991-2021





Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Catalogue 6202.0 *Labour Force, Australia.*

There are significant barriers to prevent the various potential mechanisms of adjustment from working to eliminate interstate differences in employment opportunity.

In contrast, the ACT, NT, and WA have experienced consistently low unemployment (Figure 4 (b)). The ACT had an unemployment rate below the national average in all 31 of those years; the NT in 27 of them; and WA in 23 of the 31 years. The fact that these differentials persist over a span of three decades show that there are significant barriers to prevent the various potential mechanisms of adjustment discussed in Chapter 2 from working to eliminate interstate differences in employment opportunity. In fact, in their analyses of interstate labour mobility using data from 1979 to 1997, Debelle and Vickery found evidence of 'permanent (or very persistent) differences in unemployment rates across states' (1998: 2), noting Tasmania and South Australia as having generally high unemployment. They posed the question as to whether this represented permanent features of those two states' labour markets, or just reflected the effects of a series of temporary negative shocks from which full adjustment is still in train. With observations now available over a further 20 years, it seems clear that those differences are permanent in nature.

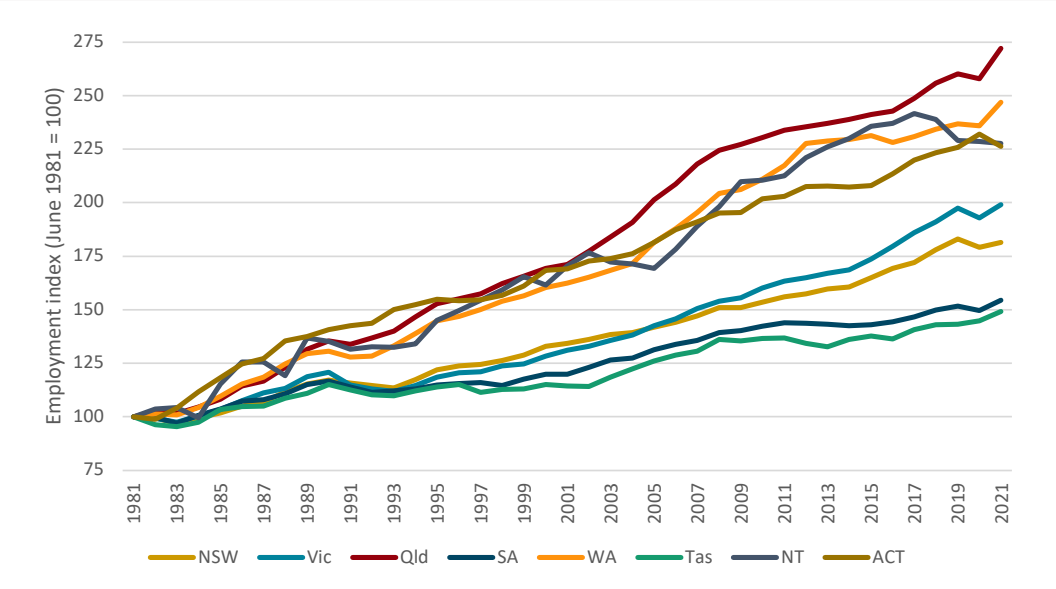
Figure 5 shows total employment by state and territory, indexed to the level of employment in 1981 in each jurisdiction, which is set to a value of 100. Over this period, Qld, WA, the NT and the ACT have consistently seen more rapid growth in employment, while long-term jobs growth in Tasmania and South Australia has been much more subdued. Figure 6 presents the comparable series for total population growth, again indexed such that 1981=100 for each jurisdiction. Qld, WA and the NT have experienced the fastest expansion in their population over this period, with the ACT population also growing relatively strongly. Western Australia's population has more than doubled in the past 40 years. From June 1981 to June 2021, WA's population grew by 1.83 per cent per year, a rate of growth one-third higher than the 1.37 per cent growth for the nation as a whole, increasing the State's share of the national population from 8.7 per cent to 10.4 per cent. The populations of Tasmania and South Australia have grown the least.

Some clear groupings among the states are apparent from this analysis. There are four growth states: Qld, WA, the NT, and ACT, with relatively high rates of employment growth and population growth. With the exception of Queensland, these growth states have also exhibited relatively low unemployment rates. Partly a statistical artefact of their size, NSW and Victoria have seen employment, population growth and unemployment rates roughly in line with the national average. In contrast, Tasmania and South Australia have displayed low employment and population growth, and experienced entrenched high unemployment rates.

Hence, there appears to be a prima facie case that population adjusts to meet employment demands. However, the persistent differentials – low unemployment rates in WA, NT and the ACT; and high unemployment rates in Tasmania and SA – indicate that either adjustment in population only partially compensates for differences in employment growth, or it does so with a considerable lag. A more complete or rapid adjustment seems to apply in the case of Queensland. Despite its high rate of jobs growth, Queensland's unemployment rate has tended to be slightly above the national rate, suggesting a more rapid inflow of population in response to employment growth than for the other three growth states. Note, however, the relationship between employment growth and population growth is not unidirectional: while population changes in response to employment opportunity, population growth also generates employment.

FIGURE 5

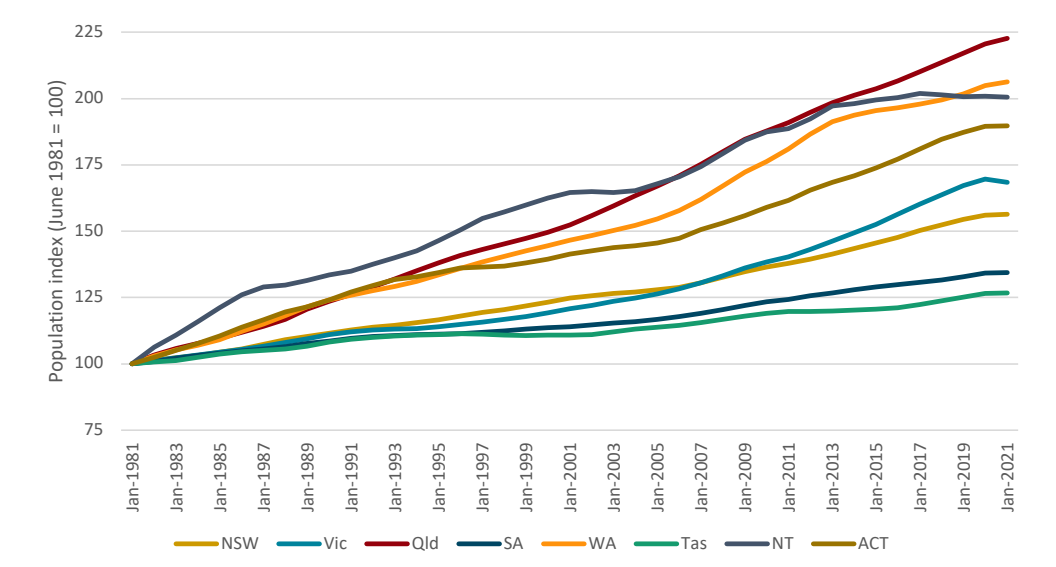
40 years of employment growth, Australian states and territories (June 1981=100)



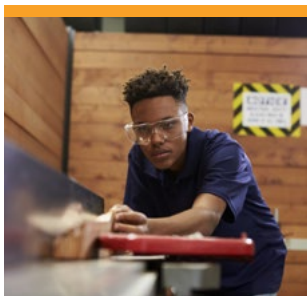
Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Catalogue 6202.0 Labour Force, Australia.

FIGURE 6

40 years of population growth, Australian states and territories (June 1981=100)



Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Catalogue 3101.0 National, state and territory population.



There are four growth states: Qld, WA, the NT, and ACT, with relatively high rates of employment and population growth. With the exception of Qld, these growth states have also exhibited relatively low unemployment rates.

Queensland stands out as the only state or territory to have consistently seen net positive contributions from natural population growth, interstate migration and international migration.

The panels in Figure 7 show the contribution of natural growth, interstate migration and overseas migration in each of the eight states and territories. All jurisdictions have seen a long-term decline in net natural population growth from 1981-82 to 2020-21. The Northern Territory stands out as having the highest contribution to population growth from this source, declining from around 2 per cent per annum in the early 1980s to currently around 0.75 per cent per annum. Of the six states, Western Australia has the highest rate of natural population growth, averaging 0.85 per cent per annum over this period, and South Australia the lowest at 0.48 per cent per annum.

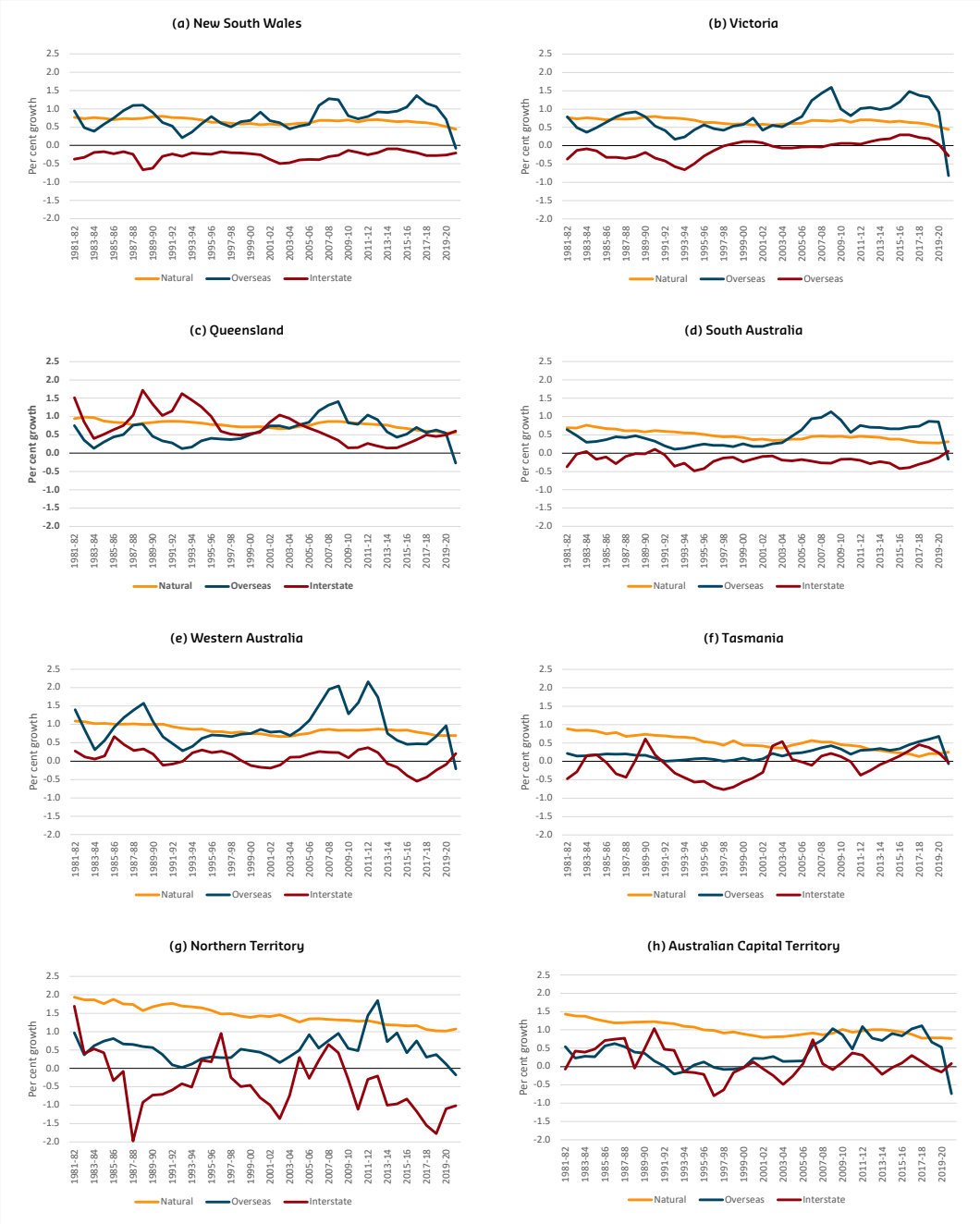
Queensland stands out as the only state or territory to have consistently seen net positive contributions from all three sources: natural population growth, interstate migration and international migration, save for the recent dip in net international migration associated with the COVID-19 pandemic. In terms of interstate migration NSW and South Australia have experienced consistent net outflows. Net interstate migration is highly volatile for the NT, but in aggregate the territory has also seen a substantial net outflow.

For WA, interstate migration has fluctuated between periods of net inflows and outflows, with a period of sustained net outflows from around 2013-15 up until the pandemic. In all, interstate migration made a small net positive contribution to total population over the past 40 years. The main source of population growth in WA has been international migration. Since 1980-81, international immigration had been contributing growth of just under 1 per cent to the State's population every year, peaking at over 2 per cent in 2008-09 and 2011-12. As Figure 7(e) shows, changes in net interstate and overseas migration in WA prior to the pandemic tended to move in tandem. However, overseas migration has played by far the major role in WA's growing population. Like all jurisdictions, there has been a sharp downturn in net overseas migration since COVID-19 reached Australian shores in 2020.

WA has been the largest recipient of net overseas migration in terms of the percentage contribution to population growth. However, NSW and Victoria have also experienced substantial contributions from international migration while, given their larger populations, inflows into those states are far larger in absolute terms than to WA. Those states provide an initial gateway for a large proportion of Australia's overseas migrants, some of whom then relocate to other states through interstate migration. The later chapters look in detail at the dynamics and drivers of net interstate and overseas migration.

FIGURE 7

Components of population growth by state and territory 1981-82 to 1920-21



Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Catalogue 3101.0 *National, state and territory population.*

The main source of population growth in WA has been international migration. Since 1980-81, international immigration had been contributing growth of just under 1 per cent to the State's population every year, peaking at over 2 per cent in 2008-09 and 2011-12.

"THE UNEMPLOYMENT RATE IN WA HAS **CONSISTENTLY BEEN BELOW THE NATIONAL AVERAGE** OVER THE PAST 30 YEARS, WITH THE EXCEPTION OF THE LATTER HALF OF THE 2010'S."

SHORTAGES AND UNTAPPED LABOUR SUPPLY IN WESTERN AUSTRALIA

INTRODUCTION

The 2006-08 boom and the current period of low unemployment were both preceded by sharp jumps in primary commodity prices and vacancies.

The unemployment rate in WA has consistently been below the national average over the past 30 years, with the exception of the latter half of the 2010's, as shown in Figure 4. The state has experienced two periods of particularly tight labour markets since the turn of the century. The unemployment rate hovered at around 3.0 per cent from mid-2006 to the end of 2008, reaching a low of 2.3 per cent in October of 2008. More recently, the State's unemployment rate briefly dipped to 2.9 per cent in April 2022 and, despite then rising again amidst another COVID-19 outbreak, continues to trend at around that 3.0 per cent mark. This chapter firstly explores a number of characteristics of those periods of skills shortages and how the WA labour market responds to changing demand conditions, with comparisons to the national labour market. The second part of the chapter looks at potential sources of labour and skills within Western Australia, including non-participation, underemployment and persons with a disability. The following chapter takes an in-depth look at the sources of barriers to greater labour force participation faced by Australian women.

Vacancies and unemployment

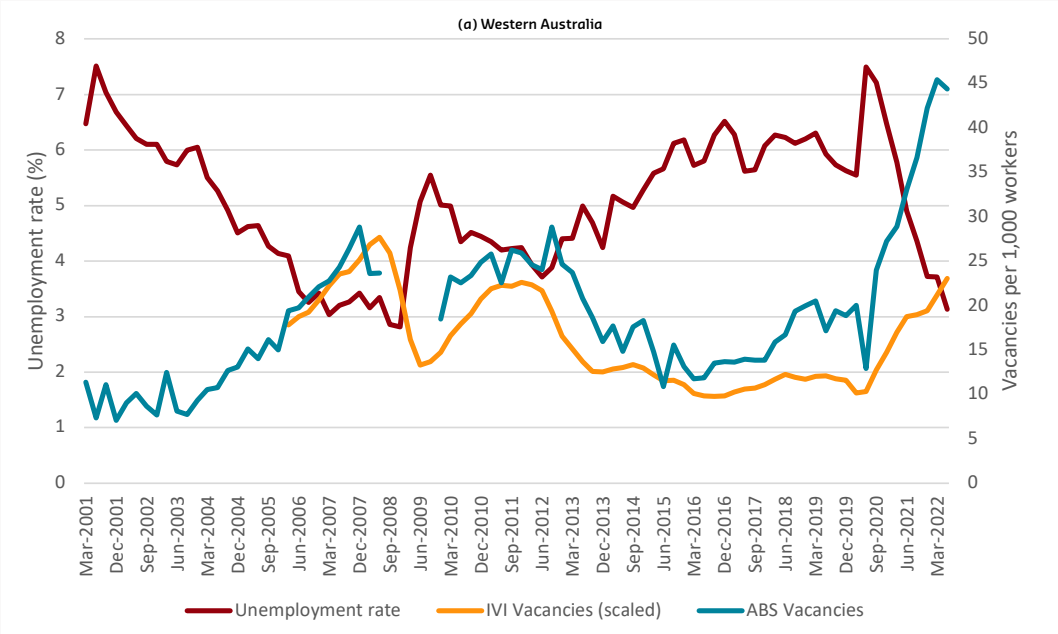
The 2006-08 boom and the current period of low unemployment were both preceded by jumps in primary commodity prices, indicating the strong link between the resources sector and the WA labour market. It is worth noting, however, that both the national and WA labour markets tightened significantly at those times. As may be anticipated, each of these periods of low unemployment were also preceded by sharp jump in job vacancies, and almost all sectors were affected by the ensuing 'skills crisis'. Figure 8(a) for Western Australia and Figure 8(b) for Australia draw on two different vacancy rate series. One is the Internet Vacancy Index (IVI), a monthly count of online job advertisements compiled by the National Skills Commission. The other is based on the number of job vacancies available for immediate filling as reported by a sample of employing organisations surveyed by the ABS around the middle of each quarter.[4] The IVI series commenced at the beginning of 2006. Unfortunately for our purposes, the ABS series was temporarily discontinued for four quarters from September 2008. We have transformed each into a quarterly series to represent a ratio of the number of vacancies to the total number of employed persons.

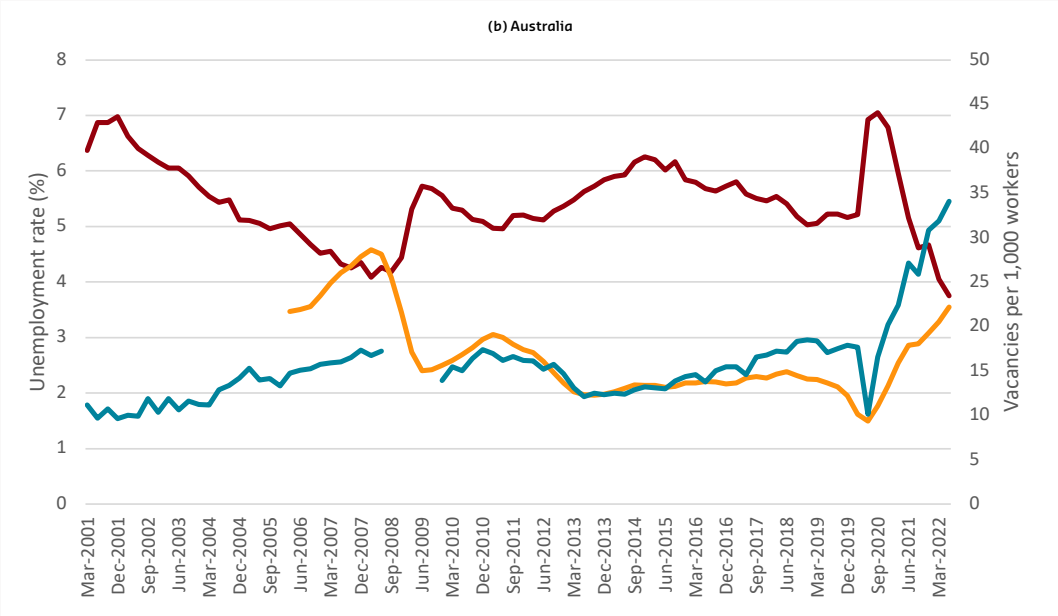
While the collection methods are very different, both vacancies series tell a consistent story. The series are more volatile in WA and the state generally sees a much higher ratio of vacancies to workers before unemployment declines (see Figure 8). Nationally there was a 2.9 percentage point fall in the unemployment rate from late 2001 to the March quarter of 2008, during which the ABS count of the number of vacancies per worker increased by 70 per cent. WA saw a larger 4.7 per cent fall in the unemployment rate from the June 2001 high to September 2008 low, but vacancies per worker had more than tripled over that period. There is a pronounced COVID-induced dip in both vacancies series in 2020 and strong subsequent recovery for WA and nationally, along with an impressive post-pandemic fall in the unemployment rate. Benchmarked against the pre-COVID December 2019 quarter, this reduction in unemployment has again been associated with a larger increase in vacancies per worker in WA. Thus, recent trends suggest WA generally needs – or experiences - a higher level of vacancies, relative to the workforce, to drive unemployment down.

4 ABS Catalogue 6354.0, *Job Vacancies, Australia*. The reference day for businesses to report the number of available vacancies in the survey is the third Friday of the middle month of the quarter (February, May, August and November).

FIGURE 8

Vacancies per unemployed person and the unemployment rate, 2001-2022





Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Catalogues 6202.0 *Labour Force, Australia* and 6354.0 *Job Vacancies*, Australia; and Australian Government National Skills Commission Internet Vacancy Index.

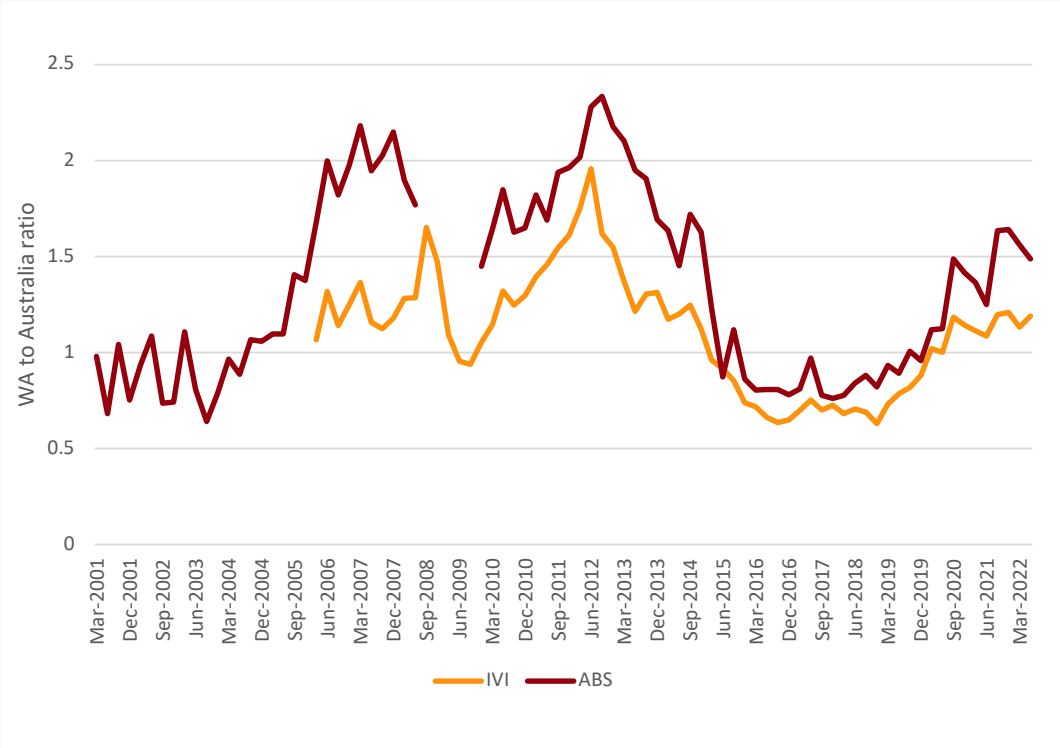
WA generally needs – or experiences - a higher level of vacancies, relative to the workforce, to drive unemployment down.

Persistently high numbers of vacancies per worker and per unemployed person suggest substantial skills shortages in WA and evidence of an inferior process of matching vacancies to available workers.

Generally, the ABS series indicates the WA labour market operates with a higher number of vacancies per worker, and this has also been the case for the IVI series since the onset of the pandemic. This could be interpreted as an indication of persistent relative shortages, or the WA labour market being less 'efficient' in matching vacancies, or some combination of the two. Similar evidence is gained when we look at the ratio of vacancies to the number of unemployed people. Since 2005 this has tended to be much higher in WA, with at times more than twice the number of vacancies per unemployed person when compared to Australia as a whole (Figure 9). Again this can be seen as indicative of substantial skills shortages in WA, and as evidence of an inferior matching process of vacancies to available workers.

FIGURE 9

Vacancies per unemployed person: WA to Australia ratio, 2001-2022



Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Catalogues 6202.0 *Labour Force, Australia* and 6354.0 *Job Vacancies, Australia*; and Australian Government National Skills Commission Internet Vacancy Index.

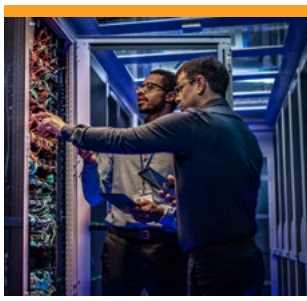
To further explore the link between vacancy levels and unemployment, simple linear regressions were estimated of the change in the unemployment rate as a function of the level of vacancies per worker. Model fit statistics indicate that the change in the unemployment rate from one quarter to the next, say Q_1 to Q_2, was captured best by the level of vacancies in the current quarter (i.e. in Q_2), rather than using a lag of the vacancy level (i.e. in Q1 or an earlier period). We concentrate on the ABS series which offers a longer time series, despite the break in 2008, and because the measure is intended as a full count of available vacancies. In contrast the internet vacancies series counts only vacancies advertised online. The resulting models for Australia and WA are reported below, where *U* denotes the unemployment rate, and *V* the number of vacancies per 1,000 workers. The data are quarterly for the period from 2001 Q1 to 2022 Q2.

- Australia $U_t - U_{t-1} = 0.360 - 0.026V_t$ (Prob > F=0.00, obs=80)
- WA $U_t - U_{t-1} = 0.171 - 0.013V_t$ (Prob > F=0.03, obs=80)

The results reveal the expected relationships in which a higher level of vacancies in a quarter is associated with a fall in the unemployment rate from the previous quarter. Both models indicate that the unemployment rate falls when vacancies are above around 13.5 vacancies per 1000 workers, and rises when vacancies are below this level.[5] However, for WA there is a much flatter estimated relationship, suggesting a much larger increase in vacancies per worker is required in WA to achieve a given fall in the unemployment rate when compared to Australia.

Repeating this exercise with the internet vacancy series gives a similar elasticity estimate for Australia as for WA. The relationship can also be depicted using a Beveridge curve, which maps out the time pathway of combinations of vacancy levels and the unemployment rate. Beveridge curves are presented for Australia and WA in Figure 10 using the National Skills Commission's IVI counts standardised by total employment. Importantly for this exercise, the IVI series covers the peak and subsequent bust of 2008.

The expected negative relationship between the level of vacancies per worker and the unemployment rate is apparent, and so too is a flatter trade-off for WA. The state and national series of the ratio of internet vacancies to workers followed very similar trends over this period, both moving within a range of 0.90 to 2.5 advertised vacancies per 100 workers on an annualised basis. However, WA's unemployment rate has been much more variable, with at some times (eg. 2013 to 2020) almost no discernible relationship between vacancies and the unemployment rate at all. Potentially, this reflects other factors affecting the IVI series such as trends in online platforms' share of job advertising. Hence while the two vacancy series provide some contrasting evidence, the evidence from the ABS series, which provides a more direct measure of available vacancies in the economy, does suggest a less efficient matching process in WA compared to the Australian labour market overall.

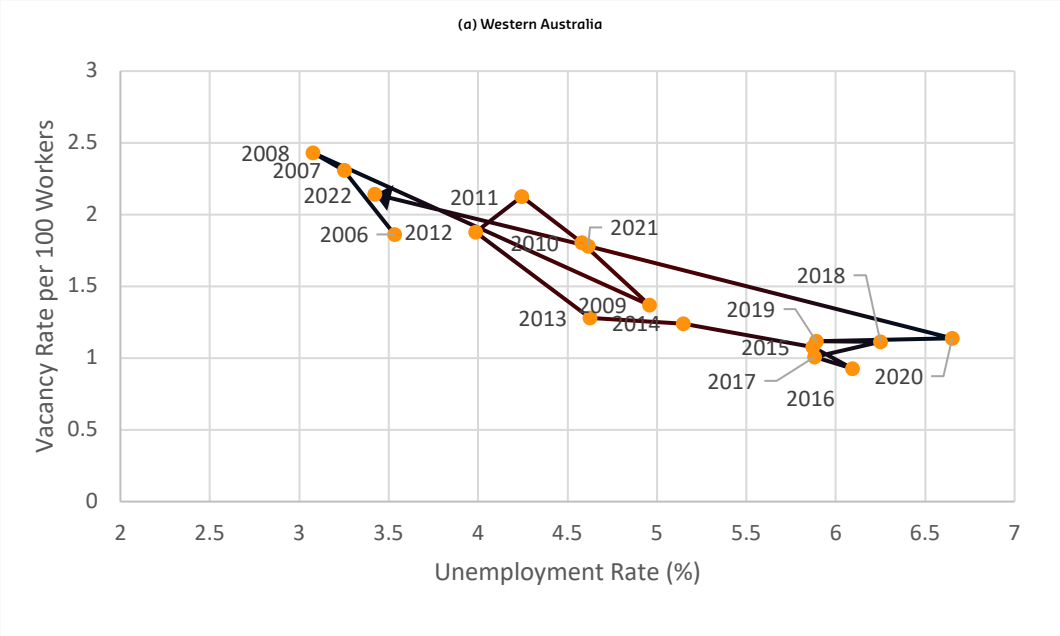


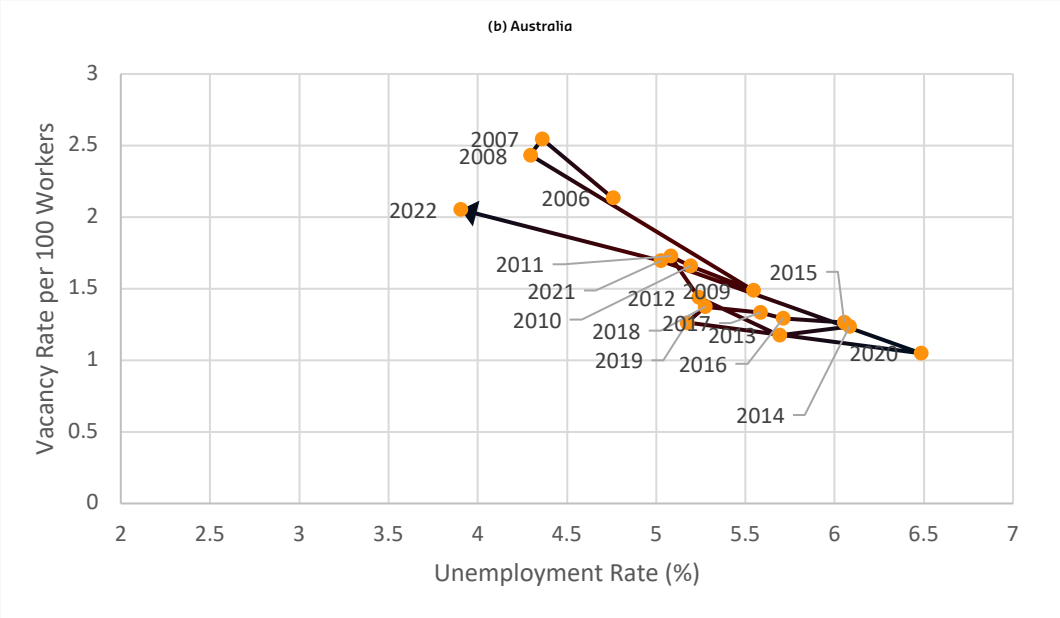
Simple time series regressions indicate the unemployment rate falls when vacancies are above around 13.5 vacancies per 1000 workers for both WA and Australia, but a larger increase in vacancies per worker is required in WA to achieve a given fall in the unemployment rate.

5 Note that the constant in the model for WA was not statistically significant (p=0.15), while the estimate for vacancies was significant at the 5 per cent level (p=0.03). Both coefficient estimates in the national model are highly significant (p<0.01).

FIGURE 10

Beveridge curves: Australia and WA, 2006 to 2022





Notes: 2022 data based on values to June 2022.

Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Catalogues 6202.0 *Labour Force, Australia* Australian Government National Skills Commission Internet Vacancy Index.

A SKILLS SHORTAGE OR A LABOUR SHORTAGE?

At the peak of the labour shortage and skills 'crisis' of 2008, there remained around 30,000 Western Australians who were unemployed – people who were out of work and actively seeking work - while employers desperately sought staff. Throughout the more recent shortage of 2022, there has been at least 40,000 Western Australians unemployed in any one month, including 43,500 jobseekers in the month the unemployment rate dipped below 3 per cent. Recent ABS estimates to May 2022 indicate that the number of vacancies employers are seeking to fill is running at over 60,000, meaning that there are substantially more positions available to be filled than there are unemployed persons.

We've highlighted that there are many potential sources of mismatch or barriers to adjustment that prevent the unemployed from filling those vacancies. Figure 11 highlights the potential magnitude of the contribution of skills mismatches. The graphs demonstrate the low and stable rates of unemployment for persons with higher education qualifications and technical level skills, such as a Certificate level III or IV or a diploma or advanced diploma. Ignoring the jump coinciding with the COVID-19 pandemic, these skilled workers in Australia have experienced rates of unemployment averaging around 4 per cent from 2015, when this data series commenced. The same applies for WA, although the series is more volatile given smaller sample sizes. In contrast, persons who completed Year 12 with no higher post-school qualification have experienced unemployment rates in a band from 6 to 8 per cent, those who completed Year 10 or Year 11 around 10 per cent, and those who had not completed Year 10 unemployment rates in the vicinity of 14 per cent.

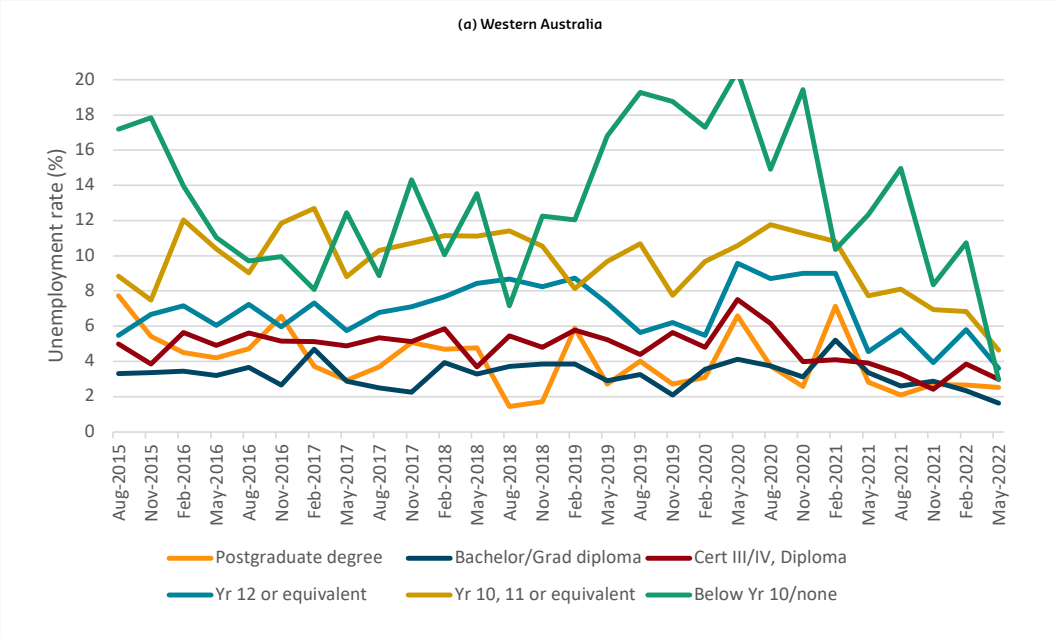
Clearly, the labour market has consistently had the capacity to absorb more skilled workers over this time, while the less qualified have struggled to find work. It is difficult to gauge how much of this relationship is due to the value employers place on formal qualifications or other, non-cognitive skills of workers that are correlated with educational attainment. However, for most of the period there appears to have been substantial mismatch between the attributes of jobseekers and employers' requirements. Aside from mismatch by level of qualification or education, mismatch can also occur in terms of the more specific types or fields of skills that more qualified workers possess. The low rates of unemployment for those with technical level or higher qualifications suggest this form of mismatch is relatively minor compared to mismatch by level of qualification.

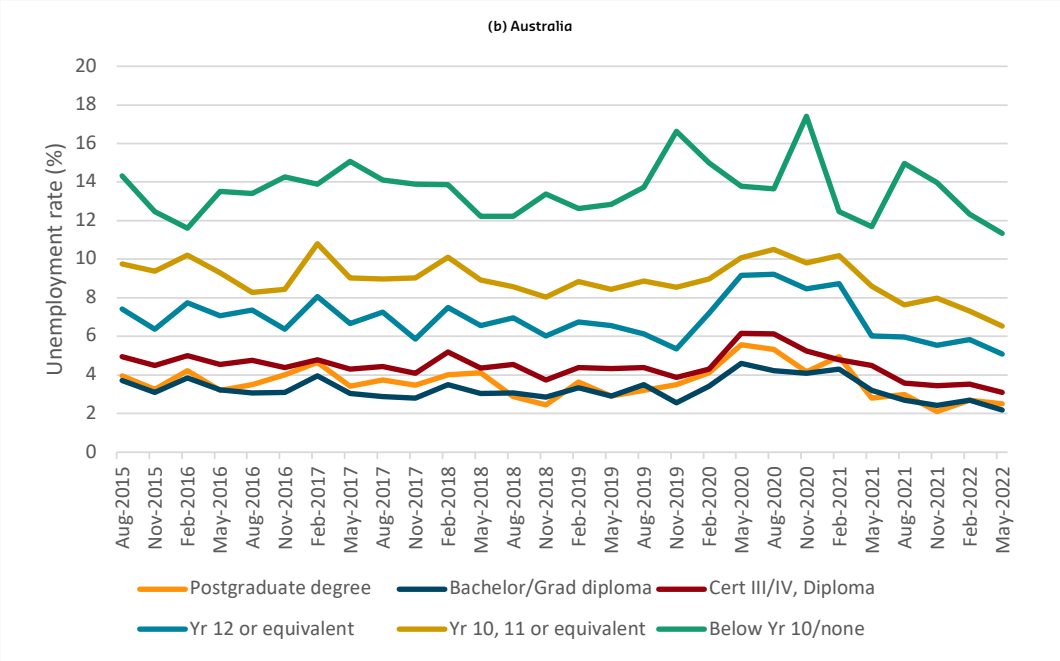
The current period of low unemployment has seen at least 40,000 Western Australians unemployed each month, while the number of vacancies employers are seeking to fill is running at over 60,000. There are substantially more positions available to be filled than there are unemployed persons.

Workers with a university education consistently experience unemployment rates below 4 per cent; those who did not complete Year 10 typically face unemployment rates in the vicinity of 14 per cent.

FIGURE 11

Unemployment rates by highest educational attainment, Australia and WA, 2015 Q3 - 2022 Q1





Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Labour Force Survey - detailed quarterly estimates.

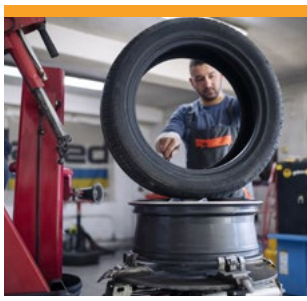
Starting from around the middle of 2021, things dramatically changed in WA. Unemployment rates by level of highest educational attainment have rapidly converged. As noted, the state unemployment reached a low of 2.9 per cent in April 2022. The detailed quarterly estimates for WA, available for May of 2022, show just a 3 percentage point spread in the unemployment rates by broad qualification level: from 1.6 per cent for people with a bachelor degree to 4.6 per cent for those who completed the equivalent of Year 10 or Year 11. The unemployment rate for those who had not completed the equivalent of Year 10 averaged almost 14 per cent from August 2015 to August 2021, and had dropped below 10 per cent in only one quarter during that period. Remarkably, given this history, the estimate for May 2022 was 3.0 per cent. While these figures are volatile at the state level, there appears to have been a pronounced shift in employers' perception of the employability of lesser skilled workers, or at least their willingness to take them on. As suggested by Mitchell and Quirk (2005: 5), this may also need to be accompanied by increased firm investment in training.

In part this fall in unemployment rates may be due to the loss of international workers to WA, such as backpackers and foreign students, who have low formal qualifications but strong non-cognitive skills and other positive attributes. However, the convergence in these unemployment rates provides evidence that WA now faces a labour shortage as much as skills shortages.

Some convergence in unemployment rate differentials is also apparent for the Australian labour market, but not anywhere near to the same extent as in WA. Nationally, unemployment rates for persons with a bachelors or higher degrees had fallen to almost 2 per cent in May, 2022, and close to 3 per cent for those with technical qualifications. For those who had not completed the equivalent of Year 10, it had fallen significantly over the four quarters leading up to May 2022, but remained above 11 per cent.

Further indication of the nature of shortages in the labour market can be gained by the return, or relative wage premium, associated with skill levels. When a shortage is primarily due to lack of skills, rather than people, the demand for skilled workers will increase relative to unskilled workers and we might anticipate the returns to years of education, as a proxy for skill level, to rise. In contrast, a simple shortage of labour will see demand for unskilled workers rise, leading to a compression of wage relativities by skill level and a fall in the return to years of education. As set out in the second chapter, such changes in relative wages provide incentives for labour market adjustment, such as promoting enrolments in courses for skills in high demand and the relocation of workers.

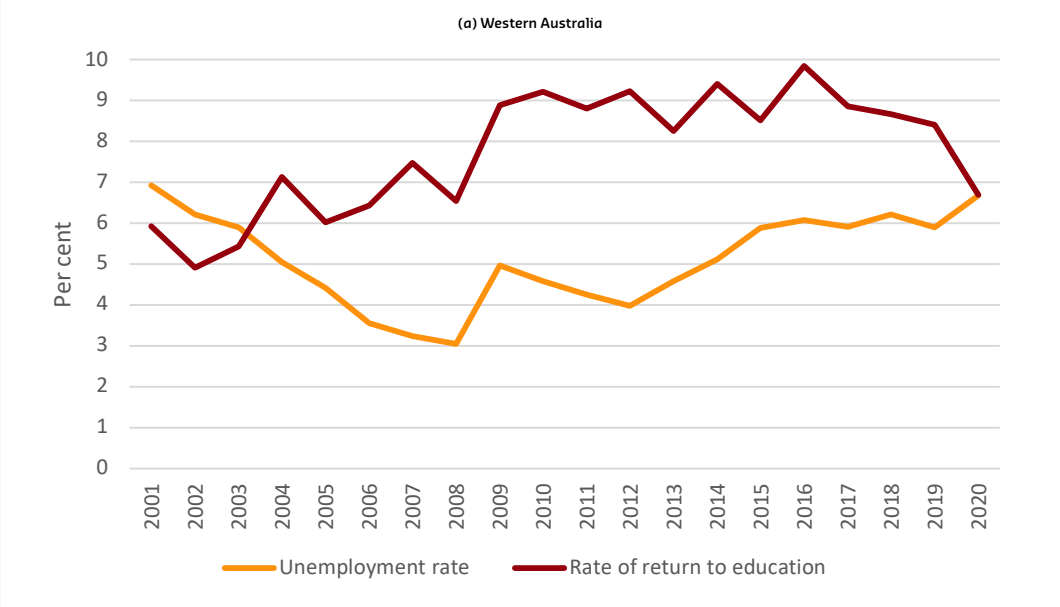
Using data from each annual wave of the HILDA survey, we estimated cross-sectional wage equations for every year from 2001 to 2020. The models estimate hourly wages while controlling for years of education completed and other characteristics of workers: gender, age, marital status, part-time/full-time status, presence of a disability, migrant status, and years of prior work experience. The results provide an estimate of the average increase in wages for each additional year of education a worker has completed, and are calculated for Australia overall and separately for WA. The estimates are depicted in Figure 12. For Australia (panel b), workers' return to a year of education has been remarkably stable over those 2 decades, ranging from a low of 7.0 per cent higher wages per year of education in 2001 to a high of 8.2 per cent in 2009 and 2010, despite significant fluctuations in the unemployment rate. In 2020 it was little changed from the beginning of the century. Possibly, the peak in 2009 and 2010 could be attributed to higher returns to skilled labour in response to the steady decline in unemployment from 2001 to 2008.

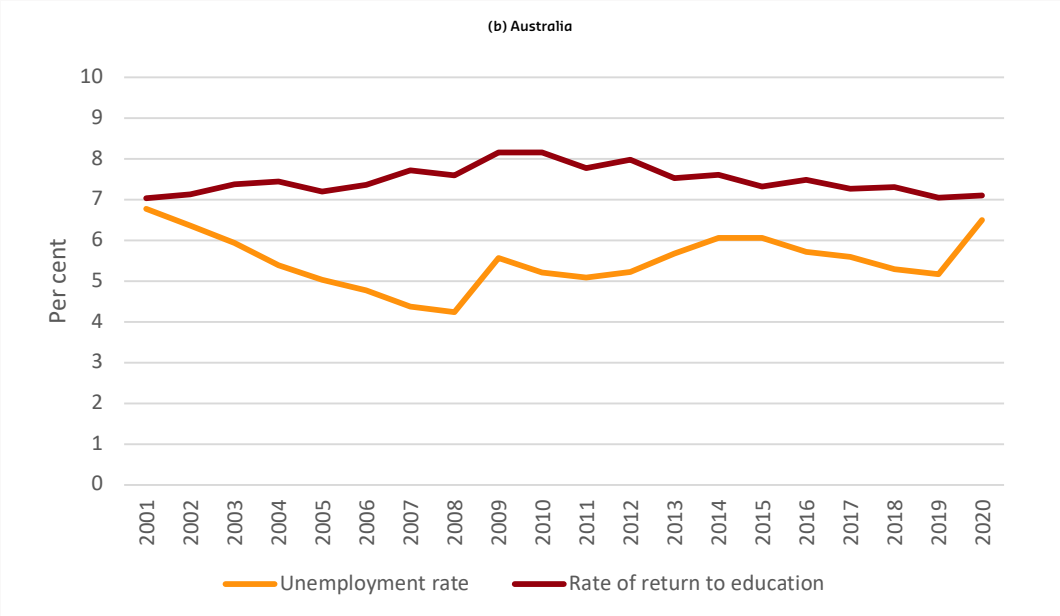


The sudden convergence in unemployment rates by level of educational attainment provides evidence that WA now faces a labour shortage as much as skills shortages.

FIGURE 12

The unemployment rate and wage premium associated with additional years of education, WA and Australia, 2001-2020





Source: Bankwest Curtin Economics Centre | Authors' calculations based on HILDA Waves 1-20 and ABS Catalogues 6202.0 *Labour Force, Australia*.

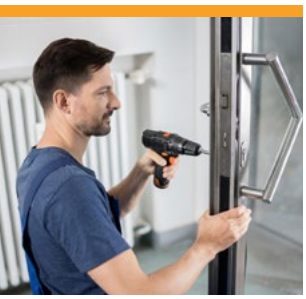
The estimated return to education in WA is more volatile. While some of that volatility may be due to the smaller sample for estimation, all estimates are quite precise in statistical terms.[6] The estimated wage premium associated with each year of education for workers in WA was a low 5 per cent in 2002, but at around 9 per cent was substantially above the national estimates from 2009 to 2019, consistent with more acute skills shortages in WA. It is surprising that the rate did not fall in the years leading up to and including 2008, when the annual unemployment rate in the state hit 3.0 per cent.

The last year for which HILDA data are available, 2020 saw a sharp drop in the estimated return to education in WA. Unfortunately it is difficult to disentangle this from effects of the pandemic, and no such drop is observed at the national level. Further, the unemployment rate in WA had been quite steady at around 6 per cent in the previous four years, which should not have put upward pressure on the relative wages of less skilled workers. It will be interesting to see if the sudden decline in the unemployment rate for lower education workers in WA in 2022, as revealed in Figure 11(a), leads to a compression of wage relativities by skill level. However, the available evidence suggests very muted wage responses to skills or labour shortages, particularly at the national level.

Evidence on changes in worker's return to extra years of education suggests very muted wage responses to skills or labour shortages, particularly at the national level.

6 Standard errors for estimates for WA in each year are less than 1 percentage point and all estimates are highly significant ($p<0.001$).

UNTAPPED SOURCES OF LABOUR



Relying on immigration to fill skills and labour gaps must be weighed against the benefits of investing in potential sources of domestic labour. Unemployment and disengagement from the labour market by those who would like to work has substantial long-run economic and social costs.

As noted in the previous section, by mid-2022 the number of vacancies in WA exceeded the number of unemployed persons, and unemployment rates by level of highest educational attainment indicate WA was experiencing as much a labour shortage as a skills shortage. In such times, it is common for employers and business groups to call for increases in migration to meet excess demand for workers and skills (see, recently, ACCI 2022). Previous research indicates Australia and WA enjoy net economic gains from overseas skilled migration (Committee for Perth 2022, Treasury 2022), plus evidence the impact on natives' job opportunities and wages are minimal and possibly positive (Dockery *et al*. 2019: 36-37).

However, relying on immigration to fill skills and labour gaps must still be weighed against alternatives of investing in potential sources of domestic labour, including the currently unemployed and discouraged jobseekers. Unemployment and disengagement from the labour market by those who would like to work has substantial long-run economic and social costs. These include declining physical and mental health plus, as discussed in the second chapter, the atrophy of vocational and non-cognitive skills. In contrast, time in employment adds to workers' experience, skills and productivity. Lifting people out of long-term unemployment or disengagement from the labour market generates significant current and future economic benefits. This includes lower underlying rates of unemployment, as the process of matching vacancies becomes more efficient when more in the pool of unemployed or underemployed are 'job ready'.

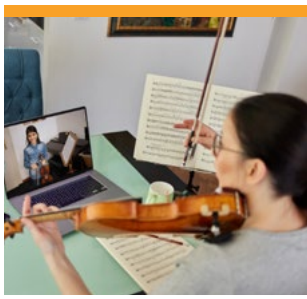
In addition, relying on immigration requires an added housing market response which, as we show in the following chapters, is a critical link in the nexus between skills and labour demand and supply side responses. This section looks at latent sources of labour that could potentially be drawn upon to meet skills and labour demand through appropriate policy measures.

Boosting participation

The current pool of unemployed represent only a proportion of the potential labour supply. There are many more people outside of the labour force altogether, but who may be willing to supply labour to some degree under the right conditions. Figure 13 demonstrates how participation in the labour force varies by age and gender. To enable detailed comparisons by five-year age groups, we draw upon 2016 ABS Census data. At the time of writing, the comparable data from the most recent 2021 census were not yet publicly available. On the plus side, the 2016 data are unaffected by COVID-19. Two salient observations to be drawn from this figure are the big gap in participation between males and females during the prime working age years from 25 to 44, and the accelerating drop off in participation commencing from around age 50.

The similarity in patterns of labour force participation by age for WA and Australia gives us confidence to impute estimates for WA from more recent and detailed data available only at the national level. According to detailed quarterly estimates from the ABS Labour Force Survey, there were 627,000 persons aged 15 and over in WA who were not participating in the labour force in May of 2022. The ABS also provides that data by highest level of qualification by age for Australia. Using national data for May 2022 on participation rates by age and educational qualification, we have worked backwards to impute the number of persons in WA by age and qualification who were not participating in the labour market for that same month. The estimates, contained in Table 2, are scaled to ensure they are consistent with the ABS totals for WA by highest level of qualification.[7]

The estimates show there were around 132,000 potential skilled workers in Western Australia – persons with a Certificate III or IV level qualification or higher – who were of working age (15-64 years) but not participating in the labour force in May of 2022. Almost half of these West Australians (57,900) held a university degree or higher qualification. To put that in context, recall that ABS estimates indicate there were around 65,000 vacancies available to be filled at that time. There were a further 178,000 people of working age without post-school qualifications who were outside the labour market.



In May of 2022, there were around 132,000 potential skilled workers in WA – persons with a Certificate III or IV level qualification or higher – who were of working age (15-64 years) but not participating in the labour force. Almost half held a university degree.

7 Commencing with ABS May 2022 estimates of the civilian population by level of education for WA, we distributed these to age groups according to Census data on age by level of education for WA, and applied national age and education specific participation rates to calculate the number of non-participants by age group and qualification. These estimates were then scaled to be consistent with ABS estimates of the total number of non-participants in WA by highest level of educational attainment.

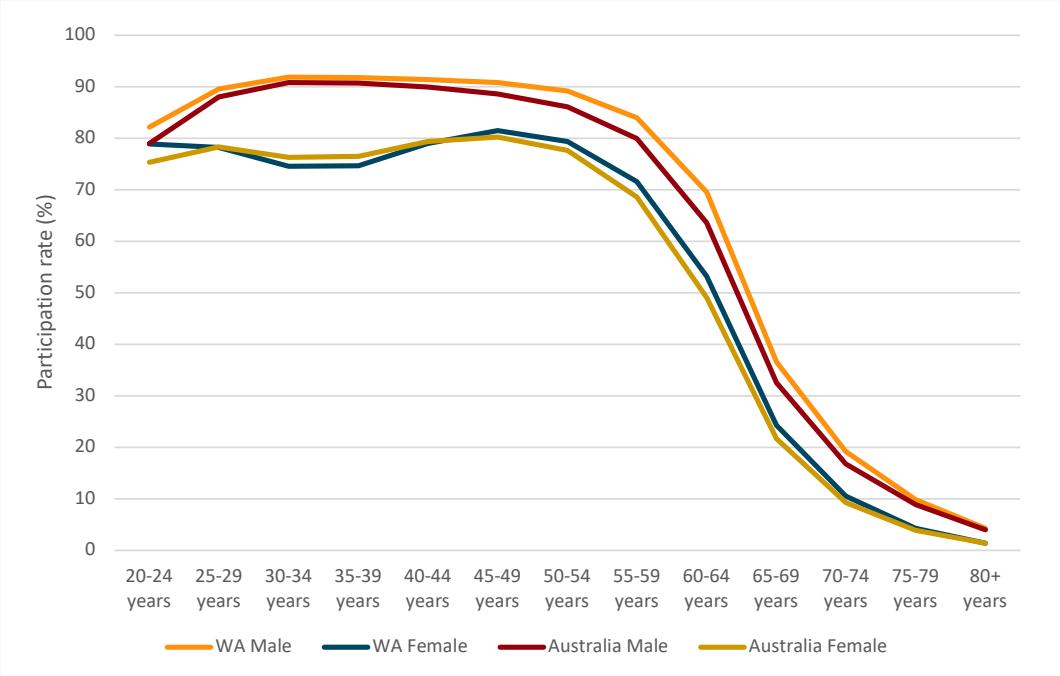
The HILDA survey asks workers outside of the labour force if they would like a job (assuming suitable childcare arrangements could be found). Based on the typical responses from those non-participants by age, we estimate there were around 64,000 Western Australians aged 25-54 outside the labour force who would potentially like a job, and a further 11,000 aged 55-64. Over half of these are skilled, including around one-quarter who hold a university degree.

In the 15-24 age group, a significant proportion of those non-participants will be in education and training. However, it can be seen that the number of skilled workers who are not participating in the labour force are spread evenly across the 10 year age groups from 25 to 54. The number escalates rapidly as we move beyond age 54, which we have reported for the 5-year groups of 55-59 and 60-64. In total, we estimate there were 17,000 university qualified West Australians aged 55-64 outside of the labour market, and a further 22,000 with advanced vocational skills (certificate III/IV, diploma or advanced diploma).

As Figure 13 shows, non-participants below 50 years of age are predominately women. Their absence from the labour market is largely related to taking on family responsibilities and lack of affordable childcare, as explored in the following chapter. For men ill-health or disability is the major factor, and participation by persons with a disability is explored below.

FIGURE 13

Labour force participation rates by 5-year age groups, WA and Australia, 2016



Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Census 2016.

TABLE 2

Western Australians not participating in the labour force, by level of educational attainment and age, May 2022

	Age groups							
Qualification level	25-34	35-44	45-54	55-59	60-64	65+	Working age (15-64)	Total (15+)
Post-graduate	2,455	2,428	1,511	918	1,862	7,437	9,323	16,760
Grad Dip/Cert	1,793	1,462	1,624	1,318	2,135	6,927	8,554	15,481
Bachelor Degree	10,253	8,339	6,153	3,821	6,996	27,216	39,514	66,730
Advanced Dip/Dip	4,733	4,322	4,568	2,708	5,281	26,427	24,401	50,827
Certificate III/IV	11,734	8,895	7,896	5,003	8,749	45,446	49,721	95,166
Year 12 or Equivalent	8,871	6,896	8,655	5,250	9,140	42,715	61,008	103,723
Below Year 12	10,215	10,715	14,294	10,744	15,924	160,857	117,213	278,070
Bachelor degree and above	14,500	12,230	9,288	6,058	10,993	41,580	57,390	98,970
Cert III/IV and above	30,967	25,448	21,752	13,769	25,022	113,452	131,511	244,964
Total	50,053	43,058	44,701	29,763	50,087	317,024	309,733	626,757

Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Labour Force Survey - detailed quarterly estimates and ABS Census 2016.

There were 17,000 university qualified West Australians aged 55-64 outside of the labour market, and a further 22,000 with advanced vocational skills as at May 2022.

Typically, around 16 per cent of Australian workers report they would prefer to work more hours.

Underemployment

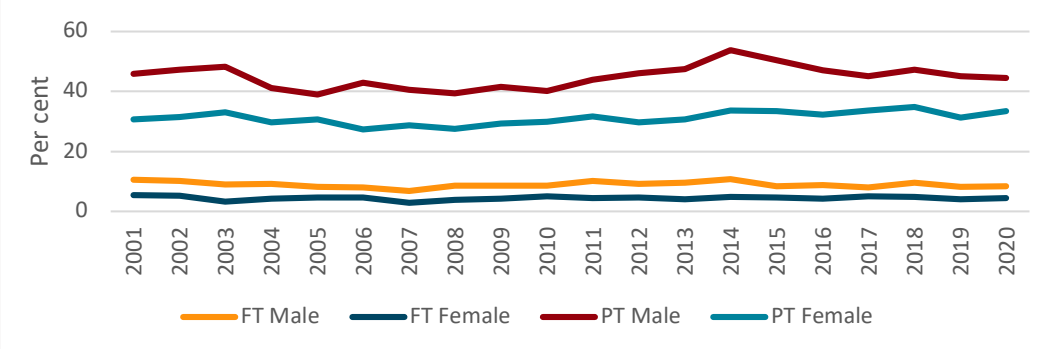
In addition to persons who are unemployed and outside of the labour force, there is a latent supply of labour in the form of workers who are underemployed: that is, workers who would like to be working more hours than they currently are. The HILDA survey asks people in employment how many hours they usually work each week, and whether they would prefer to work fewer hours, about the same hours or more hours, taking into account the effect this would have on their income. Across the pooled sample from 2001 to 2020, around 16 per cent of Australian workers reported they would prefer to work more hours. The proportion is higher for women, as would be anticipated given more women work part-time, but by a surprisingly small margin (17.2 per cent versus 15.3 per cent of men). A slightly lower proportion of WA workers were underemployed over this period (15 per cent), but with a wider gender gap (16.6 per cent of women versus 13.0 per cent of men).

The similarity in the overall proportion of men and women preferring to work more hours disguises important differences. Looking separately at full-time and part-time workers, within each category men are much more likely to be underemployed. A relatively small proportion of full-time workers report preferring to work longer hours: around 5 per cent of women and 10 per cent of men. As Figure 14 shows, part-time workers are much more likely to report being underemployed, and particularly men working part-time.

WA has an untapped labour supply of around 68,000 full-time equivalent workers in the form of additional hours the current labour force is willing to work. 52,500 of these potential full-time equivalent workers relate to the underemployment of part-time workers.

FIGURE 14

Proportion of workers who would prefer to work more hours, by gender and full-time/part-time status, Australia



Source: Bankwest Curtin Economics Centre | Authors' calculations based on HILDA 2001-2020.

Within these groups of workers, the incidence of underemployment has been relatively constant over the 20 years of HILDA. The figures for WA (not reported) are more volatile given the smaller sample sizes. They show a very similar underlying pattern, however there appears to have been an increasing trend in the incidence of underemployment among both male and female part-time workers in WA over the past 10 years.

For workers who indicated that they would prefer to work more hours, the HILDA survey also asks how many hours a week they would choose to work. From this answer and data on their usual hours worked, we can calculate the additional number of hours workers would like to supply each week, or by how many hours they are underemployed. For the pooled national data from 2001-2020, full-time workers would like to supply an average of just 0.7 extra hours per week (0.9 hours for men and 0.3 hours for women), and part-time workers an average of 4.4 extra hours (6.4 hours for men and 3.6 hours for women). Note these averages are across all workers, including those who would not prefer to work more hours (for whom preferred extra hours=0).[8]

We use these data to impute the latent supply that is potentially available in the form of additional hours that WA workers would like to work. In June of 2022, in aggregate there were just over one million West Australians employed full-time, and 457,000 employed part-time workers. Using the typical propensity for workers to prefer to work more hours observed in WA from 2001 to 2020, we converted those total latent hours to full-time equivalent workers assuming a 35 hour working week. The results imply a total latent labour supply of around 68,000 full-time equivalent workers in the form of additional hours that the current WA labour force is willing to work.

8 Because we are focusing on latent potential labour supply, we have averaged the additional hours workers desire, and not netted out hours of over-employment. While, there are many workers who would prefer to work fewer hours than they currently do, this does not negate the available hours from their underemployed colleagues.

The vast bulk of this latent labour supply relates to the underemployment of part-time workers, with those hours amounting to 52,500 potential full-time equivalent workers, of which the majority (around 60 per cent) arises from the under employment of female part-time workers.

To break this down by sector, the average additional hours are calculated using HILDA Australian data from 2001-2020 to maximise the sample size. Note from Figure 14 that these averages tend to be stable over time, and the means for full-time and part-time workers are very similar for WA and Australia. The sectoral background, gives a total level of underemployment of 78,500 full-time equivalent workers (see Table 3). This is in the vicinity of the estimate based on the aggregate number of workers (68,000), and the difference will reflect minor differences in employment by sector in WA when compared to the national level. The largest industry 'hosts' of latent labour in the form of underemployment are accommodation and food services, health care and social assistance and retail trade. For each of these sectors, part-time workers make up close to half or more of their workforce.

If those figures are expressed as a share of each sector's total workforce, the industries with the highest levels of underemployment are administrative and support services, retail trade, and arts and recreation services.

WA sectors with the largest absolute pool of latent labour in the form of underemployment are accommodation and food services, health care and social assistance, and retail trade; and with the largest share relative to their existing workforce are administrative and support services, retail trade, and arts and recreation.

TABLE 3

Underemployment by industry – Western Australia, May 2022

Industry	Total employment			Aggregate underemployment	
	Full-time	Part-time	Total	FTE Workers	PT workers
	('000s)	('000s)	('000s)	Number	Percent
Agriculture, Forestry, Fishing	20.2	9.4	29.6	1,901	75.3
Mining	143.5	7.2	150.7	3,120	24.2
Manufacturing	67.1	11.6	78.6	3,683	46.7
Electricity, Gas, Water	17.8	2.6	20.4	692	40.7
Construction	112.2	15.5	127.7	5,947	49.8
Wholesale Trade	25.4	9.3	34.7	1,725	69.7
Retail Trade	61.2	71.2	132.5	10,344	88.3
Accommodation & Food Services	35.5	66.2	101.7	11,103	90.3
Transport, Postal & Warehousing	59.5	15.8	75.3	4,869	55.6
Information Media and Telecommunications	12.1	4.0	16.2	737	75.8
Financial & Insurance Services	22.9	11.6	34.5	899	82.0
Rental, Hiring and Real Estate Services	17.7	4.5	22.3	820	65.6
Prof., Scientific & Technical Services	79.2	23.8	103.0	3,933	73.8
Administrative & Support Services	26.9	18.3	45.2	3,733	84.1
Public Administration & Safety	86.0	21.7	107.6	3,657	61.4
Education & Training	69.3	41.1	110.4	4,426	91.3
Health Care & Social Assistance	104.6	98.4	203.0	10,532	85.8
Arts & Recreation Services	17.7	10.5	28.2	1,976	80.3
Other Services	37.9	19.2	57.0	3,704	77.5
WA Total	**1016.7**	**462.0**	**1478.7**	**78,506**	**74.6**

Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Labour Force Survey - detailed quarterly estimates and HILDA 2001-2020.

Around 35 per cent of employed migrants from a non-English speaking background in Australia and in WA are working in occupations for which they are overeducated.

Migrants and skills mismatch

In aggregate, Western Australians who were born in Australia had similar levels of underemployment as migrants from the main English speaking countries and from non-English speaking countries. However, another dimension is use of skills, sometimes referred to as qualitative unemployment as opposed to quantitative unemployment or underemployment. BCEC's *Finding a Place to Call Home* report into immigration in Australia found that 40 per cent of migrants from a non-English speaking background were working in jobs that were not well matched to their qualifications (Dockery *et al*. 2019). Nationally, the report estimates a potential gain to the economy of $6 billion per annum from better matching of migrants' educational qualifications and the jobs they hold.

Table 4 presents figures on over and under-education by migrant status using HILDA survey data from 2001 to 2020. To determine whether workers are overeducated, correctly matched or undereducated, we compare their years of educational attainment to other workers in their occupation. If the number of years of education a worker has completed is more than one standard deviation above the mean for all workers in that occupation, they are classified as overeducated. Similarly if they have completed more than one standard deviation fewer years of education than other workers in their occupation, they are classified as undereducated for their job. Workers who have completed the average number of years of education plus or minus one standard deviation for their occupation, are considered correctly matched.[9]

For Western Australia, migrants who were born in one of the main English speaking countries have very similar rates of overeducation as native (Australian born) workers, at around 10 per cent. The big difference is for migrants from non-English speaking countries - in both WA and nationally 35 per cent of these workers are working in an occupation for which they are classed as overeducated. There is a large degree of underutilisation of the qualifications of skilled migrants of non-English speaking backgrounds.

TABLE 4

Proportion of workers undereducated, correctly matched and overeducated for their current occupation, by country of birth, Australia and WA

	Under or over-educated (%)			Overskilled
Industry	Under-educated	Correctly matched	Over-educated	(%)
Western Australia				
Country of birth				
Australia	16.2	73.7	10.1	13.7
Main English speaking country	11.6	78.9	9.5	11.0
Non-English speaking country	6.6	58.2	35.2	15.0
Total	14.2	72.5	13.3	13.2
Australia				
Country of birth				
Australia	14.5	74.4	11.1	12.9
Main English speaking country	12.0	74.4	13.6	7.6
Non-English speaking country	7.0	58.0	35.0	14.3
Total	13.0	71.6	15.4	12.9

Source: Bankwest Curtin Economics Centre | Authors' calculations based on HILDA 2001-2020.

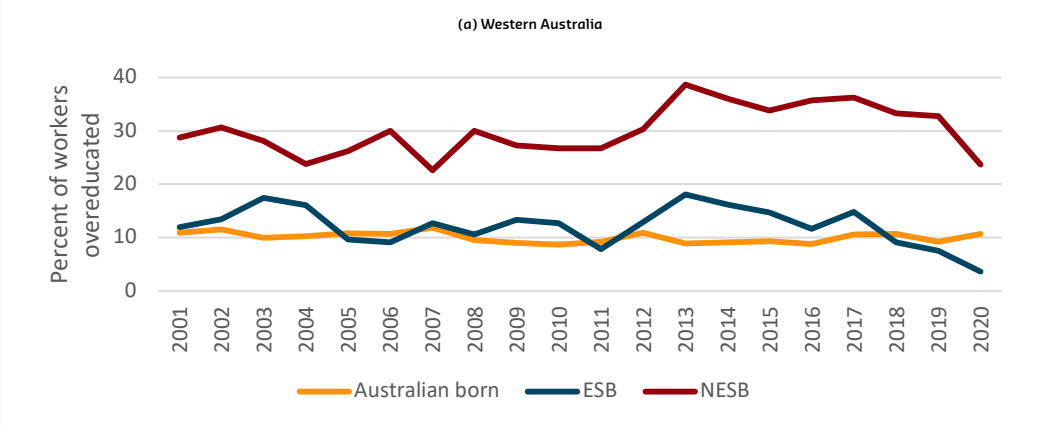
9 This analysis was conducted at the '1-digit' occupational level, corresponding to the eight major group categories in the Australian and New Zealand Standard Classification of Occupations (ANZSCO).

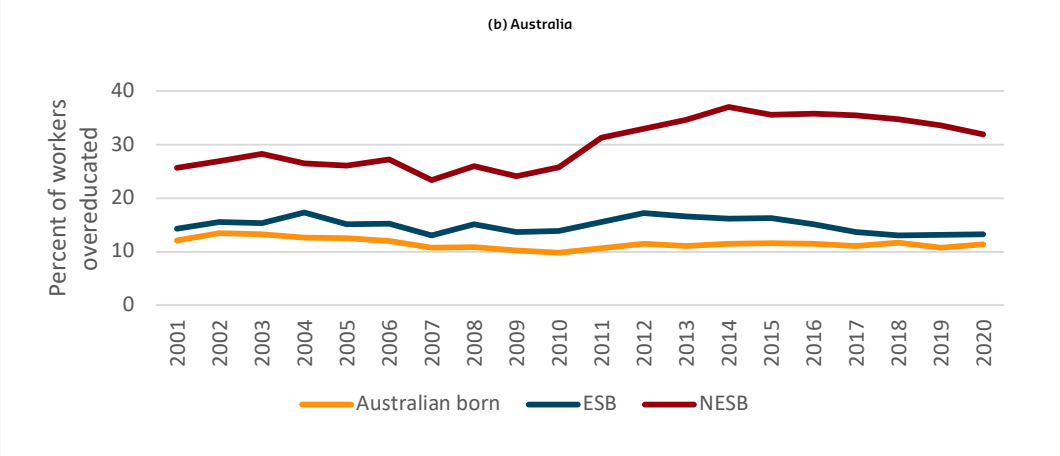
Figure 15 shows how the incidence of skills underutilisation has changed over the past 20 years. For migrants from non-English speaking backgrounds, the proportion of workers in jobs for which they are overeducated escalated significantly from 2011 in WA, and from 2012 nationally. A less pronounced increase is observed at the same times for migrants from English speaking backgrounds. These increases in the incidence of underemployment for migrants did follow the downturn in the labour market associated with the 2008 global financial crises, but with a lag of 2 to 3 years. There was also limited impact on the incidence of overeducation among native workers, so it is unclear whether that rise in unemployment contributed to the later increase in mismatch for migrants.[10]

There appears to have been surprisingly little upward occupational mobility for migrants from non-English speaking backgrounds during WA's 'skills crisis' of 2008.

FIGURE 15

Over educated workers by migrant status: WA and Australia, 2001 to 2020





Source: Bankwest Curtin Economics Centre | Authors' calculations based on HILDA 2001-2020.

10 There was a top up sample added to HILDA in 2011 to expand the coverage of immigrants who are not incorporated into the sampling frame by the natural growth of HILDA households. However, this would increase the number, but not necessarily the share of who are overeducated, and in theory that change should be accounted for in the weighting process. It would also fail to account for the difference in the timing of the increase for WA (in 2011) and Australia (in 2012).

There are substantial barriers in the labour market to the full utilisation of the skills and qualifications of migrants from non-English speaking backgrounds.

Overall, the figures for Western Australia and Australia follow very similar trends over time. Notably, there appears no reduction in the degree of mismatch for migrants of non-English speaking backgrounds in the tight labour market period leading up to 2008. The 'skills crisis' of that time would have been expected to see a higher share of skilled migrants secure jobs in line with their qualifications, and thus the proportion of persons classified as overeducated may have been expected to fall. Equally, the proportion who are undereducated may have been expected to rise, as employers need to draw on less qualified labour, but this did not occur for any of the three groups. The fall observed in the share of overeducated migrants from non-English speaking backgrounds in WA in 2020 is likely to be a result of immigrants – and particularly overeducated migrants - leaving the State during the border closures associated with COVID-19.

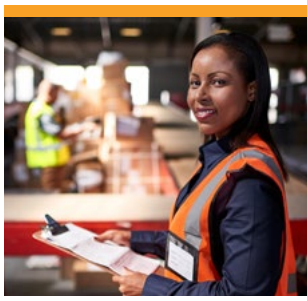
This update on trends in over- and undereducation confirm the substantial barriers in the labour market to the full utilisation of the skills and qualifications of migrants from non-English speaking backgrounds. The phenomenon persists in both the WA and national labour markets and appears to have worsened in the last decade. This points to a further latent pool of skilled labour among the existing population, with potential policy measures including improved selection processes, and improved processes for the validation and recognition of qualifications gained in non-English speaking countries. Estimates from the HILDA sample suggest there were around 95,000 workers from a non-English speaking background in WA in 2020, of whom 24,000 were working in occupations for which they were overeducated. That number is likely to increase again to closer to 30,000 workers as the temporary effects of border closures pass.

Persons with a disability

It is estimated that one in every six Australians, or around 4.4 million people, have a disability of some form, and 1.4 million Australians live with a disability classified as severe or profound (AIHW 2022). Persons with a disability have long been recognised as being at a significant labour market disadvantage relative to other labour market participants in Australia, due to an extensive range of barriers which restrict or prevent labour force participation (Olney *et al.* 2022). Some of the common challenges faced in finding work include difficulty accessing skills training and education, and lack of assistance in finding and securing employment (Committee for Perth 2022, Kavanagh *et al.* 2013). Multiple Australian studies have also established that persons with disability suffer worse socio-economic outcomes than those without a disability, and that those socio-economic disadvantages are further exacerbated for persons with more severe disabilities (Bradbury *et al.* 2001, Kavanagh *et al.* 2015).

Quite aside from the under-utilisation of the talents of persons with a disability, the opportunity to work is fundamental to living a complete and fulfilling life and to the achievement of autonomy and independence. There is a pressing moral and equity case for the promotion of inclusiveness of persons with a disability in Australian workplaces, as recognised in Australia's commitment to the United Nations' Convention on the Rights of Persons with Disability, in addition to potential benefits this may have for addressing skills needs.

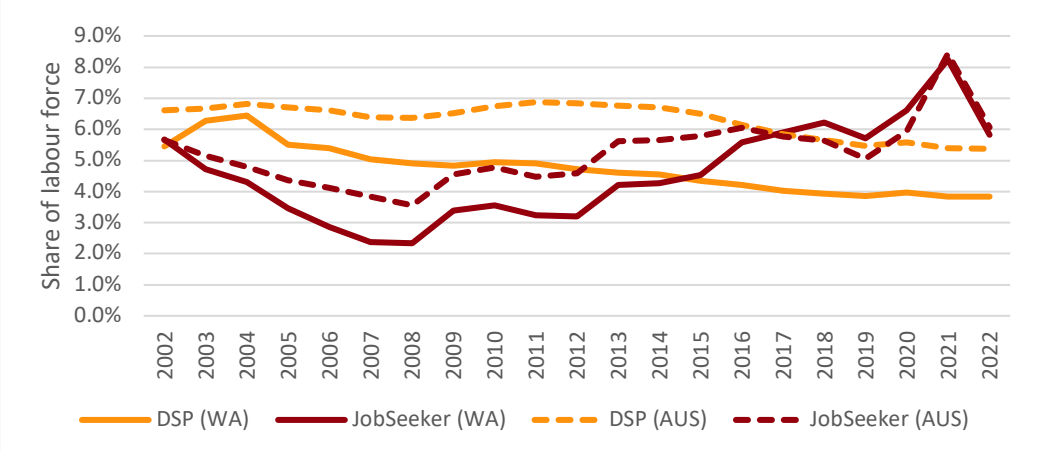
As an indication of the potential labour supply gains from greater inclusiveness in employment for people with a disability, Figure 16 compares the number of people receiving the Disability Support Pension (DSP) and those receiving Jobseeker (unemployment) benefits, expressed as a percentage of the number of persons in the labour force. By this measure, Western Australia has a relatively low number of DSP recipients relative to Australia overall, but that number still rivals the number of people on Jobseeker payments. In fact, DSP recipients outnumbered Jobseeker recipients in WA in 2014. At around 4 per cent, DSP recipients also exceed the number of Western Australians classified as unemployed in the labour force survey, given the unemployment rate currently sits at close to 3 per cent.



There is a pressing moral and equity case for the promotion of inclusiveness of persons with a disability in our workplaces, as recognised in Australia's commitment to the United Nations' Convention on the Rights of Persons with Disability.

FIGURE 16

DSP and JobSeeker recipients, expressed as share of the labour force, 2002-2022



Source: Bankwest Curtin Economics Centre | Authors' calculations from ABS Cat 6202.0; Department of Social Services demographic data and statistical paper series 2002-2022.

Two decades of gains rapidly evaporated as the COVID-19 pandemic disproportionately impacted labour force participation amongst persons with a disability in WA.

Utilising data from HILDA and from the ABS Census, this section investigates aspects of labour force participation for those with a disability in both WA and Australia, with a view to highlighting the potential for policy and practices to promote inclusiveness while addressing skills and labour needs.

Labour market engagement for persons with a disability

Despite significant policy reforms, including the introduction of the National Disability Insurance Scheme and several iterations of a National Disability Strategy (AIHW 2022), people with a disability participate in the labour market at markedly lower rates than other Australians.

Over the period from 2001-2019, the labour force participation rate for persons with a disability in WA rose from 52.4 per cent in 2001 to 62.3 per cent in 2019, a 9.9 percentage point increase.[11] In comparison, persons without a disability in WA saw an increase in labour force participation from 81.0 per cent in 2001 to 87.4 per cent, a 6.4 percentage point rise.

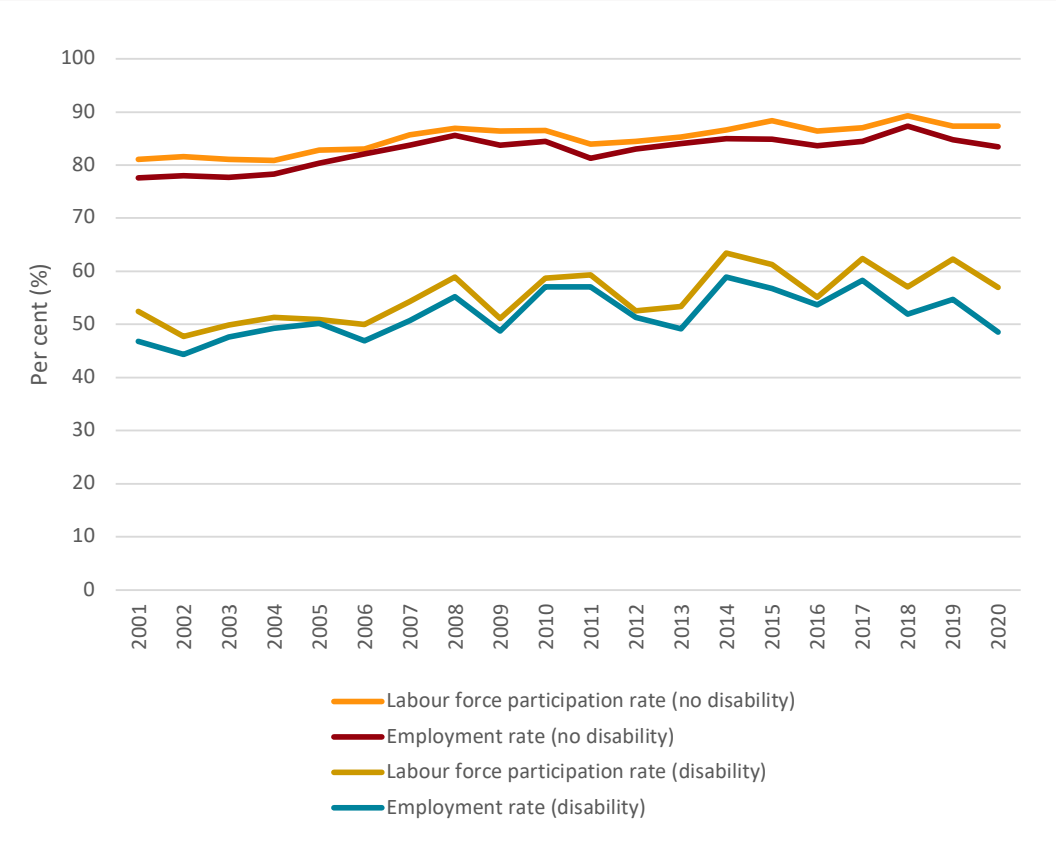
However, those two decades of gains rapidly evaporated as the COVID-19 pandemic disproportionately impacted labour force participation amongst persons with a disability in WA, with participation dropping from 62.3 per cent in 2019 to 56.9 per cent in 2020 alone. In comparison, labour force participation in WA for persons without a disability held firm in 2020, remaining at 83.7 percent.

Hence, the participation gap between persons with and without a disability in WA stood at 30.4 percentage points in 2020, little changed from the gap of 28.6 percentage points in 2001 and after narrowing to a low of 24.7 percentage points in 2017. Lower participation rates, combined with higher unemployment rates for persons with a disability when they do participate in the labour force, cascade down to lower employment rates, as can be seen in Figure 17.

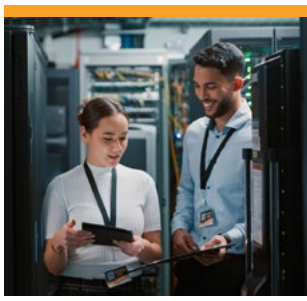
11 Based on HILDA data for persons reported to have a long-term health condition, disability or impairment.

FIGURE 17

Labour force participation and employment rate by disability status, WA, 2001 to 2020



Notes: Sample has been restricted to those aged 25-64 in order to restrict the number of students within the sample.
Source: Bankwest Curtin Economics Centre | Authors' calculations based on HILDA survey, Waves 1-20.



In WA, the proportion of persons with a disability in employment varies from around 9 per cent to 54 per cent as we move from the most disadvantaged to the most advantaged neighbourhoods.

In identifying persons with a disability, the Australian Bureau of Statistics uses a concept known as 'core activity: need for assistance'. There are three core activity areas: self-care activities, movement activities and communication activities (ABS 2022). Focusing on persons who need assistance with a core activity, 2016 ABS Census data show these Australians have markedly lower engagement with the labour market than those without such a disability (that is, those persons who do not require assistance with a core activity). The labour force participation rate for persons needing assistance with a core activity was just 10.2 per cent nationally, and 12.0 per cent for West Australians needing assistance. These compared to 68.3 per cent and 70.8 per cent for all other persons in Australia and WA, respectively.

In Western Australia, a person with a disability and living in a neighbourhood in the top decile by socio-economic advantage, is around 6 times more likely to be in employment than a person with a disability living in the least advantaged decile of neighbourhoods.

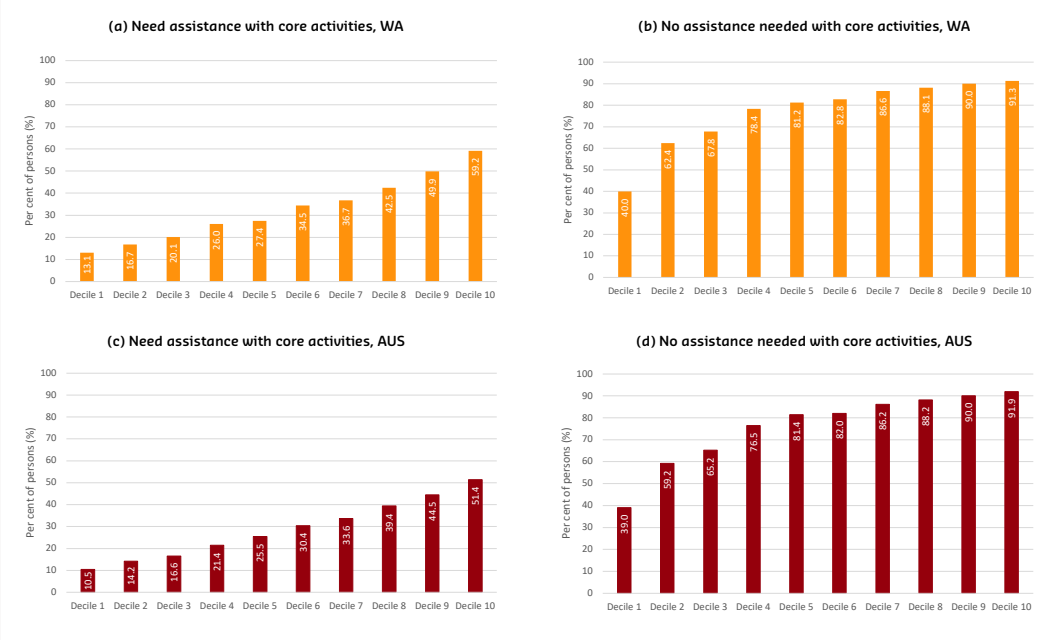
Figure 18 shows the relationship between the socio-economic decile of the neighbourhood in which a person lives and labour force participation rates. Socio-economic deciles measure the relative advantage and disadvantage of people and households within an area, by assessing income, education level and occupation within the area (ABS 2016). Decile 1 represents persons and households living in areas with the greatest socio-economic disadvantage and Decile 10 represents households in neighbourhoods characterised by the greatest socio-economic advantage. The data have been restricted to persons aged 20 to 64 to concentrate on the working age population and abstract from the 15-19 year old cohort for whom a large proportion of non-participation in the labour market is due to continuing participation in education and training.

It is apparent that there is a steep gradient in labour force participation rates by neighbourhood socio-economic status. West Australians with a disability and who live in an area in the lowest decile by socio-economic advantage have participation rates of 13.1 per cent, compared to 59.2 per cent for those who live in an area in the top decile (Figure 18).

The comparative gradients between neighbourhood socio-economic decile and employment rates are presented in Figure 19. In WA, the proportion of persons with a disability in employment varies from around 9 per cent to 54 per cent as we move from the most disadvantaged to the most advantaged neighbourhoods.

FIGURE 18

Labour force participation rate by disability status and socio-economic decile among persons aged 20-64, WA and AUS, 2016



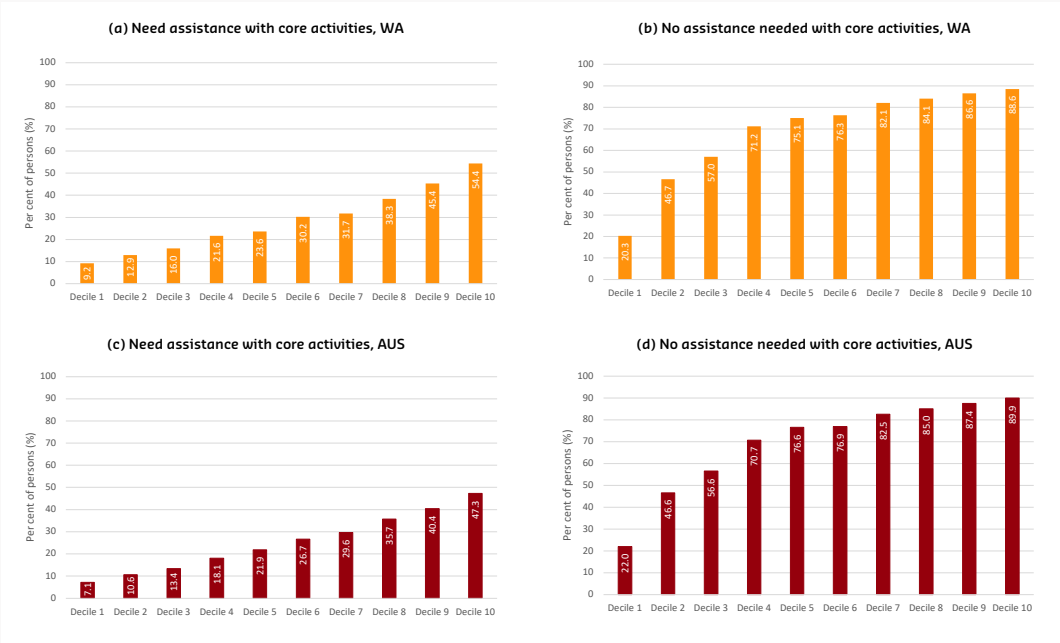
Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Census of Population and Housing TableBuilder data, 2016.

These gradients suggest that much of the labour market exclusion experienced by persons with a disability is not directly attributable to their disability, since others with a need for assistance with core activities achieve much higher labour force engagement. Admittedly, some of that gradient may arise because of differences in severity of disability, and indeed higher severity of disability can magnify socio-economic disadvantage (Kavanagh *et al.* 2015).

We also note that there are gradients in participation rates and employment rates by neighbourhood socio-economic advantage among persons without a disability. To provide that context, those gradients for persons without a disability are also shown in the right hand panels of Figure 18 for participation rates, and of Figure 19 for employment rates. The disparities by neighbourhood socio-economic status are significantly more pronounced for persons with a disability. Using WA figures by way of example, for persons with a disability living in the top neighbourhood decile is 4.5 times more likely to be participating in the labour force than someone in the bottom decile. For West Australians without a disability, the ratio is 2.3 times. For the probability of being in employment, the figures are 6 times more likely to be employed for persons with a disability, and 4 times more likely for those without a disability.

FIGURE 19

Employment rate by disability status and socio-economic decile among persons aged 20-64, WA and AUS, 2016



Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Census of Population and Housing TableBuilder data, 2016.

Noting the qualifications above on cause and effect, we believe a reasonable expectation for a target to promote labour market inclusion would be for people with a disability to achieve, on average, participation and employment rates equal to those currently attained by persons with a disability but who live in neighbourhoods in the top decile of socio-economic advantage. There seems no reason why this could not be achieved with sufficient support and resources on the supply side, and complemented with accommodation by employers to promote greater inclusion of workers with all abilities. Table 5 shows the resulting increase in labour supply and employment would be around 10,000 persons in the labour force and a similar additional number in jobs in WA alone. The figures are around 10 fold for the nation as a whole. The result that both labour force participation and employment would increase by a similar amount arises from the steeper socio-economic gradient for employment rates compared to participation rates for persons with a disability.

TABLE 5

Potential increase in participation and employment among persons aged 20-64 with a disability, Australia and WA, 2016

Persons with a core restriction	WA	Australia
Additional participants		
Need assistance with core activity	9341	107,279
Additional employment		
Need assistance with core activity	9146	105,259

Source: Bankwest Curtin Economics Centre | Authors' calculations based on ABS Census of Population and Housing TableBuilder data, 2016.

FEMALE LABOUR FORCE PARTICIPATION

INTRODUCTION

Unlocking women's participation has been highlighted as a key strategy to address the current critical skills shortages in the lead-up to the National Jobs and Skills Summit. Based on recent estimates, engaging Australian women in paid work at the same rate as men could lead to an additional one million full-time skilled workers in Australia (Jackson 2022). The literature suggests that high rates of female participation contribute to greater productivity growth (e.g. Klasen and Lamanna 2009, World Bank 2011). Moreover, paid employment is a critical driver of female empowerment and bargaining power (e.g. Anderson and Eswaran 2009, Majlesi 2016). Yet, women remain under-represented in the labour force, and continue to face significant barriers to entry.

This chapter provides an overview of female labour force participation in Australia, and shows how it varies by educational attainment, age cohort and the surrounding circumstances, offering insights on the sub-groups of the female population where participation is particularly low. It then focuses on assessing the role of two key impediments to female participation.

First, we provide an examination of family- and childcare-related reasons discouraging female participation in the labour force. Existing Australian evidence demonstrates the significant negative effect of childcare availability, affordability and quality on mother's labour force participation (Breunig *et al* 2011, 2012). We provide further engagement with the issue offering recent evidence on the significance of childcare-related challenges as a potential barrier to female participation.

Second, we explore the role of gender-biased cultural norms that may discourage female participation. A growing body of work demonstrates that gender-biased norms have important implications for female participation (e.g. Mavisakalyan 2015, Davis and Gao 2020). For example, Fernandez (2007) uses female labour force participation and attitudes in women's country of ancestry as cultural proxies and shows that both cultural proxies have significant effects on women's work outcomes in the context of the US. This chapter documents the prevalence of gender-biased work norms in Australia and examines their implications for female labour force participation.

FEMALE LABOUR FORCE PARTICIPATION IN AUSTRALIA

Female labour force participation in Australia has increased significantly over the past 30 years (Figure 20). In 2022, over 62 per cent of females aged 15 and over were in the labour force – either employed or available and looking for work – compared to under 52 per cent participation in 1992. Over the same period, the male participation rate has fallen by 3 percentage points from 74 per cent in 1992 to 71 per cent in 2022. As a consequence, the gender gap in labour force participation has gone down considerably over the past 30 years.

However, there still remains a 9 percentage point difference in the labour force participation of women and men in Australia in 2022.

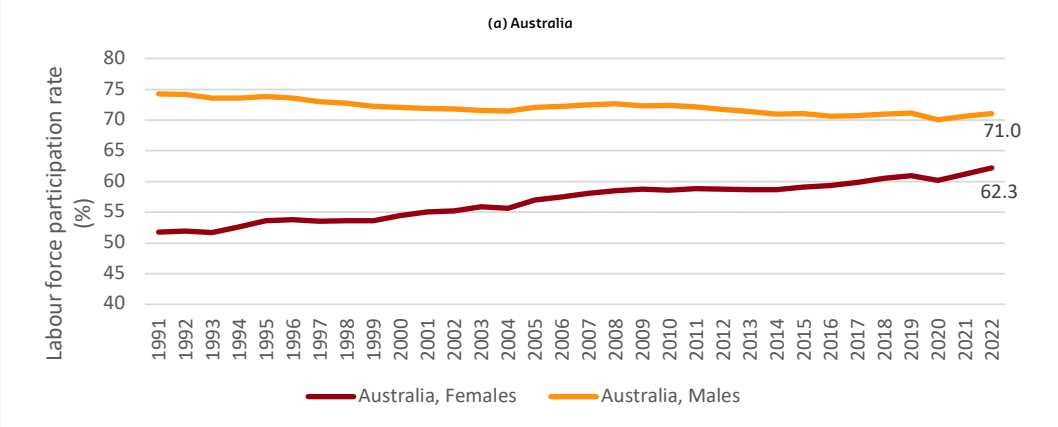
The Western Australian labour market has undergone similar patterns of evolution over the past 30 years, seeing the gender participation gap narrow considerably. As of 2022, labour force participation rates were at 64.5 per cent for females and 74.9 percent for males in WA – a difference of 10 percentage points.

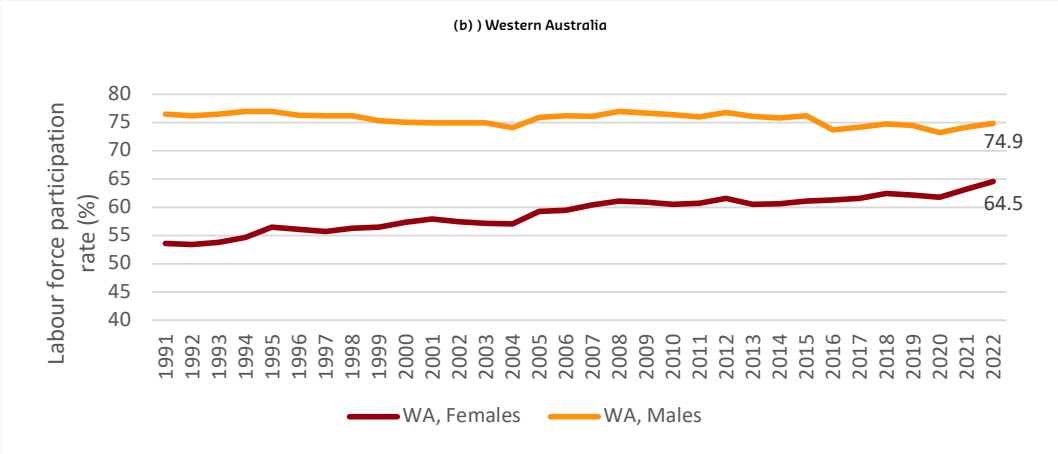
Over 62 per cent of females aged 15 and over were in the labour force in 2022 compared to under 52 per cent participation in 1992.

As of 2022, the labour force participation rates were at 64.5 per cent for females and 74.9 percent for males in Western Australia – a difference of 10 percentage points.

FIGURE 20

Evolution of labour force participation by gender, Australia and Western Australia, 1991-2022



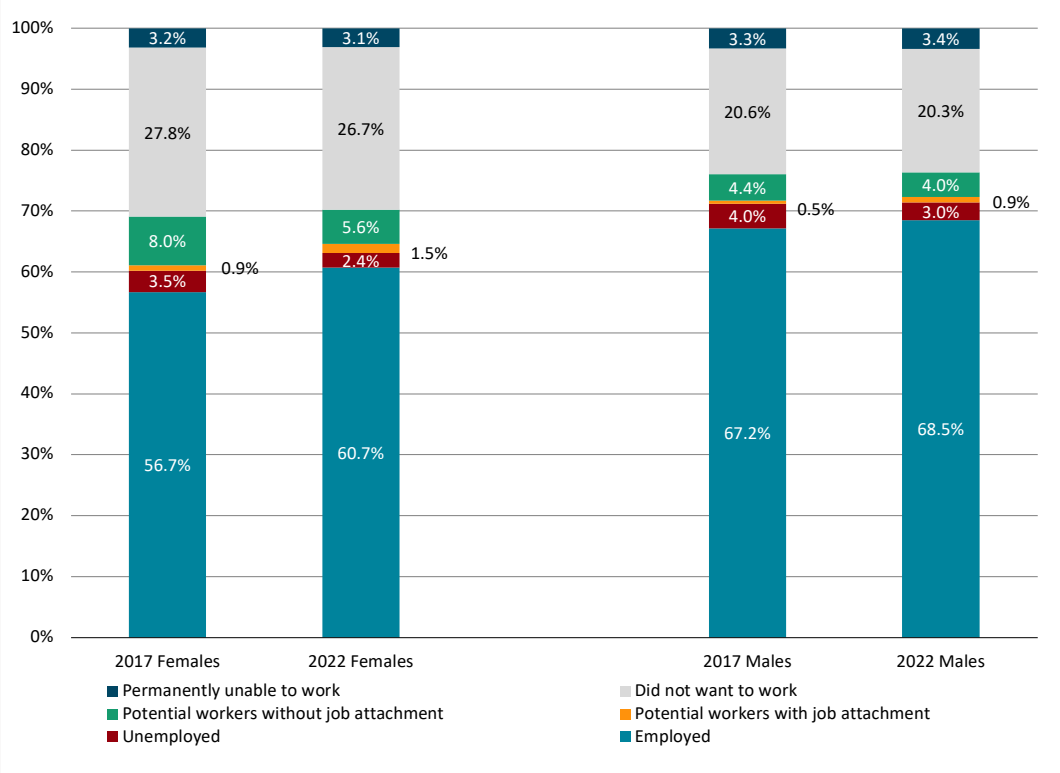


Source: Bankwest Curtin Economics Centre | Authors' calculations from ABS cat no 6291.0.55.001.

The share of employed women has gone up by 4 percentage points over the past 5 years, reaching to nearly 61 per cent in 2022.

FIGURE 21

Labour force status by gender, Australia, 2017 and 2022

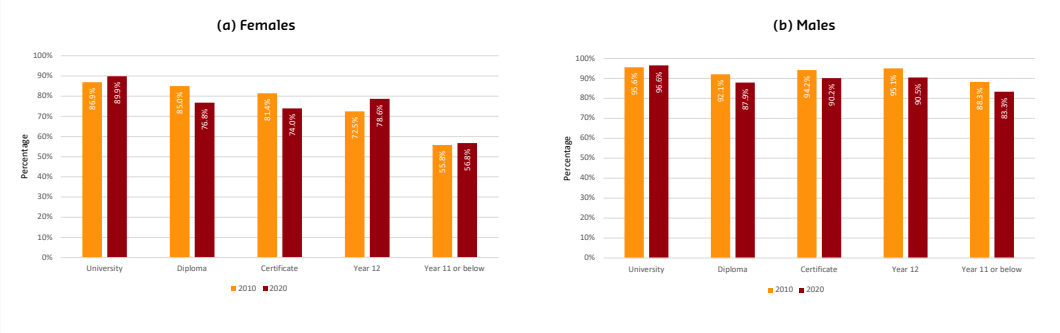


Source: Bankwest Curtin Economics Centre | Authors' calculations from ABS cat no 6228.0. and 6226.0.

Turning to the detailed breakdown of labour force status by gender in Australia in Figure 21, we see that the share of employed women has gone up by 4 percentage points over the past 5 years, reaching nearly 61 per cent in 2022. At the same time, there has been an over 2 percentage point decrease in the share of potential workers without job attachment in the female population (i.e. females who wanted to work but either weren't immediately available to work or weren't actively looking for work, or both). There have been no significant changes to male labour force status in the course of the past 5 years.

FIGURE 22

Labour force participation by educational attainment and gender, Australia, 2010 and 2020



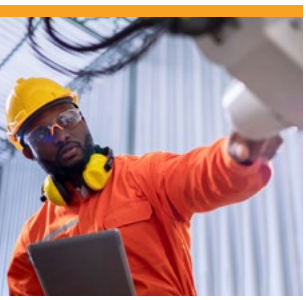
Notes: The sample is restricted to population aged 25-54.
Source: Bankwest Curtin Economics Centre | Authors' calculations from HILDA 2020.

Does educational attainment shape the patterns of gender participation in the labour force? Figure 22 offers insights on this question for the prime-age population (25-54 years olds). As of 2020, labour force participation was the highest among university-educated females (90 per cent) and those who had completed Year 12 (nearly 79 per cent). These two groups have also seen an increase in participation rates relative to a decade ago. On the other hand, in the period from 2010-2020, there has been a decrease in the labour force participation rates of females holding a diploma or a certificate. By 2020, the labour force participation among prime-age females holding a diploma was down by 8 percentage points and that of females holding a certificate was down by 7 percentage points relative to a decade ago. This is an important finding in light of the fact that the current state government strategy on addressing skills shortages focuses mainly on offering free or cheap TAFE courses, which, as our results suggest, may not necessarily be effective in boosting female participation in the labour force.

At every level of educational attainment, the male participation rate considerably exceeds the female participate rate (Panel B of Figure 22). Most strikingly, 83 per cent of prime-age males with an educational attainment of Year 11 or below and only 57 per cent of prime-age females with the same educational attainment were in the labour force in 2020 – a difference of 26 percentage points.

As of 2020, labour force participation was the highest among the university-educated females (90 per cent) and those who had completed year 12 (nearly 79 per cent).

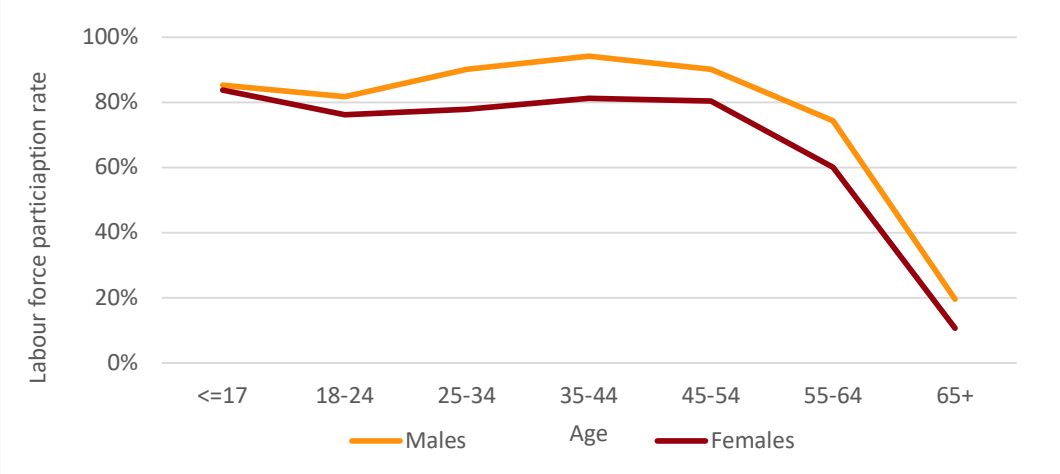
At every level of educational attainment, the male participation rate considerably exceeds the female participate rate.



At ages 25-44, potentially coinciding with child-rearing years, there is over 12 percentage points difference in labour force participation rates of males and females.

FIGURE 23

Labour force participation by age cohort and gender, Australia, 2020



Source: Bankwest Curtin Economics Centre | Authors' calculations from HILDA 2020.

As Figure 23 shows, males and females generally follow similar trajectories of labour force participation over the life course with participation going down at 18-24 years of age coinciding with key stages of educational attainment, then increasing to age 45-54 before going down in the lead up to retirement.

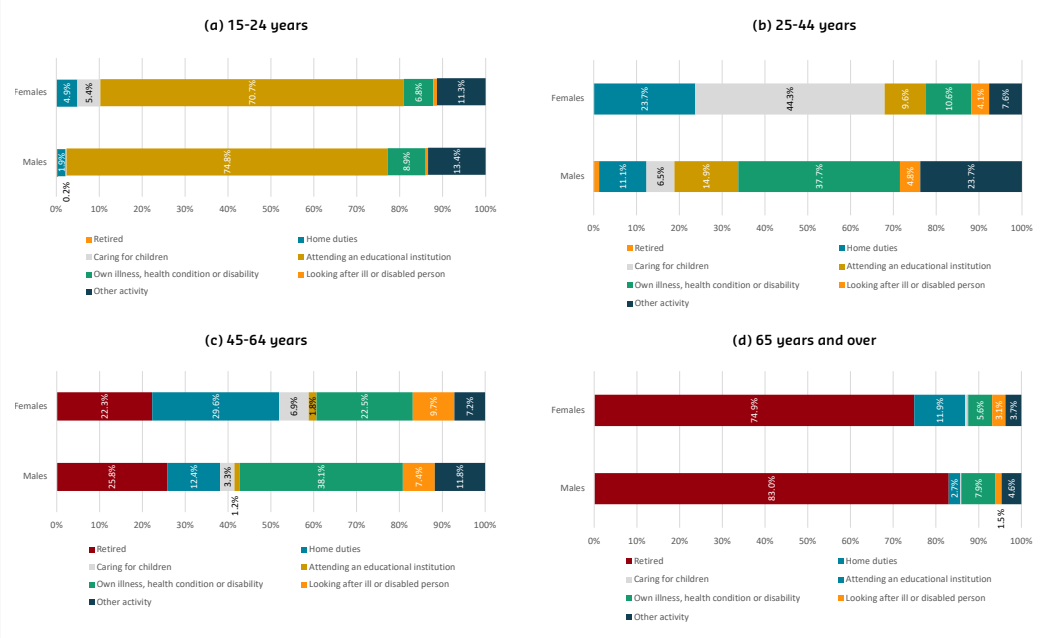
There is hardly any gender gap in participation rates at the point of the entry to the labour force. However, at ages 25-44, potentially coinciding with child-rearing years, there is over 12 percentage points difference in labour force participation rates of males and females in Australia. The gap reduces slightly at 45-54 years of age before expanding again to over 14 percentage points at 55-64 years of age, potentially coinciding with the emergence of other caring responsibilities for females.

To gain additional insights on gender-based trajectories over the life course, in Figure 24 we take a look at what males and females do while not in the labour force at different stages of their lives. At 15-24 years of age there are hardly any gender-based differences in the activities of individuals who are not in the labour force (panel A). The dominant activity for this age group is education: 71 per cent of females and 75 per cent of males aged 15-24 reported attending an educational institution in 2022.

The picture changes drastically when turning to the next age cohort: 25-44 year olds in panel B of Figure 24. Over 44 per cent of females and only 6.5 per cent of males who are not in the labour force are engaged in caring for children. An additional 24 per cent of females in this age group are engaged in home duties compared to only 11 per cent of males. On the other hand, 38 cent of males in this age group appear not to be in the labour force due to own illness, health condition or disability, in comparison to just over 10 per cent of females who face the same constraint.

FIGURE 24

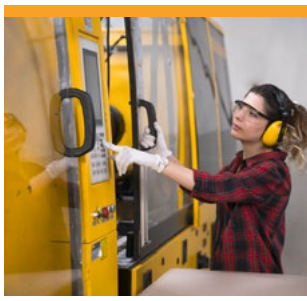
Main activity of individuals who are not in the labour force by gender and age cohort, Australia, 2022



Notes: 'Other activity' comprises three categories: 'travel, holiday or leisure activity'; 'working in unpaid voluntary or trainee job', and 'other activity'.
Source: Bankwest Curtin Economics Centre | Authors' calculations from ABS cat no 6228.0.

Own illness, health condition or disability is a dominant activity for both males and females at 45-64 years of age who are not in the labour force (panel C). Additionally, nearly 30 per cent of females aged 45-64 are engaged in home duties while not in the labour force, compared to 12 per cent of men.

Finally, looking at individuals aged 65 years and over, 83 per cent of males and 75 per cent of females who are not in the labour force are retired. Nearly 12 per cent of females in this age group are engaged in home duties as their main activity. In contrast, under 3 per cent of 65+ year old males report home duties as their main activity while not in the labour force.



Over 44 per cent of females and only 6.5 per cent of males who are of 25-44 years of age and not in the labour force are engaged in caring for children.

FAMILY AND CHILDCARE REASONS AS AN IMPEDIMENT TO FEMALE PARTICIPATION

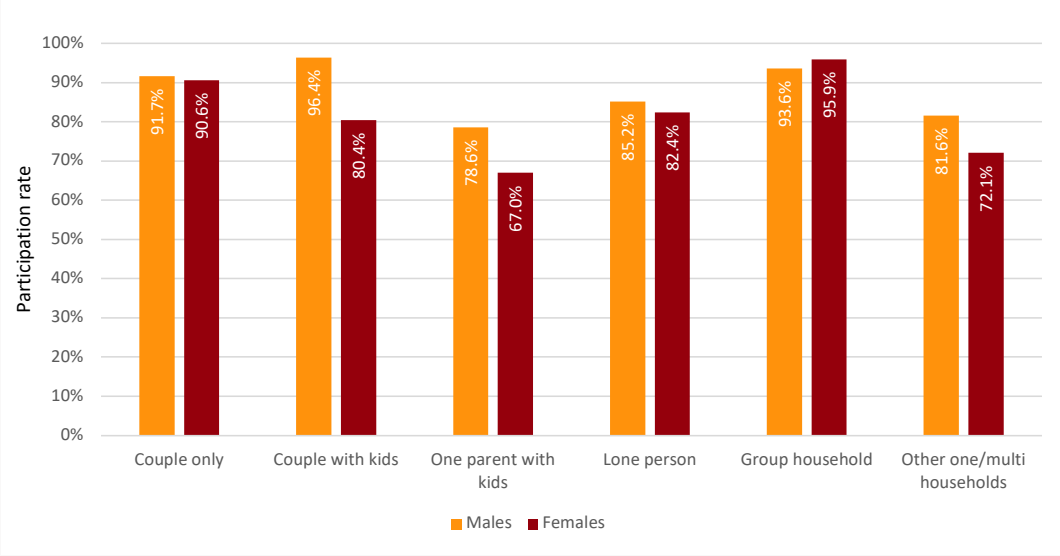
Among couples with children, over 96 per cent of males and only 80 per cent of females were in the labour force in 2020 – a difference of 16 percentage points.

In the previous section we saw that childcare and home duties appear to be the main activity for females who are not in the labour force. Consistent with that finding, in Figure 25 we see that mothers (with or without a partner) have one of the lowest participation rates of the prime-age population. Moreover, we observe the largest gender gaps in participation rates among couple and single households with children, which is highly reflective of gendered patterns in childcare responsibilities.

Among couples with children, over 96 per cent of males and only 80 per cent of females were in the labour force in 2020 – a difference of 16 percentage points. In single parent households with children, 79 per cent of males and only 70 per cent of females are in the labour force – a difference of 9 percentage points. On the other hand, there are hardly any gender differences in participation rates of couple only and group households.

FIGURE 25

Labour force participation by gender and household type, Australia, 2020



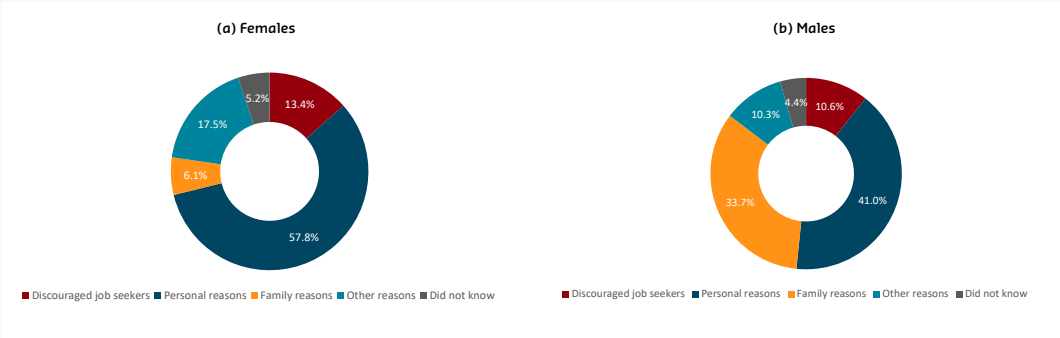
Notes: The sample is restricted to population aged 25-54.
Source: Bankwest Curtin Economics Centre | Authors' calculations from HILDA 2020.

That family and childcare responsibilities pose significant constraints on female participation in the labour force is evident from the analyses presented in Figure 26 and Figure 27. Nearly 34 per cent of females who want to and are available to work yet are not actively seeking to do so, are not looking for work because of family reasons (panel A of Figure 26). Of these females, 73 per cent are not looking for work due to childcare responsibilities, while additional 14 per cent are engaged in other caring duties (Figure 27). In contrast, only 6 per cent of males who wanted and were available to work but aren't looking for work refer to family reasons as their main reason.

Nearly 34 per cent of females versus 6 per cent of males who want to and are available to work yet are not actively seeking to do so, are not looking for work because of family reasons.

FIGURE 26

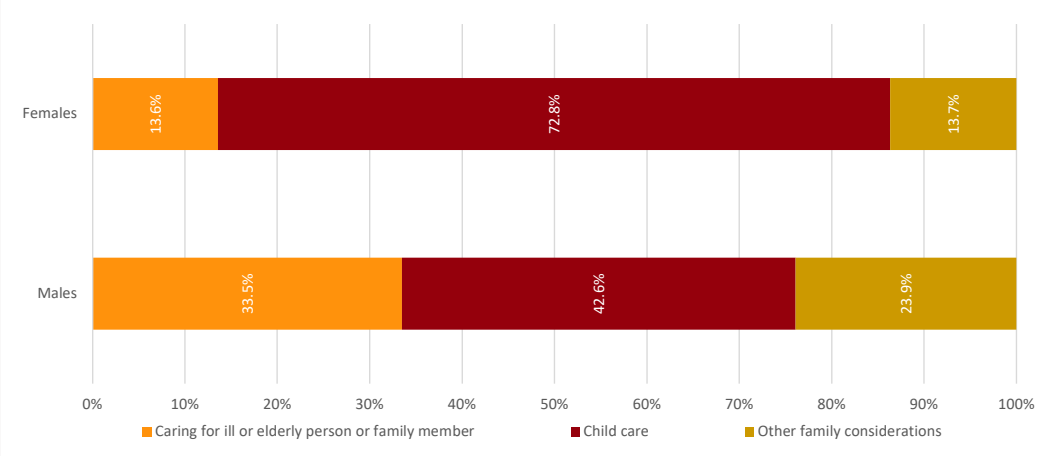
Main reason for not actively looking for work of persons who wanted to work and were available by gender, Australia, 2022



Source: Bankwest Curtin Economics Centre | Authors' calculations from ABS cat no 6228.0.

FIGURE 27

Family reasons for not actively looking for work of persons who wanted to work and were available by gender, Australia, 2022



Source: Bankwest Curtin Economics Centre | Authors' calculations from ABS cat no 6228.0.

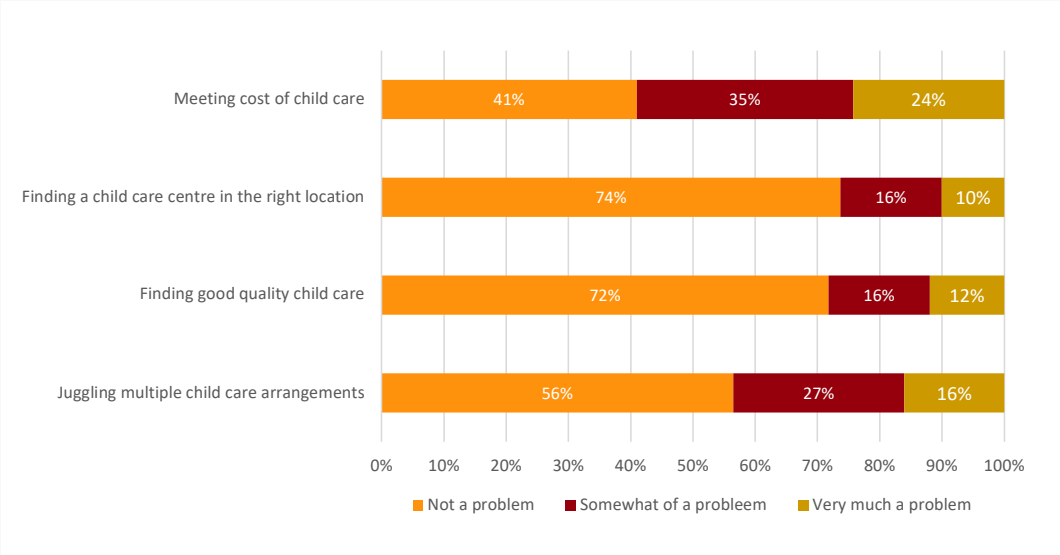
Nearly 60 per cent of individuals who used or thought about using a paid childcare consider meeting the cost of childcare as a problem to some degree.

Breunig *et al.* (2011) find that Australian partnered women and lone mothers who live in areas with more reports of a lack of availability, low quality or costly childcare work fewer hours and are less likely to work, than women in areas with fewer reported difficulties with childcare. In Figure 28 we show that difficulties with childcare availability, affordability, quality and arrangements continue to persist. Nearly 60 per cent of individuals who used or thought about using a paid childcare service consider meeting the cost of childcare as a problem to some degree. Juggling multiple childcare arrangements is seen as a problem by 44 per cent of individuals who used or thought about using a childcare service.

In comparison, a smaller yet tangible share of individuals is concerned with issues of childcare availability and quality. In 2020, 26 per cent of individuals who used or thought about using paid childcare found finding a childcare provider in the right location a problem and 28 per cent struggled to find good quality childcare.

FIGURE 28

Prevalence of difficulties with childcare availability, affordability, quality and arrangements, Australia, 2020



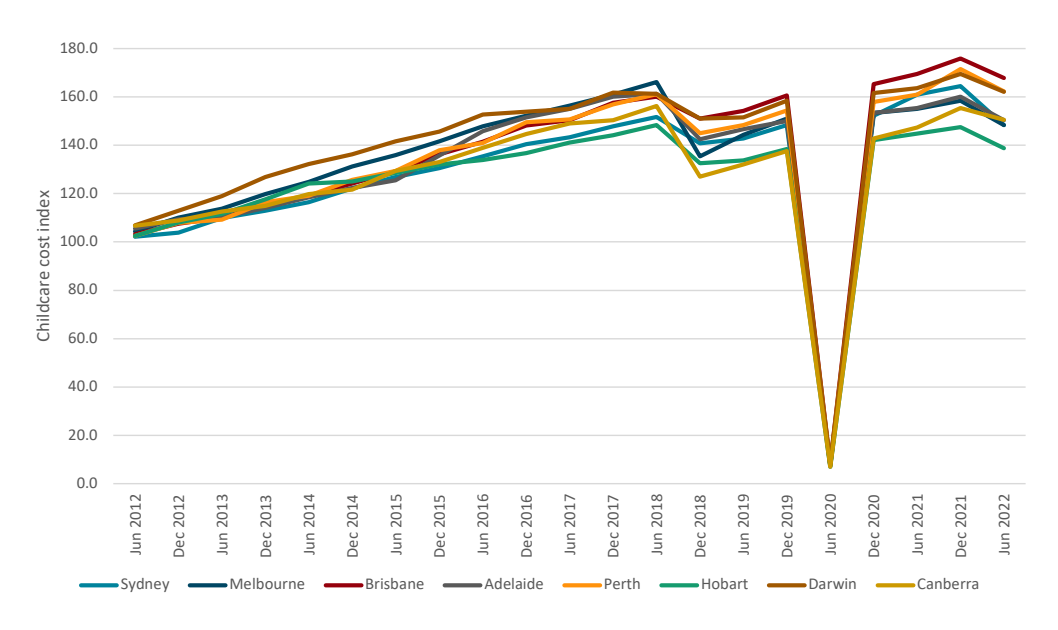
Notes: The sample is restricted to individuals who used or thought about using a paid childcare.
Source: Bankwest Curtin Economics Centre | Authors' calculations from HILDA 2020.

As we saw in Figure 28, childcare costs are seen as a problem by the majority of the population who used or thought about using paid childcare. Consistent with this, we've observed a significant increase in childcare prices across Australia's capital cities over time leading up to the onset of the COVID-19 pandemic (Figure 29). The pandemic resulted in large temporary drops in childcare prices owing to the provision of free childcare for families. Following the discontinuation of free childcare provision however, the cost of childcare then increased significantly over the course of 2021.

As of June 2022, we see a tangible drop in childcare prices across Australia's capital cities relative to half a year ago. This is likely due to the changes to the Federal Government's childcare subsidy that took effect in March lifting the rate of childcare subsidy for parents with multiple children in care. Under the new scheme, the subsidy rate for second children onwards has increased by 30 percentage points up to a maximum of 95 percent.

FIGURE 29

Childcare cost CPI by states and territories, 2012-2022



Source: Bankwest Curtin Economics Centre | Authors' calculations from ABS cat no 6401.0.

VALUING CARING ROLES AND SKILLS SHORTAGES

Women make up around 90 per cent of workers in the care sector, and earn 14 per cent lower hourly wages compared to otherwise similar men of the same age, level of education and years of work experience working in other sectors.

It's somewhat ironic that caring for children and other family caring responsibilities are the main barriers that keep women out of the labour force during their prime working ages, while within the labour market the care sectors that could potentially alleviate those barriers, notably childcare and aged care, are widely recognised as facing persistent and acute skills shortages. The Committee for Economic Development of Australia have projected there will be a national shortfall of 110,000 aged care workers within the coming decade without significant reform (CEDA 2021). In 2015, the Productivity Commission estimated around a full-time equivalent 165,000 parents would like to work, or to work more hours, but are not able to due to the cost of, or lack of access to suitable childcare (Productivity Commission 2015: 11). On a simple per capita split, that would amount to 17,200 FTE equivalent parents working in Western Australia.

In addition to it being primarily the labour force participation of women that is constrained by lack of access to services in the care sector, entrenched gendered societal norms that equate caring roles as 'women's work' have contributed to the care workforce being predominately female. The so-called shortages in the care sector workforce provide a telling example of the nuances around the definition of skills shortage. As discussed in some detail in Box 2, a myriad of factors impact upon the attraction and retention of workers to the early childhood education and care sector, including low pay, job security, staffing regulations and funding. The aged care sector faces similar challenges (CEDA 2021). A simple increase in the supply of workers, say through immigration, is not going solve all these issues.

In discussing the meaning of skills shortages, we noted the need to have reference to competitive wage rates and associated conditions. It makes little sense to talk of shortages or 'hard to fill vacancies' if the wage on offer is not competitive. While we acknowledge pay rates are not the only motivator for workers, they are reflective of how work is valued by the economy and society. To look at wage rates in the care sector, we estimated a random-effects wage equation using 2001 to 2020 panel data from the HILDA survey of the form:

(1) $Ln(Y_{it}) = \alpha + \beta X_{it} + \gamma E_{it}^{care} + \sigma_i + \varepsilon_{it}$

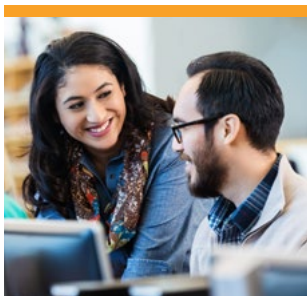
where Y_{it} is worker i's real hourly wage in time t, and X_{it} a set of control variables with associated vector of coefficients, β, to be estimated. E_{it}^{care} is a dummy variable indicating whether the individual was working in the care sector in year t, and the estimate of the coefficient γ denotes any wage premium or penalty associated with working in that sector. The individual control variables include a time trend, gender, age and age-squared, years of completed education, marital status, having a disability, part-time status, migrant status, and years of prior work experience and its quadratic. Hourly wages in each year are indexed to current (2020) dollars using the consumer price index.

A person was classified as working in the care sector if they were employed in the industry categories of preschool education, childcare services or residential care services. The wage equation estimated for the full 2001-2020 period reveals a gender gap in hourly earnings of 10.5 per cent in favour of men, and a penalty associated with working in the care sector of 4.0 per cent, with both estimates highly significant in the statistical sense. However, as is well known, these sectors are highly female dominated: based on 2016 ABS census data, 96 per cent of workers in preschool education are female, 94 per cent in childcare services, and 83 per cent in residential care services.

Hence, as women, the vast bulk of workers in the care sector earn around 14 per cent lower wages than otherwise similar men of the same age, level of education and years of work experience. They also earn 4.0 per cent lower wages than otherwise similar women. Including separate dummy variables for each of the three care industries reveals the 4.0 per cent wage penalty associated with the care sector is most pronounced for the childcare industry (a penalty of 7.6 per cent) and aged care (2.3 per cent), and was insignificant for preschool education.

To test if there had been any improvement in care sector wages over time, wage equations were estimated separately for the two periods of 2001 to 2010 and 2011 to 2020. We observe a marginal increase in the overall gender wage gap, and modest fall in the wage penalty associated with working in the care sector: from 5.4 per cent in the first decade to 3.6 per cent in the second. In both periods, the estimated penalty remains highest in the childcare industry (falling from 9.4 per cent to 8.1 per cent). Encouragingly, earnings in preschool education were on par with other industries for 2011-20, although of course the majority still faced the overall gender pay gap.

Generally, however, it seems long held concerns of acute skills shortages in the care sector have not been sufficient to invoke a rise in wages to competitive levels for workers given their skill levels. By and large, wages in the care sector are not determined by competitive market pricing of the services workers provide, but rather by funding formulae and decisions set by government. Despite the recognised externalities in the form of facilitating increased labour force participation by parents and carers, the typical care worker has hourly earnings around one-sixth that of a similarly educated and experienced male working in other industries. It's hard to escape the conclusion that these sectors are lowly paid, at least in part, *because* they are female dominated, and society is reluctant to value caring roles undertaken by women on an equal monetary footing to other economic activities.



Long held concerns of acute skills shortages in the care sector have not been sufficient to invoke a rise in wages to competitive levels for workers given their skill levels.

Box 2: Tackling workforce challenges to boost early education and care

Increasing access to affordable and reliable childcare services has been advanced as the biggest way to boost participation rates to address current labour market shortages.[12] While more childcare is clearly on the agenda for the National Jobs & Skills Summit, there are significant workforce retention and recruitment challenges that must be addressed to increase care places to enable more women to return to work or increase their hours.

Jobs & Skills WA has extended half price vocational training courses for a Certificate III in Early Childhood Education and Care, or a Diploma of Early Childhood Education and Care.[13] An estimated 40,000 additional early educators will be needed by 2023. While more workers are needed and we are currently not training enough students to meet our growing workforce needs,[14] more trainees alone will not solve this problem.

Childcare may appear an archetypal example of a skills shortage, however there are systemic issues with low wages, increasing regulatory demands and insecure work that mean many skilled workers are leaving the sector. Unless we can retain and bring back more skilled and experienced workers, we lack the capacity to take on, train and supervise more new graduates and meet mandated staffing ratios.

Hence childcare is a great case study of how we need to look beyond a one-dimensional analysis of 'skills shortages' or 'worker shortages' to take a more nuanced approach to addressing systemic issues to improve retention and increase childcare places.

While many young people have a calling to early education and care, wages and conditions need to be competitive for them to go on to make it their career. Pay rates are low, funding models and attendance rates have led to an increased reliance on insecure employment arrangements that increase financial stress and leave workers feeling undervalued.

TAFE or university-based training also only gets you so far in a profession that is very-much relational work, and much more on-the-job training is needed to attain a level of competency. Many new graduates find the experience of trying to 'manage' a room full of small, energetic, demanding little people overwhelming, leading to high early drop-out rates.

12 For example, https://www.smh.com.au/politics/federal/jobs-summit-needs-to-solve-childcare-crisis-to-tap-into-workforce-of-women-20220812-p5b9gs.html, https://www.afr.com/politics/federal/chalmers-sets-ground-rules-for-jobs-and-skills-summit-20220817-p5bahb. See also Treasury Jobs & Skills Issues Paper https://treasury.gov.au/publication/2022-302672

13 https://www.jobsandskills.wa.gov.au/pathways#early-childhood-education-and-care-job-ready-program.

14 https://thrivebyfive.org.au/news/the-parenthood-jobs-and-skills-summit-must-address-workforce-crisis-in-early-childhood-education-and-care/.

Increased regulatory requirements aimed at ensuring service quality have increased the administrative burden, while mandated ratios for higher qualified staff have been leading to closures of rooms and entire services due to staffing issues, particularly in the regions. While some mining companies are helping to set up childcare services to address their workforce barriers in the north-west, childcare workers don't make enough to rent in town. And we still hear stories of them being poached to go and drive trucks.

An immediate boost to salaries with a clear signal that structural reform is underway to better value skilled workers would go a long way to attract back an experienced workforce to the sector in the short-term. Early education and care can offer more promising career options, increasing responsibility and remuneration over time with increased mentoring and supervision roles delivering much-needed on-the-job training.

In the medium term more work is needed on funding and regulatory reform to better ensure both service viability and care quality, particularly for services in regional and remote areas, or those supporting more disadvantaged populations. We need to see more in-reach from training and professional development providers backed with some targeted resourcing to up-skill experienced and capable staff to take on broader roles. The Victorian Government has developed an innovative accelerated teaching course for experienced educators in early learning that could serve as a model to 'grow the pipeline' of teachers in this state.[15]

We prefer the language of 'quality early childhood education and care' to 'childcare', to avoid any implication that childcare should be about the cheapest cost child-minding to enable women's workforce participation. This recognises the role of early years services in social and emotional development and self-regulation during the critical first five years of life, where the majority of brain development occurs. Policy and funding need to balance early development outcomes and workforce participation to deliver the best productivity and community wellbeing outcomes in the longer term.

Those currently excluded from the workforce face systemic barriers to sourcing accessible and affordable childcare. Single parents seeking work are often caught in a Catch 22 scenario, where they need sufficient hours of reliable care to enter the workforce, but approval processes and waiting lists often mean that by the time they can secure care they have missed the job offer. Single mothers have the highest rates of going into and coming out of part-time work of any group on income support – due to problems securing care. Free access to quality early learning and care is arguably the single biggest thing that can be done to address early developmental vulnerability and deliver lifelong wellbeing outcomes. Happy and well-regulated kids make for a skilled and productive future workforce – it is a high return investment with a long lead time.[16]

15 https://www.vic.gov.au/innovative-early-childhood-teaching-courses.

16 https://bcec.edu.au/publications/the-early-years-investing-in-our-future.

Western Australia faces challenges ensuring its early education and care system is fit-for-purpose. The system is complex, compounded by the split between subsidised pre-school services delivered by the education system and the community-based care services needed to fill the gap between the care hours and parental work commitments.

WA has signed up to and is consulting on the National Preschool Reform Funding Agreement,[17] but now faces a significant policy challenge to meet the KPIs committed to. In 2020 there were 34,000 children enrolled for 600 hours of ECEC in the year before school, of which only 23,400 or 70 per cent attended the full 600 hours. 76 per cent enrolled in preschool only, 3 per cent in long day care only, and 22 per cent in both. Only 59 per cent of those enrolled in state preschool met the target of 600 hours.[18] In other words, parents are relying on access to unfunded long day care to enable workforce participation, and the State now also needs after school care to meet its KPIs. Meanwhile enrolments in long day care have risen 44 per cent and those enrolling in both by 28 per cent since 2017.

Increasing workforce participation can deliver an economic advantage and boost WA's productivity, supporting diversification of the economy over the longer term. Other states are investing heavily in early education and care independent of Commonwealth arrangements,[19] with per capita grants to support participation, teacher supplements to promote pay parity, and targeted assistance for disadvantaged areas and vulnerable cohorts. If we wish to remain competitive, we need to look at effective measures and initiatives in other jurisdictions to see what can be adapted or adopted to deliver better outcomes for children and families.

17 https://www.dese.gov.au/child-care-package/preschool/preschool-reform-funding-agreement.

18 ABS 4240.0 Preschool Education Australia (2020) Table 28.

19 https://earlychildhood.qld.gov.au/news/educators/new-kindy-funding-reform-package-for-queensland; https://www.education.sa.gov.au/working-us/service-providers/apply-non-government-preschool-providers-funding; https://ministers.dese.gov.au/robert/historic-agreement-secures-840-million-preschool-funding-nsw-families; https://www.education.vic.gov.au/childhood/providers/funding/Pages/kinderdatacollection.aspx; https://www.education.vic.gov.au/childhood/Pages/Kindergarten-Workforce.aspx; https://www.education.act.gov.au/early-childhood/set-up-for-success-an-early-childhood-strategy-for-the-act/quality-early-childhood-education-for-three-year-olds; https://www.premier.tas.gov.au/releases/working_together_helping_transition_to_kindergarten.

CULTURAL CONTEXT OF FEMALE LABOUR FORCE PARTICIPATION

It is evident in the previous section that parenthood appears to constrain female labour force participation in important ways. A significant proportion of prime age females who are not in the labour force are engaged in childcare and childcare affordability remains a concern for the majority of individuals who have used or sought to use paid childcare services.

Highly gendered norms around parenthood and childcare may pose further constraints on mothers' labour force participation. Combining work with parenting may be a challenging task, and a question that some parents may ask is whether work may affect their quality of parenting and their child's development. If these work-parenthood trade-offs are a bigger concern for mothers than fathers, then they might have larger implications for mothers' labour supply. Alternatively, mothers may be more sensitive to such perceived trade-offs in their labour supply decisions relative to fathers, given the gendered expectations of parenting roles.

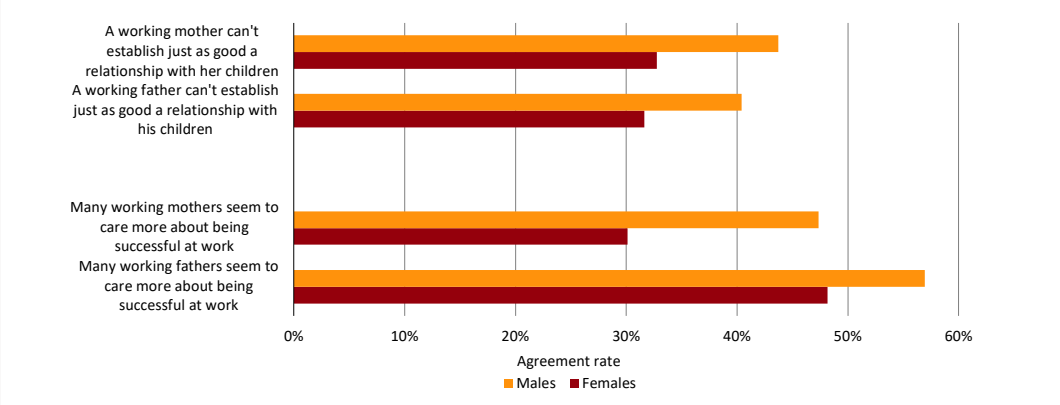
Figure 30 demonstrates that a significant proportion of males and females believe that work may have adverse implications for the quality of parenting. However, such perceptions of work-parenthood trade-offs are more common among males than females. Nearly 44 per cent of males and 33 per cent of females surveyed in 2019 agreed that a working mother cannot establish just as good a relationship with her children as a mother who does not work for pay. The views on work-fatherhood trade-offs follow a similar pattern: 40 per cent of males and 32 per cent of females agreed that a working father cannot establish just as good a relationship with his children as a father who does not work for pay.

Many also tend to think that working parents care more about being successful at work than meeting the needs of their children. Over 47 per cent of males and 30 per cent of females subscribe to the view that many working mothers seem to care more about being successful at work than meeting the needs of their children. Thinking of fatherhood, 57 per cent of males and 48 per cent of females support the view that many working fathers seem to care more about being successful at work than meeting the needs of their children.

Combining work with parenting may be a challenging task, and a question that some parents may ask is whether work may affect their quality of parenting and their child's development.

FIGURE 30

Beliefs on work and parenthood trade-offs by gender, Australia, 2019



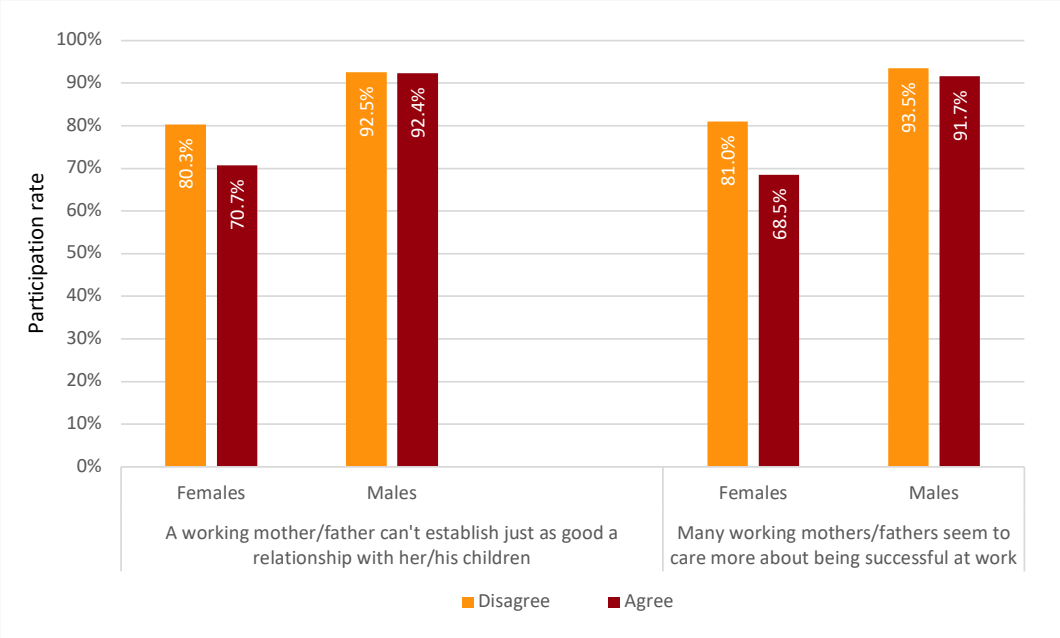
Notes: The sample is restricted to parents aged 25-54.
Source: Bankwest Curtin Economics Centre | Authors' calculations from HILDA 2020.

The perceptions of work and parenthood trade-offs appear to constrain the labour force participation of females but not males.

Do these perceptions on work and parenthood trade-offs have implications for labour force participation of females and males? When we look at labour force participation rates for those who hold these beliefs in Figure 31, we see that the perceptions of work and parenthood trade-offs appear to constrain the labour force participation of females but not males. In the population of prime-age mothers, labour force participation is at 80 per cent for those who disagree with the statement that a working mother can't establish just as good a relationship with her children as a mother who does not work for pay, and 70 per cent for those who agree with it – a difference of 10 percentage points. Similarly, labour force participation is at 81 per cent for mothers who disagree with the statement that mothers seem to care more about being successful at work than meeting the needs of their children and at 68 per cent for those who agree with it – a difference of 13 percentage points. However, there are no tangible differences in participation rates of fathers regardless of whether they support the views on work and fatherhood trade-offs. In sum, mothers appear to be more sensitive to perceived work and parenthood trade-offs in their labour supply decisions relative to fathers, and this is likely due to the gendered expectations of parenting roles.

FIGURE 31

Participation rates by beliefs on work and parenthood trade-offs by gender, Australia, 2019



Notes: The sample is restricted to parents aged 25-54. Female participation rates are calculated with reference to beliefs on work and motherhood trade-offs and male participation rates are calculated with reference to beliefs on work and fatherhood trade-offs.
Source: Bankwest Curtin Economics Centre | Authors' calculations from HILDA 2020.

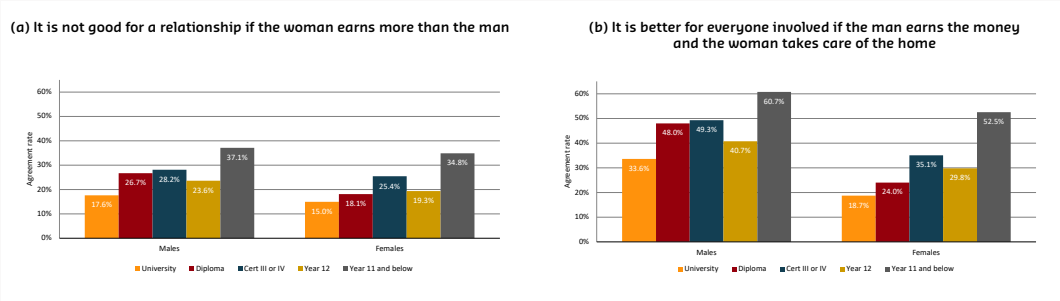
Male breadwinner biased family norms may serve to further discourage female participation. But how common are these norms in our society? Figure 32 shows that they are rather common but vary significantly by educational attainment. Only 17 per cent of university-educated males versus 37 per cent of males with an educational attainment of Year 11 or below tend to believe that it is not good for a relationship if the woman earns more than the man. A similar pattern is observed for females (15 per cent versus 35 per cent – also a gap of 20 percentage points).

More strikingly, 19 per cent of university-educated females and over half of the females (53 per cent) with Year 11 or below educational attainment subscribe to the view that it is better for everyone involved if the man earns the money and the woman takes care of the home and children. Similar attitudes are also held by 34 per cent of university-educated males and 61 per cent of males with an educational attainment of Year 11 or below.

Male breadwinner biased family norms may serve to further discourage female participation.

FIGURE 32

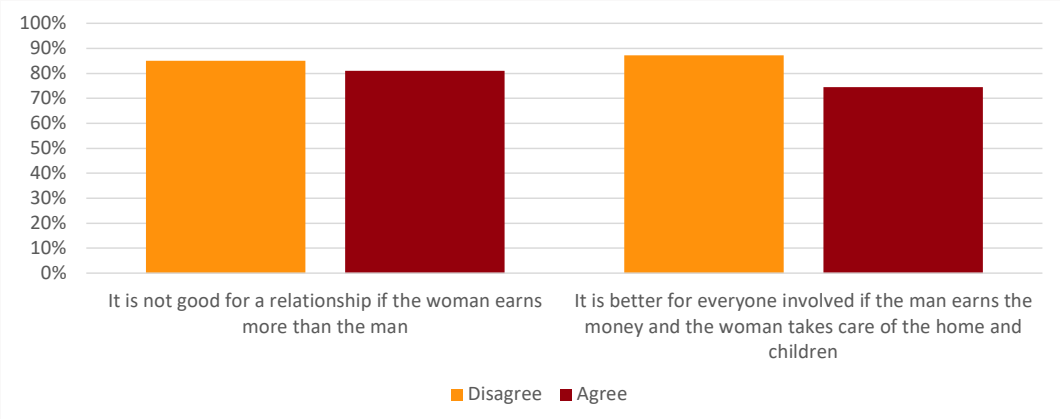
Male breadwinner bias by gender and educational attainment, Australia, 2019



Source: Bankwest Curtin Economics Centre | Authors' calculations from HILDA 2020.

FIGURE 33

Male breadwinner bias and female labour force participation, Australia, 2019

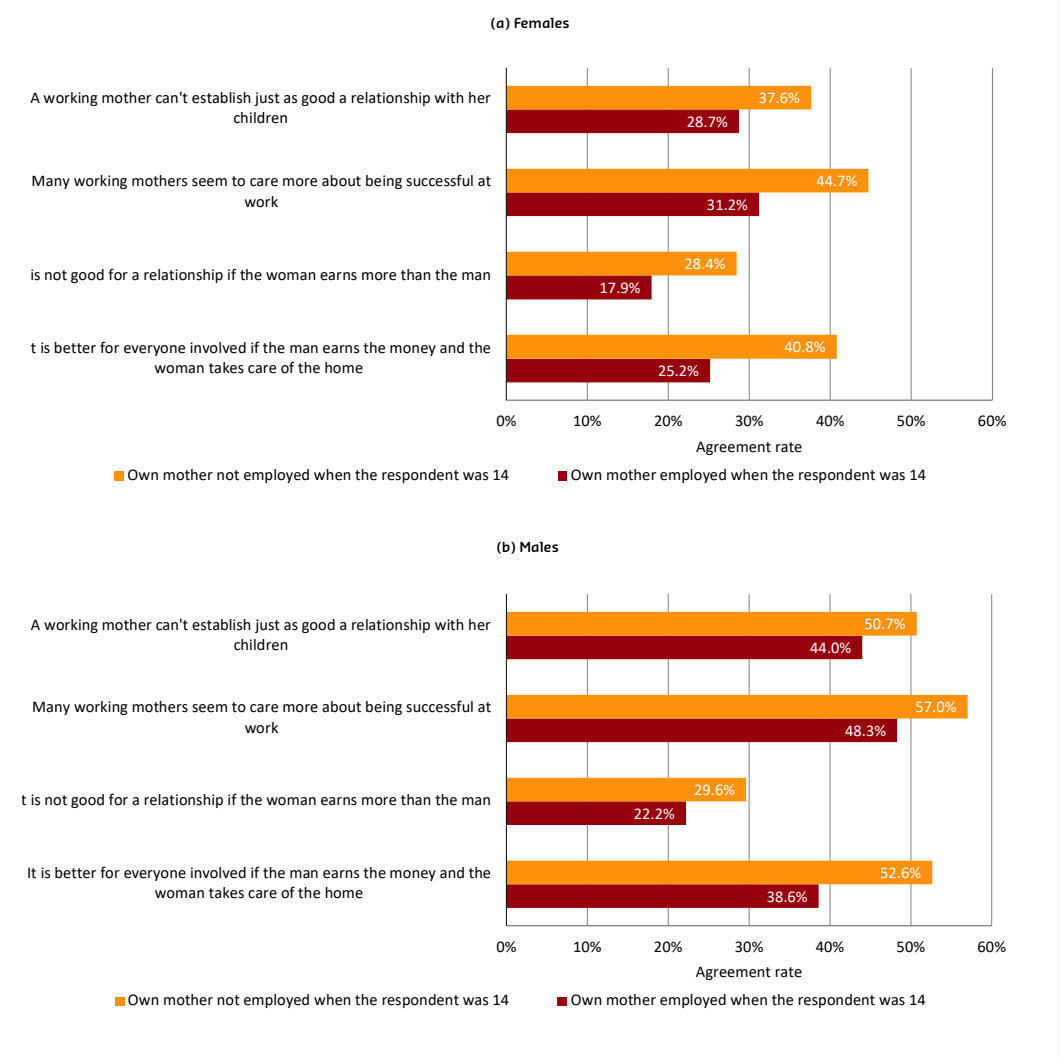


Notes: The sample is restricted to females aged 25-54 who are in couple households.
Source: Bankwest Curtin Economics Centre | Authors' calculations from HILDA 2020.

Male breadwinner bias does appear to shape the patterns of female labour force participation, as seen in Figure 33. Labour force participation is at 87 per cent for prime-age females who disagree with the statement "it is better for everyone involved if the man earns the money and the woman takes care of the home and children," while it is under 75 per cent for those who support the statement – a gap of 12 percentage points.

FIGURE 34

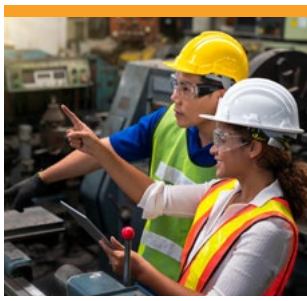
Beliefs on women's work by gender and own mother's work status when growing up, Australia, 2019



Source: Bankwest Curtin Economics Centre | Authors' calculations from HILDA 2020.

It can be seen from Figure 32 that education is a source of differences in gender biased norms that constrain female labour force participation. In particular, with an increase in educational attainment, there is a decrease in the share of individuals who support the beliefs discouraging female participation. Vertical socialisation between parents and children is one of the key sources of cultural transmission (Cavali-Sforza and Feldman 1981). We explore whether having grown up with a working mother has implications for the nature of beliefs on women's work held by individuals. Figure 34 shows that it clearly has. Nearly 41 per cent of females whose mother was not employed support the statement that it is better for everyone involved if the man earns the money and the woman takes care of the home and children, compared to only 25 per cent agreement rate among women who grew up with a working mother.

Having grown up with a working mother shapes males' views on women's work in tangible ways too. Nearly 53 per cent of males whose mother didn't work and 39 per cent of males whose mother did work support the statement that it is better for everyone involved if the man earns the money and the woman takes care of the home.



Nearly 41 per cent of females whose mother wasn't employed support the statement that it is better for everyone involved if the man earns the money and the woman takes care of the home and children, compared to 25 per cent agreement rate among women who grew up with a working mother.

SUMMARY

This chapter has shown that, in spite of significant improvements over time, female labour force participation still remains significantly lower compared to male labour force participation. In WA, there is a 10 percentage point difference in participation rates between men and women. This represents a significant proportion of the working age population who are currently excluded from the workforce and hence a significant opportunity to increase participation and productivity. Closing the gender participation gap could play a critical role in national efforts to address the current skills shortage, yet our analysis suggests that there are significant barriers to women's entry to the labour force that need to be addressed to enable this to occur.

Firstly, childcare appears to constrain female labour force participation in important ways. Over 44 per cent of females and only 6.5 per cent of males who are of 25-44 years of age and not in the labour force are engaged in caring for children. Nearly 34 per cent of females who wanted to and were available to work, yet are not actively looking for work, aren't doing so because of family reasons, childcare being the most important one of these. Childcare costs are seen as a significant problem by the majority of individuals who used or thought about using paid childcare. Yet, childcare prices remain extremely high. Our analysis suggests that initiatives like Federal Labor's election commitment for $5 billion in funding for childcare (coming into effect next year) can play a key role in enabling more women to enter the labour force – if we are able to address some of the emerging challenges to childcare access, affordability and workforce retention. Other family caring responsibilities (increasingly including caring for parents as our population ages, as well as assisting family members living with a disability) are also barriers to participation that can be addressed by better access to trusted services and supports.

Secondly, our analysis shows that gender biased norms on attitudes to women's work are an additional barrier constraining female labour force participation. A significant share of the population perceives that work and parenthood trade-offs are problematic for family wellbeing. Such views question whether working mothers and fathers can have good relationships with their children in the same way that their non-working counterparts do, or if working means they cannot dedicate sufficient attention to their parenting roles. While the presence of such perceptions of trade-offs significantly affects female participation, it appears to have no implication on male participation rates. Our analysis suggest that education and parental socialisation contribute to shaping the norms on women's work. We show that with increased educational attainment, there is a decrease in the prevalence of gender biased norms. Furthermore, experience makes a big difference, with the prevalence of such norms much lower among individuals who have grown up with a working mother, highlighting the significance of parental socialisation in the transmission of gender-based work norms.

INDIVIDUAL LABOUR MOBILITY

INTRODUCTION

In this section we analyse the factors that promote or prevent individuals and families relocating as a mechanism of labour market adjustment. To do so, we utilise 20 years of panel data from the Household, Income and Labour Dynamics in Australia survey (HILDA), which commenced in 2001. For all responding individuals in the dataset from 2001 to 2019, we can observe whether or not they had moved from their current address to a different state or territory in the following wave (i.e. up to 2020). We model interstate mobility primarily due to the greater availability of data at the state/territory level on differentials in employment opportunity and housing prices between a person's current place of residence and possible destinations. While we are equally interested in smaller area mobility in response to employment opportunity or skills shortages, we anticipate that many of the same factors conducive to mobility, or which act as barriers to mobility, will apply to both interstate and regional mobility.

State and territory unemployment rates are used as the key measure of differences in employment opportunity. Admittedly these are imperfect, and will not capture some nuances of differences in employment opportunity by smaller regional levels and by occupation or industry. However, they are considered the best available indicator of differences in labour market conditions facing workers in different states. We also use the ABS established house price indices for the eight capital cities, again as imperfect but best available proxies for differences in the relative housing costs facing people in each state and territory.[20] The HILDA sample is restricted to persons aged from 15 to 64 to focus on those of working age.

One challenge in modelling mobility decisions at the individual level is that many of those decisions are made at the household or couple level. If we observe an individual relocate and that individual is part of a couple, the characteristics of the individual's partner may have been more important in determining that decision to move than the individual's own characteristics. This may be particularly relevant to labour force characteristics, where the decision to relocate due to employment opportunity may relate to employment opportunity of one member of the couple only, such as an interstate job offer. To deal with this, we control for marital status along with the labour force status of individuals' partners, where applicable. This is in the form of a series of three dummy variables indicating whether the person is married with partner in full-time employment, married with partner in part-time employment, and married with non-working partner. Models are estimated for the full population, and separately for males and females to account for differential effects of variables by gender. We also estimate separate models by labour force status, primarily to contrast the incentives to relocate for the unemployed with those for people in work.

Initially we estimate a 'national model' of the probability of a person from any state or territory moving to a different state or territory. We then explore the determinants of movements to specific states, with a focus on differences in the effects associated with moving to Western Australia.

20 ABS Catalogue 6416.0, Residential property price indexes: eight capital cities.

A NATIONAL MODEL

Initially, the probability of a person from anywhere in Australia moving interstate is modelled. Our observations and associated explanatory variables are on individuals at a given time *t* (*t*=2001 to 2019), and the dependent variable is an indicator of whether the individual had moved to a different state by the following year's survey (i.e. at time *t*+1). We model individual (supply side) effects as well as two characteristics of the initial state or residence: relative employment opportunity and housing prices. Specifically, a panel version of the logistic model is estimated of the form:

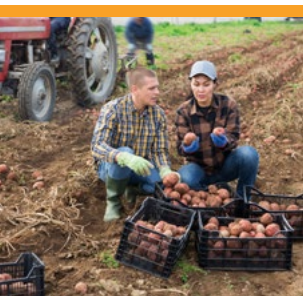
(2) $$\log \frac{P(M_{it})}{1 - P(M_{it})} = \alpha + \beta X_{it} + \gamma E_{it} + \delta H_{it} + \sigma_i + \varepsilon_{it}$$

Where $P(M_{it})$ is the probability that individual i observed at time *t* moves to a different state or territory by *t*+1 (the following year). E represents relative employment opportunity, H relative housing prices and X a vector of individual characteristics. Employment opportunity and housing prices take on state and time specific values - they are the same for all persons in a given state and given year. X includes a series of dummy variables denoting the state or territory the individual is located in at time *t*. Full regression results for the national model can be found in the Appendix.

The variable capturing the effect of employment opportunity is specified as the unemployment rate in the individual's initial home state minus the national unemployment rate. This relative unemployment rate variable would have a positive effect on the chance of moving if people are responding to employment opportunities. That is, people in a state or territory with high relative unemployment in time *t* should be more likely to move out of that state.

House prices are entered into the model as the established house price index in the individual's home state minus 100, noting that by construction the weighted average for the indices across all eight capital cities equals 100. In 2019, for example, the established house price index in Sydney was 117. Hence, the relative house price variable for individuals in NSW in 2019 equals 117-100=17, and reflects that established house prices in Sydney were 17 per cent above the average across the capital cities. In the same year, the index for Perth stood at 69, so the relative house price variable takes on a value of 69-100=-31 for WA residents.

On average, 1.7 per cent of individuals are observed to change their state of residence each year. Selected results are presented in Figure 35 in the form of odds ratios. For sets of mutually exclusive dummy variables, the darker bar denotes the comparison category. The interpretation of the odds ratio is in relation to a value of 1: an odds ratio below 1 indicates the variable is associated with a lower probability of moving interstate relative to the comparison category. For example, people in Queensland (odds ratio =0.82) are estimated to have an 18 per cent lower probability of moving than people in NSW (0.82-1.00=-0.18). An odds ratio above a value of 1 indicates the variable is associated with a higher probability of moving. For example, people living in outer regional or remote areas of their state (odds ratio=1.85) are estimated to be 85 per cent more likely to move interstate than residents of a major capital city (1.85-1.00=0.85). For the two continuous variables, the relative unemployment rate and relative housing prices, the depicted odds ratio relates to a the estimated effect of a 1 standard deviation in the variable.



People respond to employment opportunity. A one percentage point increase in a state's unemployment rate relative to the national rate, increases the chance a persons will move out of that state by 14 per cent.

Because housing prices tend to fall when unemployment is high, this typically negates around 40 per cent of the incentive to move out of a state in response to rising unemployment rates.

In terms of labour market opportunity, that movement does appear to respond to employment opportunity to some degree. First, for every one percentage point higher the unemployment rate in a state, relative to the national average, individuals are estimated to be 14 per cent more likely to move out of that state and the estimate is highly significant ($p<0.01$)[21]. Second, persons who are not employed are around 25 per cent more likely to move relative to those in employment. This applies to those who are not in the labour force and those who are unemployed, and the effects are highly significant in both cases.

Higher housing prices do promote out-migration. The estimate is moderately significant and gives an odds ratio of 1.01. This corresponds to a 1 per cent increase in the probability of moving interstate for every 1 per cent higher local established house prices relative to the national average. While this may seem a small effect, it should be noted that there is considerable variation in relative house prices between the states. Within our sample, the standard deviation of the relative unemployment rate is just 0.61, compared to 12.0 for relative house prices. This means that unemployment rate differentials and housing price differentials in the home state account for quite similar proportions of the variation in the probability of moving interstate. Moreover, there is a highly significant and negative correlation between these two variables in the data of -0.45: when the unemployment rate in a state goes down house prices tend to go up, and vice versa. The coefficients suggest that falling house prices negate around 40 per cent of out-migration associated with rising unemployment.

A number of individual characteristics also have important effects on mobility. These are:

- People who are renters, as opposed to home-owners are 2-3 times more likely to move, after controlling for other differences in characteristics. Hence, home ownership is a very significant barrier to mobility.
- Mobility increases substantially with an individual's level of education. Compared to someone who did not complete Year 12, those with a university degree or higher qualifications are around twice as likely to move. Those who completed Year 12 and/or hold trade or diploma qualifications are also substantially more mobile that those who did not complete Year 12. This likely reflects the higher potential pay-off to moving for work purposes relative to the costs for more highly qualified workers.
- Young adults aged 15 to 34 are the most mobile and mobility declines steadily with age. People aged 55-64 have around one-quarter of the propensity to move as that younger cohort.
- Being married with a partner who is in full-time employment reduces the likelihood a person is observed to move. Compared to people who are single or married with a partner who is not working, having a spouse in full-time employment reduces the likelihood of moving interstate by around one-fifth.
- Having dependent children reduces the likelihood of moving by around one-third.

[21] We use the term highly significant to indicate there is less than a 1 per cent probability (ie. $p<0.01$) that we would observe an estimate of this magnitude when the true effect is zero. That is to say, we can confidently reject the null hypothesis of no relationship between the variables. We refer to moderate significance and weakly significance where the null hypothesis can be rejected at the 5 per cent level ($p<0.05$) and ten per cent level ($p<0.10$), respectively.

In our sample, 0.8 per cent of homeowners are observed to move each year, compared to 3.2 per cent of renters. This is interesting in light of an enduring debate in economics on the potential role of homeownership on aggregate rates of unemployment, and ongoing Australian debates over stamp duty. In a series of papers, Oswald (1996, 1997, 1999) has argued that higher homeownership rates increase the underlying rate of unemployment in the economy, due to three effects: the higher cost of relocating means that homeowners are less likely to move to accept job offers; commuting times increase for homeowners as they are less likely than renters to move to be closer to work, which increases the cost of jobs; and more restrictive planning regulations in areas where there is a high proportion of homeownership restricts local commercial development and associated job creation. Oswald's earlier empirical work related to European countries, while Blanchflower and Oswald (2013) analyse data for US states to show increased homeownership is associated with lower mobility, and estimate that, in aggregate, a long-run effect in which "a doubling of home-ownership in a state would be associated in the steady state with more than a doubling of the unemployment rate." (2013: 19). It should be noted that a number of studies have not supported Oswald's hypothesis (see Kantor *et al.* 2015, Sari 2015).

Many Australian economists have argued stamp duty on housing is a highly inefficient form of taxation that reduces labour mobility and leads to people remaining in inappropriate housing (see, for example, Deloitte Access Economics 2015). Our results do confirm the much lower mobility of homeowners, consistent with Oswald's hypothesised link between homeownership and unemployment rates, but we are unable to say exactly how much of that relationship is attributable to stamp duty. However, with stamp duty on a median priced house in Perth currently around $20,000, it is unlikely to be trivial.[21]

A range of other regional effects are also apparent. Residents of Victoria are estimated to be the least likely to move state, followed by Queensland. People in NSW, SA, WA, and Tasmania all have a broadly similar propensity. Those in the two territories are highly mobile, with almost four times the likelihood of changing state or territory relative to those in NSW. Given the populations of the two territories are not declining, this indicates a high level of interstate flows both into and out of the two territories. Note these are state-specific effects after allowing for other variables, such as relative unemployment rates and housing prices. Within states and territories, those living outside the major capital cities are more mobile, with those living in outer regional and remote areas the most likely to move.

The estimated effects of these variables on the propensity to move interstate are generally very similar for males and females. An exception is that the high propensity to move for people living in the two territories is more pronounced for women. Mobility also seems to increase more steeply with men's level of qualifications than with women's, suggesting men's employment prospects having a stronger influence in determining joint household decisions to relocate.

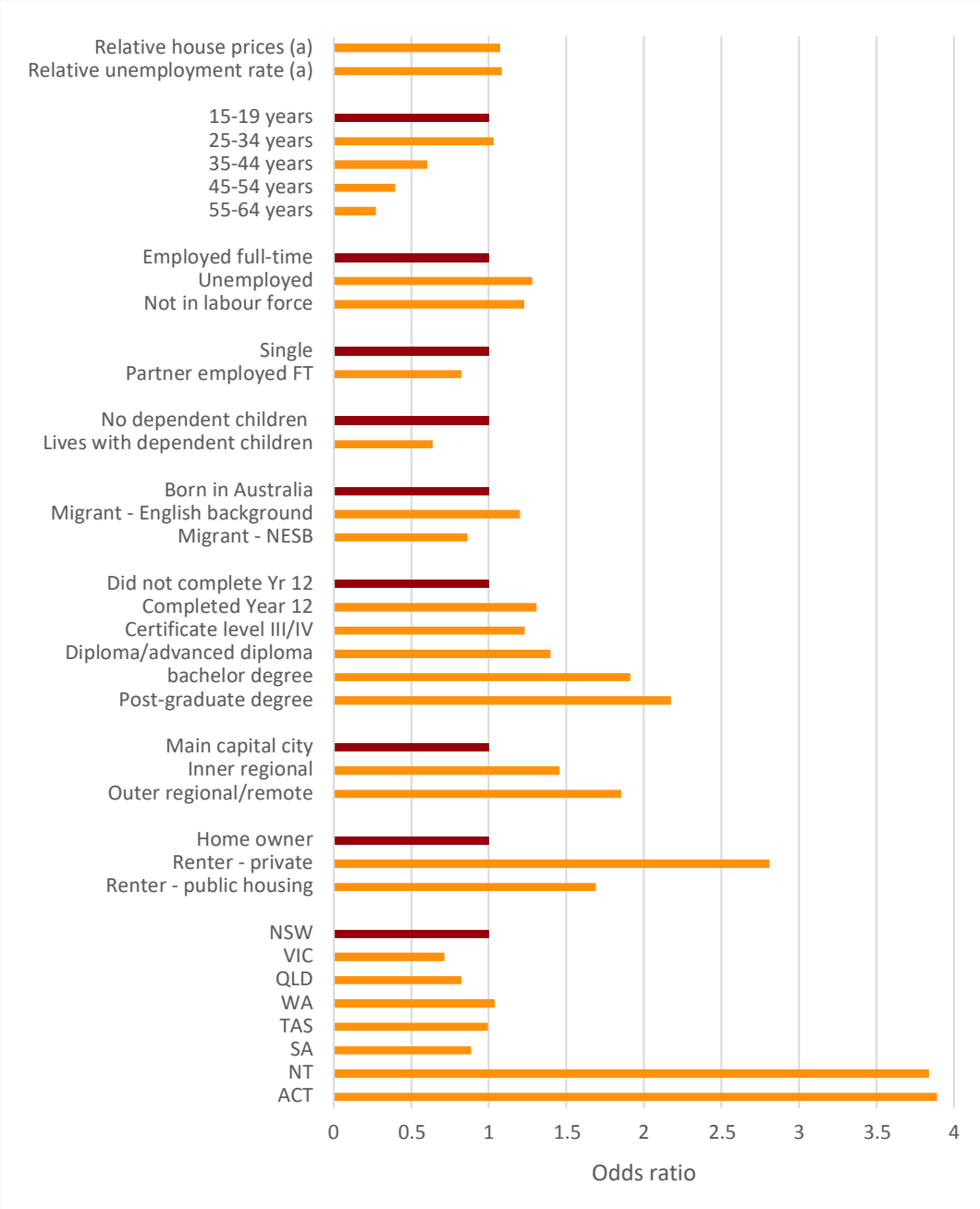
Mobility declines steadily with age. People aged 55-64 are around one-quarter as likely to move as 15 to 34 year-olds. Mobility increases substantially with educational attainment.

Homeownership significantly limits mobility. Renters are 2-3 times more likely to move interstate than a homeowner.

22 Based on median house price of $525,750 in July 2022: https://reiwa.com.au/about-us/news/perth-median-price-likely-to-stay-the-most-affordable-in-australia-for-some-time/.

FIGURE 35

Effects of characteristics on probability of moving interstate - selected odds ratios



Notes: (a) denotes continuous variable, with odds ratio relating to the effect of a one standard deviation increase.
Source: Bankwest Curtin Economics Centre | Authors' calculations based on HILDA survey, Waves 1-20.

MOBILITY BY LABOUR FORCE STATUS

The results above suggest that Australians' interstate movements are generally in line with employment opportunity. People are more likely to move out of states with a relatively high unemployment rate, and people without a job are more likely to move. The role of labour market opportunity as a driver of mobility can be further investigated more directly by looking at the mobility of people who are and who are not in employment. We do this by estimating the model separately for the samples of people working full-time, people working part-time, the unemployed, and those not actively participating in the labour force.

The sample averages are consistent with the unemployed being markedly more mobile. In our pooled sample, 2.2 per cent of unemployed people changed state each year, compared to close to 1.5 per cent for each of the other labour markets states (employed full-time, employed-part-time and not in the labour force – see Table 6). However, estimates from the multivariate models find limited evidence that those out of work tend to move out of states or territories with high relative unemployment rates. In fact, a statistically significant effect of the unemployment rate differential is observed only for people in part-time work. The estimates for part-time workers indicate that each 1 percentage point increase in the unemployment rate in the individual's home state is associated with a 24 per cent higher probability they will move to another state. The estimated effect of the relative unemployment rate is highest for the unemployed (odds ratio 1.27), but we cannot reject the hypothesis of no effect at accepted levels of confidence. Note the sample available for estimation for the model for unemployed persons is much smaller, although still sizeable at around 9,500 observations. The number of repeat observations on individuals is considerably reduced, as relatively few people in the HILDA sample remain in unemployment in repeated years, limiting the capacity to control for individual specific effects.

The estimated effect of differentials in housing prices on mobility is also highest for the unemployed. In contrast to the relative unemployment rate, however, this estimate is highly significant. For each 1 per cent increase in housing prices in an unemployed person's home state, their likelihood of moving out of that state increases by 2.6 per cent. For argument's sake, let's accept the estimate of the effect of unemployment rate differentials for the unemployed to be the true value (odds ratio=1.27). Given the negative correlation between states' relative unemployment rates and housing prices, the greater responsiveness of the unemployed to housing prices means that the incentive for an unemployed person to move out of a state as it's unemployment rate increases relative to the national unemployment rate is largely offset by the added incentive to stay put created by falling relative house prices. To be precise, the estimates indicate 85 per cent of the effect of an increase in the unemployment rate differential is offset by the associated fall in relative house prices.

The unemployed are more likely to move interstate than people in work, but there is limited evidence that they move to areas of higher employment opportunity.

Incentives for the unemployed to move to a state or territory with a lower unemployment rate are almost completely offset by the effects of higher relative housing costs in those areas.

The observed mobility patterns are consistent with 'poverty traps' in which the unemployed lack the resources to move in response to employment opportunity.

Table 6

Interstate mobility: model estimates by labour force status; Australia

	Labour force status			
	Employed full-time	Employed part-time	Unemployed	Not in the labour force
Average (proportion who move interstate each year)	1.6%	1.4%	2.2%	1.5%
Selected mobility model coefficients: odds ratio (p > z)				
Relative unemployment rate	1.11	1.24**	1.27	1.05
	(0.11)	(0.03)	(0.23)	(0.88)
Relative house prices	1.00	1.01	1.03***	1.01
	(0.35)	(0.23)	(0.01)	(0.31)
Partner's employment status				
No partner (single)	-	-	-	-
Partner employed FT	0.78***	1.01	0.62*	0.79
	(0.00)	(0.93)	(0.07)	(0.13)
Partner employed PT	0.89	0.81	1.02	1.04
	(0.23)	(0.24)	(0.95)	(0.84)
Partner not working	1.02	1.51**	0.94	0.91
	(0.84)	(0.02)	(0.78)	(0.53)

Notes: ***, * * and * indicate the estimate is significant at the 1, 5 and 10 per cent levels, respectively.
Source: Bankwest Curtin Economics Centre | Authors' calculations based on HILDA survey, Waves 1-20.

Not only is the probability of moving in response to unemployment differentials strongest for the part-time employed, but the effect of having a partner who is out of work, compared to those who are single or with working partners, is also the strongest for part-time workers. This increases their probability of relocating by around 50 per cent. This is not observed for those who are unemployed. One would expect an unemployed person who has a partner who is also not working, would have a relatively high incentive to move as, by definition, a person who is classified as unemployed is actively seeking employment.

In terms of labour market adjustment, these patterns of mobility are consistent with the presence of poverty traps, in which the unemployed cannot afford to move to access employment opportunity. Housing affordability is often a central factor in such poverty traps. Higher local unemployment rates or having a partner who is also not working do not act as 'push' factors for the unemployed, in the absence of the financial capacity to move. That they do so for those in part-time work is consistent with part-time workers having the means to relocate to pursue greater employment opportunity. They may also have greater incentives to move through a higher potential pay-off from doing so, due to their stronger existing connection to the labour market.

Those in full-time work, appear relatively insensitive to unemployment or housing price differentials, and those with partners in full-time work are generally less likely to move, indicating reduced incentives to move for individuals employed full-time or living in a household with a full-time worker. As would be anticipated, the interstate mobility of those who are not participating in the labour force (neither working nor looking for work), is also relatively insensitive to employment opportunity.

Other effects are broadly similar for all groups by labour force status, including the declining mobility with age and for those with dependent children, and the markedly higher mobility of those with higher levels of education.

WHO MOVES TO WESTERN AUSTRALIA?

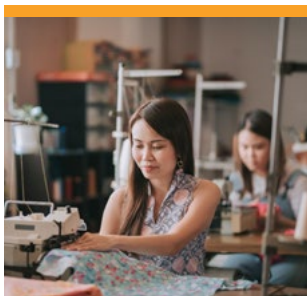
To investigate drivers of interstate migration to Western Australia, we restrict the sample to persons living in the rest of Australia and redefine the dependent variable to equal one if the person is observed to move to WA. In these models, the unemployment differential is defined as the unemployment rate in the person's home state at time *t* minus the rate in WA for that same time. Similarly, the housing price differential is defined relative to WA's established house price index.

With the smaller number of observations, and particularly of observations of people moving to WA, estimates are less precise and fewer estimates are statistically significant. Consequently, we do not report on results from models for moving to WA estimated separately by labour force status. However, the destination-specific model still reveals a number of salient differences in patterns of who moves to Western Australia when compared to more general interstate migration.

First, unemployment differentials are estimated to have a stronger estimated effect than in the national model for interstate migration, although the estimate is not quite significant at the 10 per cent level ($p=0.12$) – people do appear to move to WA in times that the state's unemployment rate is relatively low and from states facing relatively high unemployment rates. Evidence from models estimated separately by gender show this 'pull factor' is driven by a larger effect for males than for females. This contrasts with the results from the national model. The unemployment rate differential necessarily has the same influence on men and women who stay living together as couples, so this result suggests it is particularly single males drawn to employment opportunity in WA. Other results corroborate this interpretation – being married reduces the probability of moving to WA, and the effect is larger than the effect on the probability of moving interstate more generally. Second, being unemployed increases the probability of moving to WA, and this effect is larger than the effect of being unemployed on the general propensity to move interstate observed in the national model.

Relative housing prices do not seem to play a prominent role in the decision to move to WA. We also observe that Western Australian attracts interstate migrants from English speaking backgrounds. The national estimates for all interstate moves show that those born overseas in one of the main English speaking countries are 20 per cent more likely to move interstate than people born in Australia, while migrants from other countries are about 10 per cent less likely to move overall. However, immigrants of English speaking background are estimated to be 70 per cent more likely than the native born to move to WA. Recall these estimates do not relate to where immigrants initially settle when they arrive in Australia, but to decisions to relocate interstate once they have been living in Australia.

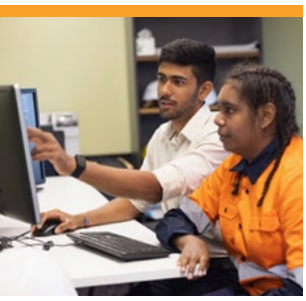
Northern Territory residents have a particularly strong likelihood of moving to Western Australia. People in the ACT are also more likely to move to WA than those from other states, but after accounting for the overall higher mobility of those territorians, the result suggests WA is generally not a preferred destination for people from the ACT. Residents from Victoria and Queensland are the least likely to move to WA, after controlling for differentials in the unemployment rate and housing prices.



Differences in employment opportunity are a significant 'pull factor' in people's decision to move to Western Australia.

Being single, male and having been born overseas in an English speaking country are associated with a higher likelihood of choosing to move to WA.

OTHER STATE EFFECTS



The tendency for Australians to move from regions of high unemployment to regions of low unemployment is driven primarily by people relocating to the two growth states of Queensland and Western Australia.

When models are estimated for each state specific destination, only the model for the likelihood of moving to Queensland displays a positive and significant effect of the relative unemployment rate. The odds ratio suggests a one percentage point higher local unemployment rate relative to Queensland's in a given year increases the probability of moving to Queensland by 18 per cent (odds ratio=1.18, p>0.01). This is a very similar estimate as that obtained in the model for moving to WA although, as noted above, the estimate is not quite significant at the ten per cent level (OR=1.19, p=0.12). The corresponding estimate is small and/or insignificant for all other destinations.[23] This means that the labour market adjustment observed in the national model, in which people tend to move to areas of higher employment opportunity, is essentially driven only by the two growth states of Queensland and WA. Notably, no such effect is observed for the two most populous states of NSW and Victoria.

Common border effects are significant. There are strong flows in both directions between NSW and Queensland; between NSW and the ACT; between Victoria and South Australia, and between the Northern Territory and South Australia. However, the same does not appear to hold for NSW and Victoria. While the absolute number of interstate moves between these states is undoubtedly high given their large populations, they do not display a preference for one another relative to moves to other states or territories.

While WA does have common borders with the NT and South Australia, these are far from any sizeable population centres on either sides of the borders. Compared to other Australians, Western Australians appear to have relatively stronger preferences for moving to Northern Territory and Tasmania. The affinity between WA and the NT may reflect mobility of workers within the mining industry.

Like WA, Queensland attracts people who were born overseas in one of the main English speaking countries, while migrants from non-English speaking backgrounds have a relative preference for moving to New South Wales.

[23] A possible exception of note is the ACT, where the estimated effect is in the opposite direction: the estimate suggests a lower local unemployment rate relative to the ACT's increases the probability of moving there (OR=0.89, p=0.37). This is perhaps unsurprising, given employment opportunity in the ACT is largely divorced from factors shaping labour market conditions around the country.

LABOUR MARKET ADJUSTMENT – TIME SERIES ANALYSIS

INTRODUCTION

The previous chapter takes a 'supply-side' approach by modelling the factors associated with individuals' and families' decisions to move interstate. This chapter provides a different perspective on the processes of labour market adjustment, by modelling aggregate net flows of overseas and interstate migration for Western Australia. The analysis uses quarterly time-series data from 1987 to 2021. We begin the chapter by examining some key patterns and trends in the WA workforce over that period that are salient to the analysis, and a descriptive overview of migration flows into the state. We then explore factors affecting the adjustment process, such as wages, rental vacancy rates, and commodity prices.

25 Various datasets from the ABS, Reserve Bank of Australia and the WA Department of Mines, Industry Regulation and Safety are used. Data collected monthly were aggregated on a quarterly basis. The CPI is used to deflate the commodity prices and wage earnings series to real terms.

WESTERN AUSTRALIA'S LABOUR FORCE

The WA economy has experienced unprecedented growth over the past 35 years, with an influx of skilled labour to the state from overseas and interstate migration, particularly since the mining boom started. From 1986 to 2021, WA's labour force grew significantly from around 0.72 million to 1.50 million people (Figure 36). During this period, the number of employed people increased from about 0.66 million to 1.45 million people. The number of unemployed people has fluctuated, with the highest number of around 0.1 million observed during the economic recession in the early 1990s and the pandemic in 2020.

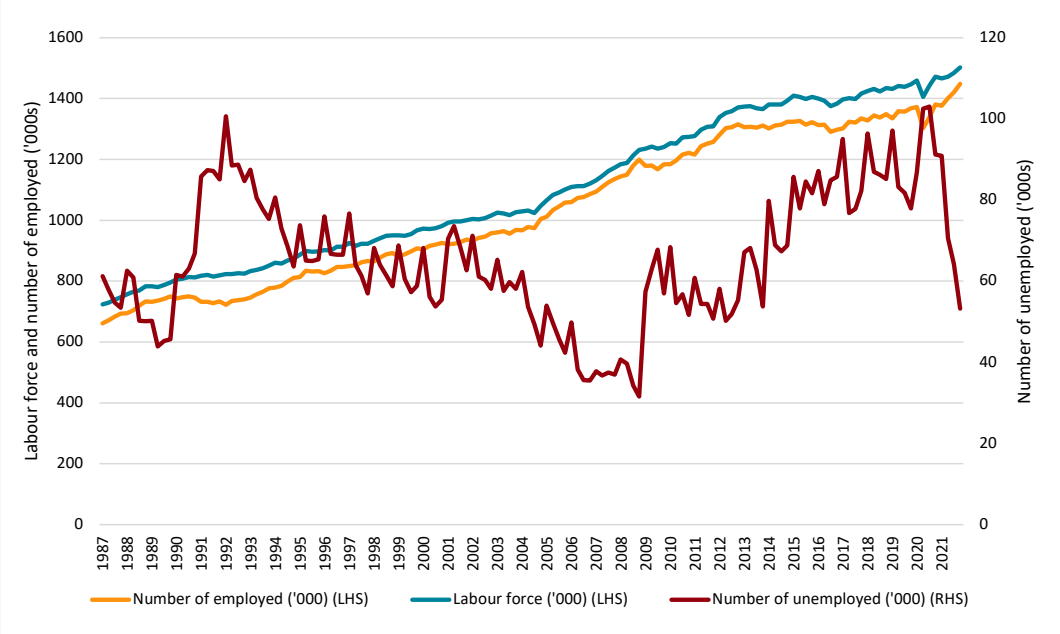
Western Australia has the fourth largest employment in Australia, accounting for around one-fifth of the total national employment, ranking after NSW, Victoria and Queensland. Among Australian states and territories, WA and Queensland are the only two states having observed an overall rising trend in the states' employment proportion to total national employment over the last three decades. Notably, the proportion of WA's employment to total national employment has been slightly higher than that of Queensland's employment during the period from 2012 to 2015.

Looking back over the period of analyses, the unemployment rate in WA was similar to the national rate until 1988, but then fell faster over the period to 2008. The unemployment rate in WA has also been increasing slightly over the past two years due to the pandemic but remains lower than the national average.

The WA workforce has doubled in size in the last three decades.

FIGURE 36

Western Australia's labour force, 1987-2021



Source: Bankwest Curtin Economics Centre |Authors' calculations based on ABS Catalogues 6202.0 Labour Force, Australia.

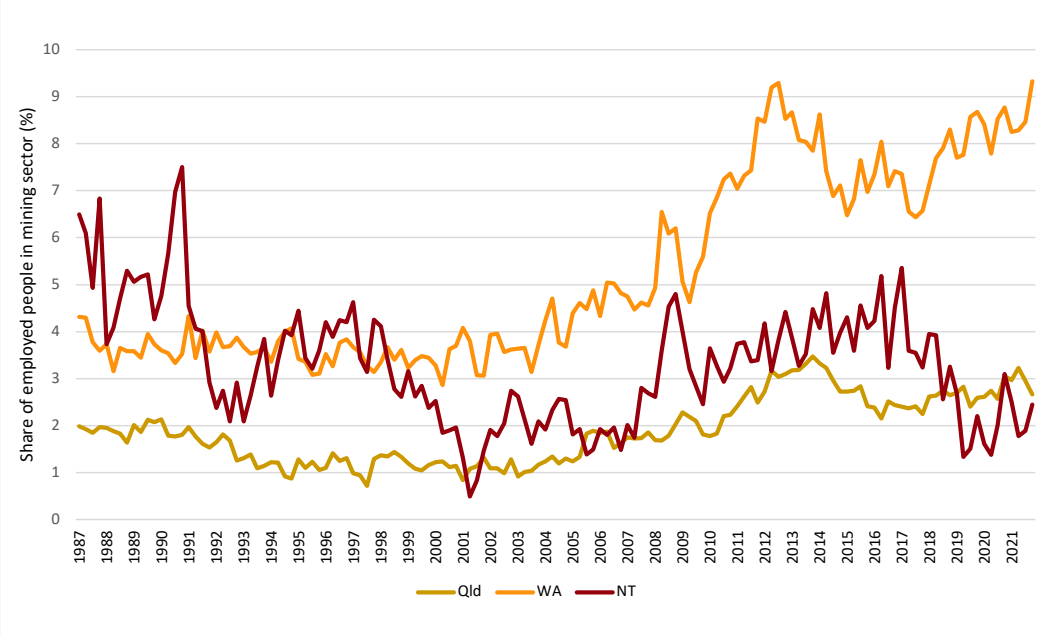
The number of people employed in mining in WA has increased significantly as a share of total employment over the last five years, reaching 9.4 per cent by 2021.

Mining remains an important sector in the WA economy. Employment in the mining sector in WA has averaged 5.2 per cent over the last three decades as a share of total state employment. However, the number of people employed by WA's mining sector has growth substantially over the last five years, reaching around 9.4 per cent at the end of 2021.

The situation has been a little different in other states. The share of people employed in mining has halved in the last five years in the Northern Territory, but has risen to 2.9 per cent in Queensland.

FIGURE 37

Employment in mining sector in Western Australia and other states and territories, 1987-2021



Source: Bankwest Curtin Economics Centre |Authors' calculations based on ABS Catalogues 6291.0 Labour Force, Australia.

INTERSTATE MIGRATION INTO WESTERN AUSTRALIA

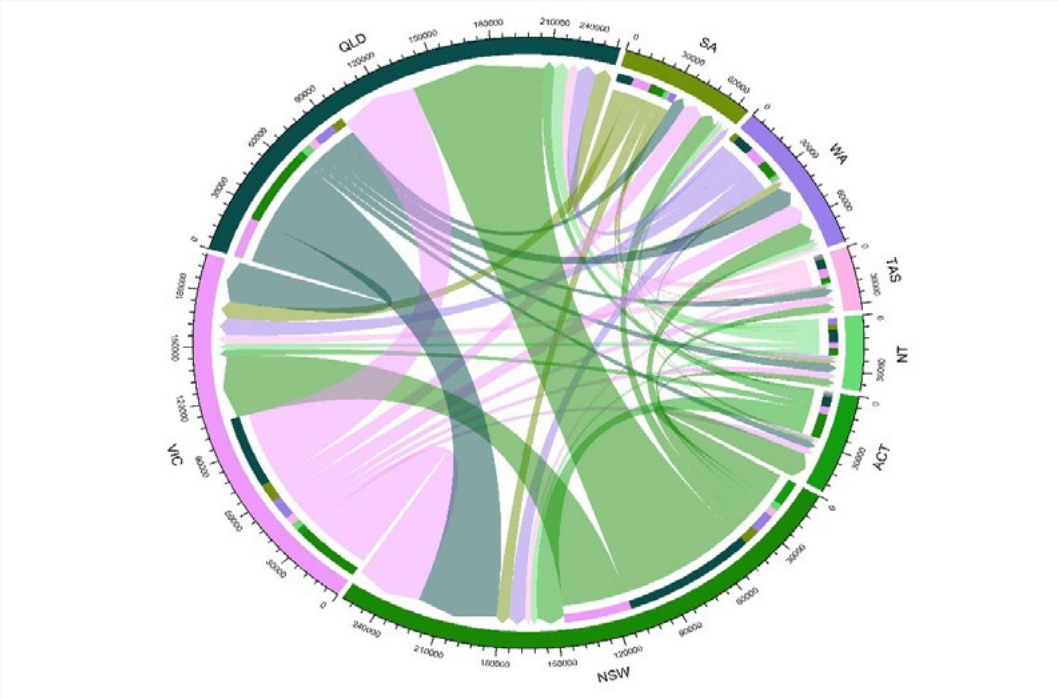
Migration has been an essential part of Australia's economic and social development for decades, and remains a critical source of supply of skilled labour to Australia's states and territories. And whether from interstate or overseas, migration represents an important channel for labour market adjustment. In this section, we examine patterns and trends in interstate migration into WA compared to other states and territories. Although smaller in volume relative to overseas migration flows, internal migration between Australian states and territories fulfils an important and relatively responsive component of labour adjustment. It can also be considered an indicator of the states and territories' economic prosperity and labour market opportunities.

Figure 38 shows that net interstate migration flows were negative in NSW, Victoria, Tasmania, the NT and ACT in 2021. Among the three states with a positive net interstate migration flow, Queensland experienced the most significant net interstate migration with a net number of around 50,200 people moving into the state, followed by WA with net migration of 9,300 people. The net in-migration flow to Queensland was nearly large enough to absorb the net out-migration flows from NSW and Victoria. If we take into account state and territory populations, the net interstate migration per thousand resident population was highest in the NT (14 people), followed by Queensland (10 people), NSW and ACT (4 people). Victoria and WA had the same level of net interstate migration, with 3 migrants per thousand resident population in 2021.

WA was amongst three Australian states and territories having a positive net interstate migration in 2021.

FIGURE 38

Interstate migration flows between Australian states and territories, 2021



Source: Bankwest Curtin Economics Centre |Authors' calculations based on ABS data (migration) in Data Explorer beta, Australia.

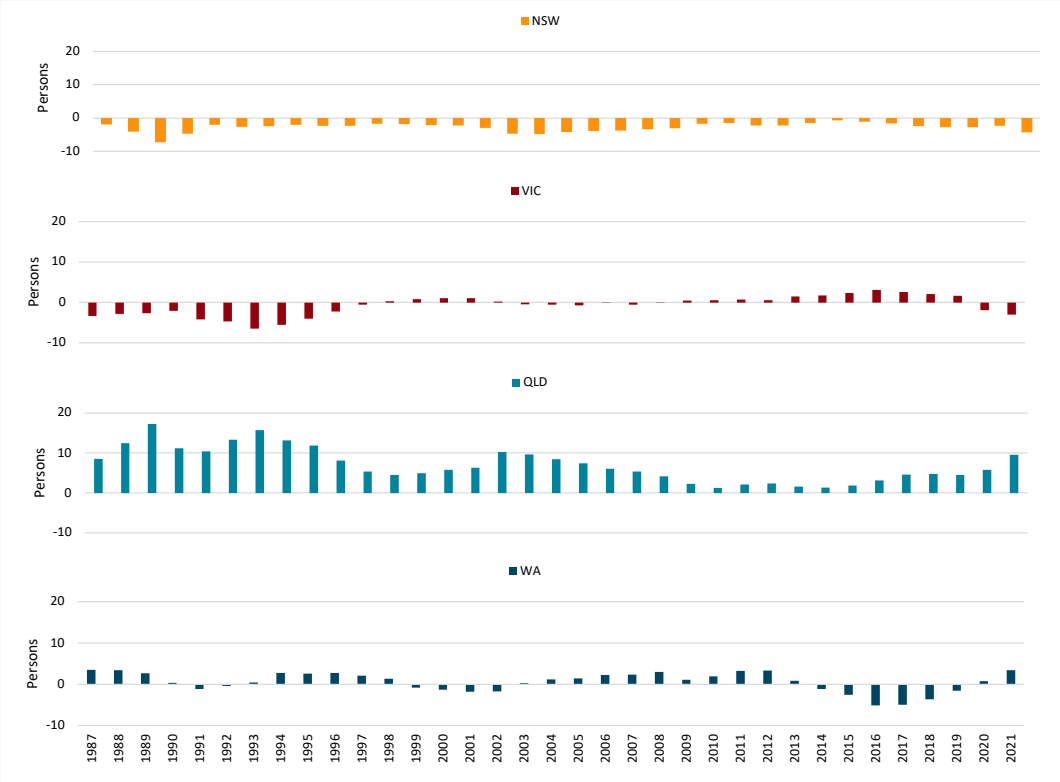
However, patterns of net interstate migration in 2021 were certainly affected by the COVID pandemic. Figure 39 presents net interstate migration in persons per thousand resident population from 1987 to 2021 for the four Australian states with the most significant net flow relative to their population sizes: NSW, Victoria, Queensland and WA.

One noticeable feature of the analysis is the persistence of negative net interstate migration flows into NSW and positive net interstate migration flows into Queensland. This is partly because Queensland appears to have absorbed a high proportion of migrants from NSW, as demonstrated by the inverse relationship between trends in net interstate migration flows into NSW and Queensland across many years during this period. For example, it can be seen that the net interstate in-migration to Queensland increased in the years that NSW saw an increase in its net interstate out-migration.

The net interstate migration flows into WA and Victoria have fluctuated during the period from 1987 to 2021 but seemed to have opposite trends over time. In the last years before the pandemic, Victoria experienced a positive net interstate migration while WA saw a negative net interstate migration.

FIGURE 39

Net interstate migration, 1987-2021



Source: Bankwest Curtin Economics Centre |Authors' calculations based on ABS data (migration) in Data Explorer beta, Australia.

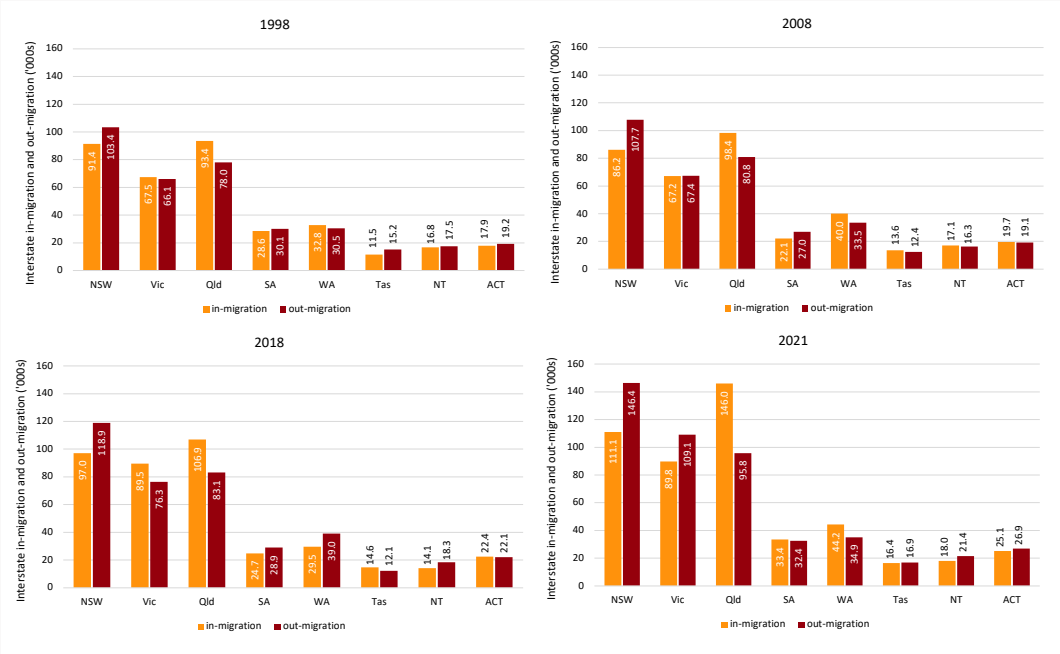
We further look at interstate arrivals and departures in selected years to better understand interstate migration into Australian states and territories in Figure 40. We can see that WA ranked number four in the number of people moving in and out the state, after NSW, Victoria and Queensland overall. There was a jump in interstate in-migration and out-migration in all the states and territories before and after the COVID pandemic, while the patterns and trends were quite similar in the pre-COVID years.

The interstate arrivals in 2021 were highest in Queensland (around 146,000 people), followed by NSW (111,100 people), Victoria (89,900 people) and WA (44,200 people). Meanwhile, the number of interstate departures was highest in NSW (146,400 people), followed by Victoria (109,100 people), Queensland (95,800 people) and WA (34,900 people).

In WA, the in-migration flow was higher than the out-migration flow in 1998 and 2008, but the trend changed in 2018. In particular, WA experienced a net out-migration in 2018 of around 9,500 people.

FIGURE 40

Interstate in-migration and out-migration, 1998, 2008, 2018 and 2021



Source: Bankwest Curtin Economics Centre |Authors' calculations based on ABS data (migration) in Data Explorer beta, Australia.

OVERSEAS MIGRATION INTO WESTERN AUSTRALIA

Overseas migration reduced significantly in all states and territories after the COVID pandemic.

WA ranked second among Australian states and territories in the size of net overseas migration relative to state population in 2019.

The composition of origin countries of overseas migration into WA changed considerably in the last decade before the pandemic.

Net overseas migration into WA has fluctuated in the last three decades but has always been significantly higher than net interstate migration into the state. The number of net overseas migrants into WA decreased from 18,600 people in 1987 to a low of 5,500 people in 1993, before reaching its peak in 2012 (48,200 people) and then experiencing a declining trend with a steep drop due to the COVID pandemic.

In this section, we look at overseas migration into WA in comparison to other the states and territories in 2019 and 2021 to better understand the changes in overseas migration before and after the COVID pandemic. Table 7 shows that the net overseas migration flow was negative in Victoria, Queensland, WA and ACT in 2021. The figures were also considerably smaller relative to interstate migration in all the states and territories, which was a consequence of the border closures due to the pandemic. Among Australian states and territories, NSW and Tasmania experienced the largest net overseas migration with around 12,600 and 1,600 people migrating into the states from overseas, respectively.

The picture was significantly different in 2019 when all states and territories experienced a positive net overseas migration. Victoria and NSW had the highest number of in-migrants from overseas (85,100 and 79,300 people respectively), followed by Queensland (33,900 people) and WA (25,500 people).

If we measure migration flows for each state or territory in 2019 as a share of the population, we find the net overseas migration per thousand resident population to be highest in Victoria (13 persons), followed by NSW and WA (10 persons), SA (9 persons), Queensland and Tasmania (7 persons) and finally ACT and NT (5 and 4 persons). The data demonstrate that overseas migration is essential to all Australian states and territories, and particularly to WA.

Table 7

Net overseas migration into Australian states and territories, 2019 and 2021

State	2019		2021	
	Net overseas migration (persons)	Net overseas migration (persons) per thousand resident population	Net overseas migration (persons)	Net overseas migration (persons) per thousand resident population
NSW	79,300	10	12,600	2
VIC	85,100	13	-9,600	-1
QLD	33,900	7	-4,800	-1
SA	16,600	9	300	0
WA	25,500	10	-3,600	-1
TAS	4,000	7	1,600	3
NT	1,000	4	700	3
ACT	2,200	5	-900	-2
Total	**247,600**		**-3,700**	

Source: Bankwest Curtin Economics Centre |Authors' calculations based on ABS data (migration) in Data Explorer beta, Australia.

Figure 41 presents the changes in net overseas migration to Australia and WA by country of birth of the migrants. We categorise the countries into 9 regions, and also include China in the figure as one of the biggest economic partners of Australia. We present the data in three points in time: 2008-2009 (after the resources boom in WA), 2018-2019 (before Covid) and 2020-21 (after Covid).

The pattern of net overseas migration into Australia by country of birth has changed slightly in the ten years before the pandemic. Southern and Central Asia provided the highest number of overseas migrants moving into Australia, followed by South-east and North-east Asia. China accounted for the majority of migrants from the North-east Asia to both Australia and WA.

In contrast, the composition of origin countries of overseas migration into WA has changed considerably in the last decade before the pandemic. In the financial year of 2008-09, North-West Europe had the highest number of migrants into WA, followed by Sub-Saharan Africa. However, Southern and Central Asia and South-east Asia became the most dominant regions in providing overseas migrants into WA 10 years later, in the financial year of 2018-19. This suggests important changes in the characteristics of the supply of skilled workers for WA in the last decade before the pandemic. This also suggests that the origin country composition of overseas migration into WA has been converging progressively to the nation's migration patterns.

Another noticeable feature of Figure 41 is that both Australia and WA have been affected by the pandemic, but the effects on WA seem to have been more severe. Net overseas migration into Australia and WA both reduced between the financial year of 2018-19 relative to the financial year of 2020-21, but the reduction was significantly higher for WA.

Notably, the North-east Asia region, including China, has seen the most significant decline in net overseas migration into Australia. From the financial year 2018-19 to 2020-21, the net overseas migration from this region reduced from 23,020 people moving in to 60,620 people moving out Australia. Meanwhile, Southern and Central Asia experienced the biggest reduction in net overseas migration into WA, from more than 8,580 in-migrants to 950 out-migrant during this period. However, if we only consider the number of people moving out WA, North-east Asia accounted for the highest number of people, at 2,630.

FIGURE 41

Net overseas migration to Australia and Western Australia by country of birth, 2008-09, 2018-19, and 2020-21

Source: Bankwest Curtin Economics Centre |Authors' calculations based on ABS data (migration) in Data Explorer beta, Australia.

FACTORS AFFECTING MIGRATION INTO WESTERN AUSTRALIA

Migration flows into WA are associated with the differentials between the state's unemployment rates, weekly wage earnings, rental vacancy rates relative to the national average and iron ore prices.

In this section, we examine key factors that affect net migration into WA (see Figure 42). We focus on differences between WA and national averages to capture how conditions in WA relative to the rest of the country shape workers' decisions on migration.

We firstly take a look into the differential between WA's and national unemployment rates. The figure shows that the differential has fluctuated from 1987 to 2021. Unemployment rates in WA were higher than the national average in the early 1990s, 2000s and mid-2010s, with the highest differential of 1.25 percentage points observed in the first quarter of 2019. There is some evidence of a negative association between the differential in unemployment rates, and migration flows into WA, particularly overseas migration. For example, the net interstate migration and overseas migration decreased when the differential in unemployment rates increased in the early 1990s and mid-2010s, consistent with workers may migrating in response to greater employment opportunities.

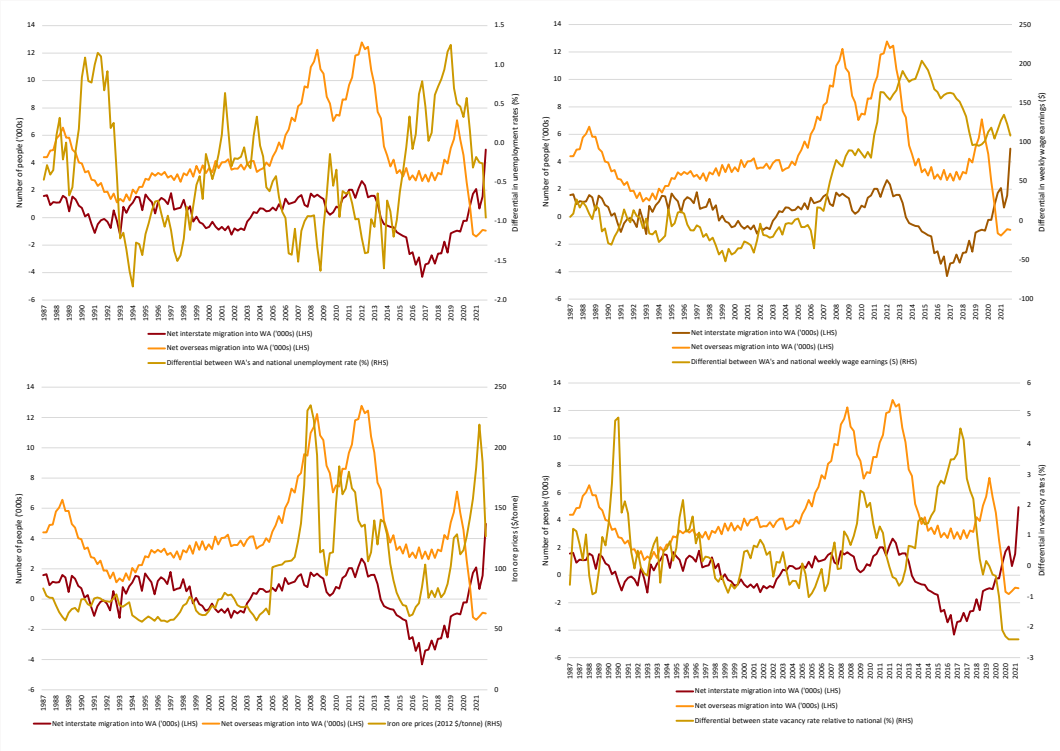
We would anticipate higher relative wages to create incentives to move to WA from other states and territories and from overseas, and there is some pattern of correlation between migration into WA and expected earnings in the state relative to national weekly earnings. Average weekly earnings in WA experienced a rising trend from the 1990s until the mid-2010s before declining until the COVID pandemic, although the differential remained positive during the pandemic. But the real take-home from the analysis is that changes in relative wages in WA look to lag rather than lead changes in the migration flows into the state.

A large number of interstate migrants have moved to WA from other states and territories as a consequence of the minerals and energy boom. We therefore also track migration flows into WA alongside iron ore prices in Figure 42. Iron ore prices have fluctuated during the period from 1987 to 2021, but show a strong correlation with both types of net migration flows. We can observe that net interstate migration flows transformed quickly from debit to credit, increasing at a rate similar to that of iron ore prices. Net overseas migration has also followed this path, mirroring the rise and fall in iron ore prices.

Finally, the impacts of the differential between state rental vacancy rates relative to the national average in driving labour migration flows to WA are demonstrated in Figure 42. To be consistent with the other variables, we have defined the rental vacancy differential as the national rental vacancy rate minus the WA vacancy rate, so that a higher value indicates a tighter housing market and stronger economy in WA. The figure shows that the relative scarcity of rental properties in WA compared to the nation has deterred migration into this state.

FIGURE 42

Factors affecting migration into Western Australia, 1987-2021



Source: Bankwest Curtin Economics Centre |Authors' calculations based on ABS Catalogues 6202.0 Labour Force, 3101.0 National, state and territory population, 6302.0 Average Weekly Earnings and the Western Australian Department of Mines, Industry Regulation and Safety (iron ore), Australia.

An increase of 1 percentage point in the unemployment rate differential between WA and Australia reduces net interstate and overseas migration into WA by a combined total of 1,750 people each quarter, or 7,000 annually.

In Figure 42, we have seen evidence of the association between interstate and overseas migration flows into WA and different drivers from the labour market, exports, and housing market. We include all these factors into a model to examine the extent and dynamics of their impacts on migration into WA. The variables are defined as differentials between the state and national levels to measure the state's relative performance compared to the national average. The expectation is that differences between labour market conditions across Australian states and territories should encourage labour movement between the states and territories. The results are presented in Figure 43.

The upper panel in the figure shows that the differential between the WA and national unemployment rate strongly affects migration flows. For example, an increase of 1 percentage point in the differential between the WA and national unemployment rates reduces net interstate in-migration to WA by 575 people each quarter, and reduces net overseas migration into WA by 1,141 people per quarter.

An increase of $10 in iron ore prices increases net interstate in-migration to WA by 2,000, with four fifths of migrants coming to WA from overseas.

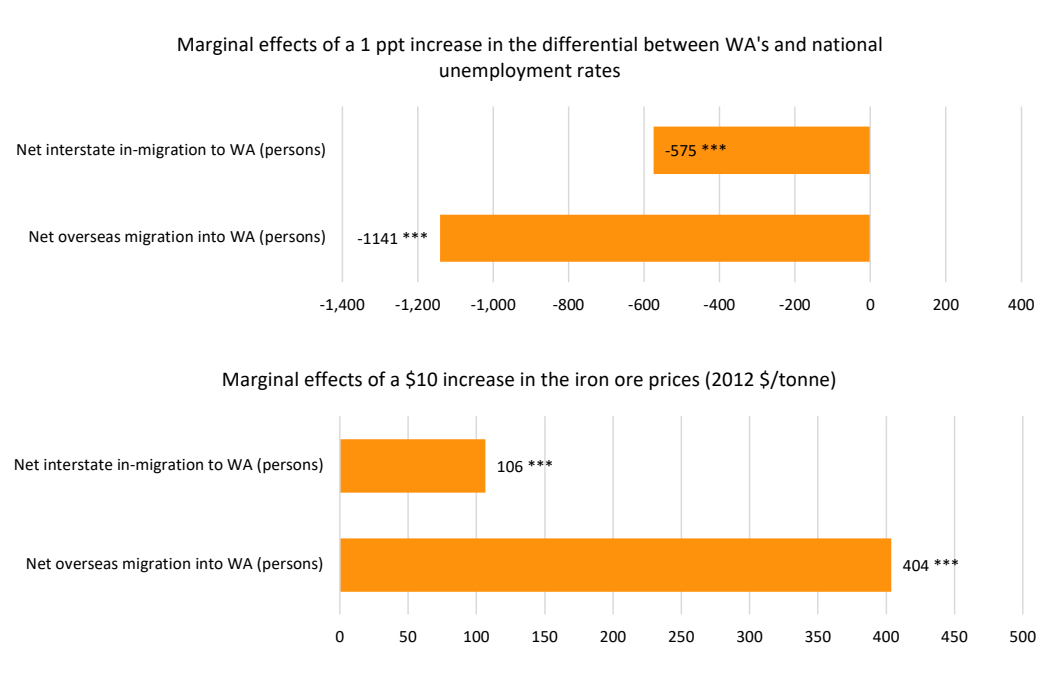
There has long been a strong correlation between iron ore prices and in-migration to WA, especially from overseas (see Cassells et al, 2014). For this Focus on WA report, we seek to capture both the magnitude of association, and the time-path of labour force adjustment, using a long time series of data on migration flows. We find that a rise of $10 in iron ore prices increases net in-migration to WA by around 2,000 per year, with four fifths attracted to WA from overseas.

From the lower panel, we can observe that an increase in iron ore prices attracts more people moving to WA, especially from overseas. In particular, a rise of $10 in iron ore prices increases net interstate in-migration to WA by 106 persons and attracts 404 more people from overseas.

In summary, there is strong evidence of the impacts of employment and iron ore prices on the interstate and overseas migration flows into WA. The effects appear to be more assertive on overseas migration.

FIGURE 43

Impacts of unemployment rates and iron prices on migration into Western Australia



Notes: OLS regressions are used the sub-sample of WA. * p<0.1, ** p<0.05, *** p<0.01
Source: Bankwest Curtin Economics Centre | Authors' calculations.

DYNAMICS OF LABOUR MARKET ADJUSTMENT

Skills shortages are affected by the speed of labour market adjustment to a demand shock.

An important but often overlooked aspect of the response to skills shortages comes from the nature of labour market adjustment, and especially the speed of labour adjustment to a labour demand shock as well as the barriers that prevent the labour market from adjusting efficiently to emerging employment opportunities.

To address these issues, our report explores the actual dynamics of migration flows into WA in response to factors that affect employment. We use statistical modelling methods[26] to explore the time path of labour market adjustment in WA, using dimensions of the state labour market that incorporates information on state employment, unemployment rates, interstate and overseas migration into WA and controls for rental vacancy rates in the WA housing market.

In Figure 44, we simulate the time path of response of interstate and overseas migration to a 1 per cent increase in WA's share of total national employment.[27] The results show that the net interstate migration into WA increases relatively immediately in response to a positive shock in WA's labour demand, with the adjustment process taking up to four years before returns to the base level of migration.

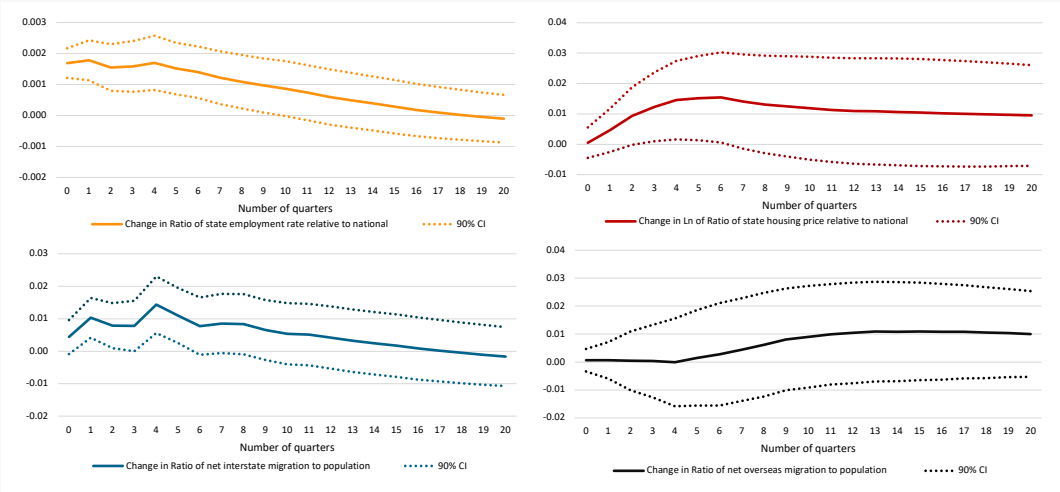
Overseas migration into WA responds in a slightly different way to an increase in the state's employment. In particular, overseas migration typically takes a year to respond to a demand shock, before increasing significantly in subsequent years. This finding accords with the time it takes for prospective migrants from overseas take to make decisions and be granted visas to move to Australia. In addition, skilled workers migrating to Australia from other countries may have to undertake supplementary education and training to qualify for migrant status.

Net interstate migration into WA responds immediately to an increase in WA's share of national employment. The full adjustment process takes approximately four years. .

In response to an increase in WA's share of national employment, overseas migration remains unchanged in the first year before increasing significantly in the years after that.

FIGURE 44

Dynamics of labour market adjustment in Western Australia



Source: Bankwest Curtin Economics Centre | Authors' calculations.

26 Our modelling approach is to use a recursive Vector Autoregressive (VAR) model to capture the time path of interstate and overseas migration adjustment to an increase in labour demand. In our modelling approach, we employ tests of the stationarity and lag length of all variables included in the model, as well as checks for the stability of the model and residual diagnostics. The recursive order of variables in our model is chosen using Granger causality tests.

27 These time paths of adjustment are generated using Impulse Response Functions (IRFs) from the VAR model to track the dynamics of the WA's labour market adjustment.

SUMMARY

Interstate and overseas migration provides skilled labour to Western Australia and is an important indicator of the state's economic growth. The rich time-series data used in this chapter demonstrate that overseas migration has been more significant than interstate migration into WA.

However, overseas migration flows into WA have been considerably smaller compared to NSW, Victoria and Queensland. Our analysis of adjustment in WA's labour market adjustment indicates that overseas migration provides an important source of skills to meet demand in the WA labour market, although the effects materialise with a lag. In contrast, interstate migration can provide more skilled labour to the state in the short term. The two types of migration are complementary to labour market adjustment in WA.

The composition of origin countries of overseas migrants to WA had been different from those for Australia in the decade before the pandemic, but has been converging towards the national profile. Asia has been becoming more dominant in providing migrants to WA. This has important implications given the differences in labour markets outcomes for migrants from English speaking and non-English speaking countries.

Western Australia is a resource-based economy, and the data show that migration into WA has been is strongly linked to changes in iron ore prices. Hence conditions in the mining sector, and particularly the value of iron ore exports, will drive volatility in the number of skilled migrants to WA if the prices are volatile. Diversification in the WA economy would help to promote stability and sustainability of migration flows into the state.

Finally, differentials between the state's wage earnings and rental vacancy rates relative to the national average are also associated with migration flows into WA. The Perth vacancy rate has dropped to its lowest point on record of 0.5% in February, which would tighten WA's rental market conditions and hinder migration flows into WA. More measures, therefore, are necessary to eliminate these challenges and barriers to potential migrants to WA.

CONCLUSIONS AND POLICY IMPLICATIONS

INTRODUCTION

The state of Western Australia has a fast growing economy and a labour market subject to frequent episodes of rapid structural change, accentuated by the vagaries of a flourishing resources sector. Like all economies, WA will also face longer-term structural change in employment in response to technological change, changing international trade patterns, demographic shifts and evolving social norms and preferences. As long as the economy is performing well, WA will inevitably continue to face skills shortages and recruitment pressures as a necessary part of a growing and dynamic economy.

The long-term challenge is not so much to eliminate skills shortages, but rather to ensure that Western Australia's labour market responds as efficiently and smoothly as possible to demand shocks, delivering the best outcomes for the people of Western Australia. This requires that skills mismatches are mitigated, and barriers to labour market entry or mobility are addressed.

Skills shortages can and do have devastating effects on the hardest hit. We've seen those impacts unfolding across the country in recent months, from major developments put on ice to small business closures, home buyers losing savings as building companies collapse, agricultural crops left unharvested and the plight of families unable to find or to afford quality care for their loved ones.

In acknowledging the inevitability of skills shortages, we by no means intend to suggest they should be dismissed lightly. What is important is establishing if a policy response is required and what that response should be. Typical definitions of skills shortages are based on the presence of hard-to-fill vacancies or, more appropriately, the presence of hard-to-fill vacancies offering competitive wages and conditions given the nature of the work. The existence of a skills shortage under such definitions is not sufficient, alone, to justify a policy response. After all, full employment and high wages are key policy objectives, and the more successful WA is in achieving those goals the more acute skills shortages become.

Justification for a policy response rests on establishing that the status quo represents a sub-optimal allocation of people and skills, which in turn implies the existence of barriers to labour market adjustment, or that such processes operate inefficiently. Hence, the focus of this report has been to provide evidence on the processes of labour market adjustment in WA and of potential misallocation of resources.

We discuss our findings and conclusions under two broad categories: labour market adjustment and latent sources of labour, before turning to some key policy recommendations that address the barriers faced by underutilised or excluded sections of society. Our findings reinforce the importance of housing, childcare, health and aged care services in supporting labour market entry and improving worker mobility. The report also considers the need for encompassing strategies that balance migration with improved access to latent skills in response to labour and skills shortages.

LABOUR MARKET ADJUSTMENT

A comparison of the WA labour market to other states and territories over recent decades shows that WA and Queensland stand out as two growth states. Over the past 30 years, WA has had the highest rate of employment growth of all the states and territories and, for most of the past two decades, the state has boasted an unemployment rate below the national average and the highest average weekly earnings after the Australian Capital Territory.

We see evidence of labour market adjustment at work in the form of geographical mobility. The higher rate of job creation in Queensland and WA has been accompanied by high rates population growth, facilitated by immigration. However, WA has had to rely primarily on overseas migration to meet its growing demand for labour, while for Queensland both international and interstate migration have contributed significantly. Modelling of the dynamics of migration flows into WA show that net interstate migration responds within one year to an increase in employment, with the full adjustment taking around four years. Net overseas migration takes at least one full year to begin to respond.

Persistent interstate unemployment rate differentials, over time scales of multiple decades, point to barriers to interstate labour market adjustment in Australia. This is most apparent from the high unemployment rates seen in Tasmania and South Australia, but also exemplified by the contrasting experiences of Queensland and WA. Unlike in Western Australia, Queensland's high rate of employment growth has been accompanied by an unemployment rate consistently above the national average. A combination of positive amenity and proximity to the most populous states provide for a more effective interstate migration response to employment opportunity in Queensland. In comparison WA faces significant barriers to this form of adjustment. This can also be seen in the results of the microeconomic modelling of individuals' decisions to move interstate. After controlling for other factors, WA has been the preferred destination – certainly over the last decade - only for those living in the Northern Territory.

In addition to rapid employment growth, we identified three unique features of the WA economy which, conceptually, make it more prone to skills shortages: isolation from other major population centres, the need for jobs in agriculture and mining to be located remotely, and volatility. The latter two of these characteristics are both largely linked to the large relative share of mining in the WA economy. While those hypotheses have not been tested directly, they do appear to play out in our results. Isolation is the most likely explanation for the relative difficulties WA experiences in attracting interstate migrants. Our estimates of the relationship between vacancies and unemployment indicate that roughly double the number of vacancies per worker are required in WA, relative to the national labour market, to solicit a given fall in unemployment. Hence, employers do appear to have greater difficulty filling vacancies in WA and, following the common understanding of the term, are more likely to face skills shortages, other things being equal.

We noted, two critical components required for an efficient matching process: information and incentives. With many vacancies now advertised online, the flow of information about available job vacancies is far less of a constraint in modern times. There are, however, regular calls for improved information for the purposes of careers guidance and workforce planning, and in particular forecasting of skills needs

to feed into the allocation of enrolments and resources for training courses (see SEWRERC (2003) as an example from around the turn of the century, and Committee of Perth (2022) as a recent example).

There will always be room for improvement in workforce planning and the dissemination of information. However, the analysis suggests this is not a substantial contributor to the mismatch we observe in the WA or national labour markets. Unemployment rates among the more skilled and educated workers are historically very low. Since 2015, the unemployment rate among Australians with a bachelor degree or higher has averaged 3.4 per cent, and 4.5 per cent for those who held a Certificate III/IV or diploma. This compares to around 7 per cent for those who completed Year 12 only, and 10 per cent and upwards for those who did not complete Year 12. A similar story holds for WA.

Essentially, very few skilled people are unemployed because they did the wrong course. Admittedly, this may be partly due to broad transferability of skills or to positive non-cognitive skills of people with higher qualifications, and does not account for mismatch of their skills within their jobs. However, it remains the case that improved alignment between industry demands and the skills held by qualified workers can only have a small impact on the overall matching efficiency and prevalence of skills shortages.

Addressing the employability of less skilled workers has a much larger potential effect, as well as increasing participation of skilled workers outside the labour force, as discussed below. Recent agreement by the Commonwealth and state governments to expand the number of free Tertiary and Further Education places is a positive measure in this regard.[28]

[28] https://www.pm.gov.au/media/opening-national-jobs-and-skills-summit.

In terms of incentives, there has been surprisingly little change in wage relativities to skill levels (as proxied by years of education) over the last 20 years. The time series analysis also found no robust, statistical evidence that wage differentials play a prominent role in driving labour market adjustment. Economists describe nominal wages as 'sticky downwards': few people receive wage cuts in the actual dollar amounts they are paid. Rather, wage adjustment more often occurs by wages in some sectors or regions growing faster than in others, with real wage cuts arising from nominal wages failing to keep pace with inflation. It is possible that the recent period of low inflation and low real wage growth in Australia has stifled relative wage adjustment. But there are also institutional rigidities in real wages growth for care sector workers such as child carers and residential and non-residential aged care workers, some of which stem from a lack of recognition of the full value – or the evolution - of care sector roles.

A key finding is that migration from states and territories of high unemployment to low unemployment occurs primarily among the part-time employed, rather than among people out of work. In modelling individuals' decisions to move to another state, differentials in housing prices had a statistically significant effect for the unemployed, and that effect was larger than for employed persons or persons not participating in the labour market.

These results are indicative of the existence of poverty traps in which the unemployed lack the resources to move to areas of higher employment opportunity, either to take up job offers or to search for work. Rather, financial constraints add to the incentive to move where housing is cheaper, and typically those areas feature lower employment opportunity. While the analysis of modelled movements between states and territories, there is no reason to expect the findings do not also apply to regional movements more generally.

We also observe that mobility increases significantly with individuals' level of education, falls off with age and is sharply lower for those who own their own home (either outright or paying off a mortgage). Single males, migrants from an English speaking background and people living in the Northern Territory are most likely to be attracted to move to WA. The link to the Northern Territory aside, WA misses out on the labour supply benefits of common border effects with larger states, such as those observed for movements between Queensland and New South Wales, between New South Wales and the ACT, and between South Australia and Victoria.

LATENT SOURCES OF LABOUR

The coexistence of hard-to-fill vacancies alongside people who are suited to fill those vacancies and who would either like to work or to work more hours than they currently do, is suggestive of allocative inefficiency. The preceding analysis looked at four groups representing potential sources of under-utilised labour: non-participants of working age, workers who would like to work more hours, migrants, and persons with a disability. We then looked in detail at the factors contributing to women's lower rate of participation in the labour market.

There are currently around 310,000 West Australians of working age (15-64 years) who are not participating in the labour force. To gain a clearer indication of the potential labour supply represented by this group, we can further restrict the group to persons aged 25-64 and apply the typical proportion of non-participants by age who indicate they would like to work (if suitable child care could be found). This exercise suggests a latent supply of 79,000 West Australians aged 25-64 who are not participating in the labour force. We estimate that approximately half of these (44,000) hold a certificate level III/IV or higher qualification, and around one quarter (20,000) have a university degree.

There are also significant numbers of potentially highly skilled workers (11,000) in the older age categories of 55-60 years and 60-64 years, for whom participation drops off rapidly. Some of this drop-off may come from older aged people who are discouraged from seeking employment because of difficulties experienced in trying to secure work, or sufficiently flexible employment terms, or because of the loss of age pension entitlement that would occur if they were to work for more than a handful of hours each week.

The number of additional hours that existing workers would like to work each week amounts to the equivalent of a 70,000 full-time equivalent workforce. A further source of underutilisation comes in the form of underutilisation of skills. This particularly affects migrants from non-English speaking backgrounds, who clearly face challenges in having their qualifications formally recognised, or in the general transferability of their skills and qualifications to the Australian work setting. Typically, 35 per cent of such migrants who are employed work in jobs for which they are overeducated, three times the rate for Australian born workers and migrants from English speaking backgrounds. We estimate there are now over 24,000 migrants from non-English speaking countries in WA who work in jobs for which they are overqualified, and who could potentially be filling skills gaps.

Aboriginal Australians are an essential but underutilised source of untapped talent in this country, with the share of Indigenous workers employed in many industry sectors far below their share in the population. Creating appropriate and meaningful employment opportunities for Indigenous workers remains a critical imperative for Australia, and an important response to skills shortages. But to do so requires a comprehensive and systemic approach to Indigenous employment by companies, encompassing issues of attraction, retention and progression as well as consideration of the inclusivity of the workplace environment, and the cultural safety of Indigenous employees. These considerations, as well as an employer roadmap to assist progression, are addressed in recent work by the Minderoo Foundation, Bankwest Curtin Economics Centre and Murawin that led to the establishment of Australia's first Indigenous Employment Index in 2022.

Only half of people with a disability in Australia are in employment, which doesn't just represent a waste of talent, but also points to specific barriers to employment that prevent greater labour market participation of this underutilised and often disadvantaged group. This seems incongruent with the labour and skills shortages being experienced across the country and may reflect the persistence of conscious or unconscious biases against employing people with disabilities. We estimate that a concerted commitment to inclusivity in Western Australian workplaces could reasonably be expected to bring at least 9,000 people into the workforce.

By comparison to these numbers, ABS estimates suggest there were around 65,000 vacancies available to be filled in Western Australian workplaces in the middle of the June Quarter. If we add to those estimates of latent labour supply the 40,000 Western Australians who are unemployed by the conventional definition, the labour supply available to work can be put at around three times the number of jobs that need filling. Many of that pool of potential workers are highly skilled and educated. The pool also far exceeds typical number of net interstate and overseas migrants, which has averaged just under 15,000 persons per year over the past decade, of whom around two-thirds will have been of working age.

KEY POLICY IMPLICATIONS FOR ADDRESSING SKILLS SHORTAGES

The ground covered in this report has implications across a wide range of areas of policy formulation by government and other stakeholders, and for practices by employers. We have argued that the case for a policy response to address skills shortages rests upon establishing that the shortage represents a sub-optimal allocation of resources. That employers report that vacancies are hard to fill is not a sufficient condition. And even if one were to establish that a skills shortage represents a suboptimal allocation, there is the further question as to whether investment in any policy response outweighs the costs. We conclude by highlighting some key areas in which the empirical evidence above can inform policy.

Immigration versus local labour

Skills shortages always prompt calls for increases in immigration. We acknowledge that immigration will continue to be an important source of skills and labour, and most studies indicate Australia and WA enjoy net economic gains from overseas skilled migration. There are currently calls for increases in the number of overseas migrants Australia takes each year; to increase the share of permanent to temporary migrants; and reform visa arrangements and processing to make it easier for employers to utilise migrant labour (BCA 2022, CEDA 2022, Refugee Council of Australia 2022).

However, efforts to increase and streamline immigration as a means of filling skills gaps must be weighed against the cost and benefits of other options. Immigrants may not directly displace other workers, but relying on immigration to fill skills gaps rather than investing in alternatives of potential local people who are unemployed or discouraged jobseekers, may not be optimal. We have documented above the significant number of potential but untapped workers in Western Australia – at the current point in time these far outnumber available vacancies to be filled or the supply of skilled labour through interstate and overseas migration.

Moreover, there are significant economic and social benefits from drawing the unemployed and marginally attached workers into employment. Ongoing exclusion from the labour market has significant costs. Unemployed and discouraged jobseekers experience declining mental and physical health. Time out of the labour force leads to the atrophy of people's vocational skills and non-cognitive skills. Keeping the pool of unemployed and marginally attached 'work ready' promotes a more efficient vacancy matching process, leading to a more efficient labour market and lower underlying unemployment rate in the long run. In the case of women and people with a disability, there are also compelling equity and social justice considerations for promoting participation.

Add to this, migrants from non-English speaking backgrounds face significant barriers to the full utilisation of their skills and they tend to have low geographical mobility. Importantly, facilitating migration requires additional housing in an already tight rental market.

On balance, we believe turning to migration to address skill shortages should not distract from a redoubling of efforts to more fully utilise the latent sources of labour in Western Australia, and that includes promoting improved job matches for existing migrants. There is no better time to do this than when unemployment is low. Mitchell and Quirk (2005) argue that employers do revise their expectations, and take on and train hard-to-place jobseekers when they need to, but readily turn to other alternatives if they are available. That

seems to be now playing out in Western Australia, with unemployment rates plummeting among the less educated in recent quarters.

Increasing female participation

Addressing barriers to women's participation in the labour force is clearly one of, if not the most important reforms required in addressing skills shortages. While there have been significant gains in terms of the gender gap in participation between Australian men and women in recent decades, a substantial gap remains over the prime working ages from 25 to 54. This is primarily attributable to women taking on a disproportionate share of caring duties relative to men. Of the women in that 25-54 years cohort who are not participating in the labour market, estimates from the HILDA survey suggest that 43 per cent would like to be in paid employment if conditions allowed, including if suitable child care could be found. As stressed above, this is not just an issue of economic gain, but one of social equity and fairness.

Australian women face a 'double whammy' in that there are major structural problems in the care sectors, limiting the availability and affordability of those very services that would allow them to increase their participation in paid work (see Box 2). At the same time, around 90 per cent of workers in those sectors are women.

These issues have long been in the public and policy spotlights, including in the recent Royal Commission into Aged Care, and were again at the forefront of the national Jobs and Skills Summit agenda. We are reluctant to think of problems in those sectors as 'skills shortages', as it is clear that wages and conditions are simply not competitive in light of the demands of the work. We estimate that, on average, women in the care sector earn around 15 per cent lower wages than similarly qualified and experienced males working in other sectors, and that penalty is even more pronounced in the childcare sector. If this were a free market sector, with wages determined by the prices consumers of the services were willing to pay, we would not see a case for policy intervention: employers should simply pay competitive wages or accept the consequences by struggling to attract and retain adequately skilled staff. But that is not the case, services are highly regulated and wages are largely socially determined via government funding decisions. Rather, it's a broader issue of how society values, or more precisely undervalues, the caring roles that primarily women take on.

Our analyses reveals a less well-known factor that contributes to the lower participation of women – gender biased norms in attitudes towards women's work. Social perceptions that parenting is primarily a women's role, and there is a trade-off between the quality of parenting and participation in paid work necessarily creates a stigma against women who wish to work. Moreover, women who hold those views are significantly less likely to participate in the labour force. Differences in Australians' beliefs about gender roles by level of education suggest that education needs to play a lead role in reshaping these attitudes. And again, how society values the work that women do only contributes to these stereotypes and norms.

Poverty traps

As set out above, the evidence on mobility patterns are indicative of poverty traps, in which the unemployed lack the resources to move to respond to changing regional employment opportunity. This contrasts with people in part-time work, who do

seem to move away from areas of high unemployment. We hypothesis that this is because they have both the incentive and resources to do so. Given the ongoing social cost of unemployment in the form of benefit payments and lost potential output, and personal costs in terms of health and wellbeing that intensify with time spent in unemployment, this suggests some form of subsidy to support mobility may be beneficial. More directly, the evidence also supports arguments for an increase in the real level of the Jobseeker payment, on the grounds that the current amounts are insufficient to support effective job search.

Housing

Discussions of how many thousands of extra workers the state needs in this or that occupation, whether in Perth or in the regions, invariably draw the retort "So where are they going to live?". And for good reason - housing featured in the analyses from several angles. First, being a homeowner dramatically reduces mobility, consistent with arguments that rising homeownership limits labour market mobility and raises the underlying or structural unemployment rate in the economy. It follows that anything that increases the cost of relocation will decrease the responsiveness of labour supply to changing regional employment opportunities. This supports the already substantial case for tax reform to remove stamp duty on owner-occupied residential property transactions.

Second, both the individual level modelling of decisions to move and aggregate time series analyses suggest housing prices are a major factor in determining interstate migration flows and location decisions for overseas arrivals. As noted above, house price movements are instrumental in limiting the capacity of the unemployed to move to take advantage of emerging employment opportunities. While our modelling is based on interstate movements, it is likely those same fundamental mechanisms work at regional levels within the state. This makes housing supply a critical lever in addressing skills shortages in the long run: workforce planning, immigration policy and residential development planning all need to work in tandem.

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APPENDICES

APPENDIX

Probability of moving interstate: Logistic regression models for Australians aged 25-64, 2001-2020

	All persons		Labour force status							
			Employed FT		Employed FT		Unemployed persons		NILF	
Independent variable	Odds Ratio	P>z	Odds Ratio	P>z	Odds Ratio	P>z	Odds Ratio	P>z	Odds Ratio	P>z
Constant	0.005	0.00	0.006	0.00	0.005	0.00	0.006	0.00	0.007	0.00
Relative unemployment rate	1.136	0.01	1.107	0.11	1.241	0.03	1.270	0.23	1.053	0.65
Relative house prices	1.006	0.01	1.003	0.35	1.006	0.23	1.026	0.01	1.006	0.31
Female	0.988	0.80	0.953	0.47	0.948	0.59	0.950	0.76	1.040	0.73
Age										
15-19 years	-		-		-		-		-	
25-34 years	1.033	0.61	0.948	0.51	1.124	0.36	1.150	0.49	1.060	0.70
35-44 years	0.605	0.00	0.572	0.00	0.718	0.03	0.526	0.03	0.589	0.00
45-54 years	0.395	0.00	0.344	0.00	0.436	0.00	0.466	0.01	0.482	0.00
55-64 years	0.272	0.00	0.247	0.00	0.236	0.00	0.342	0.02	0.289	0.00
Has disability	0.946	0.36	1.114	0.22	1.071	0.56	0.679	0.07	0.692	0.00
Labour force status										
Employed full-time	-									
Employed part-time	1.005	0.93								
Unemployed	1.281	0.00								
Not in labour force	1.228	0.00								
Partner status										
Single	-		-		-		-		-	
Partner employed FT	0.824	0.00	0.776	0.00	1.011	0.93	0.623	0.07	0.793	0.13
Partner employed PT	0.902	0.18	0.889	0.23	0.812	0.24	1.020	0.95	1.042	0.84
Partner not employed	1.085	0.28	1.021	0.84	1.510	0.02	0.937	0.78	0.911	0.53
Has dependent children	0.640	0.00	0.685	0.00	0.535	0.00	0.619	0.02	0.554	0.00
Country of birth										
Australia	-		-		-		-		-	
Main-English speaking country	1.199	0.04	1.135	0.24	1.322	0.13	1.444	0.22	0.954	0.81
Other country	0.861	0.06	0.821	0.06	0.815	0.24	1.226	0.45	0.735	0.06
Highest level of education										
Post-graduate degree	2.173	0.00	1.849	0.00	1.924	0.01	4.032	0.00	2.726	0.00
Bachelor degree	1.913	0.00	1.634	0.00	1.693	0.00	2.106	0.01	2.147	0.00
Diploma/advanced diploma	1.397	0.00	1.448	0.00	1.123	0.56	1.101	0.81	1.195	0.41
Certificate level III/IV	1.231	0.00	0.997	0.98	1.484	0.00	1.954	0.00	1.213	0.19
Completed Year 12	1.307	0.00	1.080	0.48	1.302	0.03	1.493	0.05	1.382	0.02
Did not complete Year 12	-		-		-		-		-	
Region of state										
Main capital city	-		-		-		-		-	
Inner regional	1.456	0.00	1.476	0.00	1.423	0.00	1.600	0.02	1.439	0.00
Outer regional & remote	1.853	0.00	1.516	0.00	2.144	0.00	1.964	0.00	2.297	0.00
Housing tenure										
Home owner	0.000	0.00	0.000	0.00	0.000	0.00	0.000	0.00	0.000	0.00
Renter - private	2.808	0.00	3.313	0.00	3.094	0.00	2.489	0.00	2.285	0.00
Renter - public housing	1.692	0.00	3.373	0.00	2.197	0.01	1.793	0.16	0.652	0.08
Other housing	3.211	0.00	3.289	0.00	3.286	0.00	4.944	0.00	2.624	0.00
Family member/lodger	1.020	0.82	1.197	0.14	1.116	0.55	0.766	0.43	0.598	0.02
Initial state/territory										
New South Wales	-		-		-		-		-	
Victoria	0.715	0.00	0.721	0.00	0.620	0.00	0.777	0.30	0.763	0.06
Queensland	0.824	0.00	0.827	0.04	0.831	0.18	0.927	0.76	0.937	0.67
South Australia	0.887	0.20	0.972	0.83	0.653	0.02	0.674	0.28	0.926	0.69
Western Australia	1.038	0.72	1.111	0.43	0.818	0.35	1.634	0.19	0.898	0.65
Tasmania	0.992	0.95	0.914	0.62	0.945	0.81	0.875	0.75	1.185	0.51
Northern Territory	3.836	0.00	3.983	0.00	6.601	0.00	8.599	0.00	5.498	0.00
Australian Capital Territory	3.888	0.00	3.889	0.00	6.400	0.00	7.893	0.00	4.515	0.00
Observations	210114		106472		50265		9469		43908	
Individuals	24572		16467		12851		5394		11746	
obs/individual										
Minimum	1		1		1		1		1	
Average	8.6		6.5		3.9		1.8		3.7	
Maximum	19		19		19		13		19	
Wald chi-squared	1909.5		1242.9		545.2		179.3		402.8	

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