

Labour Supply And Essential Worker Shortages In Key Health, Education And Transport Occupations

David Peetz

Emeritus Professor
Griffith University
16 February 2023

Unions  **NSW**

Labour supply and essential worker shortages in key health, education and transport occupations

Executive Summary	3
1. Introduction.....	8
1.1. Scope of this report	8
1.2. Structures of the ABS Occupational Framework and regional classifications	9
1.3. Data sources and quality	10
1.4. Characteristics of occupations	12
1.5. Structure of the report	13
2. General patterns of labour supply and demand for occupational major groups	13
2.1. National patterns	14
2.2. Occupational major groups and recruitment difficulty	15
2.3. Essential vs other occupations	16
2.4. Occupational minor groups and internet vacancies	17
2.5. Gender dimensions of essential work	19
3. Are there shortages for health professionals and teachers?	19
4. NSW internet vacancy trends for specific occupational unit groups	20
5. Shortages and demand ratings for individual occupations	27
5.1. Labour shortages and future demand ratings	27
5.2. Gender and labour shortage	37
6. Projections for occupational unit groups	37
7. Regional dimensions	41
7.1. Internet vacancies for occupation unit groups	41
7.2. Regional aspects of internet vacancies at the sub-major group level	41
8. Relationships of labour shortages to pay policy	48
9. Conclusions.....	52
Appendix A: Characteristic of Occupational unit groups (4-digit ANZSCO)	55
Appendix B: Characteristic of Occupations (6-digit ANZSCO) not listed in Appendix A.....	57
Appendix C: Real pay losses for selected essential classification under NSW public sector salary caps.....	61

Executive Summary

This report examines labour supply and apparent shortages in a group of essential service occupations in health, education and transport with a high rate of public sector employment. These are:

- teachers, including primary and secondary school and vocational teachers, as well as education aides (but excluding private tutors);
- health professionals, including health diagnostic, promotion and therapy professionals, medical practitioners and midwifery and nursing professionals (but excluding ‘complementary’ health therapists, chiropractors and osteopaths);
- social and welfare professionals, including counsellors, psychologists and social workers;
- health and welfare support workers;
- child carers;
- personal carers and assistants, including aged and disabled carers, nursing support and special care workers; and
- bus and train drivers.

However, the inclusion or exclusion of particular occupations makes little substantive difference to the overall results. The report analyses data collected and published by the Australian Bureau of Statistics (ABS) and Jobs and Skills Australia (JSA). The assessment of whether an occupation is in shortage or not is published in JSA’s Skills Priority List (SPL).

General patterns of labour supply and demand for occupational major groups

Essential occupations are mostly very female dominated, and so essential occupations experiencing labour shortages are also mostly female-dominated. An estimated 75% of employees in essential occupations are female. They include some strongly female-dominated occupations, including primary school teachers (85% female), registered nurses (89%), social workers (84%), and aged and disabled carers (80%).

Job vacancies as estimated by the ABS are considerably higher than before the pandemic began and have continued to increase despite the easing of all pandemic restrictions, at a rate well above the growth in vacancies before the pandemic.

Increasing proportions of employers report recruitment difficulties. Employers have claimed they are experiencing increased difficulty in recruiting all major occupation groups, including those which include essential occupations.

During the pandemic, demand for most occupations declined, as the overall labour market softened, but a number of ‘essential’ occupations experienced increased employer demand. In 2020, ‘essential’ internet vacancies rose by 4%, whereas other internet vacancies fell by 29%. When the pandemic circumstances changed, growth in demand for workers in non-essential occupations resumed, but this was not accompanied by any loss in demand for workers in essential occupations: in 2021, the numbers of internet vacancies for both ‘essential’ and ‘other’ occupations both rose by about half. In 2022 both sets of internet vacancies rose again — by more for ‘other’ than ‘essential’ occupations. It was nonetheless the case that, by

2022, the number of internet vacancies for ‘essential’ occupations was 98% higher than it had been in 2018. For ‘other’ vacancies, the number was just 26% higher than in 2018. Even in 2019, before the pandemic began in New South Wales, internet vacancies for ‘essential’ occupations were rising, while those for other occupations fell. The pandemic (including the migration policy response) exacerbated those tendencies severely in 2020, but it was not the sole cause of them.

Looking more narrowly, at professional workers, ‘essential’ professions experienced faster growth in vacancies than other professions. Between 2018 and 2019, internet vacancies for ‘essential’ professionals grew by 18%, while those for ‘other’ professionals fell by 10%. In 2020, the gap was even starker: growth of 8% for ‘essential’ professions, compared to a decline of 32% for ‘other’ professionals.

Are there shortages for health professionals and teachers?

The 2022 Skills Priority List (SPL) highlighted three occupational groupings in labour shortage. Two of these were health and teaching professionals.

There was a sharp change in the market for teachers in 2022. The number of suitable applicants per vacancy for education professions (the relevant ANZSCO sub-major group) fell from 3.8 in 2021 to 1.8 in 2022. While 86% of vacancies were filled in 2021, this was the case for only 60% of vacancies in 2022. A major problem seems to be high rates of teacher attrition.

Amongst health professionals, the difficulty in filling posts seems even more severe, and facing a comparable deterioration. Most nursing occupations, and a number of other health occupations, moved into the ‘shortage’ category between 2021 and 2022. Whereas 67% of vacancies for health professionals were filled in 2021, this proportion was only 52% by 2022. There were just 2.8 suitable applicants per health professional vacancy in 2021, falling to 1.5 per vacancy in 2022. Vacancies doubled over the two years to 2022.

Key occupations amongst both health and education professionals experience high rates of dissatisfaction with aspects of work and high rates of attrition. For both groups, difficulties in filling positions were notably greater in regional than in metropolitan areas.

NSW internet vacancy trends for specific occupational unit groups

Data on internet vacancies in NSW are available for occupational units.

Internet vacancies for registered nurses rose by 205% between 2012 and 2022, including a 125% increase over the past five years and a 48% increase over the two years to 2022.

Internet vacancies for medical imaging professionals (such as radiographers and sonographers) rose by 106% over the decade, including by 69% between 2020 and 2022.

There was a quadrupling of internet vacancies for secondary teachers and a quintupling for primary school teachers over the decade, with approximately a trebling over the past five years for each.

Internet vacancies for aged and disabled carers grew by 360% over ten years, including a doubling over the two years 2020-2022.

Internet vacancies for train drivers in NSW grew through the pandemic and by 2022 were 879% above the 2012 level.

Shortages and demand ratings for individual occupations

The Skills Priority List (SPL) contains the most detailed data on skills demand and shortages in NSW.

Strong future demand for an occupation is not predictive of current labour shortages. Out of 84 'essential' occupations experiencing a current shortage, only 22 (26%) were faced 'strong future demand', while among the 56 not experiencing a current NSW shortage, 15 (27%) faced strong future demand. This reflects the strong supply-side influences on labour shortages.

The SPL describes a number of occupations in shortage, including early childhood (pre-primary school) teachers, primary school teachers, secondary school teachers, special education teachers, vocational education teachers, medical diagnostic radiographers, occupational therapists, general practitioners and resident medical officers, surgeons, midwives, registered nurses, psychologists, dental hygienists, technicians and dental assistants, youth workers, child care workers, aged and disabled carers, bus drivers and (in regional areas) train drivers.

Women make up three quarters of people employed in essential occupations in shortage, whereas for other occupations they make up only a minority — three sevenths — of workers.

Projections for occupational unit groups

For workers in the essential occupation units listed in this report, employment is projected to grow by 14.4% over the five-year period. This is nearly twice the growth rate of 7.9% projected for other occupations.

The highest growth rate of any large occupation unit listed in the SPL (one with 100,000 or more workers in 2021) was projected for the essential occupation 'aged or disabled carers' (projected growth of 28.0%). Indeed, amongst the 30 large occupations units, of which 6 were 'essential' occupations, three of the five with the fastest growth projections were 'essential': aged or disabled carers, education aides (17.4%) and registered nurses (13.9%).

Nonetheless, the diversity of employment projections, from strong to quite ordinary growth – even for occupations in shortage – stands out from the data.

Regional dimensions

There are important differences between regional and metropolitan labour markets in terms of shortages for essential workers.

Notably, registered nurses were the occupation with the most frequently advertised vacancies in two regions: Mid-North Coast and Murray Riverina. They were the second-most advertised occupation in Far West-Orana. Overall, in seven of the eight provincial and rural regions, registered nurses were one of the three most advertised occupations. By contrast, registered nurses did not get into the top three in any of the four Sydney regions.

Labour shortages have a bigger impact on provincial and rural communities as they affect essential occupations, not just occupations of commercial significance. Essential occupation shortages may be more consequential in provincial and rural regions than in metropolitan Sydney.

Internet vacancies for aged and disabled carers were ranked between the 2nd and 6th highest of all occupations in seven of the eight provincial and rural regions, but in none of the metropolitan regions. Generalist medical practitioners were in the top eight vacancies in four of the eight provincial and rural regions, but not in any of the metropolitan regions. Welfare, recreation and community arts workers were ranked in the top eight vacancies in four provincial and rural regions, but not in any of the Sydney regions. Nursing support workers were ranked in the top eight vacancies in three provincial and rural regions, but in none of the Sydney regions. Child carers were ranked in the top eight vacancies in two provincial and rural regions, but in none of the Sydney regions.

Regions with low employment of an occupation that is already in labour shortage might be severely hit by such shortages. Employment of primary school teachers, an essential occupation in shortage, is particularly low in the Coffs Harbour-Grafton and Hunter regions. Some eight regions have low employment of early childhood teachers, with the lowest being Richmond-Tweed and the capital region.

It is a particularly bad sign when a region has both low employment and high vacancies for an occupation already in shortage. So probably the worst shortages may be for registered nurses in the Far West and Orana region.

‘Essential’ vacancies are considerably more common in non-metropolitan regions than in Sydney. There was an across-the board increase in the share of ‘essential’ vacancies at the sub-major group level between 2017 and 2022. In provincial and rural regions, it rose from 15.3% to 21.3%, with the largest increase occurring in the North Coast region.

Relationships of labour shortages to pay policy

Several factors explain labour shortages. The first factor that is often considered is the actual or prospective demand for an occupation. Yet the data presented in this study show that a number of occupations that are in shortage are not expected to experience rapid employment growth. It is clear that other factors are at work.

The training and education system, particularly at the tertiary level affect supply for all but ‘unskilled’ labour. A third potential influence on labour shortages is immigration.

There are other, more occupation-specific influences on the supply side. Work may become unattractive in an occupation, due to factors such as rising workload and employer demands, growing work intensity, increasing working hours or problems with control of the environment in which work is done. A broader factor influencing the supply side, however, is the attractiveness of remuneration for workers in that occupation. In theory, whatever the unattractive features of work in a particular occupation, it should be possible for employers to offer a sufficient wage to attract people to work in that occupation and/or dissuade enough from leaving. Yet clearly employers are unable or unwilling to do this, and as a consequence many potential workers for an essential occupation simply decide that it is not worth taking such a job. When employers say that there is a labour shortage, it sometimes is better interpreted as a shortage of wages that they are willing to offer to attract labour, given the disutilities of the job.

From the perspective of employers, this is often for good reason. Whatever the reason for employers behaving in this way, many labour ‘shortages’ may thus reflect the failure of employers to behave in a way that would prevent ‘shortages’ in the first place: by not offering wages high enough to clear the market or not providing the training necessary to ensure an adequate supply.

The problems that low wages create for labour supply are magnified when there is one employer that sets the pace for the market. In the public sector, where employees in essential occupations are even more likely to face a single employer, a common way by which wages are kept low is through service-wide salary caps. The damaging effects of low nominal wage norms on labour ‘shortages’ are heightened when inflation is high. For essential occupation employees subject to the New South Wales public sector salary cap policy the effect of the salary cap is equivalent to cumulative real wage reductions over three years of between \$7,000 and \$13,000. Consequent dissatisfaction with pay levels may intensify labour shortages.

Conclusions

The August 2022 national Jobs and Skills Summit established a number of mechanisms to address labour shortages, and several of these can be expected to assist in relation to labour shortages in essential occupations. Policies on migration and the improvement of skills training were amongst them. While the low rate of wages growth was also on the agenda for that Summit, it is not clear that sufficient attention has been given to the role of salary caps and other mechanisms for wage restraint in reinforcing labour shortages. As essential workers are most likely to be working for the state — because essential services are often provided by the state — then state wage restraint policies are likely to lead disproportionately to shortages of willing workers in essential occupations.

An easing of public sector wage restraint could not be the only solution to shortages of essential workers. There is no single solution. But it is difficult to see shortages being overcome in the absence of appropriate changes to wages policy.

Labour supply and essential worker shortages in key health, education and transport occupations

1. Introduction

The purpose of this report is to examine the state of the labour market, and in particular issues of labour supply and labour shortage, in a group of essential service occupations.

1.1. Scope of this report

It is neither feasible nor desirable to present data on all 1076 individual occupations for which codes exist. To do so would lose sight of the essential service occupations on which this report focuses. It would also not be possible, as most data are not available at that level and even the most disaggregated data are not available for all occupations.

The particular focus of this report is essential service occupations in health, education and transport with a high rate of public sector employment. The COVID-19 pandemic saw special pressures being placed on workers in these occupations, suggesting that their visible value to society was heightened during this time. Defining an essential service occupation is not an easy thing, and in this report it is constrained by the organisation and availability of data and time, as well as subjective judgements about what is 'essential'. To this researcher, the provision of health care, of welfare, of care and education for our children, and of public transportation were the key elements of 'essential'. In the end, this report has chosen to focus on the following occupations:

- teachers, including primary and secondary school and vocational teachers, as well as education aides (but excluding private tutors);
- health professionals, including health diagnostic, promotion and therapy professionals, medical practitioners and midwifery and nursing professionals (but excluding 'complementary' health therapists, chiropractors and osteopaths);
- social and welfare professionals, including counsellors, psychologists and social workers;
- health and welfare support workers;
- child carers;
- personal carers and assistants, including aged and disabled carers, nursing support and special care workers; and
- bus and train drivers.

More detail on how these correspond to the ANZSCO coding framework are provided below.

No doubt other researchers would choose a different set of occupations, but the above choice seemed to represent an appropriate balance of the sometimes competing considerations of data availability, relevance and value in the context of the pandemic and post-pandemic work. That said, while there may be debate about the inclusion or exclusion of particular occupations, most of those in potential dispute are likely to be smaller than the largest occupations (such as teachers and registered nurses) that drive the general patterns shown

here. Thus the inclusion or exclusion of particular occupations makes little substantive difference to the overall results.

The research questions being addressed by this report are:

- to what extent are essential occupations subject to labour shortages and associated features including growth in vacancies and current and future employment?
- which essential occupations are most subject to the above situations?
- what are the regional and gender dimensions of such shortages?
- what factors are responsible for labour shortages, and what roles, if any, are played in them by demand- and supply-side matters including employment growth and wages policy?

1.2. Structures of the ABS Occupational Framework and regional classifications

In identifying and describing essential occupations, resort is made to data using the Australian and New Zealand Standard Classification of Occupations (ANZSCO) framework. ANZSCO is based on a hierarchy of levels. At the top are the ‘major occupation groups’, of which there are eight. These are formed using a combination of skill level and specialisation which are meaningful and useful for most purposes. However, for analysis of labour supply and skill shortages, and for separating out essential occupations, more disaggregated data is needed. The official statisticians of Australia and New Zealand create an occupational hierarchy, in which a number corresponds to an occupational code and the number of digits in that number signifies the degree of disaggregation of the classification.

We see how this works with the example of how a specific worker, a ‘registered nurse (surgical)’, is classified. Among the eight major groups, our ‘registered nurse (surgical)’ is classed as a ‘professional’, which is allocated the major group code 2. The eight major groups divide into 43 sub-major groups (or ‘two-digit’ occupations) on the basis of skill level and a broad concept of skill specialisation. Within the professionals major group, there are 7 sub-major groups. At this level, our nurse is a ‘health professional’ with the code 25.

The sub-major groups divide into 99 minor groups with three digit codes. Within ‘health professionals’, there are four minor groups. Here our worker is classed as a ‘midwifery and nursing professional’ with the code 254.

These minor groups then split into 364 unit groups. Within ‘midwifery and nursing professionals’ there are 4 unit groups, amongst which our worker is described as a ‘registered nurse’ with the four-digit code 2544.

Finally, two-digit suffixes are added to give six-digit individual occupations. In the case of ‘registered nurses’, there are 14 six-digit individual occupations. Thus a ‘registered nurse (surgical)’ has the six-digit code 254424. All up, there are 1076 individual occupation codes at the six-digit level.

Varying levels of occupational coding are used in this report, as data from different sources are available at different levels. This is often due to issues arising from the quality of data at

certain levels for different purposes. These sources and quality issues are outlined in the next section. The main classifications used are at the two-digit and four-digit level, though some analyses are at the three- or six-digit level.

Similarly, when it comes to the discussion of regional data (chapter 7 of this report), several different forms of regional classification are used by the original data sources from which this analysis is drawn. Again, this is often due to issues arising from the quality of data at certain levels for different purposes, in particular the need to ensure estimates are based on large enough cell sizes to warrant publication.

1.3. Data sources and quality

The two main institutions that generate the data used in this report are the Australian Bureau of Statistics (ABS) and Jobs and Skills Australia (JSA), though much of the data published by the latter was originally collected under the name of the National Skills Commission.

The ABS employment figures come from a monthly labour force survey of approximately 26,000 households, conducted since 1978, while its job vacancy data come from a survey of 5,100 employers dating back to the early 1980s (apart from a suspension and reboot in 2008-09).

JSA analyses ABS employment data and also collects its own data including through a count of internet job ads for its monthly Internet Vacancy Index (IVI), undertaken since 2006, a survey of employer recruitment activities (SERA), and a Recruitment Experiences and Outlook Survey, which has only been undertaken since mid 2020.

These data are released at different times. The most recent labour data released for this report were issued on 25 January 2023, concerning the IVI, and they form the basis for section 4 of this report.

Most of these sources (other than the IVI) are surveys and so are subject to sampling error. This affects the accuracy of estimates for individual data points, and the resultant variability is greater when a smaller occupation is involved. For example, estimates for a small occupation like special care workers (with only around 3,000 workers) will be much more variable and hence less reliable than estimates for a large occupation like registered nurses (with closer to 300,000 workers).

Due to this problem of variability, many data are not presented at a very disaggregated level. To avoid excessive sampling error, most ABS data are only published at the major occupational group level, though some go to lower levels of aggregation. Hence this report makes use of different levels of aggregation, according to what is made available by the institutions concerned.

It is also worth noting that, over the long term, the JSA's internet vacancy index shows slower growth than the ABS job vacancy data, a result which is counter-intuitive given the shift from hard-copy to internet advertising over the past two decades. The two surveys, however, measure two different things: the existence of a vacancy, and online advertisements for job vacancies. Faster growth in the ABS series could be explained by fewer vacancies being advertised, or at least being advertised multiple times. In increasingly monopsonistic labour markets, for example, employers may be less willing to spend money on advertising

jobs when they know they will not attract workers at the prevailing wage norm. Employers might prefer to avoid the cost of formal modes of recruitment if they do not expect to fill a vacancy.

The majority of the data described here relate to Australia as a whole. That is how those data are collected and reported. However, some data (including, most importantly, the status of an occupation as being in ‘shortage’, described in Section 5 and Table 1), are specific to New South Wales. That said, as New South Wales is the largest state in Australia, the depiction of an occupational labour market at the national level in other parts of the report should normally also be applicable to the situation in New South Wales, unless otherwise specified. That is because the state descriptors of labour market status in the 2022 SPL in Table 1 are, in the vast majority of cases, the same descriptors as that for the national level in the 2022 SPL.

The term ‘essential’ refers to different groups of occupations, according to which level of analysis the data are available at. At the sub-major group (two-digit) level, the ‘essential’ occupation sub-major groups are considered to be:

- education professionals
- health diagnostic and therapy professionals
- medical practitioners and nurses
- health and welfare support workers
- carers and aides

At the occupation unit level, the ‘essential’ occupations are those shown in Table 1 at the 4-digit level, and most closely correspond to those listed on the first page of this report.

Most importantly, JSA assesses whether occupations are in shortage or not. It defines an occupation as being in shortage:

when employers are unable to fill or have considerable difficulty filling vacancies for an occupation, or significant specialised skill needs within that occupation, at current levels of remuneration and conditions of employment, and in reasonably accessible locations.¹

The assessment of whether an occupation is in shortage or not is published in the Skills Priority List (SPL). The SPL has been produced by the National Skills Commission and is now undertaken by JSA. The List and its occupation assessments

are determined through extensive statistical analysis of the labour market, employer surveys, and broad stakeholder engagement with peak bodies, industry groups, professional associations, unions, regional representative bodies and major employers

¹ <https://www.nationalskillscommission.gov.au/reports/2022-skills-priority-list-key-findings-report/overview#:~:text=An%20occupation%20is%20considered%20to,employment%2C%20and%20in%20reas onably%20accessible.> When the SPL was produced, responsibility lay with the National Skills Commission, but Jobs and Skills Australia continued to use this definition.

in the Australian labour market, combined with consultations with federal, state and territory governments.²

The ‘essential’ occupations that are presently in shortage can be read from Table 1 and are listed, at the 4-digit level, in Table 3. The biggest single factor in determining the shortage status of an occupation is the modelled vacancy fill rate. The modelled rate is not an actual observed rate, as JSA does not have the resources to track the filling of every vacancy. Instead, it uses statistical techniques to estimate the most likely fill rate for vacancies in individual occupations, based on survey and other data. However, this is not the end of the story: these modelled fill rates are combined with different employer survey evidence and, where available, stakeholder feedback. In the end, each occupation is individually assessed with the weight given to different types of evidence varying according to its robustness.

Not all occupations are included in the SPL, with some ‘unskilled’ or, to a lesser extent, ‘semi-skilled’ occupations (mostly smaller ones not involving significant external training) not covered.

This report also makes use of employment projections up to 2026, that is five years ahead from the date when the last observations were taken, in this case in 2021. This forecasting was done originally by the Department of Employment but is now undertaken by JSA. Using a form of regression it essentially extrapolates into the future from past trends, after making ‘some adjustments...to take account of research...and known future industry developments’.³ It also takes account of some general equilibrium modelling intended to ‘better understand how structural changes in the economy may affect employment growth’.⁴

Some caveats need to be made about this. The further researchers look ahead, the less useful the present is as a guide. This is especially the case in employment because, in a quickly changing world, technology is hard to predict and changing consumption patterns even harder. As prices for products fall in the face of new technologies, and new products are invented, those future consumption patterns are crucial but unforeseeable. This will affect actual employment growth for different industries and occupations.

JSA also publishes a ‘Future demand’ rating for each occupation, which is based on integrating the five-year employment projections with the ‘replacement rate’, in effect taking account of labour turnover of people within existing jobs. (An occupation with a given rate of employment growth will have higher demand for employees if there is higher labour turnover in that occupation).

1.4. Characteristics of occupations

The national characteristics of each of the occupations discussed here are summarised in Appendices A (for data at the 4-digit level) and B (at the 6-digit level).

The tables include the principal major industry group in which the greatest number of employees in that category are employed. Amongst those, the largest occupations were registered nurses (294,000 employees nationally in August 2022), aged and disabled carers

² <https://www.nationalskillscommission.gov.au/reports/2022-skills-priority-list-key-findings-report/overview>

³ <https://labourmarketinsights.gov.au/our-research/employment-projections/>

⁴ Ibid.

(274,000), primary school teachers (157,100), secondary school teachers (140,700), child carers (136,100), education aides (110,200) and nursing support and personal care workers (95,500). The numerically smallest were Special Care Workers (3,100), Diversional Therapists (2,900), Middle School Teachers (2,000), and Indigenous Health Workers (1,200).

1.5. Structure of the report

The next section of this report outlines general trends in labour availability, using data from the ABS Job Vacancies survey, and JSA's Recruitment Experiences and Outlook Survey and Internet Vacancy Index. It includes some comments about the distinctions between state and national aggregates and the patterns for various 'essential' occupations. Section 3 then considers the general issue of shortages amongst health and education professionals, two of the occupational sub-major groups at the centre of this project. Section 4 drills down to the occupational unit level, and examines patterns in internet vacancies. Section 5 contains the most detailed (disaggregated) data on skills demand and shortages in NSW, at the individual occupation level, derived from the SPL. This is the section that highlights the state of an occupation as being in shortage or otherwise. Section 6 then contains projections of employment growth for occupational units. Section 7 goes to the regional level, and looks at occupational units in the various SA4 level regions in New South Wales. Section 8 considers the possible reasons for the labour availability outcomes described in the preceding parts of the reports, and the final section concludes and summarises the findings.

2. General patterns of labour supply and demand for occupational major groups

In recent years there has been increasing talk about labour shortages in Australia.⁵ This section commences with a brief overview of the gender dimensions of these patterns, limited by the general absence of gender information from vacancy data (it is illegal to advertise a job for a specific gender). The rest of it discusses the general patterns of labour supply and shortage, first at the national level, using ABS vacancy data and JSA employer survey data, and then looking at overall trends in the internet vacancy index and aggregated differences at the major group level.

2.1. Gender dimensions of essential work

The vast majority of the essential occupations (listed in Appendix A) have, as their primary industry of employment, either Health Care and Social Assistance or Education and Training. In total, 75% of workers in the 'essential' occupational unit groups are female, compared to 47% in the workforce as a whole. Some 46% work part-time, compared to 34% in the economy as a whole.

⁵ eg use of the phrase "labour shortage" "Australia" on the internet appeared to more than double between 2021 and 2022. Based on a Google search conducted on 17/1/23 on the joined phrases "labour shortage" "Australia" with dates of update specified. Results were: 2019 - 3,260 hits; 2020 - 3,220 hits; 2021 - 5,180 hits; 2022 - 12,200 hits.

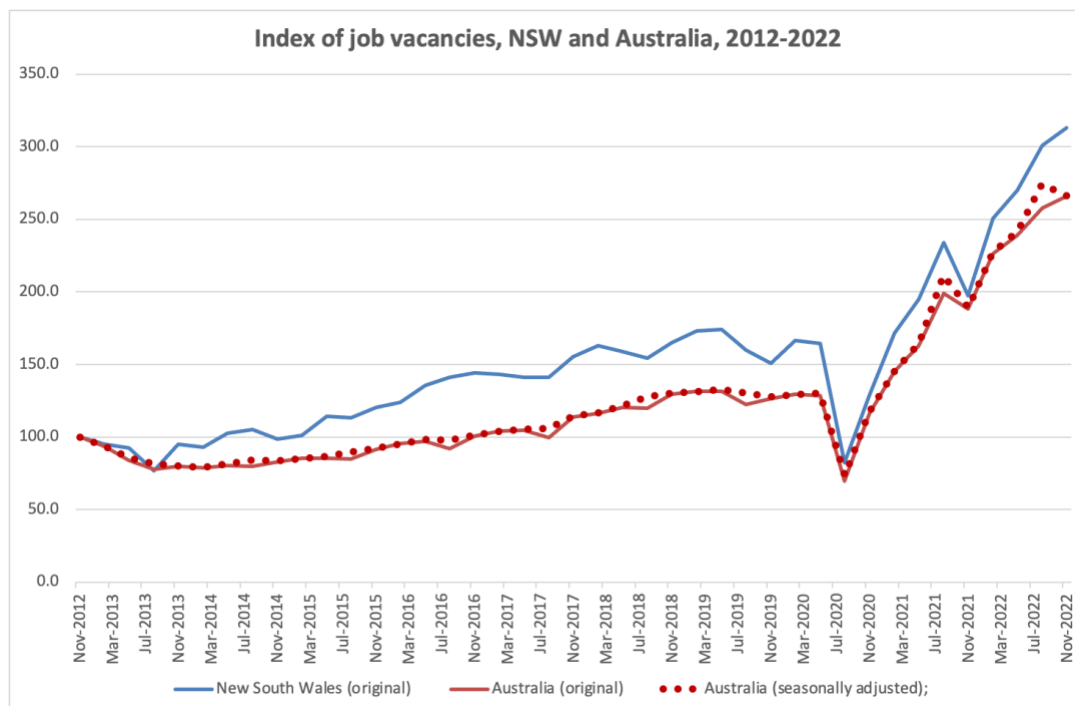
They include some strongly female-dominated occupations, including primary school teachers (85% female), registered nurses (89%), social workers (84%), and aged and disabled carers (80%), though it also includes a smaller number of male dominated occupations including surgeons (82% male), ambulance officers and paramedics (63%), bus drivers (87%) and train drivers (91%).

All up, 2.2 million workers were in the occupations covered by this study in August 2022, accounting for one sixth of all employees but over a quarter of all female employees.

2.2. National patterns of labour demand

The number of job vacancies has increased significantly in the last two years, both nationally and in New South Wales. This is reflected in Figure 1, which shows ABS estimates of the number of job vacancies since November 2012 in index form (November 2012=100), with original data for both jurisdictions plus seasonally adjusted estimates nationally (the only jurisdiction for which the ABS produces seasonally adjusted data). While it could be no surprise that vacancies are higher than at the depths of the pandemic in mid 2020, vacancies are considerably higher than before the pandemic began and have continued to increase despite the easing of all pandemic restrictions, at a rate well above the growth in vacancies before the pandemic.

Figure 1



The Recruitment Experiences and Outlook Survey, undertaken by Jobs and Skills Australia (formerly by the National Skills Commission), showed increasing proportions of surveyed employers reporting recruitment difficulties, with fairly similar growth shown between NSW and national estimates since the survey began in 2020 (Figure 2). In the year to November 2022, the estimated proportion of employers engaged in recruitment activity rose from 50%

to 58%, and over that period the proportion of recruiting employers reporting difficulty in filling vacancies rose from 63% to 69%.

Figure 2

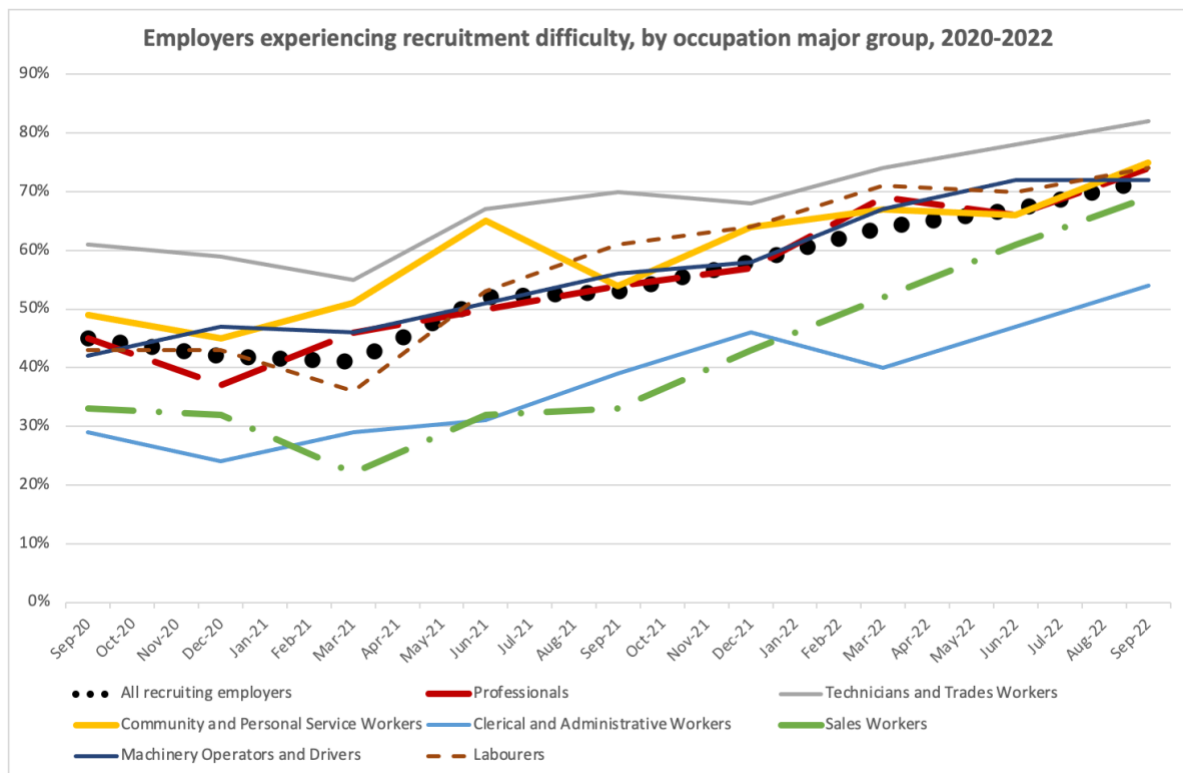


Source: Jobs and Skills Australia, Recruitment Experiences and Outlook Survey, data file, November 2022.

2.3. Occupational major groups and recruitment difficulty

Growth in reported recruitment difficulty is evident across all eight occupational major groups since 2020 (figure 3), with reported difficulty in recruiting professional employees fairly similar to that for the average of all employees as a whole.

Figure 3



Source: Jobs and Skills Australia, Recruitment Experiences and Outlook Survey, data file, November 2022.

Note: At various times in 2020 and 2022 employers in some regions were not surveyed for particular surveys, due to flooding, lockdowns or other reasons. For more information see <https://www.jobsandskills.gov.au/sites/default/files/2022-12/Recruitment%20Insights%20Report%20-%20November%202022%20data%20file.xlsx>

2.4. Essential vs other occupations

While it is apparent from Figure 3 that some occupational groups have consistently greater or lesser recruitment difficulty than others, what is not so obvious from it is that the relative circumstances of particular occupations can rapidly change in the context of changes in the external environment.

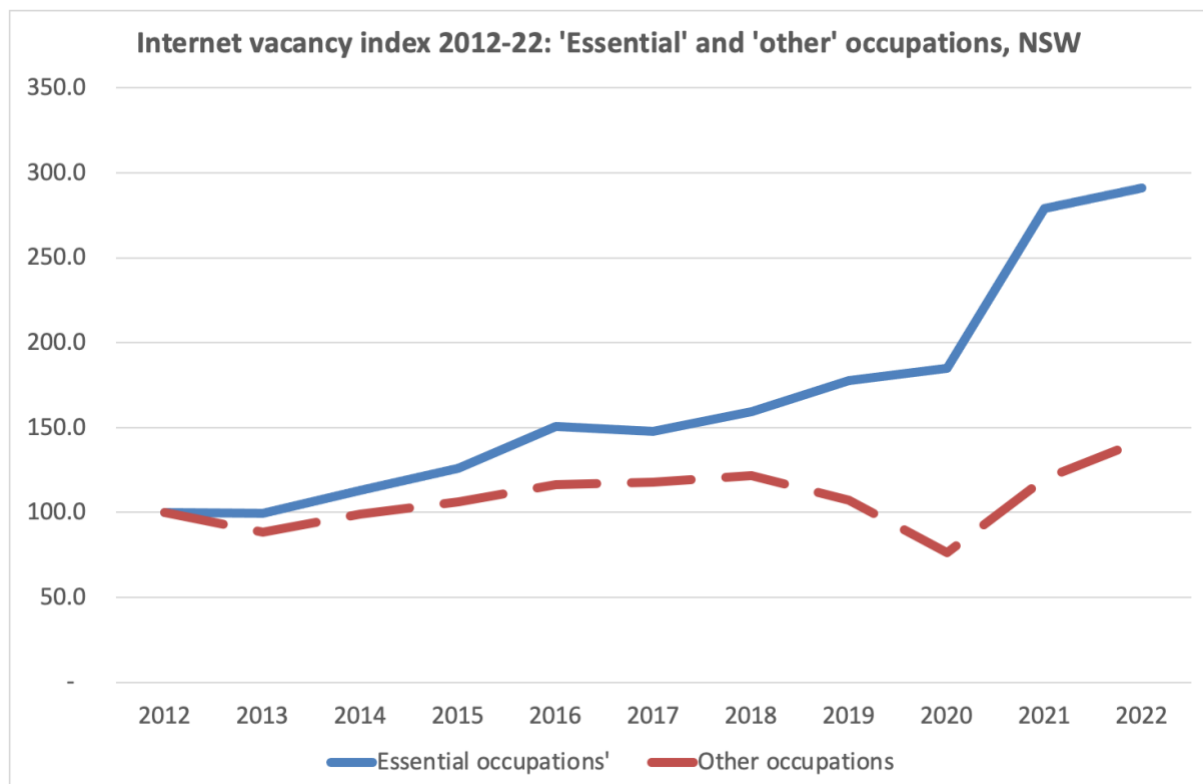
During the pandemic, demand for most occupations declined, as the overall labour market softened, but a number of ‘essential’ occupations experienced increased employer demand. As figure 4 shows, in New South Wales, internet vacancies for the ‘essential’ occupations covered in this report, and ‘other’ occupations, both showed growth in the pre-pandemic period from 2012 to 2018. But in the pandemic, vacancies for ‘essential’ occupations rose, while those for other occupations fell. In 2020, ‘essential’ internet vacancies rose by 4%, whereas other internet vacancies fell by 29%.

When the pandemic circumstances changed, growth in demand for non-essential occupations resumed, but this was not accompanied by any loss in demand for essential occupations: in 2021, the numbers of internet vacancies for both ‘essential’ and ‘other’ occupations both rose by about half. In 2022 both sets of internet vacancies rose again — by more for ‘other’ than

‘essential’ occupations. It was nonetheless the case that, by 2022, the number of internet vacancies for ‘essential’ occupations was 98% higher than it had been in 2018. For ‘other’ vacancies, the number was just 26% higher than in 2018.

That said, the growth in demand for ‘essential’ occupations was not just a function of the pandemic. As can be seen in Figure 4, even in 2019, before the pandemic began in New South Wales, internet vacancies for ‘essential’ occupations were rising, while those for other occupations fell. The pandemic (including the migration policy response) exacerbated those tendencies severely in 2020, but it was not the sole cause of them. ‘Essential’ occupations were becoming more essential even before the pandemic.

Figure 4



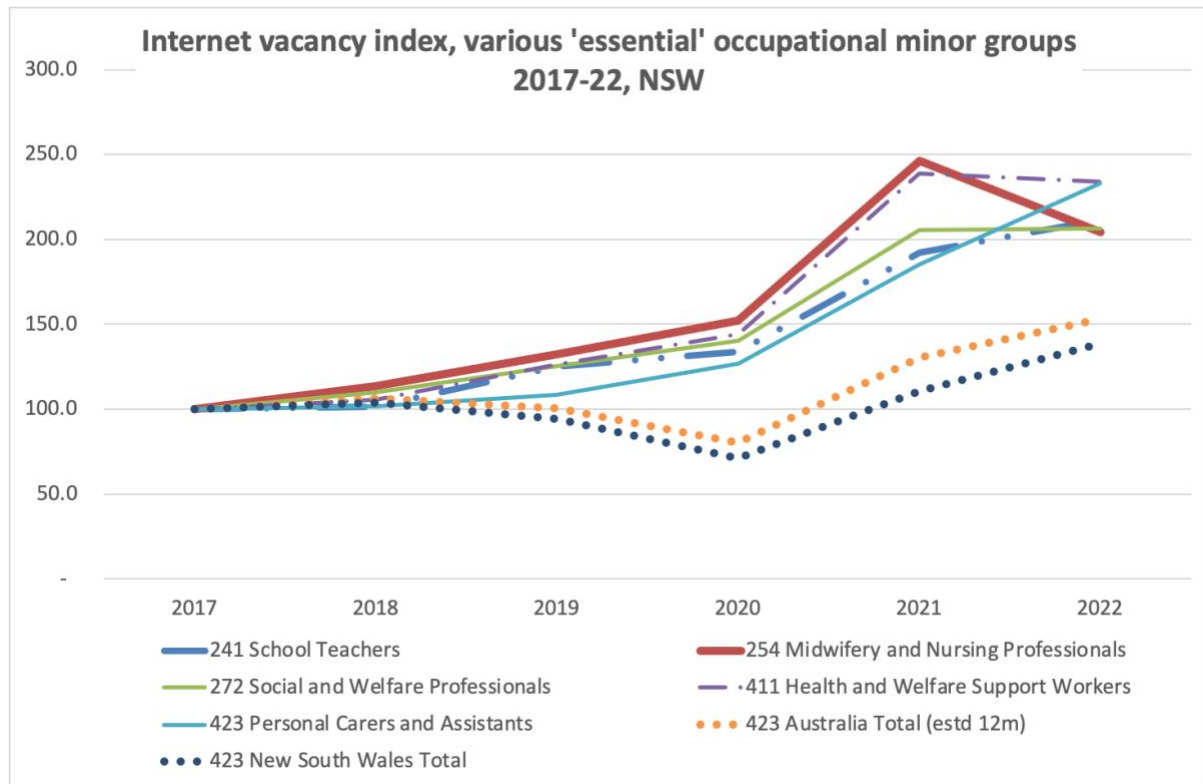
Source: <https://www.jobsandskills.gov.au/work/internet-vacancy-index#datadownloads>

2.5. Occupational minor groups and internet vacancies

Figure 5 looks at this in some more detail and illustrates something of the diversity in occupational trajectories, by showing the trends for the state and national total numbers of internet vacancies from 2017 and the numbers of vacancies in five occupational minor groups (School Teachers, Midwifery and Nursing Professionals, Social and Welfare Professionals, Health and Welfare Support Workers, and Personal Carers and Assistants). While average state and national internet vacancies fell significantly in 2019 and 2020, vacancies for the five occupational minor groups shown all increased. When the pandemic circumstances changed,

growth in demand for other sub-major occupation groups resumed, but this was not accompanied by any loss in demand for most essential occupations: the numbers of internet vacancies for the five minor groups shown here continued to grow, rather than reverting to pre-pandemic levels. The only exception was midwifery and nursing professionals, who unsurprisingly experienced a huge increase in vacancies in 2020 as the health system bore the full brunt of COVID-19, after which there was a slight easing of vacancies.

Figure 5



Source: <https://www.jobsandskills.gov.au/work/internet-vacancy-index#datadownloads>

While figure 3 suggested that growth in vacancies for professional occupations was fairly similar to the overall average, the subsequent figures implied that ‘essential’ professions may have experienced faster growth in vacancies than other professions. This was indeed the case. Between 2018 and 2019, internet vacancies for ‘essential’ professionals grew by 18%, while those for ‘other’ professionals fell by 10%. In 2020, the gap was even starker: growth of 8% for ‘essential’ professions, compared to a decline of 32% for ‘other’ professionals. Patterns of occupational growth even within the professions are quite distinct.

As another indicator of how readily circumstances can change, the number of individual occupations in ‘shortage’ increased significantly between 2021 and 2022, at least according to assessments by the National Skills Commission. There were 127 occupations determined to be in shortage in both 2021 and 2022; however, another 129 occupations were not listed as facing a shortage in 2021 but were considered in shortage by 2022.⁶ Of those who switched

⁶ NSC, *Skills Priority List 2022*, pp25, 28.

from ‘not in shortage’ to ‘in shortage’ in 2022, 40% were ‘essential’ occupations, though these made up only 18% of occupations on the SPL list.

3. Are there shortages for health professionals and teachers?

The 2022 Skills Priority List (SPL) highlighted three occupational groupings in labour shortage. Two of these were health and teaching professionals.

There was a sharp change in the market for teachers in 2022. The number of suitable applicants per vacancy for education professions (the relevant ANZSCO sub-major group) fell from 3.8 in 2021 to 1.8 in 2022.⁷ While 86% of vacancies were filled in 2021, this was the case for only 60% of vacancies in 2022. Yet, as the SPL noted:

analysis suggests that the number of graduates who are trained and qualified as Primary School and Secondary School teachers in the Australian labour market should be sufficient to meet demand. This highlights the complexities of occupational skills shortages in Australia, and that a supply of trained professionals may not necessarily translate to an adequate supply to meet labour market needs.⁸

A major problem seems to be high rates of teacher attrition, such that the supply of newly-trained teachers is not able to replace the departures. Thus, while the notional supply of teachers may appear driven by trainee graduation rates (and this had fallen by 15% over the five years to 2019),⁹ as the SPL observed, the

‘true’ supply of workers for teaching occupations may be influenced by a range of other factors including but not limited to workplace conditions, remuneration and perceptions of remuneration, impacts on wellbeing and mental health, skills wastage and attrition such as loss of qualified teachers to other occupations.¹⁰

A year earlier, the SPL had not rated most teaching occupations as being in shortage, though it commented that ‘Most stakeholders expected the recruitment difficulty to worsen over the next 12 months’.¹¹ That year, the SPL noted that, when vacancies had remained unfilled, around a quarter of such vacancies had attracted suitable applicants but no agreement could be reached over the terms and conditions of employment (especially where alternatives were available or relocation was unattractive). The proportion of unfilled vacancies nearly trebled

⁷ The research periods for SPL correspond more closely to financial years rather than calendar years. Thus the 2021 SPL refers to data collected in financial year 2020-21, and the 2022 SPL refers to data collected in financial year 2021-22.

⁸ *Skills Priority List 2022*, p23.

⁹ <https://www.nationalskillscommission.gov.au/publications/skills-priority-list-occupations/anzsco-sub-major/education-professionals> dated June 2021

¹⁰ *Skills Priority List 2022*, p23.

¹¹ <https://www.nationalskillscommission.gov.au/publications/skills-priority-list-occupations/anzsco-sub-major/education-professionals> dated June 2021

in the following year. With an ageing teaching workforce, an implication could be that younger teachers are disproportionately leaving the profession.

Amongst health professionals, the difficulty in filling posts seems even more severe, and facing a comparable deterioration. Most nursing occupations, and a number of other health occupations, moved into the ‘shortage’ category between 2021 and 2022. Whereas 67% of vacancies for health professionals were filled in 2021, this proportion was only 52% by 2022, a noteworthy shift. The huge surge in advertisements for nursing positions in 2021 had been followed by a slight easing in 2022. There were just 2.8 suitable applicants per health professional vacancy in 2021, falling to 1.5 per vacancy in 2022. Vacancies doubled over the two years to 2022. Again, in 2021 the NSC reported that ‘Most stakeholders expected recruitment difficulties to worsen over the next 12 months, or to persist’,¹² and this expectation was fulfilled.

Particularly relevant to health professionals was burnout associated with the pandemic. The 2022 SPL reported that ‘over 70% of healthcare workers reported moderate to severe burnout’,¹³ with significant minorities experiencing redeployment, changed work roles and (for 22%) increases in unpaid hours.¹⁴

For both health and education professionals, difficulties in filling positions were notably greater in regional than in metropolitan areas. In 2021, for example, regional employers of health professionals were a third more likely than their metropolitan equivalents to have unfilled vacancies.

4. NSW internet vacancy trends for specific occupational unit groups

A key influence on labour shortages is the extent of vacancies for an occupation. The ABS does not publish data at a sufficiently disaggregated level by occupation, but data on internet vacancies is available from JSA at the unit (4-digit) level for the states. This chapter looks at these data for essential occupations.

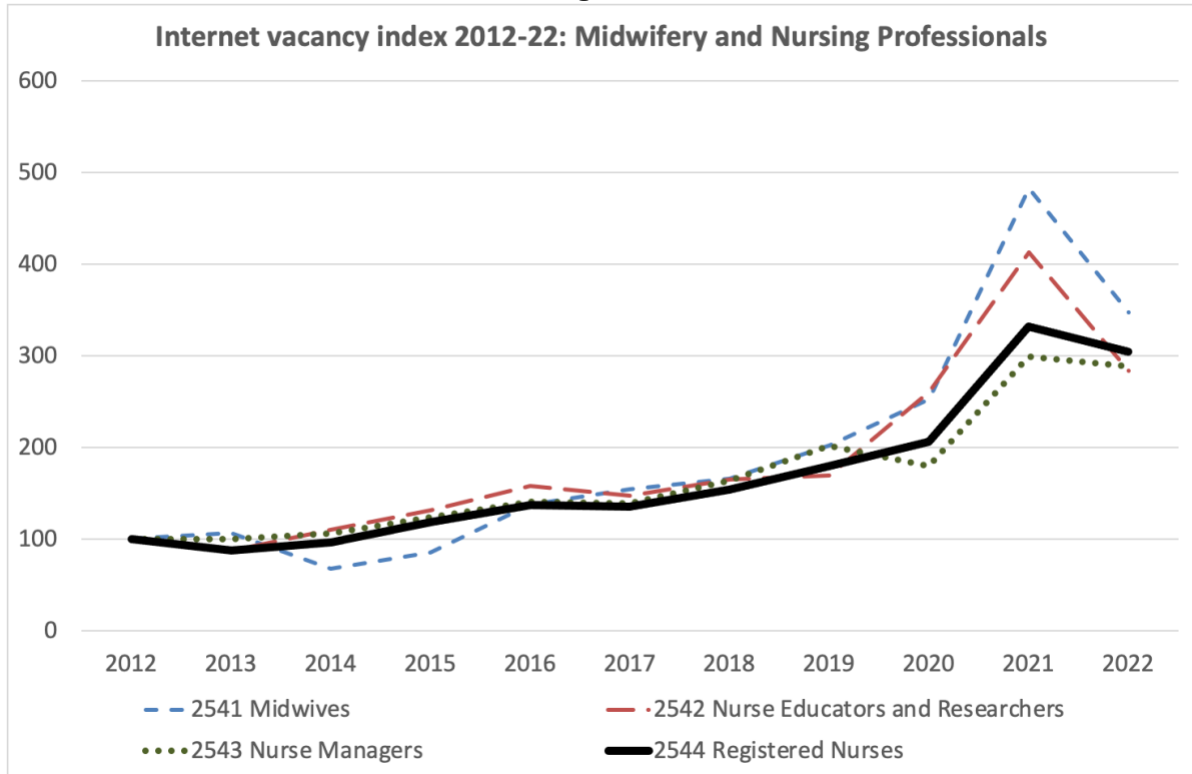
In figure 6 we see how New South Wales internet vacancies for four occupation units changed between 2012 and 2022. They rose for all four occupational units shown there: registered nurses, midwives, nurse managers and nurse educators and researchers. In the case of the largest of those occupations, registered nurses, internet vacancies trebled, rising by 205% between 2012 and 2022, including a 125% increase over the past five years and a 48% increase over the two years to 2022.

¹² <https://www.nationalskillscommission.gov.au/publications/skills-priority-list-occupations/anzsco-sub-major/health-professionals>

¹³ *Skills Priority List 2022*, p20, citing Smallwood et al. *High levels of psychosocial distress among Australian frontline healthcare workers during the COVID-19 pandemic: a cross-sectional survey*, September 2021.

¹⁴ SPL 2022, p19, citing Smallwood et al. *Occupational Disruptions during the COVID-19 Pandemic and Their Association with Healthcare Workers' Mental Health*, September 2021

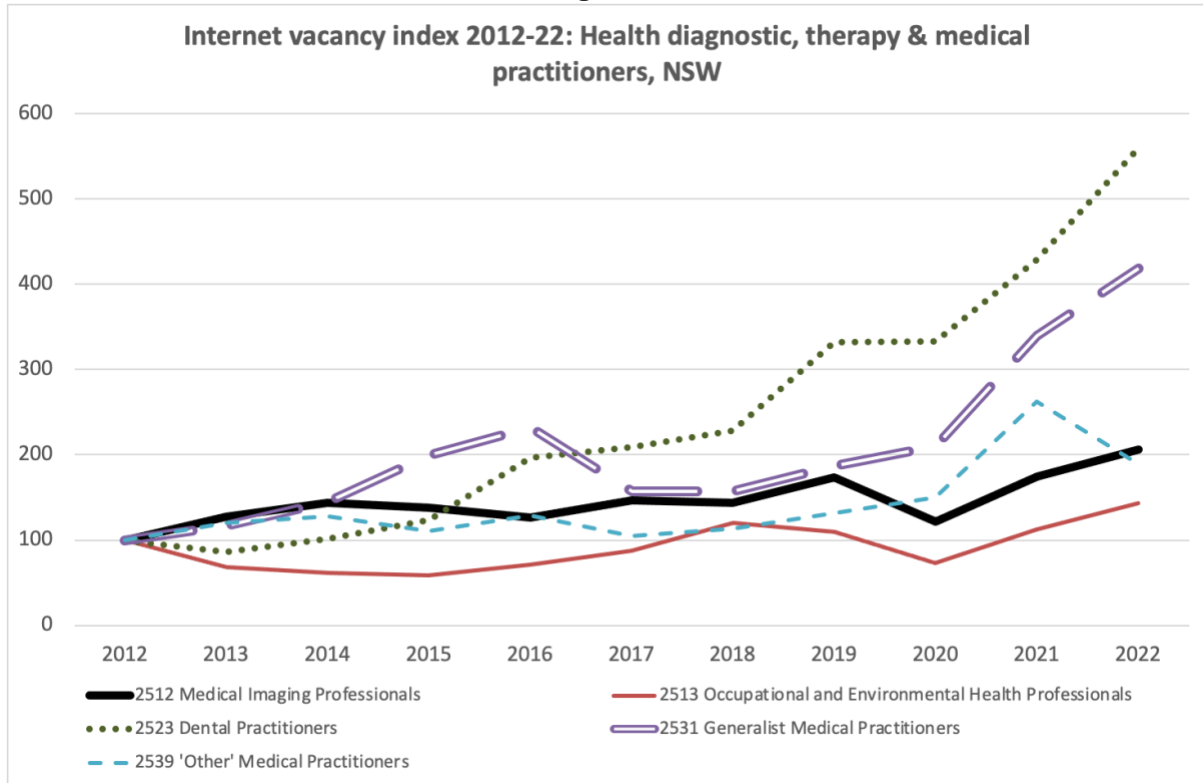
Figure 6



Source: <https://www.jobsandskills.gov.au/work/internet-vacancy-index#datadownloads>

Figure 7 shows similar data for various larger occupational units amongst other health and medical professionals. We see, for example, internet vacancies for medical imaging professionals (such as radiographers and sonographers) rose by 105.8% over the decade, including by 69% between 2020 and 2022. Vacancies for generalist medical practitioners (general practitioners and resident medical officers) quadrupled, including a doubling over the last two years. For a lot of medical specialisations, the occupational sizes are too small for it to be illuminating to graph the annual movements.

Figure 7

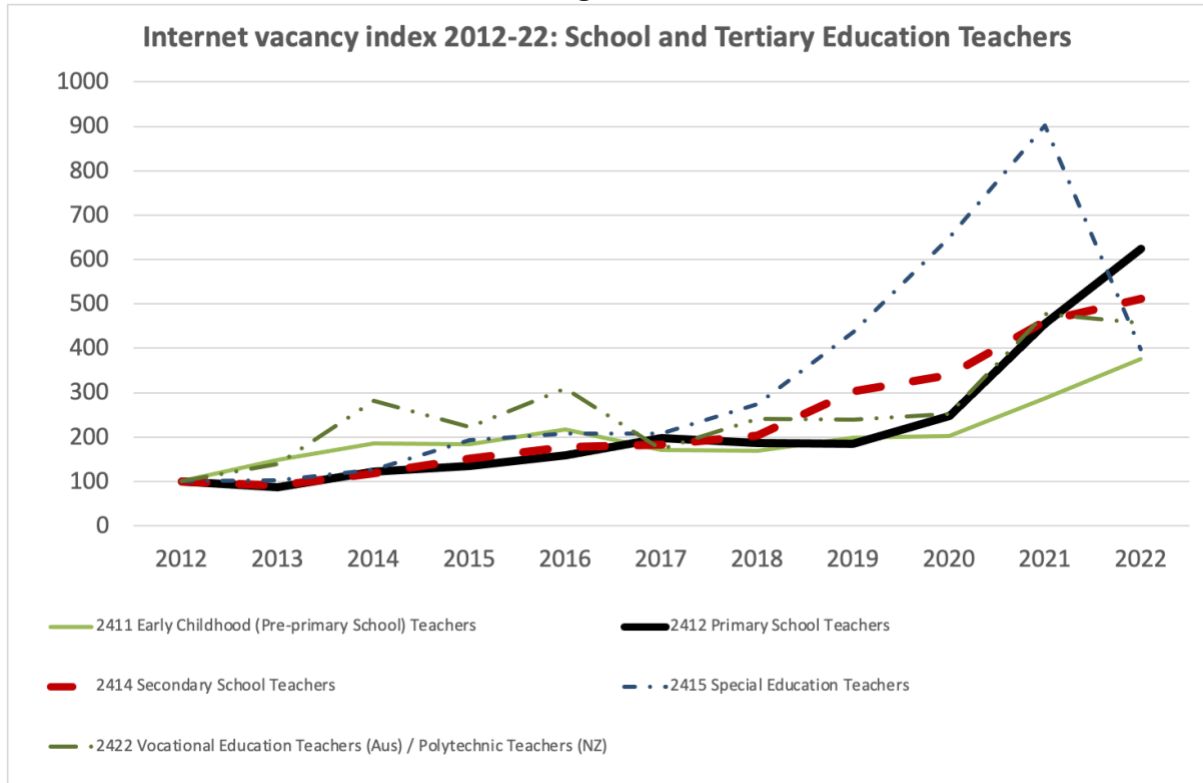


Source: <https://www.jobsandskills.gov.au/work/internet-vacancy-index#datadownloads>

Data for teachers is shown in figure 8. We can see a quadrupling of internet vacancies for secondary teachers and a quintupling for primary school teachers over the decade, with approximately a trebling over the past five years for each. The largest variation is shown, naturally enough, by the smallest occupation: special education teachers.¹⁵

¹⁵ Internet vacancies for this occupation grew by 333% between 2017 and 2021 but then fell by 56% in 2022, for a net increase of 91% between 2017 and 2022. This large variation reflected the high standard error associated with movements for a small occupation (about one seventh the size of primary school teachers).

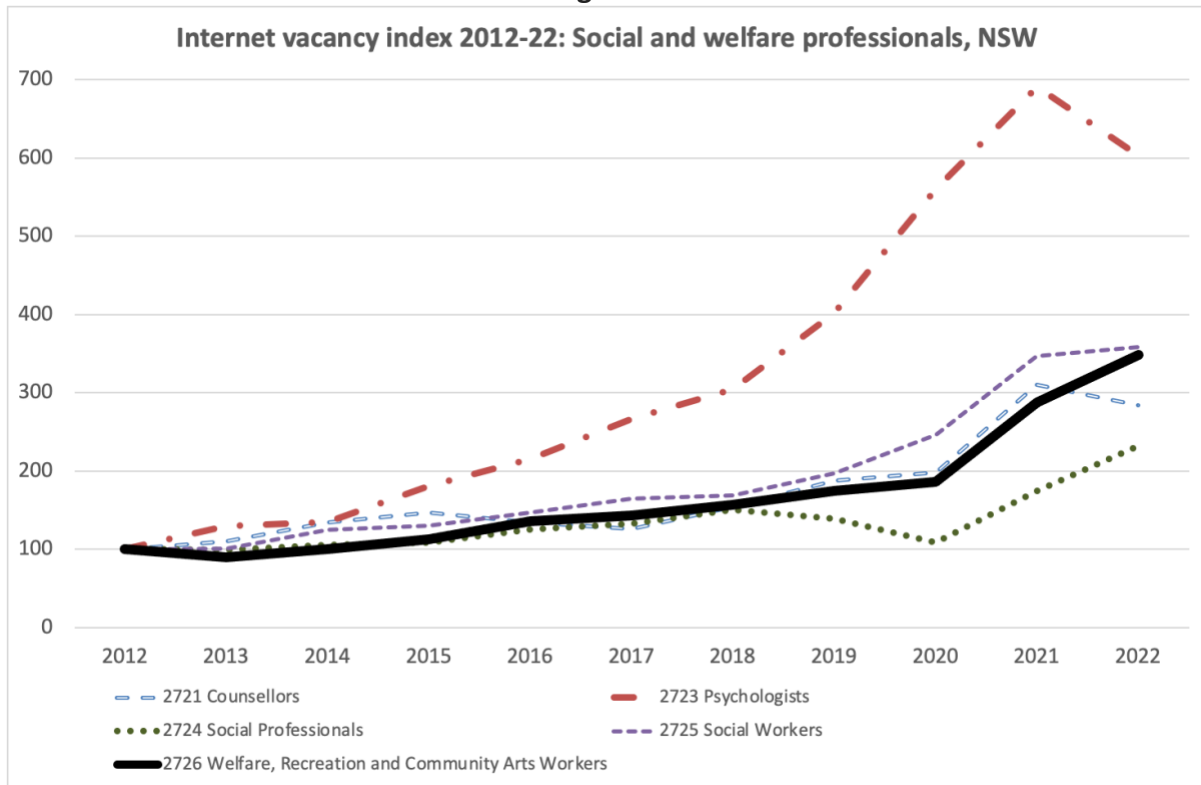
Figure 8



Source: <https://www.jobsandskills.gov.au/work/internet-vacancy-index#datadownloads>

Internet vacancies for five occupational units amongst social and welfare professionals are depicted in Figure 9. Amongst those, psychologists showed by far the biggest growth in vacancies but this was not just a phenomenon of the pandemic, it was a trend that had been apparent for several years beforehand. That aside, the largest occupational unit, welfare, recreation and community arts workers, had growth of nearly 250% in internet vacancies over the decade, including 87% over the last two years.

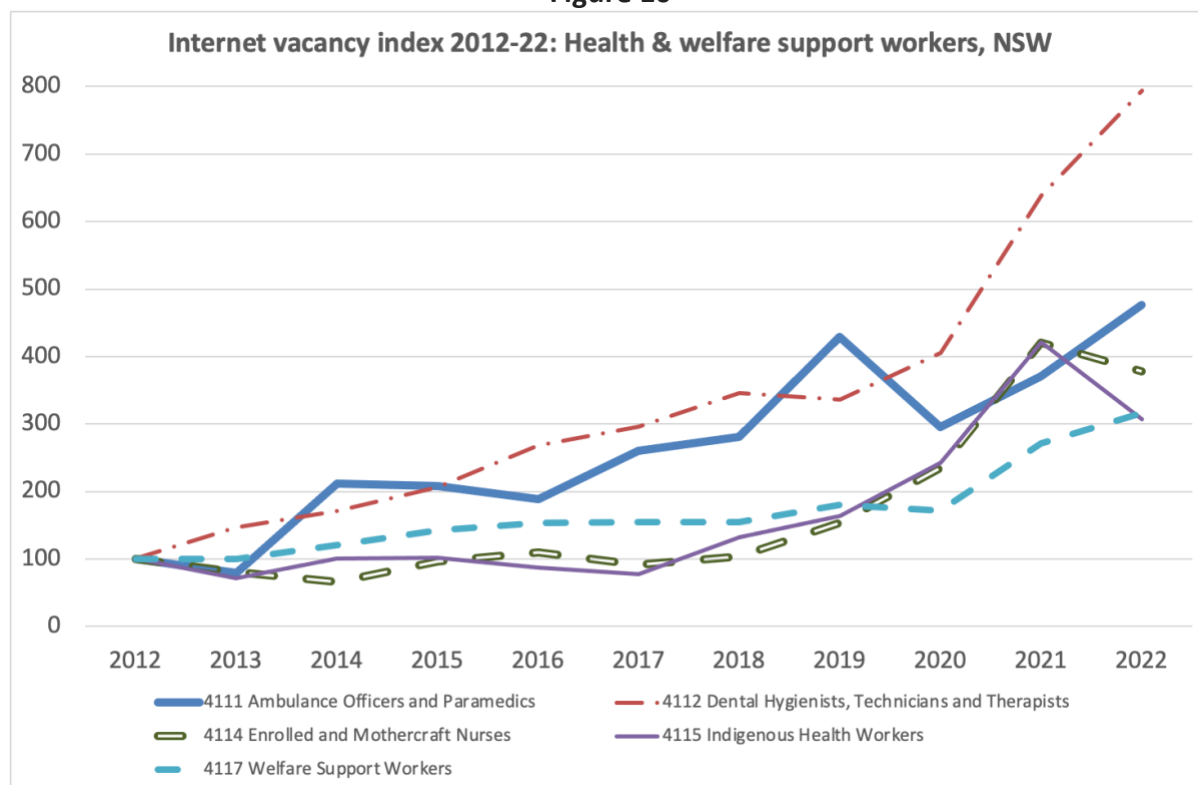
Figure 9



Source: <https://www.jobsandskills.gov.au/work/internet-vacancy-index#datadownloads>

Health and welfare support workers generally represent small occupational units, but they also followed a similar broad pattern, as seen in Figure 10. Welfare support worker vacancies trebled over the decade, with 84% growth over the last two years, while vacancies for ambulance workers and paramedics more than quadrupled in ten years, with 61% growth between 2020 and 2022.

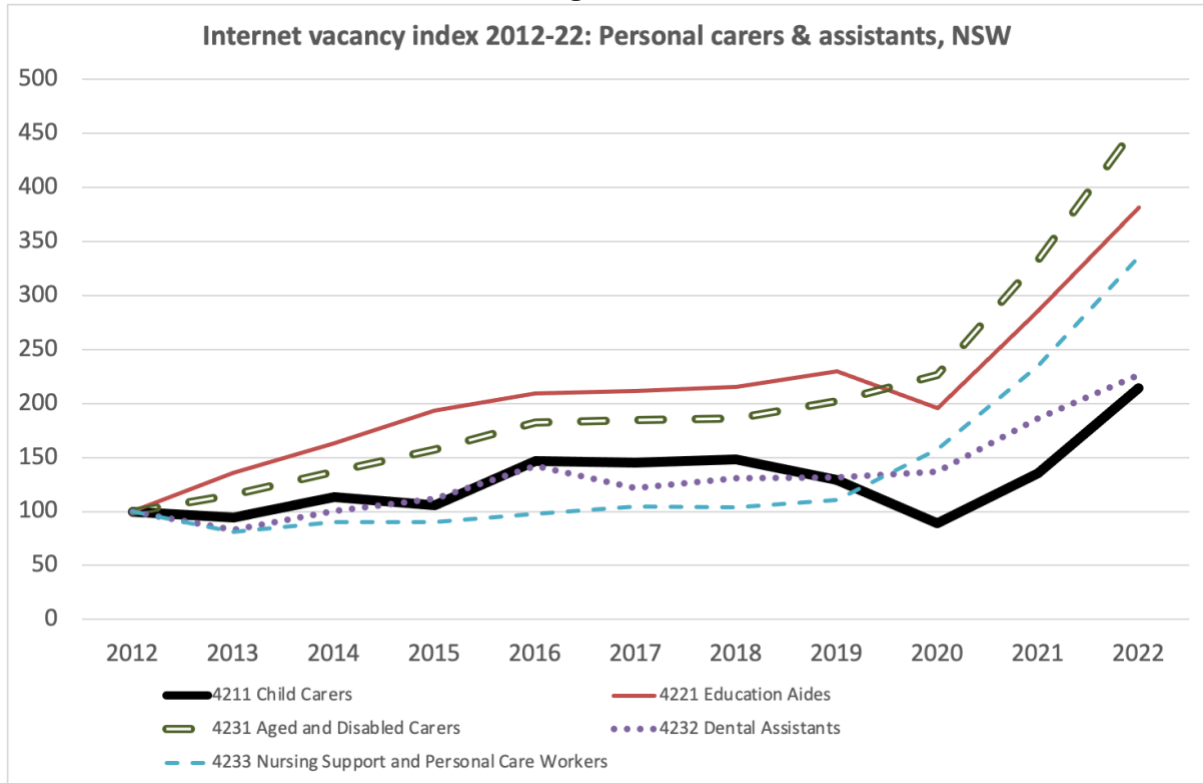
Figure 10



Source: <https://www.jobsandskills.gov.au/work/internet-vacancy-index#datadownloads>

By contrast, personal carer and assistant occupations tend to be large, and so the movements are less erratic, as depicted in Figure 11. Internet vacancies for the largest, aged and disabled carers, grew by 360% over ten years, including a doubling over the two years 2020-2022. The next largest, child carers, saw a drop in vacancies in the first year of the pandemic as many child care centres closed, to below the 2012 level; but there was a resurgence after that, such that internet vacancies grew by 141% between 2020 and 2022, and a total of 114% between 2012 and 2022.

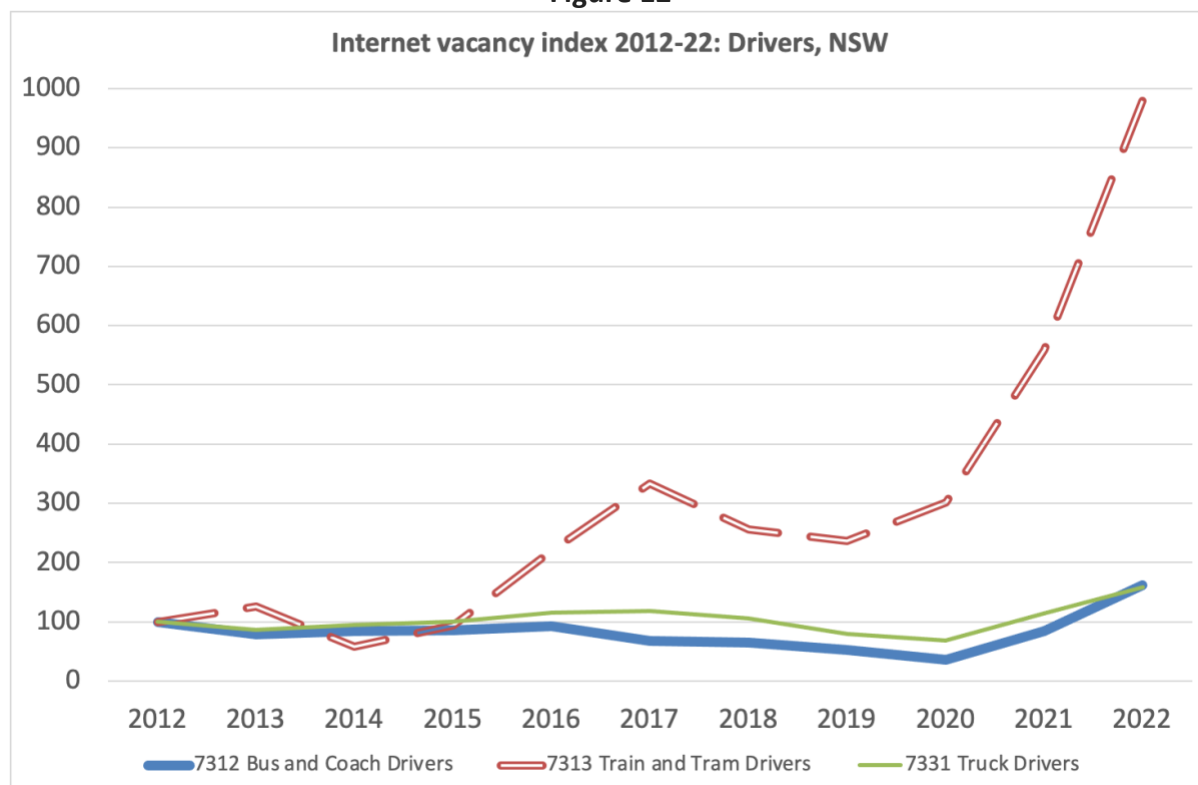
Figure 11



Source: <https://www.jobsandskills.gov.au/work/internet-vacancy-index#datadownloads>

Finally, internet vacancies for drivers are shown in Figure 12. Vacancies for bus drivers reached a trough in 2020, but by 2022 were 62% above the 2012 level. Vacancies for train drivers, however, grew through the pandemic and by 2022 were a remarkable 879% above the 2012 level.

Figure 12



Source: <https://www.jobsandskills.gov.au/work/internet-vacancy-index#datadownloads>

5. Shortages and demand ratings for individual occupations

This section contains the most detailed (disaggregated) data on skills demand and shortages in NSW, and comes from the Skills Priority List (SPL).

5.1. Labour shortages and future demand ratings

Amongst the 914 occupations for which the Skills Priority List (SPL) has data, 30% are listed as experiencing a current shortage in NSW.

Just 1% are described as facing a regional shortage, while the remaining 69% are 'NS' and not described as being in shortage. 'NS' essentially signifies that no research has identified any significant difficulty filling vacancies. So it does not always mean 'no shortage', as for some occupations, a lack of evidence would in itself result in an occupation being placed in this category. The SPL also notes that

An occupation may be assessed as being in shortage even though not all specialisations are in shortage. Similarly, a rating of national shortage does not mean that employers in every geographical location have difficulty recruiting. While an occupation can be considered in shortage, it is still possible that job seekers can face significant competition for positions (due to the level of experience or specialisations required). Similarly, employers can still have difficulty recruiting for occupations that are not in shortage.¹⁶

The SPL also includes data on forecast demand growth for each of the occupations, which are divided into three categories. While 26% are expected to face ‘strong future demand’, the majority (63%) are predicted to face ‘moderate future demand’ and 12% are expected to have ‘soft future demand’.

Table 1 lists the labour market status and prospects for 162 of those occupations from the most recent SPL, released on 6 October 2022.

One of the most notable aspects of Table 1 is that strong future demand for an occupation is not predictive of current labour shortages. It can be seen that, out of 84 ‘essential’ occupations experiencing a current shortage, only 22 (26%) were faced ‘strong future demand’, while among the 56 not experiencing a current NSW shortage, 15 (27%) faced strong future demand. This is not just a phenomenon amongst ‘essential’ occupations, as a similar story is told when we look at national level data for all occupations on the SPL. There, out of 278 occupations experiencing a current national shortage, just 66 (24%) were facing ‘strong future demand’, while out of the 628 occupations not in shortage, 167 (67%) faced strong future demand.

This reflects the strong supply-side influences on labour shortages. While strong demand can push an occupation into shortage if supply fails to match it, even moderate demand growth can be associated with a labour shortage if the occupation is not attractive to potential workers relative to the alternatives available to them or it suffers from high attrition. And even slow labour demand growth can be associated with a labour shortage if a large enough number of existing workers are leaving the occupation.

That said, where an essential occupation is facing strong demand growth, potential employers need to ensure that the supply side considerations — the availability of suitably qualified labour, and the attractiveness of the occupation — are adequate to meet future demand needs.

¹⁶ <https://www.nationalskillscommission.gov.au/skills-priority-list-methodology#:~:text=Similarly%2C%20a%20rating%20of%20national,face%20significant%20competition%20for%20positions.>

Table 1: Current labour market rating and future demand rating for selected individual occupations in 2022 Skills Priority List

Minor group	Unit group	Occupation ANZSCO Code	Occupation title	Current NSW LM Rating	Also shortage in 2021?	National Future Demand Rating
241	School Teachers					
	2411	Early Childhood (Pre-primary School) Teachers				
		241111	Early Childhood (Pre-primary School) Teacher	Current shortage	Yes	Strong future demand
	2412	Primary School Teachers				
		241213	Primary School Teacher	Current shortage	No	Moderate future demand
	2413	Middle School Teachers / Intermediate School Teachers				
		241311	Middle School Teacher / Intermediate School Teacher	NS		Moderate future demand
	2414	Secondary School Teachers				
		241411	Secondary School Teacher	Current shortage	No	Moderate future demand
	2415	Special Education Teachers				
		241511	Special Needs Teacher	Current shortage	No	Moderate future demand
		241512	Teacher of the Hearing Impaired	Current shortage	No	Moderate future demand
		241513	Teacher of the Sight Impaired	Current shortage	No	Moderate future demand
		241599	Special Education Teachers nec	Current shortage		Moderate future demand
242	Tertiary Education Teachers					
	2421	University Lecturers and Tutors				
		242111	University Lecturer	NS		Moderate future demand
		242112	University Tutor	NS		Moderate future demand
	2422	Vocational Education Teachers / Polytechnic Teachers				
		242211	Vocational Education Teacher / Polytechnic Teacher	Current shortage	No	Moderate future demand
251	Health Diagnostic and Promotion Professionals					
	2511	Nutrition Professionals				
		251111	Dietitian	NS		Moderate future demand
		251112	Nutritionist	NS		Moderate future demand

Minor group	Unit group	Occupation ANZSCO Code	Occupation title	Current NSW LM Rating	Shortage in 2021?	National Future Demand Rating
	2512	Medical Imaging Professionals				
		251211	Medical Diagnostic Radiographer	Current shortage	No	Moderate future demand
		251212	Medical Radiation Therapist	Current shortage	No	Moderate future demand
		251213	Nuclear Medicine Technologist	NS		Moderate future demand
		251214	Sonographer	Current shortage	Yes	Moderate future demand
	2513	Occupational and Environmental Health Professionals				
		251311	Environmental Health Officer	NS		Moderate future demand
		251312	Occupational Health and Safety Adviser	NS		Moderate future demand
	2514	Optometrists and Orthoptists				
		251411	Optometrist	Current shortage	Yes	Moderate future demand
		251412	Orthoptist	NS		Moderate future demand
	2515	Pharmacists				
		251511	Hospital Pharmacist	Current shortage	Yes	Moderate future demand
		251512	Industrial Pharmacist	NS		Moderate future demand
		251513	Retail Pharmacist	Current shortage	Yes	Moderate future demand
	2519	Other Health Diagnostic and Promotion Professionals				
		251911	Health Promotion Officer	NS		Moderate future demand
		251912	Orthotist or Prosthetist	Current shortage	No	Moderate future demand
		251999	Health Diagnostic and Promotion Professionals nec	Current shortage		Moderate future demand
252	Health Therapy Professionals					
	2523	Dental Practitioners				
		252311	Dental Specialist	NS		Moderate future demand
		252312	Dentist	Current shortage	No	Moderate future demand
	2524	Occupational Therapists				
		252411	Occupational Therapist	Current shortage	Yes	Moderate future demand
	2525	Physiotherapists				
		252511	Physiotherapist	Current shortage	Yes	Moderate future demand

Minor group	Unit group	Occupation ANZSCO Code	Occupation title	Current NSW LM Rating	Shortage in 2021?	National Future Demand Rating
	2526	Podiatrists				
		252611	Podiatrist	Current shortage	Yes	Moderate future demand
	2527	Audiologists and Speech Pathologists / Therapists				
		252711	Audiologist	Current shortage	No	Moderate future demand
		252712	Speech Pathologist / Speech Language Therapist	Current shortage	Yes	Moderate future demand
253	Medical Practitioners					
	2531	General Practitioners and Resident Medical Officers				
		253111	General Practitioner	Current shortage	Yes	Moderate future demand
		253112	Resident Medical Officer	Current shortage	Yes	Moderate future demand
	2532	Anaesthetists				
		253211	Anaesthetist	Current regional shortage	Yes	Soft future demand
	2533	Specialist Physicians				
		253311	Specialist Physician (General Medicine)	Current shortage	No	Moderate future demand
		253312	Cardiologist	Current shortage	Yes	Moderate future demand
		253313	Clinical Haematologist	Current shortage	No	Moderate future demand
		253314	Medical Oncologist	Current shortage	Yes	Moderate future demand
		253315	Endocrinologist	Current shortage	No	Moderate future demand
		253316	Gastroenterologist	Current shortage	No	Moderate future demand
		253317	Intensive Care Specialist	Current shortage	No	Moderate future demand
		253318	Neurologist	Current shortage	No	Moderate future demand
		253321	Paediatrician	Current shortage	No	Moderate future demand
		253322	Renal Medicine Specialist	Current shortage	No	Moderate future demand
		253323	Rheumatologist	Current shortage	No	Moderate future demand
		253324	Thoracic Medicine Specialist	Current shortage	No	Moderate future demand
		253399	Specialist Physicians nec	Current shortage		Moderate future demand
	2534	Psychiatrists				
		253411	Psychiatrist	Current shortage	Yes	Moderate future demand

Minor group	Unit group	Occupation ANZSCO Code	Occupation title	Current NSW LM Rating	Shortage in 2021?	National Future Demand Rating
	2535	Surgeons				
		253511	Surgeon (General)	Current shortage	Yes	Moderate future demand
		253512	Cardiothoracic Surgeon	Current shortage	No	Moderate future demand
		253513	Neurosurgeon	Current shortage	No	Moderate future demand
		253514	Orthopaedic Surgeon	Current shortage	No	Moderate future demand
		253515	Otorhinolaryngologist	Current shortage	No	Moderate future demand
		253516	Paediatric Surgeon	Current shortage	No	Moderate future demand
		253517	Plastic and Reconstructive Surgeon	Current shortage	No	Moderate future demand
		253518	Urologist	Current shortage	No	Moderate future demand
		253521	Vascular Surgeon	Current shortage	No	Moderate future demand
	2539	Other Medical Practitioners				
		253911	Dermatologist	Regional shortage	Yes	Moderate future demand
		253912	Emergency Medicine Specialist	Current shortage	No	Moderate future demand
		253913	Obstetrician and Gynaecologist	Regional shortage	Yes	Moderate future demand
		253914	Ophthalmologist	Current shortage	Yes	Moderate future demand
		253915	Pathologist	Current shortage	Yes	Moderate future demand
		253917	Diagnostic and Interventional Radiologist	Regional shortage	Yes	Moderate future demand
		253918	Radiation Oncologist	NS		Moderate future demand
		253999	Medical Practitioners nec	Current shortage		Moderate future demand
254	Midwifery and Nursing Professionals					
	2541	Midwives				
		254111	Midwife	Current shortage	Yes	Strong future demand
	2542	Nurse Educators and Researchers				
		254211	Nurse Educator	NS		Moderate future demand
		254212	Nurse Researcher	Current shortage	No	Moderate future demand
	2543	Nurse Managers				
		254311	Nurse Manager	NS		Moderate future demand

Minor group	Unit group	Occupation ANZSCO Code	Occupation title	Current NSW LM Rating	Shortage in 2021?	National Future Demand Rating
	2544	Registered Nurses				
		254411	Nurse Practitioner	Current shortage	No	Strong future demand
		254412	Registered Nurse (Aged Care)	Current shortage	No	Strong future demand
		254413	Registered Nurse (Child and Family Health)	Current shortage	No	Strong future demand
		254414	Registered Nurse (Community Health)	Current shortage	No	Strong future demand
		254415	Registered Nurse (Critical Care and Emergency)	Current shortage	No	Strong future demand
		254416	Registered Nurse (Developmental Disability)	Current shortage	No	Strong future demand
		254417	Registered Nurse (Disability and Rehabilitation)	Current shortage	No	Strong future demand
		254418	Registered Nurse (Medical)	Current shortage	No	Strong future demand
		254421	Registered Nurse (Medical Practice)	Current shortage	No	Strong future demand
		254422	Registered Nurse (Mental Health)	Current shortage	No	Strong future demand
		254423	Registered Nurse (Perioperative)	Current shortage	No	Strong future demand
		254424	Registered Nurse (Surgical)	Current shortage	No	Strong future demand
		254425	Registered Nurse (Paediatrics)	Current shortage	No	Strong future demand
		254499	Registered Nurses nec	Current shortage		Strong future demand
272	Social and Welfare Professionals					
	2721	Counsellors				
		272111	Careers Counsellor	NS		Moderate future demand
		272112	Drug and Alcohol Counsellor	NS		Moderate future demand
		272113	Family and Marriage Counsellor	NS		Moderate future demand
		272114	Rehabilitation Counsellor	NS		Moderate future demand
		272115	Student Counsellor	NS		Moderate future demand
		272199	Counsellors nec	NS		Moderate future demand
	2723	Psychologists				
		272311	Clinical Psychologist	Current shortage	Yes	Moderate future demand
		272312	Educational Psychologist	Current shortage	Yes	Moderate future demand
		272313	Organisational Psychologist	Current shortage	Yes	Moderate future demand

Minor group	Unit group	Occupation ANZSCO Code	Occupation title	Current NSW LM Rating	Shortage in 2021?	National Future Demand Rating
		272314	Psychotherapist	NS		Moderate future demand
		272399	Psychologists nec	Current shortage		Moderate future demand
	2724	Social Professionals				
		272411	Historian	NS		Moderate future demand
		272412	Interpreter	NS		Moderate future demand
		272413	Translator	NS		Moderate future demand
		272414	Archaeologist	NS		Moderate future demand
		272499	Social Professionals nec	NS		Moderate future demand
	2725	Social Workers				
		272511	Social Worker	NS		Strong future demand
	2726	Welfare, Recreation and Community Arts Workers				
		272611	Community Arts Worker	NS		Strong future demand
		272612	Recreation Officer / Recreation Coordinator	NS		Strong future demand
		272613	Welfare Worker	NS		Strong future demand
411	Health and Welfare Support Workers					
	4111	Ambulance Officers and Paramedics				
		411111	Ambulance Officer	NS		Strong future demand
		411112	Intensive Care Ambulance Paramedic	NS		Strong future demand
	4112	Dental Hygienists, Technicians and Therapists				
		411211	Dental Hygienist	Current shortage	No	Moderate future demand
		411212	Dental Prosthetist	Current shortage	No	Moderate future demand
		411213	Dental Technician	Current shortage	No	Moderate future demand
		411214	Dental Therapist	Current shortage	No	Moderate future demand
	4113	Diversional Therapists				
		411311	Diversional Therapist	Current shortage	Yes	Moderate future demand
	4114	Enrolled and Mothercraft Nurses				
		411411	Enrolled Nurse	Current shortage	Yes	Strong future demand
		411412	Mothercraft Nurse	NS		Moderate future demand

Minor group	Unit group	Occupation ANZSCO Code	Occupation title	Current NSW LM Rating	Shortage in 2021?	National Future Demand Rating
	4115		Indigenous Health Workers			
		411511	Aboriginal and Torres Strait Islander Health Worker	NS		Strong future demand
	4116		Massage Therapists			
		411611	Massage Therapist	NS		Strong future demand
	4117		Welfare Support Workers			
		411711	Community Worker	NS		Strong future demand
		411712	Disabilities Services Officer	NS		Strong future demand
		411713	Family Support Worker	NS		Strong future demand
		411714	Parole or Probation Officer	NS		Strong future demand
		411715	Residential Care Officer	Current shortage	No	Strong future demand
		411716	Youth Worker	Current shortage	No	Strong future demand
421	Child Carers					
	4211		Child Carers			
		421111	Child Care Worker	Current shortage	Yes	Strong future demand
		421112	Family Day Care Worker	NS		Moderate future demand
		421113	Nanny	NS		Moderate future demand
		421114	Out of School Hours Care Worker	NS		Moderate future demand
422	Education Aides					
	4221		Education Aides			
		422111	Aboriginal and Torres Strait Islander Education Worker	NS		Moderate future demand
		422112	Integration Aide	NS		Moderate future demand
		422115	Preschool Aide	NS		Moderate future demand
		422116	Teachers' Aide	NS		Moderate future demand
423	Personal Carers and Assistants					
	4231		Aged and Disabled Carers			
		423111	Aged or Disabled Carer	Current shortage	Yes	Strong future demand
	4232		Dental Assistants			

Minor group	Unit group	Occupation ANZSCO Code	Occupation title	Current NSW LM Rating	Shortage in 2021?	National Future Demand Rating
	4233	423211	Dental Assistant	Current shortage	Yes	Strong future demand
		Nursing Support and Personal Care Workers				
		423311	Hospital Orderly	NS		Moderate future demand
		423312	Nursing Support Worker	NS		Moderate future demand
		423313	Personal Care Assistant	Current shortage	Yes	Moderate future demand
		423314	Therapy Aide	NS		Moderate future demand
	4234	Special Care Workers				
		423411	Child or Youth Residential Care Assistant	NS		Strong future demand
		423412	Hostel Parent	NS		Strong future demand
		423413	Refuge Worker	NS		Strong future demand
731	Automobile, Bus and Rail Drivers					
	7312	Bus and Coach Drivers				
		731211	Bus Driver	Current shortage	No	Moderate future demand
		731212	Charter and Tour Bus Driver	NS		Moderate future demand
		731213	Passenger Coach Driver	NS		Moderate future demand
	7313	Train and Tram Drivers				
		731311	Train Driver	Regional shortage	Yes	Moderate future demand
		731312	Tram Driver	NS		Moderate future demand

Source: National Skills Commission, *Skills Priority List, 2022*. The methodology is available at <https://www.nationalskillscommission.gov.au/skills-priority-list>. The column 'Also shortage in 2021?' refers only to occupations in statewide or regional shortage in 2022, and indicates whether they were also in statewide or regional shortage in 2021.

5.2. Gender and labour shortage

As may be expected from the earlier data on the gender composition of essential occupations, there is heavy female domination of essential occupations facing labour shortages. As Table 2 (using employment data from 2016) shows, women made up three quarters of people employed in essential occupations that were in shortage in 2022, whereas for other occupations they made up only a minority — three sevenths — of workers.

This difference is driven by the difference between essential occupations and other occupations, regardless of whether there is a shortage. Essential occupations not in shortage had a similar average gender composition to essential occupations that were in shortage.

Table 2: Gender composition of essential occupations in shortage and other occupations

	Numbers of employed people, 2016 (million)			Proportions	
	Total	Males	Females	Males	Females
Essential occupations in shortage in 2022	1.59	0.39	1.20	24.5%	75.5%
All other occupations	11.84	6.68	5.18	56.4%	43.7%
- comprising:					
- essential but not in shortage in 2022	0.65	0.17	0.48	26.3%	73.7%
- not classed as essential in 2022	11.20	6.51	4.70	58.1%	42.0%
Total: all employed people	13.44	7.07	6.38	52.6%	47.5%

6. Projections for occupational unit groups

Bearing in mind the caveats at the end of the last section, the next two sections focus on employment growth projections, which are fundamentally driven by the demand side (in as much as the supply side is implicitly assumed to have an ‘unchanged’ role, as outlined below). This section provides more detail on the quantitative dimensions of projected employment growth at the occupation unit (four digit) level. The main purpose is to show the differences in employment projections for occupations in apparent shortage, one implication of which is the absence of a single source of labour shortages and therefore a single solution.

Table 3 shows the most recent employment projections for occupation unit groups, prepared by JSA, covering the 5-year period November 2021–November 2026. In interpreting the data, we should bear in mind that the JSA projections do not presently seek to separately model the demand and supply side; instead, they make an overall assessment of likely realised employment growth in the light of preceding trends and known other considerations. Implicitly, then, they assume that whatever role supply-side constraints have played in limiting recent employment growth, they will also play a similar role in future employment growth. That is, the projections do not anticipate any major improvement, or deterioration, in the supply side of any occupational unit.

Supply-side considerations are important regardless of whether or not employment growth is projected to be high. If projected employment growth is high (typically at or above 8%) then employers already facing labour shortages need to be able to ensure that supply side considerations do not impede the meeting of this demand growth. If projected employment growth is only moderate (typically 3% to 7%), employers wishing to overcome labour shortages still need to be able to ensure that the ability of the supply side to meet even this moderate demand is not hampered by inadequate training or unattractive pay or working conditions.

For workers in the essential occupation units listed in this report, employment is projected to grow by 14.4% over the five-year period. This is nearly twice the growth rate of 7.9% projected for other occupations.

The highest growth rate of any large occupation unit listed in the SPL (one with 100,000 or more workers in 2021) was projected for the essential occupation 'aged or disabled carers' (projected growth of 28.0%). Indeed, amongst the 30 large occupations units, of which 6 were 'essential' occupations, three of the five with the fastest growth projections were 'essential': aged or disabled carers, education aides (17.4%) and registered nurses (13.9%). The other three large 'essential' occupation units were child carers (5.9%), primary school teachers (5.1%) and secondary school teachers (3.7%).

At the minor group level, employment growth of 14.9% is projected for midwifery and nursing professionals over the five years, 23.6% for health therapy professionals, 21.8% for personal carers and assistants, 17.5% for health and welfare support workers and just over 13% for health diagnostic and promotion professionals and tertiary education teachers.

That all said, what stands out most from Table 3 is the diversity of employment projections, even for occupations in shortage. Employment may be projected to grow by as much as 20%, or as little as 5%, and an occupation can still be facing labour shortages. Certainly, rapid demand growth exacerbates labour shortages, and the growth in demand for 'essential' occupations is, on average, nearly twice as much for another occupation. But even some essential occupations can still be in labour shortage yet have quite moderate growth projections (for example, school teachers), reflecting supply side problems that are not adequately addressed.

Table 3: Employment projections for 'essential' occupation units in shortage, 2021-2026.

Code	Occupation	Employment			
		actual level - November 2021 ('000)	level - November 2026 ('000)	projected growth - five years to November 2026 ('000)	growth - five years to November 2026 (%)
2411	Early Childhood (Pre-primary School) Teachers	49.3	59.9	10.6	21.6
2412	Primary School Teachers	149.6	157.3	7.7	5.1
2414	Secondary School Teachers	154.3	160.1	5.8	3.7
2415	Special Education Teachers	30.2	34.3	4.1	13.5
2422	Vocational Education Teachers	37.3	40.6	3.3	8.7
2512	Medical Imaging Professionals	15.9	18.2	2.3	14.7
2514	Optometrists and Orthoptists	9.9	11.4	1.5	15.1
2515	Pharmacists	34.6	37.7	3.1	9.0
2523	Dental Practitioners	17.5	22.3	4.9	27.8
2524	Occupational Therapists	23.9	25.6	1.8	7.4
2525	Physiotherapists	32.8	42.2	9.4	28.7
2526	Podiatrists	6.4	8.5	2.1	31.8
2527	Audiologists and Speech Pathologists \ Therapists	12.3	16.6	4.3	34.7
2531	General Practitioners and Resident Medical Officers	61.5	67.8	6.3	10.2
2532	Anaesthetists	5.8	6.0	0.2	3.0
2533	Specialist Physicians	17.8	22.6	4.8	27.0
2534	Psychiatrists	5.6	5.9	0.3	5.2
2535	Surgeons	8.4	9.2	0.8	9.9
2539	Other Medical Practitioners	18.1	19.3	1.3	7.0
2541	Midwives	15.8	19.3	3.4	21.6
2544	Registered Nurses	290.8	331.2	40.4	13.9
4112	Dental Hygienists, Technicians and Therapists	6.9	7.3	0.4	5.1

Code	Occupation	Employment			
		actual level - November 2021 ('000)	level - November 2026 ('000)	projected growth - five years to November 2026 ('000)	growth - five years to November 2026 (%)
4113	Diversional Therapists	1.7	1.8	0.1	5.1
4114	Enrolled and Mothercraft Nurses	22.3	22.6	0.3	1.3
4117	Welfare Support Workers	75.6	94.7	19.1	25.2
4211	Child Carers	134.2	142.1	7.9	5.9
4231	Aged and Disabled Carers	266.9	341.8	74.9	28.0
4232	Dental Assistants	35.8	38.1	2.3	6.5
7312	Bus and Coach Drivers	49.3	53.3	4.1	8.3
7313	Train and Tram Drivers	11.8	12.8	1.0	8.3
Total: Essential occupation units (whether in shortage or not)		2096.6	2398.8	302.2	14.4%
Total: Other occupation units		11120.8	11994.8	874.0	7.9%

Note: The SPL lists individual occupations at the six-digit level, while this table uses data only released at the four-digit level.

7. Regional dimensions

This section looks at the regional dimensions of issues discussed earlier in this report. First, it considers internet vacancies, for which only limited data at the occupation unit (four digit) level are available by region. Second, it investigates what more widely available but more aggregated data, at the two digit (sub-major group) level tell us about the regional dimensions.

7.1. Regional aspects of internet vacancies at the sub-major group level

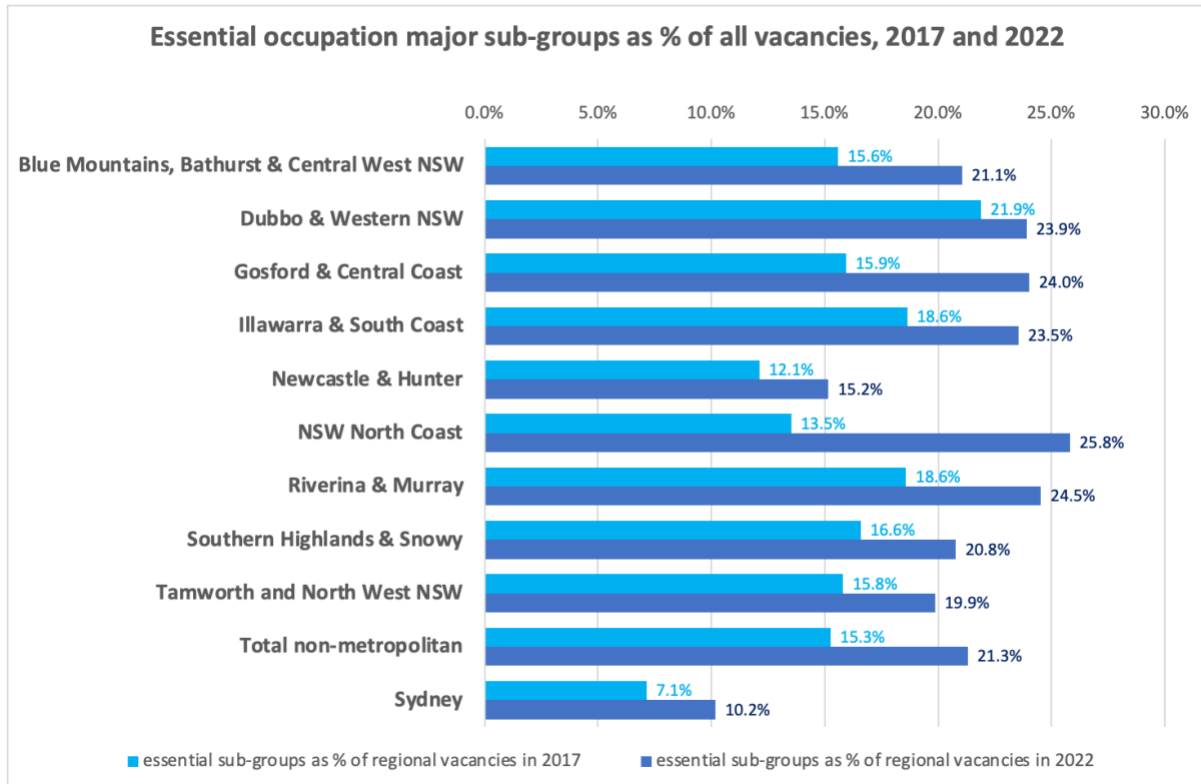
Some other regional data are only available at the occupation sub-major group (2-digit) level. While a small amount of regional internet vacancy data are made available at the unit (4-digit) level, systematic regional internet vacancy data are only published at the sub-major group (2 digit) level. Using this, we can see how vacancies in the sub-major groups predominantly comprised of ‘essential’ occupations (education professionals, health diagnostic and therapy professionals, medical practitioners and nurses, health and welfare support workers, and carers and aides) compare with vacancies in the other sub-major groups.

Figure 13 does this, comparing the share of all internet vacancies that are in ‘essential’ occupation sub-major groups in each NSW region, including a non-metropolitan average and a metropolitan (Sydney) average, in 2017 and 2022.

Two things stand out from that figure. First, and consistent with state-wide data in Figure 4, ‘essential’ vacancies are considerably more common in non-metropolitan regions than in Sydney. In 2022, on average, vacancies in ‘essential’ sub-major groups accounted for 21% of all vacancies in provincial and rural regions, more than double the 10% they accounted for in Sydney. Every non-metropolitan region had a higher ‘essential’ vacancy rate than did Sydney, with the highest incidence of ‘essential’ vacancies being in the North Coast and Riverina-Murray regions.

Second, there was an across-the board increase in the share of ‘essential’ vacancies at the sub-major group level between 2017 and 2022. In Sydney, the ‘essential’ share rose from 7.1% to 10.2%. In provincial and rural regions, it rose from 15.3% to 21.3%, with the largest increase (of some 12 percentage points, from 13.5% to 25.8%) occurring in the North Coast region.

Figure 13



Source: Jobs and Skills Australia,, spreadsheet ivi_data_regional-may-2010-onwards, <https://www.jobsandskills.gov.au/work/internet-vacancy-index#Datadownloads>

That increase in the share of ‘essential’ sub-major groups reflects faster growth in vacancies in ‘essential’ sub-major groups than in other sub-major groups. This is shown in more detail in Figure 14, which depicts, by region, the growth in vacancies in ‘essential’ and other sub-major groups between 2017 and 2022.

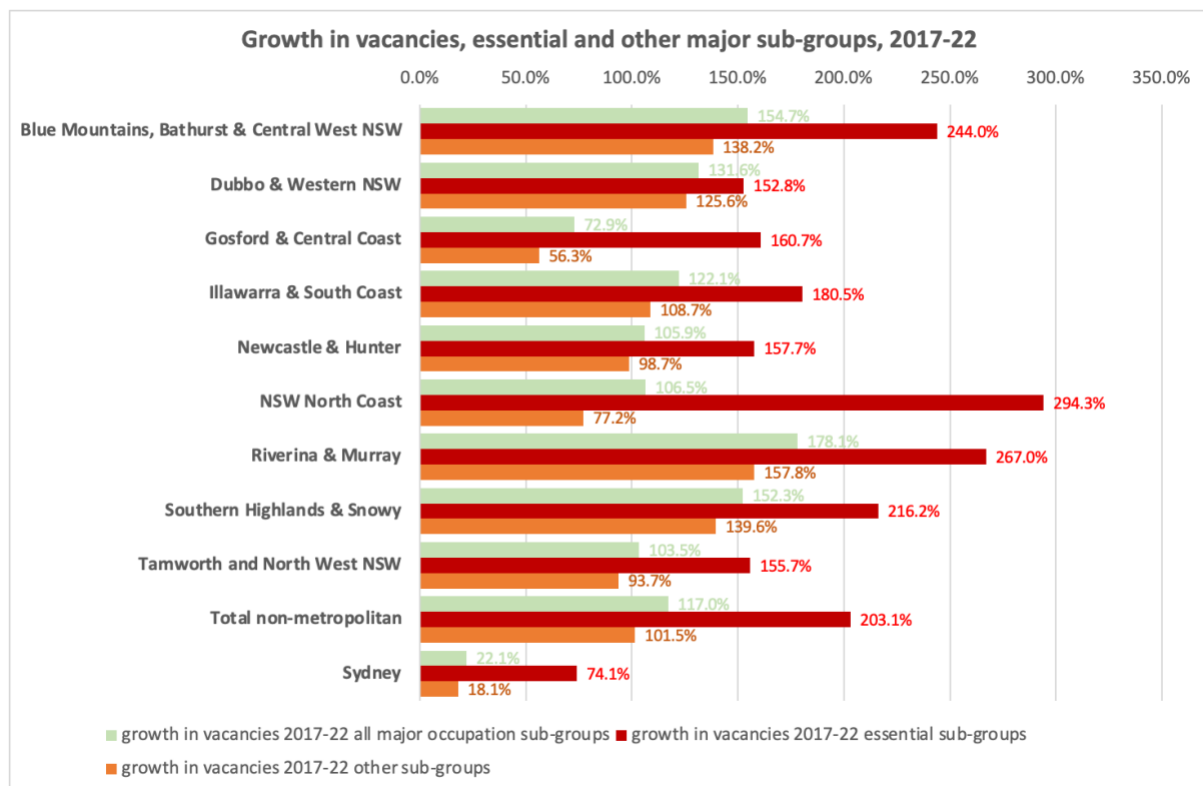
Notably, the growth in internet vacancies of both types is higher in provincial and rural regions than in Sydney. All internet vacancies grew by 22% in Sydney but by 117% in provincial and rural regions. Vacancies in ‘essential’ sub-major groups grew by 74% in Sydney but trebled, growing by 203%, in provincial and rural regions, with the fastest growth again in the North Coast and Riverina-Murray regions. Vacancies quadrupled or more between 2017 and 2022 for:

- education professionals in the Blue Mountains, Bathurst & Central West;
- health and welfare support workers in Dubbo & Western NSW;
- medical practitioners and nurses, and health and welfare support workers, in the North Coast;
- education professionals, health and welfare support workers and carers and Aides in the Riverina & Murray

While vacancies at least trebled between 2017 and 2022 for:

- health and welfare support workers and carers and aides in the Blue Mountains, Bathurst & Central West;
- health and welfare support workers in Gosford and the Central Coast;
- education professionals and carers and aides in the Illawarra & South Coast, and also in the North Coast;
- education professionals in Newcastle & Hunter, and also in Tamworth and the North-west;
- medical practitioners and nurses in the Riverina & Murray; and
- education professionals, medical practitioners and nurses, and health and welfare support workers in the Southern Highlands & Snowy

Figure 14



Source: <https://www.jobsandskills.gov.au/work/internet-vacancy-index#datadownloads>

7.2. Internet vacancies for occupation unit groups

Regional data on labour shortage status by individual occupations or occupation units are not published. However, Job Skills Australia regularly publishes a ‘Labour market data dashboard’ for regions around Australia, including 12 regions within New South Wales — four in Sydney, and eight in provincial and rural parts of the state. As part of those dashboards, JSA publishes the eight occupation units in each region (and at the state level) that have the largest number of internet vacancies associated with them.

It should be emphasised that the ranking of occupation units in this way does not just reflect the likelihood that jobs in those occupation units become vacant and are advertised. It also,

critically, reflects the size of the occupation in terms of the number employed within it. An occupation may have many vacancies but not be in shortage because those vacancies account for only a small portion of employment in the occupation.

At the regional level, we can see the relative ranking of an occupation in vacancies in a particular region, and compared that to its ranking in other regions and state-wide. That tells you about the relative importance of vacancies for that occupation in that region.

Table 4 makes use of these data by showing the relative importance of vacancies for larger occupational units in the twelve NSW regions, for the three months September-November 2022. It only shows data for occupation units that are large enough to be ranked in the top eight occupations by internet vacancies in at least one of the NSW regions. The top data row shows the ranking of that occupation unit in terms of employment, amongst the 358 occupation units across NSW. The remaining data rows show the ranking of that occupation unit within a region in terms of the number of internet vacancies, but only if that occupation unit is within the top eight in that region (or statewide).

There are important differences between regional and metropolitan labour markets in terms of shortages for essential workers. As mentioned, in 2021, regional employers of health professionals were a third more likely than their metropolitan equivalents to have unfilled vacancies. Table 4 shows us that registered nurses were the 3rd largest occupational unit in NSW, and also that, statewide, they had the 3rd highest number of internet vacancies in the period stated. Notably, registered nurses were the occupation with the most frequently advertised vacancies in two regions: Mid-North Coast and Murray Riverina. They were the second-most advertised occupation in Far West-Orana. Overall, in seven of the eight provincial and rural regions, registered nurses were one of the three most advertised occupations. By contrast, registered nurses did not get into the top three in any of the four Sydney regions. Indeed, in the four Sydney regions, registered nursing vacancies were ranked between sixth and eighth.

This suggests that statewide essential occupation shortages may be more consequential in provincial and rural regions than in metropolitan Sydney. This impression is confirmed when we look at the data for other occupation units. Internet vacancies for aged and disabled carers were ranked between the 2nd and 6th highest of all occupations in seven of the eight provincial and rural regions, but in none of the metropolitan regions. Generalist medical practitioners (GPs and registrars) were in the top eight vacancies in four of the eight provincial and rural regions, but not in any of the metropolitan regions. Yet this is not a large occupational group: it is ranked 61st in terms of employment state-wide.

Welfare, recreation and community arts workers, an even smaller occupation unit statewide, were ranked in the top eight vacancies in four provincial and rural regions, but not in any of the Sydney regions. Nursing support workers were ranked in the top eight vacancies in three provincial and rural regions, but in none of the Sydney regions. Child carers were ranked in the top eight vacancies in two provincial and rural regions, but in none of the Sydney regions.

Table 4: Ranking of selected essential occupation units amongst all occupational units in employment and internet vacancies in regions and statewide, NSW, September-November 2022.

	Registered nurses	Aged and disabled carers	Child carers	Nursing support and personal care workers	Generalist medical practitioners	Welfare, recreation and community arts workers
Ranked by employment						
NSW total	3	4	21	38	61	91
Ranked by vacancies						
NSW total	3	7				
Provincial & rural						
Central-west	3	4	8		6	
Far west - Orana	2	6			4	8
Hunter	3		8			
Illawarra South Coast	4	2			5	
Mid North Coast	1	4		7		5
Murray Riverina	1	4		8		
New England and North West	3	6			7	5
North Coast	1	4		7		5
Metropolitan						
Syd East Metro	8					
Syd Greater West	6					
Syd North & West	6					
Syd South-west	7					

Source: Jobs and Skills Australia, Labour Market Data Dashboard, <https://labourmarketinsights.gov.au/regions/publications-employment-region-dashboards-and-profiles/new-south-wales/>

It is clear from these data that vacancies for essential occupations are more consequential in rural and provincial regions than they are in metropolitan regions. In both Sydney and the non-metropolitan regions, vacancies for general clerks and sales assistants, the two largest occupation units in Australia (and neither of which is listed as being in shortage),¹⁷ are typically in the top two. But in the metropolitan regions, the remaining occupations at the top of the internet vacancies list are software and applications programmers, advertising and sales managers and waiters and, to a lesser extent, accountants and ICT business & systems

¹⁷ 'General clerks' is in the SPL but not listed in shortage in NSW or elsewhere; 'sales assistant' is not listed in the SPL.

analysts. The only essential occupation unit in the top eight in any metropolitan region is registered nurses. In provincial and rural regions, essential occupations account for between two and five (most commonly four) of the eight most frequent vacancies. This means that a reason labour shortages have a much bigger impact on provincial and rural communities is that they affect essential occupations, not just occupations of commercial significance.

Regions with low employment of an occupation that is already in labour shortage might be severely hit by such shortages, as low relative employment may reflect the effects of pre-existing labour shortages. So, another way of thinking about labour shortages at the regional level is to consider which regions have essential occupation units in shortage but already low employment for those occupations. Table 5 does that for seven essential occupation units in shortage: five larger ones (early childhood teachers, primary school teachers, secondary school teachers, registered nurses and child carers) and two smaller ones (midwives and special education teachers). The use of black versus grey font in Table 5 indicates how seriously below the state average is employment of an occupation in a particular region. Specifically, in Table 5, occupations appear in black typeface within a region in that table if, for a nominated essential occupation unit in shortage, it has relatively low employment of that occupation unit, as indicated if either (i) that occupation unit has an employment share in that region 0.1 or more percentage points below the state average, or (ii) that occupation unit has an employment share in that region 70% or less of the state average. If an essential occupation appears in grey typeface in that table, it is because its share of employment in that region is below the state average but not so low as to meet the criteria above. Employment estimates are averaged monthly estimates over the seven years from September 2015 to October 2022, thereby minimising sampling error (a real issue given the small number of observations on which some regional estimates can be based).

We can see that employment of primary school teachers, an essential occupation in shortage, is particularly low in the Coffs Harbour-Grafton and Hunter regions, where the employment share is about seven tenths of the state average or more than 0.3 percentage points below that state average. Secondary school teachers are in shortage and also have low employment share (below two thirds of the state average share, more than 0.4 percentage points below that state average). Some eight regions have low employment of early childhood teachers, with the worst being Richmond-Tweed and the capital region in south-east NSW¹⁸ (which has several other occupations in a similar situation).

It is a particularly bad sign when a region has both low employment and high vacancies for an occupation already in shortage. So probably the worst shortages may be for registered nurses in the Far West and Orana region, which had employment at barely three quarters of the state average and a share nearly half a percentage point lower, while, as we saw in Table 4, they comprised the occupation unit with the second highest number of internet vacancies in September-November 2022. Nearly as badly off for registered nurses was the Illawarra-South Coast region, with an employment share nearly as low and the occupation having the fourth highest number of internet vacancies.

Meanwhile, regarding child carers, the Central West region had below-state average employment but that occupation was in the top eight for absolute number of vacancies. Other

¹⁸ The Capital region includes the Snowy-Monaro, Bega Valley, Eurobodalla, Queanbeyan, Yass and Goulburn LGAs.

regions, however, had considerably lower employment shares for child carers, especially Richmond-Tweed but also Murray, Newcastle and Lake Macquarie, and Far West and Orana.

Table 5: Selected essential occupations in shortage, with low relative employment, by region

ANZSCO code	occupation unit	Share of employment in that region	ratio to state average share of employment	difference to state average (percentage points)
Capital Region				
2411	Early Childhood (pre-primary) Teachers	0.195%	0.44	-0.248%
2414	Secondary School Teachers	0.624%	0.52	-0.565%
2412	Primary School Teachers	0.745%	0.59	-0.520%
2541	Midwives	0.092%	0.73	-0.034%
2544	Registered Nurses	1.740%	0.82	-0.380%
4211	Child Carers	1.098%	0.94	-0.067%
Central Coast				
2541	Midwives	0.087%	0.69	-0.039%
2412	Primary School Teachers	1.114%	0.88	-0.151%
4211	Child Carers	1.146%	0.98	-0.019%
Central West				
2411	Early Childhood (Pre-primary) Teachers	0.233%	0.53	-0.210%
2541	Midwives	0.097%	0.77	-0.029%
4211	Child Carers	1.050%	0.90	-0.116%
2415	Special Education Teachers	0.157%	0.92	-0.013%
Coffs Harbour - Grafton				
2411	Early Childhood (Pre-primary) Teachers	0.272%	0.61	-0.171%
2412	Primary School Teachers	0.872%	0.69	-0.393%
2414	Secondary School Teachers	1.057%	0.89	-0.132%
2415	Special Education Teachers	0.153%	0.90	-0.017%
Far West and Orana				
2411	Early Childhood (Pre-primary) Teachers	0.275%	0.62	-0.168%
4211	Child Carers	0.892%	0.77	-0.274%
2544	Registered Nurses	1.627%	0.77	-0.493%
Hunter Valley excl Newcastle				
2415	Special Education Teachers	0.107%	0.63	-0.063%
2414	Secondary School Teachers	0.787%	0.66	-0.402%
2412	Primary School Teachers	0.913%	0.72	-0.352%
2541	Midwives	0.098%	0.78	-0.028%
Illawarra				
2544	Registered Nurses	1.643%	0.78	-0.476%
2541	Midwives	0.097%	0.77	-0.028%
Mid North Coast				
2541	Midwives	0.087%	0.69	-0.039%
2415	Special Education Teachers	0.134%	0.79	-0.035%
Murray				
2411	Early Childhood (Pre-primary) Teachers	0.249%	0.56	-0.193%
4211	Child Carers	0.834%	0.72	-0.332%
2415	Special Education Teachers	0.134%	0.79	-0.035%
2541	Midwives	0.117%	0.93	-0.009%
2412	Primary School Teachers	1.220%	0.96	-0.044%
New England and North West				
2411	Early Childhood (Pre-primary) Teachers	0.228%	0.52	-0.214%

ANZSCO code	occupation unit	Share of employment in that region	ratio to state average share of employment	difference to state average (percentage points)
2541	Midwives	0.097%	0.77	-0.029%
2415	Special Education Teachers	0.142%	0.84	-0.028%
Newcastle and Lake Macquarie				
4211	Child Carers	0.878%	0.75	-0.287%
Richmond - Tweed				
2411	Early Childhood (Pre-primary) Teachers	0.208%	0.47	-0.235%
4211	Child Carers	0.634%	0.54	-0.531%
2415	Special Education Teachers	0.147%	0.87	-0.022%
2412	Primary School Teachers	1.159%	0.92	-0.105%
2541	Midwives	0.121%	0.96	-0.005%
Riverina				
2411	Early Childhood (Pre-primary) Teachers	0.220%	0.50	-0.222%
2414	Secondary School Teachers	0.736%	0.62	-0.453%
2415	Special Education Teachers	0.142%	0.84	-0.028%
2541	Midwives	0.114%	0.91	-0.012%
4211	Child Carers	1.130%	0.97	-0.036%
Southern Highlands and Shoalhaven				
2541	Midwives	0.078%	0.62	-0.048%
2544	Registered Nurses	1.892%	0.89	-0.227%

Source: Calculated from <https://www.jobsandskills.gov.au/work/nero/nero-dashboard> , https://www.jobsandskills.gov.au/sites/default/files/2022-11/Australian%20Skills%20Classification%20-%20November%202022_0.xlsx and *Skills Priority List*.
For explanation of use black and grey fonts, see text preceding this table.

8. Relationships of labour shortages to pay policy

Several factors explain labour shortages. It can be said that a shortage occurs when supply fails to meet demand but this is not particularly illuminating, other than allowing us to categorise most influences as operating on the demand for or on supply of labour (or both) in a particular occupation.

The first factor that is often considered is the actual or prospective demand for an occupation. It seems obvious that the higher demand is for an occupation, the more likely it will be in shortage. Yet the data presented in this study show that a number of occupations that are in shortage are not experiencing rapid employment growth, though if we measure demand by vacancies rather than employment growth a link with shortages becomes clearer. Regardless of the influence that high demand has, it is clear that other factors are also at work in explaining labour shortages.

The second factor, affecting supply for all but ‘unskilled’ labour, is the training and education system, particularly at the tertiary level. There is a common view that the weaknesses of the

vocational education system have increased substantially in recent years,¹⁹ with the privatisation of much of that system in many states leading to various problems and even crises, including misappropriation of funds and failure to deliver in some courses.²⁰

Many ‘essential’ occupations, including all of the professions considered in this report, require university education. In recent years, universities have responded to employer organisations’ long-standing complaint that universities are not providing ‘work-ready’ graduates by orienting courses more towards what they think employers want. But this complaint is fundamentally about employers trying to shift the cost of training previously provided by the private sector onto the public sector, without a matching transfer of resources. So, with the same (or fewer) resources required to provide a greater service, it is little surprise that universities have difficulty in producing adequately educated graduates. The previous federal government ostensibly sought to encourage universities to focus more on producing graduates for the ‘jobs of the future’, by increasing fees substantially for some courses and reducing them for others. However, as mentioned in the introduction to this report, it is notoriously difficult to make accurate employment growth predictions for the time when incoming students will eventually graduate and, despite official claims to the contrary, there was no relationship between the pattern of fees and returns from education anyway. It seemed the main effect was a reduction of resources to universities, and there was possibly a link to other agendas.²¹

This is not to deny that some supply-side problems may relate to university training. For example, there may be logistical failures in fulfilling requirements that graduating nurses²² or teachers work professionally within a defined period of completing their degree. Problems with the training and education system should not be underestimated. However, leaving aside the lags involved, it does not follow that simply increasing the number of people trained in a particular occupation will solve any labour shortages. This is because many people trained for a particular occupation do not keep working in that area. For example, one study using 2006 census data from South Australia showed that, amongst employed people with their major qualification in school teaching, fully one third were not working in school teaching. Amongst those, about 6 per cent were working in another educational profession job, while 28 per cent were working in a different occupation.²³ A 2008 study indicated that ‘almost half of all qualified midwives have been lost from the midwifery workforce’.²⁴

¹⁹ e.g. John Quiggin, Vocational education policy is failing, and it’s not hard to see why, *Inside Story*, 22 February 2018, <https://insidestory.org.au/vocational-education-policy-is-failing-and-its-not-hard-to-see-why/>

²⁰ e.g. Daniel Hurst, Crackdown on alleged unscrupulous vocational education providers, *Guardian*, 14 October 2015, <https://www.theguardian.com/australia-news/2015/oct/14/crackdown-alleged-unscrupulous-vocational-education-providers>

²¹ <https://theconversation.com/can-government-actually-predict-the-jobs-of-the-future-141275>

²² Gus McCubbing, National nurse shortfall to hit 85,000 by 2025: Universities Australia, *Australian Financial Review*, 30 August 2022.

²³ Australian Bureau of Statistics, A labour market and demographic profile of qualified teachers and the teacher workforce in South Australia, report for Department of Education and Children’s Services (DECS) (SA), Adelaide, 2010.

²⁴ Fiona E. Bogossian et al, ‘A workforce profile comparison of practising and non-practising midwives in Australia: Baseline data from the Midwives and Nurses e-cohort Study’, *Midwifery* 27 (2011) 342–349

A third potential influence is immigration. There is indeed evidence that employers use migration as a source of skills, rather than engaging in training themselves.²⁵ Australia's migration program has become increasingly focused on skilled migration, at the expense of family reunion, in recent decades²⁶ for this reason. Thus restrictions in immigration can have an impact on supply similar to a failure of the education and training system. The first year of the COVID pandemic saw a severe cut in immigration, which was partially reversed in the second year. Thus the net population gain from migration in 2021-22 was 171,000, compared to the average over 2007-2020 of 226,000 per year.²⁷ The 2021-22 net intake represented a net increase in inwards immigration of 256,000 on the (negative) 2020-21 outcome. Migration restrictions will have different impacts on different occupations.

There are other, more occupation-specific influences on the supply side. Work may become unattractive in an occupation, due to factors such as rising workload and employer demands, growing work intensity, increasing working hours or problems with control of the environment in which work is done. Attrition may grow. Evidence of such problems amongst nurses was mentioned earlier,²⁸ as well as the considerably greater difficulties of filling positions in regional than in metropolitan areas. The factors affecting attrition may differ substantially between occupations, and the causes may be a function of the specific characteristics of the occupation. Surging cases in a hospital are not the same issue as increasing violence among clients of social and welfare professionals, growing bureaucratisation encountered by teachers or rising occupational hazards facing aged and disabled carers in private houses or nursing homes. Rural isolation may be perceived differently in different occupations, partly because of inherent geographic differences (even primary and secondary school teachers differ in terms of the smallest sized settlement they may be expected to work in). It is beyond the scope of this report to investigate these factors, being so varied and specific to the wide number of contexts facing different essential occupations.

A broader factor influencing the supply side, however, is the attractiveness of remuneration for workers in that occupation. In theory, whatever the unattractive features of work in a particular occupation, it should be possible for employers to offer a sufficient wage to attract people to work in that occupation and/or dissuade enough from leaving. Thus employers will offer what economists call 'compensating wage differentials', to compensate for the greater danger, dirtiness, or other disutilities associated with that particular occupation.²⁹ Yet clearly employers are unable or unwilling to do this, and as a consequence many potential workers for an essential occupation simply decide that it is not worth taking such a job. When

²⁵ Chris F Wright, *Bargaining for Skills: Strengthening coordination of immigration, training and industrial relations in the vocational trades*, Sydney Employment Relations Research Group, University of Sydney, August 2022.

²⁶ Anna Boucher and Amy Davidson, *The Evolution of the Australian System for Selecting Economic Immigrants*, Migration Policy Institute, May 2019.

²⁷ <https://www.abs.gov.au/statistics/people/population/overseas-migration/latest-release#visa>

²⁸ *Skills Priority List 2022*, p19-20 citing Smallwood et al. *Occupational Disruptions during the COVID-19 Pandemic and Their Association with Healthcare Workers' Mental Health*, September 2021, and Smallwood et al. *High levels of psychosocial distress among Australian frontline healthcare workers during the COVID-19 pandemic: a cross-sectional survey*, September 2021.

²⁹ R G Ehrenberg, & R S Smith, *Modern Labor Economics: Theory and Public Policy*, 11th edition, Reading, MA: Addison-Wesley.

employers say that there is a labour shortage, it sometimes is better interpreted as a shortage of wages that they are willing to offer to attract labour, given the disutilities of the job.

From the perspective of employers, this is often for good reason. Employers are unable or unwilling to raise wages to market-clearing levels because of monopsonistic tendencies in labour markets and the associated greater power that employers have in setting wages.³⁰ That is, the wage is not automatically set by the invisible hand of the market, outside of the control of employers. Instead, employers exercise discretion in the wages that they offer employees. They may choose to offer higher wages which in turn would attract high quality labour and lead to jobs being filled. Or they may choose to offer lower wages, leading to the jobs possessing little attractiveness for high quality workers and to jobs sometimes going unfilled. Or something in between. The lower the real wages offered, the more jobs remain unfilled. Typically, an employer will choose the wage that they feel maximises their surplus over the period most relevant to their consideration. They may believe they have to offer low wages to secure a contract with a government agency or private firm.

Whatever the reason for employers behaving in this way, many labour ‘shortages’ may thus reflect the failure of employers to behave in a way that would prevent ‘shortages’ in the first place: by not offering wages high enough to clear the market or not providing the training necessary to ensure an adequate supply. They may rely on temporary migration to ameliorate the resultant ‘shortages’ and then face considerable difficulties when temporary migration is temporarily halted. The problems that low wages in particular create for labour supply are magnified when there is one employer that sets the pace for the market.

Monopsony means that a small number of employers come to dominate labour markets, or other factors (such as imperfect information or barriers to costless labour mobility) make it impossible for labour to be perfectly mobile. In the private sector, real wages are kept low by wage norms that may be that way because employers who offer higher wages would be punished by losing contracts with higher-tier corporations or with public sector purchasers. In the public sector, where employees in essential occupations are even more likely to face a single employer, real wages may be kept low by governments seeking to achieve other objectives, such as to achieve budgetary surpluses, cut back government spending or to establish models for private sector employers. A common way by which this happens is through service-wide salary caps.³¹

Whether private or public sector, the damaging effects of low nominal wage norms on labour ‘shortages’ are heightened when inflation is high, because high inflation can switch a norm of positive real wage growth into a norm of negative real wage growth. This has been happening in Australia recently, as inflation reached 7.8% in November 2022 and implied serious real wage reductions for the majority of employees, given that average nominal wage

³⁰ D Card and A Krueger, *Myth and Measurement: The New Economics of the Minimum Wage*, Princeton: Princeton University Press, 1995; A Manning, *Monopsony in Motion: Imperfect Competition in Labor Markets*, Princeton: Princeton University Press, 2013; Council of Economic Advisers, *Labor Market Monopsony: Trends, Consequences, and Policy Responses*. Economic Brief. Washington DC: Council of Economic Advisers, October 2016.

³¹ There is more extensive discussion of this in D Peetz, *Wage Norms and the Link to Public Sector Salary Caps*, Sydney, 2022.

growth for people remaining in the same job was closer to 3% at time of writing.³² For essential occupation employees subject to the New South Wales public sector wage cap policy — assumed to be 3.0%, 3.0% and 2.5% in each of the years to June 2023, 2024 and 2025 — this is equivalent to cumulative real wage reductions over three years of between \$7,000 and \$13,000 for the range of selected essential classifications shown in Appendix C.³³

A consequence of this is considerable dissatisfaction with pay levels. Even before the surge in inflation, an Australian study of nurses in primary health care had found that one of the ‘least satisfying aspects of work’ was ‘poor financial support and remuneration’,³⁴ while a quantitative study of general practice nurses had found that pay was the aspect of the job with which they were least satisfied.³⁵ Indeed, low wages may not only affect current recruitment but also future labour supply, given evidence that low wages reduce entry into nurse education.³⁶ With high inflation leading to reductions in real wages in essential occupations, this dissatisfaction can be expected to be higher. It is thus no surprise that labour ‘shortages’ are particularly intense at present.

9. Conclusions

Reported labour shortages have become an increasing feature of the Australian labour market, and shortages of essential occupations are becoming especially important. Essential occupations are mostly very female dominated, and so essential occupations experiencing labour shortages are also mostly female-dominated. An estimated 76% of employees in essential occupations experiencing labour shortages are female, with only 24% being male.

Employers have claimed they are experiencing increased difficulty in recruiting all major occupation groups, including those which include essential occupations.

Online vacancies for essential occupations are increasing more rapidly than online vacancies for other occupations. When the pandemic hit, vacancies for most minor group occupations fell, but vacancies for minor group essential occupations rose. After the pandemic, vacancies for other occupations rise, but so too did vacancies for minor group essential occupations.

³² <https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/wage-price-index-australia/latest-release>

³³ This updates estimates published earlier in D Peetz, *Wage Norms and the Link to Public Sector Salary Caps*, Sydney, 2022.

³⁴ Halcomb, E. & Ashley, C. (2017). Australian primary health care nurses most and least satisfying aspects of work. *Journal of Clinical Nursing*, 26 (3-4), 535-545. ‘Primary health care was loosely defined as a setting where nursing care is delivered outside the bounds of an acute care facility. Such settings might include, but were not limited to, general practices, schools / universities, correctional facilities, sexual health clinics and community nursing services.’

³⁵ Halcomb, E. & Bird, S. (2020). Job Satisfaction and Career Intention of Australian General Practice Nurses: A Cross-Sectional Survey. *Journal of Nursing Scholarship*, 52 (3), 270-280.

³⁶ S Simoens, M Villeneuve and J Hurst, *Tackling Nurse Shortages in OECD Countries*, *OECD Health Working Papers*, DELSA/ELSA/WD/HEA(2005)1, Paris: Organisation for Economic Co-operation and Development, 2005, 33, citing YA Chiha and CR Link, ‘The shortage of registered nurses and some new estimates of the effects of wages on registered nurses labor supply: a look at the past and a preview of the 21st century’, *Health Policy*, 64(3), June 2003, 349-75; and J Spetz and R Given, ‘The Future of the Nurse Shortage: will Wage Increases Close the Gap?’ *Health Affairs*, 22(6). 2003, 199-206.

Notably, the higher growth in vacancies for essential occupations was already evident before the pandemic, but it was very much accentuated by the pandemic.

This broad pattern was also evident amongst more disaggregated, unit level essential occupations (with the major exception being child carers, for whom vacancies fell as child care centres closed in the early stages of the pandemic, but rose again thereafter).

Apparent shortages are very evident amongst health and education professionals. The former has a much higher record of employment growth than the latter, and indeed employment growth forecasts for education professionals are not all that high. But key occupations in both groups experience high rates of dissatisfaction with aspects of work and high rates of attrition, so there has been a major fall in the vacancy fill rates in both and hence both are experiencing labour shortages.

Indeed, there have been significant increases in the number of occupations experiencing labour shortages between 2021 and 2022, with the greatest increases occurring amongst workers in essential occupations.

Labour shortages have a bigger impact on provincial and rural communities than they have on metropolitan communities, because labour shortages in the former regions are likely to affect essential occupations, not just occupations of commercial significance. Vacancies for essential occupations are more consequential in provincial and rural regions than they are in metropolitan regions and, in some non-metropolitan regions, advertised vacancies for essential occupations disproportionately dominate vacancies in that region, compared to those occupations' significance in the employment structure of that region. Authorities report claims by employers in non-metropolitan regions of particular difficulties in filling key vacancies.

Many occupations are the subject of projections showing rapid future employment growth, but that in itself is not a major predictor of whether an occupation will be in shortage. True, an occupation in which employment is expected to grow rapidly will require a greater supply of labour to avoid shortage. Variations in the supply side (that is, what affects employees' ability and willingness to apply for work in an occupation, and their likelihood of staying in that occupation) appear more important than growth in the number of actual positions. Ironically, whether an occupation is essential or otherwise is a better indicator than projected employment growth of whether that occupation will be in shortage.

Overall, there are some factors affecting shortages of essential labour that are specific to individual occupations. The job-related factors that influence the (un)attractiveness of a job as a registered nurse are different to those that influence the (un)attractiveness of a job as a secondary school teacher or as a child carer or pharmacist. Only more detailed analysis of those occupations can provide a proper understanding of those. While some job-related factors, such as work intensity, burnout³⁷ and stress, may be common across essential occupations, their precise manifestations are likely to differ.

³⁷ e.g. Charanjit Singh, Wendy Cross, Debra Jackson, Staff Burnout--a Comparative Study of Metropolitan and Rural Mental Health Nurses within Australia, *Issues in Mental Health Nursing*, 2015 Jul;36(7):528-37. doi: 10.3109/01612840.2014.996838.

At the same time, there are some factors that are common to essential occupations in helping to explain labour shortages. Chief amongst those is likely to be the conditions of employment, in particular the pay associated with an essential occupation. When employers say that there is a labour shortage, it sometimes is better interpreted as a shortage of wages that they are willing to offer to attract labour, given the disutilities of the job. This may often be for what seem to be good reason, as low wages may maximise their surplus. As recent public sector pay policies have led to declines in real wages for many people in essential occupations, it is highly likely that this has depressed the supply of labour to essential occupation labour markets and thereby promoted labour shortages.

The suppression of wages for essential occupations also has a strong gender dimension. While there are many factors behind the gender wage gap,³⁸ it appears plausible that one of them is public sector pay restraint policies affecting essential occupations.

The August 2022 national Jobs and Skills Summit established a number of mechanisms to address labour shortages, and several of these can be expected to assist in relation to labour shortages in essential occupations. Policies on migration and the improvement of skills training were amongst them. While the low rate of wages growth was also on the agenda for that Summit, it is not clear that sufficient attention has been given to the role of salary caps and other mechanisms for wage restraint in reinforcing labour shortages. As essential workers are most likely to be working for the state — because essential services are often provided by the state — then state wage restraint policies are likely to lead disproportionately to shortages of willing workers in essential occupations.

An easing of public sector wage restraint could not be the only solution to shortages of essential workers. There is no single solution. But it is difficult to see shortages being overcome in the absence of appropriate changes to wages policy.

³⁸ D Peetz and G Murray (eds) *Women, Labor Segmentation and Regulation: Varieties of Gender Gaps*, New York: Palgrave Macmillan, 2017

Appendix A: Characteristic of Occupational unit groups (4-digit ANZSCO)

ANZSCO code	Occupation	National employment Aug 2022	NSW share of employment (%)	Part-time Share (%)	Female Share (%)	Median Age (%)	Most common industry of employment nationally	%
2411	Early Childhood (Pre-primary School) Teachers	54,400	35.2	44	98	40	Education and Training	60.1
2412	Primary School Teachers	157,100	31.1	36	85	41	Education and Training	99.3
2413	Middle School Teachers	2,000	5.5	17	66	39	Education and Training	93.1
2414	Secondary School Teachers	140,700	33.5	25	62	43	Education and Training	99.5
2415	Special Education Teachers	22,600	33.0	41	86	46	Education and Training	97.2
2421	University Lecturers and Tutors	61,900	31.0	42	49	45	Education and Training	98.5
2422	Vocational Education Teachers	36,800	31.2	42	51	50	Education and Training	70.0
2491	Education Advisers and Reviewers	25,600	29.1	33	71	46	Education and Training	74.7
2511	Nutrition Professionals	10,000	33.9	49	94	34	Health Care and Social Assistance	80.5
2512	Medical Imaging Professionals	18,200	33.5	33	71	37	Health Care and Social Assistance	98.7
2513	Occupational & Environmental Health Professionals	29,300	24.8	18	44	44	Public Administration and Safety	26.3
2514	Optometrists and Orthoptists	7,900	36.6	37	58	40	Health Care and Social Assistance	97.4
2515	Pharmacists	33,800	29.3	32	62	34	Retail Trade	70.3
2519	Other Health Diagnostic & Promotion Professionals	10,100	30.1	41	79	44	Health Care and Social Assistance	56.8
2521	Chiropractors and Osteopaths	6,700	31.4	48	44	38	Health Care and Social Assistance	98.0
2522	Complementary Health Therapists	7,700	33.9	63	72	47	Health Care and Social Assistance	92.8
2523	Dental Practitioners	16,900	32.3	36	42	41	Health Care and Social Assistance	93.3
2524	Occupational Therapists	21,400	29.7	42	92	34	Health Care and Social Assistance	93.8
2525	Physiotherapists	34,100	30.5	37	67	35	Health Care and Social Assistance	97.0
2526	Podiatrists	6,800	28.2	36	60	36	Health Care and Social Assistance	100.0
2527	Audiologists and Speech Pathologists	15,000	29.6	43	93	35	Health Care and Social Assistance	93.4
2531	General Practitioners and Resident Medical Officers	92,900	31.1	24	46	42	Health Care and Social Assistance	98.3
2532	Anaesthetists	5,500	30.0	19	33	44	Health Care and Social Assistance	100.0
2533	Specialist Physicians	11,800	31.4	21	43	43	Health Care and Social Assistance	96.5
2534	Psychiatrists	3,900	29.1	29	44	47	Health Care and Social Assistance	96.6
2535	Surgeons	9,100	31.6	13	18	44	Health Care and Social Assistance	100.0
2539	Other Medical Practitioners	22,400	32.9	21	46	43	Health Care and Social Assistance	96.8
2541	Midwives	17,200	27.7	61	98	45	Health Care and Social Assistance	99.1
2542	Nurse Educators and Researchers	5,400	33.8	41	91	46	Health Care and Social Assistance	72.8
2543	Nurse Managers	16,800	30.7	24	87	48	Health Care and Social Assistance	92.7

ANZSCO code	Occupation	National employment Aug 2022	NSW share of employment (%)	Part-time Share (%)	Female Share (%)	Median Age (%)	Most common industry of employment nationally	%
2544	Registered Nurses	294,000	31.3	50	89	43	Health Care and Social Assistance	96.7
2721	Counsellors	34,700	30.4	49	77	45	Health Care and Social Assistance	49.2
2723	Psychologists and Psychotherapists	40,000	33.8	48	80	44	Health Care and Social Assistance	76.1
2724	Social Professionals	13,500	31.5	61	64	46	Professional, Scientific and Tech Svcs	47.2
2725	Social Workers	46,200	28.5	37	84	42	Health Care and Social Assistance	74.1
2726	Welfare, Recreation and Community Arts Workers	42,900	31.3	37	78	42	Health Care and Social Assistance	54.9
4111	Ambulance Officers and Paramedics	21,700	28.2	14	37	40	Health Care and Social Assistance	96.7
4112	Dental Hygienists, Technicians and Therapists	6,300	25.8	39	60	40	Health Care and Social Assistance	54.3
4113	Diversional Therapists	2,900	37.5	58	91	52	Health Care and Social Assistance	100.0
4114	Enrolled and Mothercraft Nurses	23,800	24.2	57	90	47	Health Care and Social Assistance	98.8
4115	Indigenous Health Workers	1,200	27.1	24	73	44	Health Care and Social Assistance	40.0
4116	Massage Therapists	19,400	31.4	75	76	41	Health Care and Social Assistance	88.1
4117	Welfare Support Workers	82,900	29.0	37	74	43	Health Care and Social Assistance	64.7
4211	Child Carers	136,100	33.4	53	95	33	Health Care and Social Assistance	65.8
4221	Education Aides	110,200	21.7	78	90	46	Education and Training	95.1
4231	Aged and Disabled Carers	274,000	26.9	67	80	47	Health Care and Social Assistance	96.3
4232	Dental Assistants	28,600	30.7	54	98	31	Health Care and Social Assistance	98.6
4233	Nursing Support and Personal Care Workers	95,500	35.0	62	78	43	Health Care and Social Assistance	96.4
4234	Special Care Workers	3,100	20.5	48	69	38	Education and Training	56.5
7312	Bus and Coach Drivers	44,800	35.0	40	13	55	Transport, Postal and Warehousing	85.9
7313	Train and Tram Drivers	14,400	29.9	7	9	49	Transport, Postal and Warehousing	82.6

Appendix B: Characteristic of Occupations (6-digit ANZSCO) not listed in Appendix A

ANZSCO code	Occupation	National Employment June 2016	NSW share of employment (%)	Part-time Share (%)	Female Share (%)	Median Age (%)	Most common industry of employment nationally	%
241511	Special Needs Teachers	18,100	33.0	40	86	46	Education and Training	95.2
241512	Teachers of the Hearing Impaired	550	40.7	49	90	50	Education and Training	93.3
241513	Teachers of the Sight Impaired	200	54.1	38	89	52	Education and Training	90.0
241599	Other Special Education Teachers	1,300	28.1	42	73	47	Education and Training	90.9
242111	University Lecturers	37,300	31.2	27	48	48	Education and Training	98.8
242112	University Tutors	11,000	30.4	91	51	29	Education and Training	98.7
249111	Education Advisers	8,800	28.6	33	72	45	Education and Training	79.9
249112	Education Reviewers	620	32.6	35	70	53	Education and Training	74.5
251111	Dietitians	4,000	33.1	49	95	33	Health Care and Social Assistance	86.6
251112	Nutritionists	850	37.2	52	88	37	Health Care and Social Assistance	52.8
251211	Medical Diagnostic Radiographers	8,200	33.5	29	67	36	Health Care and Social Assistance	97.5
251212	Medical Radiation Therapists	1,900	32.8	27	75	34	Health Care and Social Assistance	96.7
251213	Nuclear Medicine Technologists	710	36.8	24	68	34	Health Care and Social Assistance	97.9
251214	Sonographers	4,800	33.4	44	76	39	Health Care and Social Assistance	97.9
251311	Environmental Health Officers	3,600	27.7	24	54	42	Public Administration and Safety	56.5
251312	Occupational Health and Safety Advisers	16,200	24.2	17	42	44	Public Administration and Safety	16.5
251411	Optometrists	4,200	34.4	34	53	41	Health Care and Social Assistance	96.8
251412	Orthoptists	830	46.8	51	89	35	Health Care and Social Assistance	96.1
251511	Hospital Pharmacists	3,700	25.5	27	79	33	Health Care and Social Assistance	84.2
251512	Industrial Pharmacists	830	24.1	16	54	38	Manufacturing	56.0
251513	Retail Pharmacists	18,800	30.3	34	59	34	Retail Trade	87.8
251911	Health Promotion Officers	4,700	30.8	43	83	45	Health Care and Social Assistance	65.3
251912	Orthotists and Prosthetists	410	21.4	24	43	37	Health Care and Social Assistance	79.1
251999	Genetic Counsellors (& Other Health Profsls nec)	400	32.6	42	78	42	Health Care and Social Assistance	81.3
252311	Dental Specialists (including Orthodontists)	1,200	28.7	29	27	48	Health Care and Social Assistance	96.9
252312	Dentists	11,900	32.7	37	44	40	Health Care and Social Assistance	97.1
252711	Audiologists	1,900	27.8	35	76	37	Health Care and Social Assistance	91.4
252712	Speech Pathologists	7,300	30.1	45	97	34	Health Care and Social Assistance	75.8
253111	General Practitioners	42,600	31.0	28	45	45	Health Care and Social Assistance	96.4
253112	Resident Medical Officers	11,500	31.5	10	51	30	Health Care and Social Assistance	98.3
253311	Specialist Physicians (General Medicine)	670	27.2	21	27	52	Health Care and Social Assistance	99.1
253312	Cardiologists	810	31.1	13	16	47	Health Care and Social Assistance	97.8
253313	Clinical Haematologists	130	24.6	21	30	41	Health Care and Social Assistance	97.6

ANZSCO code	Occupation	National Employment June 2016	NSW share of employment (%)	Part-time Share (%)	Female Share (%)	Median Age (%)	Most common industry of employment nationally	%
253314	Medical Oncologists	690	30.2	18	46	42	Health Care and Social Assistance	95.2
253315	Endocrinologists	210	31.9	40	65	42	Health Care and Social Assistance	98.6
253316	Gastroenterologists	360	29.6	16	26	45	Health Care and Social Assistance	98.9
253317	Intensive Care Specialists	650	30.3	7	34	38	Health Care and Social Assistance	98.9
253318	Neurologists	370	37.7	24	32	45	Health Care and Social Assistance	96.2
253321	Paediatricians	1,700	31.5	22	60	41	Health Care and Social Assistance	97.5
253322	Renal Medicine Specialists	170	36.6	22	39	42	Health Care and Social Assistance	95.9
253323	Rheumatologists	140	34.5	31	51	46	Health Care and Social Assistance	100.0
253324	Thoracic Medicine Specialists	190	29.6	22	39	42	Health Care and Social Assistance	95.3
253399	Other Specialist Physicians	1,200	32.6	30	56	43	Health Care and Social Assistance	90.6
253511	Surgeons (General)	500	30.2	13	21	45	Health Care and Social Assistance	95.3
253512	Cardiothoracic Surgeons	120	34.9	10	10	46	Health Care and Social Assistance	100.0
253513	Neurosurgeons	220	33.0	8	16	44	Health Care and Social Assistance	98.2
253514	Orthopaedic Surgeons	1,100	31.3	11	8	45	Health Care and Social Assistance	97.9
253515	Ear, Nose and Throat Specialists	270	35.4	17	20	45	Health Care and Social Assistance	100.0
253516	Paediatric Surgeons	110	42.0	5	32	44	Health Care and Social Assistance	100.0
253517	Plastic and Reconstructive Surgeons	360	24.6	10	17	45	Health Care and Social Assistance	100.0
253518	Urologists	290	26.5	7	11	46	Health Care and Social Assistance	99.0
253521	Vascular Surgeons	120	36.0	8	16	44	Health Care and Social Assistance	100.0
253911	Dermatologists	470	34.2	30	53	46	Health Care and Social Assistance	98.7
253912	Emergency Medicine Specialists	2,700	30.1	16	45	37	Health Care and Social Assistance	98.4
253913	Obstetricians and Gynaecologists	1,400	27.5	14	56	45	Health Care and Social Assistance	98.8
253914	Eye Specialists	850	35.7	20	28	47	Health Care and Social Assistance	97.2
253915	Pathologists	2,100	37.9	31	62	45	Health Care and Social Assistance	96.4
253917	Diagnostic and Interventional Radiologists	2,100	31.6	21	31	44	Health Care and Social Assistance	98.7
253918	Radiation Oncologists	250	41.5	14	47	40	Health Care and Social Assistance	97.2
253999	Medical Practitioners (not covered elsewhere)	1,100	34.9	26	44	44	Health Care and Social Assistance	88.6
254211	Nurse Educators	4,300	36.5	39	91	46	Health Care and Social Assistance	73.7
254212	Nurse Researchers	1,100	22.8	49	94	47	Health Care and Social Assistance	71.1
254411	Nurse Practitioners	1,700	28.2	37	84	48	Health Care and Social Assistance	93.9
254412	Registered Nurses (Aged Care)	39,300	42.1	56	90	47	Health Care and Social Assistance	96.7
254413	Registered Nurses (Child and Family Health)	5,400	27.1	59	99	48	Health Care and Social Assistance	74.9
254414	Registered Nurses (Community Health)	11,000	29.9	53	92	48	Health Care and Social Assistance	80.4
254415	Registered Nurses (Critical Care and Emergency)	32,900	28.8	46	87	38	Health Care and Social Assistance	96.9
254416	Registered Nurses (Developmental Disability)	70	50.0	37	82	56	Health Care and Social Assistance	70.1

ANZSCO code	Occupation	National Employment June 2016	NSW share of employment (%)	Part-time Share (%)	Female Share (%)	Median Age (%)	Most common industry of employment nationally	%
254417	Registered Nurses (Disability and Rehabilitation)	4,300	36.3	49	86	46	Health Care and Social Assistance	93.1
254418	Registered Nurses (Medical)	17,400	27.1	51	91	41	Health Care and Social Assistance	96.1
254421	Registered Nurses (Medical Practice)	8,900	28.5	66	97	48	Health Care and Social Assistance	97.5
254422	Registered Nurses (Mental Health)	14,100	31.8	33	70	47	Health Care and Social Assistance	92.7
254423	Registered Nurses (Perioperative)	19,100	29.6	48	91	43	Health Care and Social Assistance	97.5
254424	Registered Nurses (Surgical)	15,100	29.0	51	92	38	Health Care and Social Assistance	97.4
254425	Registered Nurses (Paediatrics)	5,300	29.0	53	96	36	Health Care and Social Assistance	97.0
254499	Registered Nurses (not covered elsewhere)	24,500	26.7	52	91	43	Health Care and Social Assistance	91.0
272111	Careers Counsellors	2,100	28.7	40	75	44	Professional, Scientific and Tech Svcs	80.0
272112	Drug and Alcohol Counsellors	1,600	24.4	36	63	45	Health Care and Social Assistance	87.4
272113	Family and Marriage Counsellors	1,400	25.1	60	83	51	Health Care and Social Assistance	88.2
272114	Rehabilitation Counsellors	1,600	40.4	28	74	35	Health Care and Social Assistance	61.7
272115	Student Counsellors	2,700	34.6	46	78	43	Education and Training	88.3
272199	Other Counsellors and Life Coaches	4,100	29.2	51	79	41	Education and Training	54.2
272311	Clinical Psychologists	13,500	31.0	48	80	43	Other Services	77.9
272312	Educational Psychologists	3,100	32.5	38	83	46	Education and Training	86.4
272313	Organisational Psychologists	450	32.2	35	70	41	Health Care and Social Assistance	31.5
272314	Psychotherapists	2,300	34.5	65	81	49	Health Care and Social Assistance	89.1
272399	Other Psychologists	1,200	25.8	48	79	41	Health Care and Social Assistance	53.3
272411	Historians	500	26.0	51	63	53	Professional, Scientific and Tech Svcs	28.3
272412	Interpreters	4,000	29.2	78	67	50	Professional, Scientific and Tech Svcs	53.7
272413	Translators	1,500	35.1	59	64	47	Professional, Scientific and Tech Svcs	69.6
272414	Archaeologists	430	39.0	24	51	41	Professional, Scientific and Tech Svcs	76.1
272499	Other Social Professionals	2,700	32.1	46	60	40	Education and Training	32.0
272611	Community Arts Workers	500	24.5	48	81	43	Public Administration and Safety	62.3
272612	Recreation Officers	1,800	36.6	47	62	38	Public Administration and Safety	32.3
272613	Welfare Workers	20,000	31.0	36	79	42	Health Care and Social Assistance	56.8
411111	Ambulance Officers	12,700	27.6	14	38	40	Health Care and Social Assistance	96.5
411112	Intensive Care Ambulance Paramedics	950	35.2	10	24	46	Health Care and Social Assistance	97.8
411211	Dental Hygienists	1,300	28.5	67	96	37	Health Care and Social Assistance	97.5
411212	Dental Prosthetists	830	31.7	20	15	52	Health Care and Social Assistance	79.9
411213	Dental Technicians	2,700	27.5	25	36	40	Manufacturing	65.6
411214	Dental Therapists	1,800	19.0	51	92	38	Health Care and Social Assistance	95.5
411411	Enrolled Nurses	34,000	24.1	57	90	46	Health Care and Social Assistance	94.1
411412	Mothercraft Nurses	180	41.3	65	99	54	Health Care and Social Assistance	78.6

ANZSCO code	Occupation	National Employment June 2016	NSW share of employment (%)	Part-time Share (%)	Female Share (%)	Median Age (%)	Most common industry of employment nationally	%
411711	Community Workers	24,400	29.4	39	80	45	Health Care and Social Assistance	62.7
411712	Disabilities Services Officers	6,500	28.9	34	74	45	Health Care and Social Assistance	58.1
411713	Family Support Workers	3,400	28.1	49	87	43	Health Care and Social Assistance	70.1
411714	Parole and Probation Officers	1,900	31.5	12	72	39	Public Administration and Safety	95.2
411715	Residential Care Officers	1,600	16.3	19	68	48	Health Care and Social Assistance	63.6
411716	Youth Workers	12,300	28.5	37	59	35	Health Care and Social Assistance	55.0
421111	Child Care Workers	96,300	32.2	51	97	33	Health Care and Social Assistance	66.8
421112	Family Day Care Workers	14,000	34.8	31	94	41	Health Care and Social Assistance	95.8
421113	Nannies	8,500	37.3	77	97	25	Other Services	55.6
421114	Out of School Hours Care Workers	8,600	37.3	89	79	24	Health Care and Social Assistance	62.0
422111	Aboriginal and TS Islander Education Workers	2,000	25.8	55	77	41	Education and Training	91.6
422112	Integration Aides	19,000	19.5	79	93	47	Education and Training	97.2
422115	Preschool Aides	3,800	12.7	77	98	45	Education and Training	83.6
422116	Teachers' Aides	58,800	22.9	79	90	46	Education and Training	97.3
423311	Hospital orderlies	12,400	29.7	40	38	48	Health Care and Social Assistance	92.7
423312	Nursing Support Workers	36,200	54.0	65	85	39	Health Care and Social Assistance	95.6
423313	Personal Care Assistants	28,900	16.3	69	85	45	Health Care and Social Assistance	95.0
423314	Therapy Aides	5,400	22.3	66	86	45	Health Care and Social Assistance	93.9
423411	Child and Youth Residential Care Assistants	890	16.9	44	66	34	Health Care and Social Assistance	79.1
423412	Hostel Parents	1,400	22.9	50	69	39	Education and Training	84.7
423413	Refuge Workers	280	21.2	47	82	45	Health Care and Social Assistance	74.8
731111	Chauffeurs	3,800	40.1	48	9	54	Transport, Postal and Warehousing	79.3
731112	Taxi Drivers	27,200	37.3	37	4	46	Transport, Postal and Warehousing	98.7
731199	Other Automobile Drivers	7,000	34.2	55	10	42	Transport, Postal and Warehousing	86.0
731211	Bus Drivers	33,000	35.3	40	13	55	Transport, Postal and Warehousing	80.0
731212	Charter and Tour Bus Drivers	2,100	33.5	49	10	56	Transport, Postal and Warehousing	80.3
731213	Passenger Coach Drivers	2,300	30.4	37	8	57	Transport, Postal and Warehousing	92.4
731311	Train Drivers	10,000	33.4	6	8	48	Transport, Postal and Warehousing	74.6
731312	Tram Drivers	1,300	3.6	8	18	53	Transport, Postal and Warehousing	96.7
733111	Truck Drivers (General)	137,200	30.8	14	3	48	Transport, Postal and Warehousing	54.4
733112	Aircraft Refuellers	760	26.0	12	4	45	Transport, Postal and Warehousing	55.4
733113	Furniture Removalist Drivers	5,200	31.9	47	5	34	Transport, Postal and Warehousing	92.4
733114	Tanker Drivers	2,900	26.1	9	2	50	Transport, Postal and Warehousing	50.3
733115	Tow Truck Drivers	2,300	30.7	19	1	44	Transport, Postal and Warehousing	73.8

Appendix C: Real pay losses for selected essential classification under NSW public sector salary caps

These tables update parts of Tables 1, 5 and 6 in D Peetz, *Wage Norms and the Link to Public Sector Salary Caps*, Sydney, 2022

Table C1: RBA CPI forecasts to December 2024

Year to:	CPI
Dec-2022	7.8%
Jun-2023	6.7%
Dec-2023	4.8%
Jun-2024	3.6%
Dec-2024	3.2%
Jun-2025	3.0%

Source: Reserve Bank of Australia, *Statement on Monetary Policy*, Sydney, February 2023.

Data are from the Appendix ('Forecast table') to the report at <https://www.rba.gov.au/publications/smp/2023/feb/forecasts.html>

Table C2: Past and projected pay rates under the public sector pay cap, selected NSW public sector occupations, compared to projected inflation rate for 3 years to June quarter 2025

	(C2.1) current weekly wage, June quarter 2022	(C2.2) real wage maintenance June quarter 2023	(C2.3) wage with salary cap, June quarter 2023	(C2.4) real wage maintenance June quarter 2024	(C2.5) wage with salary cap, June quarter 2024	(C2.6) real wage maintenance June quarter 2025	(C2.7) wage with salary cap, June quarter 2025
Bus driver: Senior Bus Operator	1,129.20	1,204.86	1,163.08	1,248.23	1,197.97	1,285.68	1,227.92
Nurse: Registered Nurse/Midwife Year 4	1,469.30	1,567.74	1,513.38	1,624.18	1,558.78	1,672.91	1,597.75
Paramedic: Paramedic Year 2 (Division 2 (iii))	1,490.45	1,590.31	1,535.16	1,647.56	1,581.22	1,696.99	1,620.75
Teacher: Teacher Band 2.1 Salary	1,856.37	1,980.75	1,912.06	2,052.05	1,969.42	2,113.62	2,018.66

Note: Calculated using RBA inflation forecasts for 2023, 2024, and 2025, to calculate columns (C2.2), (C2.4) and (C2.6) from column (C2.1). Columns (C2.3), (C2.5) and (C2.7) are calculated from column (C2.1) using 3%, 3% and 2.5% salary cap increases respectively.

Table C3: Real shortfalls under public sector pay cap, selected NSW public sector occupations, to June quarter 2025

	(6.1) weekly shortfall June quarter 2023	(6.2) annualised shortfall June quarter 2023	(6.3) weekly shortfall June quarter 2024	(6.4) annualised shortfall June quarter 2024	(6.5) weekly shortfall June quarter 2025	(6.6) annualised shortfall June quarter 2025	(6.7) Sum of annualised shortfalls 2023-25
Bus driver: Senior Bus Operator	41.78	2,172.58	50.26	2,613.67	57.76	3,003.56	7,789.81
Nurse: Registered Nurse/Midwife Year 4	54.36	2,826.93	65.40	3,400.88	75.16	3,908.19	10,136.00
Paramedic: Paramedic Year 2 (Division 2 (iii))	55.15	2,867.63	66.34	3,449.83	76.24	3,964.44	10,281.90
Teacher: Teacher Band 2.1 Salary	68.69	3,571.66	82.63	4,296.80	94.96	4,937.75	12,806.21

Note: Calculated from table C2. Column (C3.1) = (C2.2) – (C2.3), column (C3.3) = (C2.4) – (C2.5), and column (C3.5) = (C2.6) – (C2.7). Columns (C3.2), (C3.4) and (C3.6) are calculated by multiplying (C3.1), (C3.3) and (C3.5) respectively by 52.