



New Zealand Productivity Commission
Te Kōmihana Whai Hua o Aotearoa

Impacts of immigration on the labour market and productivity

Working paper 2021/05



NEW ZEALAND
PRODUCTIVITY COMMISSION
Te Kōmihana Whai Hua o Aotearoa



Contents

Key points	1
1 Recent migration and the New Zealand labour market	2
1.1 Migration flows and labour markets in New Zealand	2
1.2 Temporary migration accelerated over the last decade	6
1.3 New Zealand’s labour market is buoyant and dynamic.....	12
1.4 Conclusion	18
2 Perspectives on employing migrants in New Zealand	20
2.1 Employers value the contribution of migrant workers.....	21
2.2 Concerns about exploitation and impacts on local wages and conditions	28
3 Impacts of immigration on labour markets	31
3.1 Effects of temporary migration on the labour market outcomes of locals in New Zealand	31
3.2 Other evidence on the labour-market effects of migration in New Zealand	33
3.3 How a growing dynamic economy responds to migration	35
4 Immigration and productivity	38
4.1 How can immigration affect productivity and national income?	38
4.2 New Zealand evidence	40
5 Migrant workers in the dairy industry	42
5.1 Recent economic performance	42
5.2 The workforce	44
5.3 Impacts.....	46
5.4 Summary	48
References	49
Data appendix	53
Section 1 Visual analysis of the employment of different visa holders by industry in 2012 and 2019.....	55
Section 2 Visual comparison of industry employment by different visa types in 2012 and 2019	66
Section 3 Analysis of Occupation and skills information for temporary ‘Essential Skills’ visa holders.....	85
Tables	
Table 1.1 Inflows of foreign population by nationality, New Zealand, 2013-18 (thousands)	4
Table 1.2 Main migrant arrivals and GDP per capita in source countries and New Zealand, 2018	5
Table 1.3 Percentage of the population aged 15 and over, by education and immigration status, 2015-16.....	6
Figures	
Figure 1.1 Emigration from New Zealand is high as a percentage of the population	3
Figure 1.2 Proportion of foreign-born population across selected OECD countries, 2018	3
Figure 1.3 The share of skilled migrants in residence approvals, New Zealand and selected OECD countries, 2016	5
Figure 1.4 Stock of temporary work visa holders by work visa policy, 2008-21	7
Figure 1.5 Growth in employment by visa category, 2012-19.....	7
Figure 1.6 Net job creation, New Zealand, 2000-17	8
Figure 1.7 Temporary migration as a percentage of the labour force, New Zealand and selected OECD countries, 2016.....	8
Figure 1.8 Proportion of jobs held by temporary migrants, by industry	9
Figure 1.9 Proportion of jobs held by recent permanent migrants, by industry	10
Figure 1.10 Number of people approved on Essential Skills visas by skill level, 2012-19.....	10
Figure 1.11 Number of people approved on Work to Residence visas by skill level, 2012-19.....	11
Figure 1.12 Number of people approved on Skilled Migrant visa by skill level, 2012-19	11

Figure 1.13 Unemployment rate, New Zealand and OECD countries, 1990-202012

Figure 1.14 Share of unemployed, unemployed for longer than one year, OECD countries, 201813

Figure 1.15 Labour-force participation rate across OECD countries, people aged 15-64, 201713

Figure 1.16 Job churn, New Zealand, 2000-1714

Figure 1.17 Job-to-job transition rates, selected OECD countries, 2000-0714

Figure 1.18 Share of adults aged 25-64 who participated in formal or non-formal adult education or training for job-related reasons, 2012 or 201515

Figure 1.19 Minimum wage relative to the median, New Zealand and other OECD countries, 2000-2016

Figure 1.20 Minimum wage relative to the median, OECD countries, 2020.....16

Figure 1.21 Regional unemployment rates relative to the national unemployment rate17

Figure 1.22 Unemployment rates by ethnicity, age group and qualification, 2019.....17

Figure 2.1 Proportion of foreign-trained doctors and nurses, 2015-1722

Figure 2.2 Numbers of jobs held by temporary migrants, by industry.....23

Figure 3.1 Cumulative net migration and the capital-labour ratio, 1996=1 00036

Figure 5.1 Milk production, number of cows and hectares (financial year).....42

Figure 5.2 Milksolids production per hectare and cow since 1992-9343

Figure 5.3 Visa composition of the agriculture industry45

Figure 5.4 Temporary migrant share of employment in dairy cattle farming by region, 2000-1545

Figure 5.5 Skills composition of temporary Essential Skills visa holders by dairy farm occupation48

Key

F

Finding

Key points

- A high proportion of permanent migrants to New Zealand are skilled. Immigrants play an important role in filling specialised roles, and the labour-market gaps left by skilled New Zealanders emigrating to high-income OECD countries.
- The share of temporary migrants in New Zealand's workforce is one of the largest among OECD countries. Numbers of temporary work visa holders grew strongly in the decade up to the Covid-19 pandemic. Temporary work visa holders were increasingly being used to fill vacancies in lower-skill occupations during this period.
- In the period up to the Covid-19 pandemic, the New Zealand labour market has been buoyant and dynamic, with expanding employment, low unemployment, low long-term unemployment, high rates of workers moving jobs voluntarily, and high rates of workers participating in job-related education and training. Even so, the benefits of a buoyant labour market, and job-related education and training, have been unevenly distributed.
- Access to a migrant workforce can unlock complementarities and specialisation. Negative consequences on innovation and productivity from using migrant labour depend on factors such as labour market conditions and whether technological alternatives are available.
- In some industries, there have been troubling patterns of exploitation, particularly of temporary migrants. Visa conditions applied to some temporary migrants increase the risk of abuse.
- Immigration has had small and mostly positive effects on the wages and employment of New Zealand-born workers over the last 25 years. Overall evidence on labour market effects does not, of itself, point to major problems with the level and composition of immigration into New Zealand.
- Microeconomic evidence suggests positive, but small, impacts from immigration on average levels of labour productivity. New Zealand evidence on the impacts of immigration on innovation and exporting as channels for productivity growth finds minor or conditional effects.
- The dairy industry is an example where migrants on temporary work visas have become a critical part of the workforce over the last decade, especially in the South Island with its larger corporate farms. Dairy farm output and productivity grew strongly in the 25 years to 2015, though they have now levelled off. An increasing share of the growing number of temporary migrant workers in the dairy industry are employed in low-skilled (often entry-level) roles.

1 Recent migration and the New Zealand labour market

This report describes the role that migrants have recently been filling in the New Zealand labour market (this chapter). Chapter 2 canvasses perspectives on the labour-market and productivity benefits and harms of employing migrant workers. The report then looks at evidence on the impacts of immigration on the labour market outcomes of New Zealanders (Chapter 3) and on productivity (Chapter 4). Chapter 5 briefly describes the role of immigration in a few selected industries to fill out the picture presented in the previous chapters. An Appendix sets out more detailed information on the distribution of temporary and recent permanent immigrants across industries, and how this changed between 2012 and 2019, using data from the Ministry of Business, Innovation and Employment's Migration Employment Dataset.

This report is a supplementary report to the Commission's draft report for its immigration inquiry. It will be revised and updated to support the final report, which will be released in April 2022.

1.1 Migration flows and labour markets in New Zealand

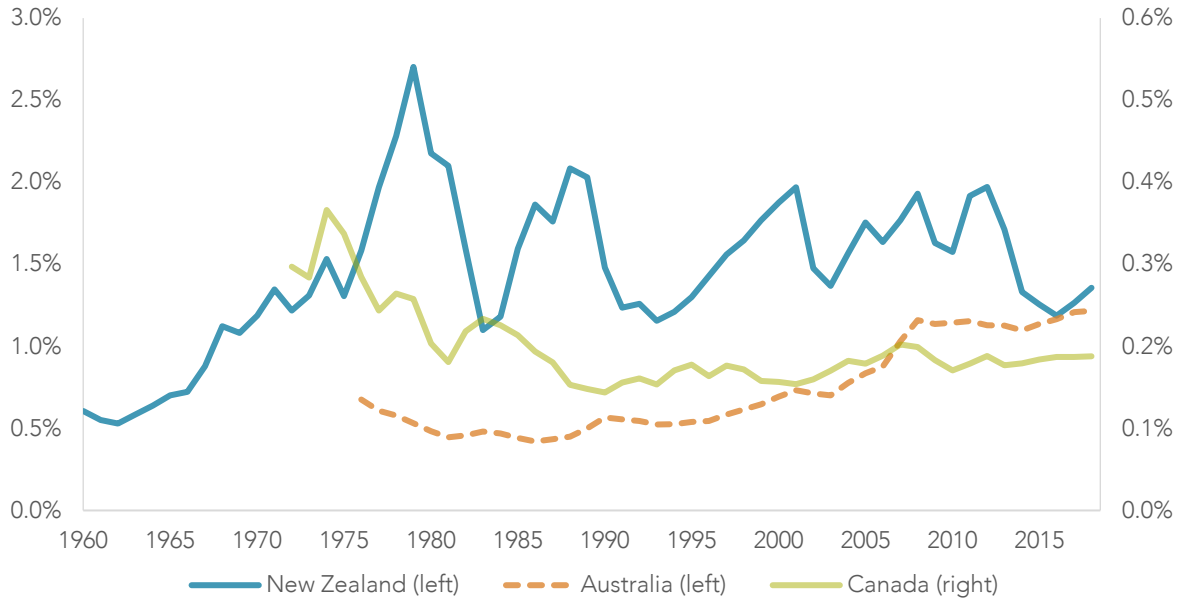
New Zealand's immigration policy has always had a strong economic development and labour-market focus (NZPC, 2021a). For much of the 19th and 20th centuries New Zealanders enjoyed very high incomes by global standards. For these and other reasons New Zealand was an attractive destination for migrants seeking a better life than they could expect in their source countries. Past immigration policy (up to the 1980s) was shaped by periodic concerns about New Zealand's capacity to absorb high rates of immigration. Policy included a preference for permanent rather than temporary migrants, and for migrants who were deemed more likely to settle successfully (in effect because they came from the same countries as the existing settler community).

New Zealanders emigrate at comparatively high rates, mostly to Australia and other OECD countries with higher incomes

Changes in New Zealand's economic performance relative to other countries and shifts in policy have altered the volume, direction and source of migrant flows. From the 1960s, incomes in New Zealand fell steadily behind those in leading OECD countries. From the 1970s, the income gap with Australia has been a significant driver of New Zealanders migrating across the Tasman. Falling costs of international travel and communication, and the income gap with leading OECD countries, have encouraged many educated young New Zealanders to emigrate further afield (Carey, 2019).

As a result, emigration from New Zealand is currently high by OECD standards, at between 1.3% and 2.0% of the population each year since 2000 (Figure 1.1). A large proportion of this is to Australia, and most of those emigrating there do not return to New Zealand to live. Emigrants are better educated than the resident New Zealand population.

Figure 1.1 Emigration from New Zealand is high as a percentage of the population

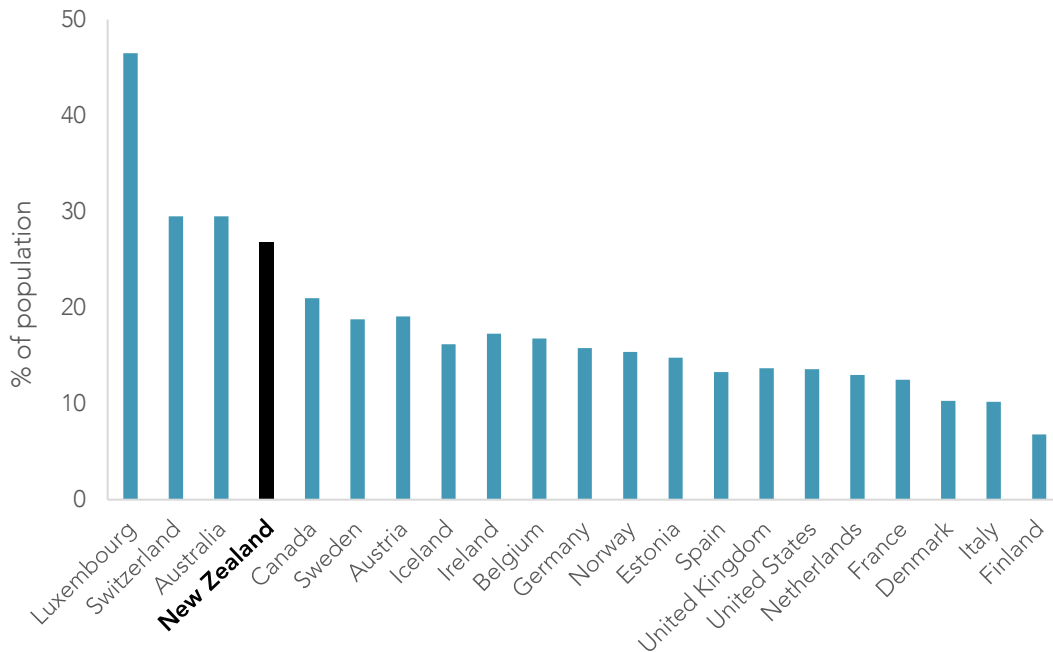


Source: Stats NZ; Statistics Canada; Australian Bureau of Statistics; Carey (2019).

Immigration rates have also been high

Immigration policy shifted significantly from the late 1980s, with an increased emphasis on skilled migrants and the abandonment of preferences for traditional source countries. This opened the way for significant flows of migrants from new source countries, often with incomes substantially below those prevailing in New Zealand. The foreign-born share of the population in New Zealand (27% in 2018) is one of the highest in the OECD (Figure 1.2).

Figure 1.2 Proportion of foreign-born population across selected OECD countries, 2018



Source: OECD (2020).

Notes:

1. Foreign-born residents are all persons who have ever migrated from their country of birth to their current country of residence. This includes the children of New Zealand diaspora who have returned to this country.
2. Data for Canada is for 2017.

New Zealand draws migrants from diverse sources

In recent years, migrant inflows from the UK, China, India, Australia, South Africa and the Philippines have all been strong (Table 1.1).

Table 1.1 Inflows of foreign population by nationality, New Zealand, 2013-18 (thousands)

	2014	2015	2016	2017	2018
China	13.0	15.1	16.5	15.5	16.1
India	16.2	19.6	14.8	14.1	14.5
Philippines	6.5	8.4	8.2	9.1	9.1
UK	8.8	8.7	8.9	9.0	8.5
Australia	6.2	6.8	7.1	7.1	8.2
South Africa	2.6	3.4	5.8	5.8	7.0
US	2.9	3.3	3.1	3.5	4.2
Korea	2.5	2.6	3.1	2.9	2.9
Samoa	2.1	2.3	2.4	2.7	2.8
Fiji	2.4	2.5	3.0	2.5	2.4
France	1.6	1.7	1.8	1.8	2.1
Malaysia	1.6	1.7	1.9	2.0	2.0
Germany	1.5	1.6	1.7	1.7	1.9
Brazil	0.9	1.3	1.6	1.7	1.8
Japan	1.5	1.6	1.6	1.5	1.7
Other countries	21.3	22.3	24.0	24.4	26.5
Total	91.7	102.9	105.6	105.3	111.8

Source: OECD (2020 Table B.1); Stats NZ.

Note:

1. Data represents permanent and long-term arrivals who come to live in New Zealand for 12 months or more.

Incomes in many, but not all, source countries are substantially lower than in New Zealand.

Earnings are higher than in many source countries

Over 40% of migrants in 2018 came from countries with substantially less than half of New Zealand's GDP per capita (Table 1.2). New Zealand has had a relatively high propensity among OECD countries to draw skilled migrants from non-OECD countries (Docquier et al., 2014, p. 1119 Table 1) (over the period 1990 to 2000).

Table 1.2 Main migrant arrivals and GDP per capita in source countries and New Zealand, 2018

	Arrivals	% of total	GDP per capita (US\$)
China	16 100	14.4%	15 240
India	14 500	13.0%	6 520
Philippines	9 100	8.1%	8 520
UK	8 500	7.6%	46 040
Australia	8 200	7.3%	49 150
South Africa	7 000	6.3%	12 630
US	4 200	3.8%	61 590
Total	111 800	100%	
New Zealand	-		42 870

Source: World Bank (2021); OECD (2020 Table B.1); Stats NZ (n.d.).

Note:

1. GDP per capita is measured in US\$2017, adjusted for 'purchasing power parity'.

A relatively high proportion of permanent migrants are skilled

Currently, around one-half of all residence approvals are in the skilled migrant or business category, including accompanying family, one of the highest shares in the OECD (Figure 1.3).¹

Figure 1.3 The share of skilled migrants in residence approvals, New Zealand and selected OECD countries, 2016



Source: OECD (2018); Carey (2019).

Note:

1. The data is for the group of countries which identify the accompanying family of skilled migrants separately.

¹ In this report the definition of skills when using official data usually follows that used in New Zealand's immigration system (see NZPC, 2021b, chapter 5). Other data used in this report sometimes takes level of education as a proxy for skills.

Immigrants are much more likely to be tertiary educated than New Zealand-born residents and outnumber tertiary-educated emigrants. As a result, immigration “has more than offset New Zealand’s brain drain, resulting in a ‘brain exchange’” (Carey, 2019, p. 18). As a share of the adult population, immigrants made up 40% of those with tertiary education, while those heading offshore with tertiary education represented 21% (Table 1.3).

Table 1.3 Percentage of the population aged 15 and over, by education and immigration status, 2015-16

	Immigration	Emigration	Net migration
High education	39.6	20.8	18.8
Low-middle education	23.9	12.6	11.34
Total	27.4	14.4	13.0

Source: Carey (2019, p. 18).

Note:

1. ‘Low education’ refers to lower secondary education; ‘middle’ education corresponds to upper secondary education and post-secondary non-tertiary education; and ‘high education’ refers to tertiary education.

F1.1

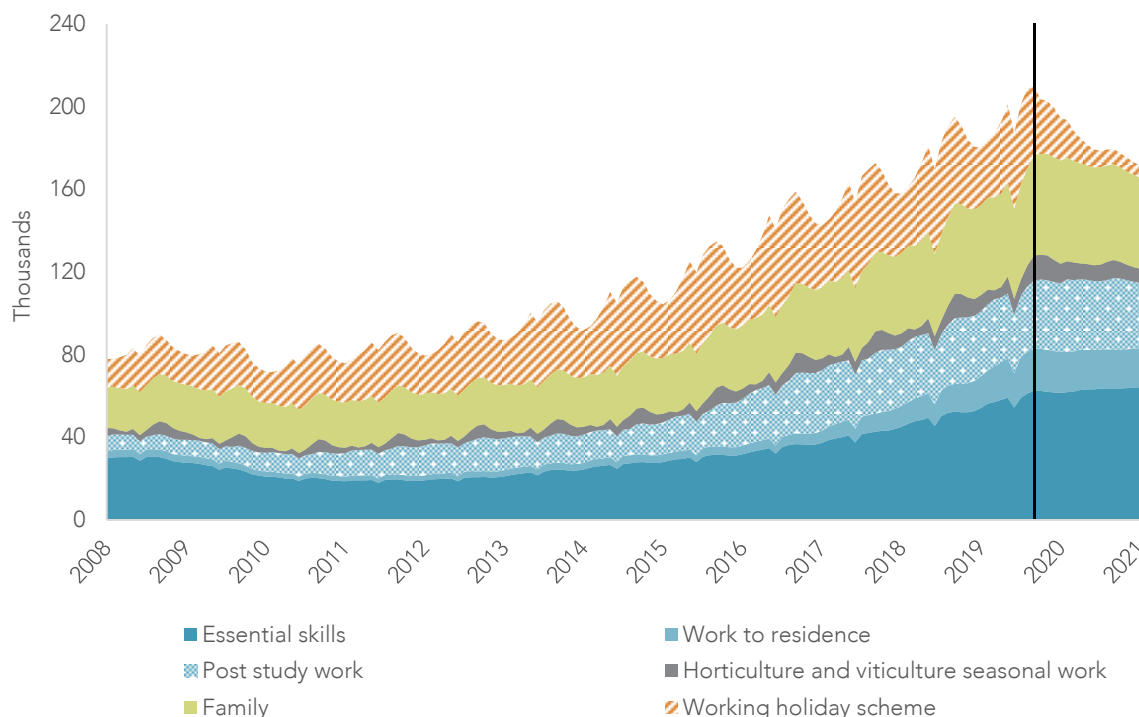
A relatively high proportion of permanent migrants to New Zealand are skilled. Immigrants play an important role in filling the labour-market gaps left by skilled New Zealanders emigrating to high-income OECD countries.

1.2 Temporary migration accelerated over the last decade

Temporary immigration flows and stocks have grown substantially over the past decade (NZPC, 2021a, Figure 5.3) (Figure 1.4).

Five main categories together accounted for a large part of the increase between 2012 and 2019 in the stock of workers holding temporary work visas:

- Essential Skills (ES) – about a quarter of the total in 2012, excluding student visa holders who may have some rights to work;
- Family (eg, partners of migrants holding other categories of work visas or migrant partners of New Zealand citizens and residents);
- Working holidaymakers (WHMs);
- Students (with concurrent working rights) (NZPC, 2021a, Figure 5.3); and
- Post-Study Work visas.

Figure 1.4 Stock of temporary work visa holders by work visa policy, 2008-21

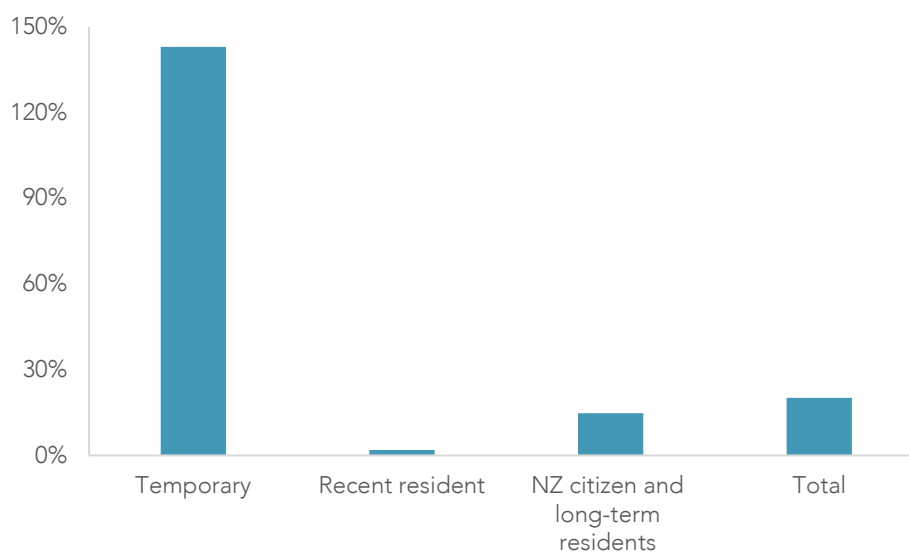
Source: MBIE Migration Data Explorer.

Note:

1. The Appendix provides a detailed breakdown of the industries in which different categories of temporary visa holders are employed and how this changed between 2012 and 2019.

Temporary migrants have entered an expanding employment market

Between 2012 and 2019, the number of people employed in the New Zealand labour market expanded by 20%, accommodating both a large increase (143%) in the stock of temporary migrants employed, and a steady increase (15%) in the employment of New Zealanders (Figure 1.5).

Figure 1.5 Growth in employment by visa category, 2012-19

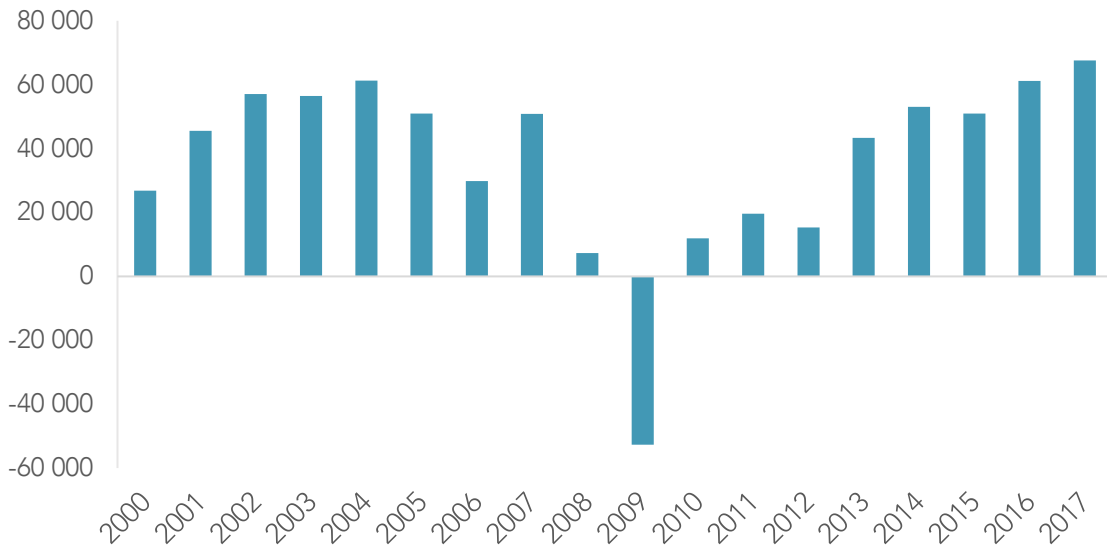
Source: MBIE Migrant Employment Data.

Notes:

1. The total includes a category 'other' that covers work visas not otherwise classified (such as those used by diplomats, other officials and the military).
2. Recent residents are those who have been in New Zealand as residents or permanent residents for less than five years.
3. The MBIE Migrant Employment Data does not distinguish between fulltime and part-time employment.

Other data shows that, apart from a period around 2009 that reflected the effects of the Global Financial Crisis, the number of jobs in the New Zealand economy has increased substantially in most of the last 20 years (Figure 1.6).

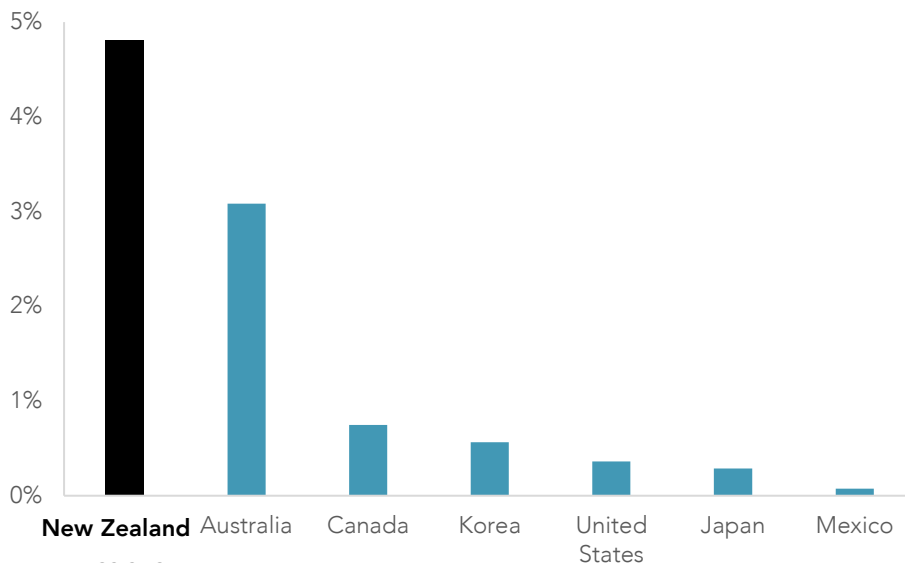
Figure 1.6 Net job creation, New Zealand, 2000-17



Source: Stats NZ Linked employer-employee database; NZPC (2019a).

At almost 5% of the workforce, New Zealand currently has the largest share of temporary labour migrants among OECD countries (Figure 1.7).

Figure 1.7 Temporary migration as a percentage of the labour force, New Zealand and selected OECD countries, 2016



Source: Carey (2019, Figure 9); OECD International Migration database and Annual Labour Force Statistics database.

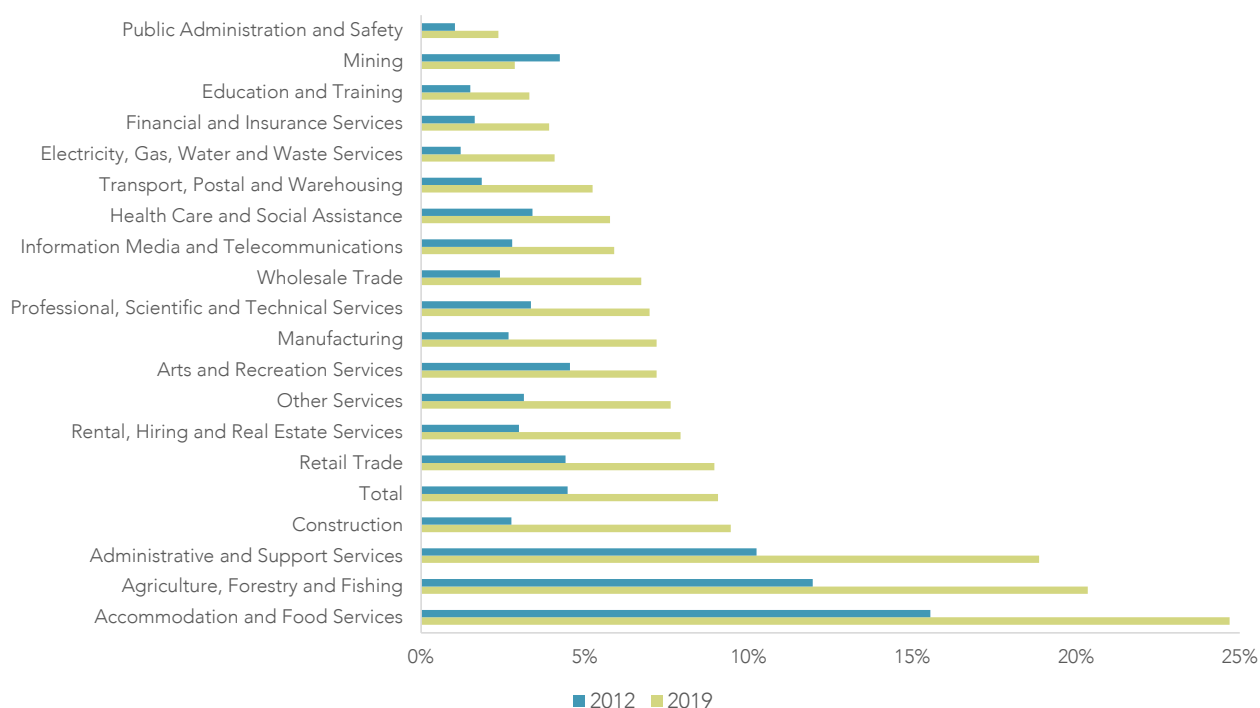
Notes:

1. The data consist of inflows of seasonal and non-seasonal (interns, intra-company transfers and working holidays) foreign workers who obtained a working visa.
2. European countries have been excluded because, as part of the Schengen Area arrangements, visa-free movement is available among most of them.

A substantial proportion of workers in some industries are temporary migrants

Temporary migrants are an increasing proportion of workers across many industries and represent a substantial proportion in some.

Figure 1.8 Proportion of jobs held by temporary migrants, by industry



Source: MBIE Migrant Employment Data.

Notes:

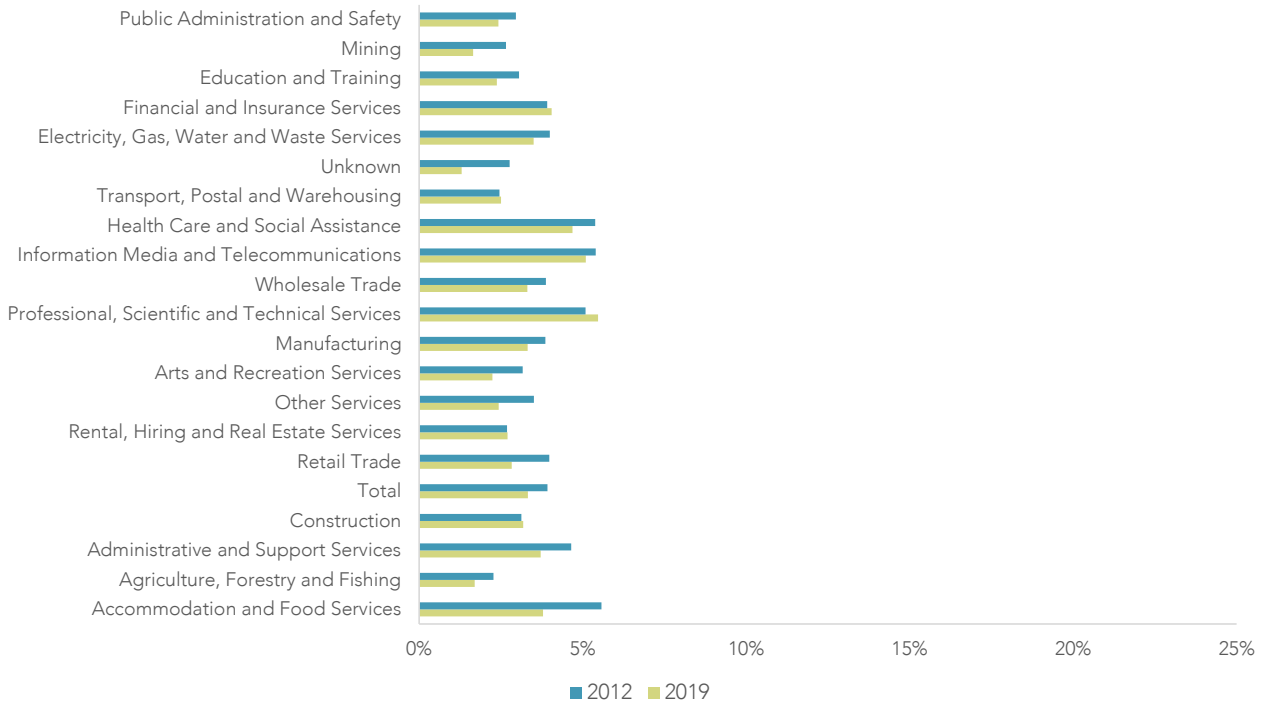
1. The Appendix provides more detail on which categories of temporary visa holders are employed in which industries and how this changed between 2012 and 2019.
2. The 'Administrative and Support Services' industry includes labour hire firms. A proportion of jobs in the industry held by temporary migrants may be to provide services to other businesses.

The rapid growth of tourism, dairying and horticulture is likely to explain part of the large increase in the employment of Working Holiday and Essential Skills visa holders in the accommodation and food services, and the agriculture, forestry and fishing industries. Growth in the construction industry has seen a large increase in the employment of Essential Skills and Work to Residence visa holders (Appendix). Chapter 5 looks in more detail at the role of migrants in the dairy industry.

Recent permanent migrants, in contrast, are distributed more evenly across industries

Recent permanent migrants (those who have been in New Zealand as residents or permanent residents for less than five years) are distributed more evenly across industries than temporary migrants. The recent permanent migrant share of total jobs, and of jobs in most industries, remained broadly stable between 2012 and 2019. Recent permanent migrants now make up a much smaller proportion than temporary migrants of the overall workforce.

Figure 1.9 Proportion of jobs held by recent permanent migrants, by industry



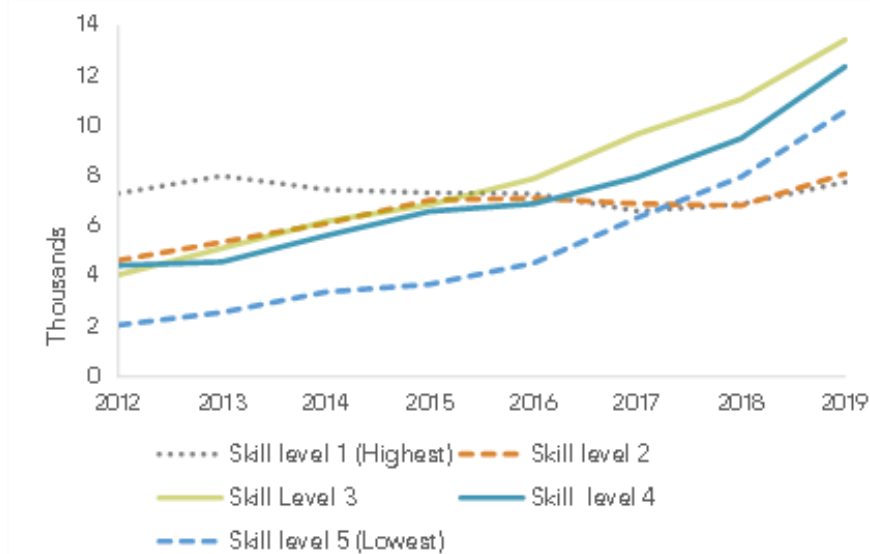
Source: MBIE Migrant Employment Data.
 Note:

1. Recent permanent migrants are those who have lived in New Zealand as residents or permanent residents for less than five years.

An increasing proportion of temporary visa holders are employed in less-skilled occupations

Comprehensive data on the occupations of all temporary migrants with work rights are not available. Where it is available for holders of Essential Skills and Work to Residence visas, the data suggests that an increasing proportion of temporary migrants are employed in less-skilled occupations as measured by the Australian and New Zealand Standard Classification of Occupations (ANZSCO) (Figure 1.10 and Figure 1.11).²

Figure 1.10 Number of people approved on Essential Skills visas by skill level, 2012-19



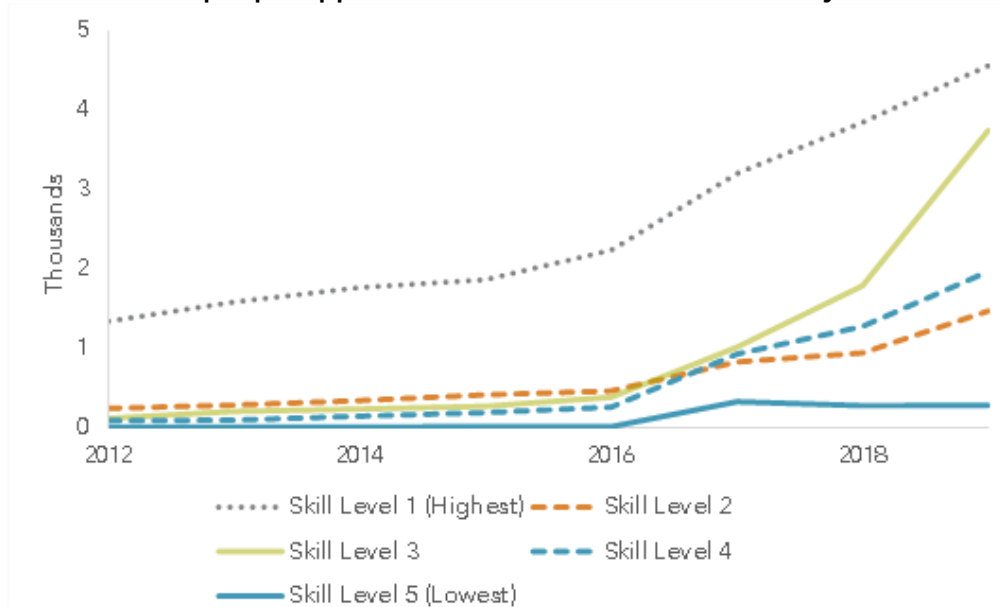
Source: MBIE Migration Data Explorer.

Note:

1. Data are the number of visa approvals in the year to December.

² Medium- and high-skilled occupations are defined as levels 1-3 on a scale up to 5 in the ANZSCO occupational classification, where level 1 is the highest skill level.

Figure 1.11 Number of people approved on Work to Residence visas by skill level, 2012-19



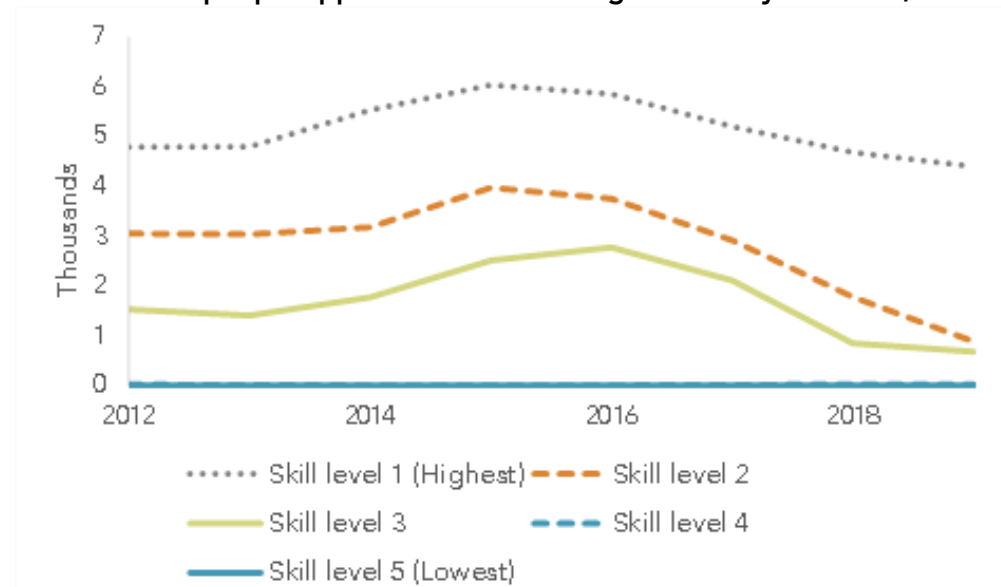
Source: MBIE Migration Data Explorer.

Notes:

1. The data are the number of visa approvals in the year to December.
2. The data refer to anyone approved to be in New Zealand on a Work to Residence visa. This includes the following categories: Talent (Accredited Employer, Long-term Skill Shortage List Occupation, South Island Contribution, Skilled Migrant, Talent – Arts, Culture and Sports, Global Impact Visa and Job Search).

One-half of new permanent migrants held an Essential Skills visa at some stage (Carey, 2019), though this visa does not, by itself, provide a path to permanent residence. In contrast, the proportion of high-skilled workers among recently approved permanent migrants increased between 2012 and 2019 (Figure 1.12), despite the increasing proportion of Essential Skills and Work to Residence visa holders employed in less-skilled occupations.³

Figure 1.12 Number of people approved on Skilled Migrant visa by skill level, 2012-19



Source: MBIE Migration Data Explorer.

Notes:

1. Data are the number of visa approvals in the year to December.
2. Does not include those whose skill levels are 'not recorded'.
3. The decline in numbers of skilled migrant visas approved after 2016 followed a Cabinet decision to raise the points threshold for selection from the pool of Expressions of Interest, to give higher priority to higher-paid and higher-skilled migrants, and to strengthen the English language requirements (CAB-16-MIN-0500, 26 September 2016).

³ NZPC (2021b) provides further information on work visa categories and the new Accredited Employer Work Visa that will replace the Essential Skill Visa and the Work to Residence Visa (and some other types of work visas) from mid-2022.

F1.2

The share of temporary migrants in New Zealand's workforce is one of the largest among OECD countries. Numbers of temporary work visa holders grew strongly in the decade up to the Covid-19 pandemic, as they entered an expanding employment market. Temporary work visas were increasingly being used to fill vacancies in lower-skill occupations during this period.

1.3 New Zealand's labour market is buoyant and dynamic

Over the last decade the stock of recent permanent migrants and migrants on temporary work visas in New Zealand has increased dramatically (section 1.2). Chapter 3 finds that this rapid growth in numbers had only modest (and overall positive) impacts on the earnings and employment of locals. This points to a labour market that has been relatively successful in attracting and employing many additional workers, comprising both New Zealand residents and temporary migrants (Figure 1.5).

Unemployment and long-term unemployment are comparatively low...

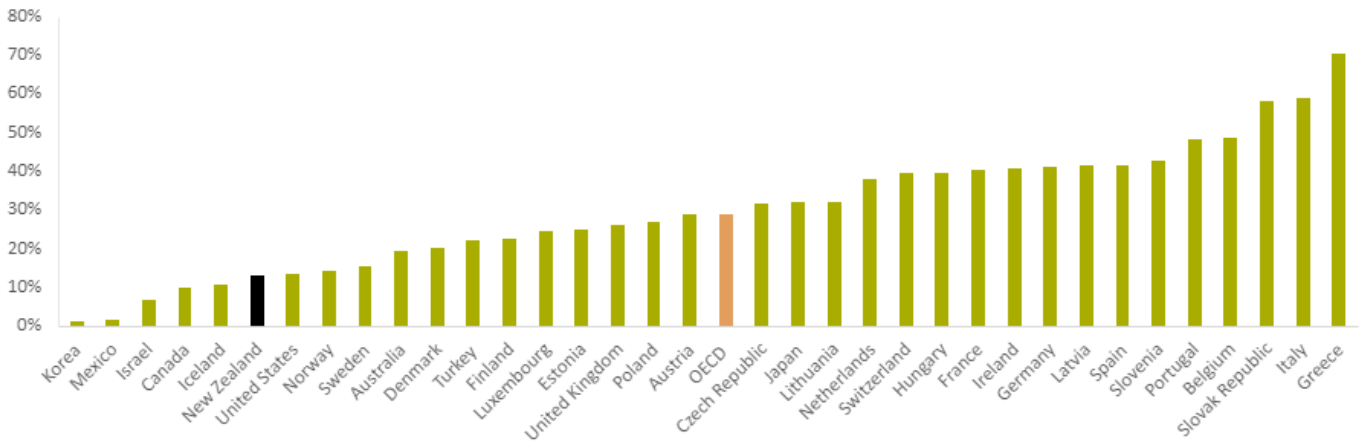
Comparisons across OECD countries show that New Zealand has a buoyant and flexible labour market. From the 2000s and up to the Covid-19 pandemic, New Zealand has had relatively low unemployment (Figure 1.13), low long-term unemployment (Figure 1.14) and high labour-market participation rates (Figure 1.15).

Figure 1.13 Unemployment rate, New Zealand and OECD countries, 1990-2020



Source: OECD Unemployment rate.

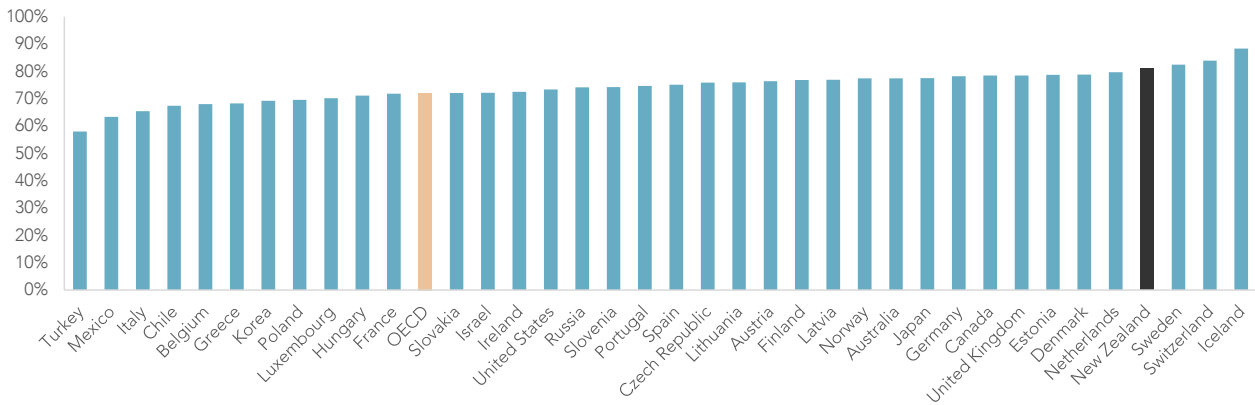
Figure 1.14 Share of unemployed, unemployed for longer than one year, OECD countries, 2018



Source: OECD Long-term unemployment rate; NZPC (2019a).

... and the labour force participation rate is high

Figure 1.15 Labour-force participation rate across OECD countries, people aged 15-64, 2017

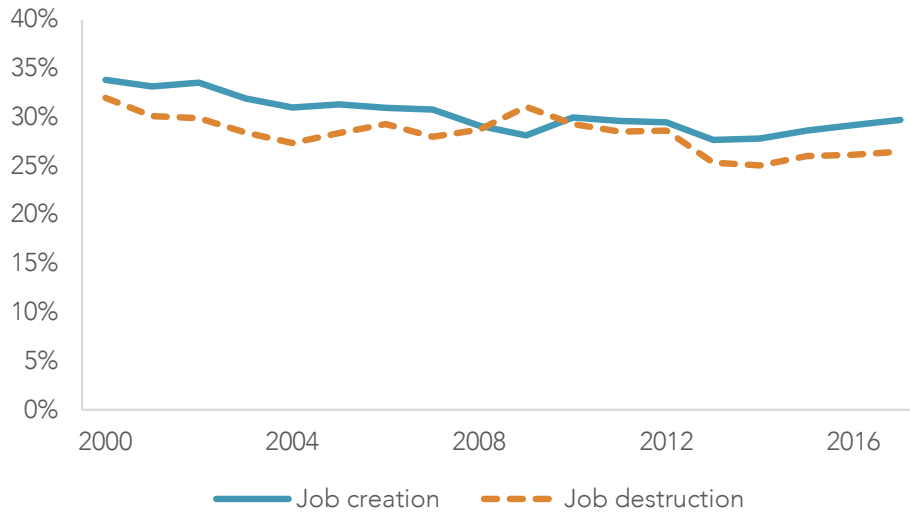


Source: OECD Labour-force participation rate; NZPC (2019a).

New jobs are continually being created and workers move frequently from job-to-job

In a dynamic economy, new firms are born, old ones exit, and existing firms grow or contract. The demand by firms for labour changes accordingly. Job churn figures assist in understanding this dynamism (Figure 1.16).

Figure 1.16 Job churn, New Zealand, 2000-17



Source: Stats NZ Linked employer-employee database; NZPC (2019a).

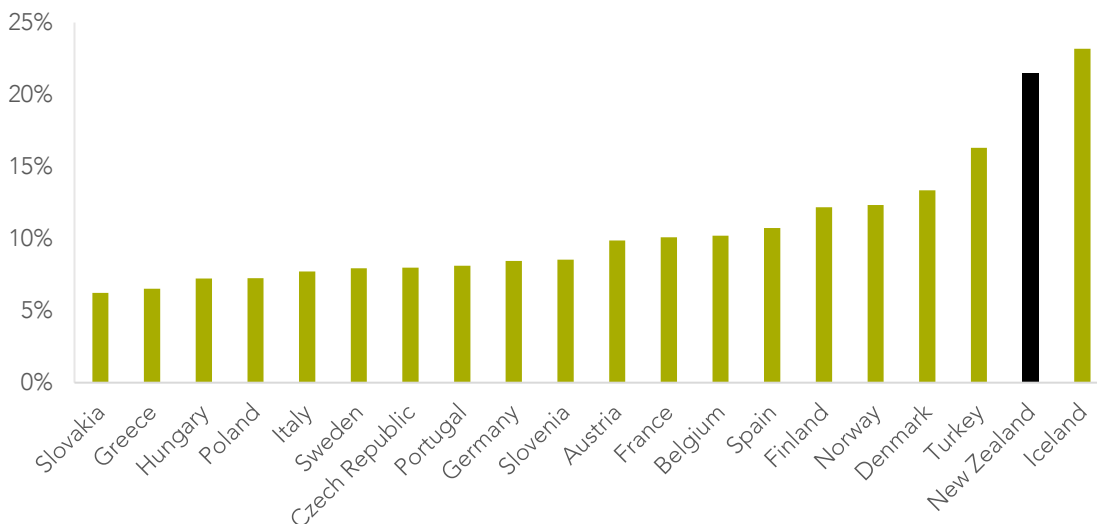
Note:

1. The rate of job creation for each year is calculated by dividing the sum of the new jobs created each quarter in that year by the average of the total filled jobs across the four quarters of that year. Job destruction rates are calculated using the same approach.

Workers moving voluntarily from one job to another is another sign of a dynamic labour market. A voluntary move from one job to another is an important way for workers to grow their wages since they have stronger bargaining power if already employed. Job switches also benefit workers who stay in their jobs as this shows that they likely also have other employment options (NZPC, 2019a). New Zealand’s rate of job-to-job transition is relatively high (Figure 1.17).

The ability of locals to move readily to another job may help in moderating the effect of migrants entering the labour market, on the employment and wages of locals. Locals are likely to have more options available to them than migrants and can move to jobs that complement those being filled by migrants, or move to jobs in other industries.

Figure 1.17 Job-to-job transition rates, selected OECD countries, 2000-07



Source: Coleman & Zheng (2020) for New Zealand; Bassanini & Garnero (2013); NZPC (2019a).

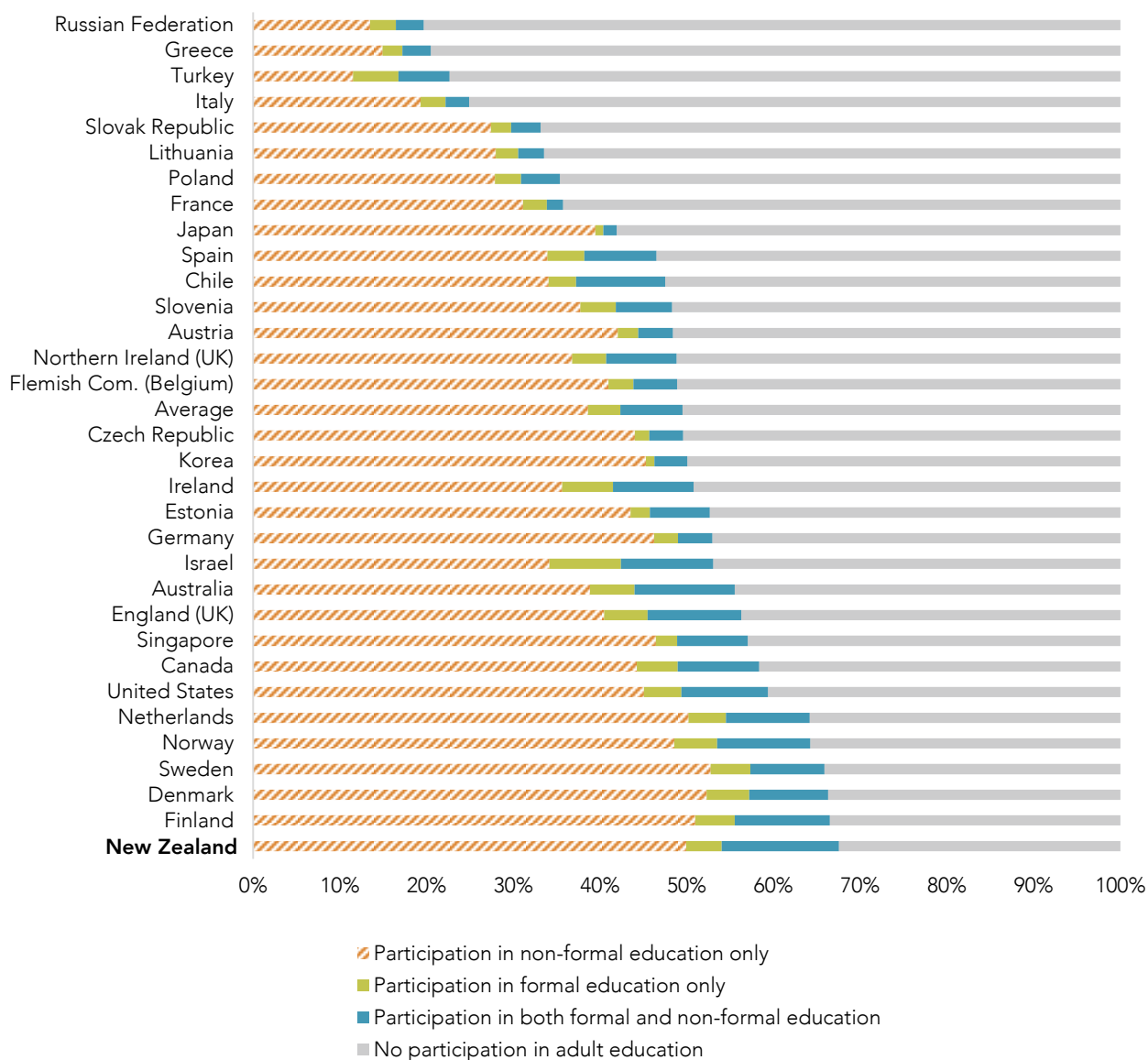
Notes:

1. Both Coleman and Zheng, and Bassanini and Garnero, defined a job-to-job transition as when a person was in a job at a specified point in year t and another job at the same point in year t+1.
2. Coleman and Zheng estimated the job-to-job transition rate as the share of people in a job in year t who made a job-to-job transition between year t and year t+1. Bassanini and Garnero estimated the rate as the share of people in a job in year t+1 who made a job-to-job transition between year t and year t+1.

New Zealand workers participate in job-related education and training at high rates

Job-related education and training provide workers with more opportunities in the current jobs and more options to move to other jobs. Education and training is a means for local workers to take up new opportunities that might arise in an expanding industry served by migrant workers (Peri, 2016). New Zealanders workers participate in job-related education and training at comparatively high rates (Figure 1.18).

Figure 1.18 Share of adults aged 25-64 who participated in formal or non-formal adult education or training for job-related reasons, 2012 or 2015



Source: NZPC (2019b); OECD (2017).

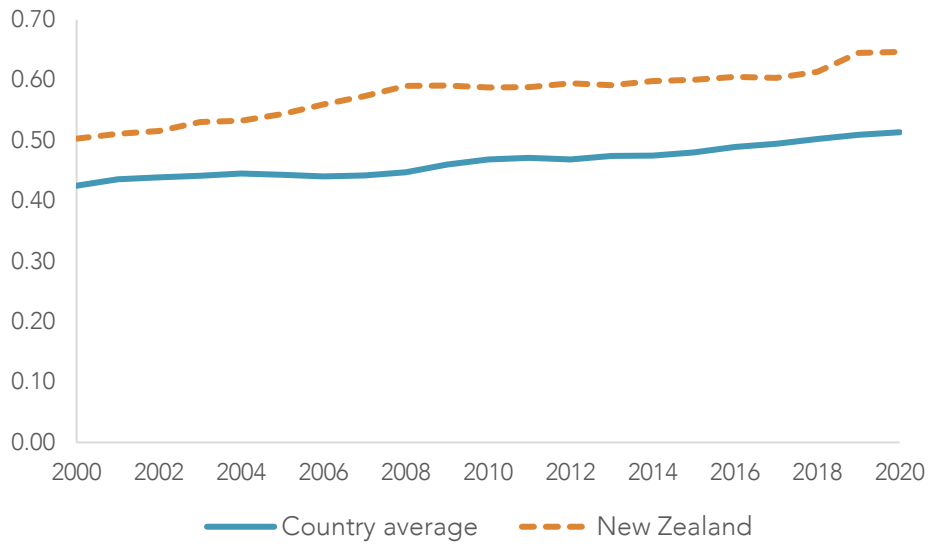
Note:

1. "Formal education" is "planned education provided in the system of schools, colleges, universities and other formal educational institutions that normally constitutes a continuous 'ladder' of full-time education for children and young people." "Non-formal education" is "sustained educational activity that does not correspond exactly to the definition of formal education. Non-formal education may take place both within and outside educational institutions and cater to individuals of all age" (OECD, 2017, p. 325).

New Zealand’s minimum wage is high relative to the median wage

Wages in New Zealand are lower than in many OECD countries (eg, the US, the UK, Australia, Western Europe), but substantially higher than in developing country migration sources (eg, China, India, Philippines) (section 1.1; Carey (2019)). Yet, compared to other OECD countries, New Zealand’s minimum wage is high relative to its median wage (Figure 1.19 and Figure 1.20). A relatively high minimum wage could increase the attractiveness of New Zealand as a destination for low-skilled migrants. At the same time, it could moderate downward pressure on local wages from such migrants.

Figure 1.19 Minimum wage relative to the median, New Zealand and other OECD countries, 2000-20

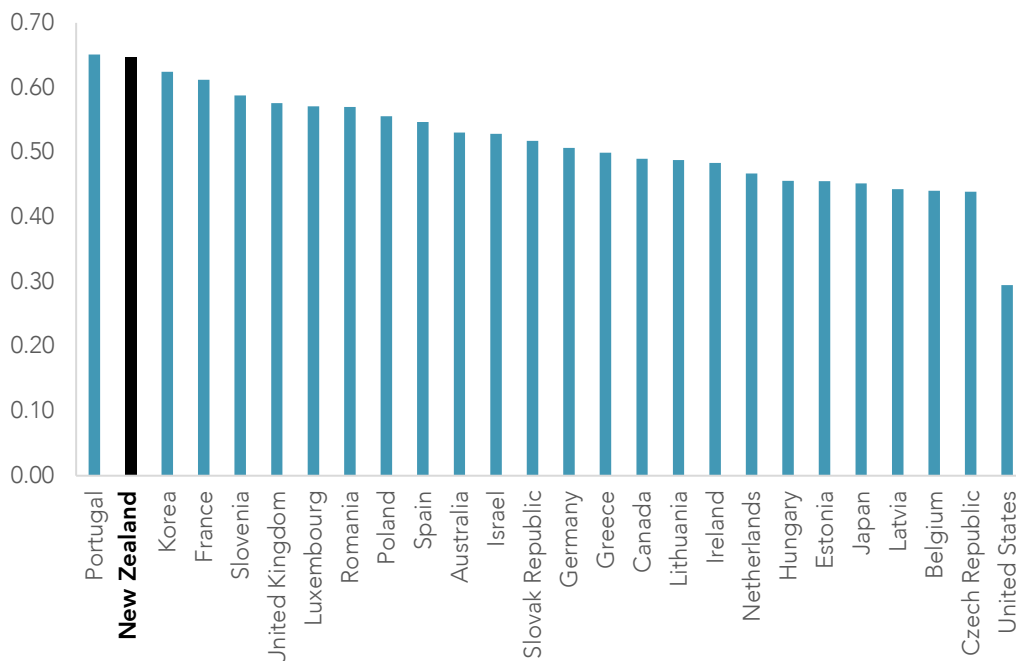


Source: OECD.Stat.

Notes:

1. The country average is the average ratio of the minimum wage to the median for 23 developed countries for which data is available each year from 2000 to 2020.

Figure 1.20 Minimum wage relative to the median, OECD countries, 2020

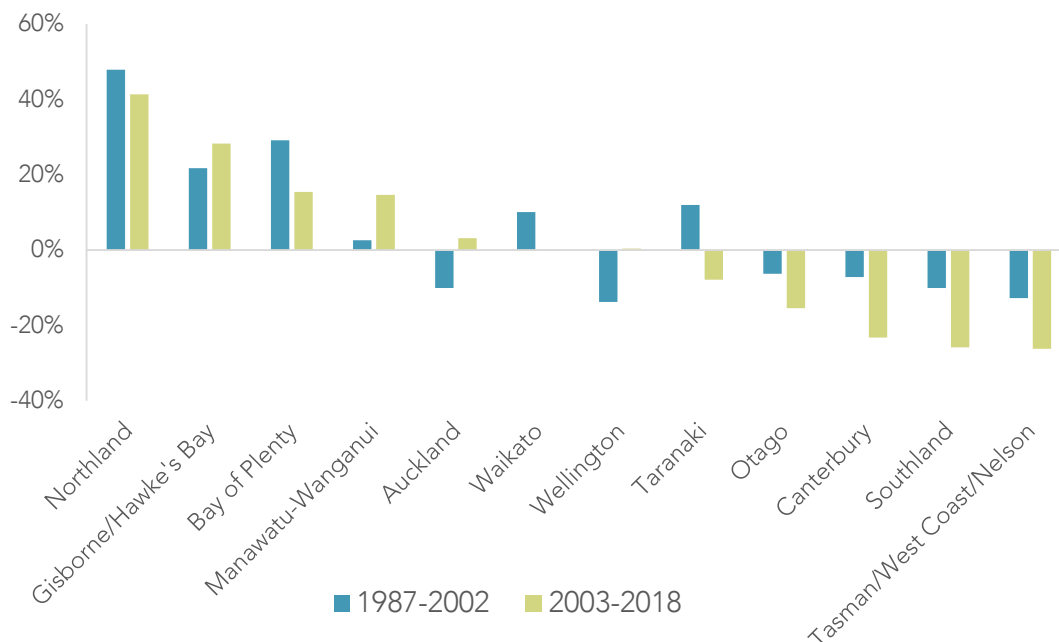


Source: OECD.Stat.

The benefits of a buoyant labour market are unevenly distributed

While in aggregate the unemployment rate is low, regional unemployment rates differ considerably from the national average. Regions such as Gisborne and Northland have persistently higher rates of unemployment. There are also large disparities between ethnic groups – Māori and Pacific peoples experience much higher levels of unemployment. Young workers and less-educated workers also face higher unemployment.⁴

Figure 1.21 Regional unemployment rates relative to the national unemployment rate

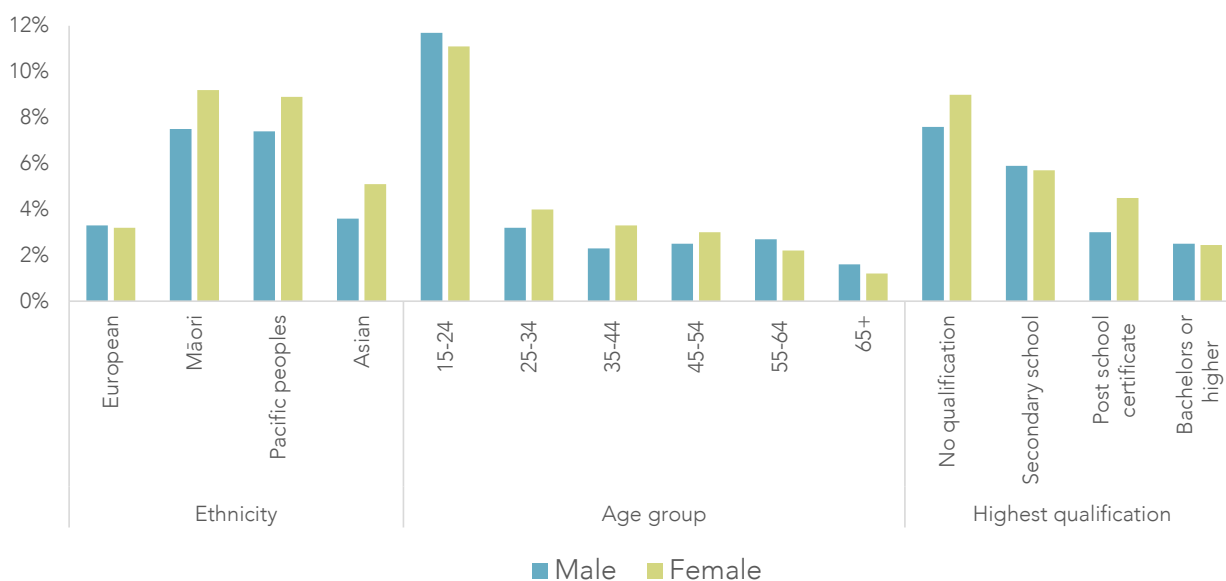


Source: Stats NZ Household labour force survey; NZPC (2019a).

Note:

1. The figure shows the regional unemployment rate relative to the national rate. So, for example, if the national rate is 4%, then a region with 50% higher unemployment has a 6% unemployment rate.

Figure 1.22 Unemployment rates by ethnicity, age group and qualification, 2019



Source: Stats NZ Household labour force survey; NZPC (2019a).

Notes:

1. The unemployment rates by ethnicity and highest qualification covers people aged 15 and above.
2. Some of these categories have relatively few survey respondents. As a result, estimates of unemployment rates for these categories are imprecise.

⁴ These factors are not independent of each other. For example, Māori and Pacific peoples are younger on average than other groups.

Already well-educated workers have better access to job-related education and training

While, overall, New Zealand workers have good access to education and training, this is not true for some. Some New Zealanders leave school poorly equipped to enter employment or, if they find a job, to undertake further education and training that increases their labour market prospects. As a result, they are likely less able to take up opportunities that flow from businesses employing migrants.

Consistent with findings in other countries, New Zealand workers in professional occupations are more likely to take part in training than those in other occupations. Professionals (71%) and community and personal service workers (68%) have the highest rates of participation in education and training. The lowest participation rates were for labourers (43%), and machinery operators and drivers (48%) (Stats NZ 2018 Survey of working life; NZPC (2020))⁵.

Temporary workers are less likely to receive education and training paid by employers (Blumenfeld, 2016). Industries that employ high numbers of temporary migrants are more likely than other industries to employ locals as temporary workers. As a result, employers in those industries are less likely to provide training to workers.

NZPC (2020) commented:

New Zealand adults seem well positioned for changing workplaces, in international comparison. However, those with less education or poor skills are at higher risk of job displacement and unemployment and benefit less from retraining as an adult. This points to the importance of school-level education in preparing people for success in the labour market. (p. 53)

The Commission went on to find that “[t]he New Zealand education system produces persistently poor outcomes for some young people, especially children in socio-economically disadvantage backgrounds and Māori and Pasifika students” (p. 56).

F1.3

In the period up to the Covid-19 pandemic, the New Zealand labour market has been buoyant and dynamic, with low unemployment, low long-term unemployment, high rates of workers moving jobs voluntarily, and high rates of workers participating in job-related education and training. Even so, the benefits of a buoyant labour market, and job-related education and training, have been unevenly distributed.

1.4 Conclusion

In the decade up to 2020, New Zealand has experienced very high rates of net permanent and temporary migration. Temporary migration accelerated strongly over the period and, unlike permanent migration, has seen a shift towards a greater share of migrants working in less-skilled occupations.

Throughout the period, the New Zealand labour market has performed well in creating new jobs, keeping unemployment low and participation high, and providing relatively strong opportunities for workers to access education and training, and to move to new jobs. These conditions likely dampened the potential negative impact of increased employment of migrants on the wages and employment of locals (as suggested by the research reported in Chapter 3).

Despite this apparently benign picture, two aspects warrant care in looking at the evidence in the remainder of this report:

⁵ The OECD survey of adult skills (PIAAC) reported similar occupational patterns of participation in on-the-job learning (Ministry of Education & MBIE, 2016; NZPC, 2020).

- Some regions and some population groups may not be as well-placed as others to benefit from the opportunities provided by the employment of migrants, and may as a result be more at risk of poorer labour-market outcomes than in a low-migration scenarios. The next two chapters consider this as part of a look at the broad labour-market effects of migration.
- While businesses may benefit from employing migrant workers in low-skilled jobs and so expand and increase revenues, such growth could draw resources away from other potentially more productive businesses. In the long run this could reduce the potential incomes available to local workers. This is a hypothetical possibility and so is not easy to pin down. The evidence on aggregate effects of migration on productivity in New Zealand does not suggest strong effects of this type (see Chapter 4). Looking at the role of migrants in selected industries, such as dairying, will also help inform judgements (Chapter 5).

A third potential drawback is assessed in a companion report on the wider wellbeing effects of immigration (NZPC, 2021d). The sheer scale and rate of growth of migration may overwhelm New Zealand's ability to provide the physical and social infrastructure to accommodate a larger population in a timely manner. Increased investment in such infrastructure may draw resources away from potentially more productive uses.

2 Perspectives on employing migrants in New Zealand

During this inquiry the Commission has heard from over 70 submitters and met with many individuals and organisations with an interest in the role of immigrants in the New Zealand economy. This chapter presents both positive and less positive perspectives on employing migrants in New Zealand.

Over many decades, skilled permanent migrants have played an important role in the local economy. They have been filling skill gaps left by emigrating New Zealanders and bringing specialist knowledge and work experience otherwise not available in this country. They have also added to the pool of skilled workers able to contribute to a growing, innovative and therefore more productive economy (Chapter 1 and Chapter 4).

New Zealand's system of temporary migration has been substantially shaped by demand from employers. The stock of temporary migrants with work rights has more than doubled over the eight years up to 2020, and the proportion of migrant workers in low-skilled occupations has grown (Chapter 1). Unsurprisingly, many employers and industry representatives are very positive about the contribution that migrants make to their businesses and are keen to see these arrangements continue at similar volumes into the future. Some argue that their business viability depends on continued access to migrant workers (section 2.1).

Other commentators, especially worker representatives, are concerned that employing lower-skilled migrants might erode wages and conditions for locals (section 2.2). Reinforcing these concerns, well-documented examples show instances where migrants have been exploited by unscrupulous employers.

Migrants work in New Zealand under a wide variety of visa conditions

A complex combination of visa types and industries exists and the mix that given industries use has changed over time. While many skilled migrants hold residence visas, they may before this have held different types of temporary visas (such as an Essential Skills, Work to Residence or Post-Study Work visas). Confusingly, many less-skilled temporary migrants who are not on a path to residence hold the same sorts of temporary visas.⁶

Some temporary visa types (such as the Essential Skills visa) are for employment with a specified employer to undertake a specified job, and so it is possible to identify the skill-level of the job. Other visas (such as the Working Holiday visa) provide open work rights (NZPC, 2021b). Data is available for the industry in which visa holders with open work rights are employed, but not for their occupation (see the Appendix which shows data for 2012 and 2019).

As a result, the discussion in section 2.1 is organised very loosely on a continuum from highly skilled migrant workers to relatively unskilled temporary migrants (who for the most part are unlikely to qualify for residence). Where relevant, readers can consult the Appendix to remind themselves of the mix of visas typically used in each industry.

⁶ The Commission is undertaking a cohort analysis of transitions across visa types that will provide a better understanding of the duration and nature of migrant employment careers in New Zealand and the extent to which these result in residence or otherwise.

2.1 Employers value the contribution of migrant workers

This section reflects submissions from and meetings with individual employers and industry groups, as well as discussions with officials involved in labour market and immigration policy and operations.

Skilled migrants are an integral part of the New Zealand economy

Many well-educated New Zealanders go overseas to work not long after completing their New Zealand studies. For at least 30 years, the flow of permanent migrants into this country has been more skilled on average than the local population. Recently, the number of skilled immigrants has been greater than the number of skilled emigrants (Chapter 1; Carey (2019)). More than 27% of the population were born overseas, and recent migrants are employed across a wide range of industries (Figure 1.9), so most working New Zealanders have migrant colleagues.

Unsurprisingly, employers and industry organisations place high value on the role that skilled migrants play in the economy. Examples follow.

Medical specialists and nurses

The Association of Salaried Medical Specialists submitted:

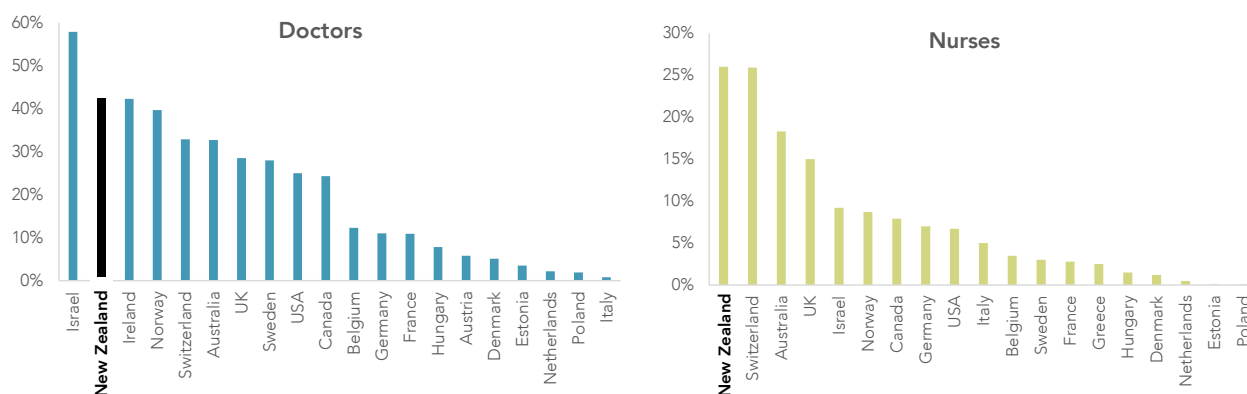
Our health system relies heavily on overseas trained senior doctors and dentists (international medical graduates [IMGs]) to maintain our medical workforce. IMGs fill gaps in the medical workforce that we cannot fill with locally trained doctors. Currently, IMGs make up 43% of the New Zealand specialist workforce and a well-functioning immigration system is necessary for their continued recruitment. (sub. 40, p. 3)

Similarly, the Royal New Zealand College of General Practitioners noted that the “New Zealand’s medical workforce relies on international graduates to sustain health care in our communities, particularly so in rural areas...” (sub. 65, p. 1).

The New Zealand Medical Association told the Commission that 60% of migrant medical specialists leave New Zealand in the first two years after they register, pointing to an international workforce that is highly mobile (sub. 49).

Almost 40% of the 5 000 nurses employed in the aged care sector are migrants and over one-half of these hold temporary visas (New Zealand Aged Care Association (NZACA), sub. 69, Table 1). The New Zealand Nurses Organisation told the Commission that 30% of nurses employed by District Health Boards (DHBs) are migrants (pers. comm., 28 July 2021). The aged care sector sometimes employs migrant internationally qualified nurses in caregiver roles until they become qualified to work in New Zealand as nurses. As DHBs pay higher salaries, the aged care sector risks losing its nursing staff to DHBs. The government funding model constrains the salaries that the sector can pay to nurses (NZACA, sub. 6; pers. comm., 23 July 2021).

New Zealand employs foreign-trained doctors and nurses at relatively high rates compared to other OECD countries. At the same time, it trains relatively low numbers of medical students and moderate numbers of nurses by OECD standards (OECD, n.d.-a, n.d.-b).

Figure 2.1 Proportion of foreign-trained doctors and nurses, 2015-17

Source: OECD Health Statistics 2018.

Teachers

According to the Fair Initiative, “in the 5 years to 2019, New Zealand brought in an average of 2 725 teachers a year, offering many of them a grant of NZ\$5 000 to emigrate here” (sub. 61, p. 11). The Fair Initiative thought that reliance on migrant teachers could be reduced through better pay and progression opportunities for teachers “but... it’s hard to escape the reality that our education workforce will remain reliant on migration for some time to come” (p. 11).

Technology experts

Trustpower relies on high-skilled migrants with technical skills:

Trustpower has employed numerous high skilled migrant labourers particularly in our technology division. We believe that this migrant labour has increased diversity of thought amongst this division, allowing for more innovative ideas to be shared and different working practises to be adopted. We have observed that our migrant workers have greater experience managing certain applications. They have used this knowledge to grow the capability of internal employees. Strong policy to attract these high impact migrant workers presents a great opportunity to adopt technology and improve the training of the New Zealand workforce. (sub. 25, p. 2)

Other industry groups, while valuing the contribution of skilled migrants, are seeking ways to balance this with more opportunities for New Zealand workers, often working with government agencies to do so. For instance, the Institute of IT Professionals, for instance, told the Commission that currently 55% of tech jobs are filled by migrants. The Institute considered that 20% to 25% would be more sustainable. To achieve this, the industry and its employers are engaging with education providers to develop a flexible set of pathways into employment. Doing this is a component of the Digital Technology Industry Transformation Plan (The Institute of IT Professionals, pers. comm., 11 August 2021; New Zealand Digital Skills Forum, 2021; NZ Tech & MBIE, n.d.).

Skilled construction workers

Civil Contractors NZ is an industry body that covers a wide range of sectors and activities, including the Three Waters, communications, energy, transport and big rural farm work (eg, large-scale earthmoving). The organisation told the Commission that demand for skilled workers – and problems sourcing it locally – are partly about the lumpy nature of infrastructure projects in New Zealand. For instance, it does not make sense to train as a tunnelling expert here when major tunnelling work only happens every few years. Tunnellers are a globally mobile workforce (Civil Contractors NZ, pers. comm., 6 August 2021).

Migrants sometimes fill specialist roles not otherwise available in New Zealand

Government agencies told the Commission that employers rely on overseas specialists who are otherwise not available in New Zealand. Examples included:

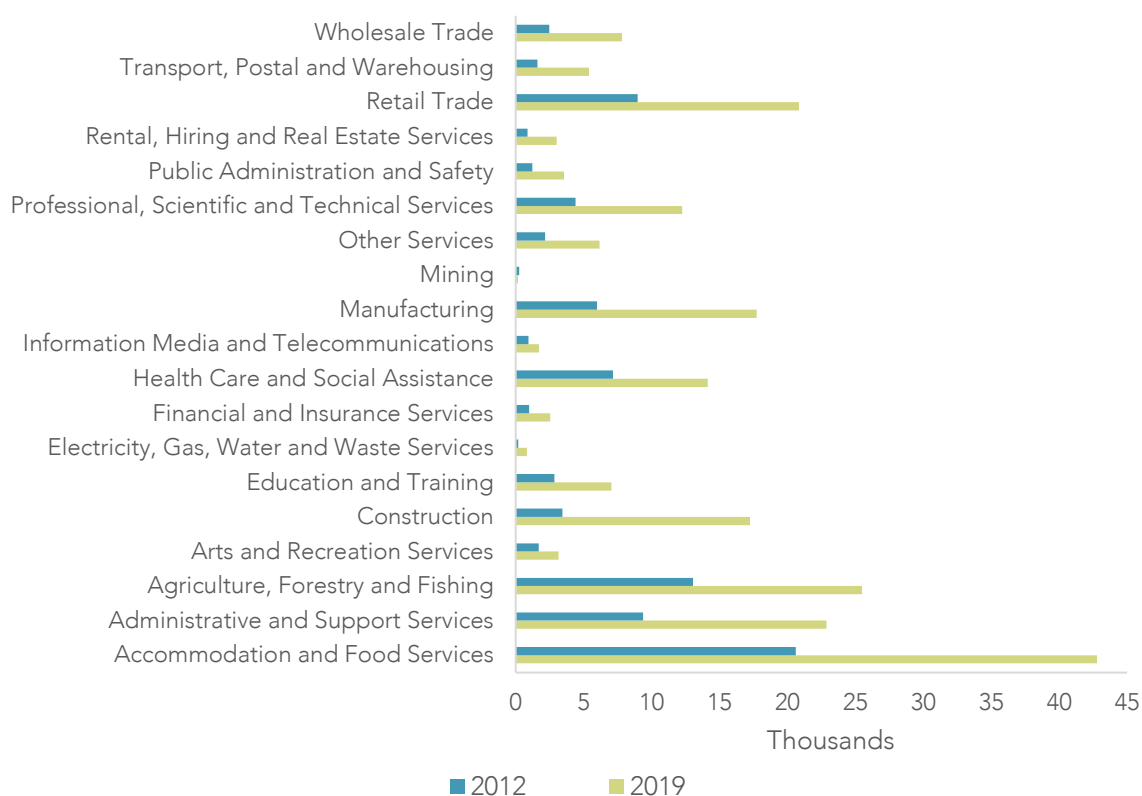
- snow groomers or bespoke (eg, ethnic cuisine) chefs in the hospitality industry;
- maritime pilots (who guide ships into the harbour) in the transport industry; and
- product managers and international marketing experts in the software industry.

Employers turn to migrant workers because of time-consuming and expensive training requirements, and insufficient scale in some New Zealand industries to support local training. Some specialised roles also require experience working in large, multinational companies.

The demand for temporary migrants, many in low-skilled jobs

The most notable change in immigration patterns over the last decade has been (prior to 2020) the sustained rise in the stock of temporary migrants with work rights, of whom an increasing proportion have been employed in low-skilled occupations (Chapter 1). Much of the growth in numbers was accounted for by a relatively few industries (Figure 2.2). These include some in the primary sector (especially dairying and horticulture), in accommodation and food services (serving an expanding tourism sector), and in construction (which has been expanding first during the Christchurch rebuild and then as infrastructure and, more recently, housing investment accelerated). The retail sector has also seen a notable increase in jobs held by temporary migrants. The Appendix provides more detail on the types of work visas held by migrants in these sectors.

Figure 2.2 Numbers of jobs held by temporary migrants, by industry



Source: MBIE Migrant Employment Data.

Primary industries and associated manufacturing

The primary industries, especially dairying and horticulture, have greatly increased their employment of temporary migrants over the last decade. The Commission met with many primary sector industry organisations and individual employers, including New Zealand Apples & Pears, Horticulture New Zealand, Federated Farmers of New Zealand, DairyNZ, New Zealand Winegrowers, New Zealand Thoroughbred Racing Inc. and the Wakatū Incorporation. The Commission also met with the New Zealand Meat Industry Association, representing a downstream processing industry. Some of these and other organisations and employers also made submissions. Box 1 provides examples from these meetings and submissions.

Box 1 Primary industry views on why they need temporary migrants to fill jobs

NZ Kiwifruit Growers Inc jointly submitted with Zespri and Māori Kiwifruit Growers Inc (sub. 55).

The kiwifruit industry relies on temporary migrant labour to fill predominantly seasonal (ie, for a few months) and regional jobs, where there is very few available New Zealand workers, and which complement and enable a significant number of permanent and high skilled jobs for New Zealanders. Without access to temporary migrant labour, the industry would be unable to grow and there would be fewer permanent high-skilled jobs for New Zealanders. (p. 1)

DairyNZ was concerned that signalled changes in government immigration policy could reduce the sector's access to migrant labour.

The dairy sector needs... an acknowledgement that stopping all migrant labour into the sector is unreasonable, could lead to severe welfare issue for both farmers and animals, and have wide-reaching productivity consequences. Immigration plays and will continue to play a critical role in maintaining the dairy sector's economic and productivity contribution to New Zealand... Migrants have proved to be a reliable labour source. Many of them now occupy middle management and higher positions that are integral to business operations... As at July 2020, approximately 7 500 workers held a visa, with 4 800 on a temporary work visa and 2 700 on a resident visa. (Dairy NZ, sub. 43, pp. 3-7)

Two independent horticulturalists submitted on their reliance on temporary migrant labour, emphasising the unavailability of suitable local workers.

We are a vegetable growing business in Pukekohe, South Auckland... The repetitive and manual nature of our jobs does not attract or appeal to local labour despite our best effort with advertising and we struggle to find and retain an adequate number of local to fill our vacancies in both the outside teams and packhouses. We just want competent and reliable workers. Our current workforce is made up of approximately 60% Kiwi's/Permanent Residents and 40% temporary visa holders... Some of the challenges we have with hiring locals is the high level of drug use and criminal convictions. (Allan Fong, sub. 27, p. 1)

We have an orchard [in a regional centre]. We do employ locals through a contractor, however there are not enough local workers wanting to do the work and there is a huge gap that thankfully the overseas migrants on working visas fill. They work hard and put in a good day and yes we pay them well [\$25 an hour]. Some of our local workers want to finish at 2pm and can't work with other locals and have to be split. This slows down production. The overseas workers just get stuck in no matter what, are lovely people and work well. They are needed in the horticulture sector and there are not enough willing local workers to do the work. (Leigh Anderson, sub. 51)

New Zealand Thoroughbred Racing Inc. told the Commission that the industry would like to move from a dependence on migrant labour, but this required a transition and not a leap. The industry would continue to rely on skilled migrant staff to accompany seasonal horse movements across the border. Workers need to have the soft skills and attributes required to look after expensive horses for concerned owners. Track workers also need a combination of physical strength and light weight, which is getting harder to find locally (pers. comm., 17 August 2021).

New Zealand Winegrowers noted that while automated harvesting and other labour-saving production technologies were in wide use in the industry, there was a trade-off between using these and product quality. The exchange of highly-educated winemakers between the northern and southern hemispheres is hugely beneficial to the industry through spreading ideas and processes (pers. comm., 14 September 2021).

The Meat Industry Association told the Commission that the industry relies heavily on migrants for seasonal work and halal slaughter. The Meat Industry Association pointed to a role that skilled migrant workers play in training unskilled New Zealanders. The availability of migrant workers allows plants to be used more intensively (in night shifts) and helps them remain viable (pers. comm., 21 July 2021).

While each industry has distinct characteristics, some common themes emerged from meetings and submissions:

- The reliable supply of migrant workers has enabled industries to expand, while consolidating into larger production units. Output of product per hectare of land has been rising.
- Concurrent with increased employment of migrants, horticulture industries have been making improvements in harvesting and packing technology, and refining supply chains into international markets, sometimes building on plant variety rights. Even so, some further potential improvements in harvesting technology are years or even decades away, require substantial investments (eg, in replanting in new formats), and will only eventuate if revenues from current operations remain buoyant.
- Technology does not reduce the demand for workers, but it changes the nature of the work by making it less physically demanding.
- Expansion building on a reliable supply of migrant workers has enabled the employment of more New Zealanders in skilled roles.
- Industry players are aware of disquiet around the increased employment of migrants in low-skilled jobs. In some industries, employers already work closely with government agencies that oversee the operation of the Essential Skills visa and the Recognised Seasonal Employer (RSE) scheme. They say that they hope to be less reliant on migrant workers in the future, and are working to develop training arrangements that can bring more New Zealanders into their industries.
- Many of the jobs occupied by migrant workers are seasonal and/or in remote locations, and are physically demanding, which make them unattractive to New Zealanders. Employers consistently say that they cannot find enough New Zealanders with the needed physical skills and work ethic to do the job.

The RSE scheme was designed to help tackle labour shortages in the horticulture industry (Box 2). The dairy industry has become increasingly reliant on migrants holding Essential Skills visas (see the case study in Chapter 5).

Box 2 **Some economic impacts of the RSE scheme**

The RSE scheme commenced in 2007 and allows the temporary entry of migrants from Pacific Island countries to work in New Zealand's horticulture and viticulture industries. Annual numbers of such workers grew from around 3 500 in the first year to around 14 400 in 2020-21. As part of a broader study of the impact of the RSE scheme, Nunns et al. (2019) looked at the effect of the scheme on the economies of six local New Zealand communities.

During this period, the horticulture and viticulture industries grew strongly, with expansion of export markets and area of land under planting, a shift to higher-yield varieties and consolidation of businesses within the industry. These changes extended "the picking, packing and pruning seasons and... increase[d] the demand for labour and the length of time labour is required" (p. 27).

In the six communities studied, industry and employer informants noted:

...the RSE schemes's critical and enabling role in the expansion of the [horticulture and viticulture] industries due to the certainty of labour that the scheme provides. The RSE scheme enables producers to achieve greater scale, efficiency and productivity due to: a core, seasonal labour force over peak periods; improved quality of pick; and stabilisation of production (crop picked and packed at optimum time). Employers in every community report[ed] growing business confidence on the back of RSE which in turn fuels expansion.

This expansion has multiplier effects on other, related industries, which fuels further economic growth and prosperity in local communities. (p. 28)

Nunns et al. (2019) noted examples of efficiency gains through the employment of RSE workers. These included more intensive use of existing packhouses (in one case doubling production) by using RSE workers on night shifts. Large-scale capital investment (often foreign investment) has accompanied the expansion of production. Expansion has, at the same time, increased employment opportunities for skilled New Zealanders.

In its *Frontier Firms* inquiry, the Commission heard from Bostock New Zealand, a Hawke's Bay exporter of organic apples and other produce. The company told the Commission that a reliable seasonal labour supply through the RSE scheme had enabled them to increase output, invest in mechanisation and increase the number and proportion of permanent positions. Investments in automation raised packhouse productivity by 93% over two years. Bostock have also introduced new technology to reduce the physical effort of picking apples (G. Lewis et al., 2021).

Yet the Commission also heard, in the same inquiry, that the availability of reliable seasonal labour could reduce incentives for producers to adopt new labour-saving technology. KLIMA, established in 2008, developed and commercialised a mechanised vineyard pruning system. The developers were responding to the same seasonal labour shortages that led to the establishment of the RSE scheme. The KLIMA system prunes a row of vines in two minutes compared to two hours for a person. The company estimates that their system generates labour-cost savings of 30%–50%, or around \$1 000–\$1 500 per hectare. The owners report that the availability of RSE labour slowed demand in New Zealand for their products in the early years. The company now has a strategic partnership and licensing arrangement with the German vineyard machinery firm ERO Weinbau to manufacture and distribute the machines across Europe (G. Lewis et al., 2021). New Zealand Winegrowers told the Commission that the technology is now widely used in Marlborough (pers. comm., 14 September 2021).

Curtain et al. (2018) compared the RSE scheme with Australia's Seasonal Worker Programme (SWP). They found that the Australian horticulture industry was much more reliant on informal foreign labour and foreign working holidaymakers than their New Zealand counterparts, and much less reliant on seasonal labour from the Pacific. They attributed this difference to greater employer and industry body involvement in setting up the New Zealand scheme, stronger incentives on working holidaymakers in Australia to work in horticulture for a period (so earning the right to stay an extra year), and New Zealand growers' much stronger export focus. Meeting international standards for ethically sourced products gave New Zealand producers "a powerful incentive for supporting the RSE" (p. 472). Employer compliance with these standards is much stronger in New Zealand than in Australia, where producers mostly supply a monopsonistic domestic market (a market condition in which there is only one buyer), with "a strong emphasis on price competition and cost minimisation" (p. 473).

A reliance on migrant workers in the primary industries in New Zealand is consistent with the experience in other developed countries. Wilson and Fry (2021) noted:

[L]ow-cost imported labour is a near-universal feature of agricultural production in high-income countries: farmers (often through directly or indirectly influencing immigration policy) have solved the farm labour problem by seeking to employ people with low reservation wages [the lowest wage rate at which a worker would be willing to accept a particular type of job]. The reservation wages of migrants will be heavily influenced by the employment conditions in their home country, and migrant workers from low-income countries will naturally tend to have low reservation wages. (pp. 19-20)

Accommodation and food services

Tourism Industry Aotearoa (TIA) submitted on the importance of migrant workers in the tourism industry.

It's fair to say that skill and labour shortages is an enduring issue for tourism businesses... [challenges include]... 7 days a week, shift work, businesses widely geographically dispersed, seasonal employment and low skilled/repetitive jobs, not necessarily well-paid, combined with a highly competitive business environment... Migrant staff play a significant role in the tourism and hospitality workforce. (sub. 56, p. 1)

TIA told the Commission that migrants were more likely to be in front-facing and frontline roles, while New Zealanders were more numerous in management roles. Migrants also played a role in filling specialised vacancies, such as for snow groomers and bungy masters, filled by an itinerant seasonal international labour market (Tourism Industry Aotearoa, pers. comm., 15 July 2021).

Hospitality New Zealand noted the need for migrants to fill seasonal roles, to help train others, and to free up New Zealanders for more skilled roles in the industry. Much of the training in the industry is 'on-the-job'. Staff need soft skills and so the industry is a feeder to other industries. International and local students working part-time are a significant part of the workforce (pers. comm., 5 October 2021).

One business running high-end Auckland restaurants submitted:

[We]... run three restaurants and employ more than 60 staff. Fifty percent of our workforce is made up of residents and citizens. The other 50% are migrants on visas... We have advertised for months, giving New Zealand citizens and residents preference for every role. We have had no luck... No one is available to fill the roles even on a short-term basis. (Creative Cuisine Limited, sub. 4, pp. 1-2)

Retail

Retail NZ told the Commission that there is an ongoing need for immigration to provide the skills their members need. Members find that local people with the required skills are not readily available. First, some retail jobs require well-developed skills (eg, in management), and even entry-level jobs require skills (such as engaging well with customers). They considered that New Zealand applicants often do not have these skills (Retail NZ, pers. comm., 5 August 2021).

Aged care

The New Zealand Aged Care Association told the Commission that (in addition to the migrant nurses discussed above) 25% of over 20 000 caregivers (or health care assistants) are migrants. Their members typically find that there are not enough New Zealanders available to fill these roles. Demand for beds in the sector will grow steadily over the next 10 years, with an ageing population. The Association favours a policy that offers migrant aged care workers the opportunity of permanent residence, so that New Zealand could get the benefits of the skills and training they have acquired in this country (pers. comm., 23 July 2021; sub. 69).

The New Zealand Council of Christian Social Services submitted that:

Migrants who work in aged care either as nurses or health assistants or any other role are highly valued. Bluntly with many other opportunities available it can be hard to attract existing citizens to this work. However, with the rapidly ageing population and increased complexity of aged care work we simply need a very large amount of people to do the mahi. Migrants are critical to Aotearoa's ageing population being able to age well. (sub. 74, p. 3)

F2.1

Access to a migrant workforce can unlock complementarities and specialisation. Whether or not there are negative consequences on innovation and productivity from using migrant labour depends on a range of factors, including underlying labour market conditions and whether technological alternatives are available.

2.2 Concerns about exploitation and impacts on local wages and conditions

Worker organisations and other inquiry participants voiced concerns about the poor treatment of migrants working in low-skill jobs and the downward pressure this placed on the wages and conditions for locals.

First Union represents workers across a range of sectors and in 2012 established the the Union Network of Migrants (Unemig) within the union to protect the rights and welfare of migrant workers in New Zealand. First Union told the Commission that in the industries where lower-skilled migrant workers are concentrated (eg, hospitality) the trend has been towards casualised, minimum wage work. In the view of First Union, this has made it unattractive to locals, as there are low wages and little in the way of career paths. Hospitality and construction are the industries where migrants are most exposed to exploitation. Temporary visas tied to employers increases the risk of exploitation (Box 3). First Union told the Commission that there was not necessarily a causal connection from the availability of migrant workers to the existence of poor wages and conditions. Rather, the erosion of wages and conditions meant that only migrants were willing to undertake the work. Bus driving is an example where pay and conditions have been shaped by contract negotiations for service provision (First Union, pers. comm., 8 July 2021).

The New Zealand Council of Trade Unions reinforced the idea that within industries some employers favoured low-wage business models, with poor training and safety records, so that local workers preferred other employers. As a result, employers using such business models were more likely to employ temporary migrants than other employers in the same industry (pers. comm., 27 September 2021).

E tū told the Commission of questionable practices in accessing migrant workers. For example, some construction industry employers brought in migrants as tradies, but reclassified them as hammerhands to keep costs down. Some migrants came in to work on the Christchurch rebuild, but relocated to Auckland. E tū argued for more inspection and tougher penalties to address abuses. E tū thought that the public funding model for the aged care sector meant that wages in the sector would not be attractive to New Zealanders (E tū, pers. comm., 7 July 2021).

Mike Treen of Unite Union summarised concerns in an article for BusinessDesk:

Entire industries had become dependent on workers on temporary visas, and could not operate with them... Temporary visas became the drug of choice to fix the problem as these industries were unable to recruit and train Kiwis to do the jobs at wages that genuinely reflected the skill and work intensity involved... There was no incentive on employers to fix the problems that stopped them from recruiting labour in the first place. This system has also resulted in horrific cases of exploitation. (Treen, 2021)

Other inquiry participants submitted on the potential for negative outcomes for locals from employing migrants.

[As] NZ employees have a higher degree of generally knowing their employment rights, there can be an incentive for employers to hire well trained migrants to fill gaps, rather than train NZ employees. It may come down to cost, why invest in a New Zealander when you can get the skills already acquired and pay the new migrant employee less as they have an additional incentive of residency rather than pay and conditions. Migrant workers are generally fearful towards their employers until they gain residency, as they do not want to jeopardise their employment pathway to residence by asking for better conditions... General supply and demand economics show that when there are more available employees wages will drop. (Adam Irish, sub. 3, pp. 2-3)

Temporary migrant labour has been a convenient way of keeping wages down... Not only wages, but working conditions have been affected by the more unscrupulous employers. (Christopher Horan, sub. 6, p. 1)

Rob Wardle, the owner of a small horticultural enterprise in Central Otago that uses harvesting and processing machinery to avoid the need for seasonal labour, submitted:

I have observed that both the tourism and horticultural industries in Central Otago (especially the cherry industry) are growing their industries in the full knowledge that there is not the local labour supply to fill the abundance of low paying/low skill jobs which are being created. These industries have no social license to demand that the community wears the housing, environmental and social consequences arising from their thirst for external labour. (sub. 7. pp. 1-2)

Exploitation of migrant workers

Documented instances of exploitation reinforce concerns about the employment of low-skilled migrants exerting downward pressure on local wages and conditions. Examples include employers threatening to withhold entitlements or asking workers to pay to hold on to their jobs (Palmer & Varcoe, 2021). There have also been more extreme cases of migrant worker exploitation (Box 3).

Some current visa conditions – such as tying people to specific employers – significantly weaken the bargaining power of temporary migrants (NZPC, 2021b). Administrative hurdles make it difficult for migrants on employer-assisted visas to change employer, increasing the risk of exploitation.

Following a review of migrant exploitation, the Government introduced a specific six-month visa category to allow migrants to leave exploitative situations and remain in New Zealand for a period. A dedicated 0800 phone number and web form make it easier to report cases of exploitation. Policy work is underway on law changes to increase enforcement powers for labour inspectors and introduce new offences (MBIE, n.d.).

Box 3 Limited mobility creates risks of migrant worker exploitation

Collins and Stringer (2019, p. iv) were tasked by MBIE to explore the “nature, drivers and consequences of exploitation from the perspective of migrants and key stakeholders.” The types of exploitation examined included underpayment or non-payment of wages and taxes, refusing leave, non-payment of holiday entitlements, failure by employers to comply with employment contracts, as well as threats and abuse. Some exploitation was intentional and systematic, with business models built around it and strategies to avoid punishment (such as ‘phoenixing’, where a business is placed into liquidation to avoid paying debts, with the business owner going on to establish a new firm).

Collins and Stringer found that exploitation occurred most frequently where workers held student visas and employer-assisted visas, including the Essential Skills and Post-Study Work categories. For students, some private tertiary providers had “been complicit in concentrating full-time study courses across two days a week that allow students to work full time, in breach of their visa regulations” (p. v). Many students had also taken on significant amounts of debt (either personally or through their family) to get to New Zealand. They thus faced significant pressure to find and hold work in order to service payments.

For employer-assisted visas, the risks of exploitation often arose because the visa and work rights were tied to a specific employer, meaning the worker was effectively “dependent on their employer for their legal status in New Zealand as well as employment” (p. 83). Although workers can apply to have their visa conditions varied in order to find work elsewhere, the bureaucracy and slow processes involved meant that this option was not always readily-accessible. Collins and Stringer concluded that employer-assisted visas were “a mechanism for suppressing workers’ rights” (p. 88).

They recommended introducing more flexible conditions into employer-assisted visas, stronger labour law enforcement and better victim support mechanisms, clearer information for migrants about immigration law and employment rights, more resources for Immigration New Zealand to speed up processes, a review of the international education sector, and a concerted effort by government to work with stakeholders like unions and industry bodies to tackle exploitation.

In a separate report for MBIE, Stringer and Michailova (2019) compared temporary migrant exploitation in Australia, Canada, New Zealand and the UK. Common drivers of exploitation were visas linked to specific employers, inadequate enforcement of labour laws, debt bondage or the need to remit money back to family. Industries where exploitation was concentrated differed between countries. In New Zealand, exploitation in the hospitality sector was “deliberate and sustained” (p. iv), although there were also cases in the agriculture, horticulture, viticulture and construction industries.

F2.2

In some industries, there have been troubling patterns of exploitation, particularly of temporary migrants. Visa conditions applied to some temporary migrant increase the risk of abuse.

The number of migrants employed in the informal economy is unknown

Daley (2019) raises the probability that (in Australia) some migrants work in the informal economy for wages that are less than the minimum wage. The extent is unknown, as such earnings will not be reported to the tax authorities (and such work may not be well-reported in labour-market surveys). Anecdote and small-scale studies in Australia provided some evidence of underpayment of workers in some enterprises. Underpayment of migrants, particularly those in the informal economy, will likely slow wage growth for locals and migrants employed in regular jobs.

No systematic evidence exists on the employment of temporary migrants in the informal economy in New Zealand. There is, however, evidence of underpayment (Box 3).

3 Impacts of immigration on labour markets

This chapter looks at the New Zealand evidence on the effects of employing immigrant workers on the employment and wages of locals. Consistent with most international evidence (Box 4), the New Zealand research finds that the effects are small and positive overall, although in some studies some groups experience minor negative effects.

Section 3.1 looks at the most recent evidence on the effects of temporary migration on labour market outcomes. Section 3.2 looks at older evidence on the combined effects of both temporary and permanent migration in New Zealand. Section 3.3 discusses how labour markets and the wider economy adjust to migration flows, therefore explaining the findings in the earlier sections.

Box 4 International evidence – minor effects on local wages and employment

A very large international literature exists on the labour market effects of migration. This literature covers many countries, experiencing different sorts of migration (eg, skilled and unskilled) from different sources and at different rates, as a proportion of the destination country population. Much of the literature covers OECD countries that have, by and large, like New Zealand, experienced relatively skilled migration from other members and from non-OECD countries (Boubtane et al., 2016; Docquier et al., 2014).

Edo (2019) provided a recent authoritative review of the literature:

Economic studies indicate that the impact of immigration on the average wage and employment of native workers is null or slightly positive. However, because adjustments take time, the immediate labor market effects of unexpected (as opposed to expected) migration episodes can be detrimental. Immigration also can have distributional consequences. In particular, the skill composition of immigrants matters in determining their impact on native labor market outcomes. An inflow of immigrants will tend to reduce the wages of competing native workers (with skills similar to those of the migrants), and increase those of complementary workers (with skills that complement those of immigrants). By affecting the skill composition of the workforce, immigration can create winners and losers among native workers via changes in the wage structure. (p. 922)

Earlier reviews reached similar conclusions. For example, Longhi, Nijkamp and Poot (2010) undertook an econometric metanalysis of seven studies of the joint impacts of immigration on wages and employment. They found negative, but almost negligible, effects of increases in the share of migrants in the local labour market on the wages and employment of locals.

Dustmann et al. (2016) reviewed the different empirical strategies that researchers use to estimate the effects of immigration on local wages. Studies that are well-designed to answer the question “What is the overall effect of immigration on native wages of a particular education-experience group?” tend mostly to find only small (positive or negative) effects on average (pp. 34, 38).

3.1 Effects of temporary migration on the labour market outcomes of locals in New Zealand

MBIE (2018) was a major study of the impacts of temporary migration on the New Zealand labour market between the years 2000 and 2015. The study updated earlier research (McLeod & Maré, 2013) so that it could gauge whether the earlier findings of small impacts still held true in the period after 2010 when temporary migration grew quickly.

The research used data in Stats NZ's Integrated Data Infrastructure on monthly employment and earnings of all employees in New Zealand linked to information on the migration status of workers. The study looked at effects across the full 15-year period and for: three five-year sub-periods. It also analysed results for all local workers, and for sub-groups: those over the age of 25 years; youth (aged 16 to 25 years); and beneficiaries (for employment outcomes only). Where the data permitted, the study estimated effects for various industries and regions and for different types of temporary visas.

The researchers identified the effects on the labour market outcomes of locals, by looking at how they change as migrant employment (in specific regions and industries) changes. They looked at both direct effects (associated with changes of migrant employment within an industry in a region) and indirect effects (associated with changes of migrant employment in another industry in the same region). The study controlled for changes influencing outcomes that were constant across industries and regions in a year, and across years. As migrants will tend to locate in areas that have better labour-market outcomes, the study controlled for regional and industry changes in the demand for employment. It also used econometric techniques ('instrumental variables') to further account for the tendency for migrants to locate in areas with better outcomes. This is a standard approach in the international literature (Box 5).

Box 5 **Empirical strategies to estimate the effects of migration on labour market outcomes**

Edo et al. (2020) identified two broad strategies for identifying the effects of immigration on the labour market outcomes of local workers. Each has its own strengths and weaknesses.

Structural models

Structural models rely on theoretical models ('production functions') that relate labour and inputs of various kinds, and other inputs such as capital, to the production of outputs in an economy. Such models require empirical estimates (sometimes taken from other research) of parameters that reflect how these 'factors' of production respond to each other, and often strong assumptions about the functional form that shapes the relationships. Typically, models are calibrated to data to simulate the effect of migration flows on outcomes. Maré and Stillman (2009) is a New Zealand example that uses a production function approach (although their research also exploits spatial variation in the location of incoming migrants to identify effects).

Non-structural, 'more data-driven' approaches

In the first non-structural approach, identifying effects relies on data that shows how the outcomes of locals varies with the clustering of immigrants across geographic areas in the host country, or within skill groups, or both. The challenge for this approach is to separate the 'exogenous' (independent) effects of migration from a tendency for migrants to locate in areas with better labour-market outcomes. To do this, many studies rely on the well-documented tendency for new migrants to locate in localities where there are already many migrants from their own country, even if these are not the best labour-market locations for people with their skills and experience (see Maré et. al, (2007) for a New Zealand study). Edo et al. (2020) noted that in practice it is difficult to be confident about isolating the independent effects of migration from prevailing local labour-market conditions.

The second non-structural approach relies on so-called "natural experiments". These are events which were unanticipated and changed migration flows into locations in a way unrelated to local labour-market conditions. A well-known example is Card's (1990) study of the effects of the large influx of Cuban migrants into Miami during the 1980 Mariel boat lift.

New Zealand researchers Dave Maré, Lynda Sanderson and Melanie Morton are currently using a 'natural experiment', the closure of the New Zealand border on 19 March 2020, to study the firm-level impact on the composition (value-added, wage bill and labour force) of employing seasonal migrants from the Pacific. The study will compare the outcomes of businesses that experienced different changes to their RSE workforces.

While “natural experiments” help to identify the effects of migration on local labour markets, they are often created by events of a scale, direction and magnitude that are not typical of usual migration flows. Edo et al. (2020) noted “...[i]t is not clear... whether some of these estimates can be generalized to contexts where migration occurs at slower and more predictable rates and is largely driven by economic motivations” (pp. 1374-75).

Overall, MBIE (2018) found no effects of temporary migration on employment and new hires and small positive effects on earnings of those aged over 25 years. On average a 0.4% increase in the proportion of migrants employed in an industry led to an increase of 0.2% (\$11 per month) in the earnings of New Zealanders aged 25 years or more.

Chapter 2 shows that regions and population sub-groups vary greatly in their labour-market outcomes. MBIE (2018) found the effects from temporary migration impacting specific industries, regions and groups of workers were positive and negative.

- Temporary migration reduced new hires of beneficiaries by 8.9% in 2000–05, but not in later periods.
- Temporary migration increased new hires of youth in 2005–10 and 2010–15 by 2.3% and 3.6%, respectively.
- Using data pooled from 2000–15, the study found that temporary migration reduced new hires of beneficiaries outside the main urban areas (-2.3%), and in horticulture (-4.5%). Employment of temporary migrants in the family category reduced new hires of beneficiaries (-3.0%). Employment of international students had small positive direct effects on new hires of beneficiaries (+0.3%).
- In food services, temporary migration overall directly increased the employment of New Zealanders generally (11.1%) and youth (16.4%).

3.2 Other evidence on the labour-market effects of migration in New Zealand

Section 3.1 covered research on the labour-market effects of recent temporary migration in New Zealand. Other New Zealand research covers earlier periods of migration. This research also defines migrants in different ways to the MBIE (2018) study and use different empirical strategies (Box 5). Even so, these studies also tend to find only small and often statistically insignificant effects (both positive and negative) of migration on the labour-market outcomes of local workers.

In the most thorough study, Stillman and Maré (2009) used data from the 1996, 2001 and 2006 censuses to investigate the effects of migration on the wages and employment of three “nativity groups” (defined as the New Zealand born; earlier migrants; and “recent migrants” – those who had arrived within the last five years). The researchers used 140 labour market areas in their main analysis, and divided the population aged 25 to 54 into qualification groups, or (in alternative analyses) into “predicted occupations”.

The researchers undertook extensive analyses using alternative specifications. The main results simulate effects under different immigration scenarios, using the results of estimates that employed a ‘constant elasticity of substitution’ (CES) production function. They used econometric techniques to account for local labour-market effects on shaping migrants’ choice of location. Their summary of results follows.

Simulations of the impact of different potential immigration scenarios show that the impact of immigrants’ changing the skill distribution are small relative to the impact that arises from changing the nativity mix within occupations. The strongest wage and employment impact of a change in the number of recent migrants falls on recent migrants themselves. Our CES estimates imply that doubling the size of recent migrant inflows lowers the wages of recent

migrants by 4% to 14% and lowers their employment rates by 10% to 13%... The impact on New Zealand-born workers of a doubling of recent migration inflows is positive but small – raising employment rates by between 1.4-1.8% and wage rates by 0.2-1.9% depending on the model assumptions. The only evidence we find of negative impacts of recent migrants on wages for New Zealand-born workers is when we increase the relative skill-composition of the recent migrant inflows; this has a small negative impact on the wages of high-skilled New Zealand-born workers which is offset by a small positive impact on the wages of medium-skilled New Zealand-born workers.” (p. 33)

Maani and Chen (2012) used data from Stats NZ Household Labour Force Survey Income Supplement (HLFS IS) for 2004 in a cross-sectional analysis of effects of migrants (defined as all foreign born) on the earnings of around 6 000 men aged 25 to 54 years. To do this, they divided the sample into regional-occupational cells and used the variation in the share of migrants in these cells to identify effects.

The researchers checked their results by using HLFS IS data for 2003 and 2004 to look at how changes in the share of migrants were associated with changes in the earnings of the New Zealand born. They also used econometric techniques to try to account for a tendency for migrants to locate in areas where they could earn more. Their main results were not overturned by these refinements.

The study showed that (relative to effects on those with middle-level skills) a greater share of high-skilled migrants was associated with an insignificantly positive effect on the earnings of high-skilled locals. On the other hand (again relative to effects on those with middle-level skills), a greater share of high-skilled migrants was associated with a small, but statistically significant negative effect, on the earnings of low-skilled New Zealand-born workers. A 10% increase in the relative (to middle-skilled) share of high-skilled migrants was associated with a 1.4% to 1.9% decrease in the earnings of New Zealand-born workers with no qualifications. The researchers suggested that this second finding could be explained by evidence of occupational downgrading (a tendency for high-skilled migrants to work in less-skilled occupations than New Zealand-born workers with the same education and experience).

Tse and Maani (2017) used pooled annual HLFS IS data from 2002 to 2007 to estimate the effects of changes in the proportion of foreign-born workers in 32 groups defined by skill (education level) and experience, on the earnings and hours worked of local (New Zealand-born) male workers. The main analysis found a small positive, but statistically insignificant, association of migration with the earnings and hours worked of New Zealanders.⁷

The researchers repeated the analysis by adding regional groups to skill and experience. Apparently driven by the concentration of migrants in Auckland, the association between the migrant share and earnings of locals became statistically significant and negative, although small.

When the researchers redefined the experience of migrants to reflect how employers value such experience (“effective experience”) their main model yielded a significant though small negative association between the proportion of foreign-born workers and the weekly earnings of New Zealand-born workers. The weekly earnings of locals fell by 1.6% for a 10% increase in the proportion of foreign-born workers. The result suggested that migrants were competing with locals who have less experience within skill groups.

F3.1

Immigration has had small and mostly positive effects on the wages and employment of New Zealand-born workers over the last 25 years. Overall evidence on labour market effects does not, of itself, point to major problems with the level and composition of immigration into New Zealand.

⁷ Note that Dustmann et al. (2016) argued that studies with this design are essentially answering the question “How does immigration affect native wages of experienced relative to inexperienced workers in the same education group?” rather than the more general question “What is the overall effect of immigration on native wages of a particular education-experience group?” (pp. 37-38).

3.3 How a growing dynamic economy responds to migration

Chapter 2 shows that over the last 10 years net job creation in the New Zealand economy outstripped net migration. Sections 3.1 and 3.2 show that migration has had only minor, and sometimes positive, direct effects on the labour-market outcomes of New Zealanders. To help understand these findings this section briefly discusses some of the channels through which the economy and local labour markets can adjust to flows of migrant workers.

Adjustment of the economy to migrant flows

Brell and Dustmann (2019) reviewed research on the effect of immigration on wages in Australia, finding (like New Zealand research) little evidence of significant effects, either positive or negative. Using simple conceptual models, they set out the potential channels by which investors, employers and local workers adjust to immigration flows.

- In a simple model of the economy, with fixed output prices and technologies, the sectors of the economy that make more use of the 'abundant' factor (eg, low-skilled or high-skilled labour) will grow, and other sectors will decline. After adjustment, local wages will be unaffected.
- In a similar way, firms may adjust technology to take advantage of the abundant factor (altering the relative intensity of use of low-skilled or high-skilled labour). They might, for instance, reduce mechanisation of labour-intensive tasks (E. Lewis, 2011) or adopt technologies (eg, packhouse automation and computerisation of supply chains) that make low-skilled migrants and locals more productive in complementary specialised roles (Basso et al., 2020; Peri, 2012). Again, after adjustment, the wages of locals will be unaffected.
- In a simple model of demand and supply, wages and employment will adjust to migration flows, which then induces changes in sectoral structure and technologies employed. The way that wages and employment adjust will depend on forces such as: how labour supply responds to changes in wages; the extent to which high-skilled workers can substitute for low-skilled workers; and whether an increased supply of high-skilled workers increases demand for complementary low-skilled workers (and vice versa) (Box 6).
- Simple models can include capital (machinery, equipment, plant and business 'know how'). The conclusions about effects of increased migration on labour markets will then depend on how the supply of capital responds to increased opportunities for profitable investment. If the supply of capital is responsive, impacts of migration on the labour-market outcomes of locals will be minor.

Box 6 How migrants can act as substitutes and complements to local workers

'Complementarities' and 'substitutes' describe how particular sets of factors (eg, workers, capital, land, technology) interact with each other. Where factors are substitutes, an increase in the use of one item will reduce the demand for the other (or vice versa). For example, a farmer introducing more fertiliser and better harvesting techniques may need less land to produce a given amount of crops. Where factors are complements, an increase in the use of one item increases the demand for the other. The introduction of new technologies, for example, often leads firms to hire more skilled workers who are able to make the best use of those technologies.

In the case of immigration, migrants may be substitutes or complements for local workers. Where migrants are substitutes (ie, have similar skills, experience and other characteristics relevant for a job), employers may hire them instead of a local. Where migrants are complements, hiring a foreign-trained worker can increase the demand for local staff. For example, where a migrant brings skills that are critical to a project but hard to hire in New Zealand (eg, tunnellers for large infrastructure projects, snow groomers for ski fields, experienced horticultural workers), this can overcome bottlenecks, allowing the firm to grow and increasing the demand for local workers.

In practice, adjustment processes are complex and influenced by additional interacting factors. For example, migrant workers may relieve severe labour shortages that are holding back economic growth. They may contribute to the international competitiveness of some industries (such as agriculture). Or migrant workers may be a complement to new technologies being adopted locally (bringing skills that are not available locally) or to local workers occupying different roles. As discussed in Chapter 4, migrants can increase innovation in an economy, so eventually raising productivity and local wages. Adjustment processes take time and depend on how well investors and employers anticipate the effects of migrant flows.

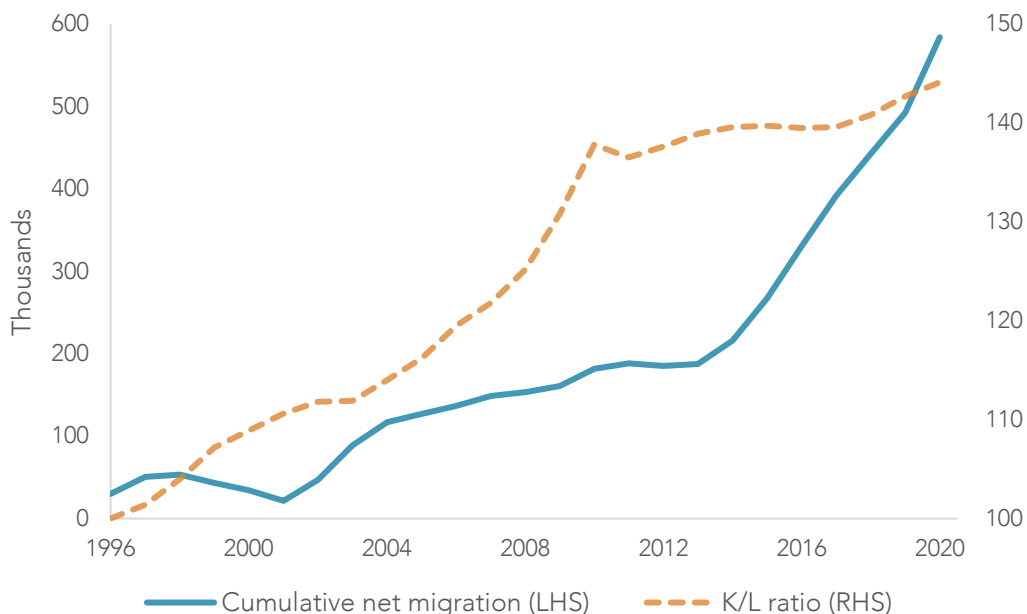
The supply of private capital appears responsive to migration flows

An expanding workforce, other things equal, will increase the return on capital (both through increased demand and through the greater availability of workers to match capital). As a result, businesses likely respond to predictable migration flows by investing in more capital. Investment in new vintage capital can raise the productivity and therefore the wages of both local and migrant workers.

Consistent with this idea, Peri (2012) finds that over long periods of time (10-year intervals from 1960 to 2000) immigration had no effect on the capital-output ratio in the US, measured at the state level: "...[I]ncreased employment and higher productivity were matched by investments to guarantee a constant capital output intensity" (p. 353). Peri (2016) argued that businesses make capital investments to match increased specialisation of workers facilitated by migration, therefore raising labour productivity and incomes.⁸

Researchers have not investigated the effects of immigration on capital intensity in New Zealand using econometric techniques. Descriptive data show that the capital-labour ratio in the 'measured sector' of the economy grew steadily over the period 1996 to 2019, a time of high net migration inflows. Yet it is notable that the rate of capital accumulation slowed over the latter part of this period as net migration flows accelerated (Figure 3.1).

Figure 3.1 Cumulative net migration and the capital-labour ratio, 1996=1 000



Source: Stats NZ, NZPC.

Note:

1. The capital-labour (K/L) ratio is for the measured sector of the economy. The measured sector covers around 80% of GDP and includes "...[a]ll industries for which estimates of inputs and outputs are independently derived at constant prices... Excluded are... government non-market industries, such as administration, health and education as well as private sector industries such as residential and commercial property" (Stats NZ, 2021, p. 3).
2. The data on cumulative net migration starts from 1996.

⁸ Boubtane et al. (2016) used an empirical model that assumes that incoming migrants "dilute" capital intensity in host countries. Even so, they found that in 22 OECD countries over the period 1986 to 2006 net migration increased average skills in destination countries. They also found that the effect of migration on GDP per worker through skills more than outweighed the effect through capital dilution.

Do locals move to other areas to avoid competition as migrants move in?

Local workers could respond to the arrival of migrants by moving to other parts of the country with fewer migrants and so less competition for jobs (Peri, 2016). While some international studies have found such responses, others have not. Card (2001) found that, at least in the short term, high inflows of low-skilled migrants into some American cities around 1989 did not significantly raise outflows of low-skilled locals.

High external migrant inflows are a possible explanation for why Auckland has experienced persistent internal migration losses to other parts of the country (NZPC, 2012, 2017; Stats NZ, 2017). Even so, other factors (such as high housing costs and retirees choosing to relocate) may be driving observed trends for Auckland. In any case, annual net internal migration is a relatively small proportion (less than 1%) of the total Auckland population (Stats NZ, 2017). More broadly, New Zealand studies have not found evidence of significant internal migration responses of local workers to external migration inflows in earlier periods (Stillman & Maré, 2007; Tse & Maani, 2017).

Might locals move to jobs where they have a comparative advantage over migrants?

In response to external migration flows, local workers may move into other occupations, particularly occupations that complement those preferred by migrants. This may not happen immediately, but over time, both through direct moves and through the choices of new labour-market entrants. Local workers likely have greater proficiency in local languages, and are more familiar with local norms and culture that give them an advantage in some occupations compared to incoming migrants (Tse & Maani, 2017).

Peri and Sparber (2009), for instance, showed that between 1960 and 2000 unskilled US-born workers increasingly specialised in communications-intensive occupations, while their foreign-born counterparts were more specialised in occupations requiring manual skills. The shift was strongest in states with large immigration flows and among groups of US-born workers who were more at risk from competition with immigrants (due to their larger reliance upon manual-task-intensive occupations). Peri (2012) found that the increased specialisation of local workers in communications-intensive occupations could potentially explain some of the increase in state-level total factor productivity over the period. More recently, Basso et al. (2020) showed that increased use of computers in US labour-market areas between 1980 and 2010 was associated with stronger migration flows, increased employment of migrants in manual and service jobs, and increased employment of locals in jobs requiring cognitive skills and decreased employment of locals in routine jobs. Roodman (2014, p. 2) noted, however, that “the effect [of this shift to complementary roles] is certain, though its speed and size is not.”

Similar specialisation may happen in New Zealand. Tse and Maani (2017) found that in New Zealand in the 2000s, low-skilled (measured by qualifications and experience) migrants tend to work in different occupations than low-skilled local workers. The opposite was true for workers with a Bachelor’s degree or higher. These patterns appear to persist even for long-term migrants – Tse and Maani (2017) look at differences in occupations chosen by all foreign-born and New Zealand-born workers in their sample.

The evidence in Chapter 2 similarly suggests that employing less-skilled migrant workers in horticulture provided more opportunities for New Zealanders to work in higher-skilled roles in the industry and was associated with productivity improvements. According to industry informants, productivity enhancing developments included industry consolidation (larger production units), greater output per hectare, more intensive use of existing plant, increased sophistication in international supply changes and marketing, and investment in new, labour-saving technologies.

4 Immigration and productivity

This chapter identifies the microeconomic channels by which immigration can impact productivity, broadly defined (section 4.1), and assesses the limited New Zealand evidence (section 4.2). A companion report, (NZPC, 2021d), looks at how migration flows could affect productivity growth through macroeconomic channels.

Most of the studies covered in this chapter do not look at the effects of migration on measures of productivity at the firm level. Cross-country studies discussed in section 4.1 tend to investigate the effect of migration on a broader measure of national income (such as GDP per capita) or on a rough proxy for national labour productivity (such as GDP per worker). The existing firm-level New Zealand studies discussed in section 4.2 investigate the effect on migrant workers on innovation and exporting, which are likely linked to a firm's productivity performance.

4.1 How can immigration affect productivity and national income?

Immigration can affect productivity growth and incomes through various channels. People bring capital, skills, reciprocal relationships, ideas and methods.

Jaumotte et al. (2016) decompose the possible effects of migration on GDP per capita into:

- an increase in the working age population as a proportion of the total (as migrants are typically of working age);
- a change in the employment rate (this is predicted not to change over the longer term for reasons covered in Chapter 3);
- a possible effect on labour productivity through changes in the capital-labour ratio (again this is predicted not to change in the longer term);
- an increase in labour productivity through an increase in the average skills held by workers (in practice migrant workers in OECD countries, including New Zealand, are on average better educated than locals); and
- changes in total factor productivity (TFP)⁹ because migrants may bring new skills, ideas and knowledge that spread to other firms and workers, or because they may complement the work done by local workers (eg, by filling labour shortages in skilled roles or by allowing locals to specialise in more complex work). Alternatively, a large inflow of low-skilled workers could shift the economy towards lower-productivity sectors, thus lowering economy-wide TFP.

Young skilled migrant workers increase GDP per capita in OECD countries...

In most OECD countries, including New Zealand, migrants are on average younger and more skilled than the host population. As a result, migration increases GDP per capita because a greater proportion of the population is working and the average skills among those working are higher (Jaumotte et al., 2016).

Boubtane et al. (2016) used a structural model (Box 5) to look at immigration and economic growth across 22 OECD countries, including New Zealand, between 1986 and 2006. They found that a 50% increase in the rate of foreign-born net permanent migration led to a short-run average increase in GDP per worker of 0.3% a year and a long-run average increase in GDP per worker of 2%. The more selective the migration, the stronger the effect, as skilled migrants are more productive. The researchers found

⁹ TFP, also called multifactor productivity (MFP), "measures the overall efficiency with which all the measured inputs [to the production of goods or services] combine to produce the measured outputs... The long-run drivers of MFP stem from using technology and new skills in new, innovative ways" (NZPC, 2021c, pp. 10–11).

that a 10% increase in the share of migrants with a tertiary qualification is associated with a 1% increase in GDP per worker.

Jaumotte et al. (2016) used a non-structural approach (Box 5) to estimate the economic impact of migration in 16 advanced economies, including New Zealand, using pooled five-yearly data covering the period 1980 to 2010. On average, across alternative models, they found that a one percentage point increase in the share of migrants (the foreign born) in the adult population of a country was associated with an eventual increase in the level of GDP per capita of around 2%.

These studies should be interpreted cautiously. Each relies on methodologies that face challenges (Box 4), cover periods when migration into OECD countries was generally lower than in recent experience, and include countries which on average have much lower immigration rates than New Zealand.

... but likely capture most of the benefits themselves

Importantly, migrants themselves, in terms of income, are likely the main immediate beneficiaries of the per capita income gains from having a younger and more skilled population (Coates et al., 2021). Chapter 3 shows that immigration has only modest impacts (in New Zealand overall slightly positive) on the incomes of residents in receiving countries.

Evidence for complementarities between migrant and local workers, and for faster dissemination of migrants' knowledge about technology and markets, could help explain these modest effects on the income of residents (Edo et al., 2020). Section 4.2 looks at the limited New Zealand evidence for this.

Migrants can complement local skills and technology

Clearly, when migrants fill specialised roles where local skilled workers are not available they likely support local businesses to be more productive (Jaumotte et al., 2016). Chapter 2 shows that there are many businesses in New Zealand that have benefited from employing highly-skilled migrants, both permanent and temporary. A more difficult question revolves around the contribution of less-skilled migrants to productivity.

Peri (2012) tackled this, using state-level decennial census data to estimate the labour-market and productivity effects of relatively low-skilled migration into the US between 1960 and 2000 and using a structural model of the economy (Box 5). Peri found that such migration was associated with technological change biased to low skills. To explain this result, he pointed to evidence that low-skilled migrants tended to specialise in manual tasks, while low-skilled locals specialised in communications-intensive tasks, as computerisation changed the nature of many jobs (Peri & Sparber, 2009). Peri (2012) found that, as a result, migration was associated with increases in TFP and in state-level incomes per capita. Yet, because of methodological challenges, Peri was cautious about interpreting his findings as showing a causal link between migration and productivity.

Permanent immigration into New Zealand has been mostly skilled, although in recent years there has been an increasing proportion of temporary migrants working in low-skilled jobs (Chapter 1). Overall, temporary migration has had slightly positive effects on the wages of New Zealand workers, suggesting some complementarities exist (Chapter 3). The horticulture industry provides an example where the employment of less-skilled migrants appears to have aided export growth, further investment in technology, more intensive use of existing plant and greater yields per hectare of land. Such developments are likely to have raised productivity in the industry and increased the incomes of New Zealanders employed in more skilled jobs.

The Commission is studying other industries to inform judgements about the productivity effects of employing migrants (see Chapter 5 for a discussion of the dairy industry).

..but availability of low-skilled workers may reduce incentives to adopt technology...

Easy access to workers willing to accept low wages may discourage firms from investing in new technology. The most famous example illustrating this is the closure of the bracero programme, which had allowed seasonal workers from Mexico to work on US farms for periods of between six weeks to six months. The programme was wound down over 1962-64, with the aim of improving wages and

employment for US workers. In practice, however, there was little impact on the locals' incomes and jobs, as affected farmers either replaced migrant workers with technology (eg, mechanised harvesters) or reduced their production levels where viable technological alternatives did not exist (Clemens et al., 2018). This result suggests that:

- in some circumstances, access to lower-skilled migrant labour may reduce pressures on employers to innovate; but
- technological alternatives need to be readily available for such capital-labour substitution to occur.

Inquiry participants from the primary industries pointed to the long lead times needed for the development and implementation of technologies that would reduce the need for less-skilled workers (Chapter 2).

Agglomeration effects are unlikely to be significant

Immigration could contribute to higher productivity by creating larger labour markets that are better able to specialise, bear the costs of innovation and exporting, and more rapidly transmit ideas and technologies.

Maré and Graham (2013), in a study of such "agglomeration effects" in New Zealand, found that TFP was an average 0.7% higher across industries for every 10% increase in numbers employed in a location. This was broadly consistent with the findings of a wide range of international studies (Melo et al., 2009).

At rates of population growth in New Zealand's urban centres, these estimates suggest agglomeration (and thus migration) could have made only a small contribution to the actual increase in this country's productivity over the 30 years to 2012 (NZPC, 2017).

4.2 New Zealand evidence

One study (Nana et al., 2009) uses a "computable general equilibrium" (CGE) model to evaluate the impact of different immigration scenarios across the New Zealand economy, including on GDP per capita. Other New Zealand studies look at firm-level effects of migrant workers on innovation and exporting.

A computable general equilibrium model of the impacts of migration

Immigration may affect national productivity by influencing the industrial composition of the economy. If, for example, immigration supplied workers of particular importance to high-productivity industries, this could see these industries expand faster than lower-productivity industries. Average and overall productivity would increase as a result. The reverse would happen if low-productivity industries expanded at the expense of higher-productivity industries.

CGE models are one way to investigate the effects of different immigration scenarios on the structure of the economy and on measures such as GDP per capita. Such models draw on detailed information about the relationship among firms within and across industries, the goods and services they produce, households and the supply of labour in different occupations. In CGE models, changes in supply and demand are mediated through market prices.

CGE models are complex and, to be tractable, require assumptions about the evolution of key economic variables (such as technological change, export market demand, terms of trade, demographics, and the savings to gross national product ratio). CGE models assume that markets (including housing markets) adjust to balance supply and demand, and do not take account of the potential for the investment and supply constraints discussed in NZPC (2021d).

Nana et al. (2009) used their CGE model to explore the effects of different migration scenarios. The most relevant scenario involved a doubling of net migration of overseas-born people from historic rates to an annual rate of 40 000. In these scenarios, the supply of migrant workers in specific occupations is driven by industry demand.

The study found that doubling migration raised GDP and real GDP per capita (1.5% higher by 2021) through:

- reduced production costs;
- increased exports; and
- increased domestic investment and/or consumption depending on the composition of immigration.

The study found that demand-driven migration had a slightly stronger effect on exports than deliberately skill-selective immigration, reflecting that the export sector:

...requires semi-skilled as well as skilled labour resources in order to expand its activities. For example, occupations such as machine operators and clerical staff in manufacturing, drivers in the transport sector, and sales and restaurant workers in tourism-related industries are also export-related requirements. (pp. 9-10)

The results of this study do not suggest that, overall, immigration has a negative effect on GDP per capita through attracting low-skilled migrants into low-productivity industries at the expense of higher-productivity industries. This finding, in turn, is consistent with the evidence on the effect of temporary migration on overall wages in MBIE (2018, Chapter 3).

Effects on firm innovation and exporting

Three New Zealand studies have used firm-level data from the Business Operations Survey for the period 2005 to 2011, linked to Stats NZ's Integrated Data Infrastructure, to investigate the impacts of migration on firm innovation and exporting. Each study has found either minor effects or correlations rather than evidence for causal impacts.

- Maré et al. (2010) looked at the effect of having migrants in a local labour-market area on firm innovation. Once industry, firm size and research and development spending were controlled for, they found no relationship between the presence of migrants in local labour markets and firm-level innovation.
- McLeod et al. (2014) found that employing more migrants is associated with greater firm-level innovation, but this effect was more to do with having new, high-skilled employees than migrants as such.
- Sin et al. (2014) found that having a higher proportion of migrants among high-skilled workers is associated with a greater probability of exporting. Having migrant workers from developed (but not developing) countries was linked with a greater probability of earning export income in the workers' source countries.

It is possible that migrants may struggle to make effective international linkages or diffuse new ideas because they cannot find work that best meets their skills and experience, or because their employers fail to appreciate their potential contributions. The impacts of immigration on productivity may also take some time to be felt, as markets and firms adjust and people move to take up new opportunities.

F4.1

Microeconomic evidence suggests positive, but small, impacts from immigration on average levels of labour productivity. New Zealand evidence on the impacts of immigration on innovation and exporting as channels for productivity growth finds minor or conditional effects.

New research

Richard Fabling and the Commission's Economics and Research team are linking individual-level information from Stats NZ Integrated Data Infrastructure to business-level information from the Longitudinal Business Database to examine sorting, productivity and wage differentials between migrant and local workers. The research will explore whether migrants' work at firms and in jobs that are more productive, whether migrants are more productive than local workers, and whether migrants are paid differently to similar locals.

5 Migrant workers in the dairy industry

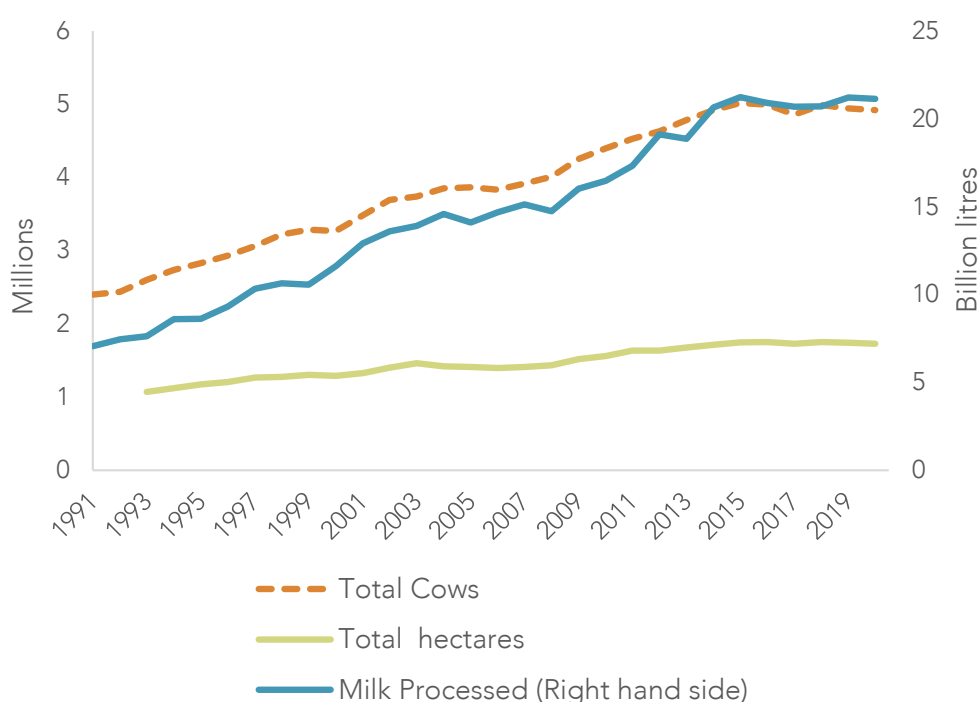
Much of the international and local literature into the impacts of immigration on labour markets and productivity looks at the aggregate effects. But the circumstances of specific locations and industries can matter for the scale and distribution of these impacts. To illustrate this point, the Commission is preparing case studies into some industries that have made significant use of migrant labour in recent years.

5.1 Recent economic performance

Rapid output, input and 'on-farm' productivity growth over 1990 to 2015

Dairy sector output and productivity grew markedly over 1990 to 2015. Milk supply increased three-fold from 7 million litres in 1990-01 to 21 billion litres in 2014-15 (Figure 5.1). The average kilogram of milksolids per hectare¹⁰ increased by 67% and the average kilogram of milksolids per cow increased by 48% over the period (Figure 5.2).

Figure 5.1 Milk production, number of cows and hectares (financial year)



Source: DairyNZ, LIC, New Zealand Dairy Statistics 2019/20.

Note:

1. Total hectares is measured in effective hectares (see footnote 10).

This three-fold increase in output was the result of:

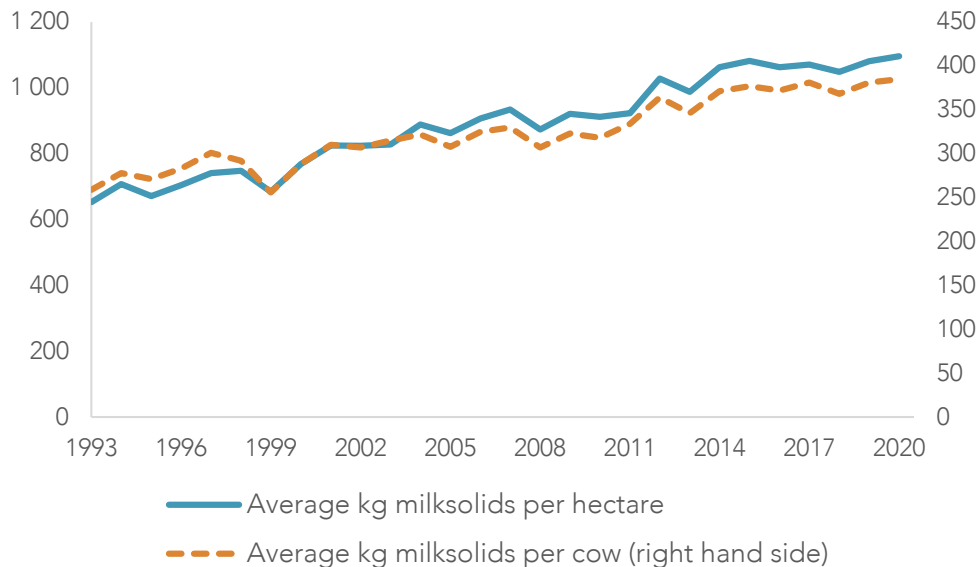
- increased inputs (more land, cows, workers and off-site feed);
- more intensive input use (increased use of fertilisers and increased cows per hectare); and
- a shift in how these inputs were combined with technology and managerial skill (increased use of irrigation, larger herd sizes, larger farms, new management techniques, bigger sheds and an increased use of technology).

¹⁰ The measure is technically effective hectares, which is a measure of the "true" area over which the milking cows graze. For example, the measure excludes any area used on a farm for young "non-milking" stock.

At the same time, total dairy land use increased from around 1 million to 1.7 million hectares. Almost all the increase in land use from the 2000s (around 400 000 hectares) was through converting land in the South Island to dairy use (DairyNZ & Livestock Improvement Corporation, 2020, p. 9). The total number of cows increased from 2.4 million cows to 4.9 million cows (DairyNZ & Livestock Improvement Corporation, 2020, p. 9).

The structure of the industry has changed, with a shift toward large corporate dairy farms, mostly (but not exclusively) through South Island land conversions, but also through consolidation in the North Island. The average herd size has increased, with larger or more productive milking sheds in use, and an increase in farm employees (DairyNZ sub. 43, appendix 1 p. 20).

Figure 5.2 Milksolids production per hectare and cow since 1992-93



Source: DairyNZ and LIC 2020, Table 2.3, 10.

Note:

1. Hectares is measured in effective hectares (see footnote 10).

Output growth and 'on-farm' productivity growth has levelled off...

Since 2015 both output and 'on-farm' productivity growth has levelled off (Figures 5.1 and 5.2). The total milk produced has stabilised at around 21 million litres of milk (DairyNZ & Livestock Improvement Corporation, 2020; G. Lewis et al., 2021) and 'on-farm' productivity gains for average kilograms of milksolids per effective hectare and per cow have flattened. The dairy industry appears to have reached several input and technology limits including:

- a shortage of further South Island land dairy conversion opportunities;
- increased water quality regulation;
- an increased difficulty in securing both labour (especially in the South Island) and financial capital,¹¹ as levels of indebtedness associated with rising land prices rose over the period (Federated Farmers, sub. 60, p. 7); and
- dairy's "social licence" coming under increased scrutiny due to its emissions and pollution footprint (Pawson & The Biological Economies Team, 2018).

¹¹ More recently, farmers have been encouraged by banks to pay down debt levels and have faced tougher lending policies.

...and 'on-farm' productivity measures provide only a partial picture

As discussed in the Commission's case study into frontier firms "true measures of productivity should account for all inputs including negative environmental impacts" (G. Lewis et al., 2021, p. 11), something that is missing from the 'on-farm' measures of dairy productivity above. Indeed:

...some farmers and researchers have demonstrated that farm profitability can be as good or better with a more conservative model of lower stocking rates, fewer inputs and better-fed, better-bred and healthier cows. Other benefits are fewer GHG emissions and reduced nitrogen leaching to waterways. (G. Lewis et al., 2021, p. 12)

5.2 The workforce

Around 50 000 people are directly employed in the dairy sector. Approximately 60% (roughly 30 000 people) are employed on-farm and the remaining 40% (20 000) are employed in processing and wholesaling. Processing and wholesaling staff have a higher annual median wage of \$79 417 compared to on-farm workers who have an annual median wage of \$52 700 (DairyNZ, 2020).

The overall median wage however masks not only a wide variation in pay rates but also the long, on average, hours worked in the industry. In terms of hours worked, dairy farmers and farm workers both tend to work longer hours than the New Zealand working population (Tipples et al., 2010) with 40% of employees, 45% of employers and 49% of those self-employed without employees working over 60 hours per week compared to 10% of the total New Zealand working population. When looking at wages, generally wages rise alongside responsibility and experience.

Yet most employment on-farm is either at the bottom end of the wage and salary distribution, with 30% of workers in the industry (10 800 people) classified as farm assistants (with a mean salary of \$46 829) or at the top of the distribution, with 38% of workers (12 200 people) being business managers/owners at the top of the pay scale (with a mean salary of \$81 560). This reflects the owner/operator structure of many dairy farms and the need for employees as herd sizes increase. Sandwiched in between these two roles are:

- herd managers (15% of workers, or 5 400 people);
- assistant managers (7% of workers, or 2 400 people); and
- farm managers (15% of workers, or 5 200 people) (Dairy NZ, sub. 43, p. 9).

Migration has been a key source of labour for the dairy industry

In 2019-20, there were 7 700 migrant workers employed on farms. The majority (roughly 4 800 workers) held a temporary work visa with the vast majority (3 240 workers) having an Essential Skills visa. Around 350 held a Working Holiday visa and the remainder held either a South Island contribution visa, a partner/family visa or some other temporary visa. In addition to those holding a temporary visa, there were 2 900 workers who held some form of resident visa (DairyNZ, sub. 43, p. 8).

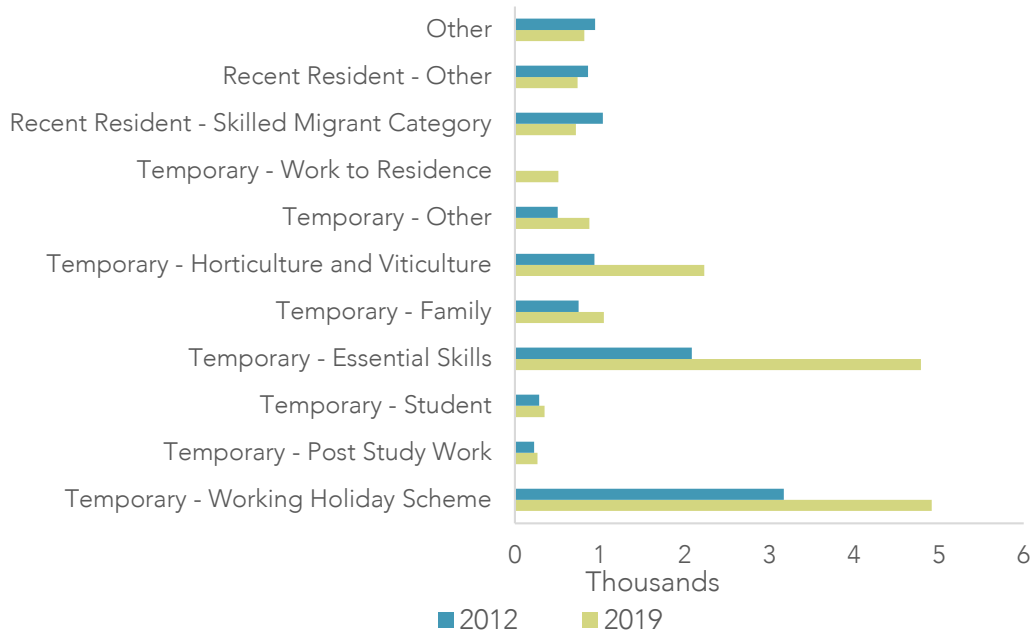
Most migrants work in lower-level and lower-paid roles

Most migrants are employed to work in lower-level and lower-paid roles. In 2019-20, 2 800 migrants were working as farm assistants, 1 242 were herd managers, 792 were assistant managers and 832 migrants were farm managers. There were almost no migrants employed at the business manager/owner level (Federated Farmers of New Zealand, 2020, pp. 11–29). However, in more recent years migrants are increasingly being hired in lower managerial levels that are integral to farm operations and hence to the employment of locals as well (DairyNZ, sub. 43, p. 7).

Agriculture has made increasing use of temporary migration

The wider agricultural industry's use of migration mirrors that of the dairy sector, with significant growth since 2012 in the use of temporary visa, especially the Essential Skills and Working Holiday Scheme visas.

Figure 5.3 Visa composition of the agriculture industry



Source: MBIE, Migrant Employment Data.

Notes:

1. Total agriculture employment by visa holders is the sum of all the horizontal bars by year.
2. Recent resident only includes the first five years of residency in New Zealand, and after five years these visa holders are folded into the New Zealand citizen category regardless of their citizenship status.

Farms in the South Island make particular use of temporary migration

Across the industry, the proportion of the workforce made up by temporary migrants is 7%, but rates are much higher in much of the South Island which corresponds with the South Island dairy conversions. Temporary migrants comprised 20% of all employment (months) between 2000 and 2015 in Canterbury, 16% in Southland, 13% in Otago and 10% in Gisborne and Hawke’s Bay (Figure 5.4).

Figure 5.4 Temporary migrant share of employment in dairy cattle farming by region, 2000-15

Region	Percent
Northland	3%
Auckland	3%
Waikato	6%
Bay of Plenty	4%
Gisborne- Hawke’s Bay	10%
Manawatu-Wanganui	3%
Taranaki	2%
Wellington	2%
Tasman, Nelson, Marlborough, West Coast	5%
Canterbury	20%
Otago	13%
Southland	16%
Total	7%

Source: MBIE (2018), Appendix D, Table 23.

Migrants comprised half of all industry new entrants in 2019

The dairy sector has become increasingly reliant on migration to source its new entrants. In 2019, migrants accounted for 50% of all new entrants, up from just over 20% in 2010 (DairyNZ, sub. 43, p. 7).¹² This growing reliance on migration to fill its new entrant needs has seen both tertiary graduates and career changers becoming a smaller proportion of new entrants over the years (DairyNZ, sub. 43, p. 8). Retention rates for new entrants are both a problem facing the sector and an opportunity for change, with 58% of new entrants having left the sector after 12 months. Only 23% remain in the sector after 36 months (DairyNZ, sub. 43, p. 12).

Attracting new entrants appears to be easier for farms closer to centres of population than those further away. Many isolated rural communities, especially in the South Island, are also experiencing ageing populations and hence have fewer young people from whom to source new entrants.

Relative wages and conditions may affect retention and hence the need for new entrants. A DairyNZ / Federated Farmer survey in March 2021 found that most (87%) farmers had made improvements to wages and conditions to make their business more attractive to staff. As a result, 25% of respondents found it easier to recruit staff and 60% found it easier to retain staff (Federated Farmers, sub. 60, p. 5).¹³

F5.1

Dairy industry output and productivity grew strongly in the 25 years to 2015, though they have now levelled off. Over the last decade, migrants on temporary work visas have become a critical part of the dairy industry workforce, especially in the South Island with its larger corporate farms. An increasing share of the growing number of temporary migrant workers in the industry are employed in low-skilled (often entry-level) roles.

5.3 Impacts

Technology use on larger farms only partly offsets labour needs

The emergence of larger corporate farms has enabled greater use of automation or larger-scale infrastructure. One result is that the labour ratio on these farms “will typically sit around 200 cows per full time equivalent”, which is a less intensive use of labour than the industry average of approximately 146 cows milked by each fulltime equivalent (FTE) (DairyNZ, sub. 43, Appendix 1, p. 20). While labour-to-cow ratios are smaller, and hence more productive for cows milked per FTE on larger farms, their larger herd sizes still require on average additional employees.¹⁴ This need for additional employees on farms with larger herd sizes is confirmed when looking at the composition of employment to self-employment across the regions. For example, in the Waikato (an area with smaller herd sizes) there is a 50:50 split between employees and self-employed (owners/sharemilkers to workers). In Canterbury and Southland (both areas that have larger farms and larger herds), 75% to 80% of people on farms are employees (DairyNZ, sub. 43, Appendix 1, p. 21).

¹² In any year the dairy industry attracts between 4 000 and 5 000 new workers. This is roughly 10%-12% of its total workforce. While most new entrants, 55%, enter at the farm assistant level, 17% enter at the herd manager level, 6% at assistant manager level, 12% as a farm manager, and 10% as a business manager. (DairyNZ, Sub. 43, p. 9).

¹³ The largest percentage pay increases post-Covid have been received by assistant managers who saw a 21% increase to \$59 778, and farm assistants who received an 11.2% increase to \$46 829 (Federated Farmers of New Zealand, 2020, pp. 18–29). Both roles have substantial proportions of migrant workers. Many farmers also responded by giving existing staff more time off, reducing hours of work, introducing flexible milking schedules and increased upskilling and training options.

¹⁴ The average herd size in the South Island at 645 is nearly double that of the North Island where the average herd size is 358. At the industry averages for small and larger farms, the South Island herd would require three FTEs to milk the herd, whereas the North Island herd sizes would require two FTE workers.

Further technology adoption is constrained by a range of factors

The ability of farmers to further adopt technology around robotic milking and modernisation appears to be limited by:

- access to capital; and
- the need to redesign technology to suit New Zealand conditions, such as larger herd sizes, more pasture-focused herds, and the lack of local skilled service and operations staff (Federated Farmers, sub. 60, p. 7).

Substitution or complementarities are unclear

It is almost impossible to know whether the employment of migrants in the sector, especially on larger farms, has enabled the employment of more New Zealanders or made it more difficult for New Zealand residents to find work. There has been a small and recent shift toward using migrants in managerial positions (as discussed above) and as a growing source of new entrants into the industry. However, the distance of many farms from major population centres and underlying demographic trends in regional areas are likely to constrain the supply of suitable local workers.

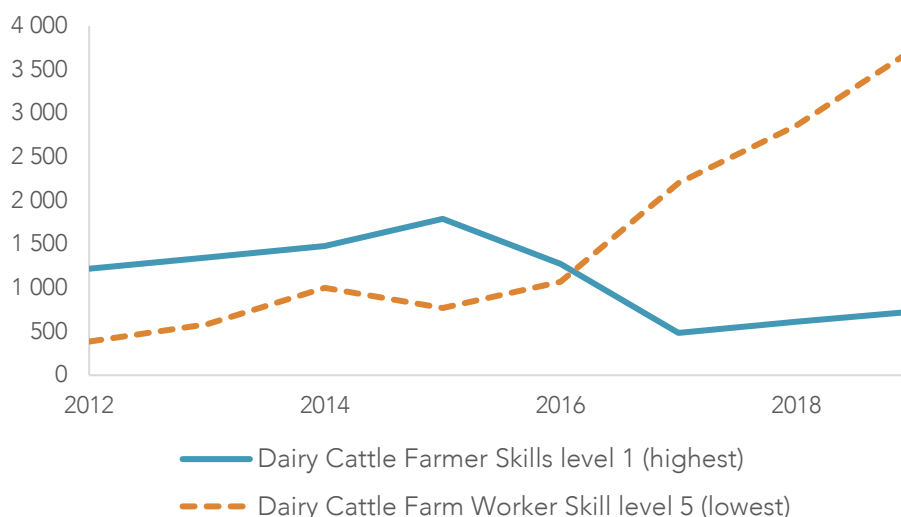
Short visa terms may discourage some training investments

Participation rates in credentialed training across the industry has halved in recent years from 3 600 dairy qualifications gained in 2015 to 1 800 in 2019 (DairyNZ, sub. 43, p. 18). However, key factors cited as the causes for this decline include problems finding time for staff to participate in training, high farm debt levels and poor-quality training options (ibid.)

Short timeframes associated with some migrant workers' visas may reduce the willingness of employers to invest in training migrants. There are also reports that where an industry makes use of repeated one-year visa cycles, this can keep workers and employers focused on the next visa approval and "minimises the agency workers feel to negotiate with their employers or to question the conditions they have at work" (Collins & Stringer, 2019, p. 66).

Essential skills visas are increasingly focused on lower skilled roles

Essential Skills visa holders make up a significant share of all temporary migrants employed in agriculture (Figure 5.3). In dairy, the composition of people employed on an Essential Skills visa has since 2016 shifted significantly toward the low skilled. Overall, since 2012 the number of migrants with low skill levels (as measured by ANZSCO) has increased nearly 10-fold, while those with a high skill level have fallen from their 2015 peak. Prior to 2015, the industry approved more highly-skilled dairy cattle farmers than farm workers.

Figure 5.5 Skills composition of temporary Essential Skills visa holders by dairy farm occupation

Source: MBIE Migrant Data Explorer.

Notes:

1. Approvals only by calendar year, ANZSCO code 121313 Dairy Cattle Farmer and code 841512 Dairy Cattle farm worker sorted by skill level.
2. Temporary Essential Skills visa holders include anyone classified in the Migration Data Explorer in the W3 category whose application criteria includes Essential Skills, General, Approved in Principle, Essential Skills - Level 1 and Specialist Skills.

At the same time, a 2016 case study looking at the integration of dairy workers in the Canterbury region outlines that “most migrant dairy workers were university educated; however in most cases, these qualifications were not recognised by New Zealand Immigration...” (Kambuta et al., 2016, p. 9). As Noah a migrant dairy farmer in the study above outlines “I have a degree in Farm Management and Genetic Selection... but it does not fit with the New Zealand system.”

Poor treatment of migrant workers is a known risk and being managed

The dairy industry has historically been overrepresented in known migrant exploitation. Yet it is also an example where “industry groups have taken a positive role” and where “complaints within the dairy farming sector were now less common and less severe than in the past” (Collins & Stringer, 2019, pp. 62, 76). The risk of exploitation is related to both New Zealand-specific conditions and the characteristics of individual migrants. The New Zealand factors that increase rates of exploitation in the industry include the geographic isolation of farms and the linking of a worker’s visa to a specific employer. Risks related to migrant characteristics are not specific to the industry and include whether or not there is a need to repay offshore debt or to send remittances home (Collins & Stringer, 2019).

5.4 Summary

Overall, the interaction of migration, the labour market and productivity in the dairy industry appears to be developing on different timeframes, and with different characteristics, in the North and South Islands. The recent expansion in milk volume based on South Island land conversion, combined with increases in farm and herd size, required a ready supply of workers as a key ingredient. Migrants and temporary work visas have become a critical part of the dairy sector’s overall expansion strategy. In recent years, temporary migrant numbers have skewed heavily towards lower-skilled roles.

Information is lacking on whether the increasing employment of migrants has been a complement to further local employment or been a substitute for local employment overall. There has been a growth in the use of migrants in entry-level positions (potentially making it harder for locals to get these positions). Yet there has also been a growth in the use of migrants in positions further up the managerial and operational hierarchy (potentially enabling further local employment in entry-level roles). Migrants comprised one-half of all new entrants in 2019, up from 20% in 2010. While this may raise concerns about substitution of locals, the dairy industry has argued strongly that the geographic isolation of many farms and tight local labour-market conditions mean that there are few suitable New Zealand workers to displace.

References

- Bassanini, A., & Garnero, A. (2013). Dismissal protection and worker flows in OECD countries: Evidence from cross-country/cross-industry data. *Labour Economics*, 21, 25–41.
- Basso, G., Peri, G., & Rahman, A. S. (2020). Computerization and immigration: Theory and evidence from the United States. *Canadian Journal of Economics/Revue Canadienne d'économique*, 53(4), 1457–1494. <https://doi.org/10.1111/caje.12472>
- Blumenfeld, S. (2016). Who receives employer-supported training. In *Understanding insecure work*. New Zealand Work Research Institute, Auckland University of Technology. https://workresearch.aut.ac.nz/_data/assets/pdf_file/0019/56224/Understanding-Insecure-Work-brochure.pdf
- Boubtane, E., Dumont, J.-C., & Rault, C. (2016). Immigration and economic growth in the OECD countries 1986–2006. *Oxford Economic Papers*, 68(2), 340–360. <https://doi.org/10.1093/oep/gpw001>
- Brell, C., & Dustmann, C. (2019, July). *Immigration and wage growth: The case of Australia*. RBA Annual Conference (Vol. 41), Canberra, Australia. www.rba.gov.au/publications/confs/2019/pdf/christian-dustmann.pdf
- Card, D. (1990). The impact of the Mariel boatlift on the Miami labor market. *ILR Review*, 43(2), 245–257.
- Card, D. (2001). Immigrant inflows, native outflows, and the local labor market impacts of higher immigration. *Journal of Labor Economics*, 19(1), 22–64. <https://doi.org/10.1086/209979>
- Carey, D. (2019). *Improving well-being in New Zealand through migration* [Economics Department Working Paper No.1566]. OECD. <https://doi.org/10.1787/18151973>
- Clemens, M. A., Lewis, E. G., & Postel, H. M. (2018). Immigration restrictions as active labor market policy: Evidence from the Mexican bracero exclusion. *The American Economic Review*, 108(6), 1468–1487. <https://doi.org/10.1257/aer.20170765>
- Coates, B., Sherrell, H., & Mackey, W. (2021). *Rethinking permanent skilled migration after the pandemic* [Report No. 2021-06]. Grattan Institute. <https://grattan.edu.au/wp-content/uploads/2021/05/Rethinking-permanent-skilled-migration-Grattan-Report.pdf>
- Coleman, A., & Zheng, G. (2020). *Job-to-job transitions and the regional job-ladder* [Working Paper 2020/01]. NZPC. www.productivity.govt.nz/assets/Documents/local-government-insights-2/8c53ba315b/Job-to-job-transitions.pdf
- Collins, F., & Stringer, C. (2019). *Temporary migrant worker exploitation in New Zealand* [Final report - not government policy]. MBIE. www.mbie.govt.nz/dmsdocument/7109-temporary-migrant-worker-exploitation-in-new-zealand
- Curtain, R., Dornan, M., Howes, S., & Sherrell, H. (2018). Pacific seasonal workers: Learning from the contrasting temporary migration outcomes in Australian and New Zealand horticulture. *Asia & the Pacific Policy Studies*, 5(3), 462–480. <https://doi.org/10.1002/app5.261>
- DairyNZ. (2020). *QuickStats about dairying—New Zealand 2020*. www.dairynz.co.nz/media/5794072/quickstats-about-dairying-new-zealand-2020-web.pdf
- DairyNZ & Livestock Improvement Corporation. (2020). *New Zealand dairy statistics 2019-20*. www.dairynz.co.nz/media/5794073/nz-dairy-statistics-2019-20-dnz.pdf
- Daley, J. (2019). *Immigration and wage growth* [Discussant paper]. Grattan Institute. <https://grattan.edu.au/wp-content/uploads/2019/07/RBA-wages-and-migrants-as-submitted-22-July.pdf>
- Docquier, F., Ozden, Ç., & Peri, G. (2014). The labour market effects of immigration and emigration in OECD countries. *The Economic Journal*, 124(579), 1106–1145. <https://doi.org/10.1111/eoj.12077>
- Dustmann, C., Schönberg, U., & Stuhler, J. (2016). The impact of immigration: Why do studies reach such different results? *Journal of Economic Perspectives*, 30(4), 31–56.

- Edo, A. (2019). The impact of immigration on the labor market. *Journal of Economic Surveys*, 33(3), 922–948. <https://doi.org/10.1111/joes.12300>
- Edo, A., Ragot, L., Rapoport, H., Sardoschau, S., Steinmayr, A., & Sweetman, A. (2020). An introduction to the economics of immigration in OECD countries. *Canadian Journal of Economics/Revue Canadienne d'économique*, 53(4), 1365–1403. <https://doi.org/10.1111/caje.12482>
- Federated Farmers of New Zealand. (2020). *Farming salaries 2020: Remuneration summary report 2019/20*. www.fedfarm.org.nz/FFPublic/Support/RemReport/Copy_of_Copy_of_Farming_Salaries_2018.a_spx
- Jaumotte, F., Koloskova, K., & Saxena, S. C. (2016). *Impact of migration on income levels in advanced economies* [Spillover Notes No. 16/08]. International Monetary Fund. www.imf.org/en/Publications/Spillover-Notes/Issues/2016/12/31/Impact-of-Migration-on-Income-Levels-in-Advanced-Economies-44343
- Kambuta, J., Bicknell, K., Edwards, P., & Tipples, R. (2016). *Measuring the integration of migrant dairy workers into New Zealand*. www.researchgate.net/publication/312580423_Measuring_the_Integration_of_Migrant_Dairy_Workers_into_New_Zealand
- Lewis, E. (2011). Immigration, skill mix, and capital skill complementarity. *The Quarterly Journal of Economics*, 126(2), 1029–1069. <https://doi.org/10.1093/qje/qjr011>
- Lewis, G., Garden, S., Shafiee, H., Simmons, G., & Smith, J. (2021). *Frontier firms: Four industry case studies* [Working Paper No. 2021/02]. NZPC. www.productivity.govt.nz/inquiries/frontier-firms
- Longhi, S., Nijkamp, P., & Poot, J. (2010). Joint impacts of immigration on wages and employment: Review and meta-analysis. *Journal of Geographical Systems*, 12(4), 355–388. <https://doi.org/10.1007/s10109-010-0111-y>
- Maré, D. C., Fabling, R., & Stillman, S. E. (2010). *The impact of immigration and local workforce characteristics on innovation* [Economic Impacts of Immigration Working Paper]. Motu Economic and Public Policy Research. <https://hdl.handle.net/10863/2715>
- Maré, D. C., & Graham, D. J. (2013). Agglomeration elasticities and firm heterogeneity. *Journal of Urban Economics*, 75, 44–56. <https://doi.org/10.1016/j.jue.2012.12.002>
- Maré, D. C., & Stillman, S. (2009). *The impact of immigration on the labour market outcomes of New Zealanders* [Motu Working Paper 09-11]. Motu Economic and Public Policy Research. http://motu-www.motu.org.nz/wpapers/09_11.pdf
- Maré, D. C., Stillman, S., & Morten, M. (2007). *Settlement patterns and the geographic mobility of recent migrants to New Zealand* [Motu Working Paper 07-11]. Motu Economic and Public Policy Research. <https://doi.org/10.1080/00779950709558508>
- MBIE. (n.d.). *Addressing temporary migrant worker exploitation*. Retrieved 1 October 2021, from www.mbie.govt.nz/immigration-and-tourism/immigration/temporary-migrant-worker-exploitation-review/
- MBIE. (2018). *Impact of temporary migration on employment and earnings of New Zealanders: Update of 2013 analysis*. www.mbie.govt.nz/dmsdocument/4241-impact-of-temporary-migration-on-employment-earnings-new-zealanders
- McLeod, K., Fabling, R., & Maré, D. C. (2014). *Hiring new ideas: International migration and firm innovation in New Zealand* [Motu Working Paper 14-14]. Motu Economic and Public Policy Research. <https://doi.org/10.2139/ssrn.2531479>
- McLeod, K., & Maré, D. C. (2013). *The rise of temporary migration in New Zealand and its impact on the labour market*. MBIE. <http://hdl.voced.edu.au/10707/270691>
- Melo, P. C., Graham, D. J., & Noland, R. B. (2009). A meta-analysis of estimates of urban agglomeration economies. *Regional Science and Urban Economics*, 39(3), 332–342.
- Ministry of Education & MBIE. (2016). *Skills in New Zealand and around the world: Survey of adult skills (PIAAC)*. www.educationcounts.govt.nz/_data/assets/pdf_file/0003/173514/Skills-in-New-Zealand-and-Around-the-World-Aug-2018.pdf

- Nana, G., Sanderson, K., & Hodgson, R. (2009). *Economic impacts of immigration: Scenarios using a computable general equilibrium model of the New Zealand economy* [Economic impacts of immigration Working Paper series]. Department of Labour. www.gtap.agecon.purdue.edu/resources/download/4659.pdf
- New Zealand Digital Skills Forum. (2021). *Digital skills Aotearoa: Digital skills for our digital future*. https://digitaltechitp.nz/wp-content/uploads/sites/31/2021/01/Digital-Skills-Aotearoa-Report-2021_online.pdf
- Nunns, H., Bedford, C., & Bedford, R. (2019). *RSE impact study: New Zealand stream report*. MBIE. www.immigration.govt.nz/documents/statistics/rse-impact-study-new-zealand-stream-report.pdf
- NZ Tech & MBIE. (n.d.). *Digital Tech ITP*. Retrieved 28 October 2021, from <https://digitaltechitp.nz/>
- New Zealand Productivity Commission (NZPC). (2012). *Housing affordability inquiry*. www.productivity.govt.nz/inquiries/housing-affordability/
- NZPC. (2017). *Better urban planning: Final report*. www.productivity.govt.nz/inquiries/better-urban-planning
- NZPC. (2019a). *Employment, labour markets and income* [Draft report 2]. www.productivity.govt.nz/inquiries/technology-and-the-future-of-work/
- NZPC. (2019b). *Training New Zealand's workforce—Technological change and the future of work* [Draft report 3]. www.productivity.govt.nz/assets/Documents/da611be657/Draft-report-3_Training-New-Zealands-workforce-v2.pdf
- NZPC. (2020). *Technological change and the future of work* [Final report]. www.productivity.govt.nz/inquiries/technology-and-the-future-of-work
- NZPC. (2021a). *International migration to New Zealand: Historical themes & trends* [Working Paper 2021/04]. www.productivity.govt.nz/intl-migration-history
- NZPC. (2021b). *Primer to New Zealand's immigration system* [Working paper 2021/06]. www.productivity.govt.nz/immigration-primer
- NZPC. (2021c). *Productivity by the numbers*. www.productivity.govt.nz/assets/Documents/productivity-by-the-numbers/Productivity-by-the-numbers.pdf
- NZPC. (2021d). *The wider wellbeing effects of immigration* [Working Paper 2021/07]. www.productivity.govt.nz/immigration-wellbeing
- OECD. (n.d.-a). *Medical graduates (indicator)*. Retrieved 11 October 2021, from <https://data.oecd.org/healthres/medical-graduates.htm#indicator-chart>
- OECD. (n.d.-b). *Nursing graduates (indicators)*. Retrieved 11 October 2021, from <https://data.oecd.org/healthres/nursing-graduates.htm#indicator-chart>
- OECD. (2017). *Education at a glance 2017: OECD indicators*. OECD Publishing. <http://dx.doi.org/10.1787/eag-2017-en>
- OECD. (2018). *International migration outlook 2018 (42nd edition)*. OECD Publishing. https://doi.org/10.1787/migr_outlook-2018-en
- OECD. (2020). *International migration outlook 2020* (44th ed.). OECD Publishing. <https://doi.org/10.1787/ec98f531-en>
- Palmer, C., & Varcoe, J. (2021). *Settling in New Zealand: Migrant survey trends from 2015 to 2019*. Premium Research.
- Pawson, E. & The Biological Economies Team. (2018). *The new biological economy: How New Zealanders are creating value from the land*. Auckland University Press.
- Peri, G. (2012). The effect of immigration on productivity: Evidence from U.S. states. *The Review of Economics and Statistics*, 94(1), 348–358. https://doi.org/10.1162/REST_a_00137
- Peri, G. (2016). Immigrants, productivity, and labor markets. *Journal of Economic Perspectives*, 30(4), 3–30. <https://doi.org/10.1257/jep.30.4.3>

- Peri, G., & Sparber, C. (2009). Task specialization, immigration, and wages. *American Economic Journal: Applied Economics*, 1(3), 135–169. <https://doi.org/10.1257/app.1.3.135>
- Roodman, D. (2014). *The domestic economic impacts of immigration* [SSRN 3635860]. SSRN. <https://doi.org/10.2139/ssrn.3635860>
- Sin, I., Fabling, R., Jaffe, A. B., Maré, D. C., & Sanderson, L. (2014). *Exporting, innovation and the role of immigrants* [Motu Working Paper 14-15]. Motu Economic and Public Policy Research. <https://doi.org/10.2139/ssrn.2537149>
- Stats NZ. (n.d.). *Permanent & long-term migration by every country of residence and citizenship (Annual-Dec)*. Retrieved 3 August 2021, from <http://infoshare.stats.govt.nz>
- Stats NZ. (2017). *Internal migration estimates using linked administrative data: 2014-17*. Stats NZ. www.stats.govt.nz/reports/internal-migration-estimates-using-linked-administrative-data-201417
- Stats NZ. (2021). *Productivity measures statistics* [Version 62]. www.stats.govt.nz/information-releases/productivity-statistics-19782020
- Stillman, S., & Maré, D. C. (2007). *The impact of immigration on the geographic mobility of New Zealanders* [CReAM Discussion Paper No 14/07]. <https://doi.org/10.2139/ssrn.984807>
- Stringer, C., & Michailova, S. (2019). *Understanding the exploitation of temporary migrant workers: A comparison of Australia, Canada, New Zealand and the United Kingdom* [Final report - not government policy]. University of Auckland. www.mbie.govt.nz/dmsdocument/7110-understanding-the-exploitation-of-temporary-migrant-workers-a-comparison-of-australia-canada-new-zealand-and-the-united-kingdom
- Tipples, R., Trafford, S., & Callister, P. (2010). *The factors which have resulted in migrant workers being 'essential' workers on the New Zealand dairy farms*. Victoria University of Wellington. www.academia.edu/28162487/The_Factors_Which_Have_Resulted_in_Migrant_Workers_Being_Essential_Workers_on_New_Zealand_Dairy_Farms
- Treen, M. (2021, May 12). How can the broken immigration system be fixed? *BusinessDesk*. <https://businessdesk.co.nz/article/opinion/how-can-the-broken-immigration-system-be-fixed>
- Tse, M. M. H., & Maani, S. A. (2017). The impacts of immigration on earnings and employment: Accounting for effective immigrant work experience. *Australian Journal of Labour Economics*, 20(1), 291–317.
- Wilson, P., & Fry, J. (2021). *Picking cherries: Evidence on the effects of seasonal migrants on the New Zealand economy*. NZIER. www.productivity.govt.nz/inquiries/frontier-firms
- World Bank. (2021). *World Development Indicators (WDI)* [Dataset]. <https://databank.worldbank.org/source/world-development-indicators>

Data appendix

This data appendix is the Commission's preliminary analysis of how migrants are employed in the New Zealand labour market. The analysis is in three sections tackling three broad questions.

- Section 1, figures 1-22 provides data on how the holders of work visas of each type are employed across industries, and how has this changed between 2012 and 2019. As an example, this analysis can answer which industries are making greater use of Working Holiday visa workers or Essential Skills visa workers.
- Section 2, figures 23-60 provides data, by visa type, on the numbers of migrant workers (and their proportion of all workers) employed in each industry, and how this has changed between 2012 and 2019. As an example, this analysis shows holders of which visa types are employed in the Accommodation and Food Service industry.
- Section 3, figures 61-70 is an occupation and skills analysis for temporary 'Essential Skills' visa approvals, temporary 'Work to Residence' visa approvals and residence class 'Skilled Migrant' visa approvals in 2012 and 2019. This analysis describes how the overall skills and occupations have changed within these visa classes between 2012 and 2019.

Notes on the data sources

The analysis used the publicly available MBIE Migration Data Explorer (MDE) and data made available to the Commission via the MBIE Migrant Employment Dataset (MED). Information on the MDE is available online here: https://mbienz.shinyapps.io/migration_data_explorer/.

The MED dataset combines Immigration New Zealand's visa data (the basis of the MDE) with Pay-As-You-Earn (PAYE) tax data via Statistics New Zealand Integrated Data Infrastructure (IDI). As the IDI is designed for research purposes, the results do not represent official statistics. The privacy requirements related to microdata outputs are met by adhering to Stats NZ's microdata output requirements. In practice this means that all inputs are anonymised, and all outputs have had random rounding to base three applied. Alongside this, all small counts have been suppressed.

The MED provides a measure of how many people are engaged in the labour market each month, by industry (up to 96 industry subdivisions from the Australian and New Zealand Standard Industrial Classification), visa type (as recorded by Immigration New Zealand), geographic area (at the regional council level) and by some demographic characteristics.

The MED, because it uses PAYE data, only covers waged and salaried people. It does not cover unemployed people, or people who are self-employed. There is also no wage or salary information provided and no measures of hours worked available. This means it is not possible to assess if the employed headcount is someone working full-time, part-time, or their income level per hour.

To establish the head-count number of people who fall into the specified categories for any given month, the MED assumes that:

- a person is considered to be on a given visa type for the month if they spent any time during the month on that visa type;
- a person is considered to be in a given region for the month if their residential address was listed in the region at any point in the month;
- a person is considered to be working in a given industry for the month if they receive any wages or salaries during the month from a business which is considered to be in that industry or if they receive wages or salaries from the same business for both the previous and the following months, and that business is considered to be in that industry; and

- a person is considered to be a recent resident if their residence in New Zealand is less than 5 years. After five years they are classified as a New Zealand citizen within the data set independent of their actual citizenship status.

In constructing the figures in this Appendix, the Commission decided:

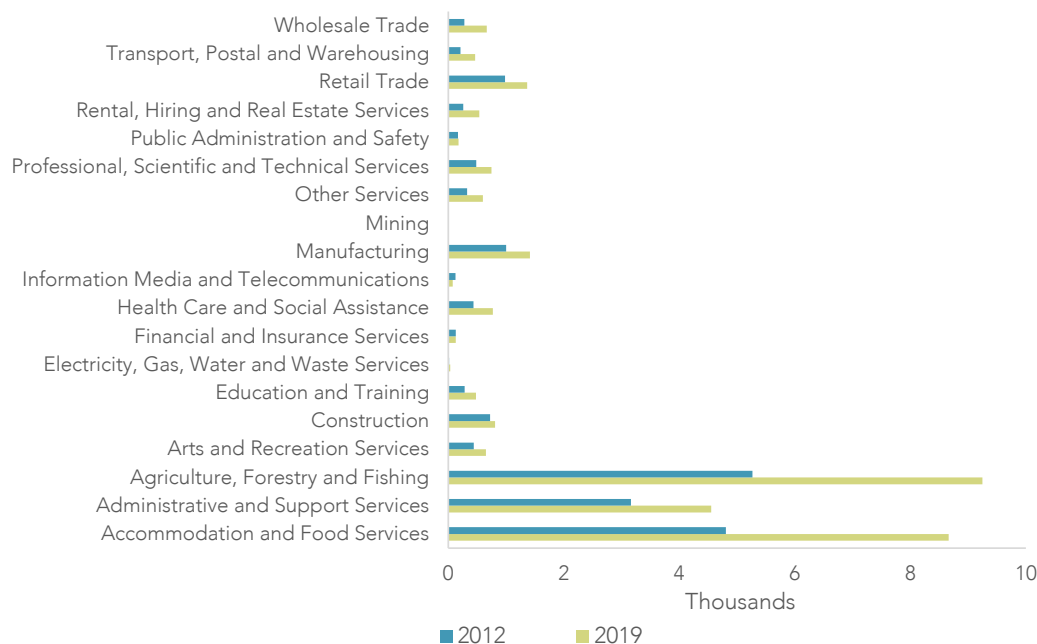
- not to use provisional or part year data;
- to use 2019 as the last year of the trend analysis, to avoid Covid-19 impacts; and
- to use the December month as the basis for the snapshot in each reference year.

This last decision masks some seasonal variation over the year, and some variation across different industries within a year - as some industries are more likely than others to require staff in December than in other months. This does not affect comparisons of trends across years for different industries.

Further information on the MED is available by contacting the Migration team, Evidence and Insights branch at migration_evidence_insights@mbie.govt.nz.

Section 1 Visual analysis of the employment of different visa holders by industry in 2012 and 2019

Figure 6 Comparison of the numbers of Temporary Working Holiday Visa holders employed by industry in 2012 and 2019

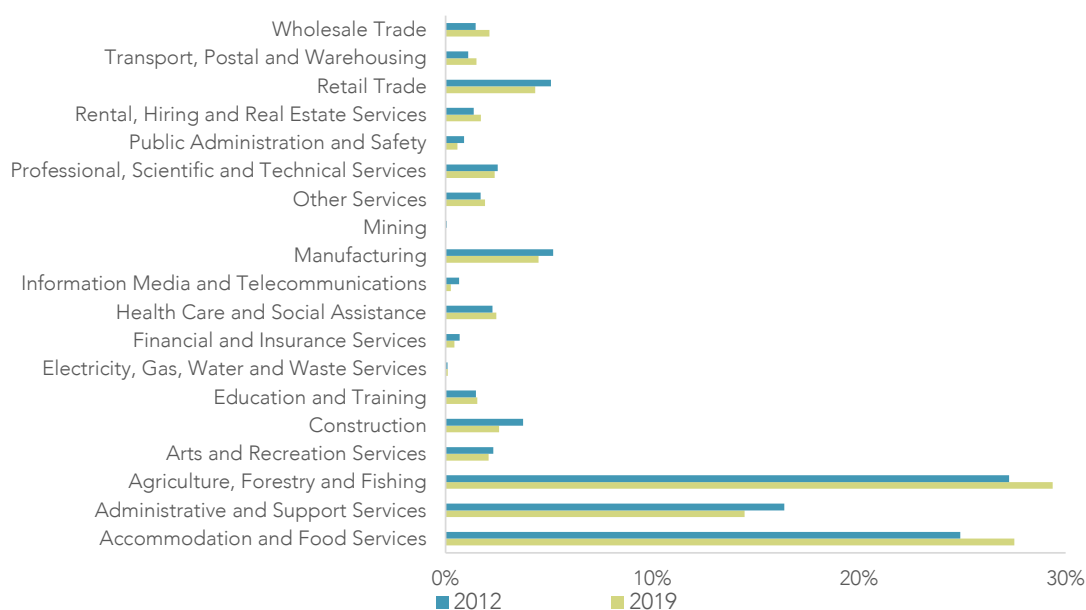


Source: MBIE Migrant Employment Dataset

Notes:

- Includes all those whose application criteria in the MED are classified as being on a bilateral Working Holiday Scheme visa but does not include those on WHS Extension visas.
- The total number of temporary Working Holiday Visa holders is the sum of all horizontal bars by year.

Figure 7 Comparison of temporary Working Holiday Visa holders employed by Industry as a percent of total temporary Working Holiday Visa employment in 2012 and 2019

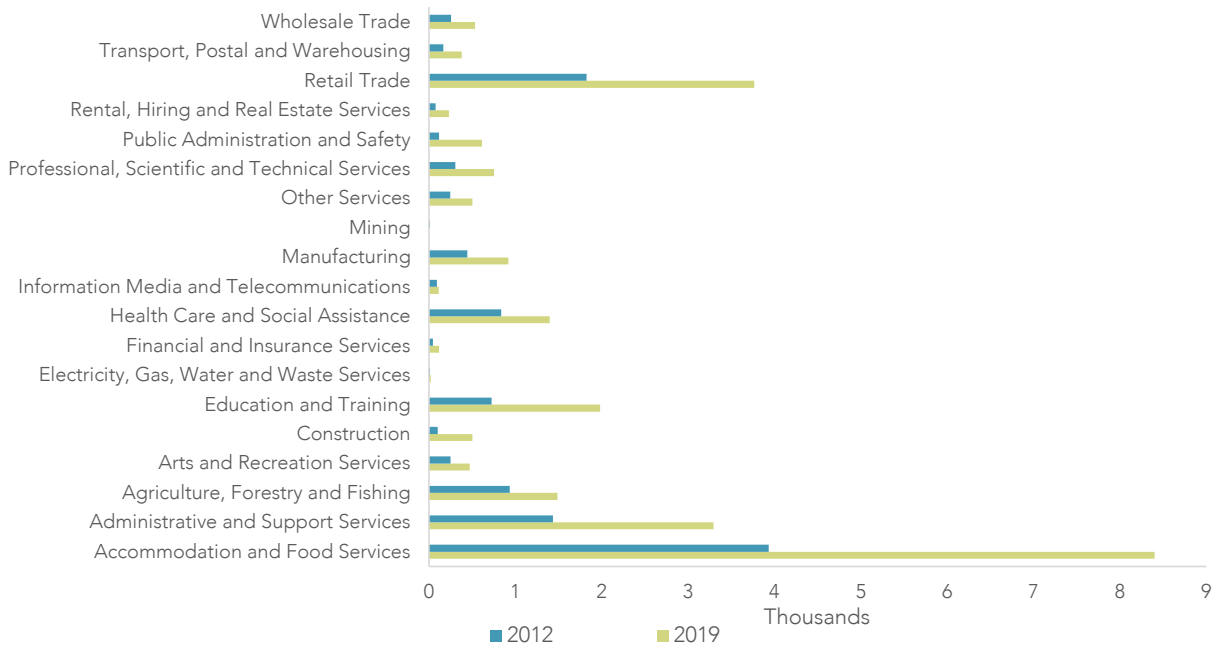


Source: MBIE Migrant Employment Data

Note:

- Includes all bilateral Working Holiday Scheme visa holders but does not include those on Working Holiday Scheme Extension visas.

Figure 8 Comparison of the numbers of temporary Student visa holders employed by Industry in 2012 and 2019

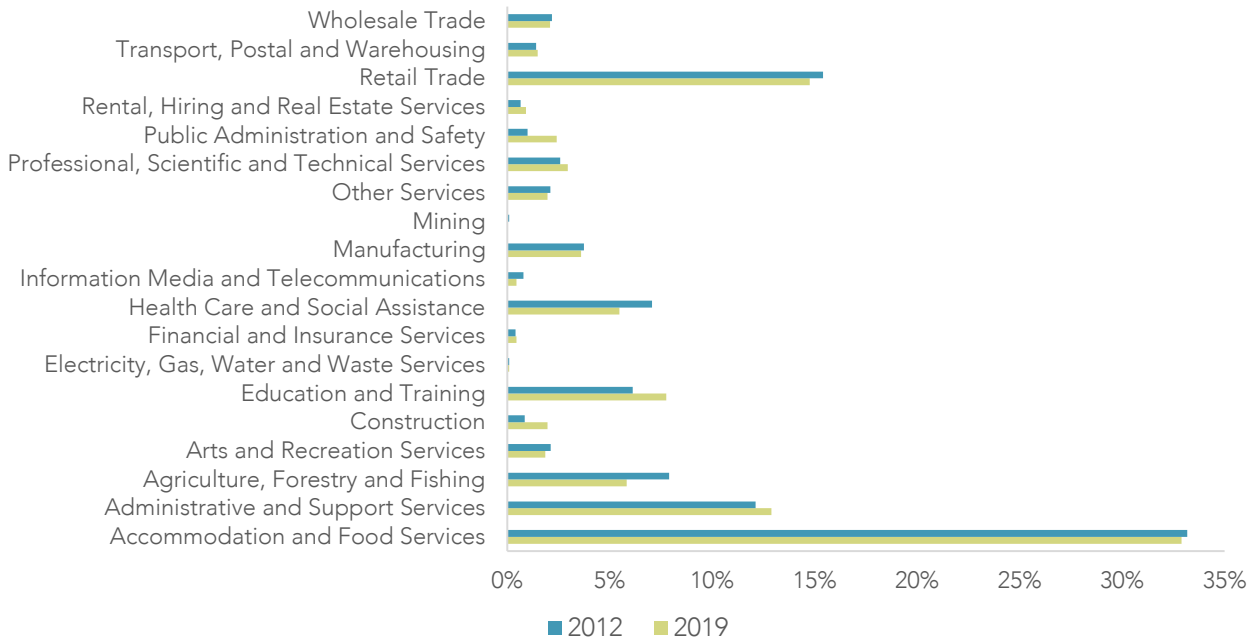


Source: MBIE Migrant Employment Data

Note:

1. The total number of temporary Student visa holders is the sum of all horizontal bars by year.

Figure 9 Comparison of temporary Student visa holders employed by Industry as a percent of total temporary Student visa employment in 2012 and 2019



Source: MBIE Migrant Employment Data

Figure 10 Comparison of the numbers of temporary Essential Skills visa holders employed by industry in 2012 and 2019

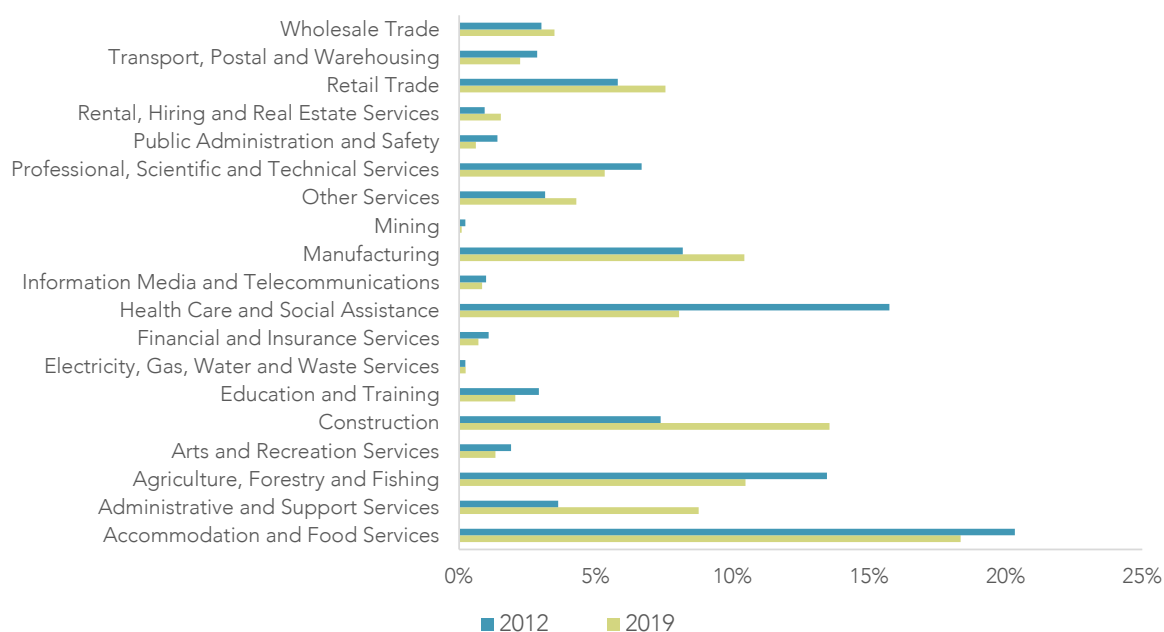


Source: MBIE Migrant Employment Data

Notes:

1. Includes all those whose application criteria in the MED are classified as Essential Skills, General, Approved in Principle, Essential Skills - Level 1, and Specialist Skills.
2. The total number of temporary Essential Skills visa holders is the sum of all horizontal bars by year.

Figure 11 Comparison of temporary Essential Skills visa holders employed by industry as a percent of total temporary Essential Skills visa employment in 2012 and 2019

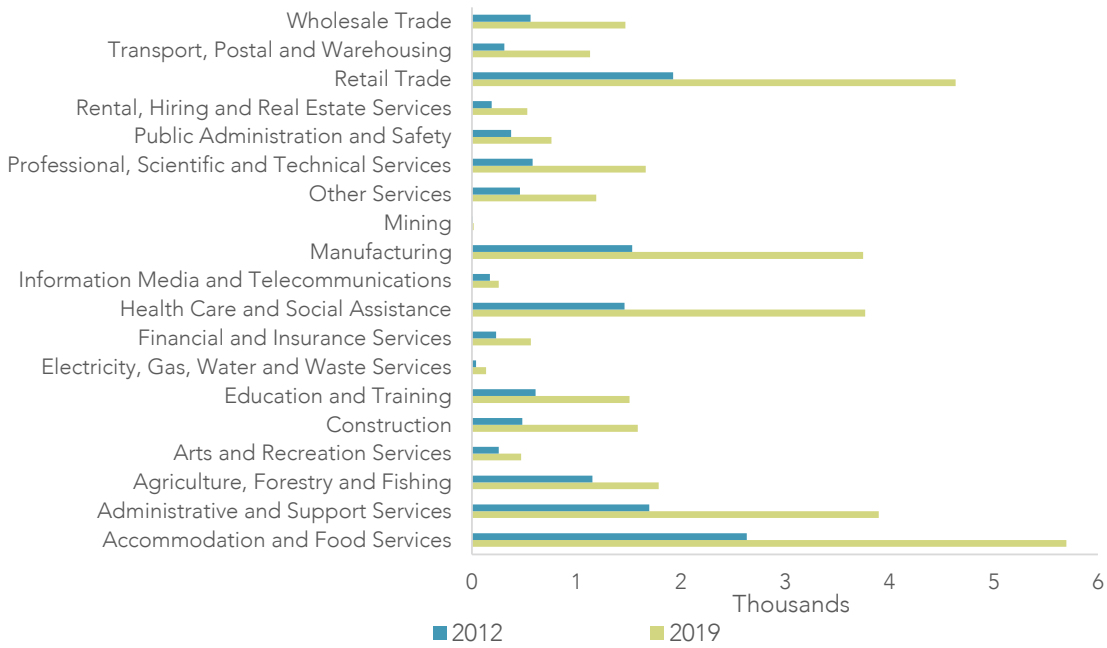


Source: MBIE Migrant Employment Data

Note:

1. Includes all those whose application criteria in the MED is classified as Essential Skills, General, Approved in Principle, Essential Skills - Level 1, and Specialist Skills.

Figure 12 Comparison of the numbers of temporary Family visa holders employed by industry in 2012 and 2019

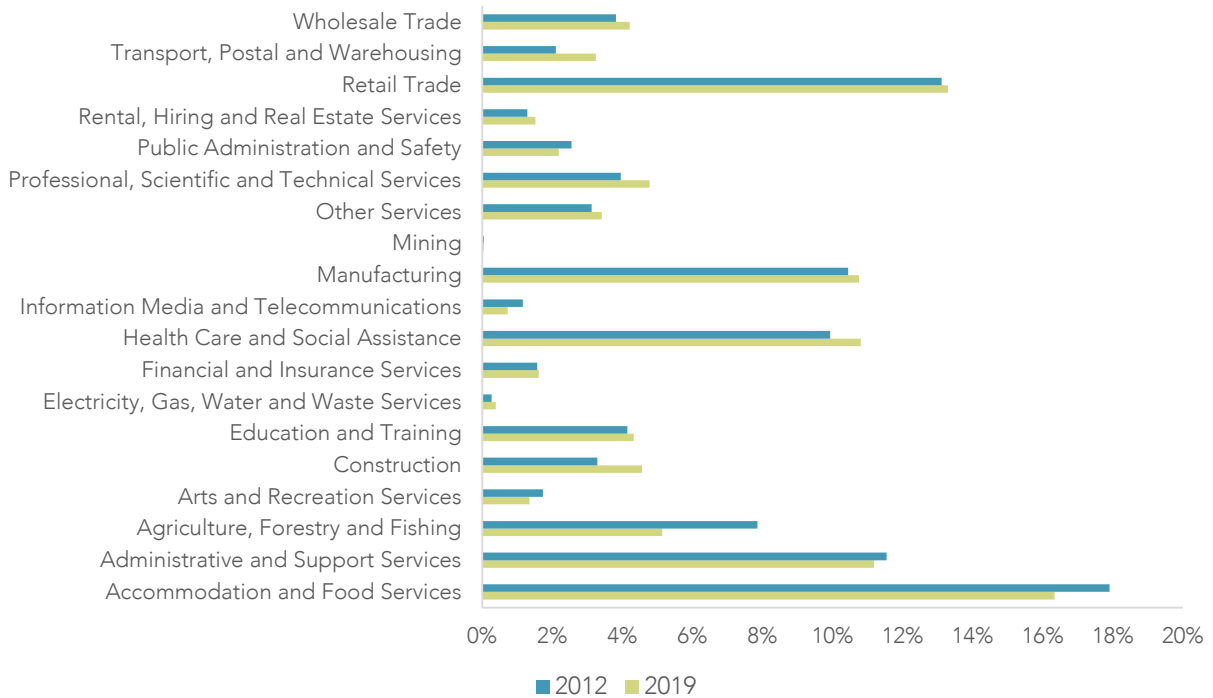


Source: MBIE Migrant Employment Data

Notes:

1. Includes all those in the MED whose application criteria is classified as Partner of a worker, Partnership, Partner of Student, Partner of NZAID Student, Partner of Entrepreneur, Spouse/Partner of Worker, Partnership deferral, Spouse of NZ cit/res, De factor partner of NZ cit/res, Fiance(e) of NZ cit/res, Child of NZ cit/res.
2. The total number of temporary Family visa holders is the sum of all horizontal bars by year, in 2019 = 34 900.

Figure 13 Comparison of temporary Family visa holders employed by industry as a percent of total temporary Family visa employment in 2012 and 2019

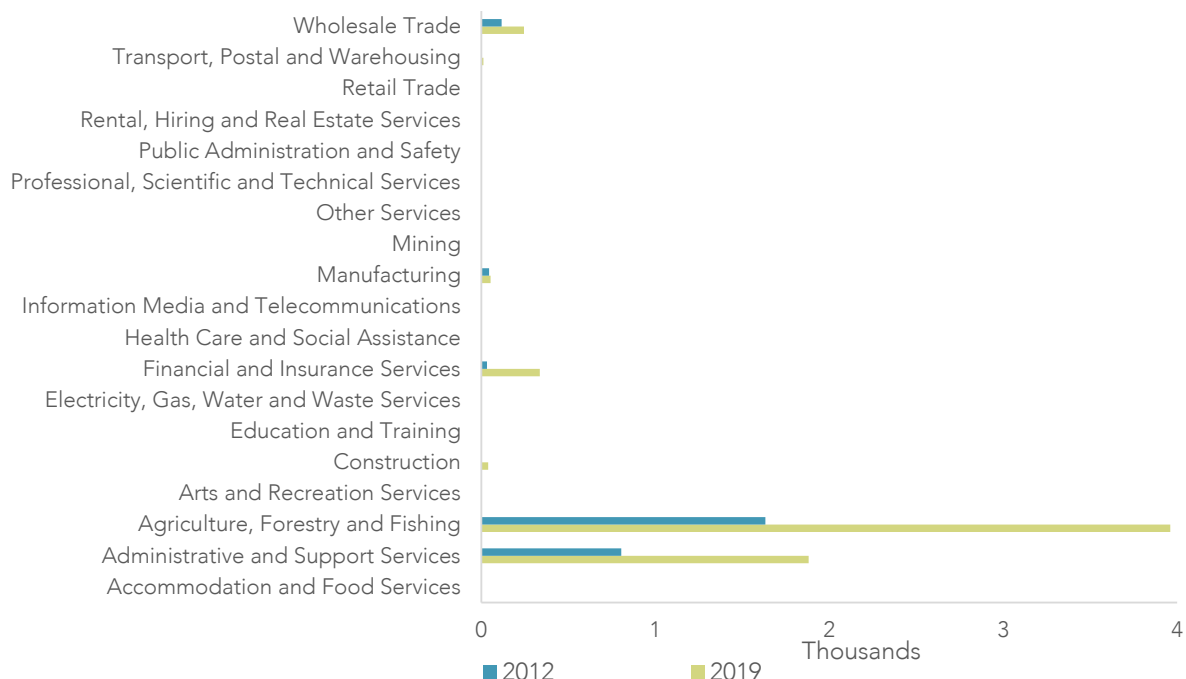


Source: MBIE Migrant Employment Data

Note:

1. Includes all those in the MED whose application criteria is classified as a Partner of a worker, Partnership, Partner of Student, Partner of NZAID Student, Partner of Entrepreneur, Spouse/Partner of Worker, Partnership deferral, Spouse of NZ cit/res, De factor partner of NZ cit/res, Fiance(e) of NZ cit/res, Child of NZ cit/res.

Figure 14 Comparison of the numbers of temporary Horticulture and Viticulture visa holders employed by industry in 2012 and 2019

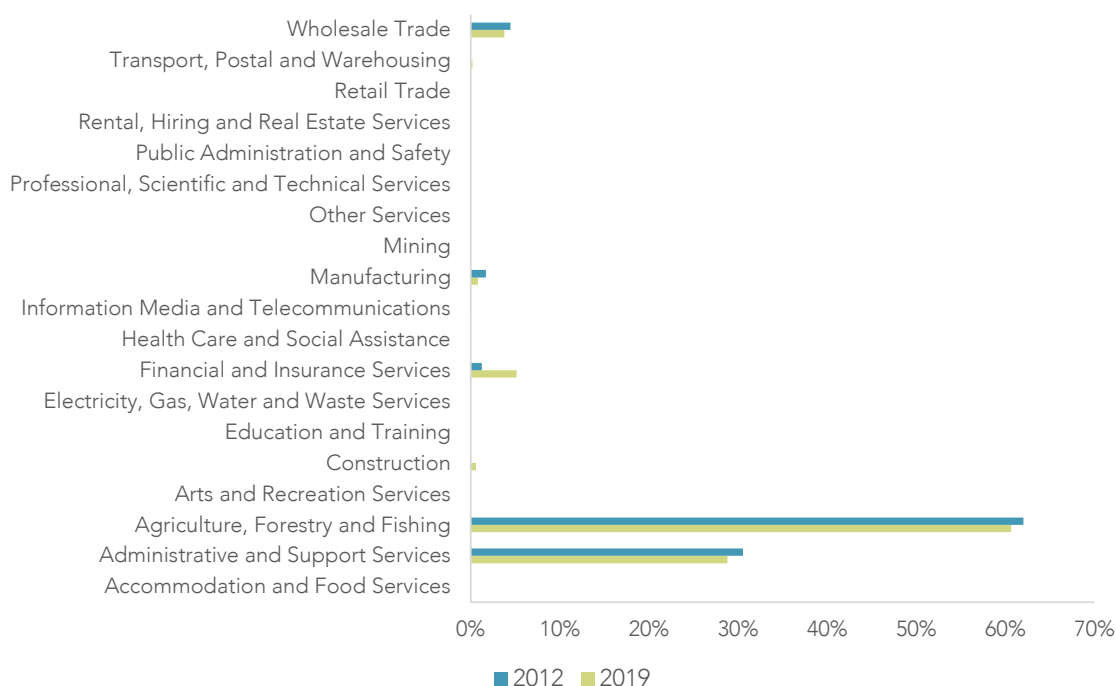


Source: MBIE Migrant Employment Data

Notes:

1. Includes all those in the MED whose application criteria is classified as Recognised Seasonal Employer, WHS Extension, Supplementary Seasonal Employment, Transitional Recognised Seasonal Employer.
2. The total number of temporary Horticultural and Viticultural visa holders is the sum of all horizontal bars by year, in 2019 = 6 500.

Figure 15 Comparison of temporary Horticulture and Viticulture visa holders employed by industry as a percent of total temporary Horticulture and Viticulture visa employment in 2012 and 2019

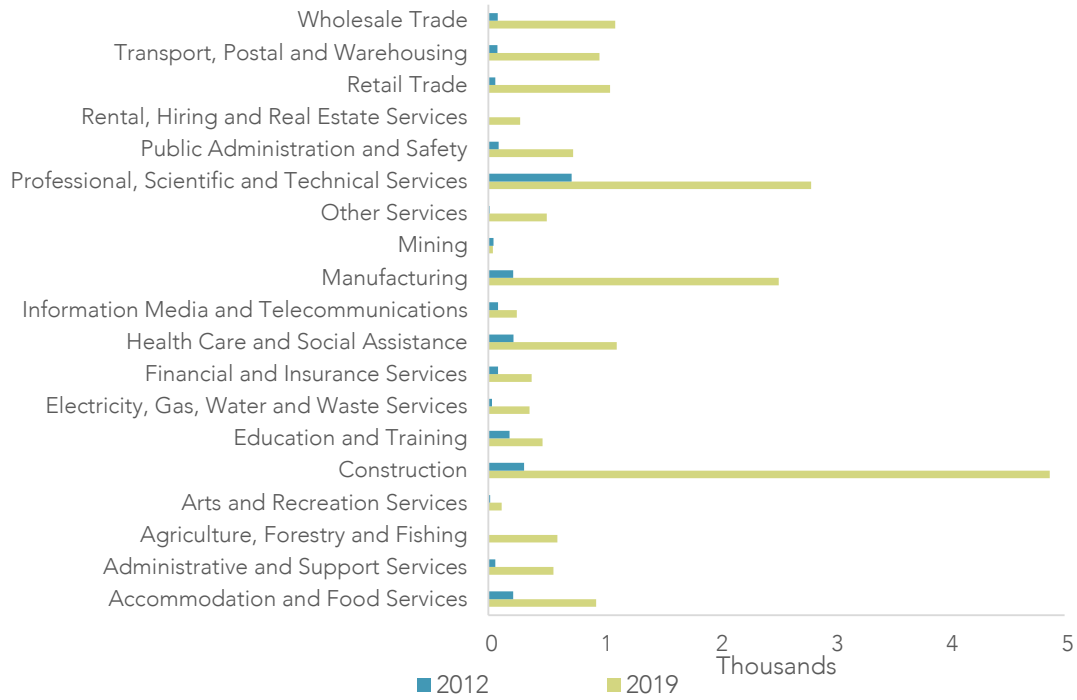


Source: MBIE Migrant Employment Data

Note:

Includes all those in the MED whose application criteria is classified as Recognised Seasonal Employer, WHS Extension, Supplementary Seasonal Employment, Transitional Recognised Seasonal Employer.

Figure 16 Comparison of the numbers of temporary Work to Residence visa holders employed by industry in 2012 and 2019

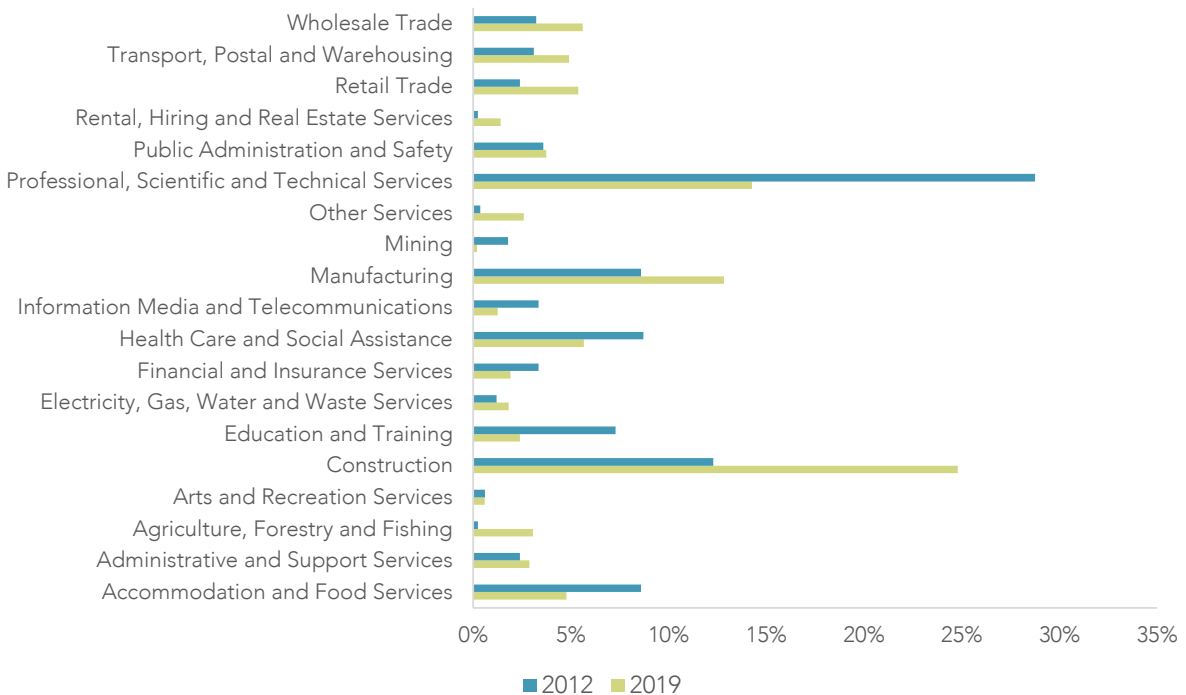


Source: MBIE Migrant Employment Data

Notes:

1. Includes all those in the MED whose application criteria is classified as Talent Accredited Employer, Long Term Skill Shortage List Occupation, South Island Contribution, Skilled Migrant, Talent - Arts, Culture and Sports, Global Impact Visa, Job Search.
2. The total number of temporary Work to Residence visa holders is the sum of all horizontal bars by year, in 2019 = 19 600.

Figure 17 Comparison of temporary Work to Residence visa holders employed by industry as a percent of total temporary Work to Residence visa employment in 2012 and 2019

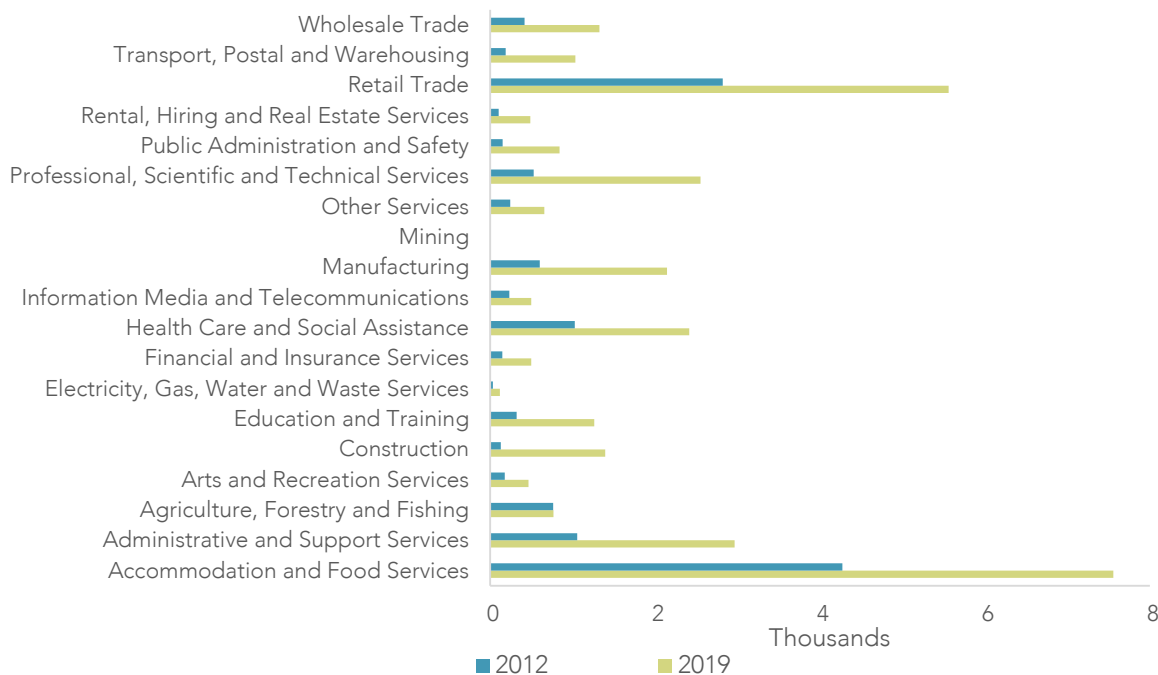


Source: MBIE Migrant Employment Data

Note:

1. Includes all those in the MED whose application criteria is classified as Talent Accredited Employer, Long Term Skill Shortage List Occupation, South Island Contribution, Skilled Migrant, Talent - Arts, Culture and Sports, Global Impact Visa, Job Search.

Figure 18 Comparison of the numbers of temporary Post Study Work visa holders employed by industry in 2012 and 2019



Source: MBIE Migrant Employment Data

Notes:

1. Includes all those in the MED whose application criteria is classified as Post-study - Open, Post-Study - Employer Assisted, and Practical experience post study visa.
2. The total number of temporary Post Study Work visa holders is the sum of all horizontal bars by year, in 2019 = 32 600.

Figure 19 Comparison of temporary Post Study Work visa holders employed by industry as a percent of total temporary Post Study Work visa employment in 2012 and 2019



Source: MBIE Migrant Employment Data

Note:

1. Includes all those in the MED whose application criteria is classified as Post-study - Open, Post-Study - Employer Assisted, and Practical experience post study visa.

Figure 20 Comparison of the numbers of temporary Other visa holders employed by industry in 2012 and 2019

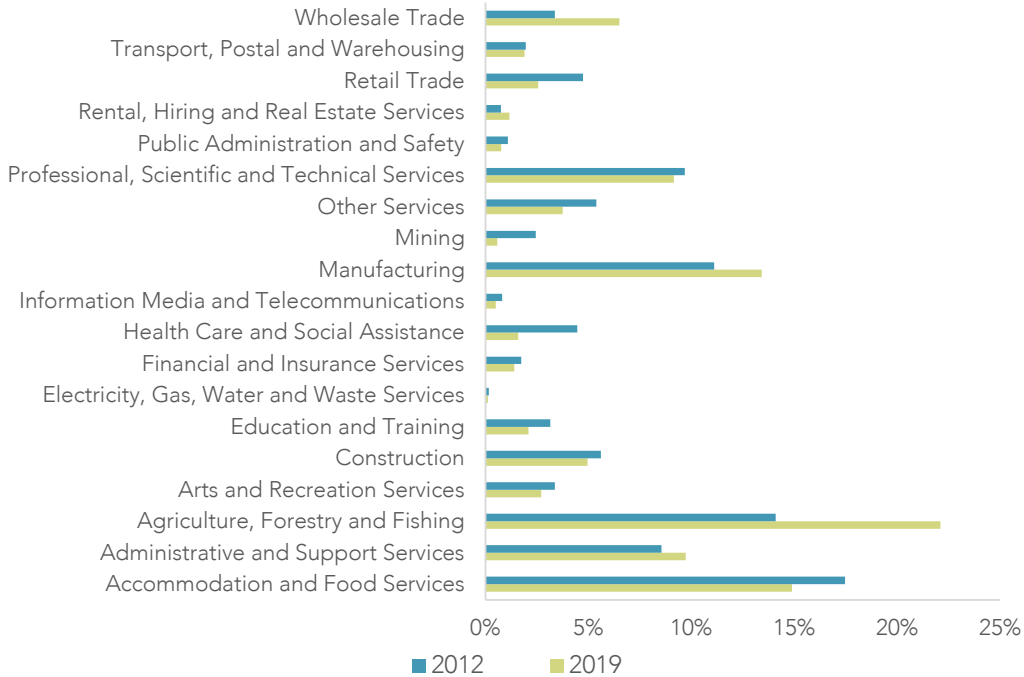


Source: MBIE Migrant Employment Data

Notes:

1. Includes all those in the MED whose application criteria is not listed in the temporary visa categories above. This includes (but is not limited to) Specific Purpose or Event, Section 61, Religious Worker, Crew of fishing vessel, and Exchange Work application criteria, as well as Variations of Conditions visas which cannot be traced back to an original Work visa.
2. The total number of temporary Other visa holders is the sum of all horizontal bars by year, in 2019 = 7 700.

Figure 21 Comparison of temporary Other visa holders employed by industry as a percent of total temporary Other visa employment in 2012 and 2019

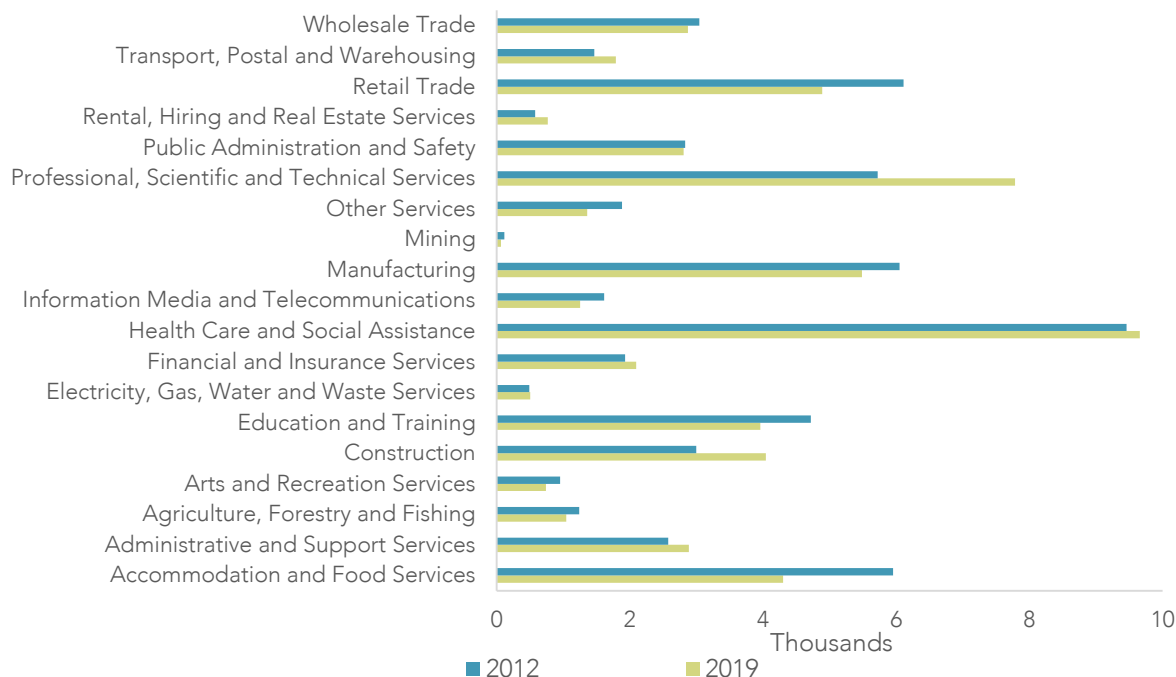


Source: MBIE Migrant Employment Data

Note:

1. Includes all those in the MED whose application criteria is not listed in the temporary visa categories above. This includes (but is not limited to) Specific Purpose or Event, Section 61, Religious Worker, Crew of fishing vessel, and Exchange Work application criteria, as well as Variations of Conditions visas which cannot be traced back to an original Work visa.

Figure 22 Comparison of recent residents on a Skilled Migrant Category visa employed by industry in 2012 and 2019

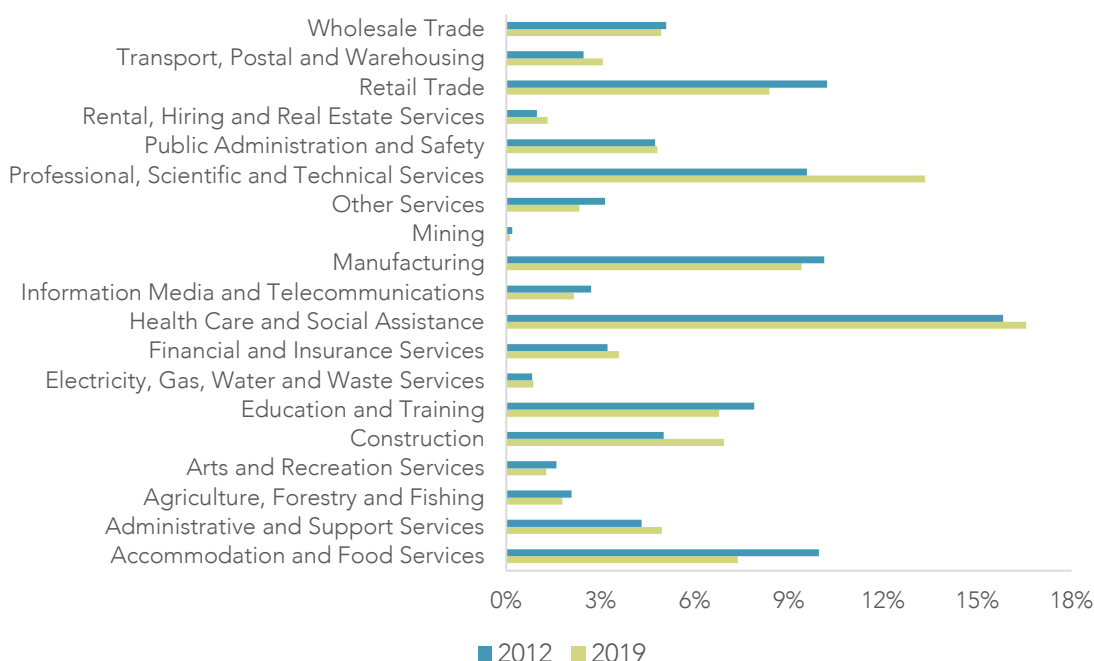


Source: MBIE Migrant Employment Data

Notes:

1. Includes all those in the MED whose application criteria is classified as a Skilled Migrant.
2. Recent resident in the MED only includes those residing in New Zealand for their first five years. After five years the visa category is moved into the NZ Citizen category irrespective of citizenship status.
3. The total number of recent resident Skilled Migrant Category visa holders is the sum of all horizontal bars by year, in 2019 = 58 300.

Figure 23 Comparison of recent resident Skilled Migrant Category visa holders employed by industry as a percent of total recent resident Skilled Migrant Category employment in 2012 and 2019

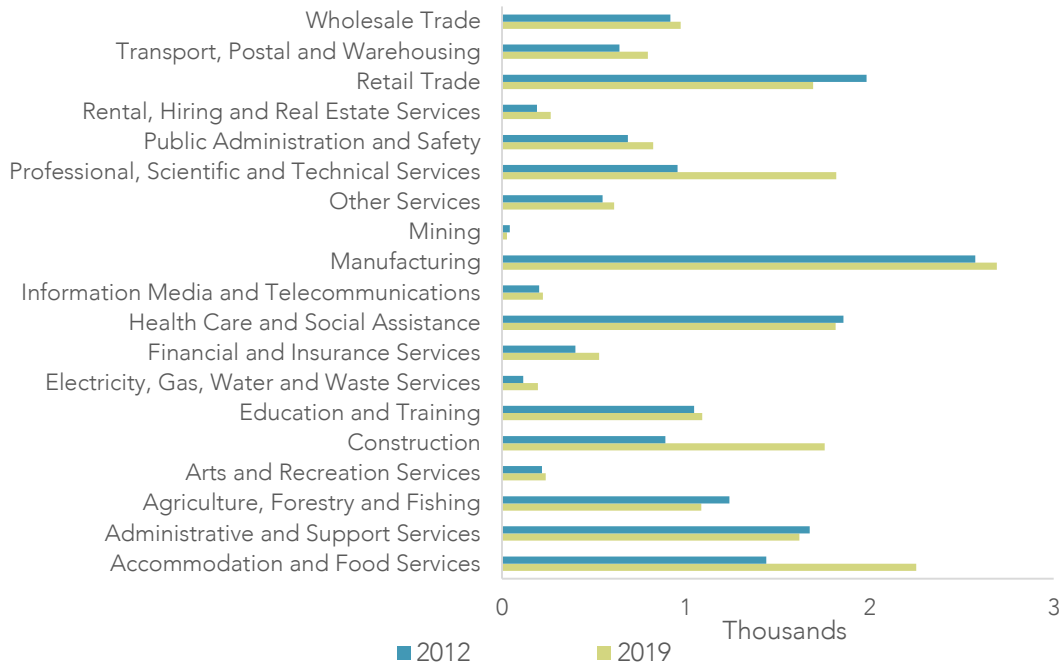


Source: MBIE Migrant Employment Data

Notes:

1. Includes all those in the MED whose application criteria is classified as a Skilled Migrant.
2. Recent resident in the MED only includes those residing in New Zealand for their first five years. After five years the visa category is moved into the NZ citizen and long-term resident category.

Figure 24 Comparison of recent residents on any Other residence class visa (not Skilled Migrant Category) employed by industry in 2012 and 2019

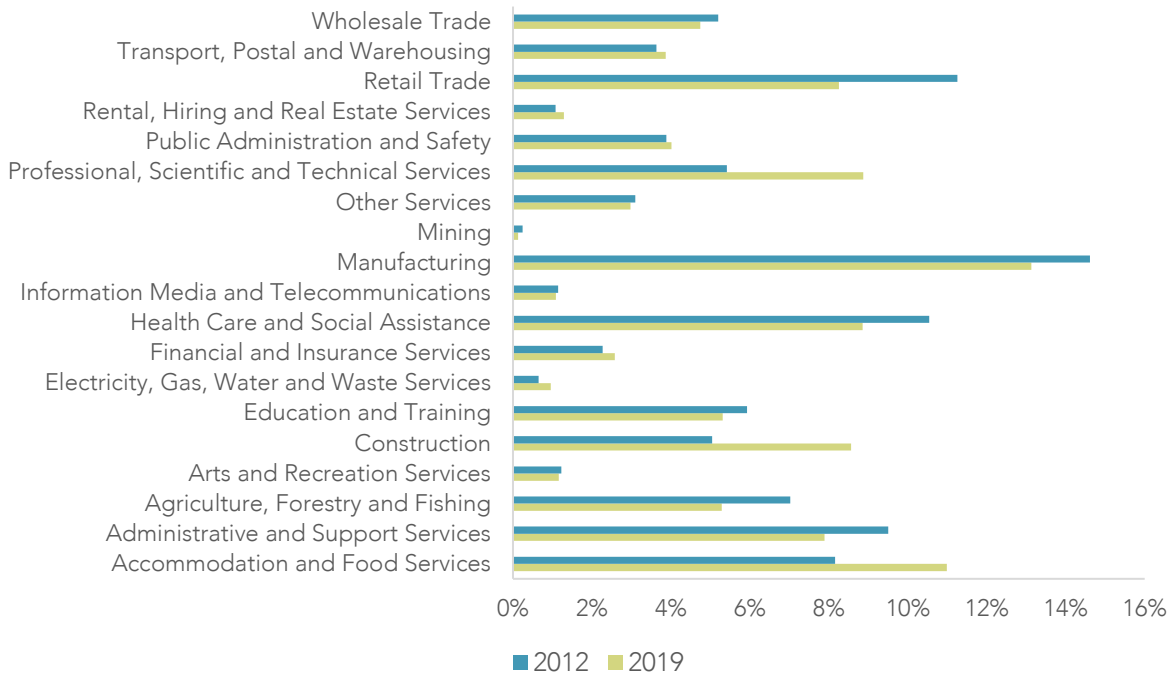


Source: MBIE Migrant Employment Data

Notes:

1. Includes all those in the MED on a residence class visa that is not a skilled migrant category visa.
2. Recent residents only includes those residing in New Zealand for their first five years. After five years the visa category is moved in the MED into the NZ Citizen category irrespective of citizenship status.
3. The total number of Recent Residents on any other residence class visa holders (not SMC) is the sum of all horizontal bars by year, in 2019 = 20 500.

Figure 25 Comparison of recent residents on any Other residence class visa (not Skilled Migrant Category) employed by industry as a percent of total employment of recent residents on any Other residence class visa in 2012 and 2019

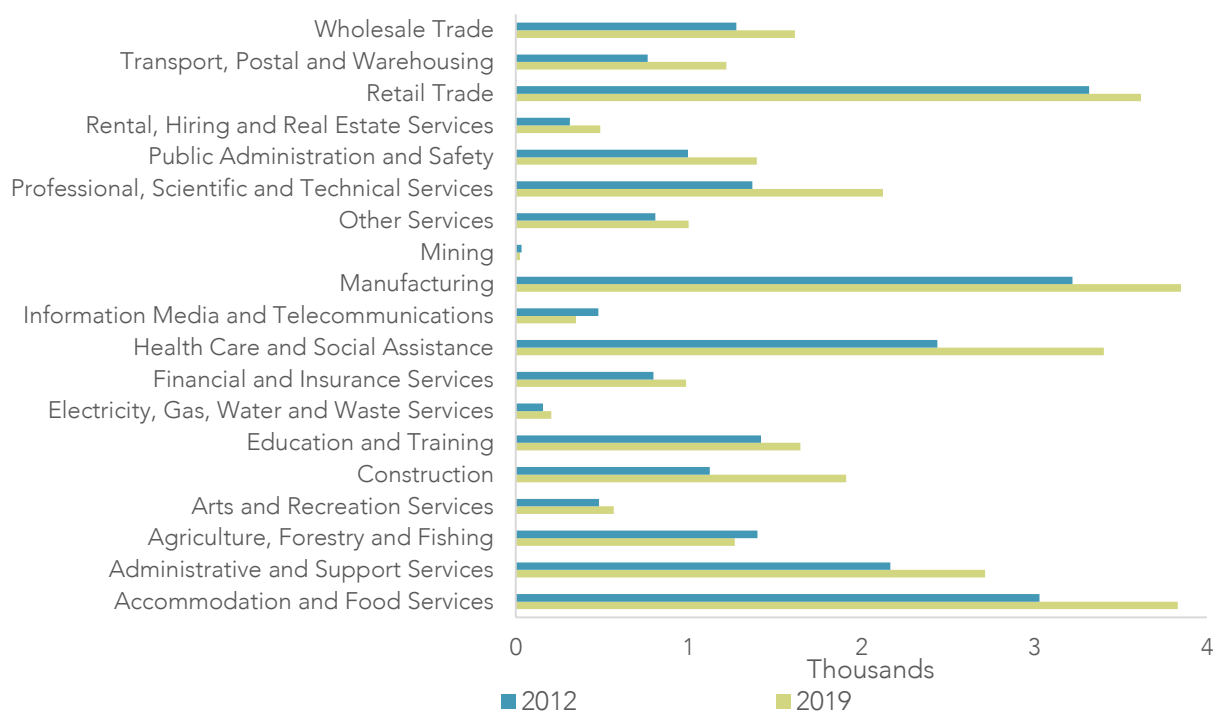


Source: MBIE Migrant Employment Data

Notes:

1. Includes all those in the MED on a residence class visa that are not on a Skilled Migrant Category visa.
2. Recent residents only includes those residing in New Zealand for their first five years. After five years the visa category is moved in the MED into the NZ Citizen category irrespective of citizenship status.

Figure 26 Comparison of Other visa holders employed by industry in 2012 and 2019

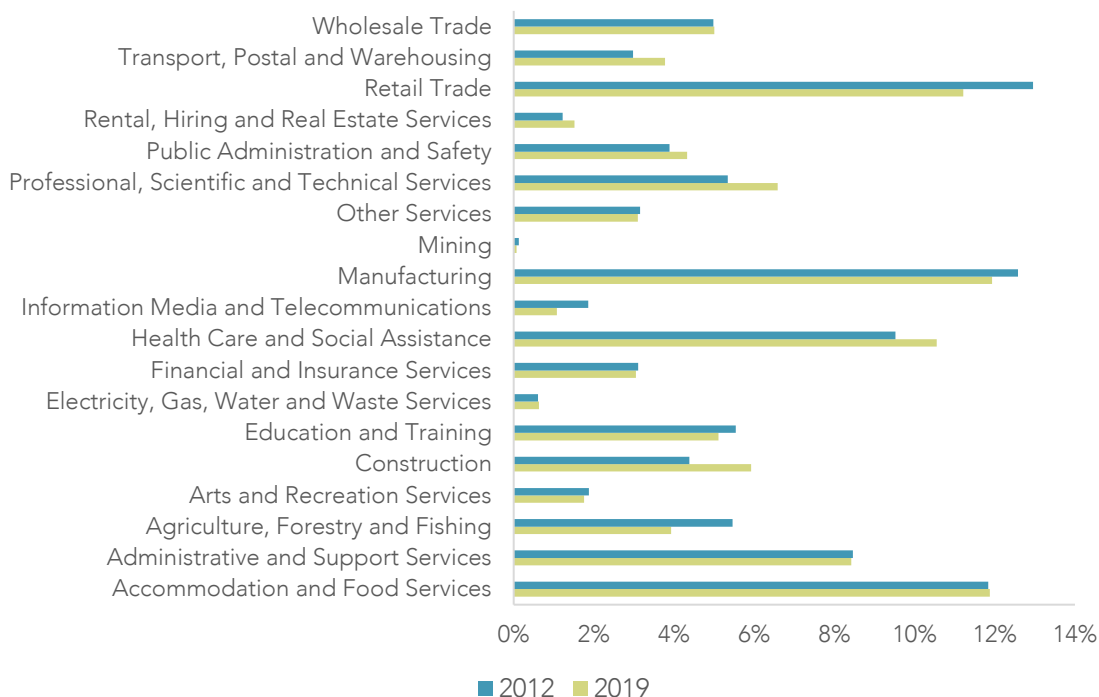


Source: MBIE Migrant Employment Data

Notes:

1. Other visas include any visas that are not residence, work, or student visas. This includes (but is not limited to) Diplomatic, Official, Consular, and Military visas.
2. The total number of other visa holders is the sum of all horizontal bars by year, in 2019 = 32 300.

Figure 27 Comparison of Other class visa holders employed by industry as a percent of the total employment of Other class visa holders in 2012 and 2019.



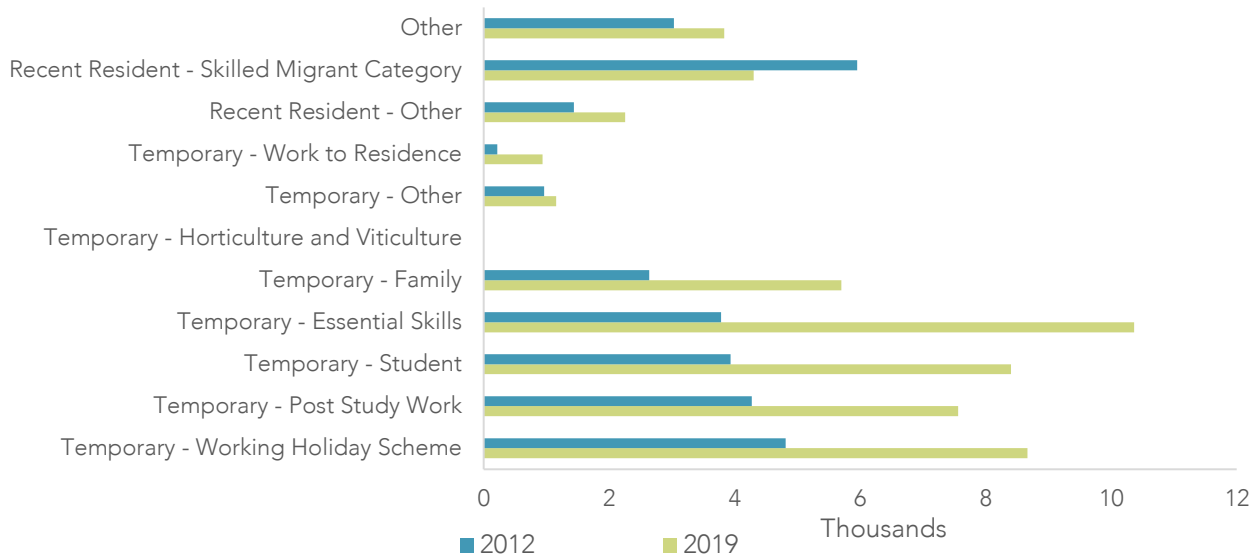
Source: MBIE Migrant Employment Data

Note:

1. Other visas include any visas that are not Residence, Work, or Student visas. This includes (but is not limited to) Diplomatic, Official, Consular, and Military visas.

Section 2 Visual comparison of industry employment by different visa types in 2012 and 2019

Figure 28 Employment in the accommodation and food service industry by visa type

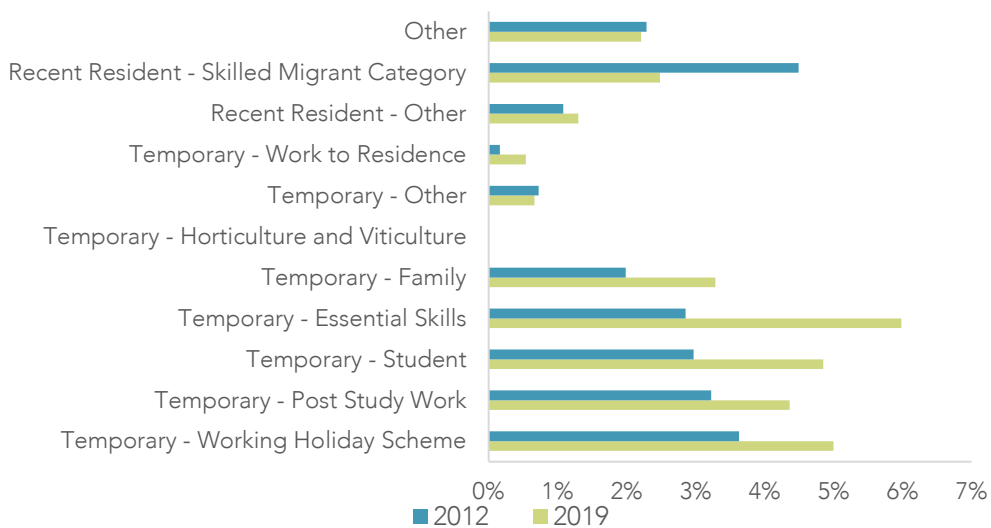


Source: MBIE Migrant Employment Data.

Notes:

1. The total industry employment of visa holders is the sum of all horizontal bars by year.
2. Rec Resident only includes the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 29 Percentage of total accommodation and food services industry employment filled by visa type

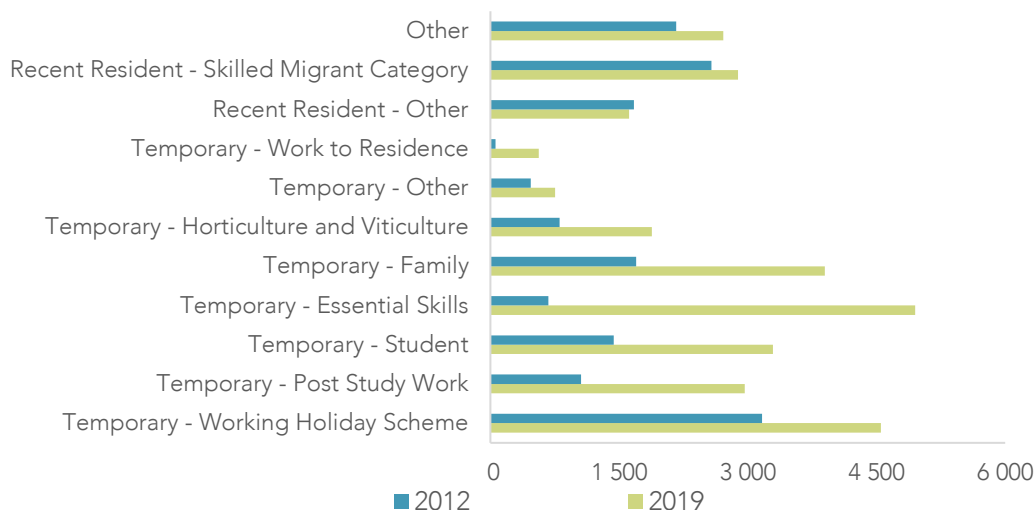


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012 = 23%, in 2019=31%.
2. Recent residents only includes the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 30 Employment in the administrative and support services industry by visa type

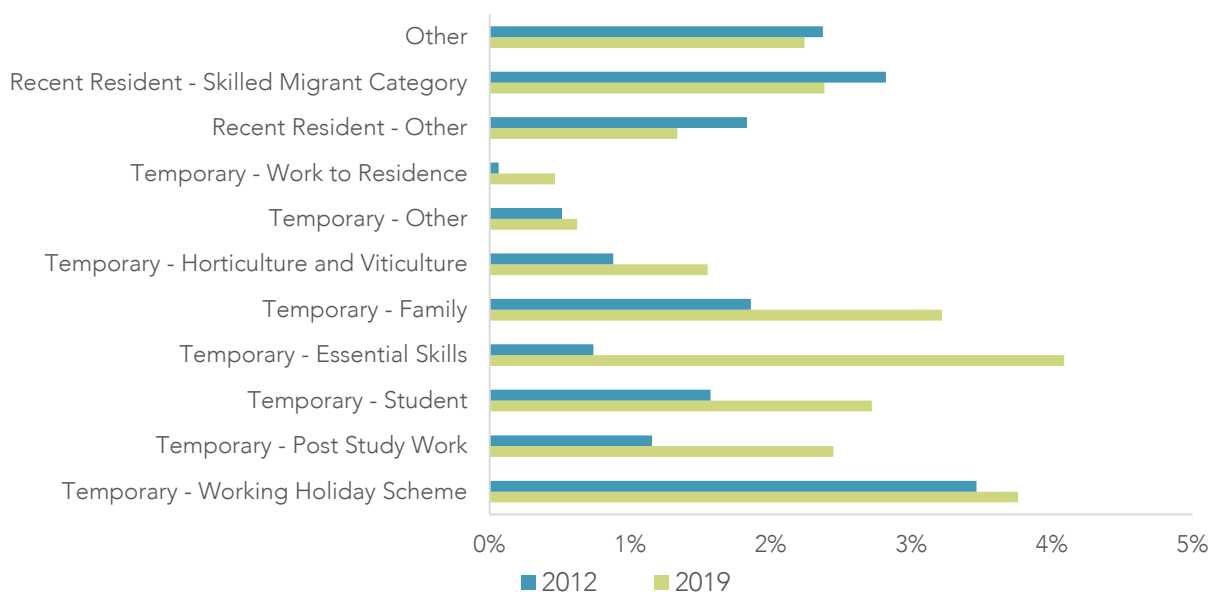


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 31 Percentage of total administrative and support services industry employment filled by visa type

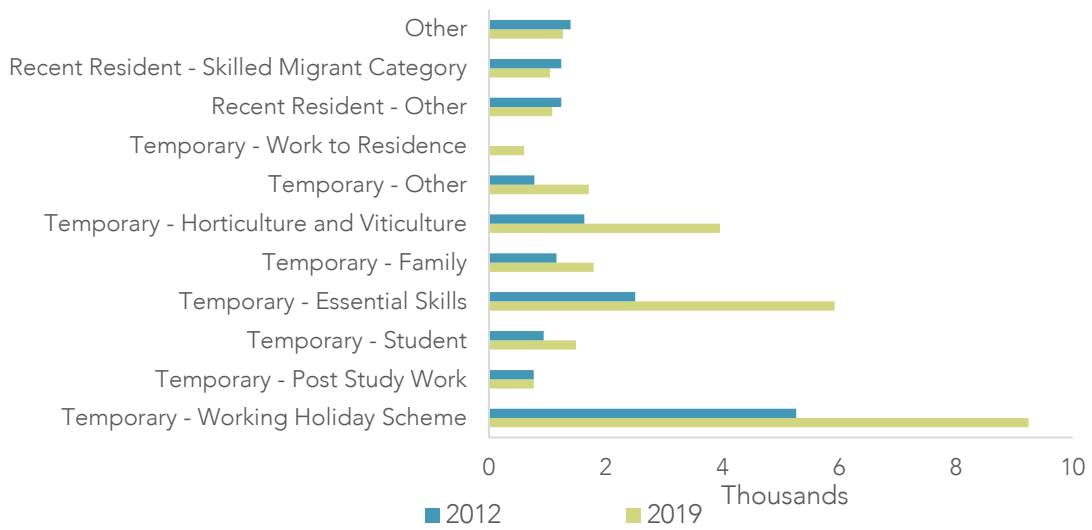


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=17%, in 2019=25%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status

Figure 32 Employment in the agriculture, forestry and fishing industry by visa type

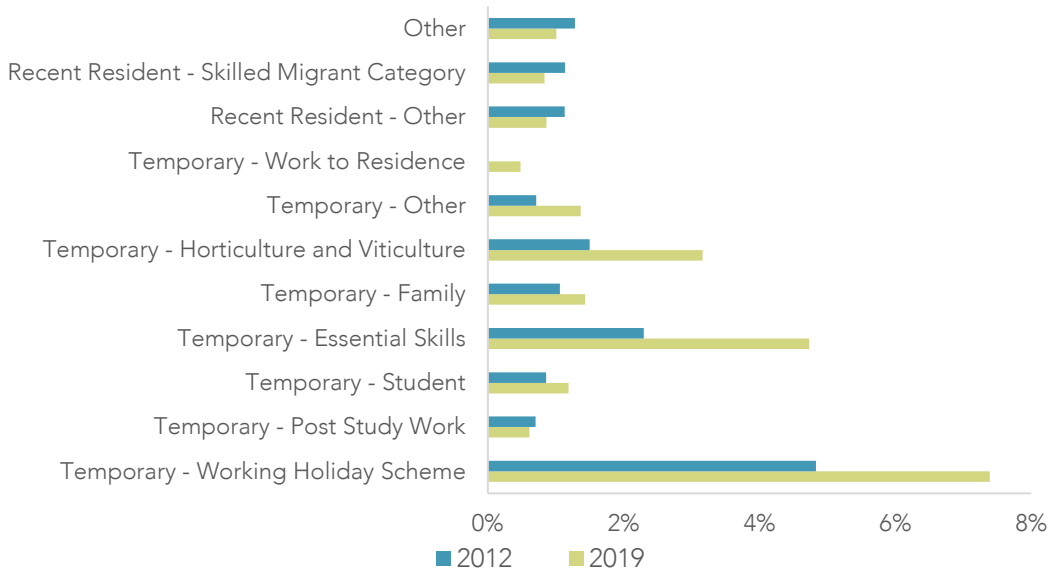


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status

Figure 33 Percentage of total agriculture, forestry and fishing industry employment filled by visa type

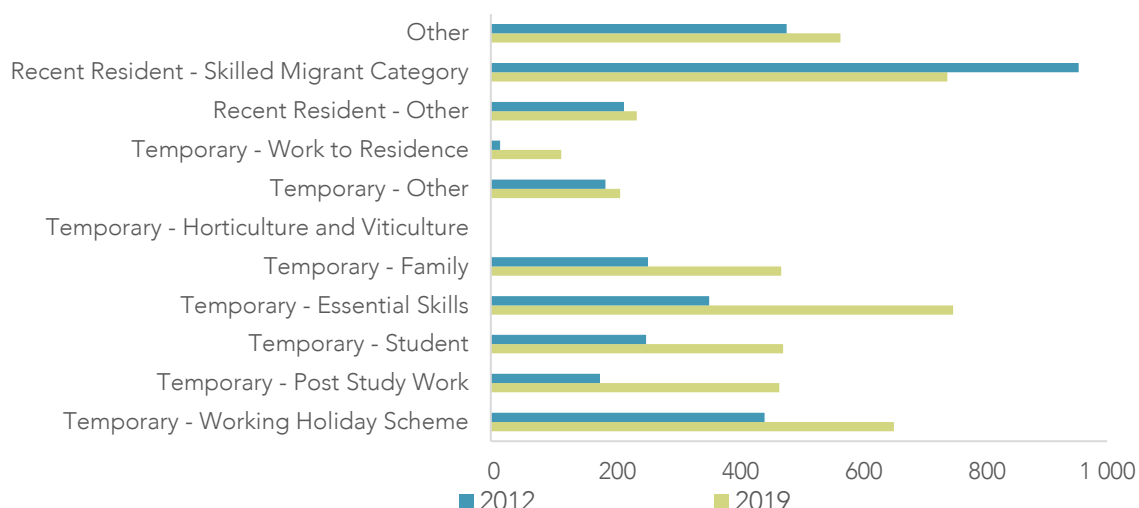


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=16%, in 2019=23%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the NZ citizen category regardless of their citizenship status.

Figure 34 Employment in the arts and recreation services industry by visa type

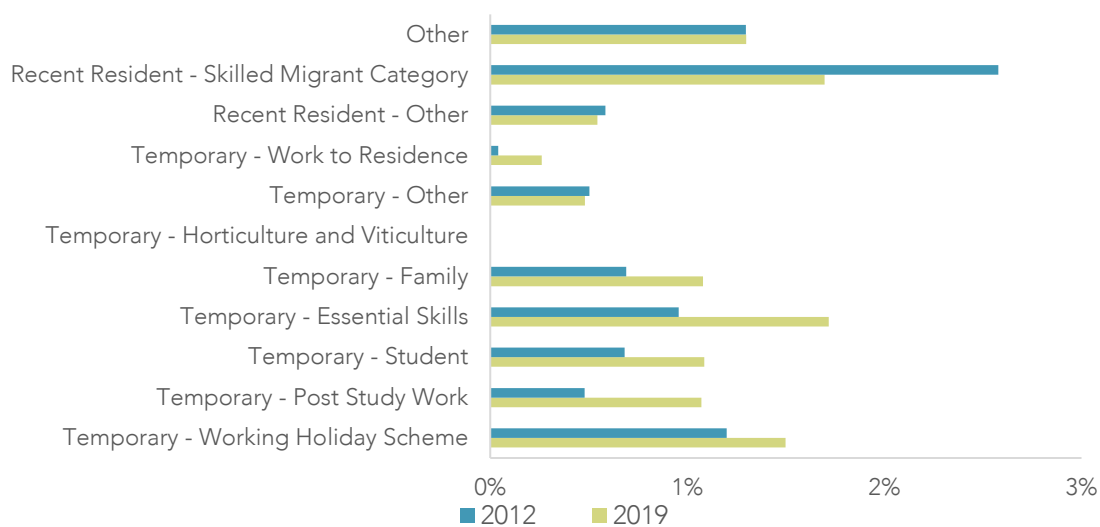


Source: MBIE Migrant Employment Data

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 35 Percentage of total arts and recreation industry employment filled by visa type

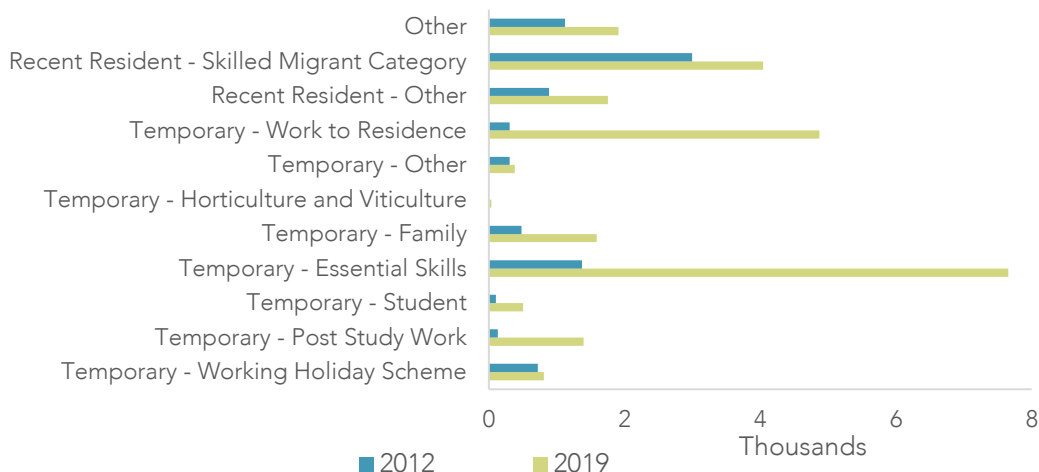


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=9%, in 2019=11%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand citizen category regardless of their citizenship status.

Figure 36 Employment in the construction industry by visa type

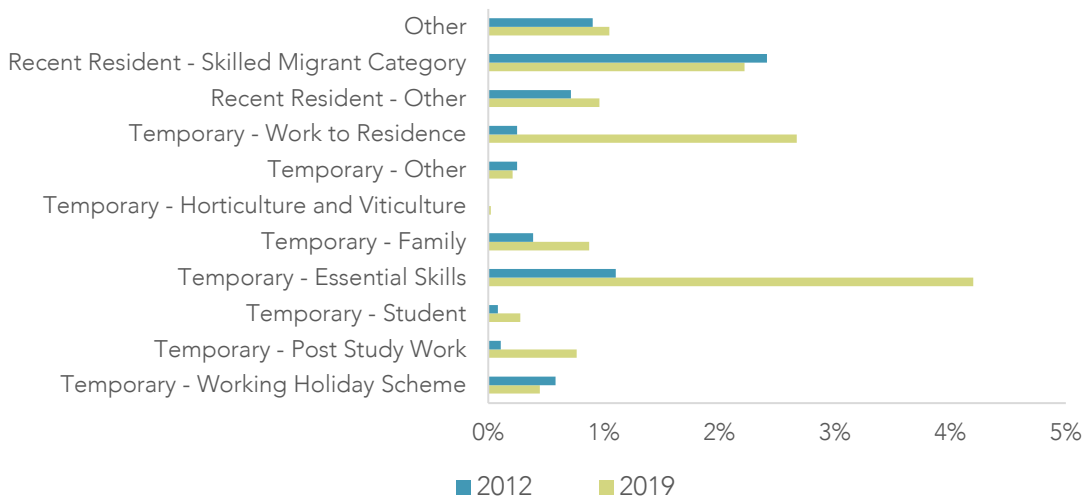


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 37 Percentage of total employment in the construction industry filled by visa type

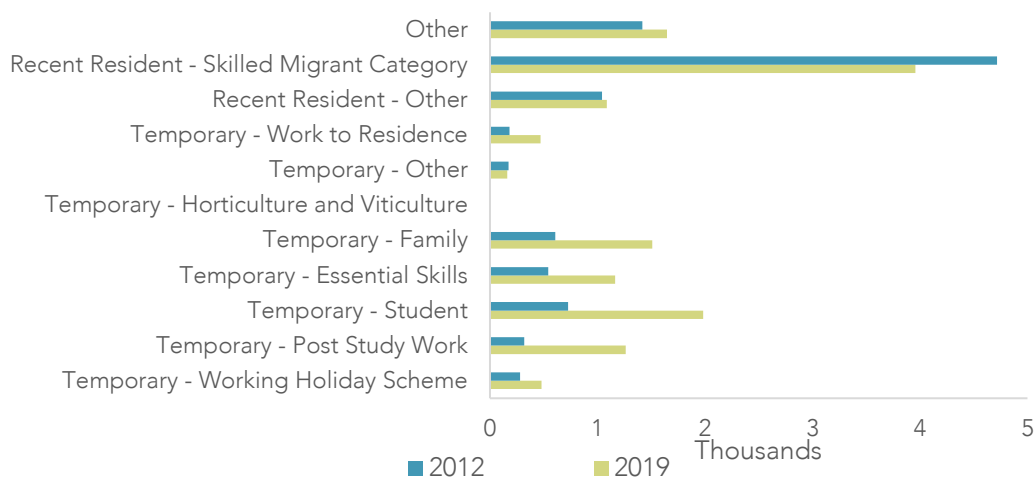


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=7%, in 2019=14%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 38 Employment in the education and training industry by visa type

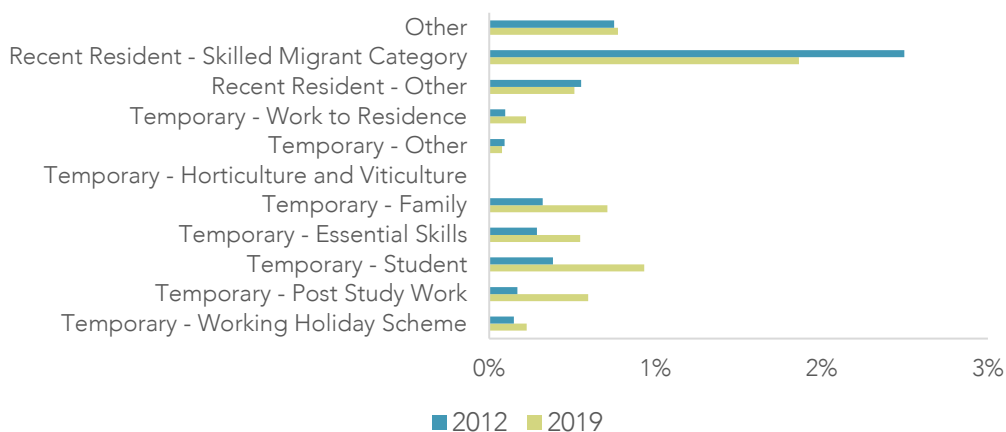


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 39 Percentage of total employment in the education and training industry filled by visa type

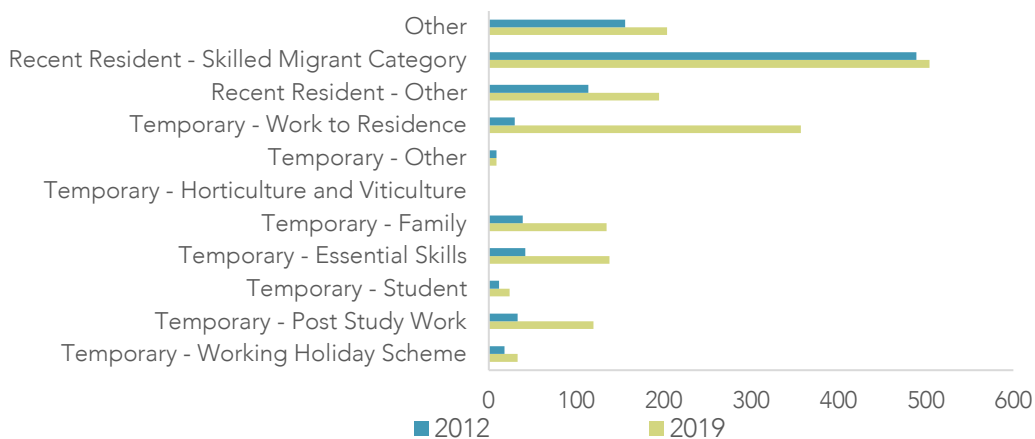


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=5%, in 2019=6%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand citizen category regardless of their citizenship status.

Figure 40 Employment in the electricity, gas, water and waste services industry by visa type

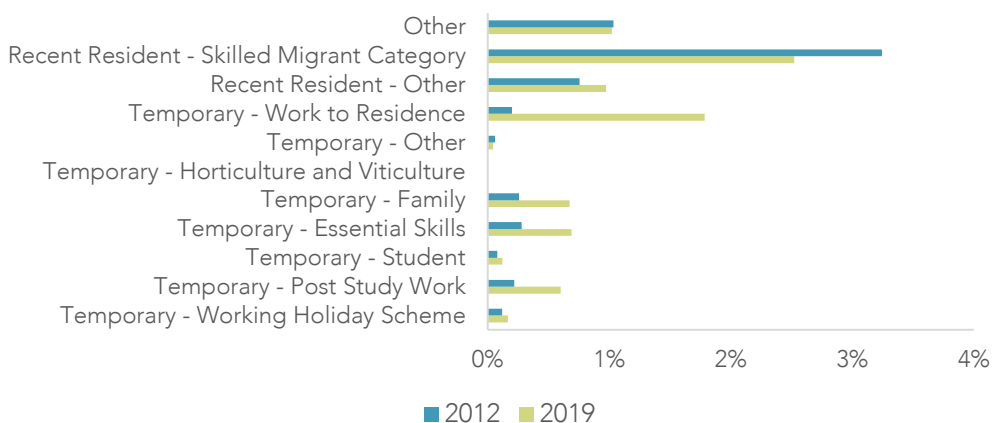


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 41 Percentage of total employment in the electricity, gas, water and waste services industry filled by visa type

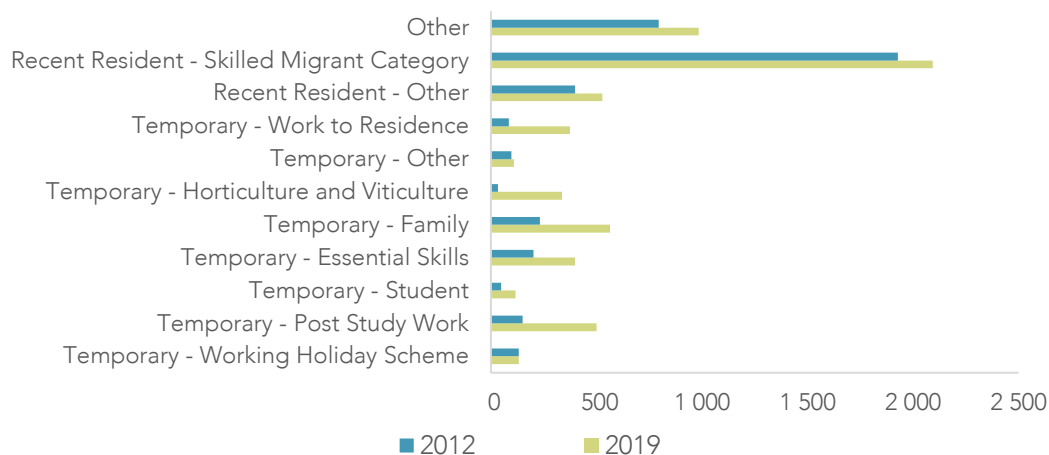


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=6%, in 2019=9%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand citizen category regardless of their citizenship status.

Figure 42 Employment in the financial and insurance services industry by visa type

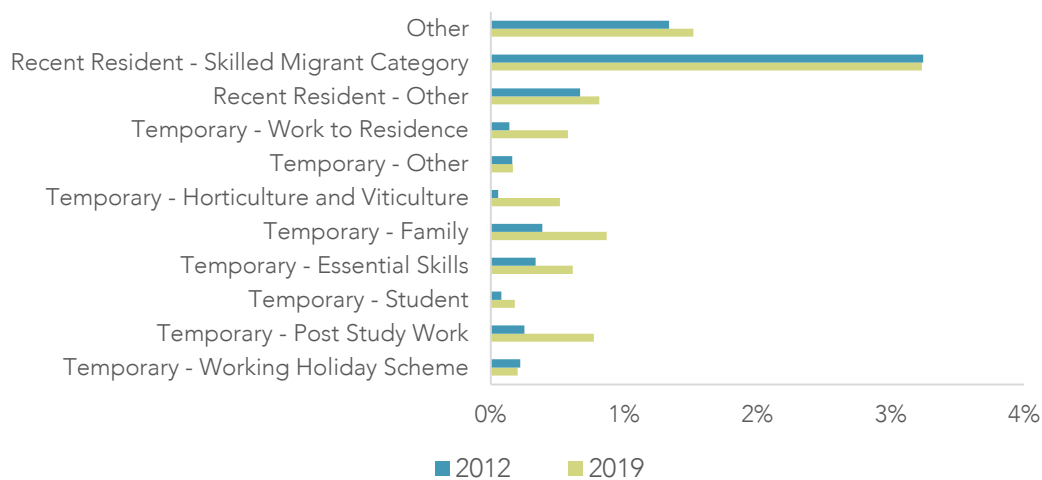


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 43 Percentage of total employment in the financial and insurance services industry filled by visa type

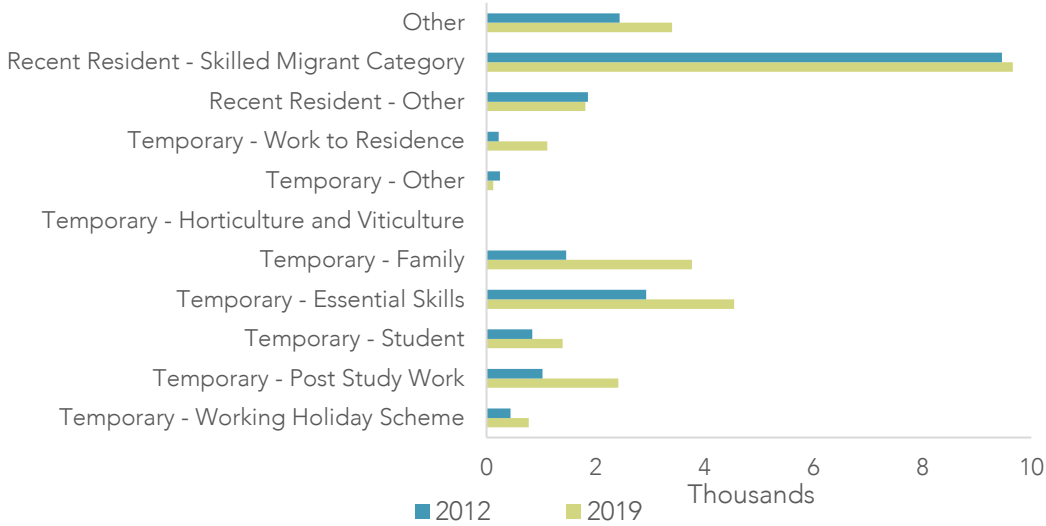


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=7%, in 2019=9%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 44 Employment in the health care and social assistance industry by visa type

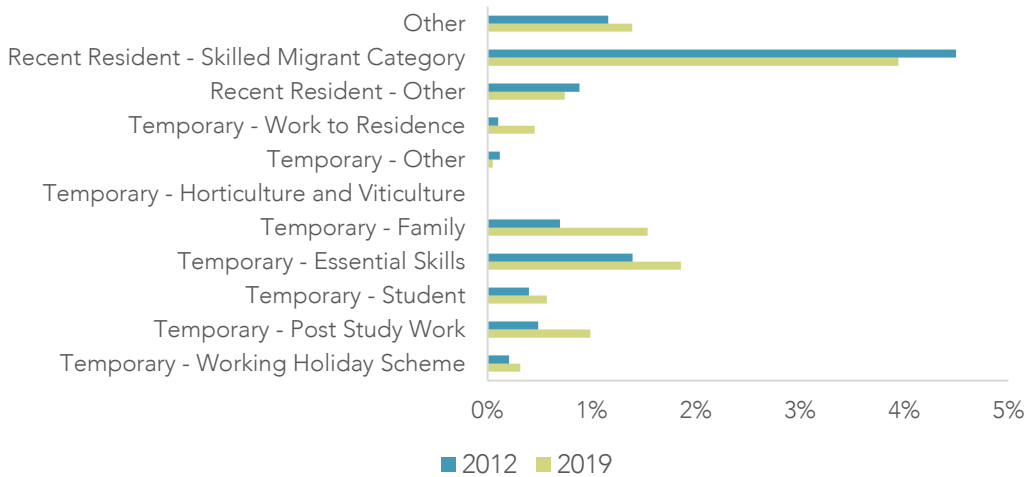


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 45 Percentage of total employment in the health care and social assistance industry filled by visa type

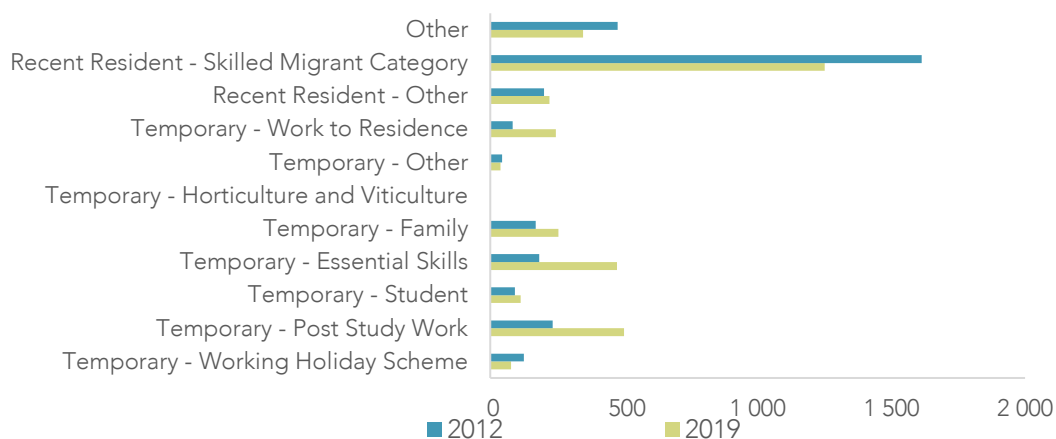


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=10%, in 2019=12%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 46 Employment in the information media and telecommunications industry by visa type

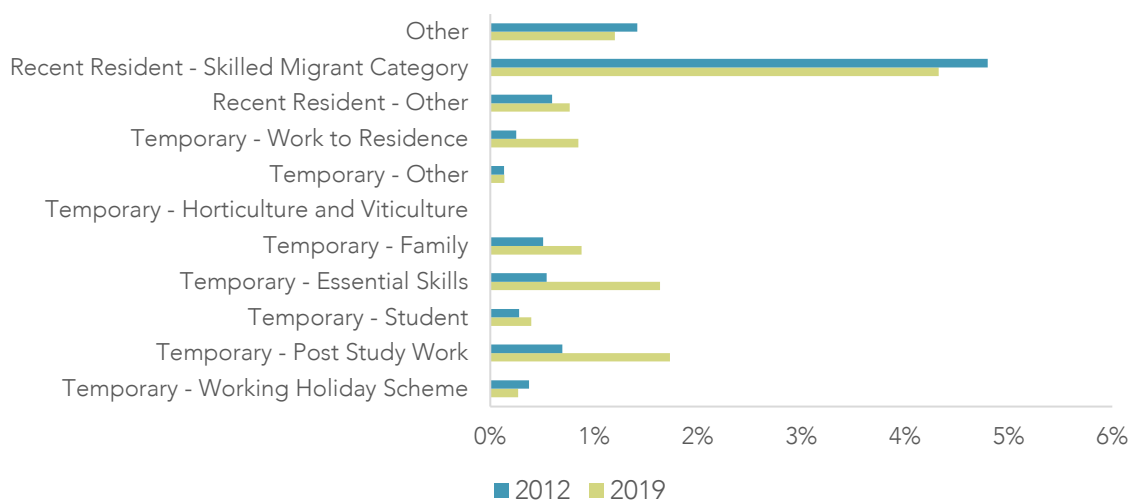


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 47 Percentage of total employment in the information media and telecommunications industry filled by visa type

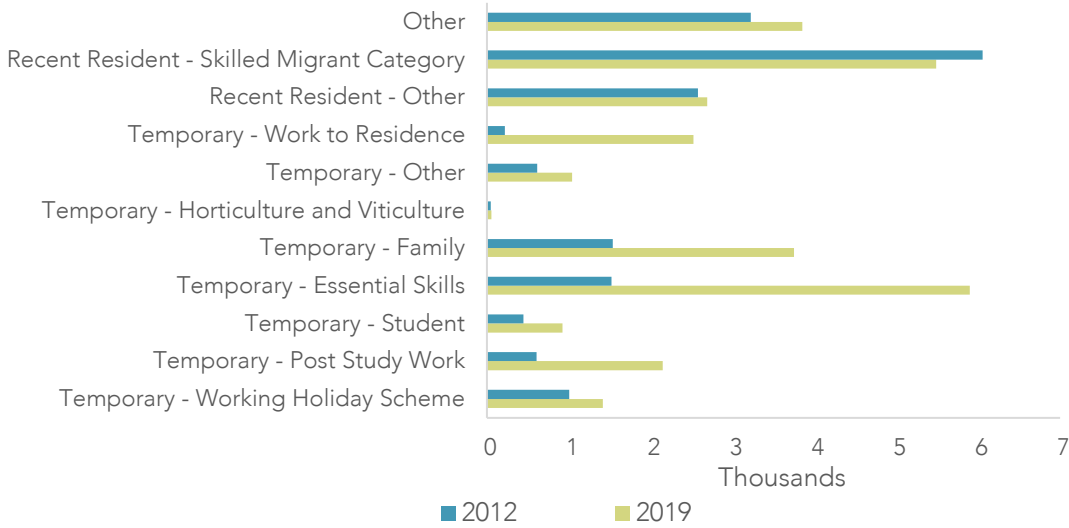


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=10%, in 2019=12%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 48 Employment in the manufacturing industry by visa type

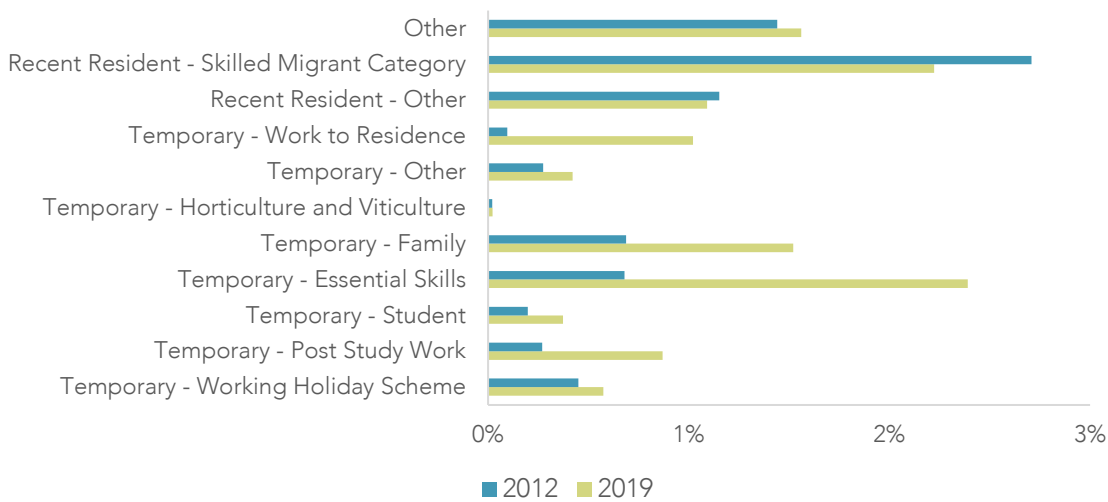


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status

Figure 49 Percentage of total employment in the manufacturing industry filled by visa type

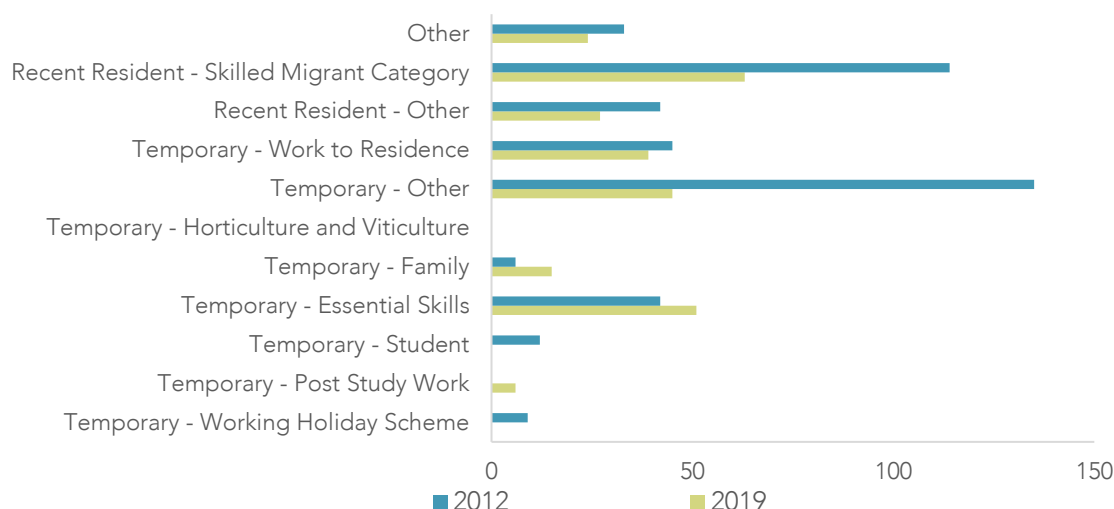


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=8%, in 2019=12%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 50 Employment in the mining industry by visa type

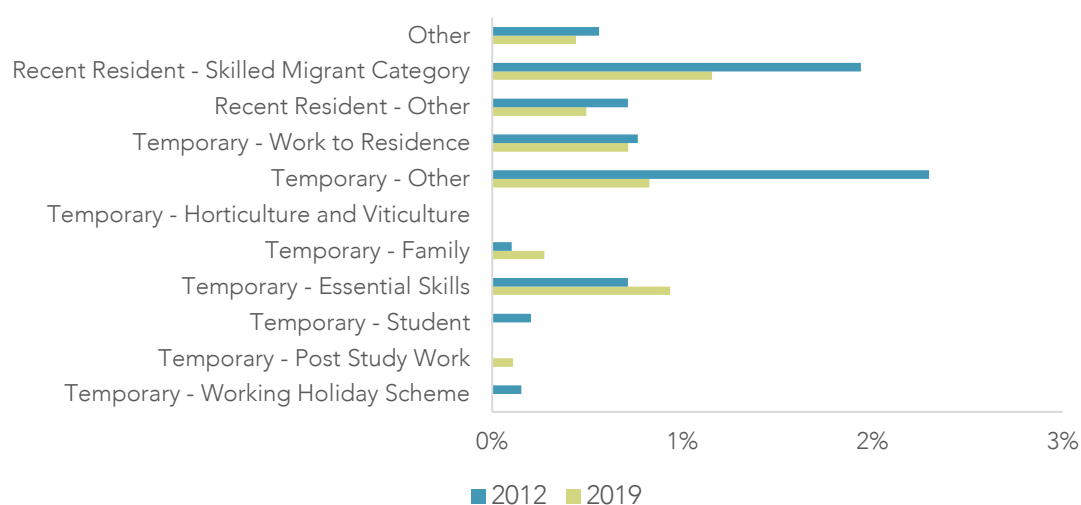


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent Resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status

Figure 51 Percentage of total employment in the mining industry filled by visa type

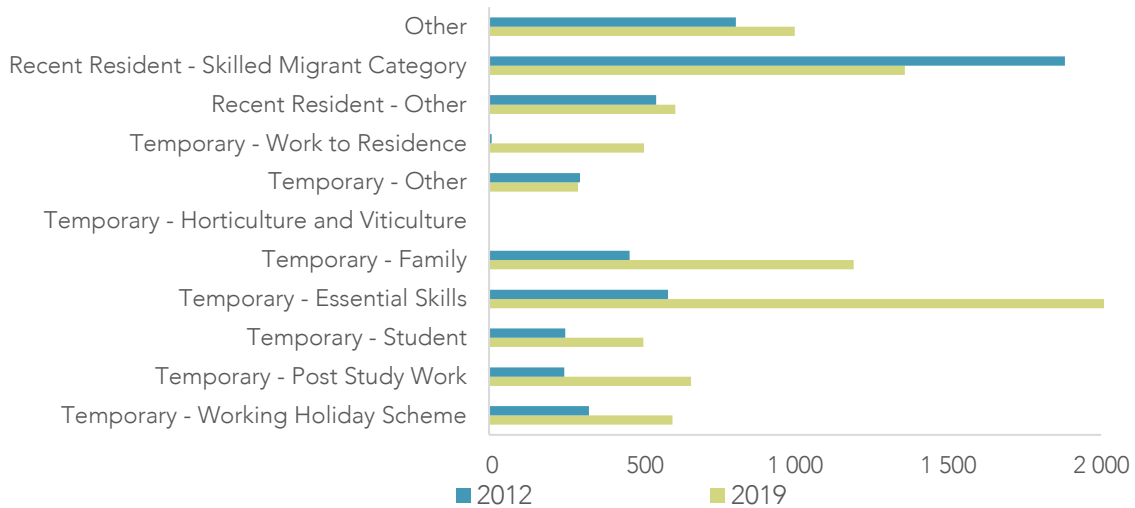


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=7%, in 2019=5%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 52 Employment in the other services industry by visa type

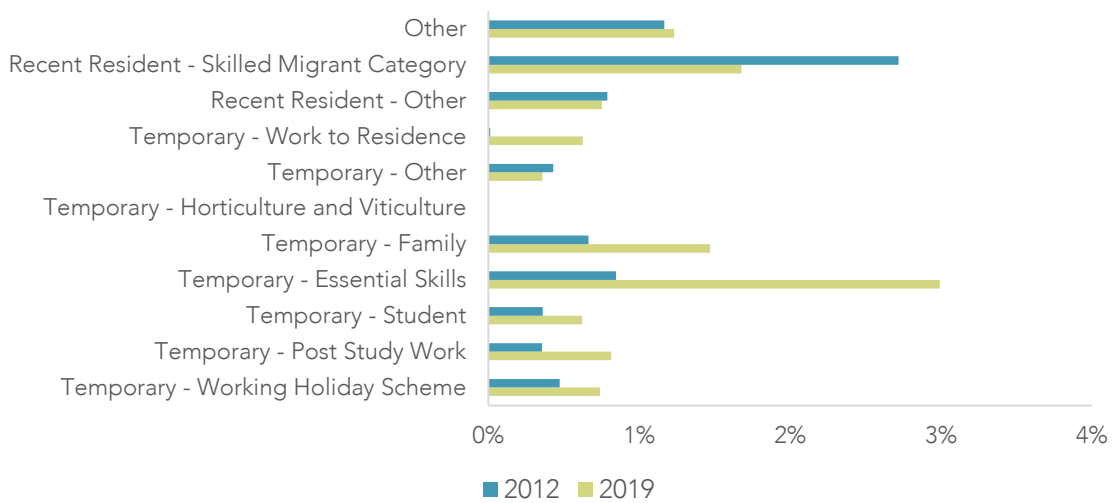


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status

Figure 53 Percentage of total employment in the other services industry filled by visa type

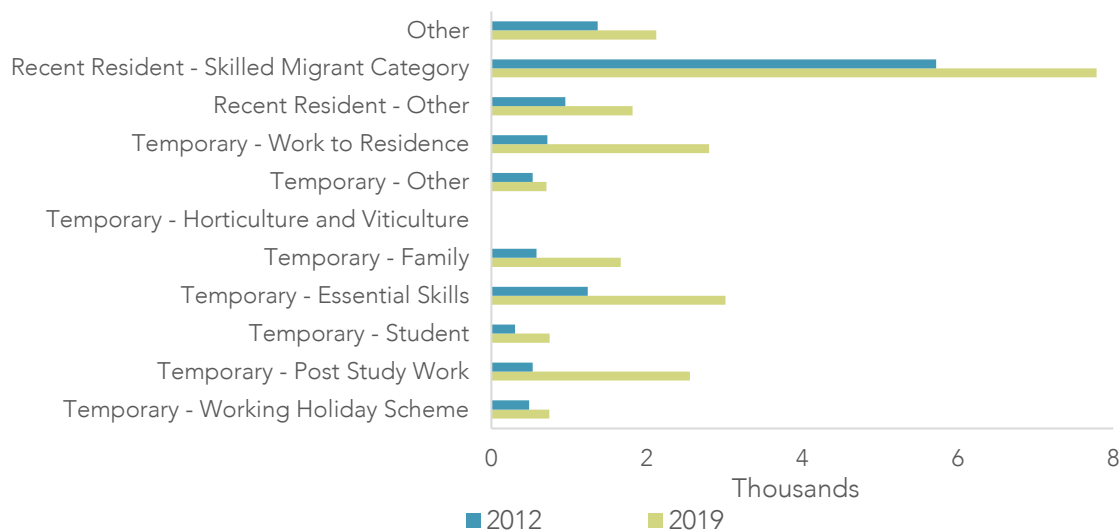


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=8%, in 2019=11%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 54 Employment in the professional, scientific and technical services industry by visa type

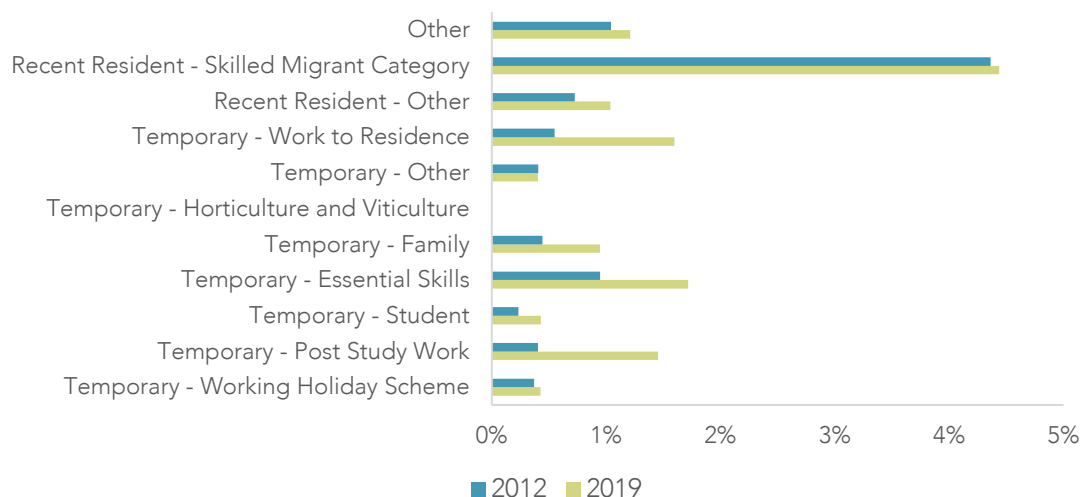


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 55 Percentage of total employment in the professional, scientific and technical services industry filled by visa type

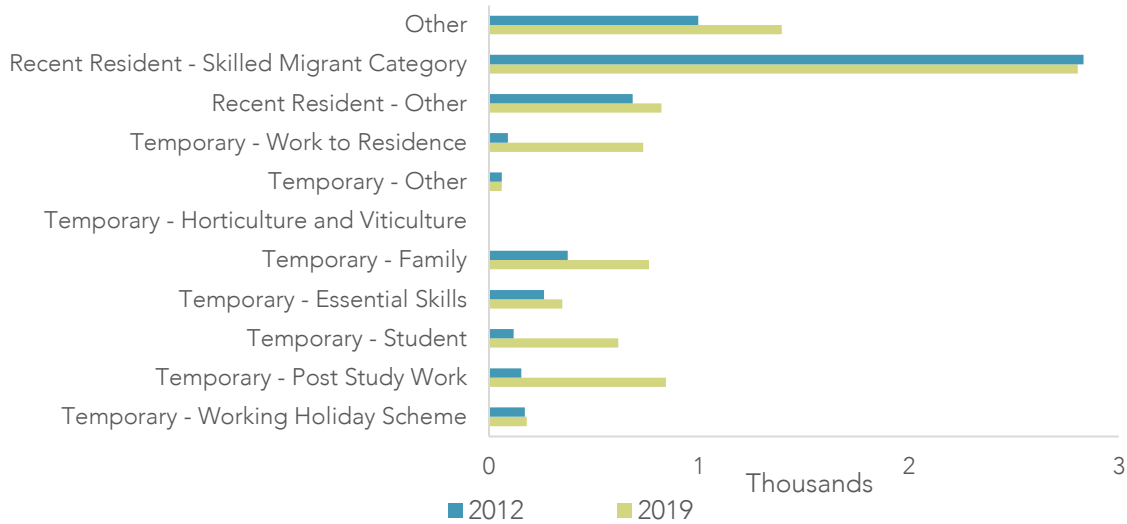


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=9%, in 2019=14%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 56 Employment in the public administration and safety industry by visa type

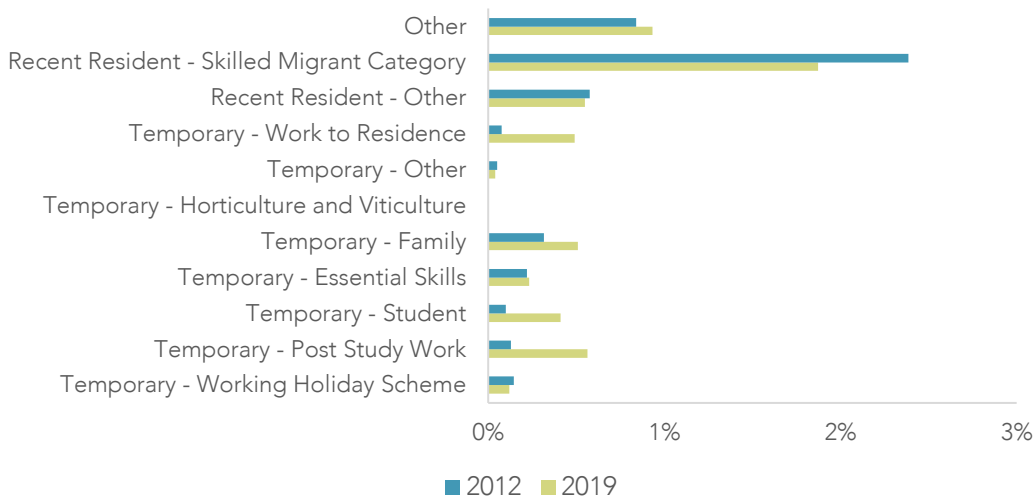


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 57 Percentage of total employment in the public administration and safety industry filled by visa type

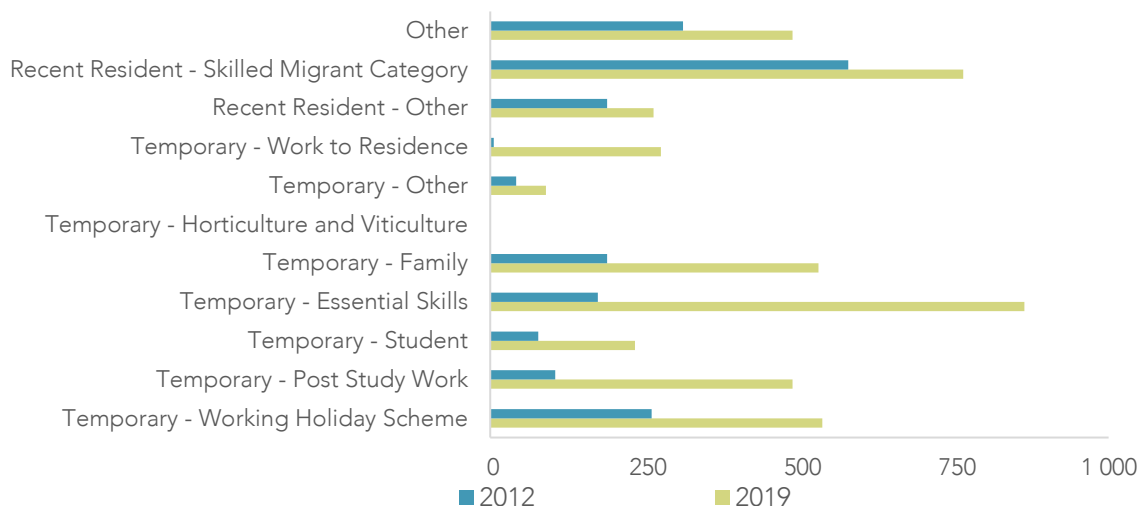


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=5%, in 2019=6%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 58 Employment in the rental, hiring and real estate services industry by visa type

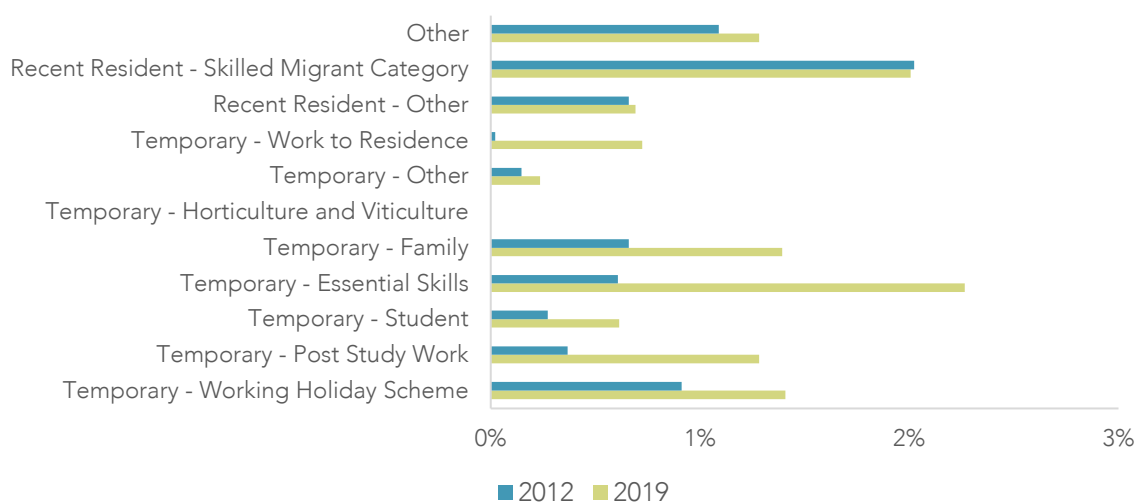


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 59 Percentage of total employment in the rental, hiring and real estate services industry filled by visa type

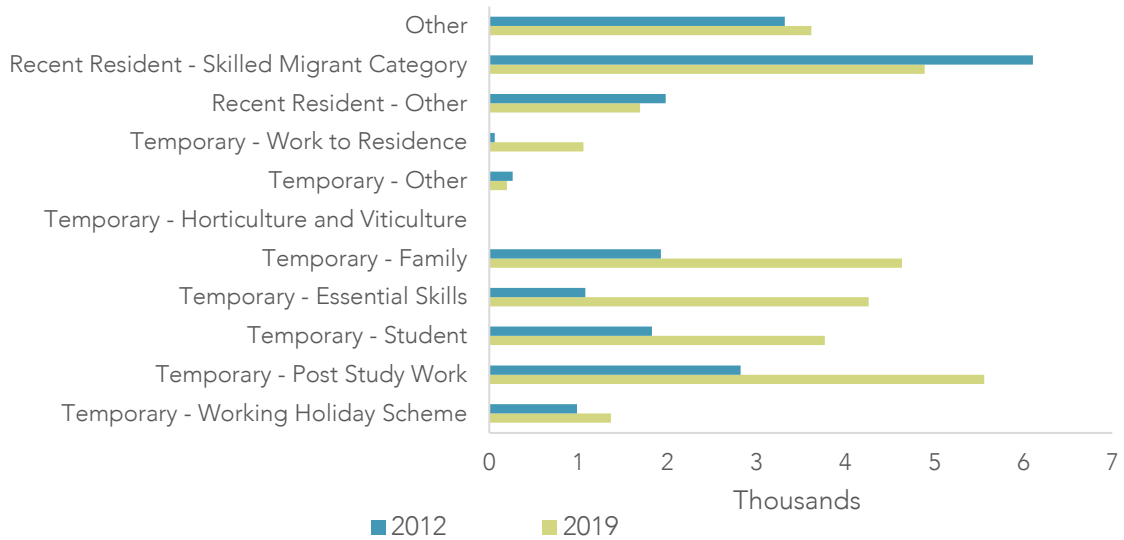


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=7%, in 2019=12%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 60 Employment in the retail trade industry by visa type

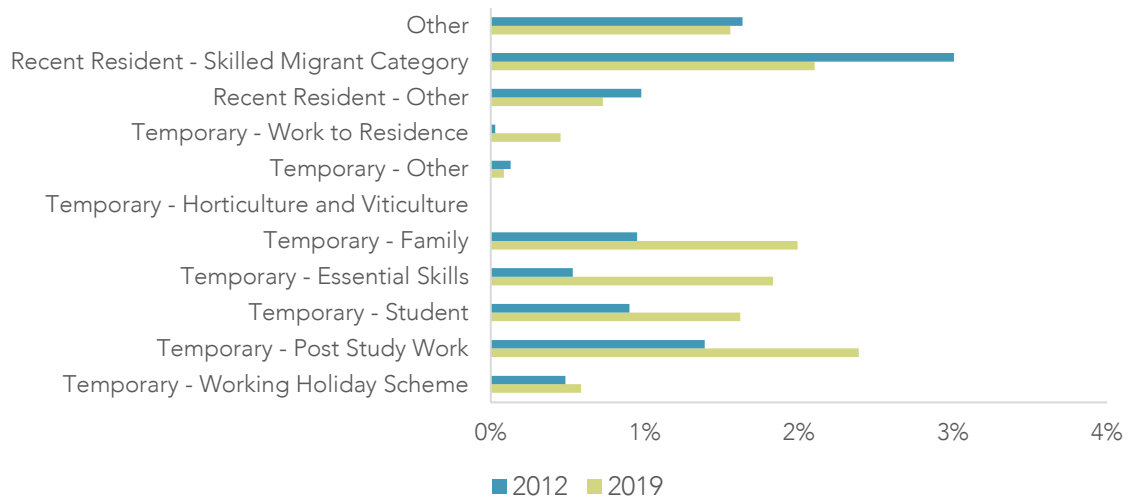


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 61 Percentage of total employment in the retail trade industry by visa type

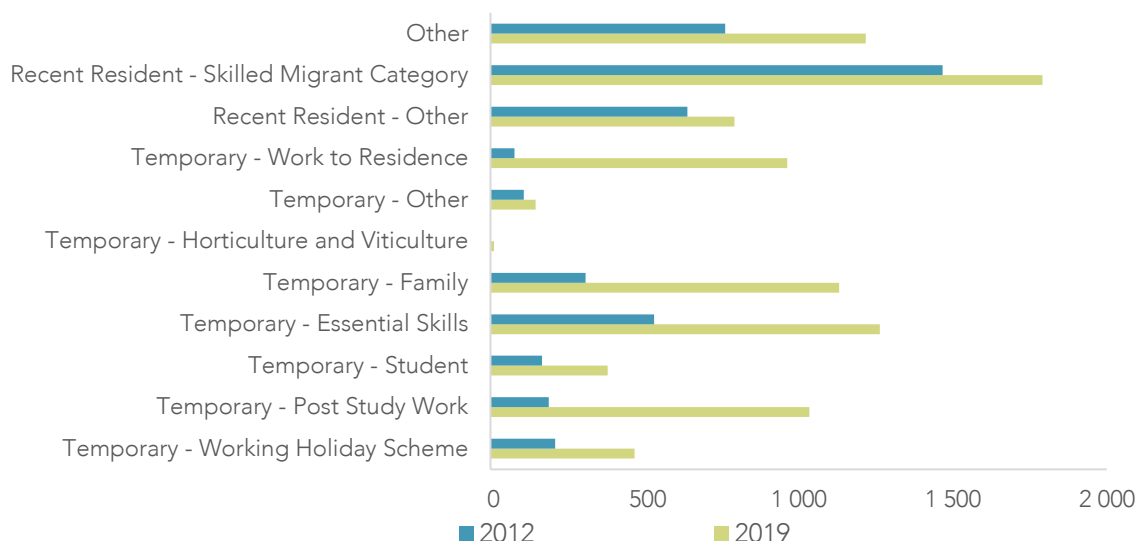


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=10%, in 2019=13%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 62 Employment in the transport, postal and warehousing industry by visa type

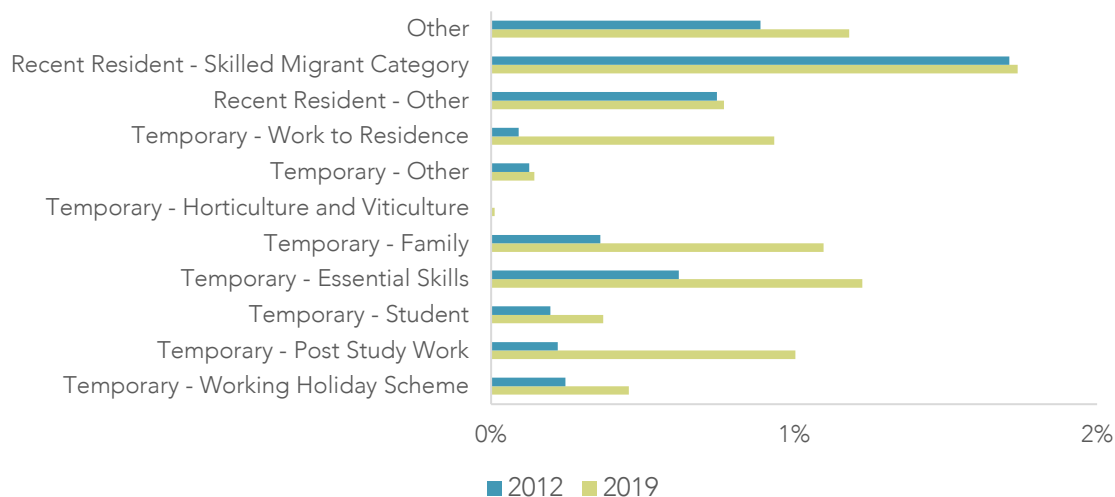


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 63 Percentage of total employment in the transport, postal and warehousing industry by visa type

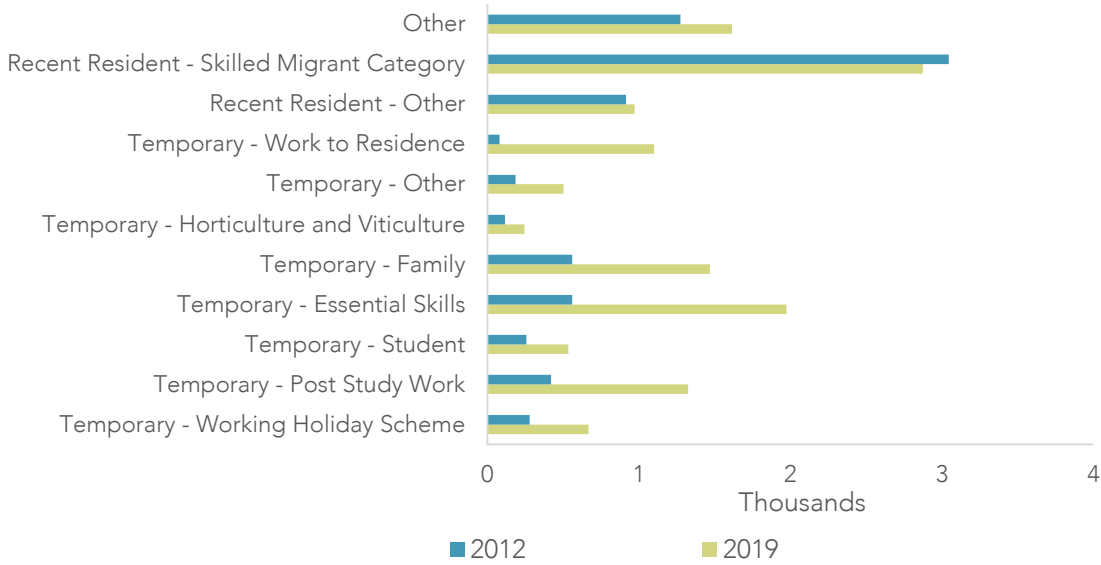


Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=5%, in 2019=9%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 64 Employment in the wholesale trade industry by visa type

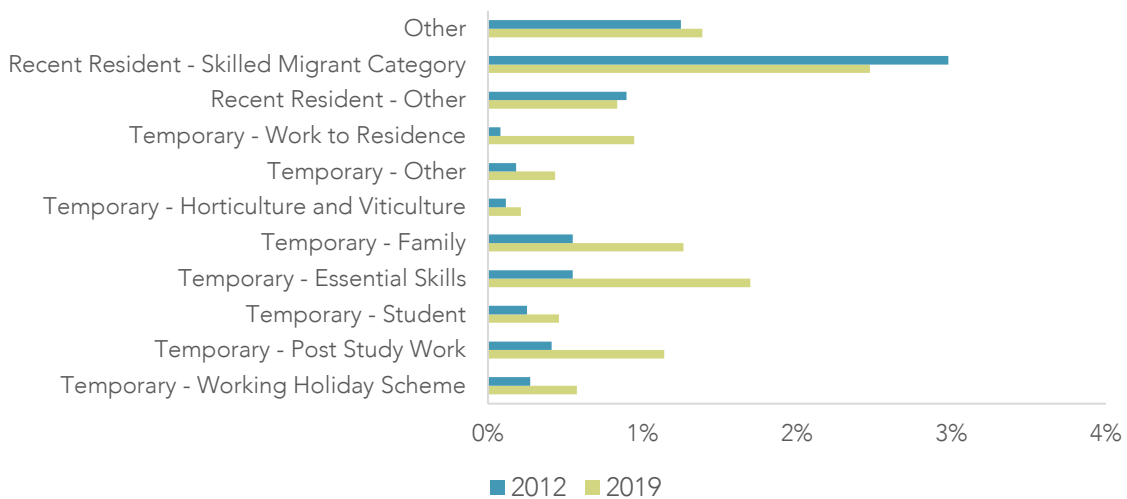


Source: MBIE Migrant Employment Data.

Notes:

1. Total industry employment by visa holders is the sum of all horizontal bars by year.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Figure 65 Wholesale trade industry employment proportion by visa type



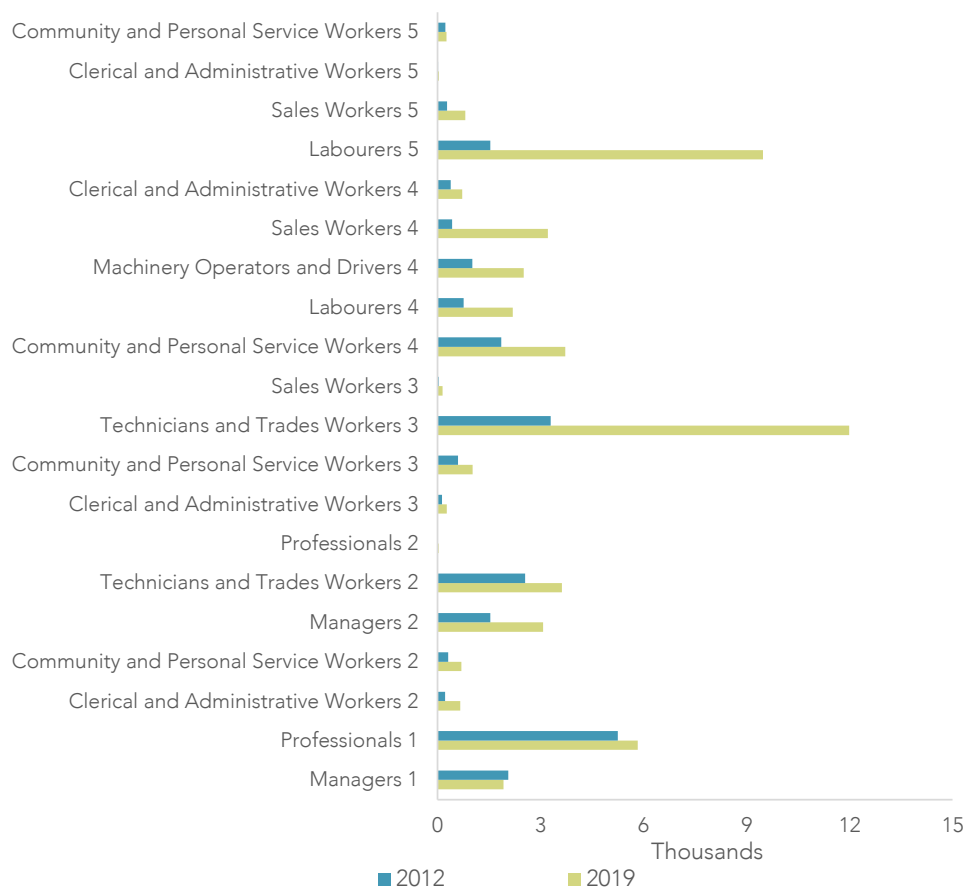
Source: MBIE Migrant Employment Data.

Notes:

1. The total proportion of industry employment by visa holders is the sum of all horizontal bars by year, in 2012=8%, in 2019=11%.
2. Recent resident categories only include the first five years of residency in New Zealand, after five years these visa holders are folded into the New Zealand Citizen category regardless of their citizenship status.

Section 3 Analysis of Occupation and skills information for temporary 'Essential Skills' visa holders

Figure 66 Temporary Essential Skills visa approvals by major occupation group and skill level

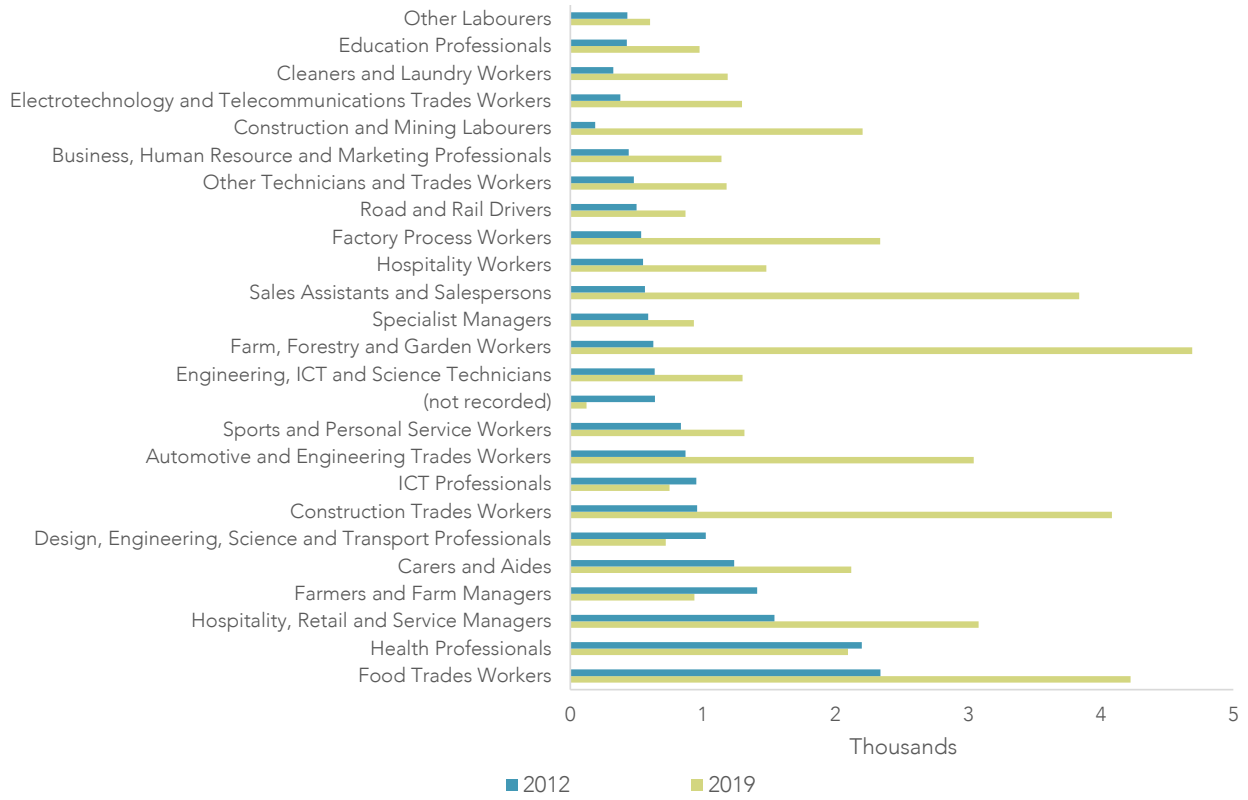


Source: MBIE Migration Data Explorer

Notes:

1. Approvals only and calendar year (year ended December).
2. Does not include 'not recorded', 'Response Outside Scope/Not Stated' and 'Responses outside of the current definition of the labour force'.
3. Temporary Essential Skills visa holders include anyone classified in the migration data explorer in the W3 category whose application criteria includes Essential Skills, General, Approved in Principle, Essential Skills - Level 1 and Specialist skills.

Figure 67 Essential Skills Visa approvals, top 20 occupations by sub-major group



Source: MBIE Migration Data Explorer

Notes:

1. Approvals only and calendar year (year ended December).
2. Does not include 'not recorded', 'Response Outside Scope/Not Stated' and 'Responses outside of the current definition of the labour force'.
3. Temporary Essential Skills visa holders include anyone classified in the migration data explorer in the W3 category whose application criteria includes Essential Skills, General, Approved in Principle, Essential Skills - Level 1 and Specialist skills.

Table.1 Comparison of the Top 20 Essential Skill visa approvals by occupations in 2012 and 2019.

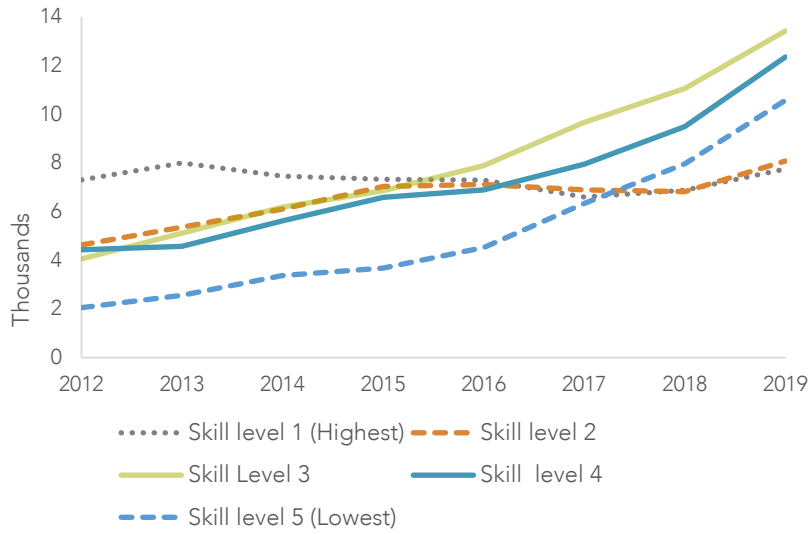
2012	Number	Skill-level	2019	Number	Skill-level
Chef	1740	2	Dairy Cattle Farm Worker	3732	5
Dairy Cattle Farmer	1218	1	Retail Supervisor	3033	4
Cafe or Restaurant Manager	675	2	Chef	2268	2
Aged or Disabled Carer	675	4	Carpenter	2094	3
Resident Medical Officer	477	1	Cook	1380	3
Retail Manager (General)	477	2	Cafe or Restaurant Manager	1068	2
Truck Driver (General)	408	4	Retail Manager (General)	1005	2
Dairy Cattle Farm Worker	384	5	Aged or Disabled Carer	924	4
Registered Nurse (Aged Care)	357	1	Personal Care Assistant	786	4
Snowsport Instructor	336	3	Dairy Cattle Farmer	729	1
Retail Supervisor	312	4	Registered Nurse (Aged Care)	720	1
Deck Hand	306	4	Builder's Labourer	714	5
Personal Care Assistant	297	4	Sales Assistant (General)	606	5
Multimedia Specialist	282	1	Commercial Housekeeper	600	5
Carpenter	270	3	Truck Driver (General)	579	4
Painting Trades Worker	225	3	Metal Fabricator	558	3
Cook	192	3	Waiter	549	4
Motor Mechanic (General)	186	3	Telecommunications Technician	537	3
Chef	183	2	Winery Cellar Hand	507	5
Sales Assistant (General)	183	5	Scaffolder	465	4

Source: MBIE Migrant Data Explorer.

Notes:

1. Approvals only and calendar year (year ended December).
2. Does not include 'not recorded.'
3. Temporary Essential Skills visa holders include anyone classified in the migration data explorer in the W3 category whose application criteria includes Essential Skills, General, Approved in Principle, Essential Skills - Level 1 and Specialist skills.

Figure 68 Essential Skills visa approvals by skill level

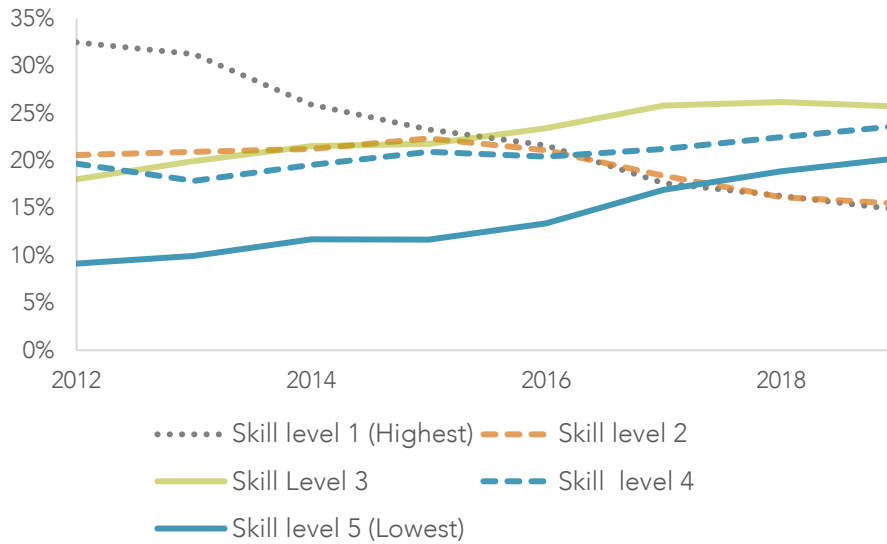


Source: MBIE Migration Data Explorer

Note:

1. December year, approvals only.
2. Temporary Essential Skills visa holders include anyone classified in the migration data explorer in the W3 category whose application criteria includes Essential Skills, General, Approved in Principle, Essential Skills - Level 1 and Specialist skills.

Figure 69 Essential Skills visa approval proportions by skill level



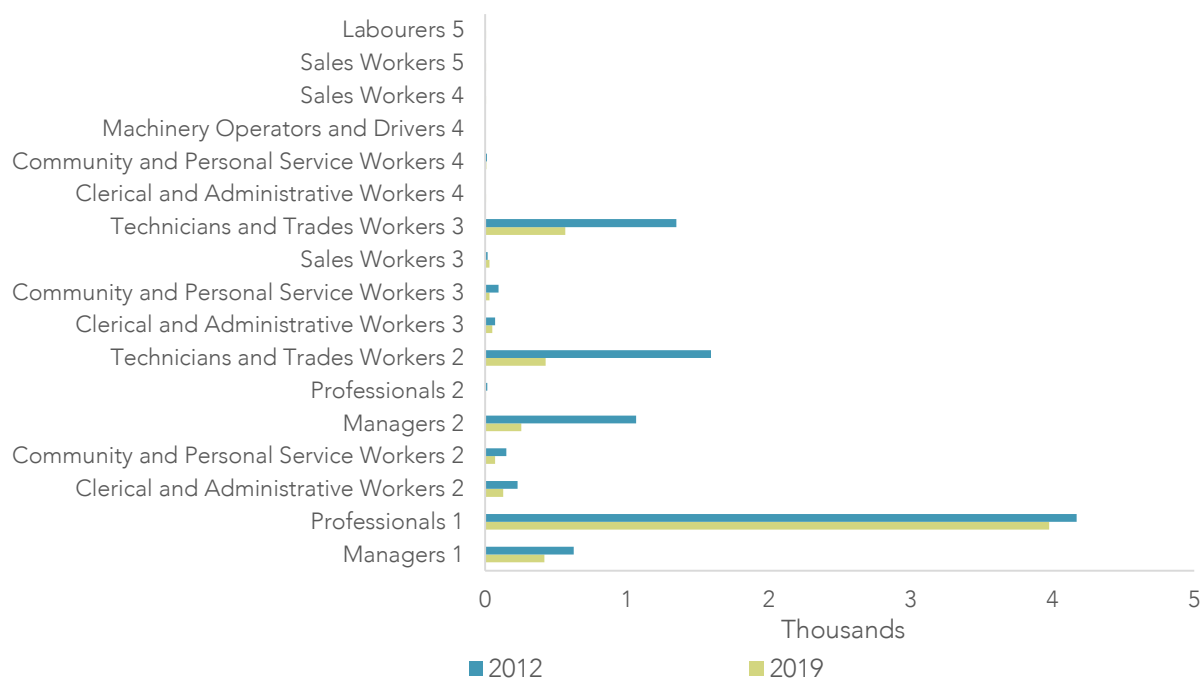
Source: MBIE Migration Data Explorer

Notes:

1. December year (approvals only).
2. Temporary Essential Skills visa holders include anyone classified in the migration data explorer in the W3 category whose application criteria includes Essential Skills, General, Approved in Principle, Essential Skills - Level 1 and Specialist skills.

Analysis of occupation and skill information for residence class 'Skilled Migrant' visa approvals

Figure 70 Residence class Skilled Migrant visa approvals by major occupation group and skill level in 2012 and 2019

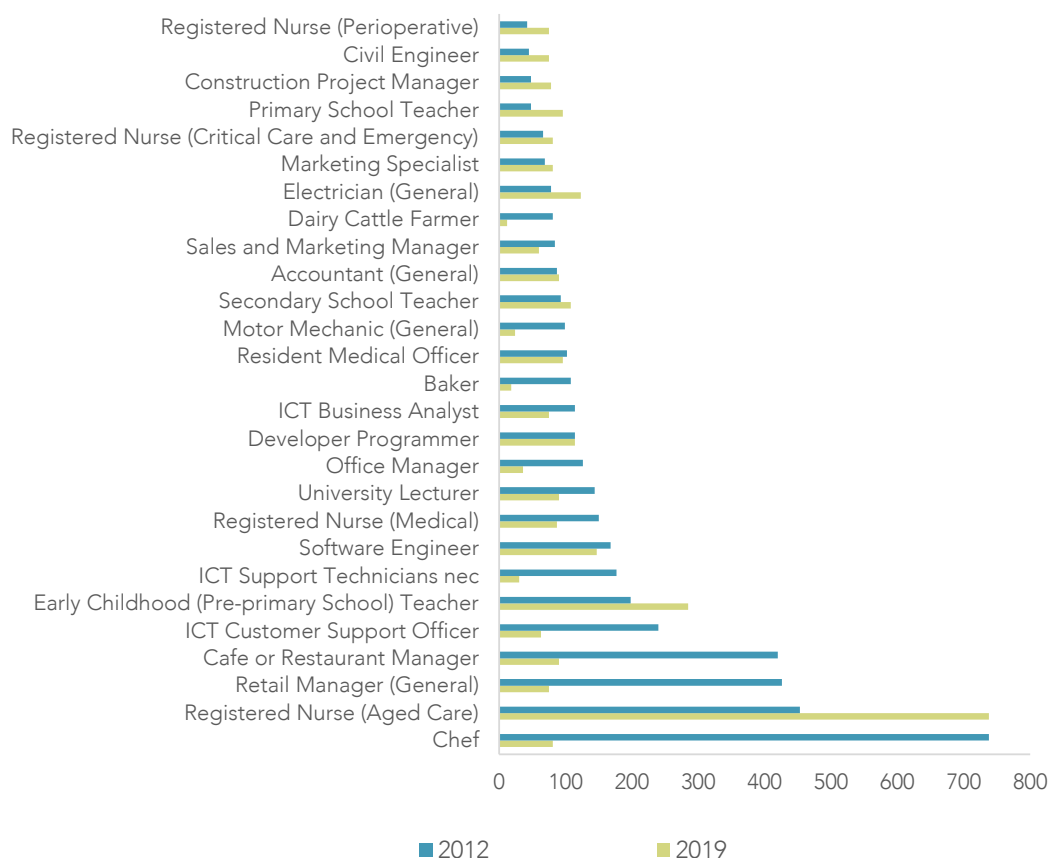


Source: MBIE Migration Data Explorer.

Note:

1. Year ended December (approvals only).
2. Skill levels are ranked from 1-5 with 1 the highest and 5 the lowest.
3. Does not include Response Outside Scope/Not Stated, Responses outside of the current definition of the labour force, or those whose skills were not recorded.

Figure 71 Top 20 occupations for residence class Skilled Migrant visa approvals in 2012 and 2019

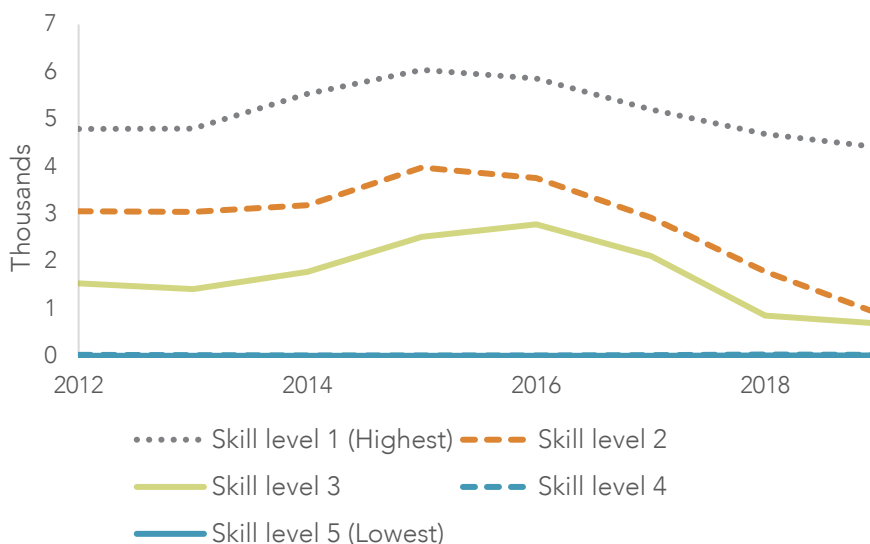


Source: MBIE Migrant Data Explorer

Notes:

1. Excluding those not recorded.
2. Includes all of the top 20 2012 and 2019 occupations, by 2019 the following seven occupations had made the top 20, Electrician (General), Marketing Specialist, Registered Nurse (Critical Care and Emergency), Construction Project Manager, Civil Engineer, Primary School Teacher, Truck Driver (General) and the following 2012 occupations no longer made the top 20, Sales and Marketing Manager, ICT Customer Support Officer, Motor Mechanic (General), Dairy Cattle Farmer, ICT Support Technicians nec, Office Manager, and Baker.

Figure 72 Approvals of residence class Skilled Migrant visa's by skill levels

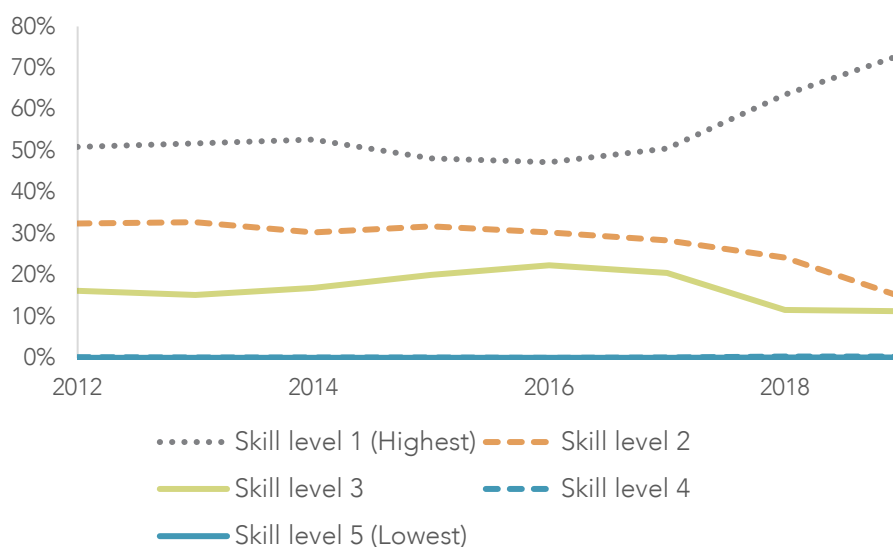


Source: MBIE Migration Data Explorer.

Notes:

1. Year ended December (approvals only).
2. Does not include those whose skill levels were 'not recorded'

Figure 73 Composition of residence class Skilled Migrant visa approvals by skill level.



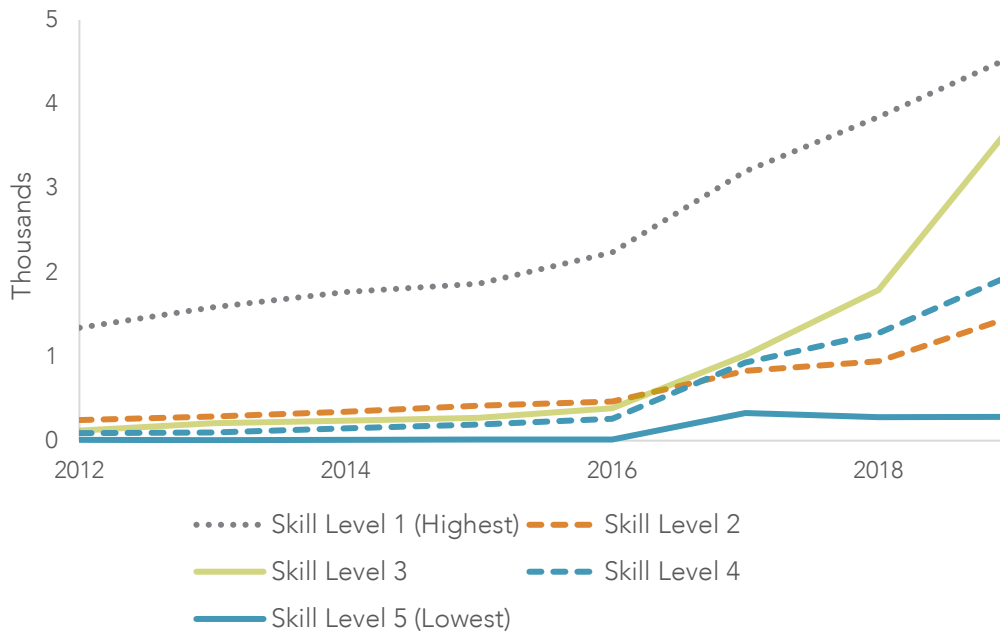
Source: MBIE Migration Data Explorer.

Notes:

1. Year ended December (approvals only).
2. Does not include those whose skill levels were 'not recorded'.

Analysis of Work to Residence visa approvals by skill level and occupation

Figure 74 Temporary Work to Resident visa approvals by skill level

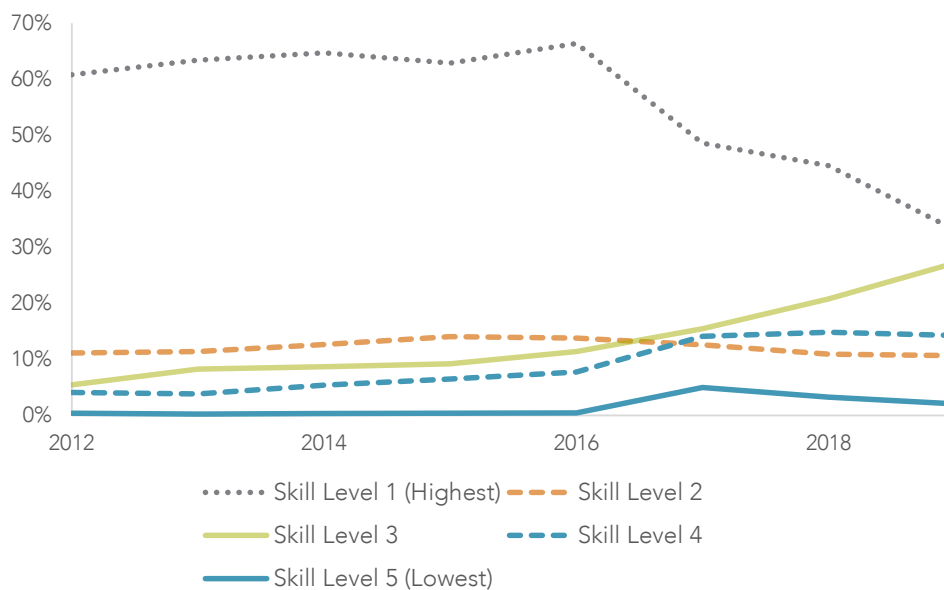


Source: MBIE Migration Data Explorer

Notes:

1. Temporary WTR includes anyone in New Zealand on a Work to Residence Visa which includes the following criteria in the Migration Data Explorer: Talent (Accredited Employer, Long term Skill Shortage List Occupation, South Island Contribution, Skilled Migrant, Talent – Arts, Culture and Sports, Global Impact Visa, and Job Search).
2. December Year, approvals only.

Figure 75 Proportion of temporary Work to Resident visas approvals by skill level



Source: MBIE Migration Data Explorer

Notes:

1. Temporary Work to Residence approvals includes anyone in New Zealand on a Work to Residence visa which includes the following criteria in the Migration Data Explorer: Talent (Accredited Employer, Long term Skill Shortage List Occupation, South Island Contribution, Skilled Migrant, Talent – Arts, Culture and Sports, Global Impact Visa, and Job Search).
2. December Year, approvals only.

Table.2 Comparison of the top 20 Work to Residence visa approvals by occupations in 2012 and 2019 by Skill level

2012	Number	Skill	2019	Number	Skill
Chef	141	2	Carpenter	600	3
University Lecturer	90	1	Chef	456	2
Quantity Surveyor	69	1	Truck Driver (General)	453	4
Civil Engineer	39	1	Scaffolder	351	4
Structural Engineer	39	1	Metal Fabricator	327	3
Construction Project Manager	36	1	Electrician (General)	306	3
Developer Programmer	33	1	Diesel Motor Mechanic	219	3
Software Engineer	33	1	Civil Engineer	201	1
ICT Business Analyst	30	1	Earthmoving Plant Operator (General)	192	4
Mechanical Engineer	27	1	Developer Programmer	174	1
Software Tester	24	1	Construction Project Manager	162	1
Driller	24	4	University Lecturer	159	1
Engineering Professionals nec	21	1	Motor Mechanic (General)	159	3
Computer Network and Systems Engineer	18	1	Software Engineer	156	1
Database Administrator	18	1	Technicians and Trades Workers nec	153	3
Finance Manager	18	1	ICT Business Analyst	129	1
ICT Systems Test Engineer	18	1	Fibrous Plasterer	129	3
Management Consultant	18	1	Recruitment Consultant	120	1
Recruitment Consultant	18	1	Welder (First Class) (Aus) / Welder (NZ)	117	3
Specialist Managers nec	18	1	Management Consultant	111	1

Source: MBIE Migrant Data Explorer.

Notes:

1. Temporary Work to Residence approvals includes anyone in New Zealand on a Work to Residence visa which includes the following criteria in the Migrant Data Explorer: Talent (Accredited Employer, Long term Skill Shortage List Occupation, South Island Contribution, Skilled Migrant, Talent – Arts, Culture and Sports, Global Impact Visa, and Job Search).
2. Approvals only, December year.
3. Does not include those classified with their occupation or skill level as 'not recorded'

