



Distributional aspects of New Zealand's tradable and non-tradable sectors

NZIER final report to MFAT

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Key points

In this report, we consider the composition of New Zealand's tradable and non-tradable sectors in terms of gender, ethnicity, region and business size.

The GDP contribution of the tradable sector has decreased from 53 percent in 2000 to 47 percent in 2017

- The tradable sector accounts for \$107 billion of GDP and almost 900,000 jobs under the indirect classification approach.
- The tradable sector's decreasing share of the economy is due to nominal GDP growing faster than exports over this period (5.3 percent compared to 4.1 percent per annum, respectively, since 2000).

With higher labour productivity, the tradable sector can offer a higher average income compared to the non-tradable sector

- Workers in the tradable sector get paid about \$3,700 more on average than workers in the non-tradable sector.
- Sixty-eight percent of tradable workers are employed in industries that pay over \$50,000 on average, compared to 53 percent for non-tradable workers.

Women are less likely to be employed in the tradable sector

- Women account for 40 percent of the tradable sector workforce, compared to 57 percent of the non-tradable sector.
- Most of the tradable sector industries have gender ratios (female employment as a share of total) ranging from 25 percent to 49 percent.
- None of the female-dominated industries (i.e. with a gender ratio above 75 percent) are in the tradable sector. Many female-dominated industries are in the broad government sector (e.g. health, education, social services).
- This does not necessarily mean there are barriers to female participation in the tradable sector – it may be due to different qualifications, skills and preferences between males and females.

Ethnicity has little influence on tradable sector employment

- In 2017, New Zealand Europeans made up most of the workforce in both the tradable (71%) and non-tradable sectors (72%).
- Since 2015, the share of the New Zealand Europeans workforce employed in the tradable sector has decreased.
- Asian workers make up 13 percent of the tradable sector workforce, compared to 11.7 percent in the non-tradable sector.
- For all other ethnicities, a slightly higher proportion works in the non-tradable sector.

Workers in the tradable sector are slightly more likely to work for smaller firms

- Twenty-one percent of tradable sector workers are employed in firms with less than 10 employees, compared to 18 percent for the non-tradable sector.
- Conversely, 58 percent of the non-tradable sector workers have a job in firms with 50 or *more* employees (compared to 54 percent for tradable firms). The role of the non-tradable government sector (education, health, social services) is a key driver of this result.

South Island workers are more likely to be engaged in the tradable sector than those in the North Island

- Tasman and Nelson, Marlborough, Hawke's Bay, Gisborne and Southland have the highest proportion of tradable sector workers in the country (above 50 percent).
- The tradable sector makes up 44 percent of the employment in the South Island compared to only 41 percent in the North Island.

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1. New Zealand's tradable sector

With growing international concern about inequality, there is increased interest in how the benefits of trade growth are distributed across society. While economists have long understood the benefits of free trade in terms of improved living standards, they have sometimes lacked the ability to convince all parts of society about its merits.

This report looks to inform this debate.

Overall, **New Zealand's tradable sector accounts for 47 percent of New Zealand's GDP, while employing only 42 percent of New Zealand's workers** (Figure 1).

In other words, New Zealand's tradable sector is more labour-productive than the non-tradable sector.

The tradable sector's share of GDP has **fallen from 53 percent in 2000 to 47 percent in 2017** (Figure 1). This decrease is because the New Zealand economy has grown faster than exports (5.3 percent compared 4.1 percent per annum since 2000).

The tradable sector is a collection of industries in the New Zealand economy with most exposure to international markets. In this report, we defined an industry as tradable if it exports over 20 percent its output or 20 percent of its inputs are imports.¹ These are the same criteria as used in Bailey and Ford (2017).

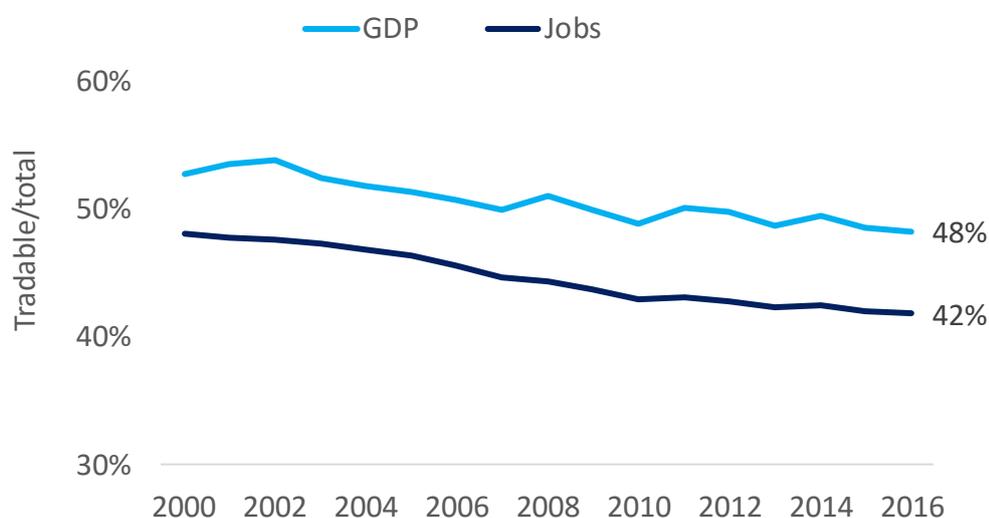
We use a more disaggregated industry classification than Bailey and Ford (2017). Another area of difference is that we update the 2017 Input-Output table with national accounts data. We also do not consider output exported from non-tradable industries as tradable output, and we consider import thresholds for the industry doing the importing, rather than the industry competing with these imports.

The non-tradable sector has grown faster than the tradable sector; and some tradable industries no longer meet the thresholds² to be in the tradable sector.

¹ We conduct sensitivity analysis in Appendix B by changing the threshold of exported output for which an industry is defined as tradable (export ratios of 10%, 20%, 25% and 50%). This allows us to determine how much the results are influenced by the choice of thresholds.

² To identify which industries are tradable or non-tradable, we have used MFAT's definition in which an industry is classified as tradable when its "ultimate" exports, as a share of output is greater than 20 percent and/or its imports as a share of total inputs is greater than 20 percent.

Figure 1 Tradable sector employment and GDP shares



Source: Statistics NZ, NZIER

The largest tradable industries, as a share of total employment, are:

- Employment and other administrative services (3.4%)
- Advertising, market research and management services (2.7%)
- Scientific, architectural and engineering services (2.1%)
- Tertiary education (2%)
- Road transport (1.9%)
- Accommodation (1.6%)
- Legal and accounting services (1.5%)
- Machinery and equipment wholesaling (1.4%)
- Meat and meat product manufacturing (1.4%)

These 10 industries account for 17.3 percent of New Zealand's total employment. Note that many of these industries are indirectly tradable – they produce goods and services that are widely used by industries that export and import directly.

2. Average incomes are higher in the tradable sector

The higher productivity of the tradable sector means that average incomes are higher for most tradable sector workers (Figure 2). Workers in the tradable sector get paid about \$3,700 more on average than workers in the non-tradable sector.

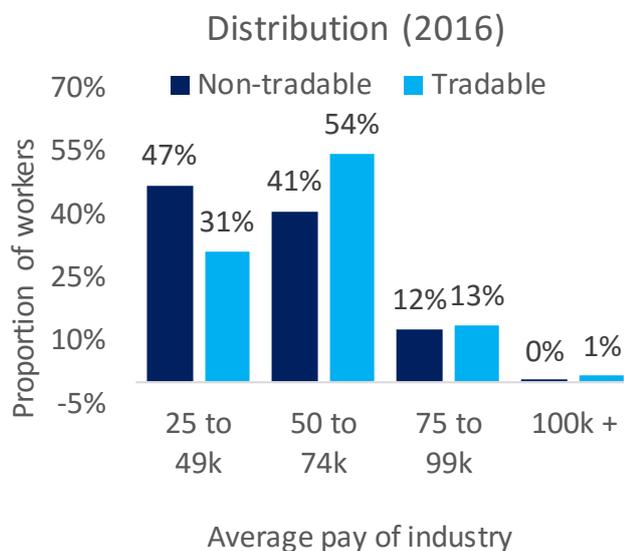
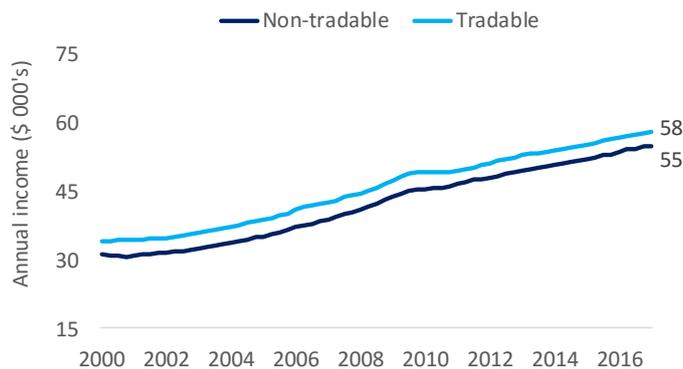
The non-tradable sector is dominated by low paying industries, with almost half the workforce (47 percent) being paid on average less than \$50,000.

Conversely, workers in the tradable sector are more likely to work in higher wage industries. Sixty-eight percent of tradable workers are employed in industries that pay over \$50,000, compared to 53 percent for non-tradable workers.

However, between 2008 and 2017, average income in the non-tradable sector has grown slightly faster (2.7 percent) than the average pay in the tradable sector (2.1 percent).

Figure 2 Average income for tradable sector workers

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Source: Statistics NZ, NZIER

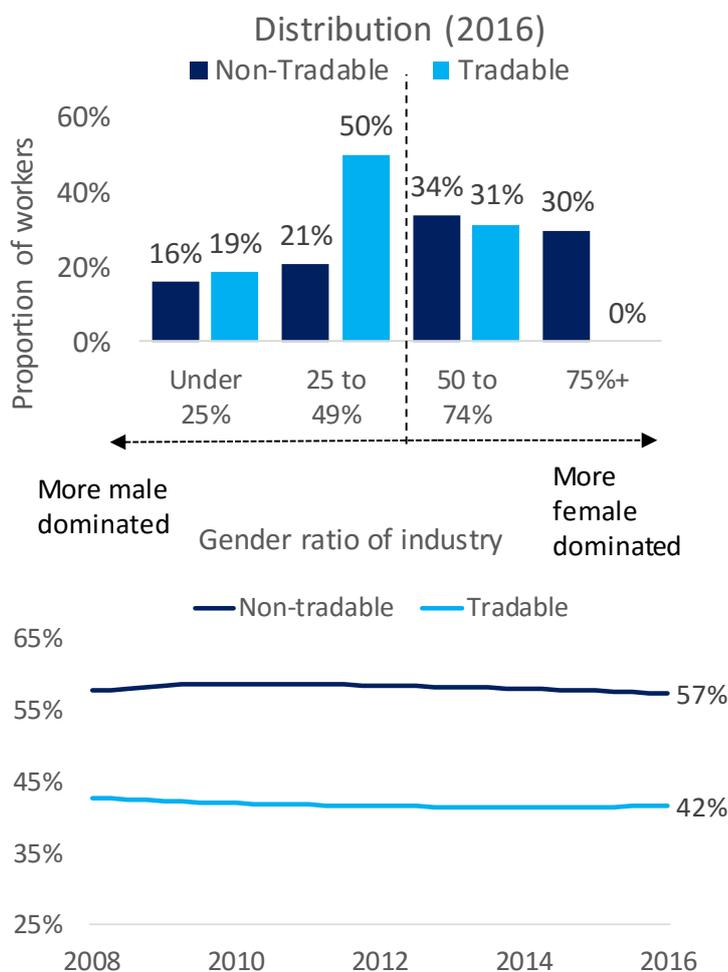
3. Females are less likely to be employed in the tradable sector

Tradable sector workers are less likely to be women than men. Women account for 42 percent of the tradable sector workforce, compared to 57 percent in the non-tradable sector (Figure 3). For comparison, women represent 49 percent of the total workforce.

Figure 3 shows the distribution of men and women across industries, as well as the gender ratio between the tradable and non-tradable sectors. The gender ratio is defined as the share of females in total employment. Figure 3 also indicates that the share of women working in tradable and non-tradable sectors has remained stable over the last decade.

Figure 3 Tradable sector by gender*

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* The distribution graph shows the gender ratio of industries weighted by the proportion of workers.

Source: Statistics NZ, NZIER

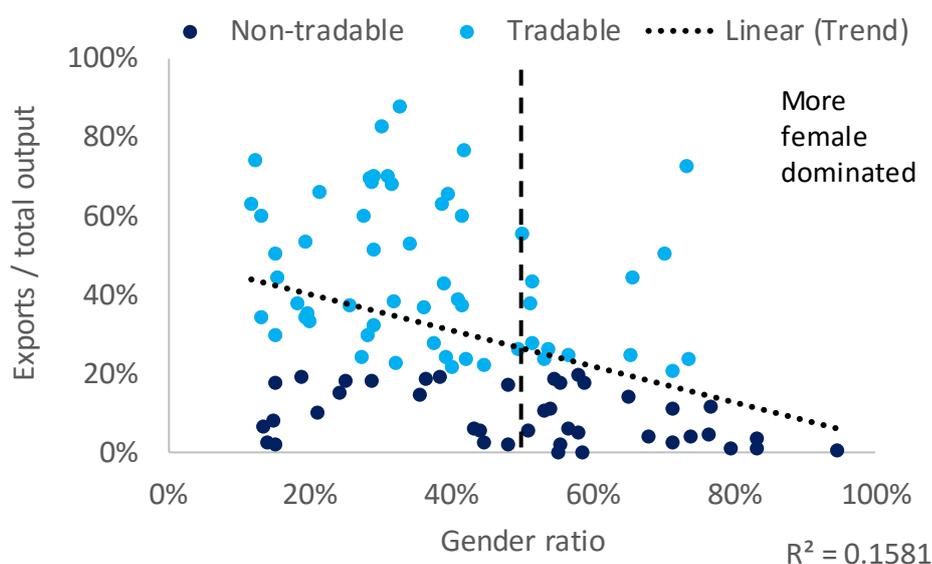
Figure 4 shows the gender ratio compared to the export ratio of both tradable and non-tradable sectors. Like Figure 3 above, it shows that tradable sectors tend to be

male dominated. Most of the tradable sector industries have gender ratios ranging from 25 percent to 49 percent.

None of the female-dominated industries (i.e. gender ratio above 75 percent) are in the tradable sector, as shown in Figure 4 and Table 10 in Appendix C.

It also shows a weak negative correlation between the export ratio and the gender ratio. In other words, the more tradable an industry (higher export to output ratio), the less likely it will employ women.

Figure 4 Gender ratio compared to export ratio



Source: Statistics NZ, NZIER

Table 1 shows the top three industries with a high export ratio that are female dominated. These industries correspond to the three outliers in female dominated industries in Figure 4 above.

Table 1 Industries with high gender and export ratio

Industry	Industry gender ratio	Industry export ratio
Clothing, knitted products and footwear manufacturing	73%	72%
Travel agency and tour arrangement services	70%	50%
Accommodation	66%	44%

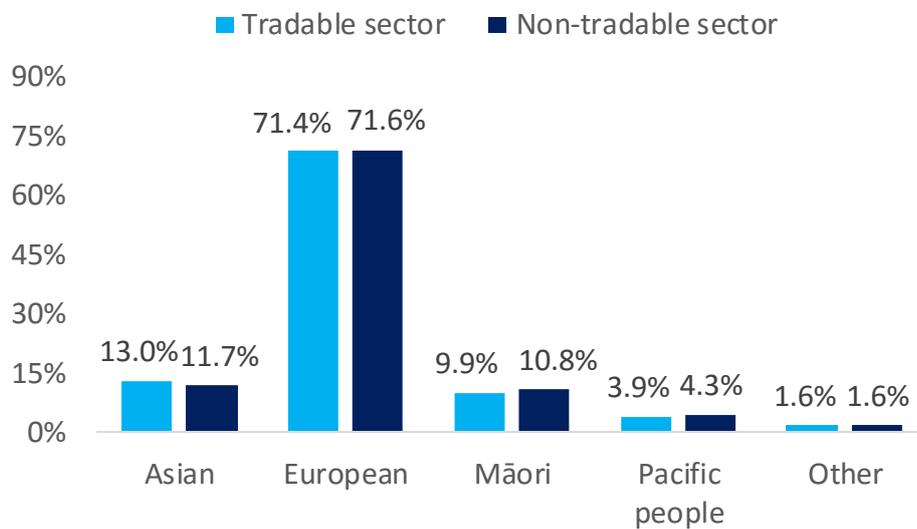
Source: Statistics NZ, NZIER

4. Ethnicity has little influence on tradable sector employment

Asian workers account for 13 percent of the tradable sector workforce, compared to 11.7 percent of the non-tradable sector workforce. For all other ethnicities, a slightly higher proportion works in the non-tradable sector (Figure 5).

Figure 5 Tradable sector by ethnicity

HLFS 2018



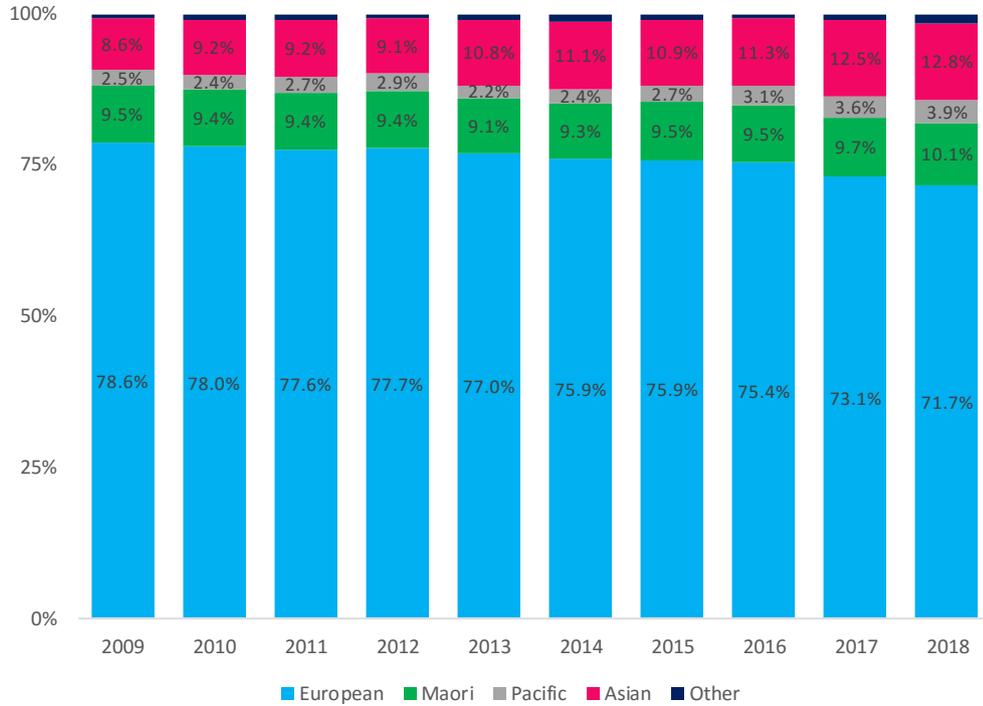
Source: Statistics NZ, NZIER

Figure 6 shows the percentage point difference between the share of people employed in the tradable and non-tradable sectors by ethnicity, over time.

Between 2009 and 2018, the share of New Zealand European employees in the tradable sector has decreased by 6.3 percentage points, while the share of Asians and Pacific peoples has increased by 4.8 percentage points and 0.8 percentage points, respectively (Figure 6).

Figure 6 Share of employees in the tradable sector, by ethnicity and over time³

In percent of total employment in tradable sector



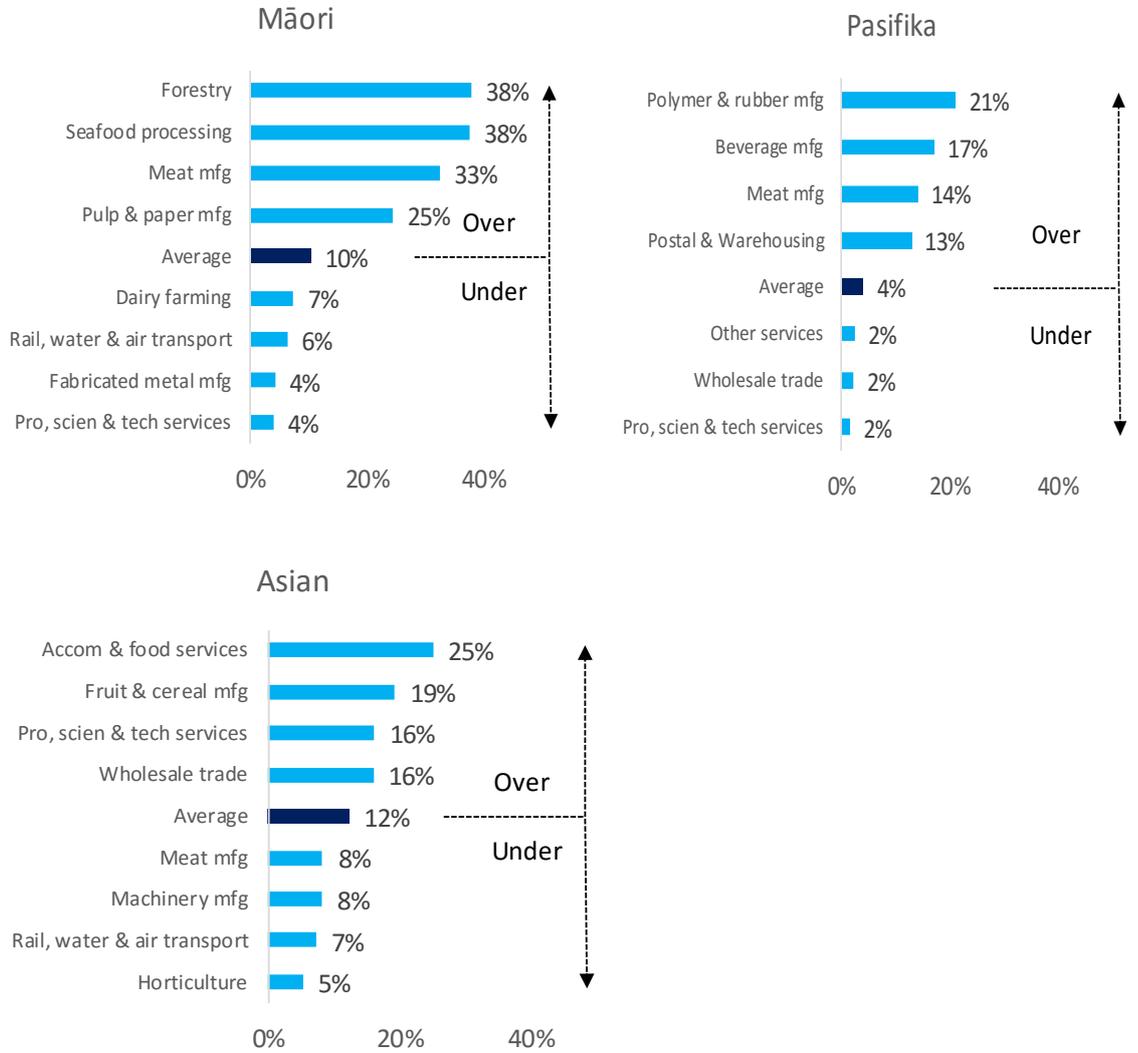
Source: Statistics NZ, NZIER

Figure 7 shows the representation of Māori, Pasifika and Asian workers within selected tradable industries.

³ The fairly volatile nature of this series is likely due to the use of the disaggregated Household Labour Force Survey results as the primary source. The more disaggregated the results are, the more uncertain they are (sampling error).

Figure 7 Tradable industries with over- and under-representation by ethnicity

HLFS 2018



Source: Statistics NZ, NZIER

5. Tradable sector employment is concentrated in SMEs

Workers in the tradable sector are slightly more likely to work for small and medium size firms (SMEs) (i.e. less than 10 employees)⁴ than those in the non-tradable sectors: 46 percent compared to 42 percent (Figure 8).

The top 5 tradable industries with the highest concentration of SMEs are the following:

- Dairy cattle farming (80% of employees work for SMEs)
- Sheep, beef cattle and grain farming (74% of employees work for SMEs)
- Repair and maintenance (60% of employees work for SMEs)
- Other manufacturing (41% of employees work for SMEs)
- Poultry, deer and other livestock farming (40% of employees work for SMEs)

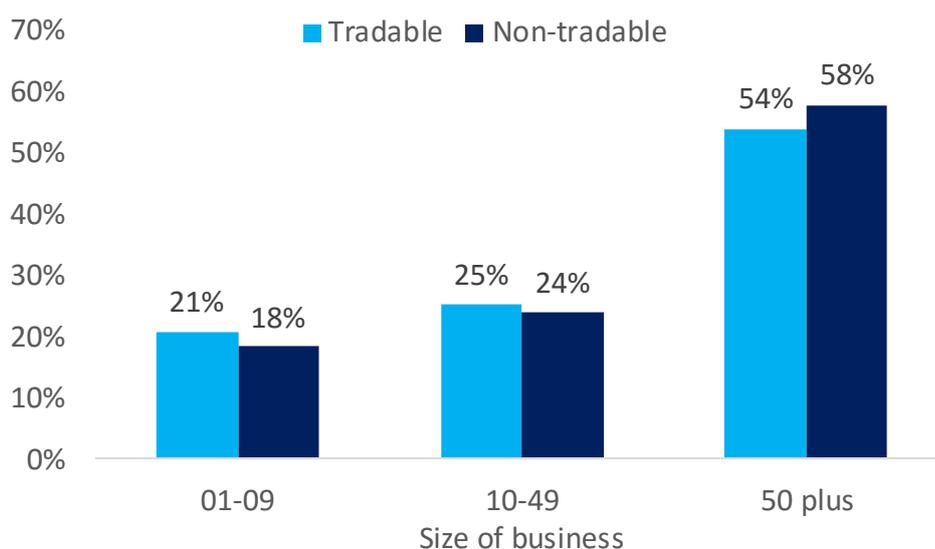
For full results see Table 11 in Appendix B.

Conversely, 58 percent of the non-tradable sector workers have a job in firms with 50 or more employees (Figure 8). The role of the non-tradable government sector (education, health, social services) is a key driver of this result.

Excluding the non-tradable government sector, non-tradable workers are less likely to work in firms with 50 or more employees (51 percent compared of 54 percent for tradable workers).

Figure 8 Tradable sector by firm size

LEED 2016



Source: Statistics NZ, NZIER

⁴ Note that there is no 'official' definition of a SME. MBIE uses 20 or less employees to define a 'small business' (see <http://www.mbie.govt.nz/info-services/sectors-industries/sectors-reports-series/pdf-image-library/the-small-business-sector-report-and-factsheet/small-business-factsheet-2016.pdf>). But they also use this to define a SME.

6. South Island workers are more likely to be engaged in the tradable sector than those in the North Island

The tradable sector makes up 44 percent of employment in the South Island compared to only 41 percent in the North Island. The tradable sector in Tasman, Marlborough and Southland accounts for over half of total employment (Figure 9). This is also true for the Hawke's Bay and Gisborne regions.

Wellington employment is mostly concentrated in the non-tradable sector, due largely to the prevalence of non-tradable government industries.

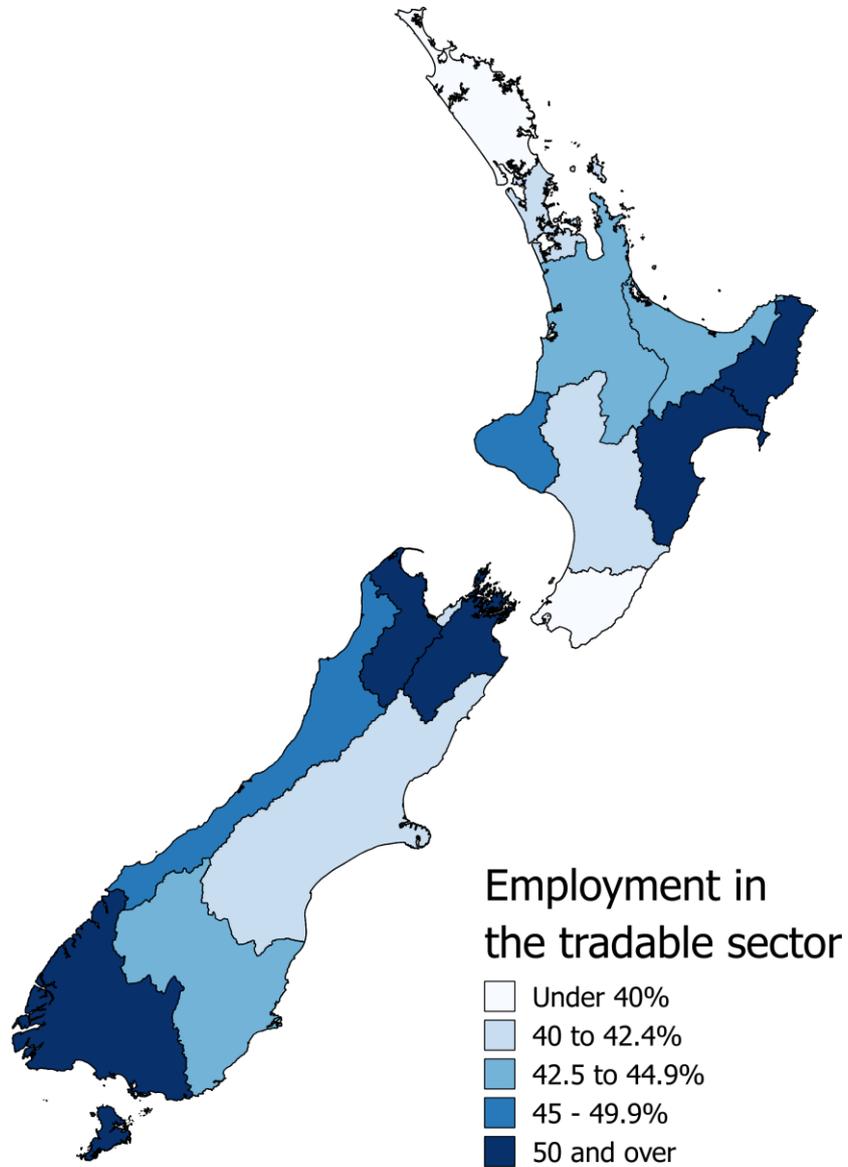
This split also exists at the national level with 49 percent of employment in the tradable industries based in rural areas, against 38 percent in urban areas.⁵

Figure 10 shows the largest tradable industries. It shows that the primary industries dominate regions with high tradable sector employment. For example, horticulture and fruit growing is an important industry for Gisborne, Hawke's Bay, Tasman, and Marlborough. Dairy cattle farming is an important tradable sector industry in the Waikato, Taranaki, Northland, and Southland.

⁵ The following cities are defined as urban areas: Auckland, Christchurch, Dunedin, Hamilton, Invercargill, Lower Hutt, Napier, Nelson, Palmerston North, Porirua, Tauranga, Upper Hutt, Wellington.

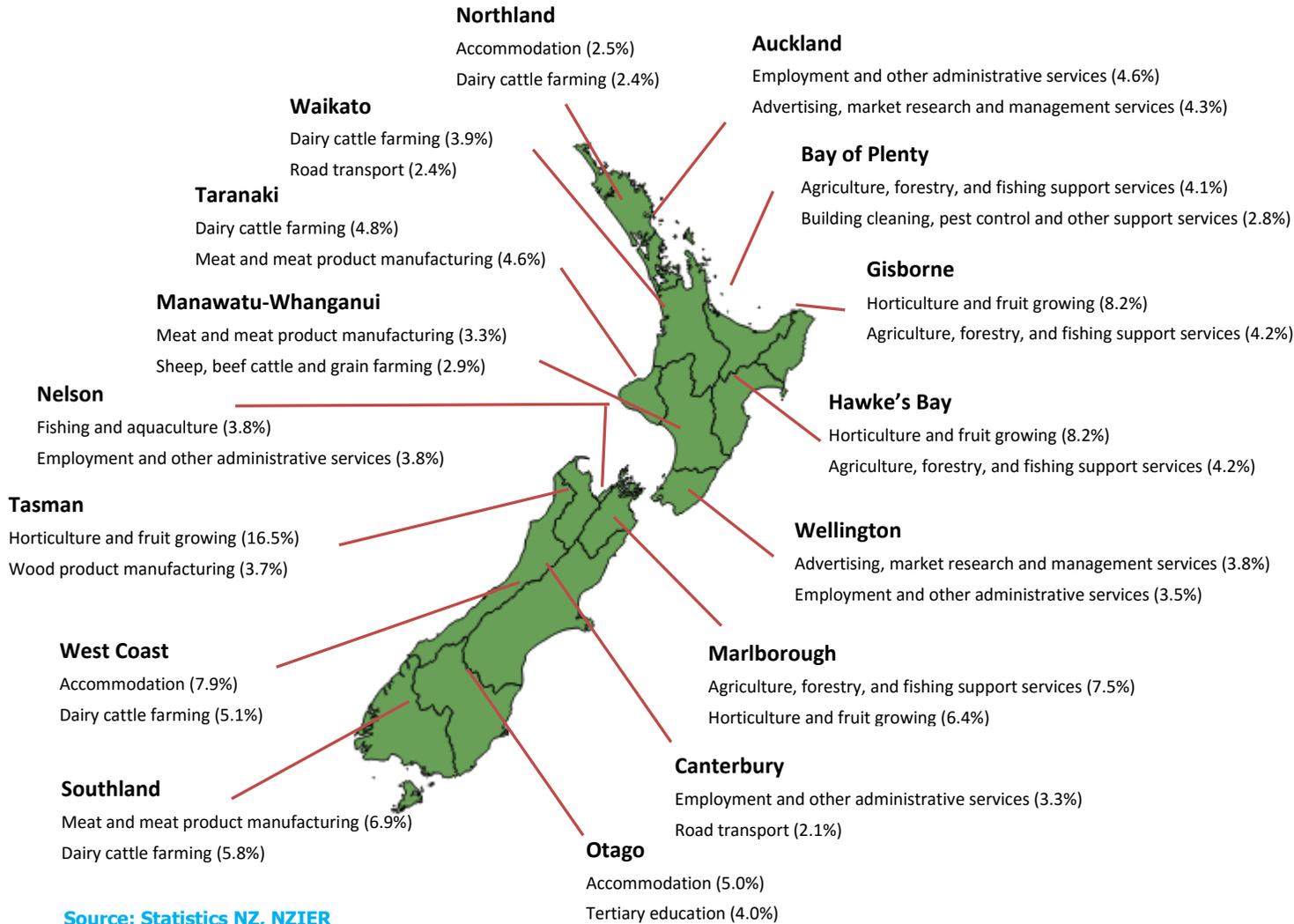
Figure 9 Tradable sector employment by region

Business Demography 2017



Source: Statistics NZ, NZIER

Figure 10 Largest regional tradable industries by employment



Source: Statistics NZ, NZIER

See Appendix B for more detailed tables.

Appendix A Methodology

A.1 Definition of tradable sector

We have updated Statistics New Zealand’s classification for tradable and non-tradable industries using the input-output (IO) table for the year ended March 2013 and published in July 2017, with some adjustments to take into account the latest data available in the 2017 National Accounts.

To make these adjustments, we use a program developed by Mark Horridge (2009)⁶ which uses scaling procedures based on RAS or maximum-entropy approach.⁷

The procedure:

1. Scales up the 2013 industry GDP data to match the 2017 National Accounts industry GDP data.
2. Estimates the additional data we need to run our CGE model, such as compensation of employees, operating surplus, taxes and subsidies, components of final demand, etc, by industry (which is not available in the 2017 National Accounts data).
3. Ensures that key CGE adding up constraints are satisfied – namely total sales of each commodity must equal total production; and total costs of each industry must equal value of output, by making iterative small adjustments to industry costs and output until the database is balanced.

The IO table describe the relationships between industries, registered under the Australia New Zealand Standard Industry Classification 2006 (ANZSIC06), and the goods and services they use and produce using National Accounts 2006 Commodity Classification (NA06CC).

Imports and exports data from these tables were used to identify whether an industry is considered tradable or not.

We have followed the same methodology as Attewell and Crossan (2013).⁸

To identify which industries are tradable or non-tradable, we have used MFAT’s definition⁹ in which an industry is classified as tradable when:

- Its exports as a share of output is greater than 20 percent
- Its imports as a share of total inputs is greater than 20 percent.

In practice, we find that the imports ratio test is essentially redundant, as every single tradable industry that passes the imports test also passes the exports test.

⁶ Horridge JM. (2009). Using levels GEMPACK to update or balance a complex CGE database. Technical document tpmh0058. Centre of Policy Studies, Monash University, Melbourne.

⁷ This program can be downloaded from the Centre of Policy Studies website: <https://www.copsmodels.com/archivep.htm>. Technical document TPMH0058. The file contains (1) a word document describing the technical aspects of the ADJUSTER program, (2) the TABLO file (ADJUSTER.TAB) which contains all relevant equations to update the database and (3) several command files (*.CMF). These command files illustrate a series of example computations.

⁸ Attewell, J.; Crossan, S., 2013, *The tradable sector and its relevance to New Zealand’s GDP*, presented at the New Zealand Association of Economists conference, Wellington, New Zealand, 2013.

⁹ Bailey, P.; Ford, D., 2017, *Estimating New Zealand’s tradable and non-tradable sectors using Input-Output tables*.

A.2 Classification of tradable and non-tradable industries

In this report, we only consider the indirect classification for which an industry is classified as tradable if the 'ultimate use' of its output is more than 20 percent exported. This approach captures the share of an industry output that is indirectly exported, i.e. for its 'ultimate use'.

For example, the electricity sector may not export directly at all, but because it is used by export industries, we can measure how much of electricity output is indirectly exported. We use the MFAT definition for defining tradable industries and therefore, maintain a threshold of 20 percent of total output exported to identify a tradable industry.

When taking into account upstream industries under the indirect method, the tradable sector accounts for 47 percent of the economy and 42 percent of employment (Table 2).

Table 2 summary of tradable and non-tradable sectors

2017, NZIER and Business Demography

Sector	No. of industries	GDP at factor cost, \$m	Share of GDP	Employment	Share of employment
Non-tradable	46	\$122,647	53%	1,263,990	58%
Tradable	60	\$107,150	47%	897,175	42%
Total	106	\$229,796	100%	2,161,165	100%

Source: NZIER

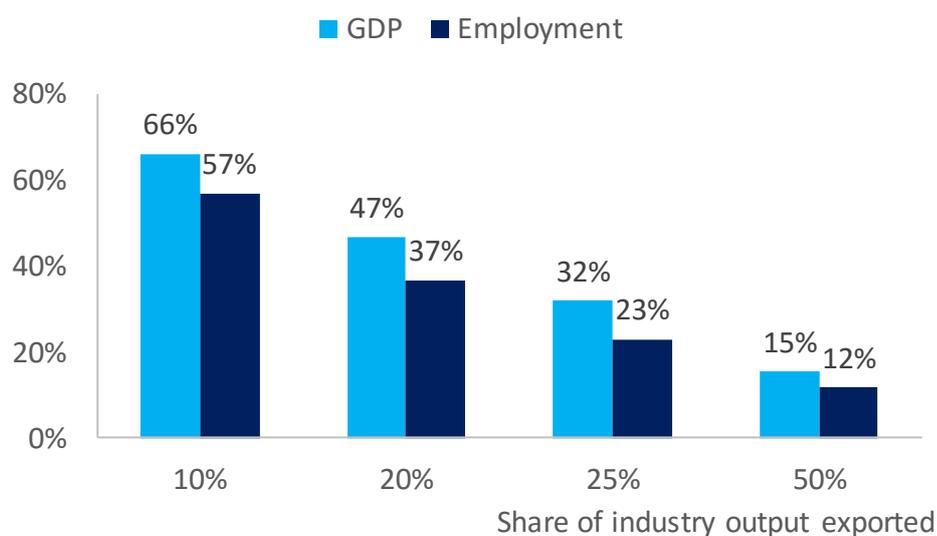
Appendix B Sensitivity analysis

This appendix looks at how the results change depending on what threshold of exported industry output we choose to define the tradable sector.

Figure 11 shows that, regardless of the threshold, productivity is higher in the tradable sector.

Figure 11 Share of tradable sector in GDP and employment

The x axis shows the different thresholds for exported industry outputs



Source: NZIER

Table 3 Sensitivity analysis of average incomes

LEED 2017

Sector	Tradable at 10%	Tradable at 20%	Tradable at 25%	Tradable at 50%
Tradable	56,148	57,414	56,856	55,897
Non-tradable	53,729	53,643	54,497	55,092

Source: NZIER

The share of women employed in the tradable sector is sensitive to threshold of exported industry output (Table 4). Similarly, employment by firm size (Table 5) and by regions (Table 7) is sensitive to the degree of exported industry outputs chosen.

Conversely, employment by ethnicity is largely stable across the different thresholds (Table 6).

Table 4 Sensitivity analysis of employment by gender

LEED 2017

Sector	Tradable at 10%	Tradable at 20%	Tradable at 25%	Tradable at 50%
Women in Tradable	538,274	335,504	215,549	71,005
Men in Tradable	694,815	502,090	382,535	155,595
Gender ratio	43.7%	40.1%	36.0%	31.3%

Source: NZIER

Table 5 Sensitivity analysis of employment by firm size

LEED 2017

Sector	Firm size	Tradable at 10%	Tradable at 20%	Tradable at 25%	Tradable at 50%
Tradable	1- 9 employees	22%	21%	24%	27%
	10-49 employees	27%	25%	27%	25%
	50+ employees	51%	54%	50%	47%
Non-tradable	1- 9 employees	15%	18%	17%	18%
	10-49 employees	21%	24%	24%	24%
	50+ employees	64%	58%	59%	57%

Source: NZIER

Table 6 Sensitivity analysis of employment by ethnicity

HLFS 2017

Sector	Ethnicity	Tradable at 10%	Tradable at 20%	Tradable at 25%	Tradable at 50%
Tradable	European	73%	71%	69%	72%
	Māori	10%	10%	11%	14%
	Pacific	4%	4%	5%	2%
	Asian	12%	13%	13%	6%
Non-tradable	European	73%	74%	75%	73%
	Māori	12%	11%	10%	10%
	Pacific	5%	4%	4%	4%
	Asian	13%	12%	13%	13%

Source: NZIER

Table 7 Sensitivity analysis of employment by region

Business demography 2017

Regions	Tradable at 10%	Tradable at 20%	Tradable at 25%	Tradable at 50%
Auckland	65%	41%	27%	7%
Bay of Plenty	59%	43%	34%	15%
Canterbury	59%	41%	30%	13%
Gisborne	62%	51%	44%	27%
Hawke's Bay	63%	50%	42%	24%
Manawatu-Wanganui	55%	40%	30%	17%
Marlborough	66%	54%	47%	24%
Nelson	58%	41%	29%	12%
Northland	54%	39%	30%	16%
Otago	62%	44%	32%	15%
Southland	65%	52%	45%	30%
Taranaki	62%	48%	39%	21%
Tasman	70%	54%	50%	33%
Waikato	60%	43%	34%	18%
Wellington	55%	31%	18%	4%
West Coast	61%	46%	40%	22%
New Zealand	61%	42%	30%	12%

Source: NZIER

Appendix C Detailed results

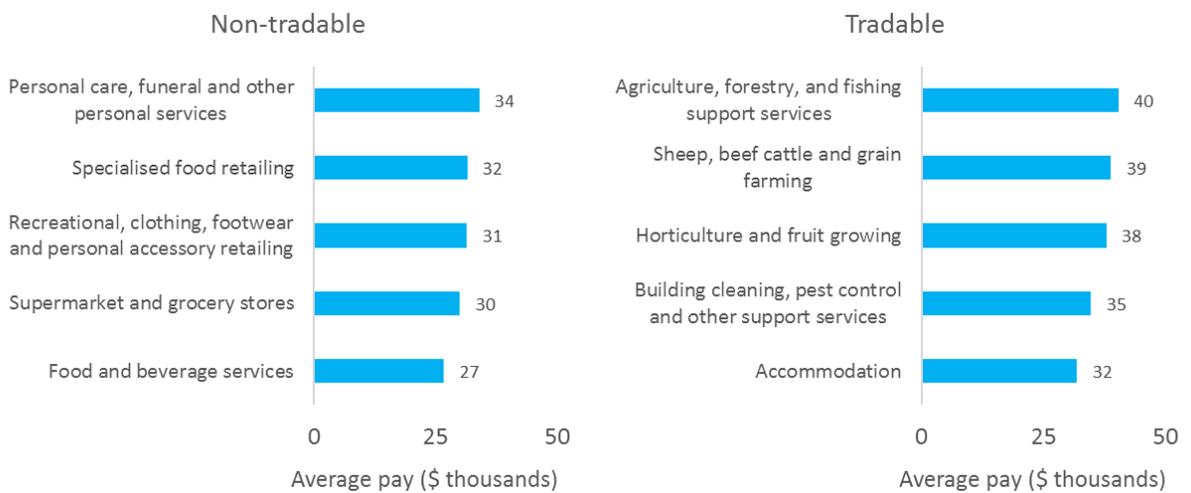
Figure 12 and Figure 13 below show the five lowest paying and five highest paying industries in both sectors. The lowest paying industries in the tradable sector are agriculture and accommodation, while the highest are oil, mining and electricity.

For the non-tradable sector, retailing and food services pay the lowest, while banking, finance and ICT-related industries pay the highest.

For more industries see Table 9.

Figure 12 Lowest paying industries by sector

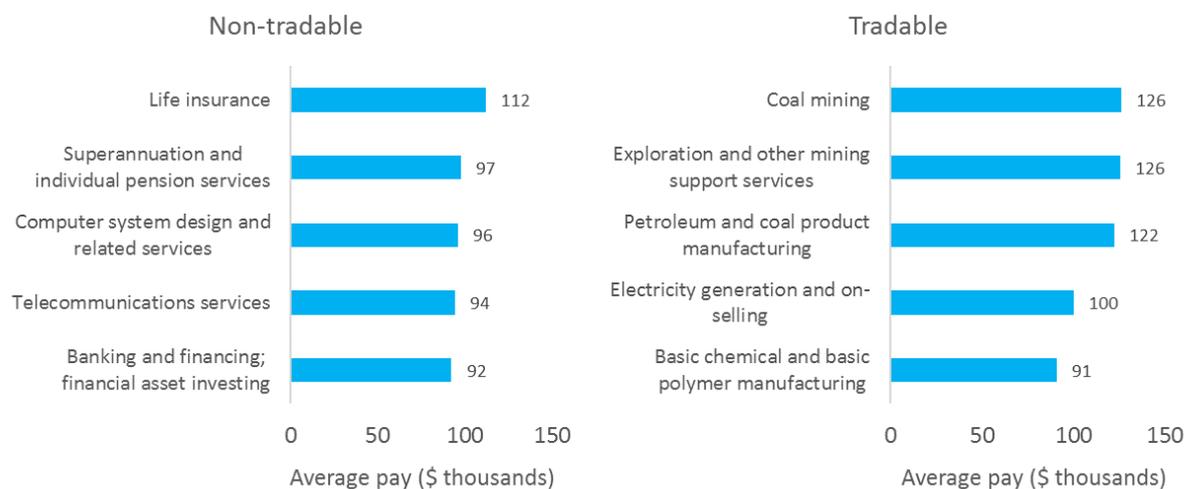
LEED 2016



Source: Statistics NZ, NZIER

Figure 13 Highest paying industries by sector

LEED 2016



Source: Statistics NZ, NZIER

Table 8 Number of jobs

Business Demography 2017

Industry (NZSIOC Level 4)	Jobs	% of total jobs		Industry (NZSIOC Level 4)	Jobs	% of total jobs
Non-tradable				Tradable		
Food and beverage services	129,508	6.0		Employment and other administrative services	73,445	3.4
Central government administration and justice	97,131	4.5		Advertising, market research and management services	57,612	2.7
School education	95,535	4.4		Tertiary education	42,140	2.0
Construction services	88,383	4.1		Road transport	40,829	1.9
Residential care services and social assistance	84,090	3.9		Accommodation	34,200	1.6
Hospitals	77,320	3.6		Legal and accounting services	33,360	1.5
Medical and other health care services	68,949	3.2		Building cleaning, pest control and other support services	33,306	1.5
Supermarket and grocery stores	57,360	2.7		Machinery and equipment wholesaling	30,095	1.4
Scientific, architectural and engineering services	46,112	2.1		Meat and meat product manufacturing	29,913	1.4
Furniture, electrical and hardware retailing	38,335	1.8		Horticulture and fruit growing	29,332	1.4
Heavy and civil engineering construction	33,615	1.6		Transport support services	28,183	1.3
Computer system design and related services	32,550	1.5		Repair and maintenance	28,067	1.3
Recreational, clothing, footwear and personal accessory retailing	31,380	1.5		Fruit, oil, cereal and other food product manufacturing	27,711	1.3
Banking and financing; financial asset investing	28,957	1.3		Other goods and commission based wholesaling	26,699	1.2
Other store based retailing; non-store and commission based retailing	28,005	1.3		Dairy cattle farming	26,380	1.2
Sport and recreation activities	27,096	1.3		Agriculture, forestry, and fishing support services	26,275	1.2
Preschool education	26,913	1.2		Fabricated metal product manufacturing	24,955	1.2
Residential building construction	26,300	1.2		Grocery, liquor and tobacco product wholesaling	24,792	1.1
Religious services; civil, professional, and other interest groups	23,088	1.1		Basic material wholesaling	22,112	1.0
Local government administration	21,845	1.0		Sheep, beef cattle and grain farming	21,060	1.0
Personal care, funeral and other personal services	19,585	0.9		Wood product manufacturing	17,170	0.8
Department stores	18,430	0.9		Machinery manufacturing	16,304	0.8
Motor vehicle and parts retailing	18,290	0.8		Adult, community and other education	16,227	0.8
Telecommunications services	15,151	0.7		Other transport	14,804	0.7

Industry (NZSIOC Level 4)	Jobs	% of total jobs		Industry (NZSIOC Level 4)	Jobs	% of total jobs
Non-tradable				Tradable		
Superannuation and individual pension services	14,548	0.7		Rental and hiring services (except real estate); non-financial asset leasing	12,952	0.6
Specialised food retailing	12,011	0.6		Dairy product manufacturing	12,171	0.6
Real estate services	11,075	0.5		Transport equipment manufacturing	12,096	0.6
Non-residential building construction	10,930	0.5		Electronic and electrical equipment manufacturing	11,896	0.6
Heritage and artistic activities	10,289	0.5		Polymer product and rubber product manufacturing	11,424	0.5
Fuel retailing	8,681	0.4		Publishing (except internet and music publishing)	8,851	0.4
Residential property operation	8,490	0.4		Printing	7,902	0.4
Non-metallic mineral product manufacturing	8,432	0.4		Travel agency and tour arrangement services	7,745	0.4
Health and general insurance	8,264	0.4		Veterinary and other professional services	7,637	0.4
Motor vehicle and motor vehicle parts wholesaling	8,000	0.4		Beverage and tobacco product manufacturing	7,137	0.3
Waste collection, treatment and disposal services	5,799	0.3		Poultry, deer and other livestock farming	6,334	0.3
Furniture manufacturing	5,621	0.3		Textile and leather manufacturing	6,116	0.3
Broadcasting and internet publishing	5,450	0.3		Warehousing and storage services	5,728	0.3
Library and other information services	4,125	0.2		Electricity transmission and distribution	5,233	0.2
Gambling activities	4,054	0.2		Pulp, paper and converted paper product manufacturing	4,742	0.2
Life insurance	2,300	0.1		Forestry and logging	4,698	0.2
Water supply	1,889	0.1		Pharmaceutical, cleaning and other chemical manufacturing	4,396	0.2
				Primary metal and metal product manufacturing	4,098	0.2
				Seafood processing	3,978	0.2
				Metal ore and non-metallic mineral mining and quarrying	3,845	0.2
				Motion picture and sound recording activities	3,419	0.2
				Clothing, knitted products and footwear manufacturing	3,353	0.2
				Fishing and aquaculture	3,202	0.1
				Other manufacturing	2,986	0.1
				Rail transport	2,286	0.1
				Electricity generation and on-selling	1,783	0.1
				Basic chemical and basic polymer manufacturing	1,724	0.1
				Fertiliser and pesticide manufacturing	1,185	0.1

Industry (NZSIOC Level 4)	Jobs	% of total jobs	Industry (NZSIOC Level 4)	Jobs	% of total jobs
Non-tradable			Tradable		
			Petroleum and coal product manufacturing	1,012	0.0
			Exploration and other mining support services	871	0.0
			Gas supply	695	0.0
			Coal mining	657	0.0
Total (non-tradable)	1,263,886	58%	Total (Tradable)	897,123	42%

Source: Statistics NZ, NZIER

Table 9 Number of jobs and average income by industry

LEED 2016 and Business Demography 2017

Industry (NZSIOC Level 4)	Jobs (2017)	Average pay (2016)		Industry (NZSIOC Level 4)	Jobs (2017)	Average pay (2016)
Non-tradable				Tradable		
Life insurance	2,300	111,779		Coal mining	657	126,020
Superannuation and individual pension services	14,548	97,484		Exploration and other mining support services	871	125,701
Computer system design and related services	32,550	95,857		Petroleum and coal product manufacturing	1,012	122,199
Telecommunications services	15,151	94,164		Electricity generation and on-selling	1,783	100,108
Banking and financing; financial asset investing	28,957	92,081		Basic chemical and basic polymer manufacturing	1,724	90,893
Health and general insurance	8,264	85,619		Primary metal and metal product manufacturing	4,098	89,787
Broadcasting and internet publishing	5,450	79,163		Rail transport	2,286	87,784
Scientific, architectural and engineering services	46,112	77,455		Pulp, paper and converted paper product manufacturing	4,742	81,839
Central government administration and justice	97,131	73,910		Fertiliser and pesticide manufacturing	1,185	79,136
Non-residential building construction	10,930	73,736		Machinery and equipment wholesaling	30,095	78,196
Heavy and civil engineering construction	33,615	73,525		Advertising, market research and management services	57,612	76,037
Water supply	1,889	72,163		Dairy product manufacturing	12,171	73,209
Hospitals	77,320	71,875		Transport equipment manufacturing	12,096	71,762
Non-metallic mineral product manufacturing	8,432	67,781		Electronic and electrical equipment manufacturing	11,896	71,338
Local government administration	21,845	66,314		Basic material wholesaling	22,112	67,386
Library and other information services	4,125	64,130		Metal ore and non-metallic mineral mining and quarrying	3,845	66,867
Motor vehicle and motor vehicle parts wholesaling	8,000	62,173		Legal and accounting services	33,360	66,238
Real estate services	11,075	61,574		Machinery manufacturing	16,304	65,193
Waste collection, treatment and disposal services	5,799	57,657		Tertiary education	42,140	63,132
Motor vehicle and parts retailing	18,290	56,234		Polymer product and rubber product manufacturing	11,424	62,853
Construction services	88,383	54,881		Transport support services	28,183	61,332
Gambling activities	4,054	52,747		Pharmaceutical, cleaning and other chemical manufacturing	4,396	60,844
School education	95,535	52,526		Other goods and commission based wholesaling	26,699	59,835
Residential building construction	26,300	52,053		Fabricated metal product manufacturing	24,955	59,409
Furniture manufacturing	5,621	49,756		Fishing and aquaculture	3,202	59,077

Industry (NZSIOC Level 4)	Jobs (2017)	Average pay (2016)		Industry (NZSIOC Level 4)	Jobs (2017)	Average pay (2016)
Non-tradable				Tradable		
Medical and other health care services	68,949	49,676		Publishing (except internet and music publishing)	8,851	58,552
Heritage and artistic activities	10,289	48,718		Meat and meat product manufacturing	29,913	58,324
Residential property operation	8,490	47,791		Forestry and logging	4,698	56,759
Furniture, electrical and hardware retailing	38,335	44,909		Printing	7,902	56,581
Religious services; civil, professional, and other interest groups	23,088	41,592		Grocery, liquor and tobacco product wholesaling	24,792	56,261
Sport and recreation activities	27,096	39,206		Fruit, oil, cereal and other food product manufacturing	27,711	56,207
Other store based retailing; non-store and commission based retailing	28,005	36,718		Wood product manufacturing	17,170	56,116
Preschool education	26,913	36,555		Warehousing and storage services	5,728	55,719
Department stores	18,430	35,945		Textile and leather manufacturing	6,116	54,962
Fuel retailing	8,681	35,847		Seafood processing	3,978	54,446
Residential care services and social assistance	84,090	35,435		Road transport	40,829	53,342
Personal care, funeral and other personal services	19,585	34,036		Rental and hiring services (except real estate); non-financial asset leasing	12,952	53,024
Specialised food retailing	12,011	31,527		Motion picture and sound recording activities	3,419	52,446
Recreational, clothing, footwear and personal accessory retailing	31,380	31,459		Veterinary and other professional services	7,637	52,302
Supermarket and grocery stores	57,360	29,967		Travel agency and tour arrangement services	7,745	51,884
Food and beverage services	129,508	26,685		Repair and maintenance	28,067	50,115
				Beverage and tobacco product manufacturing	7,137	48,885
				Other manufacturing	2,986	47,177
				Employment and other administrative services	73,445	44,322
				Other transport	14,804	43,796
				Dairy cattle farming	26,380	43,713
				Adult, community and other education	16,227	42,475
				Poultry, deer and other livestock farming	6,334	42,375
				Clothing, knitted products and footwear manufacturing	3,353	41,951

Industry (NZSIOC Level 4)	Jobs (2017)	Average pay (2016)		Industry (NZSIOC Level 4)	Jobs (2017)	Average pay (2016)
Non-tradable				Tradable		
				Agriculture, forestry, and fishing support services	26,275	40,491
				Sheep, beef cattle and grain farming	21,060	38,869
				Horticulture and fruit growing	29,332	38,011
				Building cleaning, pest control and other support services	33,306	34,806
				Accommodation	34,200	31,883
Total (non-tradable)	1,263,886	53,643		Total (Tradable)	891,195	57,414

Source: Statistics NZ, NZIER

Table 10 Employment by gender

LEED 2017

Industry (NZSIOC level 4)	# of women	Total employment	Gender ratio		Industry (NZSIOC level 4)	# of women	Total employment	Gender ratio
Non-tradable					Tradable			
Preschool education	24,730	26,170	94%		Veterinary and other professional services	5,460	7,420	74%
Residential care services and social assistance	67,610	81,090	83%		Clothing, knitted products and footwear manufacturing	2,440	3,330	73%
Medical and other health care services	56,420	67,740	83%		Legal and accounting services	23,070	32,280	71%
Hospitals	57,330	71,950	80%		Travel agency and tour arrangement services	4,910	6,990	70%
Personal care, funeral and other personal services	14,660	19,070	77%		Accommodation	19,700	29,960	66%
School education	76,050	99,380	77%		Adult, community and other education	10,960	16,790	65%
Recreational, clothing, footwear and personal accessory retailing	22,080	29,880	74%		Tertiary education	25,610	45,310	57%
Other store based retailing; non-store and commission based retailing	18,795	26,340	71%		Other goods and commission based wholesaling	13,950	26,000	54%
Real estate services	7,690	10,790	71%		Publishing (except internet and music publishing)	3,890	7,320	53%
Department stores	12,470	18,340	68%		Pharmaceutical, cleaning and other chemical manufacturing	2,230	4,340	51%
Religious services; civil, professional, and other interest groups	15,540	23,830	65%		Advertising, market research and management services	28,710	55,930	51%
Health and general insurance	4,780	8,120	59%		Fruit, oil, cereal and other food product manufacturing	13,480	26,320	51%
Life insurance	1,250	2,130	59%		Motion picture and sound recording activities	1,630	3,260	50%
Library and other information services	2,260	3,889	58%		Building cleaning, pest control and other support services	14,920	30,200	49%
Food and beverage services	67,380	116,070	58%		Employment and other administrative services	28,380	63,480	45%
Supermarket and grocery stores	30,960	54,810	56%		Electricity generation and on-selling	800	1,900	42%
Banking and financing; financial asset investing	18,155	32,675	56%		Seafood processing	1,470	3,510	42%
Local government administration	12,020	21,680	55%		Horticulture and fruit growing	8,960	21,550	42%

Industry (NZSIOC level 4)	# of women	Total employment	Gender ratio		Industry (NZSIOC level 4)	# of women	Total employment	Gender ratio
Non-tradable					Tradable			
Superannuation and individual pension services	7,789	14,109	55%		Other transport	6,075	14,655	41%
Heritage and artistic activities	5,340	9,760	55%		Beverage and tobacco product manufacturing	2,605	6,355	41%
Sport and recreation activities	13,180	24,370	54%		Grocery, liquor and tobacco product wholesaling	9,000	22,490	40%
Specialised food retailing	6,000	11,300	53%		Textile and leather manufacturing	2,290	5,790	40%
Gambling activities	2,480	4,880	51%		Printing	3,125	7,950	39%
Broadcasting and internet publishing	2,560	5,320	48%		Other manufacturing	1,100	2,820	39%
Residential property operation	3,820	7,950	48%		Poultry, deer and other livestock farming	2,290	5,920	39%
Central government administration and justice	39,040	87,230	45%		Transport support services	10,500	27,870	38%
Furniture, electrical and hardware retailing	16,460	37,310	44%		Rental and hiring services (except real estate); non-financial asset leasing	4,410	12,170	36%
Fuel retailing	3,560	8,210	43%		Electronic and electrical equipment manufacturing	3,840	11,230	34%
Water supply	710	1,850	38%		Dairy product manufacturing	3,950	12,040	33%
Scientific, architectural and engineering services	16,200	44,480	36%		Electricity transmission and distribution	1,650	5,130	32%
Telecommunications services	5,020	14,130	36%		Warehousing and storage services	1,780	5,590	32%
Computer system design and related services	9,100	31,520	29%		Meat and meat product manufacturing	7,440	23,600	32%
Furniture manufacturing	1,380	5,480	25%		Fishing and aquaculture	950	3,050	31%
Waste collection, treatment and disposal services	1,290	5,350	24%		Dairy cattle farming	7,480	24,760	30%
Motor vehicle and parts retailing	3,670	17,440	21%		Basic material wholesaling	6,090	20,900	29%
Motor vehicle and motor vehicle parts wholesaling	1,480	7,840	19%		Polymer product and rubber product manufacturing	3,130	10,800	29%
Residential building construction	3,810	25,000	15%		Sheep, beef cattle and grain farming	4,980	17,190	29%
Non-metallic mineral product manufacturing	1,200	7,990	15%		Fertiliser and pesticide manufacturing	390	1,350	29%
Construction services	12,530	83,930	15%		Basic chemical and basic polymer manufacturing	500	1,750	29%
Heavy and civil engineering construction	4,490	31,890	14%		Gas supply	150	530	28%

Industry (NZSIOC level 4)	# of women	Total employment	Gender ratio		Industry (NZSIOC level 4)	# of women	Total employment	Gender ratio
Non-tradable					Tradable			
Non-residential building construction	1,360	10,220	13%		Agriculture, forestry, and fishing support services	6,380	23,185	28%
					Machinery and equipment wholesaling	8,010	29,440	27%
					Petroleum and coal product manufacturing	260	1,010	26%
					Pulp, paper and converted paper product manufacturing	970	4,520	21%
					Rail transport	490	2,440	20%
					Repair and maintenance	5,260	26,810	20%
					Transport equipment manufacturing	2,330	12,020	19%
					Metal ore and non-metallic mineral mining and quarrying	780	4,050	19%
					Road transport	6,930	38,100	18%
					Machinery manufacturing	2,440	15,750	15%
					Wood product manufacturing	2,540	16,700	15%
					Fabricated metal product manufacturing	3,620	23,950	15%
					Coal mining	85	645	13%
					Exploration and other mining support services	104	794	13%
					Forestry and logging	540	4,340	12%
					Primary metal and metal product manufacturing	470	4,010	12%
Total (non-tradable)	672,649	1,211,513	56%		Total (tradable)	335,504	837,594	40%

Source: Statistics NZ, NZIER

Table 11 Employment by firm size

Census 2013

Industry (NZSIOC level 4)	1 to 9 employees	10 to 49 employees	50+ employees		Industry (NZSIOC level 4)	1 to 9 employees	10 to 49 employees	50+ employees
Non-tradable					Tradable			
Central government administration and justice	1,270	2,640	83,310		Employment and other administrative services	4,940	10,100	48,460
Hospitals	45	480	71,430		Tertiary education	420	1,740	43,160
School education	2,530	37,890	58,960		Advertising, market research and management services	10,440	10,520	34,980
Residential care services and social assistance	5,930	21,000	54,150		Meat and meat product manufacturing	350	1,160	22,100
Supermarket and grocery stores	4,370	4,760	45,690		Transport support services	3,340	3,850	20,670
Medical and other health care services	14,160	14,150	39,430		Road transport	6,760	10,830	20,510
Food and beverage services	31,680	52,450	31,950		Building cleaning, pest control and other support services	6,930	5,990	17,280
Banking and financing; financial asset investing	2,110	1,420	29,140		Fruit, oil, cereal and other food product manufacturing	3,975	7,460	14,890
Heavy and civil engineering construction	2,000	4,920	24,980		Grocery, liquor and tobacco product wholesaling	2,820	4,820	14,860
Scientific, architectural and engineering services	10,710	11,020	22,740		Machinery and equipment wholesaling	5,380	10,420	13,600
Furniture, electrical and hardware retailing	6,970	8,510	21,860		Accommodation	7,510	9,010	13,430
Local government administration	0	90	21,580		Other transport	1,090	1,670	11,920
Department stores			18,340		Dairy product manufacturing	170	550	11,310
Recreational, clothing, footwear and personal accessory retailing	7,360	5,750	16,780		Legal and accounting services	9,670	11,730	10,880
Computer system design and related services	6,230	8,820	16,470		Basic material wholesaling	3,730	6,870	10,310
Construction services	34,670	32,920	16,330		Other goods and commission based wholesaling	6,990	9,400	9,580
Preschool education	4,400	9,010	12,760		Fabricated metal product manufacturing	4,250	11,230	8,469

Industry (NZSIOC level 4)	1 to 9 employees	10 to 49 employees	50+ employees		Industry (NZSIOC level 4)	1 to 9 employees	10 to 49 employees	50+ employees
Non-tradable					Tradable			
Telecommunications services	860	1,030	12230		Wood product manufacturing	2,310	6,070	8,320
Sport and recreation activities	5,900	8,680	9780		Horticulture and fruit growing	5,320	8,300	7,920
Motor vehicle and parts retailing	3,850	5,180	8410		Electronic and electrical equipment manufacturing	1,200	2,420	7,590
Health and general insurance	50	360	7720		Transport equipment manufacturing	1,790	3,420	6,810
Superannuation and individual pension services	4,250	2,639	7240		Adult, community and other education	3,660	6,340	6,800
Heritage and artistic activities	1,180	1,880	6680		Agriculture, forestry, and fishing support services	6,265	10,145	6,790
Other store based retailing; non-store and commission based retailing	10,080	9,582	6,670		Polymer product and rubber product manufacturing	860	3,760	6,190
Religious services; civil, professional, and other interest groups	9,840	7,680	6,310		Machinery manufacturing	3,505	6,610	5,620
Non-residential building construction	1,380	3,690	5,150		Publishing (except internet and music publishing)	980	1,090	5,250
Non-metallic mineral product manufacturing	1,000	1,950	5,080		Electricity transmission and distribution	40	250	4,820
Broadcasting and internet publishing	360	375	4,580		Rental and hiring services (except real estate); non-financial asset leasing	3,600	3,775	4,790
Gambling activities	240	290	4,350		Warehousing and storage services	470	980	4,160
Fuel retailing	1,720	2,260	4,220		Pulp, paper and converted paper product manufacturing	112	302	4,090
Library and other information services	21	35	3,840		Beverage and tobacco product manufacturing	656	2,030	3,660
Personal care, funeral and other personal services	10,840	4,520	3,720		Printing	1,710	3,005	3,230
Waste collection, treatment and disposal services	900	1,210	3,240		Primary metal and metal product manufacturing	230	565	3,210
Motor vehicle and motor vehicle parts wholesaling	2,060	2,570	3,210		Metal ore and non-metallic mineral mining and quarrying	399	715	2,940

Industry (NZSIOC level 4)	1 to 9 employees	10 to 49 employees	50+ employees		Industry (NZSIOC level 4)	1 to 9 employees	10 to 49 employees	50+ employees
Non-tradable					Tradable			
Real estate services	3,940	3,910	2,940		Textile and leather manufacturing	1,055	1,880	2,850
Specialised food retailing	5,120	4,050	2,110		Pharmaceutical, cleaning and other chemical manufacturing	400	1,290	2,675
Life insurance	0	45	2,080		Veterinary and other professional services	1,880	2,910	2,610
Residential building construction	15,450	7,890	1,670		Seafood processing	130	780	2,600
Water supply	110	85	1,650		Repair and maintenance	16,030	8,300	2,499
Furniture manufacturing	1,660	2,800	1,010		Travel agency and tour arrangement services	2,250	2,260	2,470
Residential property operation	6,160	1,080	710		Rail transport		30	2,420
					Fishing and aquaculture	690	510	1,850
					Electricity generation and on-selling	18	70	1,810
					Poultry, deer and other livestock farming	2,340	1,930	1,650
					Motion picture and sound recording activities	905	1,095	1,260
					Basic chemical and basic polymer manufacturing	135	370	1,230
					Sheep, beef cattle and grain farming	12,730	3,330	1,130
					Clothing, knitted products and footwear manufacturing	805	1,430	1,080
					Dairy cattle farming	19,710	4,000	1,040
					Fertiliser and pesticide manufacturing	110	260	970
					Petroleum and coal product manufacturing	50	60	910
					Forestry and logging	1,610	2,200	540
					Coal mining	35	85	510
					Gas supply	0	15	510
					Other manufacturing	1,160	1,200	460
					Exploration and other mining support services	135	310	345
Total (non-tradable)	221,406	289,621	700,500		Total (tradable)	174,050	211,442	452,018

Source: Statistics NZ, NZIER

Table 12 Jobs by ethnicity*

HLFS 2018

Industry (NZSIOC Level 2)	European	Māori	Pacific Peoples	Asian	Other	Industry (NZSIOC Level 2)	European	Māori	Pacific Peoples	Asian	Other
Arts and Recreation Services	41,000	4,800	1,300	3,300		Accommodation and Food Services	94,400	18,300	9,900	43,000	5,700
Auxiliary Finance and Insurance Services	15,100	2,000		2,400		Administrative and Support Services	61,200	11,400	5,000	11,500	
Building Construction	67,700	10,400	3,500	5,400	2,100	Agriculture, Forestry and Fishing Support Services and Hunting	14,200	2,200			
Central Government Administration, Defence and Public Safety	84,600	16,500	7,700	10,100		Basic Chemical and Chemical Product Manufacturing	4,100				
Construction Services	100,800	18,900	7,200	9,200	1,000	Beverage and Tobacco Product Manufacturing	7,200		1,500		
Education and Training	183,600	27,300	9,200	19,800	5,500	Dairy Cattle Farming	36,000	3,600		5,100	4,000
Finance	27,300	3,000	2,600	8,300		Dairy Product Manufacturing	9,700	2,600		2,300	
Health Care and Social Assistance	187,700	30,800	12,400	43,800	7,600	Electricity and Gas Supply	8,300	1,500			
Heavy and Civil Engineering Construction	26,300	4,900	2,400	2,200	1,500	Fabricated Metal Product Manufacturing	23,900	1,100			1,200
Insurance and Superannuation Funds	8,200		1,000	2,200		Fishing and Aquaculture	4,100				
Local Government Administration	27,900	4,400	1,800	3,400	1,400	Forestry and Logging	4,400	2,700			
Motor Vehicle and Motor Vehicle Parts and Fuel Retailing	22,300	3,000		4,900		Fruit, Oil, Cereal and Other Food Product Manufacturing	17,000	4,500	4,000	6,100	
Non-Metallic Mineral Product Manufacturing	4,300					Furniture and Other Manufacturing	11,000				
Other Store-Based Retailing and Non Store Retailing	100,000	13,600	4,600	20,400	1,100	Horticulture and Fruit Growing	19,000	3,500		1,300	1,100

Industry (NZSIOC Level 2)	European	Māori	Pacific Peoples	Asian	Other	Industry (NZSIOC Level 2)	European	Māori	Pacific Peoples	Asian	Other
Property Operators and Real Estate Services	34,900	1,400		6,500		Information Media Services	15,000				
Supermarket, Grocery Stores and Specialised Food Retailing	46,200	9,400	4,700	17,100	2,100	Machinery and Other Equipment Manufacturing	22,600	2,200		2,200	
Telecommunications, Internet and Library Services	11,400		1,300	3,900		Meat and Meat Product Manufacturing	13,500	10,600	4,600	2,700	1,100
						Mining	1,100				
						Other Services	80,400	12,500	2,600	10,100	1,200
						Petroleum and Coal Product Manufacturing	1,200				
						Polymer Product and Rubber Product Manufacturing	7,700	1,200	2,700	1,100	
						Postal, Courier Transport Support, and Warehousing Services.	24,800	5,900	5,600	6,900	
						Poultry, Deer and Other Livestock Farming	8,300			1,200	
						Primary Metal and Metal Product Manufacturing	1,400				
						Printing	6,600				
						Professional, Scientific and Technical Services	192,400	10,000	4,000	41,100	6,400
						Pulp, Paper and Converted Paper Product Manufacturing	4,000	1,300			
						Rail, Water, Air and Other Transport	16,100	1,300	1,800	1,500	
						Rental and Hiring Services (except Real Estate)	7,300				

Industry (NZSIOC Level 2)	European	Māori	Pacific Peoples	Asian	Other	Industry (NZSIOC Level 2)	European	Māori	Pacific Peoples	Asian	Other
						Road Transport	27,800	7,000	4,700	7,200	
						Seafood Processing	3,300	2,000			
						Sheep, Beef Cattle and Grain Farming	32,200	4,200			1,100
						Textile, Leather, Clothing and Footwear Manufacturing	6,100	1,100		1,100	
						Transport Equipment Manufacturing	9,500				
						Wholesale Trade	80,600	9,300	2,500	17,600	
						Wood Product Manufacturing	14,700	4,000			
Total (non-tradable)	996,400	150,400	59,700	162,900	22,300	Total (tradable)	891,100	124,000	48,900	162,000	21,800

* The sum of the ethnicity columns will not sum to equal total workers. This is because an individual worker can be in multiple ethnicity categories.

Source: Statistics NZ, NZIER

Table 13 Tradable sector by region

Business Demography 2017

Region	Tradable jobs	Non-tradable jobs	% tradable jobs
Auckland Region	313,534	441,976	41.5
Bay of Plenty Region	53,325	71,463	42.7
Canterbury Region	120,681	172,455	41.2
Gisborne Region	10,675	10,194	51.2
Hawke's Bay Region	38,576	38,388	50.1
Manawatu-Wanganui Region	40,325	60,292	40.1
Marlborough Region	12,230	10,500	53.8
Nelson Region	10,898	15,813	40.8
Northland Region	22,635	36,052	38.6
Otago Region	49,084	61,977	44.2
Southland Region	25,494	23,440	52.1
Taranaki Region	23,637	25,989	47.6
Tasman Region	11,201	9,408	54.4
Waikato Region	81,185	105,550	43.5
Wellington Region	76,977	172,727	30.8
West Coast Region	6,419	7,529	46.0
Total	1,168,310	992,699	54.1

Source: Statistics NZ, NZIER