



Regional Spotlight
Horticulture and Winegrowing

Disclaimer

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These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) and Longitudinal Business Database (LBD) which are carefully managed by Stats NZ. For more information about the IDI and LBD please visit <https://www.stats.govt.nz/integrated-data/>

The results are based in part on tax data supplied by Inland Revenue to Stats NZ under the Tax Administration Act 1994 for statistical purposes. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes, and is not related to the data's ability to support Inland Revenue's core operational requirements

Why are we producing spotlights

- A range of data series are available through our website workforceinsights.govt.nz. These provide insight into the workforce across a range of measures.
- However, in certain cases, we have data that tells stories that are hard to communicate through a data series. In these cases, it is helpful to use a spotlight – take a deeper dive, including both commentary and a closer focus on parts of the data, potentially including data that might not be easy to produce or interpret as part of a series, or which might have a smaller range of users.
- The purpose of this particular spotlight is to help understand how the horticulture industry sits across the ANZSIC06 framework that underpins our data. On its face, in many cases the workforce counts (and trends) associated with orchard and vineyards appears lower than we would expect. We take advantage of the fact that the regional size of the spotlighted industries' workforces means that recognisable trends are visible, and can be identified and discussed.

Horticulture and Winegrowing Regional Spotlight

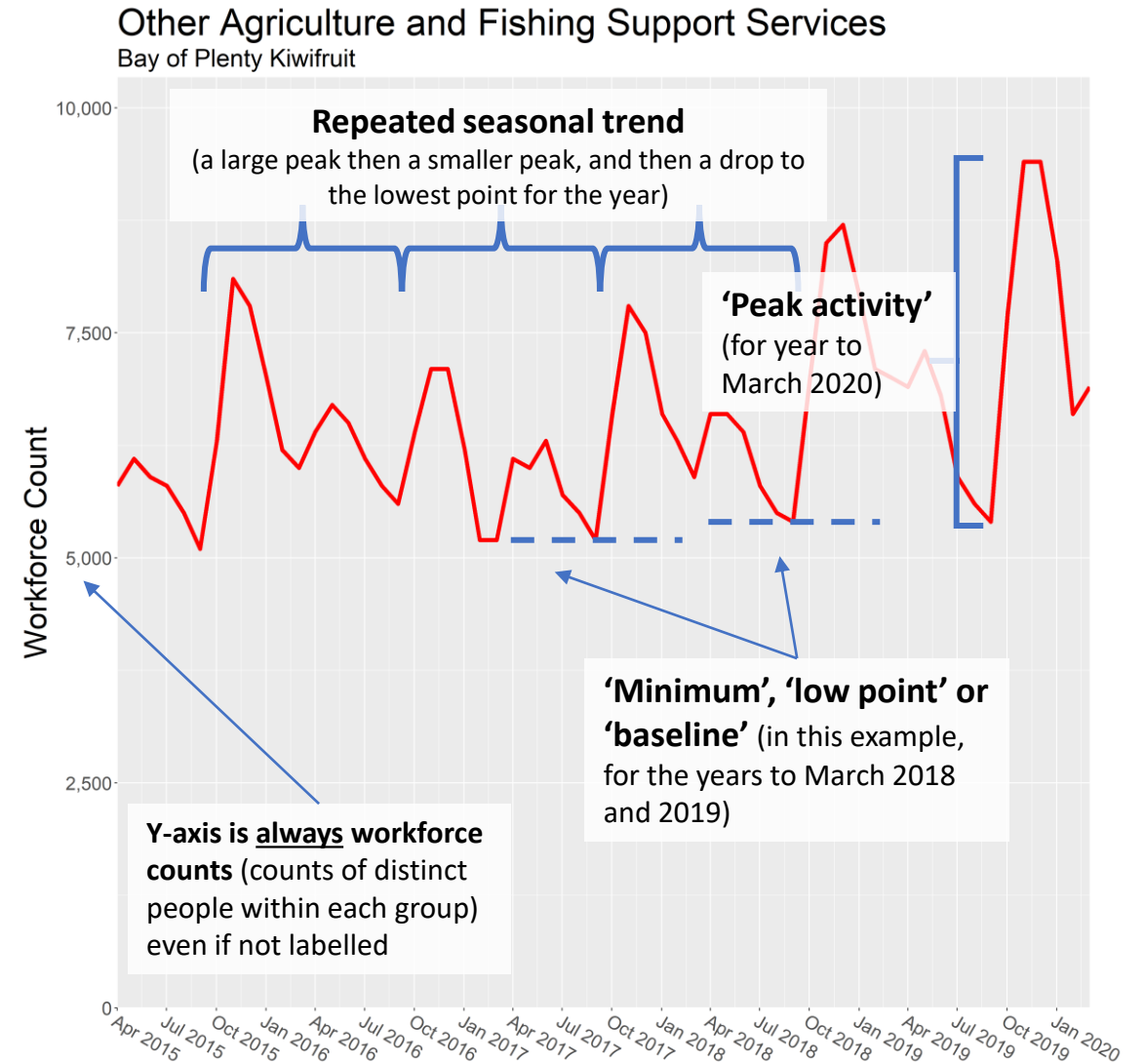
- This spotlight is a dive into more detail on three major horticulture and viticulture within regions that are significant for those crops:
 - Kiwifruit in the Bay of Plenty;
 - Viticulture and Wine in Marlborough;
 - Pipfruit, Viticulture and Wine, and other horticulture in Hawke's Bay.
- We explore these crops within these regions, including:
 - A discussion of the kinds of activities carried out;
 - The size and timing of workforce peaks; and
 - Where, within our data, the people carrying out these activities are likely to be found;
 - Other horticulture and food and fibre sector activity with the region.
- This is not a statistical analysis, but rather a commentary of the figures coming out of the data, that seeks to draw on industry knowledge in interpreting the figures. The purpose is to understand the limitations of our approach to identifying business activities using ANZSIC06 class codes, identify whether (and if so where) there are significant gaps in our coverage, and identify where people are likely to be found in order to assist interpretation of our figures.
- This spotlight supplements the data in the website workforceinsights.govt.nz by:
 - Demonstrating that our definition of the sector is robust and as comprehensive as possible;
 - Demonstrating, to people seeking to use an ANZSIC06 based approach to measure these sectors, which ANZSIC06 classes must be considered in order to get a full perspective of the sectors (and by extension the kinds of considerations at play for other sectors);
 - Improving our understanding of how the food and fibre sectors sit within the ANZSIC06 framework, which will help guide our own future research.
- Our aim is that this future research will complement the knowledge of, and insights into these industries, held by participants and industry bodies, by linking into additional sources of data. For example, the data underlying this spotlight could be used to support research into experience, retention or movement between industries.

What areas we are seeking to analyse?

- Horticulture and viticulture require a range of seasonal tasks to be carried out at different times of the year. This includes activities such as pruning and thinning, harvest, and packing or processing the harvested crop. On-orchard and on-vineyard tasks may be carried out by employees of the business (or the owners themselves!), and/or contracted out to specialist providers. Packing (and storage of fruit in climate controlled coolstores, to preserve ripeness) may be carried out in specialized packhouses and coolstores that provide services to a range of orchards, or may be carried out in smaller, onsite, facilities.
- We believe that contractors carrying out seasonal activities may be included in the following ANZSIC06 classes:
 - **Other Agriculture and Fishing Support Services (A052900)**. As well as including a range of horticulture-related activities, such as fruit picking, this ANZSIC06 class also contains activities not relevant to horticulture, such as contract milking;
 - **Labour Supply Services (N721200)**, which contains a wider range of labour contracting services and is not limited to horticulture (nor the food and fibre sectors). However, we were unable to discern seasonal patterns that fall within this ANZSIC06 class;
 - **RSE found in other ANZSIC06**, which is a special category we have created. This includes RSE visa holders from all non-horticulture ANZSIC06 codes (the two codes above are not 'Horticulture', under our framework). The rationale is that we know these people are working in horticulture, due to visa work entitlement restrictions, even if we cannot link the business to horticulture under the ANZSIC06 framework.
 - **The same ANZSIC06 class as the businesses** they contract to.
- We believe that packhouses and coolstores, where they are separate from orchards, are likely to be found under **Packaging Services (N732000)** and **Other Warehousing and Storage Services (I530900)**, respectively.
- In addition, we recognize that a smaller number of people may engage in specialist activities that are very important but not included here. High-level workforce counts are not likely to be the best way to understand these contributions, and these activities outside the scope of this spotlight.

Our approach to estimates

- The charts in this spotlight show counts of workforce, measured using our usual approach of counting distinct individuals in each ANZSIC06 class coded industry.
- We are intending to analyse certain ANZSIC06 classes that span more than one industry (such as *Packaging services* or *Other Agriculture and Fishing Support Services*) by interpreting any visible seasonal trend based on how it aligns with the spotlighted industries.
- Because of the size of the spotlighted industries in the regions chosen, we expect that their impact would be sufficiently large that it would be visible in the trend, even if activities relating to other industries were also taking place.
- The chart opposite shows three terms or concepts we are using in our discussion of these 'mixed' ANZSIC06 classes.
- The first is a repeated seasonal trend. Where a recurring trend like this is visible, we consider whether it fits what we know about the demand that may be coming from the spotlighted industry(s).
- The 'minimum' workforce tells us what the lowest demand is. Beneath this we cannot see the trends, so it is more difficult to estimate the proportion attributable to different industries. Beneath the minimum, there is likely to be a combination of self-employed/business owners (who are treated as working year round), permanent employees, and combination of continual cycles of seasonal activity.
- The peak activity, in contrast, is very visible. If the timing of this is a good match for the expected demand from a spotlighted sector, it is likely that a high proportion of this activity may be attributable to the spotlighted sector.
- In all of this, we also need to bear in mind the presence of other industries within the region that could be contributing to these counts.



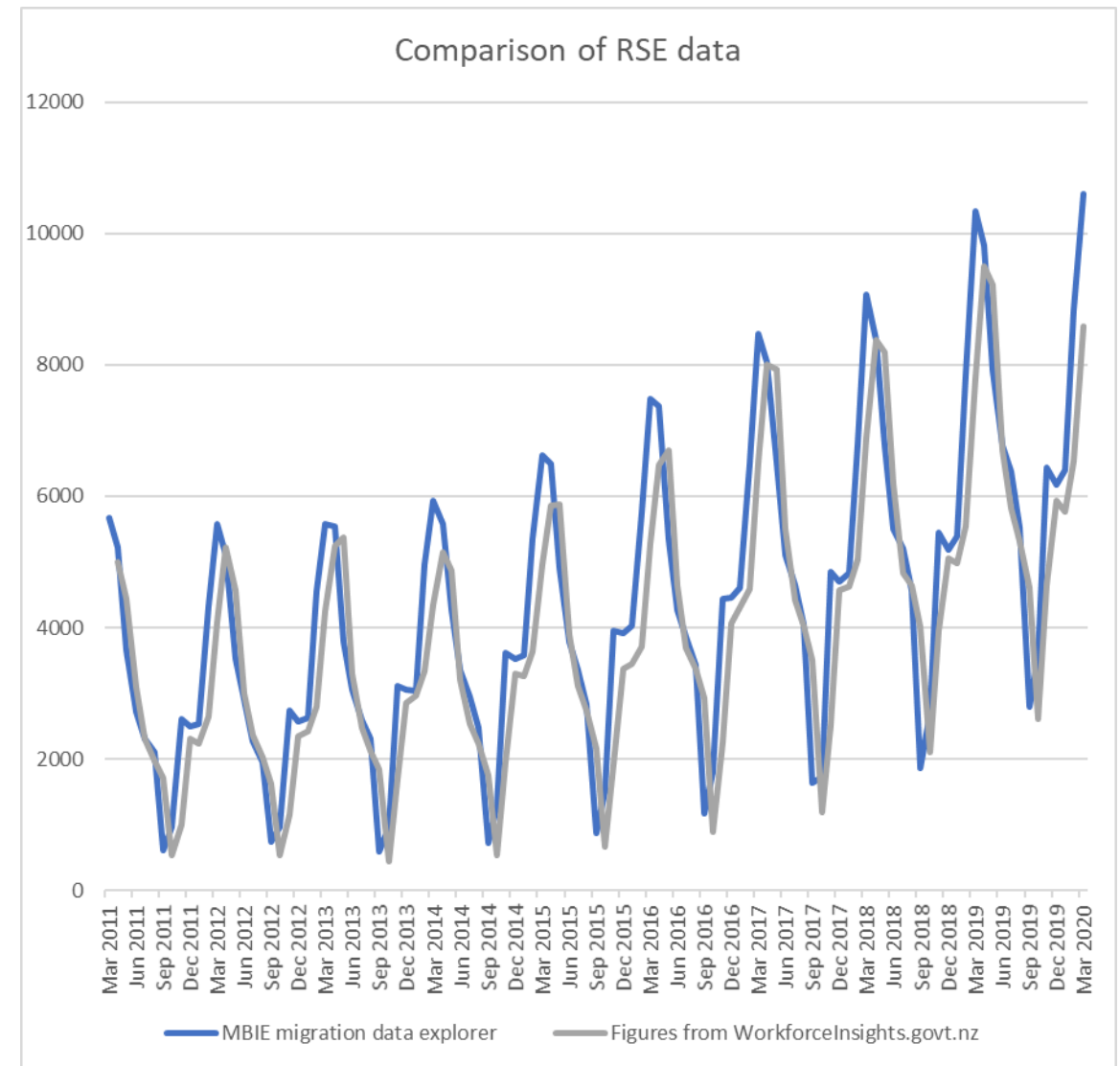
Limitations

- All data has its limitations. We have drawn our data from the IDI, which largely relates to tax data linking employees and businesses, and identifying people who are self-employed (which includes running a business).
- At its best, what this will show is the number of people in the past workforce, in terms of headcount. This is different from hours-based measures or estimates (such as FTE positions), from forecasts of need (which are often hours based), or from total jobs across a wider time period (that recognise the many different people that bring different skillsets at different times), which some data, especially industry forecasts, may be based on.
- In practice, there will be limitations – for example, we are limited in terms of how precise we can be with timing, and we do not have information about hours worked – a person who works for a very short time, and a person working 50 hours a week, would each contribute ‘one’ to the headcount. There may also be difficulty identifying all relevant persons in the administrative data we use.
- In the past, contractors have also been a significant gap for us. This spotlight seeks to push further in terms of improving our understanding what these contractors might look like in the data – but we acknowledge that there are other significant activities that we haven’t included, such as transporting produce for sale.
- We also acknowledge that these limitations and differences in methodology mean our figures are not always in exact correspondence with figures from industry bodies. For example, we look at figures from the *Marlborough Wine Industry Growth Forecast 2020* on slides 25 and 26, as an important different perspective to the spotlight.
- Finally, extrapolating from the past to the present can be fraught. Many things, including new production coming online, record-breaking harvests, climatic events, and Covid-19 related impacts, can impact the workforce required. Industry is in a better place to incorporate these into forecasts, and this is not something the data here purports to do.
- Given these limitations, one might ask why we do not just use these other figures. One of the advantages our data has is that it is drawn from the IDI, so can be linked into a range of other datasets containing other data that helps us understand the people who make up the food and fibre sectors – who they are, what else they do, and to improve our understanding of the past to inform and improve our future. In this way we aim to support forecasts of current needs.
- An important step towards this is to be confident we are measuring the right people. This will be an ongoing journey, and this spotlight reflects where we are now.

Limitations - continued

- One of the limitations was that not all persons will be identified in the administrative data we use.
- The chart opposite compares our figures for RSE with figures from the MBIE Migration Data Explorer.¹
- We see that:
 - Our series presents a similar shape, but with a one month lag;
 - Overall, our count is lower.
- Our data is based on receipt of employment income, and we believe that a delay between arriving onshore and receiving first pay may be causing some of the difference.
- More generally, a delay between working and receiving first pay could result in imprecision in our data around the timing of the start of seasonal activities, not just for RSE workers.
- Care should be taken in any case, as the timing could also vary between years based on other factors, such as climatic factors.
- As a result, there is some imprecision around timings, and we are open to the possibility that the coverage of our data may have some gaps (ie, that we have not been able to locate everyone in the data).

¹ www. https://mbienz.shinyapps.io/migration_data_explorer/

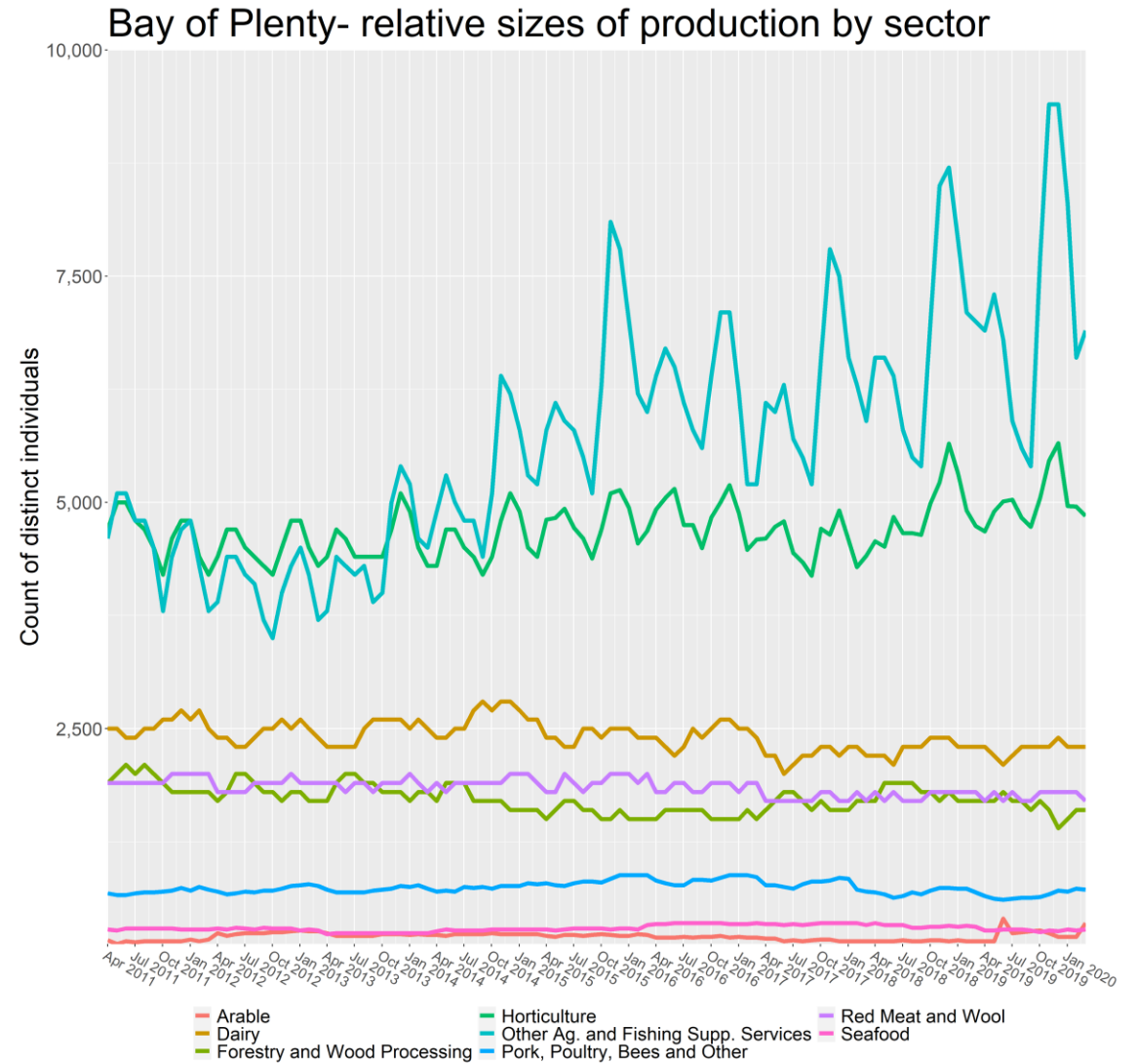


Conclusions - Overall

- Horticulture can be more difficult to analyse than other food and fibre sectors, due to the extent of utilisation of contractors. However, due to the size of the horticulture sector within certain regions, seasonal patterns in are visible.
- The main ANZSIC06 classes identified are *Other Agriculture and Fishing Support Services* (seasonal contractors) and *Packaging Services* (packhouses).
- In some cases, *Other Warehousing and Storage Services* displayed a seasonal trend that was thought to be associated with coolstores.
- *Labour Supply Services* did not display an identifiable seasonal trend.
- Care should be taken when carrying out analysis of these classes given that these categories will also contain some non-Food and Fibre Sector workers, or workers attributable to other Food and Fibre Sectors.
- This justifies the inclusion of these ANZSIC06 classes within our definition of the food and fibre sectors.
- These categories should be considered when analysing or monitoring these workforces using an ANZSIC06 code based approach. Failure to do so risks a large undercount.

Bay of Plenty - overview

- The Bay of Plenty includes a range of Food and Fibre sector activity. The five largest sectors by production workforce, in order are:
 - Horticulture;
 - Cross Sector;
 - Dairy;
 - Red Meat and Wool; and
 - Forestry and Wood Processing.
- The Bay of Plenty is the main region for kiwifruit growing, and kiwifruit dominates the planted area for horticulture within the Bay of Plenty.
- *Other Agriculture and Fishing Support Services* has shown significant growth across the displayed period. It shows large variation in the size of the workforce across each year.



Bay of Plenty - kiwifruit

- Kiwifruit orchards have a peak workforce demand towards the start of summer, driven by seasonal orchard tasks such as thinning and pruning.
- Much of this orchard work will be carried out by specialist contractor businesses.
- As kiwifruit are harvested, they are sent to large packhouses to be packed for sale. These packhouses provide services to a larger number of orchards. The peak packhouse workforce is in autumn, when kiwifruit are harvested.
- Harvested kiwifruit may also be put into coolstores. Putting kiwifruit into coolstores maintains ripeness, and fruit can be later repacked for sale. Repacking occurs over the June to October period.

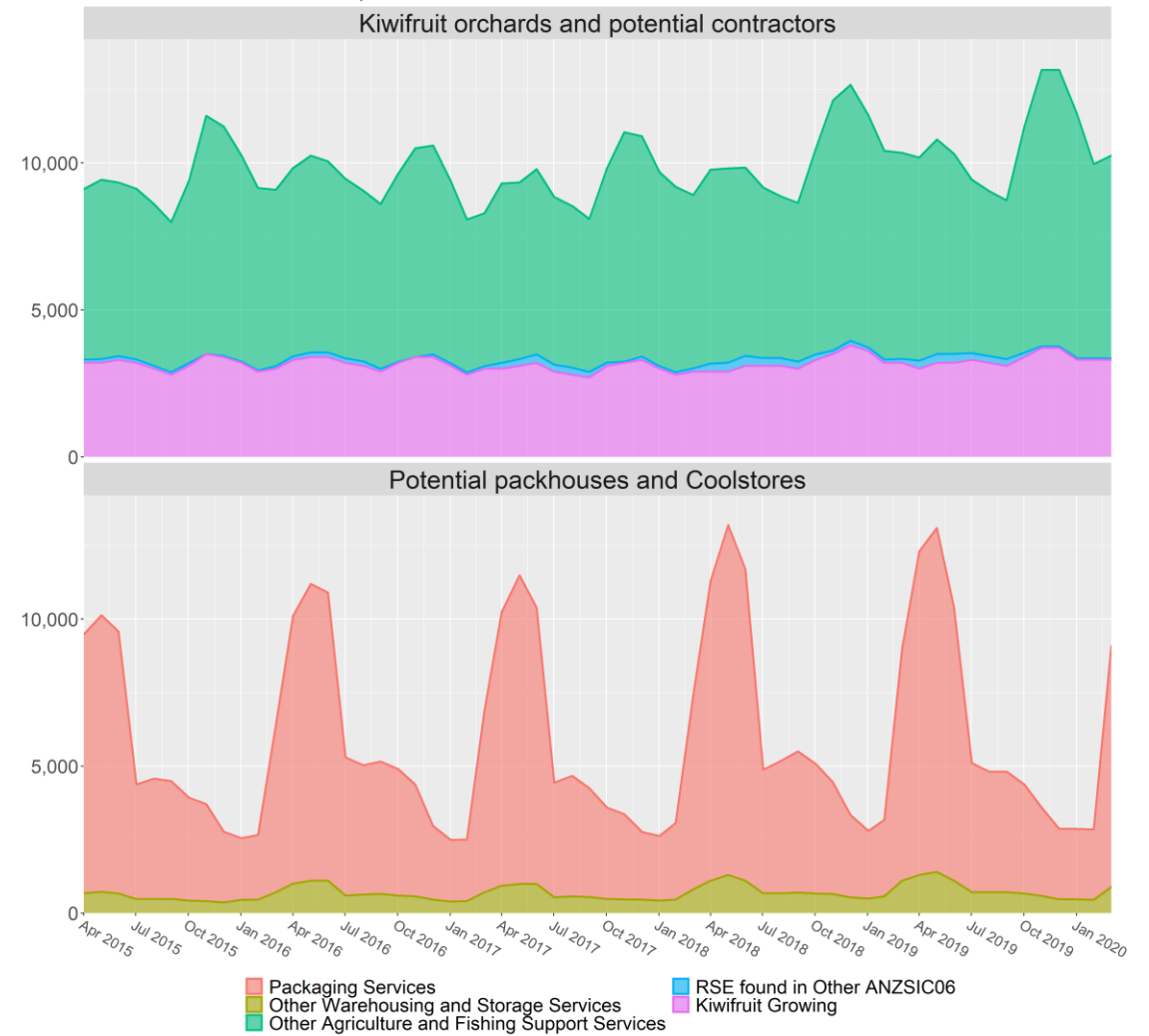


What we found

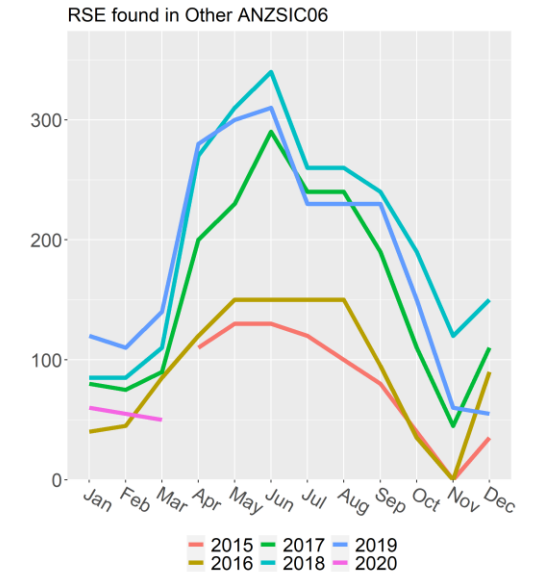
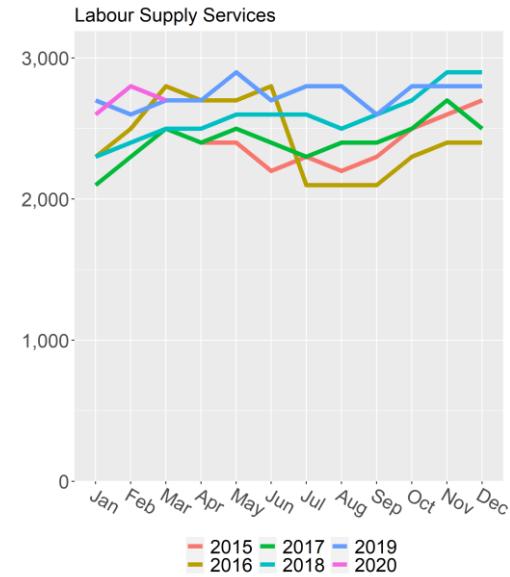
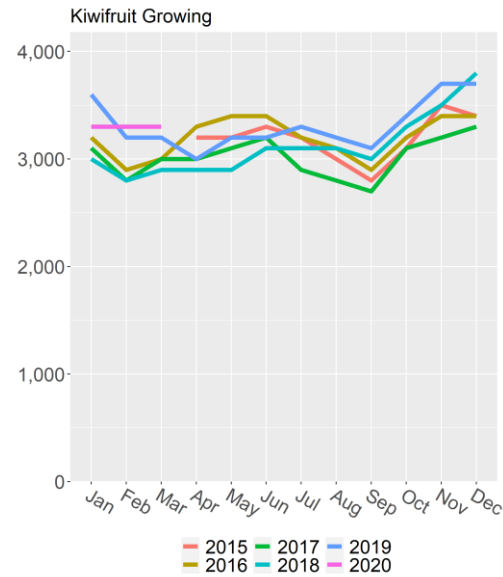
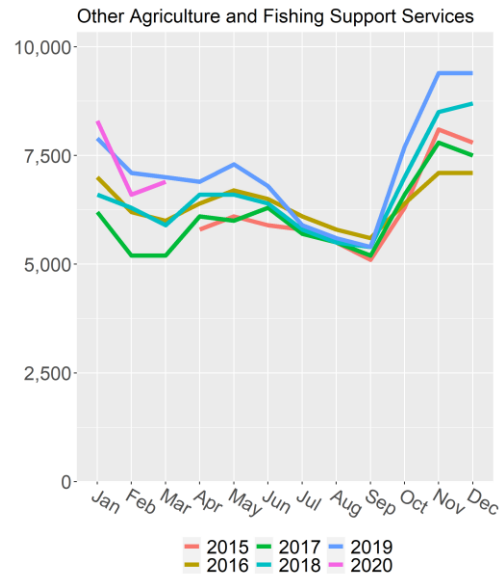
- The kiwifruit workforce is largely located within the *Other Agriculture and Fishing Support Services, Packaging Services* and *Kiwifruit Growing* ANZSIC06 codes.
- Relatively low workforce associated with the *Kiwifruit Growing* ANZSIC06 class (compared with the expected size of the kiwifruit workforce), reflecting use of seasonal contractors to carry out seasonal orchard work.
- Relatively few people in the *RSE found in Other ANZSIC06* category. This may reflect that RSE are directly employed within 'horticulture' classes and counted there.*
- Large numbers of people in the *Other Agriculture and Fishing Support Services* ANZSIC06 class. This also showed a strong seasonal trend. While a mixed class, we believe this is mainly attributable to kiwifruit.
- Very strong seasonal trends in *Packaging Services* and *Other Warehousing and Storage Services*, resulting in large peak workforces in *Packaging Services*. While a mixed class, we believe this is mainly attributable to kiwifruit.
- In some cases a single business may have multiple activities, we expect there may be some 'crossover'. For example, we understand that packhouses and coolstores may be part of the same facility. The figures displayed would not capture this level of granularity.

Potential Bay of Plenty kiwifruit workforce

Area chart - shaded area shows composition

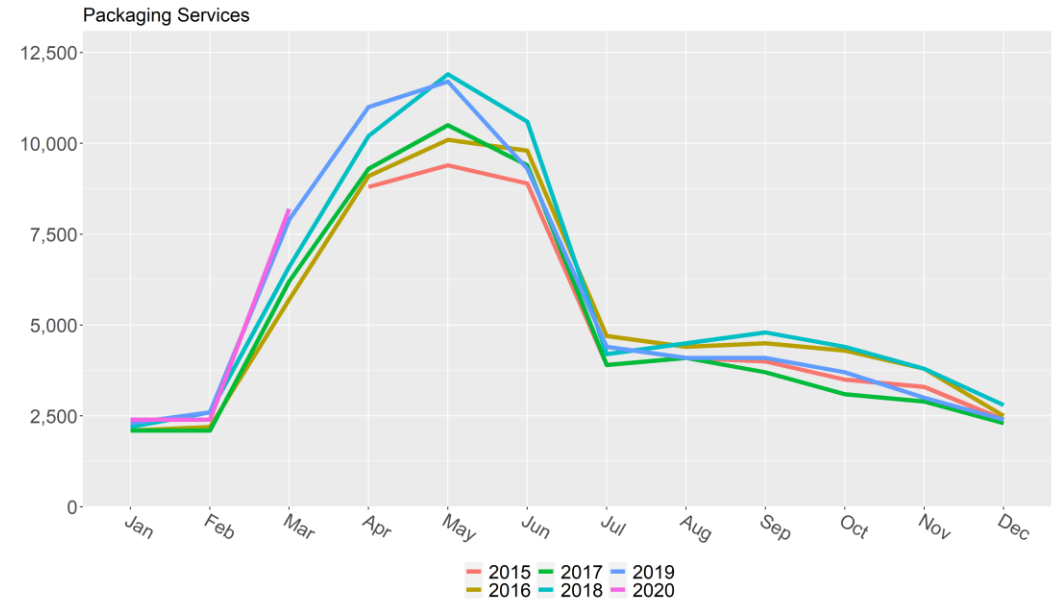
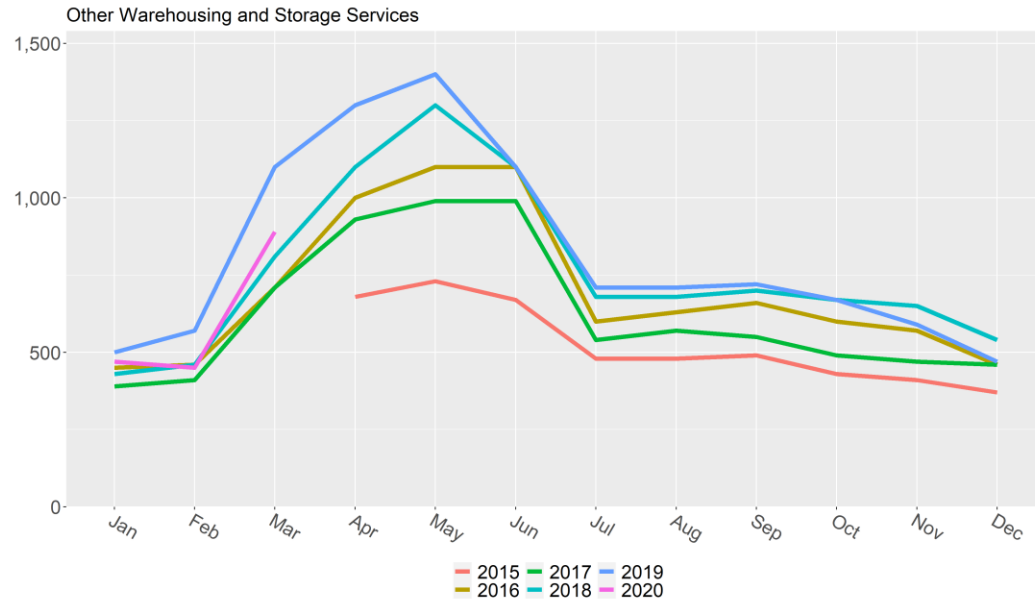


* We understand that packhouses may have associated contractors, and that *Packaging Services* and *Other Warehousing and Storage Services* are "horticulture" classes under our framework. RSE workers (and other contractors carrying out orchard work) employed by these businesses may end up coming through in these counts.



Seasonal trends – Orchards and contractors

- We see recurring annual trends, with peaks at times that correspond with high demand from the kiwifruit industry, in three of the four groups.
- Kiwifruit Growing and Other Agriculture and Fishing Support Services have the largest workforce in November-January (thinning and summer pruning), but also have a second peak around May (picking)
- Labour Supply Services does not have a clearly discernable trend. Some of these people are still likely to work in kiwifruit, given the size of the industry in the context of the region.
- There are relatively few people within the constructed 'RSE Contractors' group. The peak is around May-June, which corresponds with harvest.
- Note that not all the people within Other Agriculture and Fishing Support Services will necessarily be kiwifruit contractors – but, given the regional dynamics, a large proportion will be.
- Note the changes in scale between the charts.



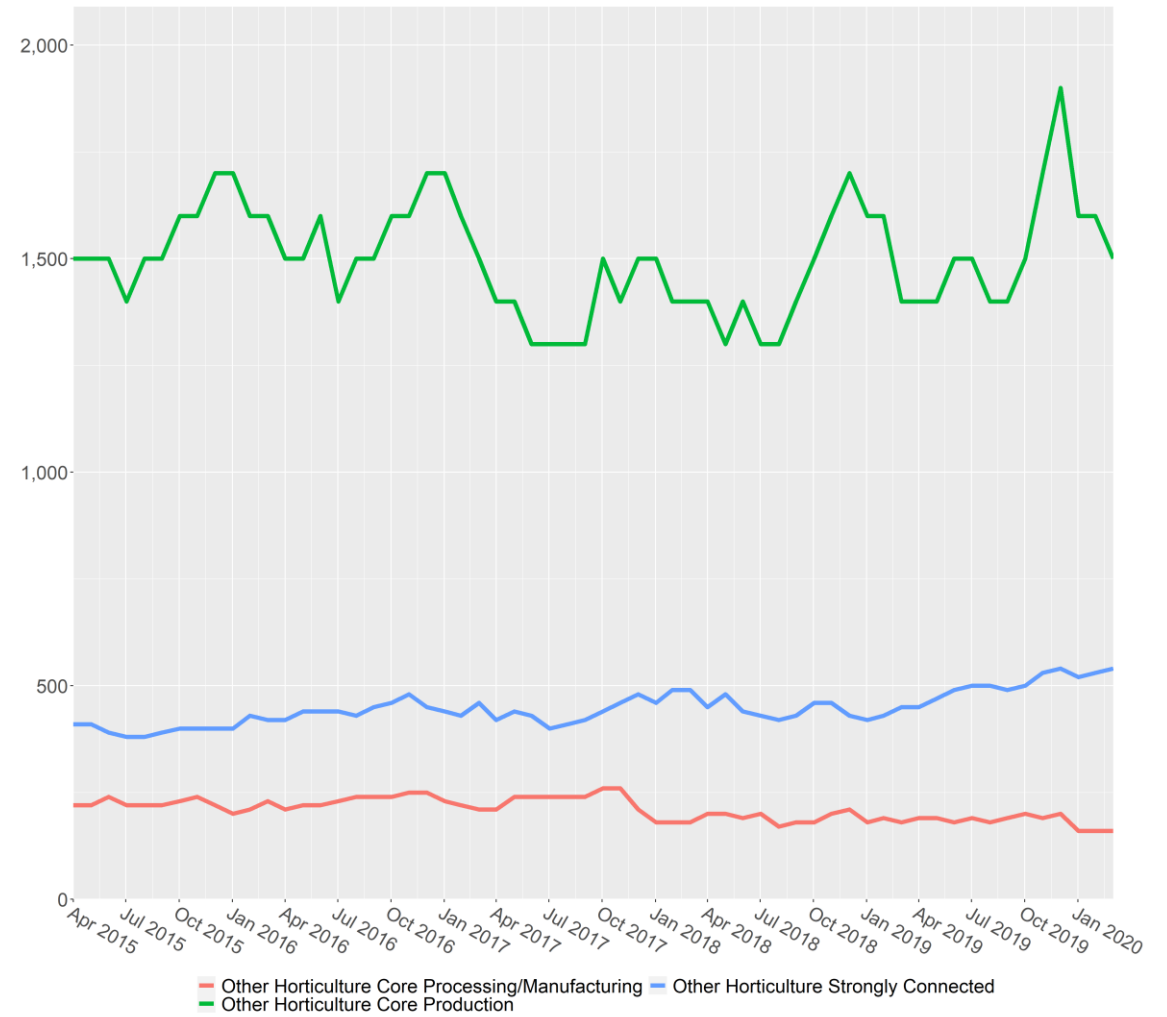
Seasonal trends— Potential packhouses and coolstores

- We see recurring seasonal trends across both series, with consistent peaks over April-July. This is consistent with the timing expected from harvested Kiwifruit.
- Following the peak, there is a plateau in activity (likely representing repacking), tailing off towards the end of the year.
- The size of the peak has increased over time, with 2020 and 2019 being the largest, followed by 2017 and 2018, and 2016 being smallest. There is some small variation in timing and shape.
- We consider that the seasonal trend and the scale of seasonality supports an inference that the peaks are likely to be mainly attributable to kiwifruit. Because packhouses and coolstores have some staff throughout the year, some of the 'non-peak' workforce will also be attributable to kiwifruit.
- Note the change in scale between the charts.

Bay of Plenty – Other horticulture

- The other main horticulture activity within the Bay of Plenty is avocado growing. Fresh Facts² reports that Kiwifruit and avocados make up 97% of planted horticultural area within the Bay of Plenty (2017 figures).
- Avocado production is estimated to employ (nationwide) 2,200 people on a permanent basis, and 3,000 seasonal/part-year workers.¹
- As the Bay of Plenty accounts for nearly half the total planted area (NZ-wide) for avocados,² this is consistent with a workforce of around 1,700 people for the Bay of Plenty, plus some amount of people associated with other crops.
- This is reasonably consistent with these figures shown in this chart and suggests that while Other Horticulture Production is not likely to materially affect the contractor figures discussed.
- In terms of post harvest-activities, the NZIER report also indicates that avocados do not require coolstores, quoting an industry source as saying *“the [avocado] tree is the coolstore”*³
- This supports the inference that the potential packhouses and potential contractors relate mainly to kiwifruit within the Bay of Plenty.

Other horticultural activities - Bay of Plenty



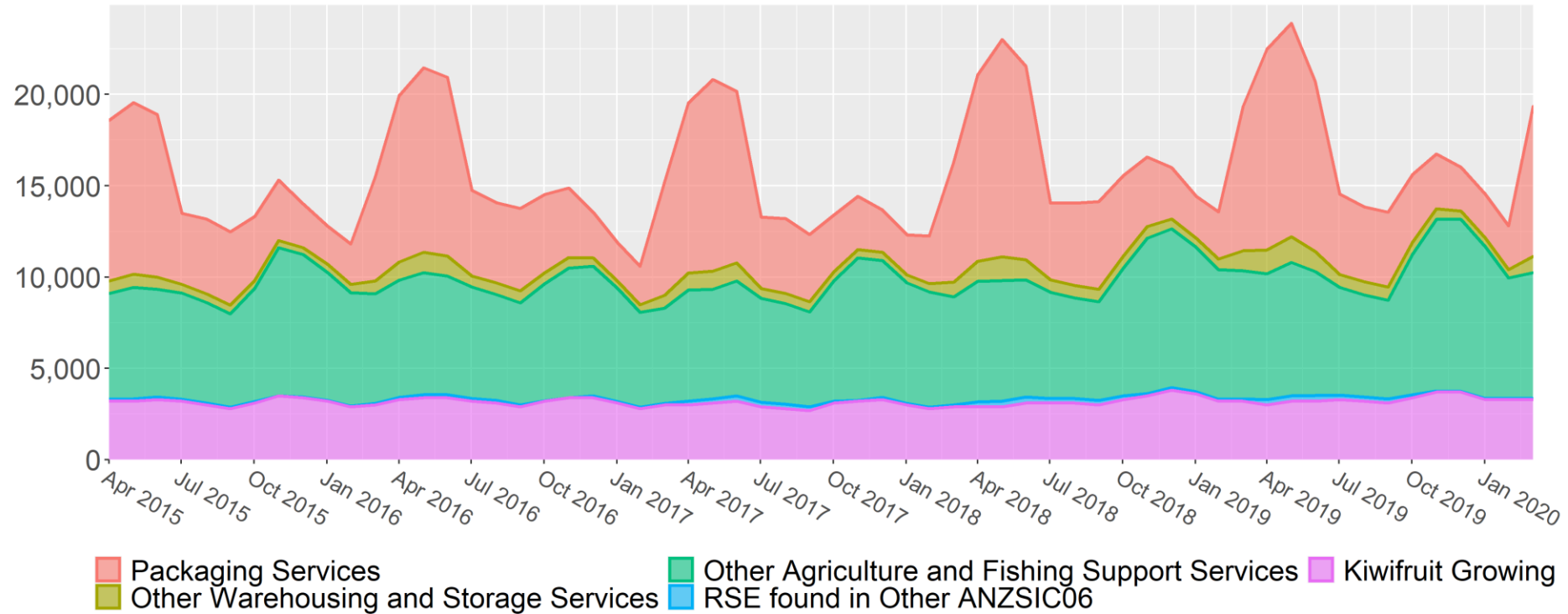
1. NZIER & MPI. 2022. The food and fibre workforce, data on its size and composition. A report for the Ministry of Primary Industries and the Primary Sector Workforce Data and Forecasting Working Group.

2. Fresh Facts 2021, at 5. <https://freshfacts.co.nz/files/freshfacts-2021.pdf>

3. NZIER & MPI, above n1, at 50

Estimate of Bay of Plenty kiwifruit workforce

Area chart - shaded area shows composition



What we found –
summary for year to
March 2020

- The above is a what an estimate of the kiwifruit workforce might look like that includes everyone within the displayed categories.
- It does not include Labour Supply Services, as a seasonal pattern that could be related to kiwifruit could not be identified.
- In addition, there will be constant changes in the composition of the workforce, as seasonal tasks change – although some people may have skills across a range of tasks and work year-round.

	Description	ANZSIC06 Class	Maximum	Minimum
Orchard	Kiwifruit orchards	Kiwifruit Growing	3,700 (Nov/Dec)	3,000 (Apr)
	Contractors (ex RSE)	Other Agriculture and Fishing Support Services (excluding RSE visa holders)	9,400 (Nov/Dec)	5,400 (Sep)
	Contractors (RSE)	RSE included in any non-horticulture ANZSIC06 classes	310 (Jun)	50 (Mar)
	Total orchard		13,160 (Nov)	8,730 (Sep)
Post-harvest	Packhouses and coolstores	Packaging Services	11,700 (May)	2,400 (Dec-Feb)
		Other Warehousing and Storage Services	1,400 (May)	450 (Feb)
	Total post-harvest		13,100 (May)	2,850 (Feb)
Overall			23,900 (May)	12,805 (Feb)

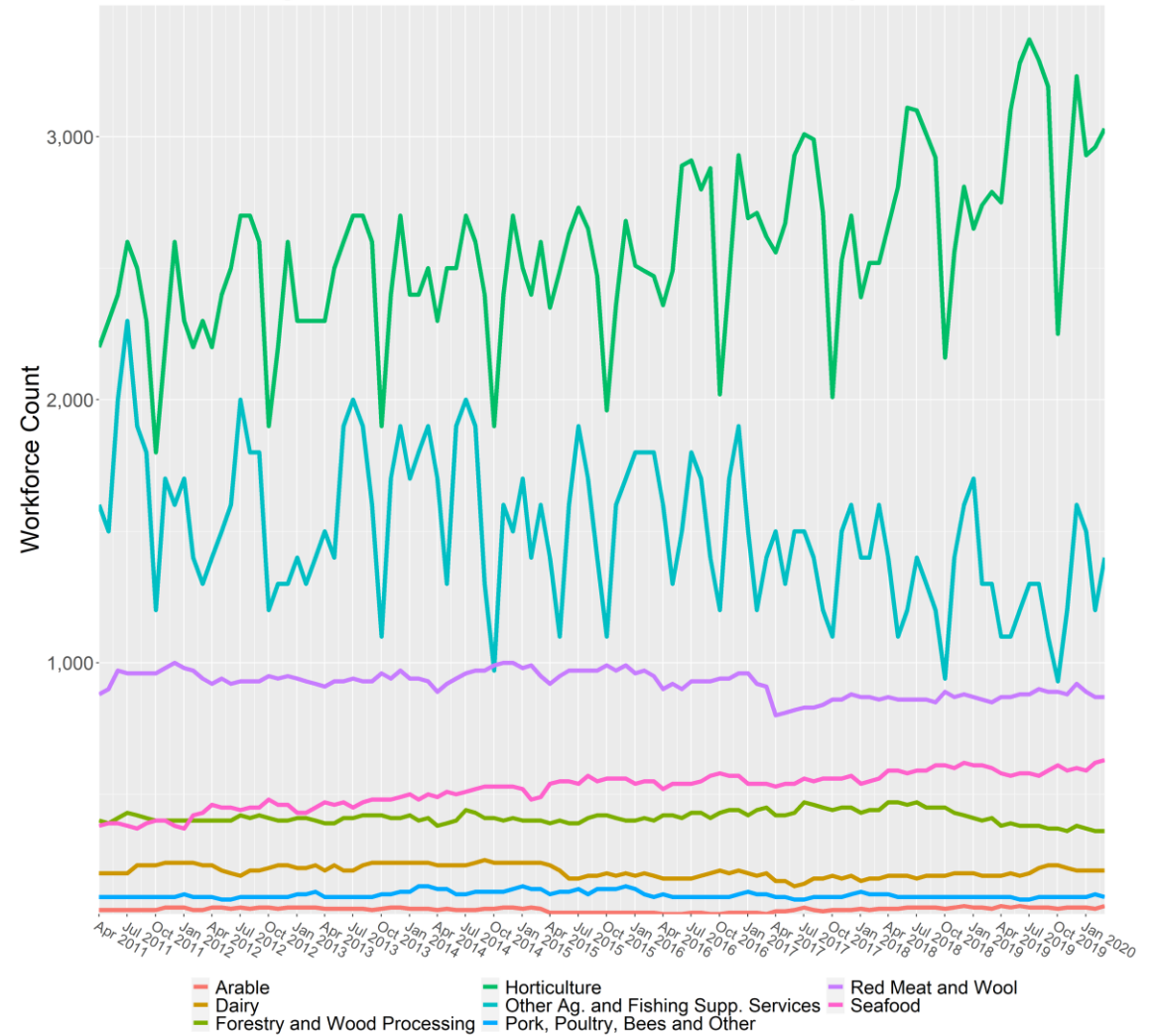
What we found –
summary for year to
March 2020

The table above shows the counts of these groups, from the previous page.

Marlborough

- Marlborough is well known for the Marlborough Sounds and for its wine, particularly sauvignon blanc.
- The main food and fibre production workforces in Marlborough are from:
 - Horticulture (predominantly viticulture and wine)
 - Cross Sector
 - Red Meat and Wool
 - Seafood
 - Forestry and Wood Processing
- Marlborough accounts for the majority of New Zealand's grape growing and wine production, with 71% of the total nationwide planted hectares, and 78% of the mass of crushed grapes in 2022.¹

Marlborough- relative sizes of production by sector



¹ Calculated from Annual Report 2022, New Zealand Winegrowers Inc <https://www.nzwine.com/media/22749/nzw-annual-report-2022.pdf>

Marlborough – viticulture and wine

- Seasonal activity occurs throughout the year on vineyards. Key seasonal activities include winter pruning, wire lifting, netting, and harvest. Harvest in Marlborough is heavily mechanised, as sauvignon grapes are able to be harvested via mechanical means, unlike many other varieties which must be hand harvested.
- The largest seasonal workforce peak is driven by winter pruning. Much of this is carried out by RSE visa holders, who have developed skill and experience in carrying out this work. The summer peak in viticulture is also significant, and also requires people from outside the region to meet this need.
- Wineries have a peak workforce demand when grapes are harvested in summer-autumn. Wine grapes cannot be stored, so must be processed as they are harvested. This seasonal workforce is comprised of cellarhands, and a smaller number of winemakers, who supplement the people working year-round. Prior experience is very important for cellarhands.
- Other roles include lab techs, receival coordinator, traceability, vintage coordinator, welfare officers, truck drivers.
- Vineyards make extensive use of contractors for seasonal viticulture work. In contrast, wineries are understood to generally employ directly.



Terminology in this section

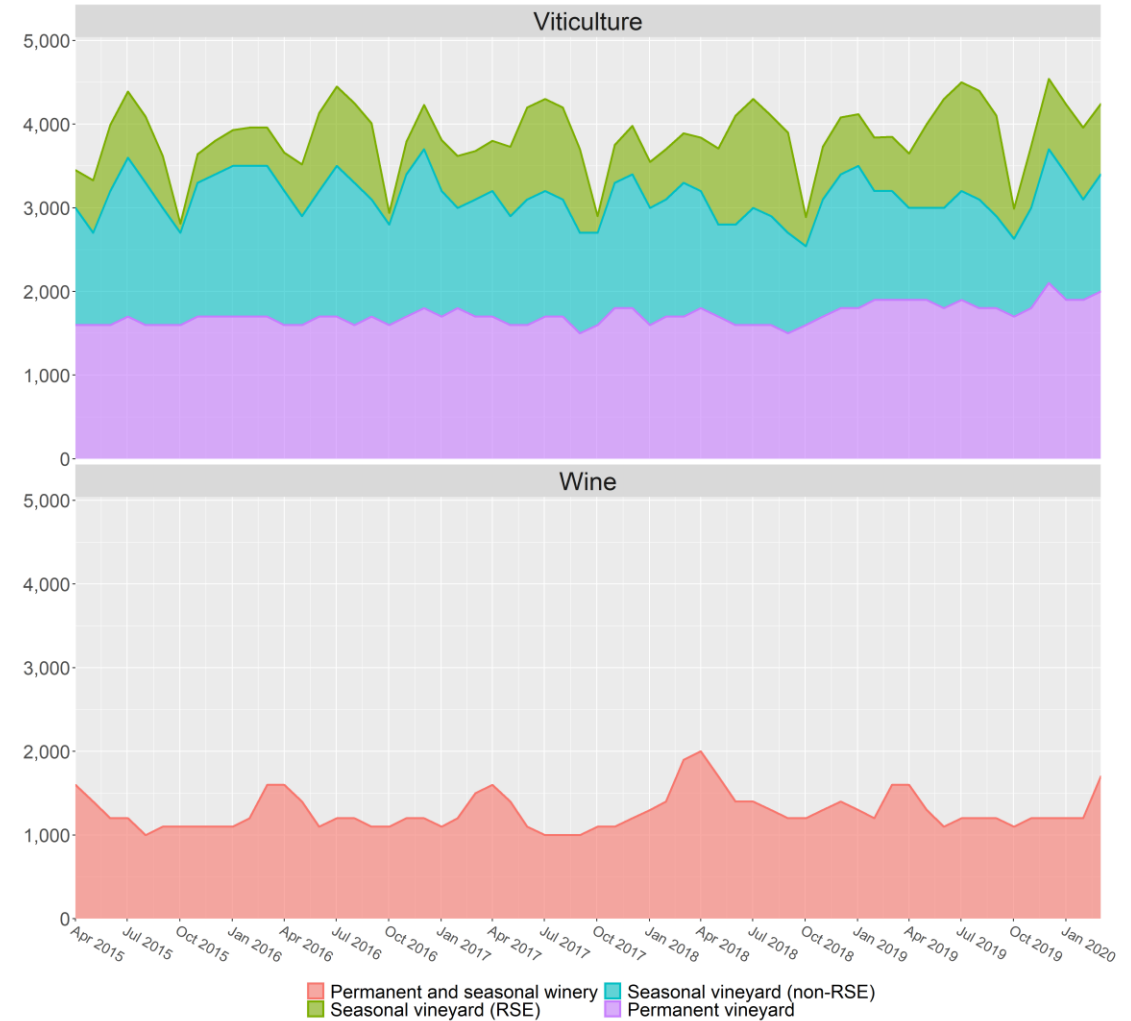
- We understand that the winegrowing industry looks at workers based on whether they are permanent or seasonal, and whether they are vineyard or winery.
- We have adopted this terminology for this section and have measured these as shown in the table.
- The ANZSIC06 codes do not perfectly align with these categories – for example, Wine and Other Alcoholic Beverage Manufacturing may include winegrowers (a vineyard and winery). As a result, there may be some movement between categories.

Description in this section	ANZSIC06 classes
Permanent vineyard	Grape Growing
Permanent winery Seasonal winery	Wine and Other Alcoholic Beverage Manufacturing
Seasonal vineyard (Contractors)	Other Agriculture and Fishing Support Services Any RSE visa holders not employed by a business coded to a “horticulture” ANZSIC06 class.

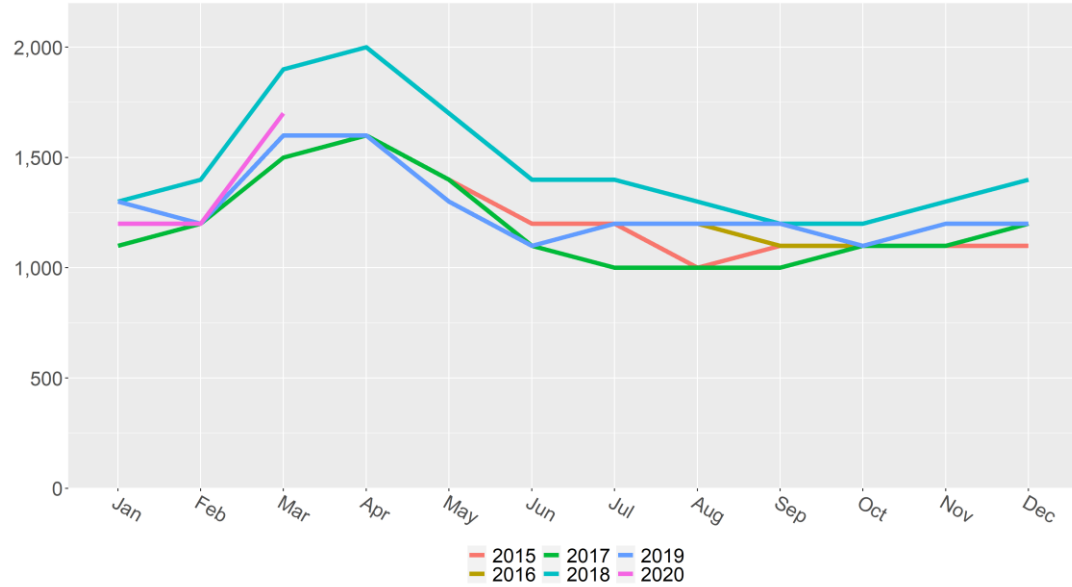
What we found

- A workforce of up to 2,100 directly employed vineyard permanent workforce, with relatively low seasonal variation.
- The seasonal vineyard workforce follows a fairly consistent pattern over the time series. It has a pronounced seasonal pattern with seasonal peaks around harvest, and over winter. The winter peak is larger and lasts for longer. These will reflect contractors.
- Wineries have a noticeable seasonal peak at the time of vintage, which will reflect seasonal cellarhands and some additional winemakers.
- There may be some crossover between Grape Growing and Wine and Other Alcoholic Beverage Manufacturing, given that both activities may be carried out by the same business at the same site.
- Other people may also be involved directly or indirectly in producing wine – for example, people working for freighting businesses involved in shipping wine – or may work for businesses that benefit from the spending from viticulture and wine businesses and their workforce.
- This is not the appropriate tool for understanding these “flow on” impacts of this workforce, and our counts do not include these people.

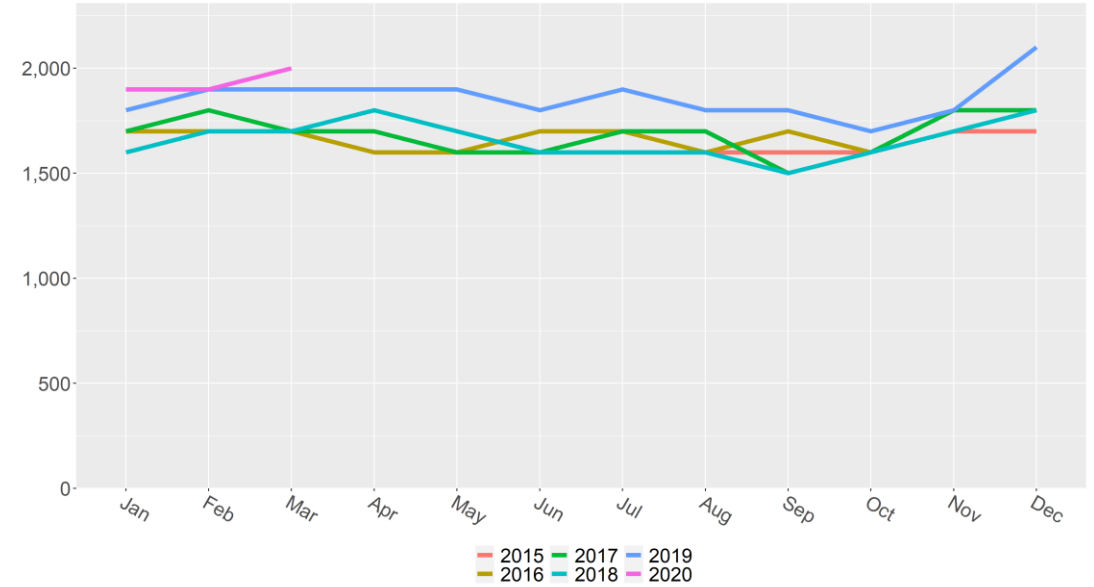
Potential Marlborough Viticulture and Wine Workforce
Area chart - shaded area shows composition



Winery (Permanent and Seasonal)



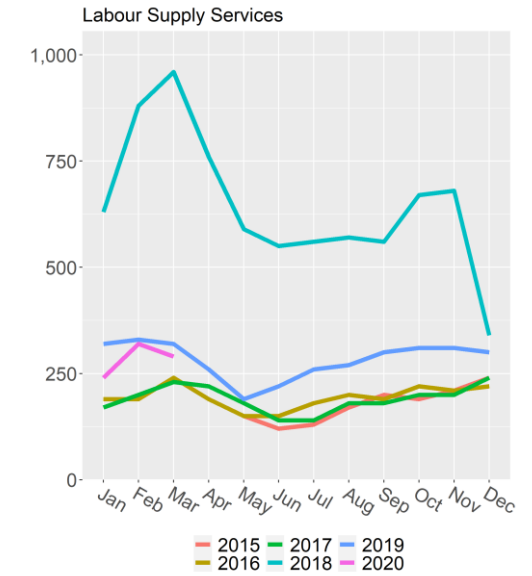
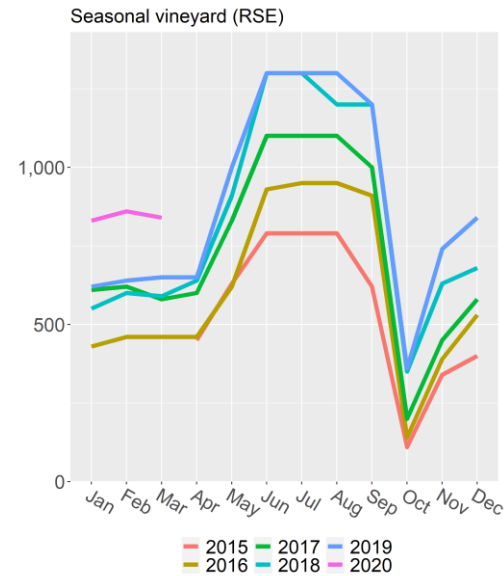
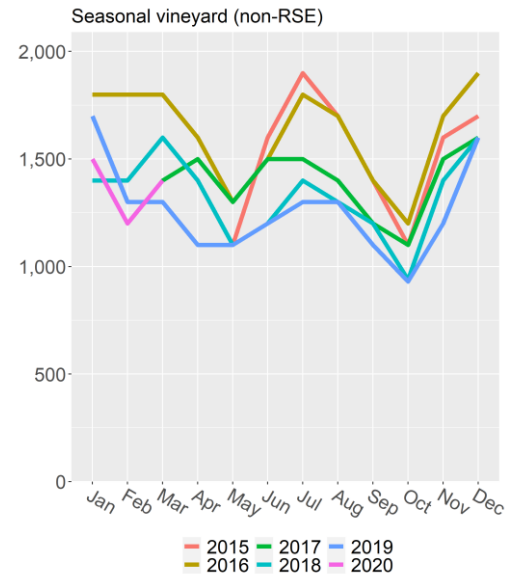
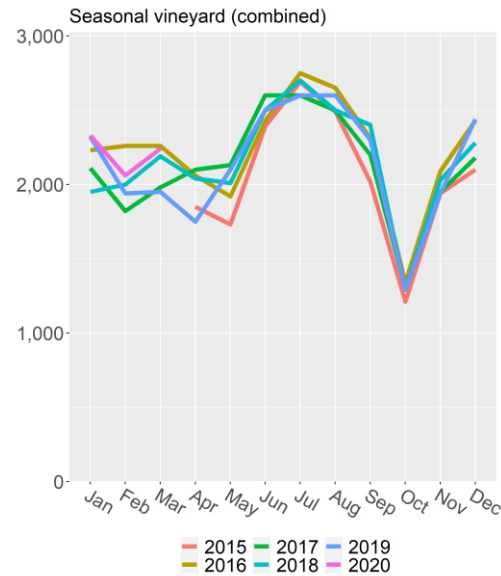
Permanent vineyard



Annual seasonality – Viticulture and Wine

- Grape Growing is fairly consistent year-round, as seasonal activities are contracted out. Some years appear to have an increase coming into summer.
- Wine and Other Alcoholic Beverage Manufacturing shows a clear annual peak around March and April when winemaking teams are increased to manage wine production.
- We understand that the count for *Wine Production* is higher than Wine Marlborough's figure of approximately 630 permanent employees of wine companies (and over 1,000 additional seasonal workers during vintage).
- The figures shown are around 400 people higher as the baseline (aside from 2018 which is higher). This may be due to not all people being counted being an FTE at all times of the year.

Annual seasonality – Potential contractors



- Overall, there is a clear seasonal summer peak, and a larger winter peak in the seasonal viticulture workforce, with the point of lowest activity being in October.
- Breaking this out into RSE and non-RSE workers, we see that over time, the number of RSE workers has grown. The peak RSE workforce is over May to September (inclusive), reflecting their significant contribution to winter seasonal activities, but also making contributions for most of the year. The size of this peak has been increasing over time.¹
- Other seasonal vineyard workers display clear peaks in winter, and summer-autumn. This will reflect winter pruning, summer viticulture work, and harvesting. There seems to be some variation with earlier years showing a larger workforce. The decrease may be due to RSE visa holders taking on a greater share of this work.
- Labour Supply Services appears to be have a slight peak over summer and a slightly lower point in winter. We included this in order to assess whether there is a seasonal trend matching vineyard workforce, and to understand if it is likely to be a material labour source to take into account. Overall, it appears to be neither.
- Note the changes in scale between the charts.

¹ Also see slides 7-8 and 25-26 for discussions around limitations and in particular about the RSE workforce.

	Description	ANZSIC06 class	Maximum	Minimum
Viticulture and wine	Vineyards	Grape Growing	2,100 (Dec)	1,700 (Oct)
	Vineyard (seasonal) (non-RSE)	Other Agriculture and Fishing Support Services	1,600 (Dec)	930 (Oct)
	Vineyard (seasonal) (RSE)	RSE visa holders (unless employed by a "horticulture" ANZSIC06 code ¹)	1,300 (Jun-Aug)	360 (Oct)
	Wineries		1,700 (Mar)	1,100 (Jun/Oct)
Combined total			5,940 (Mar)	4,090 (Oct)

Summary for year to March 2020

The wine industry is much larger than the other food and fibre sectors in Marlborough. With the exception of labour supply services, which did not have the same trends, we think it is likely that all the people in the seasonal/contractor workforces are attributable to viticulture.

The workforce for the year to March 2020 is summarised in the chart above.

¹ Refer to workforceinsights.govt.nz/about-this-data/which-businesses-do-we-include/ for a full list of ANZSIC06 codes we consider are related to horticulture

How does this compare with other figures?

- Wine Marlborough have kindly provided us with a copy of the *Marlborough Wine Industry Growth Forecast 2020*, which contains a range of figures, modelling, and forecasts about the sector. We have looked at how this compares to our results. We understand that a relatively high proportion of businesses have participated in the survey underlying this forecast and providing figures for previous years, which supports the robustness of these figures.
- Taking into account the imprecision in aligning the ANZSIC06 classes perfectly with vineyard and winery activities, and the bluntness of “number of people receiving any pay during a month” versus task/time based forecasts of requirements, and the purposes we intend our data to be used for, we believe our results are reasonably close to the monthly figures set out in the report.
- For example the viticulture workforce (combined seasonal and permanent) peaks at 4,500 in winter (our figures) compared with 4,726,² and winery workforce (combined seasonal and permanent) peaks at vintage at 1,700, compared with 1,644.³ One difference is that our data may remain higher at times – for example, it is consistently around 500 people higher for wineries. One possibility is that our headcount based system is not able to measure a reduced intensity of efforts, and in has limitations around measuring participation of self-employed/business owners.

1. Greg Dryden and Anna Weeks, *Marlborough Wine Industry Growth Forecast 2020: Vineyard Area Expansion, Future Challenges and Opportunities* (Fruition, report prepared for Wine Marlborough, April 2021)
2. Table 18, page 16. See also Figure 4.
3. Table 19, page 16. See also Figure 5.

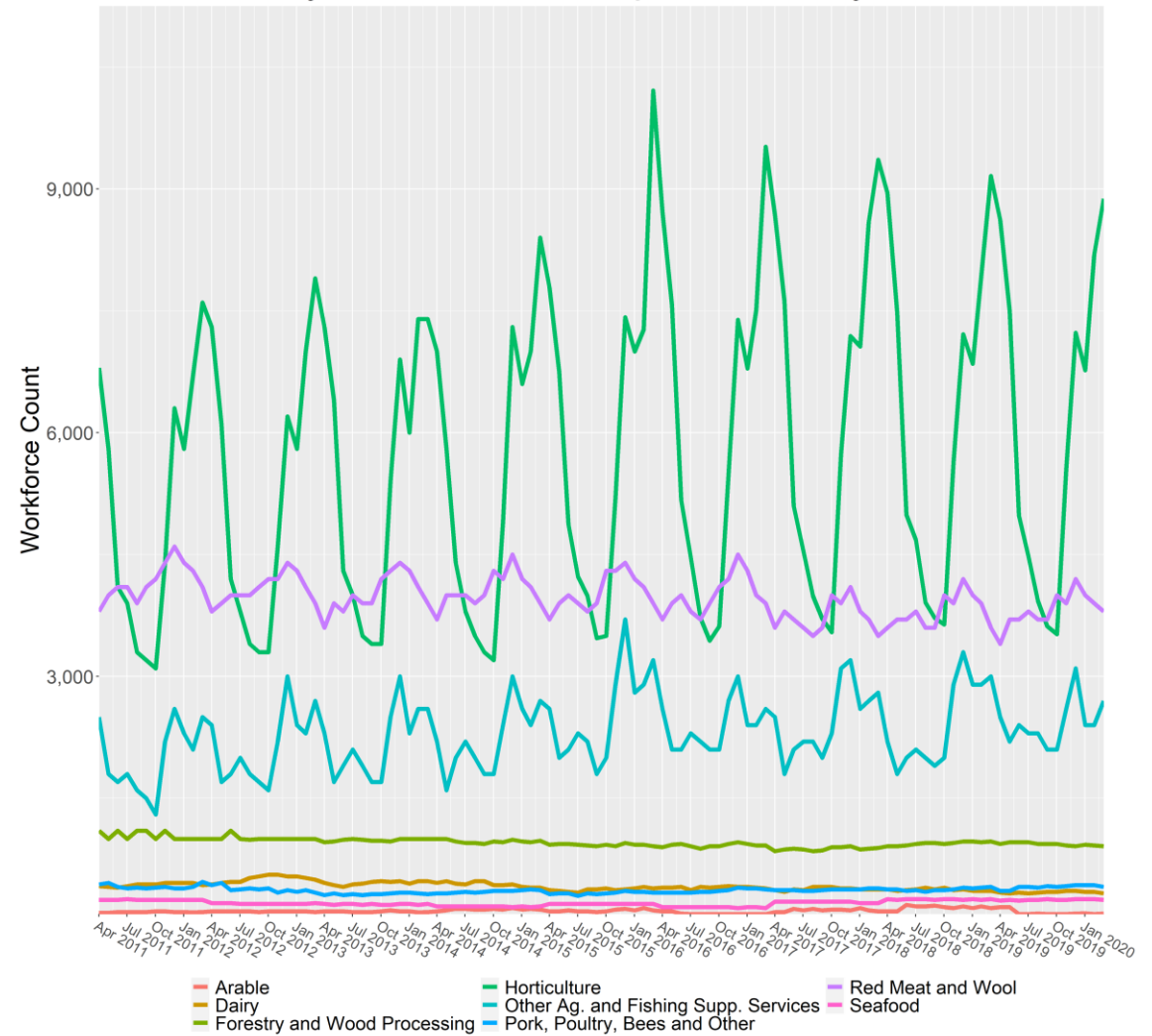
How does this compare with other figures - continued

- This also contrasts with the forecast annual requirement for Marlborough wine industry labour of 8,896 (2020/21). This is significantly above the maximum monthly workforce in our data (which was just under 6,000 for 2019-2020).
- We understand that this higher figure may reflect the number of seasonal workers needed to achieve the required peak workforce. This would highlight the importance of considering other factors, such as maximum visa duration (for RSE workers or foreign backpackers), when thinking about the workforce. This is a particularly important consideration in regions with small populations, that may be distant from the workforce need and have no large pool of people to easily draw on.
- As well as the previously discussed limitations with the data in this spotlight, we believe one of the contributing factors to why the spotlight figures are lower than this is that the 'comings and goings' of seasonal workers may result in these people being spread out over several months in the spotlight.
- Another piece of data that has been provided to us is approved ATRs for RSE workers for Marlborough region. This shows a peak of around 2,700 RSE in July and August 2019, which is more than double our figure for the RSE workforce. We know that we do not have perfect coverage of RSE visa holders, and it is possible that the missing coverage could result in regionally significant gaps. There are also some uncertainties with how joint ATRs would present in our data, and we are open to the possibility that RSE figures are higher than set out here.
- As mentioned earlier, we caution readers against using the figures in this report to estimate workforce demand, particularly when there are other sources, such as forecasts, available. The purpose of this spotlight is to complement the knowledge of, and insights into these industries, held by participants and peak industry bodies, by linking into additional sources of data.

Hawke's Bay

- Hawke's Bay is well known for a range of horticulture, especially apples, and for its wine.
- The main food and fibre production workforces in Hawke's Bay are from:
 - Horticulture
 - Red Meat and Wool
 - Cross Sector
 - Forestry and Wood Processing
- The Hawke's Bay has large areas of planted fruit and vegetables. In 2017 there was:¹
 - 9,572ha planted fruit;
 - 8,356ha planted vegetables.
- Apple growing accounts for half the planted area for fruit.¹

Hawke's Bay- relative sizes of production by sector



1. Fresh Facts 2021, at 5. <https://freshfacts.co.nz/files/freshfacts-2021.pdf>

Hawke's Bay

- Apples are harvested in late summer and early autumn. Harvested apples are sent to packhouses to be packed. Some orchard work is required ahead of this, such as thinning – removing some of the growing apples to improve the quality of the remaining ones and protect the branches from breaking under excess weight.
- Seasonal activity occurs throughout the year on vineyards. Key seasonal activities include winter pruning, wire lifting, and harvest. Wineries have a seasonal workforce (mainly additional cellarhands) over March-April, when harvested grapes must be received processed.
- Other horticultural production takes place in the Hawke's Bay, including growing summerfruit, peas, squash, sweet corn, onions and other vegetables. In addition to this, processing activity also takes place.
- This other activity occurring could also be driving contractor or packing counts. As a result, Hawke's Bay poses a different analytical challenge to the Bay of Plenty and Marlborough.

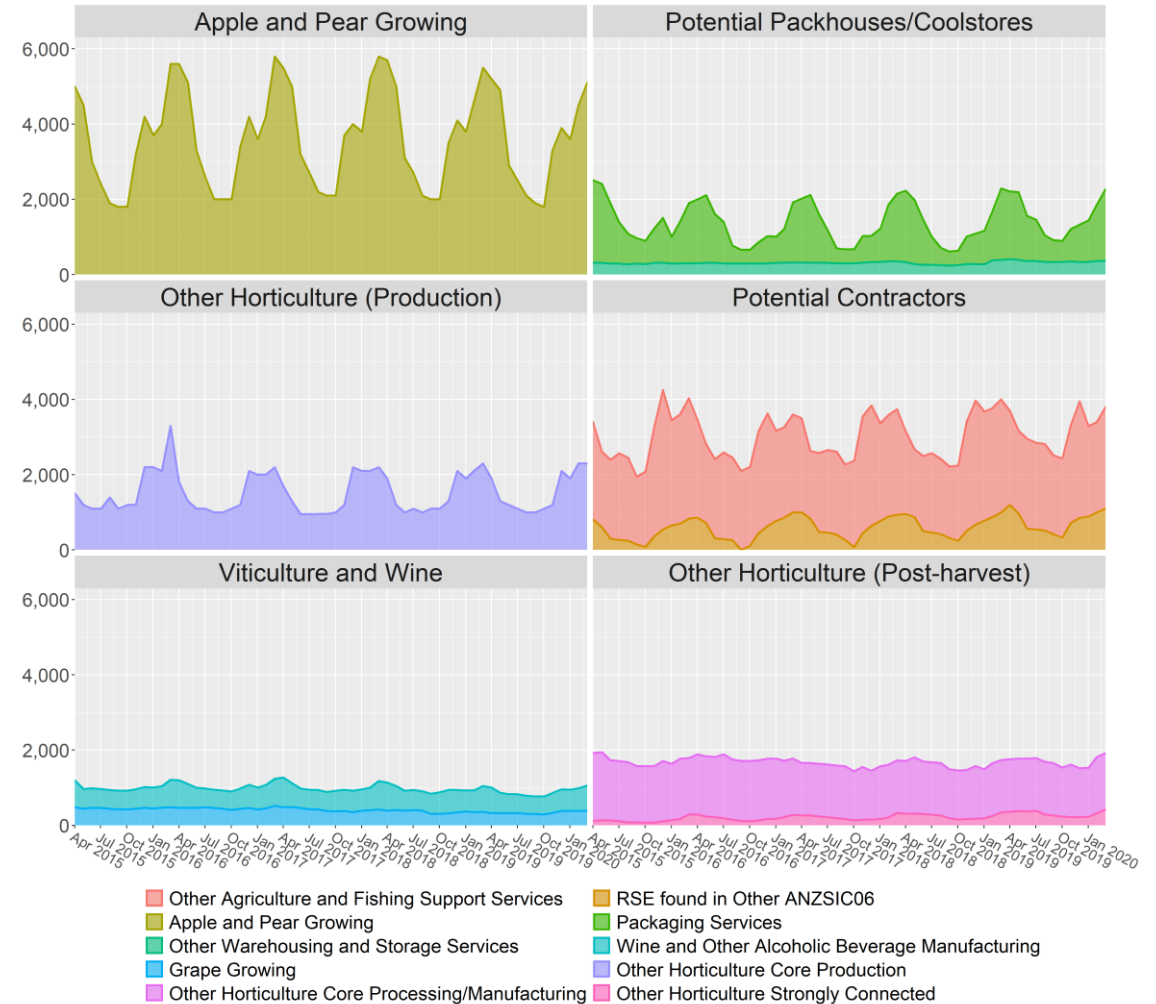


What we found

- A large workforce is employed within the *Apple and Pear Growing* ANZSIC06 class, that displays clear seasonal pattern. This could also represent some packhouse activity occurring at facilities on-orchard.
- A smaller workforce employed within other horticultural production, which also shows a strong seasonal pattern, peaking over summer-autumn.
- Packaging Services displays a clear seasonal pattern. Other Warehousing and Storage Services does not show such a pattern and is relatively small.
- Other post-harvest horticultural activities are much flatter.
- The *Other Agriculture and Fishing Support Services* ANZSIC06 class and our created *RSE found in Other ANZSIC06* category display a clear seasonal pattern over the time series and vary between around 2000-4000 people each year.
- *Grape Growing* and *Wine and Other Alcoholic Beverage Manufacturing* have a relatively smaller workforce directly employed. This may reflect a contractor model for viticulture, similar to Marlborough. Unfortunately, due to the smaller scale, the same approach of identifying this seasonal workforce is not likely to be applicable here.
- Wineries have a noticeable seasonal peak at the time of harvest, which will reflect seasonal cellarhands and some additional winemakers.

Potential Hawke's Bay horticulture and viticulture workforce

Area chart - shaded area shows composition

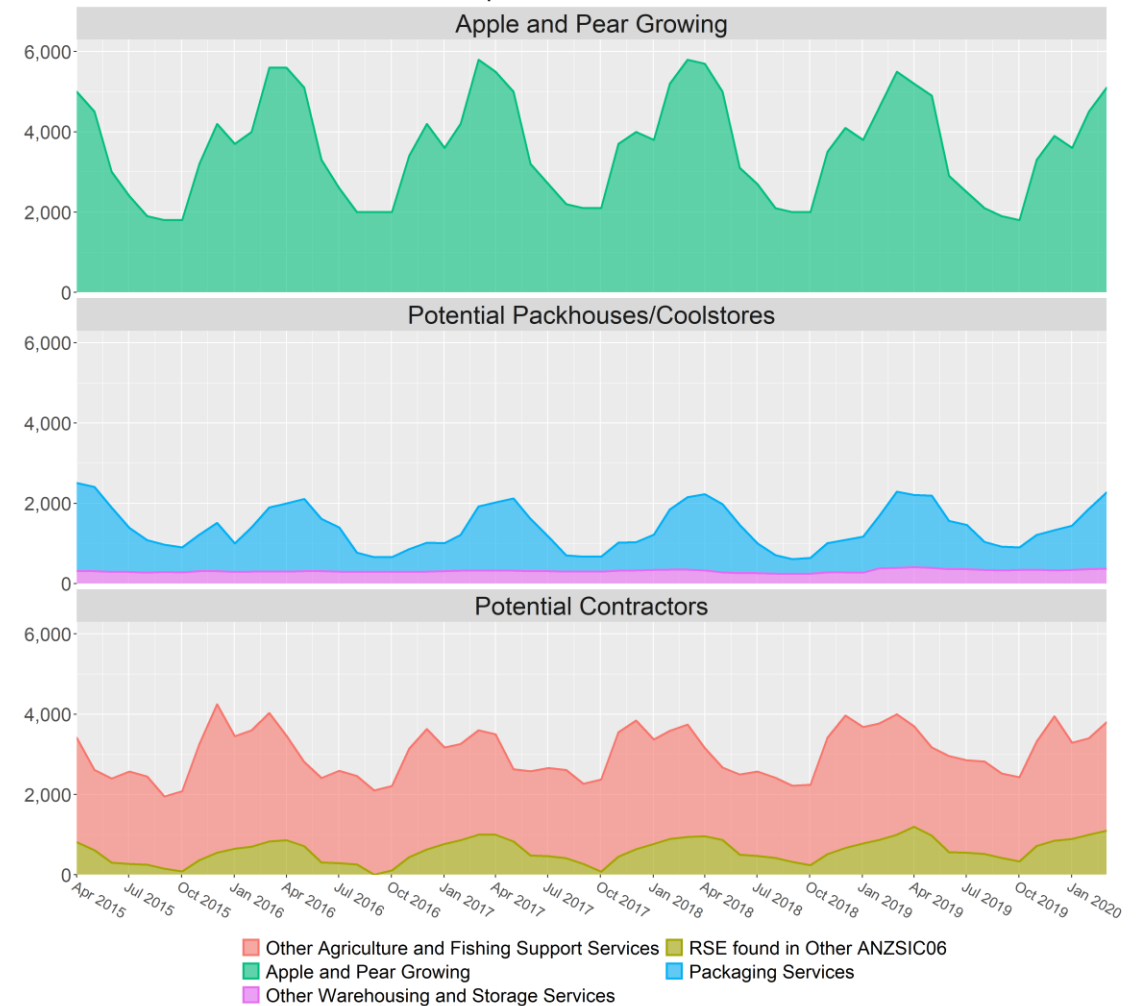


What we found - apples

- We see a clear annual trend for apples.
- The peaks in Packaging Services seems to correspond to the timing of apples and of other horticulture (next page), which suggests this has been correctly identified as horticulture-related, likely apple packhouses.
- “Potential Contractors” has two peaks, around December, and March/April. We see on the next slide that this timing corresponds closely to other horticulture, so it this group may not mainly relate to apples.

Potential Hawke's Bay pipfruit workforce

Area chart - shaded area shows composition

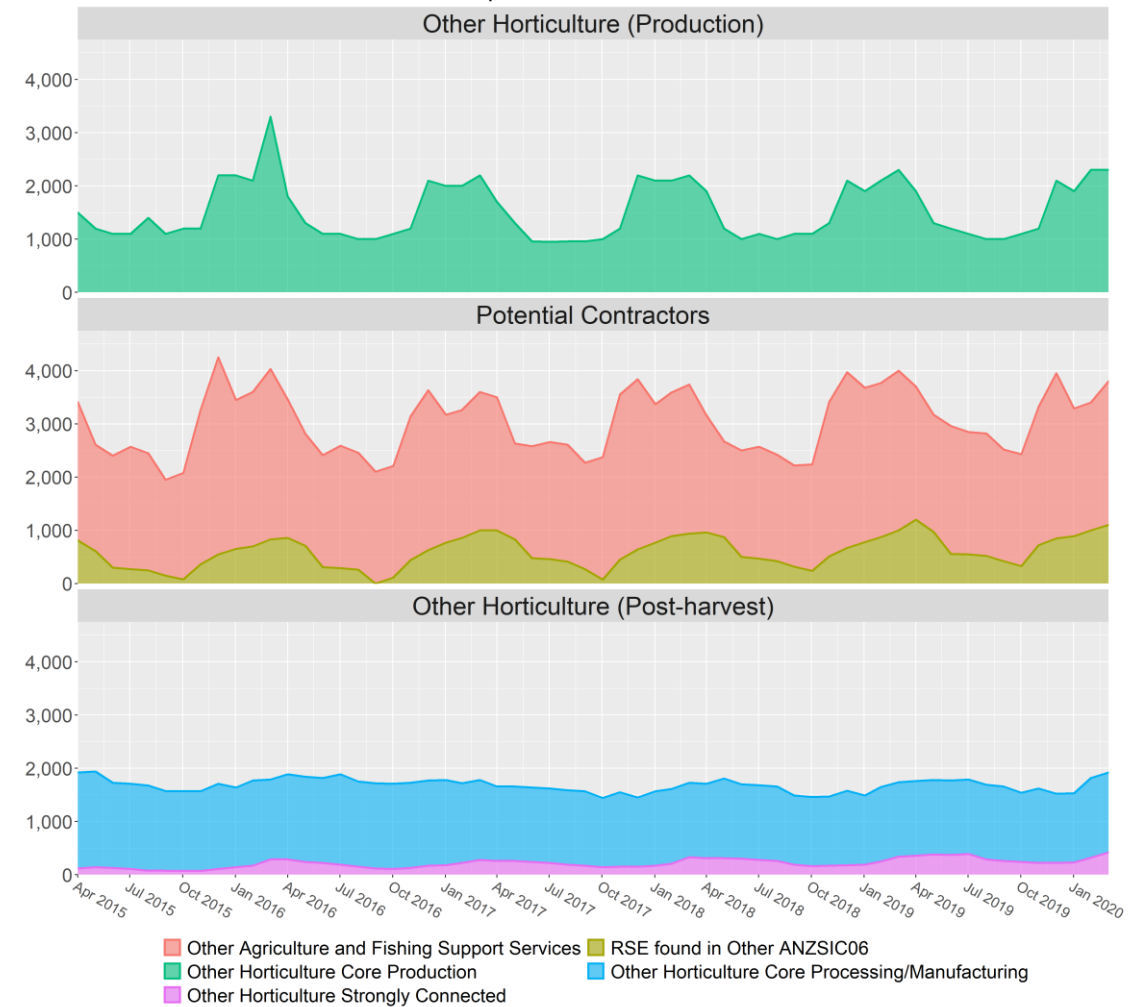


What we found – other horticulture

- A clear annual trend for other horticulture.
- Over summer/autumn this aligns fairly closely with the trend for *Other Agriculture and Fishing Support Services*.
- Other Horticulture (Post-harvest) will relate to Fruit and Vegetable Processing, and to Wholesaling activities.

Potential Hawke's Bay other horticulture workforce

Area chart - shaded area shows composition

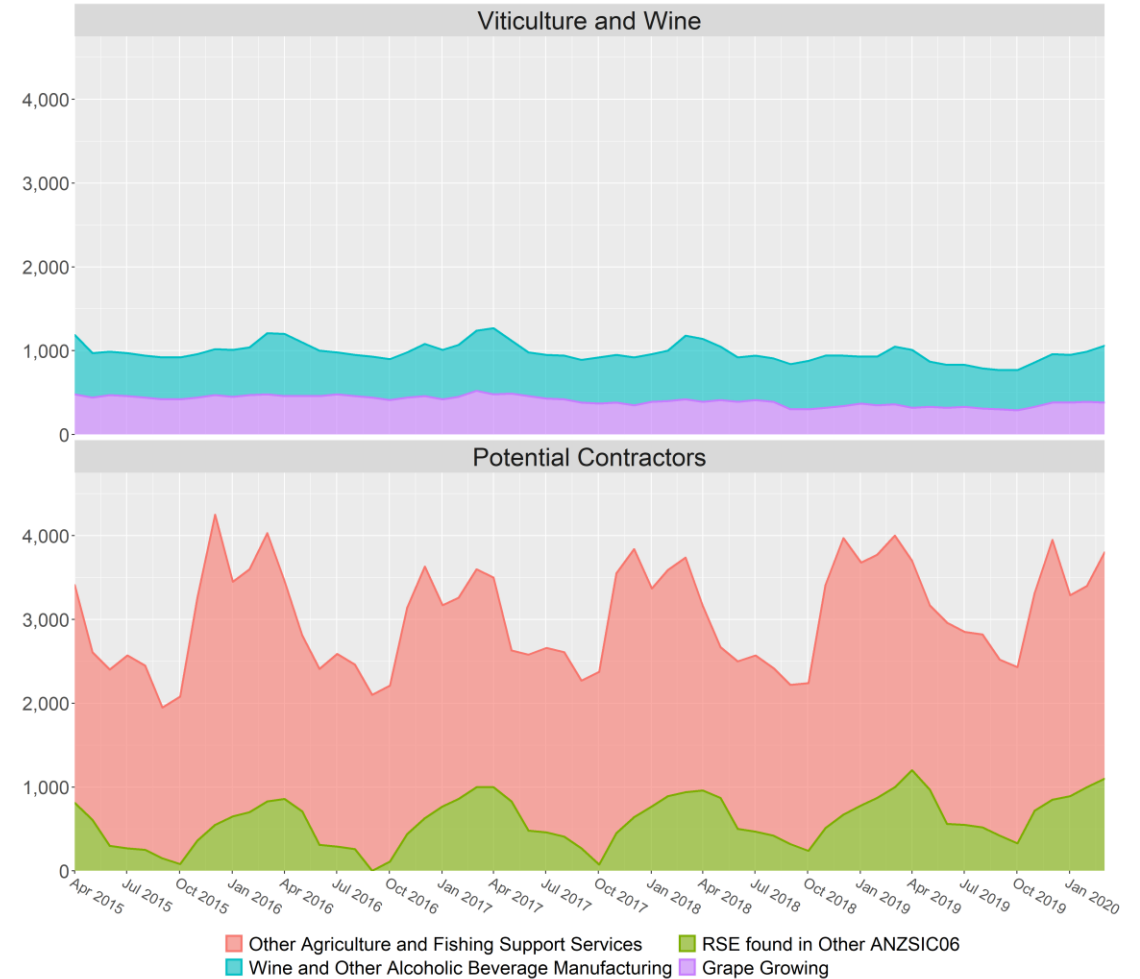


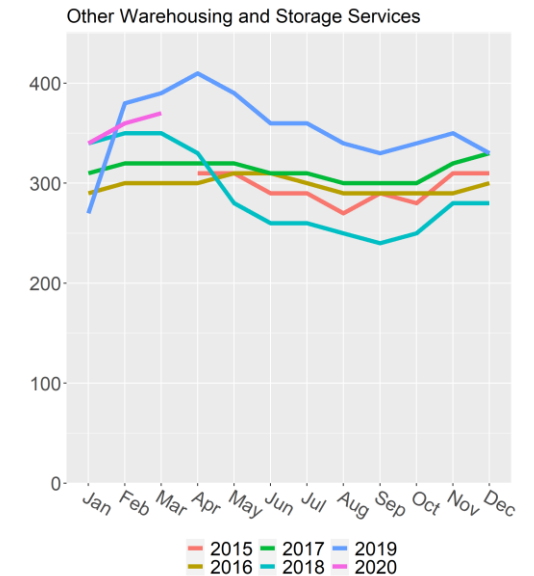
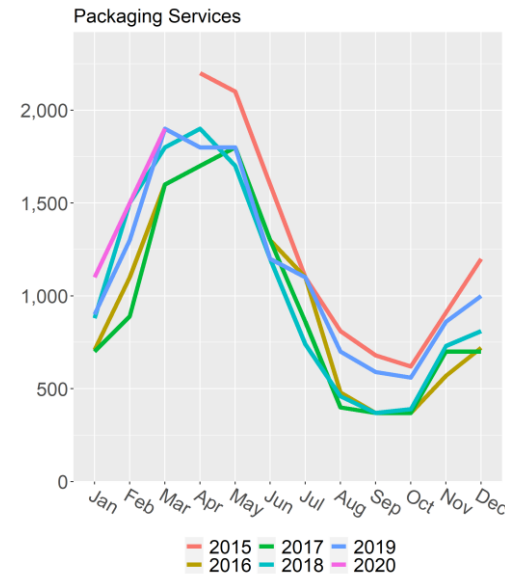
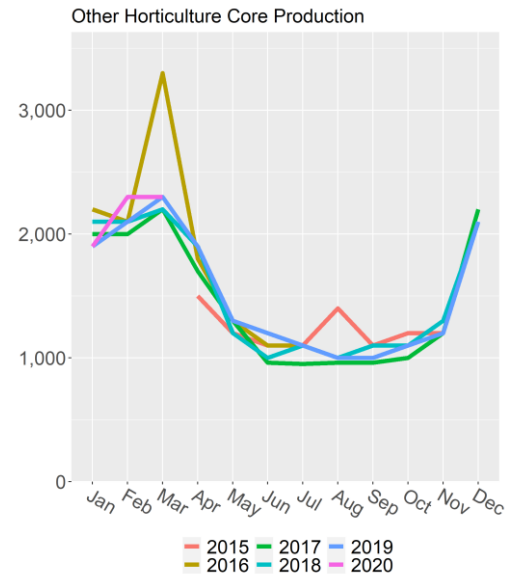
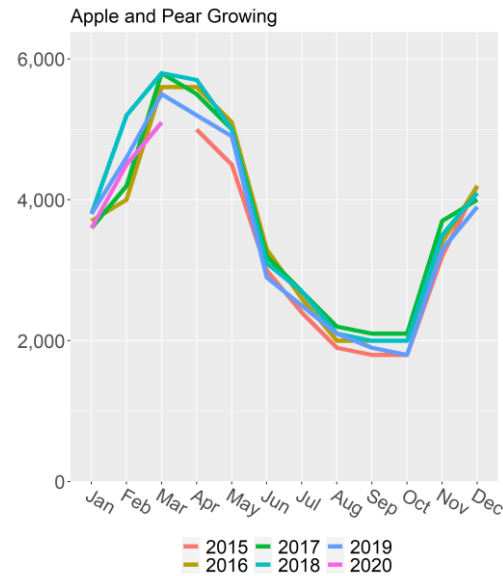
What we found – viticulture and wine

- Given the flatness of the wine and viticulture workforce, it is likely that many seasonal tasks will be carried out by contractors.
- Due to the range of crops, it is difficult to clearly link industries with contractors. It is possible that the plateau extending into winter in both contractor groups relates to wine.
- Although the visibility of this plateau has decreased over time (as the workforce becomes higher year-round), using the size earlier in the period as a guide, this could potentially be over 700 people.
- There is an annual peak in wine and other Alcoholic Beverage Manufacturing around March-April. This is around 2-300 people, and is clearer in the year-on-year changes in the following slides.

Potential Hawke's Bay viticulture and wine workforce

Area chart - shaded area shows composition

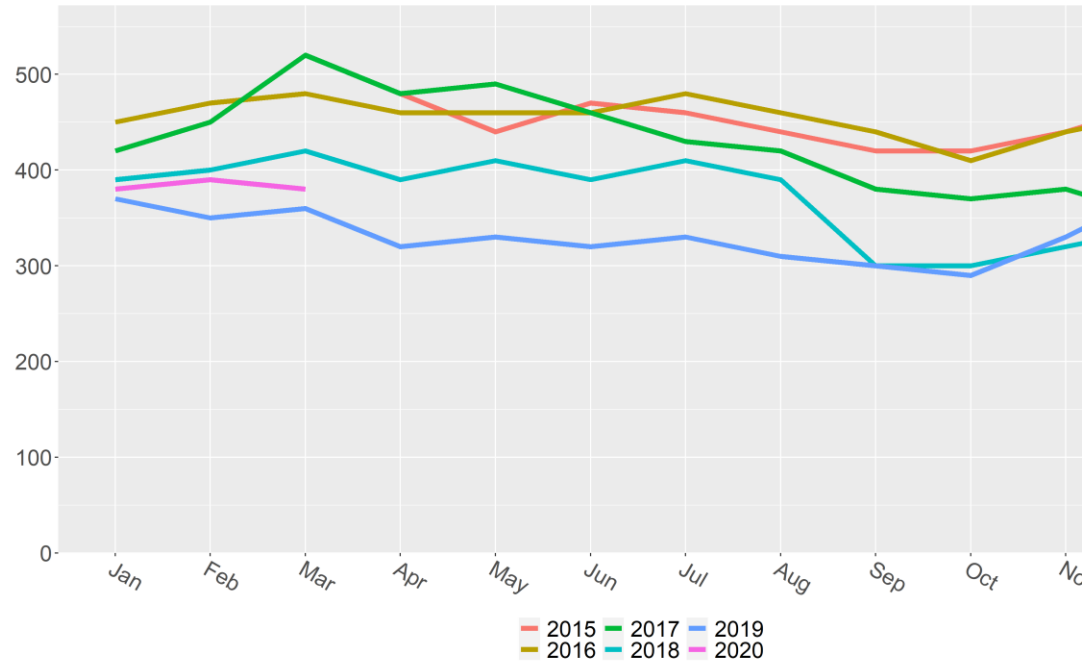




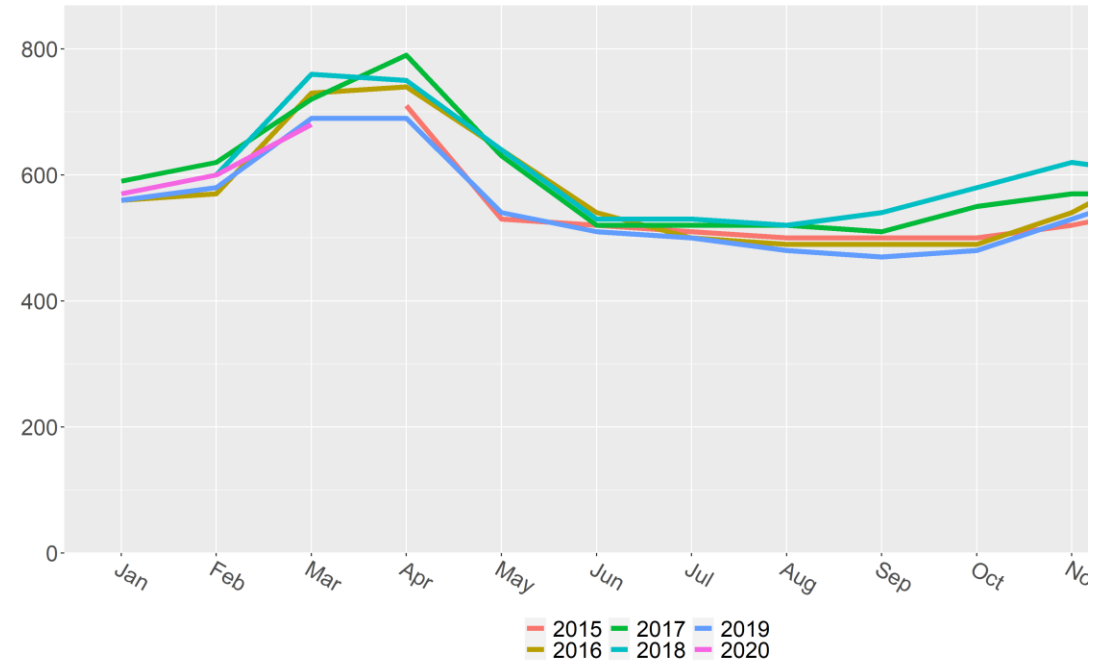
Annual seasonality – Horticulture and Potential Packhouses

- Apple and Pear Growing, and Other Horticulture Core Production both have visible peaks over summer-autumn, with apples peaking slightly later. There is a period with a smaller workforce following the harvest (much longer for Other Horticulture), and an increase in demand coming into summer (starting earlier for apples).
- Packing Services shows a more similar timing to Apple and Pear Growing than to Other Horticulture Core Production. Consequently, we believe this may primarily relate to the apple industry.
- Other Warehousing and Storage Services is relatively flat, and very small compared to the other groups. It is possible that this reflects year-round operation, and whether this might be the expected trend. However, although this is different to the trend we saw in the Bay of Plenty. We include this ANZSIC06 class, noting that it has a relatively small workforce compared to the other groups, so has a relatively small impact on the figures.

Grape Growing

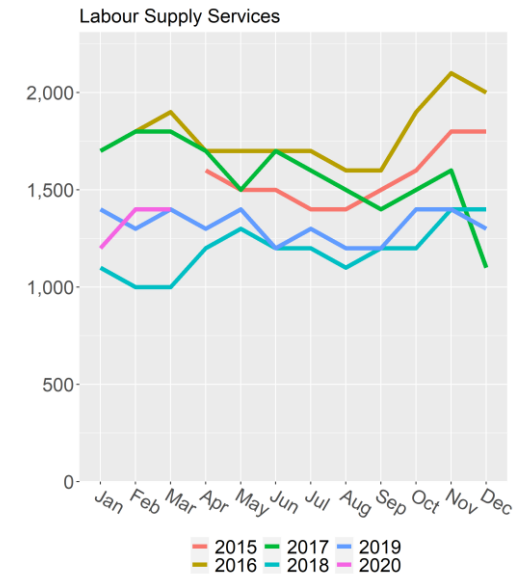
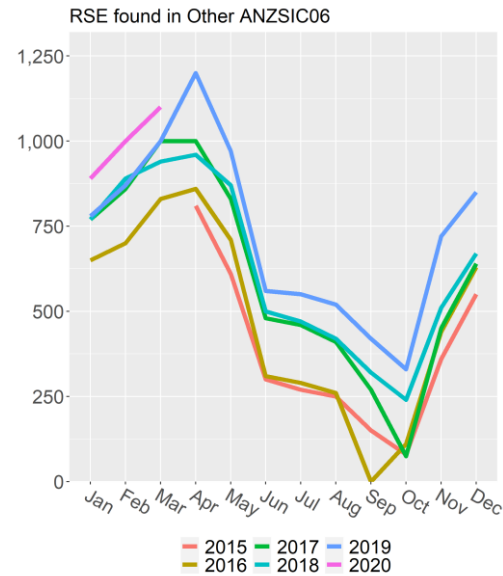
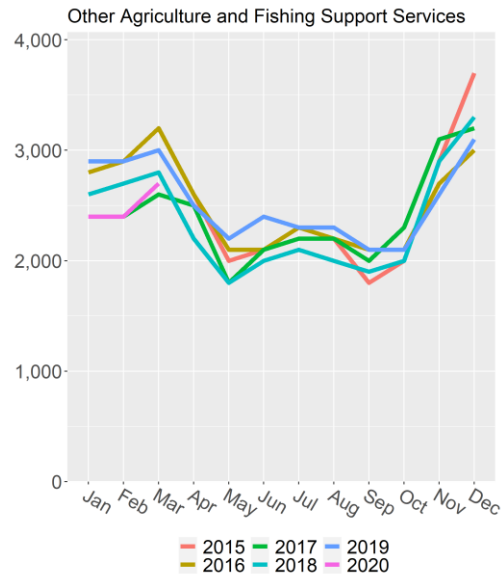


Wine and Other Alcoholic Beverage Manufacturing



Annual seasonality – Viticulture and Wine

- Grape Growing is similar to the trend in Marlborough, which is relatively consistent year-round. Generally the trend increases coming into summer. There is also a small peak around March. We would expect some of the workforce being located under the ANZSIC06 classes considered to be ‘potential contractors’.
- Wine and Other Alcoholic Beverage Manufacturing has a pronounced peak around harvest, likely from seasonal cellarhands. There is also an increase towards the end of the year. This may reflect viticulture workers - vineyards with attached wineries may be included in this ANZSIC06 class.



Annual seasonality – Potential contractors

- *Other Agriculture and Fishing Support Services* follows a similar trend each year with the highest workforce over summer, that resembles the “Other Horticulture Core Production” trend two slides before.
- It also includes a small peak in winter (Jun-Aug). We see a similar peak in Marlborough, associated with viticulture (although on a larger scale), and it is thought that this may reflect viticulture activity.
- As in the other regions, *Labour Supply Services* does not visually present a trend, and so we do not estimate a share. However, it is likely that some people in this group will be involved in horticulture or viticulture at some time.
- *RSE found in Other ANZSIC06* follows a similar seasonal trend to *Apple and Pear Growing*, and as a result may be likely to be mainly associated with apples.

	Description	ANZSIC06 Class	Maximum	Minimum
Apples	Apple orchards	Apple and Pear Growing	5,200 (Apr)	1,800 (Oct)
Other Horticulture	Other Horticulture Core Production		2,300 (Feb/Mar)	1,000 (Aug/Sep)
	Other Horticulture Post-Harvest		1,920 (Mar)	1,520 (Dec)
	Total Other Horticulture		4,220 (Mar)	2,640 (Oct)
Packhouses and coolstores	Potential packhouses	Packaging Services	1,900 (Mar)	560 (Oct)
	Potential coolstores	Other Warehousing and Storage Services	410 (Apr)	330 (Sep/Dec)
	Total packhouses and coolstores		2,270 (Mar)	900 (Oct)
Viticulture and wine	Viticulture	Grape Growing	390 (Feb)	290 (Oct)
	Wine	Wine and Other Alcoholic Beverage Manufacturing	690 (Apr)	470 (Sep)
	Total viticulture and wine		1,060 (Mar)	770 (Sep/Oct)
Contractors	Contractors (ex RSE)	Other Agriculture and Fishing Support Services	3,100 (Dec)	2,100 (Sep/Oct)
	Contractors (RSE)		1,200 (Apr)	330 (Oct)
	Total Contractors		3,950 (Dec)	2,430 (Oct)
Overall			16,450 (Mar)	8,540 (Oct)

What we found –
summary for year to
March 2020

The range of different activities taking part in Hawke's Bay makes estimating a total by crop much more difficult than the Bay of Plenty and Marlborough.

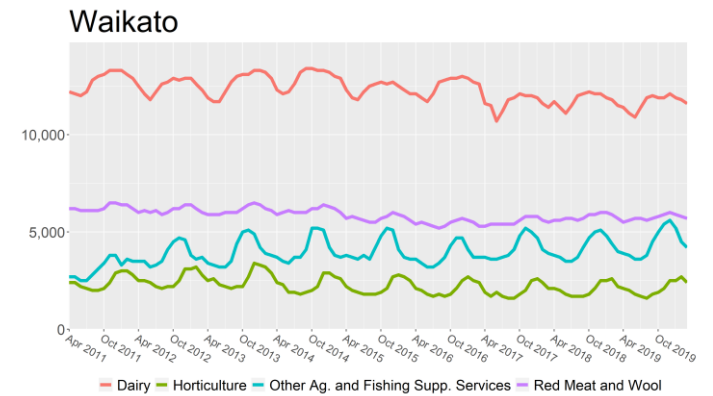
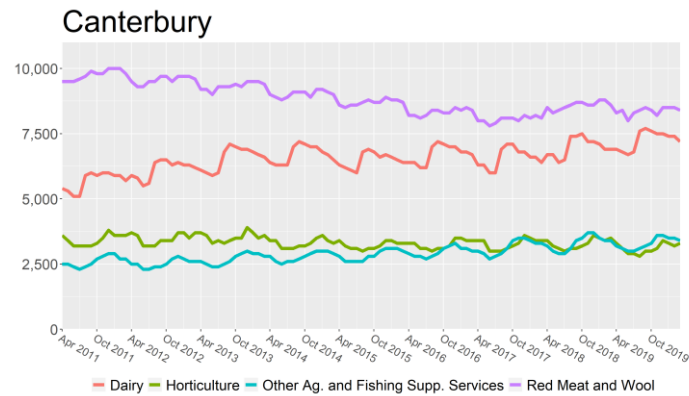
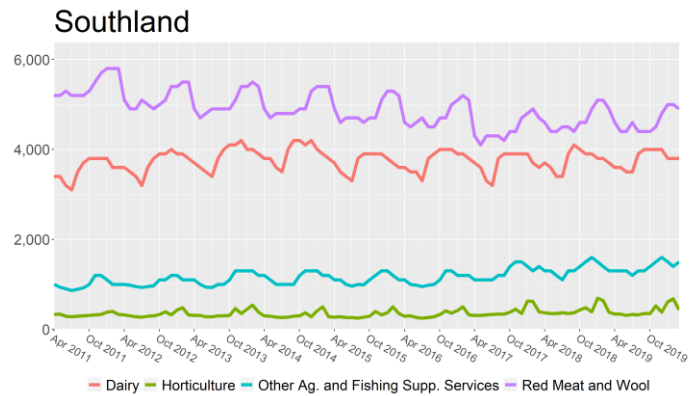
It is likely that many contractors will work for different crops at different times of the year, and to some extent it may be difficult to separate them.

Appendices:

Other potential users of Other Agriculture and Fishing Support Services

Potential packhouses and coolstores – nationwide picture

Other potential users of Other Agriculture and Fishing Support Services



To help analyse whether other sectors might be determining the size of the *Other Agriculture and Fishing Support Services* this might be occurring, we looked to three regions where Dairy and/or Red Meat and Wool sectors are large, and horticulture and viticulture relatively small: Waikato, Canterbury and Southland. Red Meat and Wool and Dairy were generally among the next largest sectors for production workforce in the spotlighted regions.

We see that in these other regions the *Other Agriculture and Fishing Support Services* counts are generally much lower than the Dairy or Red Meat and Wool counts. This supports the inference that they are not mainly responsible for the large size of the *Other Agriculture* category in our spotlighted regions.

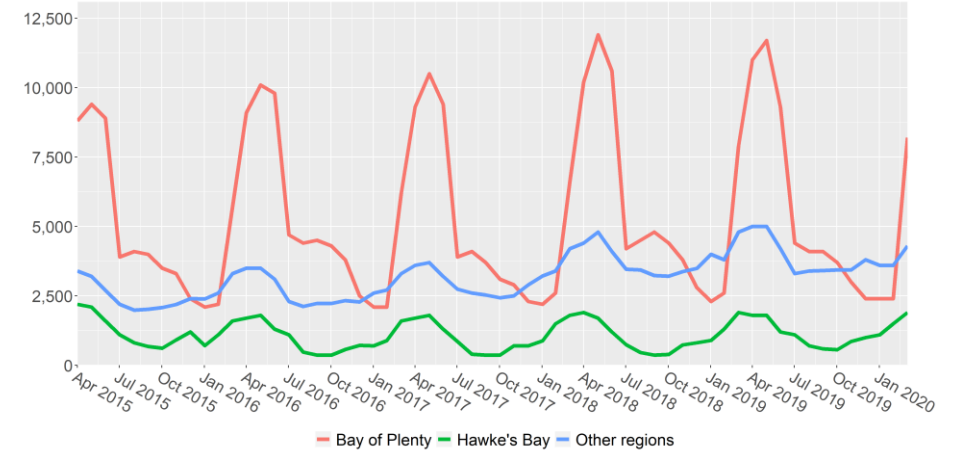
It is possible that there could be a difference in industry structure between these regions and the spotlighted regions, for these sectors, although we are not aware of facts to suggest this is the case. In contrast, we are aware that kiwifruit in the Bay of Plenty and viticulture in Marlborough make use of contractors of seasonal tasks (less so apples in Hawke's Bay).

Other Agriculture and Fishing Support Services will also include people who are carrying out activities for Arable, Pork, Poultry, Bees and Other Primary, and Seafood (but does not include forestry contractors). However, these industries are relatively small compared to the spotlighted industries; and we are not aware of qualitative reasons that might suggest a very high proportion of the workforce in these sectors coming from contractors.

Potential packhouses and coolstores – nationwide picture

- To support our analysis and conclusions, we also look at packaging services at a national level.
- We see that the strong seasonal trend visible in the Bay of Plenty for potential packhouses (*Packaging Services*) is visible in Hawke's Bay and in the aggregated other regions.
- The peak is much larger in the Bay of Plenty, which would be consistent with the sizes and different structures of these industries.
- However, the seasonal pattern seen in the Bay of Plenty for potential coolstores (*Other Warehousing and Storage Services*) is not visible in Hawke's Bay, nor in the aggregated other regions. The Bay of Plenty makes up a much smaller proportion of overall activity within this class, too.
- This does not mean that the workforce within this ANZSIC06 class (outside the Bay of Plenty) should not be included in our measurement of the Food and Fibre Sectors – in particular, we believe that this class may also include activity related to processed meat products.

Potential Packhouses
(Packaging Services)



Potential Coolstores
(Other Warehousing and Storage Services)

