Wellbeing in the seasonal workforce – a technology-based solution

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Executive Summary

New Zealand is a nation heavily reliant on its primary industries. Many horticulture organisations within the primary industries operate seasonally, relying on a changing workforce each year. This presents unique challenges which the horticulture industry has struggled to overcome and as a result, there is room to improve seasonal staff retention and productivity.

This report was written to investigate how rostering technology can improve the wellbeing, and therefore the retention and productivity, of New Zealand's seasonal workforce and to establish what this technology would look like. Through a comprehensive literature review, initial assumptions were validated:

- There is a problem with retaining good seasonal workers in the horticultural industry
- Current seasonal work practices in the horticulture industry contribute to negative staff wellbeing.
- Improving seasonal worker wellbeing will improve retention and productivity for organisations.

A series of nine semi-structured interviews were conducted with key seasonal employers to understand what factors employers considered important for staff wellbeing and how organisations are currently contributing positively to staff wellbeing. Thematic analysis of these interviews demonstrated several tangible pathways to improve seasonal staff wellbeing. These pathways are focused on:

1. Reducing fatigue within the staff pool
2. Giving staff clearer expectations on working hours
3. Considering staff's physical environment

A competitor feature analysis of existing rostering software revealed that few had any features which utilised these tangible pathways to improve wellbeing, and so a conceptual software solution was developed. The proposed software would assign each employee a 'ready to work' score which accounts for several wellbeing factors and this is used to generate optimal rosters.

Based on the conclusions of this report, the recommended next steps are:

- Seasonal employers in the horticulture space including post-harvest and orchard management companies should improve the wellbeing of their seasonal staff because it improves financial and ethical outcomes.
- A business plan should be created to commercialise the proposed software solution – the right organisation or individual to do this will be technology-forward, business smart, and have a strong understanding of the horticultural industry.
- The aforementioned employers should adopt wellbeing-focused automated rostering software such as the one described here.

Businesses that improve their staff's wellbeing see financial and ethical benefits, and this report provides the industry with a pathway to achieve this.

Acknowledgements

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1. Introduction

This report investigates how rostering technology can improve wellbeing for New Zealand's seasonal workforce and to establish what this technology would look like. The scope of this report is to:

- Target only seasonal and shift workers who operate within the horticulture industry of New Zealand.
- Focus on validating the need for software which automates rostering for the seasonal workforce – other functionality of software such as payroll and time clocking will not fall within the scope of this report.
- Validate the idea for the software conceptually but not fully investigate the team, market and finances that would be required to commercialise it.

1.1 Background

Primary Industries and Horticulture:

New Zealand is a nation heavily reliant on its primary industries (Ministry for Primary Industries, 2020). In terms of total contribution to New Zealand's GDP, Figure 1 highlights that the primary industries contributed about 7%.

According to MPI, the food and fibre sector exports were expected to increase 6% to $56.2 billion for the year to 30 June 2023. As of 21 August 2023, provisional data for actual export revenue for the year to 30 June 2023 was $57.4 billion (see Figure 2). Clearly, this is a large industry for New Zealand's economy and is therefore a worthwhile industry to concentrate on and improve.

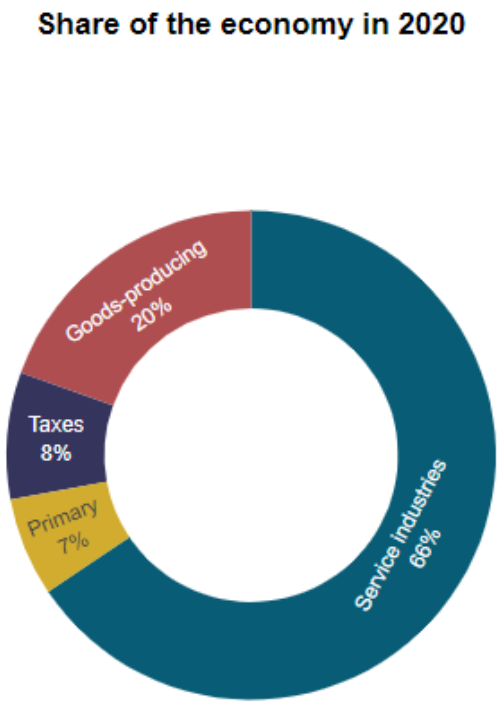

Figure 1: Share of the NZ economy by industry (2020). (From stats.govt.nz)

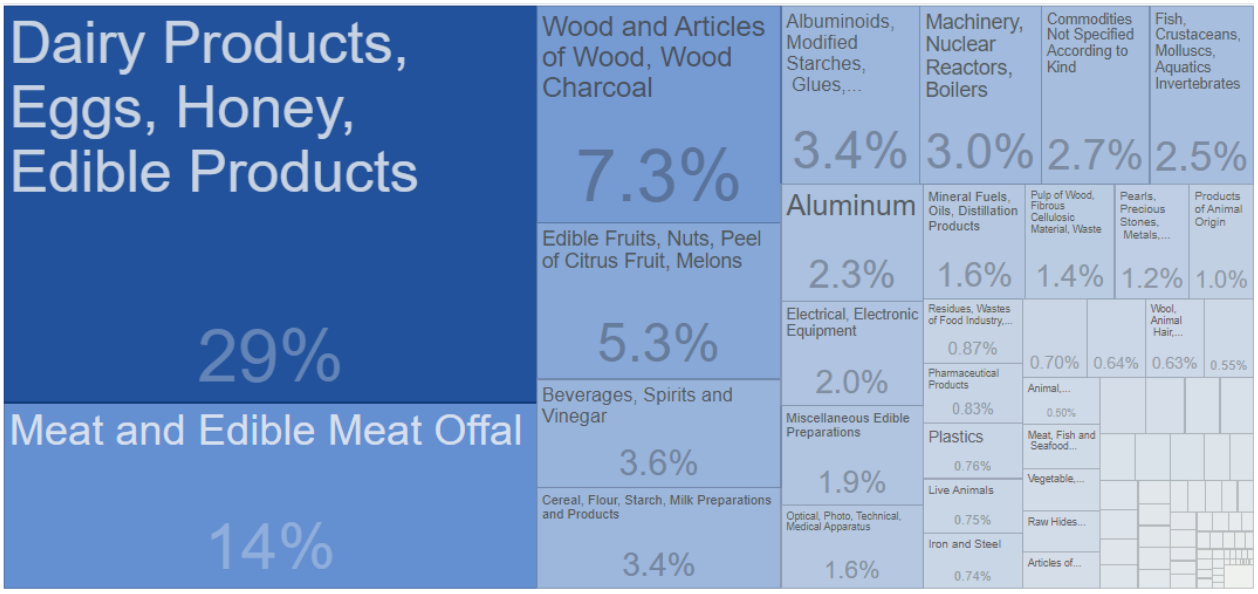

Figure 2: Breakdown of NZ's exports by industry. (From https://tradingeconomics.com/new-zealand/exports-by-category)

In 2019, 366,807 people were employed in the primary industries which is a 9.1% increase from the 2012 statistic according to MPI.

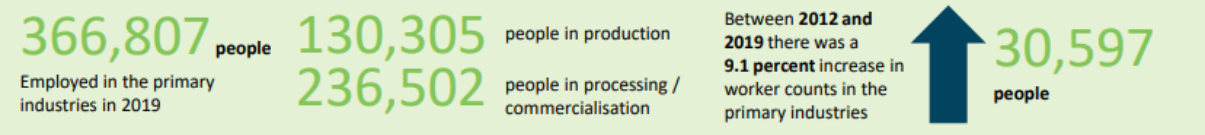

Figure 3: A breakdown of staff statistics in the primary industries. (2019). https://www.mpi.govt.nz/dmsdocument/29270-Primary-industries-workforce-fact-sheets

Seasonal Workers: Of those employed in the primary industries, there are a number that only work seasonally. This is a particular issue in horticulture where harvest only happens for a short period of the year, as demonstrated in Figure 4. In 2023, more than 52,000 working holiday visas had been approved by April. The RSE (Recognised Seasonal Employer) scheme worker numbers went from 16,000 – 19,000 (Farmers Weekly, 2023). All RSEs are brought in by specific employers from overseas if there are not enough New Zealand workers to fulfil a job. The scope of the rest of this research will be to focus on horticulture as this industry is specifically focused on seasonal staff due to work demand at harvest time.

Indeed – one of the largest recruitment websites in the world– describes seasonal workers as people who work temporarily (anywhere between a few weeks to many months) to help businesses during their busiest periods. The New Zealand government lays out examples of seasonal workers and nearly 70% of those roles fall clearly within the primary industries (Work and Income, n.d.). The focus of this report will be on the seasonal/ shift workers that exist within the horticulture industry, including RSE workers.

Figure 4: A map of New Zealand's seasonal labour demand by region. (2021). (From Horticulture New Zealand's Horticulture Workforce Transition Plan).

Rostering: This report investigates how to better automate rostering of the seasonal workforce in the horticulture space. Rostering is the process of creating and assigning shifts to employees within an organisation. Seasonal staff are often given rosters, sometimes these are done well in advance and sometimes these are done on a day-by-day basis. For example, a fruit/vegetable picking gang may plan to work one day, but if the crop is not performing as expected or there are unexpected weather events, then that gang may be told not to come to work.

In Horticulture New Zealand's Horticulture Workforce Transition Plan (Horticulture New Zealand, 2021), they laid out their plan for transitioning away from the current state of the seasonal workforce. They highlight that the workforce number will stay the same but that automation, such as smart rostering will need to be introduced to improve the productivity of that workforce. In their plan, Horticulture NZ claims that "the use of platforms in orchards [will] allow one individual to increase their productivity by up to 2.5x."

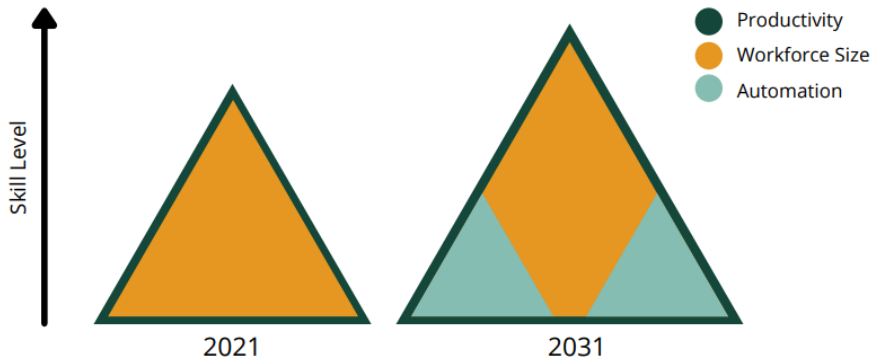

Figure 5: A breakdown of automation assisting with growth in the Horticulture industry (2021). (From Horticulture New Zealand's Horticulture Workforce Transition Plan).

2. Aims and Objectives

The need for improved rostering software product for the horticulture industry seasonal workers was established by making several assumptions. Those assumptions are:

1. There is a problem with retaining good seasonal workers in horticulture.
2. Current seasonal work practices in the horticulture industry contribute to negative staff wellbeing.
3. Improving seasonal worker wellbeing will improve retention and productivity for organisations.

The first step will be to validate these assumptions using the methods employed during this research project. Further research was then conducted to dive into exactly what a solution (a software tool) would look like.

The recommended software tool will have to have several features. Whilst these features will appear to have a purely wellbeing focus, it is also the expectation that this report will lay out why staff wellbeing is extremely valuable from the perspective of productivity and staff retention. Conversations often appear in boardrooms and in management that assume that organisations must balance the needs of their staff with the financial needs of the business. This creates the idea that the bottom line is always at odds with staff receiving more care and benefits. This project also intends to highlight that this argument is too linear and that often the two can work harmoniously together.

The objective of this project is to recommend a new software solution which would enable a huge range of organisations within the food and fibre sector to manage their staff more holistically which will lead to better retention and happier and more productive staff.

3. Literature Review

3.1 Methodology

The three initial assumptions listed in Section 2 were used to focus the research into relevant, existing literature:

1. Keywords were pulled out of each assumption.
2. Relevant literature was found through university library portals and Google Scholar.
3. All texts were read and key themes or relevant data were identified and used to verify each assumption.

Generally, only peer-reviewed articles were considered but some government/ international body reports were included to provide wider statistics and context. Whilst these kinds of reports are not peer-reviewed in the same sense as an academic journal, it is assumed that these documents have been published to inform and have likely had oversight from many experts. All articles and documents that were reviewed have been published in the last 25 years to keep the focus on current issues and schools of thought relating to seasonal staff's wellbeing.

3.2 Limitations

The reviewed pieces of literature do not summarise the entirety of the work done in the wellbeing space but it is felt that it covers a broad enough range of what is published.

3.3 Review Content

Through the literature review, the following learnings were found regarding the key assumptions laid out in Section 2:

Assumption one: There is a problem with retaining good seasonal workers in the horticultural industry.

In 2013, the Ministry for Primary Industries looked into the new entrants into the food and fibre sector (Ministry for Primary industries, 2019). They made the following discoveries:

- A fifth of new entrants were temporary migrants. Whilst some of these migrants would go on to remain in New Zealand indefinitely, a wide number will move on and away from New Zealand.
- The retention rate in the primary industries was lower than the national average, keeping only 29% of new entrants after 3 years, as opposed to the 34% retained in nationwide averages.

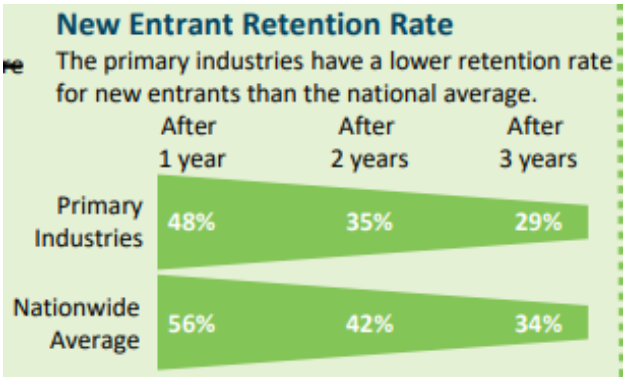

Figure 6: New Entrant Retention Rate. (2021). (From the Ministry of Primary Industries' Workforce Fact Sheets).

This study from MPI shows us there is an issue with retention in the primary industries (of which horticulture is a large player), but what about the seasonal workforce? (Araslı & Arıcı, 2019) observed that seasonal workers, even when working alongside permanent staff, are less likely to have their needs met at work in terms of their career development, training and level of income amongst other things. (Lee & Moreo, 2007) identified a number of unique challenges with employing a seasonal workforce, observing that their job satisfaction requirements are different from those who work full-time. They also observed that the seasonal workforce is made up of quite a range of people (from students to pensioners and from those with little to no education to those who are highly educated.) The diversity of people and the variety in why they do the job (some for pleasure and some for cash) makes it hard to meet all the team's needs.

Assumption two: Current seasonal work practices in the horticulture industry contribute to negative staff wellbeing.

Assumption two requires us to answer several sub-questions:

a) What does wellbeing in the workplace mean?

(Pescud, Teal, & Shilton, 2015) conducted a study where the key factors contributing to wellbeing were:

- Occupational Health and Safety
- Mental Health
- Nutrition
- Physical Activity
- General Health Issues

(Danna & Griffin, 1999) identified key factors as:

- Physical Health
- Mental Health

- Emotional Stress
- Physiological Wellness

The World Health Organisation define wellbeing as "a positive state experienced by individuals and societies… [It] is determined by social, economic and environmental conditions." (The World Health Organisation , 2023).

To further determine wellbeing and what it means, we can look at Figure 7, from the workplace wellness report from Southern Cross Health Society published in 2019.

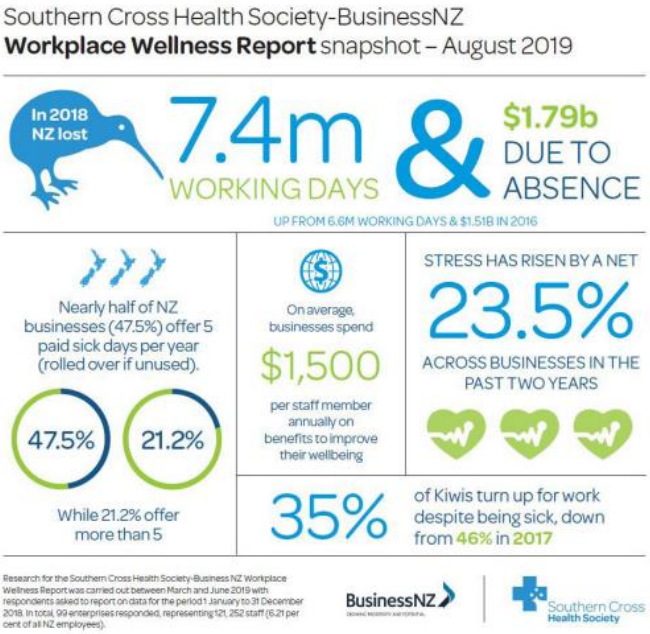

Figure 7: Workplace Wellness Report Snapchat (2019). (From Southern Cross' Workplace Wellness Report).

So, for the remainder of this report, wellbeing will be assumed to be the state of an individual's physical and mental health as impacted by their social, physical and environmental conditions.

b) How can seasonal/shift work negatively impact wellbeing?

It is important to note that an increasing amount of literature agrees that there is overlap from the workplace into the non-work part of an employee's life (Danna & Griffin, 1999). Multiple studies have attempted to identify what impacts work has on different areas of people's lives but whilst it is hard to quantify this in a metric, consensus in the literature was that personal life and work life are intrinsically linked.

So we will continue this research with the assumption that the wellbeing impacts that people experience in the workplace will also have an impact on their private lives outside of work.

(Chanane, 2017) investigated shift workers and the risks they faced in their lives which would have a negative impact on the overall wellbeing of the employee. According to the workers who were part of this study, their health issues, followed by fatigue and family conflict had a negative correlation with their job satisfaction and vice versa. This proves that asking workers to "leave their personal life at home" or not "take work home with them" is a flawed concept

which arguably allows employers to renege on their duties to their employees under s36 of the Health and Safety at Work Act (2015).

(Fransen M; Wilsmore B; Winstanley J; et al, 2006) found that shift work (defined as shifts which were: rotating with nights, rotating without nights, or permanent nights) was significantly associated with work injury even when accounting for increased exposure to high-risk occupations, lifestyle factors, and excessive daytime sleepiness.

In their study, (Tipples, Hill, & Wilson, 2012) observed that burnout was common among farm workers, who were driven by industry demands to work excessive hours. By their 7th day of working, farmers often observed that they were starting to lose capability due to their fatigue.

To conclude a somewhat bleak review of the additional risk to our seasonal shift workers, WorkSafe published a document to employers in an attempt to educate them on the dangers of shift work (WorkSafe, 2021). It is important to note that not all shift workers are seasonal but in the horticulture industry, almost all seasonal workers are shift workers. WorkSafe defined shift work as involving "various work hours, including permanent, rotating, irregular, or unpredictable schedules, early starts, late finishes, and night shifts. Long work hours extending beyond traditional work times are also considered shift work." The WorkSafe document identified the key areas of concern for these types of workers, including:

- Health – an increase in susceptibility to illnesses including chronic diseases and mental health problems such as depression and psychological distress.
- Fatigue – slower reaction times meaning increased mistakes and safety risks. Mood swings and irritability contributing to communication difficulties
- Turnover and sick leave – consistently working long hours, having short recovery periods or consecutive night shifts can all lead to increased sick leave.

Clearly, the seasonal workforce is exposed to a high degree of risk. Risk, according to the literature, appears to extend well beyond the short and long-term physical risks, to the mental health and resilience of the staff. These impacts appear to contribute negatively to staff's wellbeing in their private life as well as in their work life.

(Maslach & Leiter, 2016) attempted to better understand what burnout at work was. They established the three pillars of burnout (exhaustion, cynicism and a lack of a sense of achievement). They noted that the opposite of burnout could be considered engagement. These are displayed below in the form of a diagram. It is worth thinking about these risks in the context of the risks that WorkSafe identified as being heightened for shift work:

- Working long hours into the night or in early morning (exhaustion risk)
- Having short recovery periods and needing more sick leave (detachment risk)

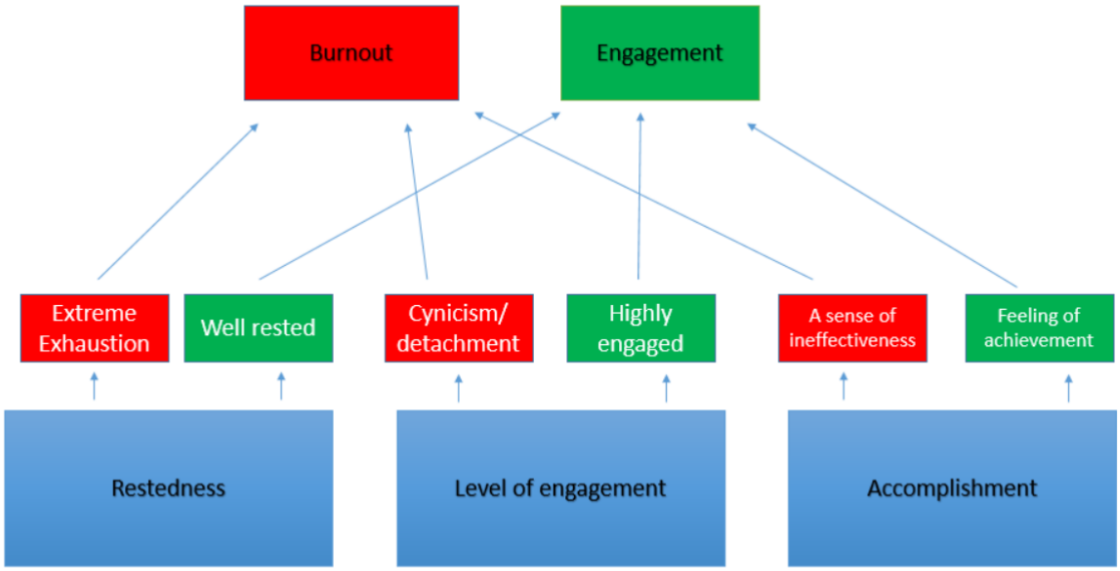

Figure 8: Diagram interpretation of Maslach and Leiter's theory

Most seasonal workers are assigned work through a roster, and how they are rostered can negatively impact their wellbeing. (Schneide & Harknett, 2019) looked into the effect of working in a changing roster. Lots of businesses do last-minute rostering to try and accommodate ever-changing workloads. However, this instability is associated with psychological distress, poor sleep quality, and unhappiness. Where it is not possible to build out a roster ahead of time, suggestions have been made that employers attempt to stick to regular working days as much as possible.

Their study identifies some of the main concerns of shift work as:

- Household economic insecurity – people don't know exactly how much they'll earn each pay period because there is no pre-determined roster.
- Work-life conflict – personal life events are hard to commit to.

So if worker X has become accustomed to having Wednesdays and Thursdays off, then employers should continue to meet this as frequently as possible. This allows worker X to schedule regular activities in their social life, prepare for meaningful rest from work and feel more valued by the employer. It is important to remember that in the context of the rural sector, it is not always possible to achieve this balance easily. For example, it is standard practice to cease the harvesting of fruit in the rain. This is outside of the control of the employer and if the only option to make up minimum hours is to let worker X work on either Wednesday or Thursday then there is no perfect outcome for the worker.

Furthermore, health-related behaviours such as getting enough rest, exercising and having a good diet requires people to have the time and ability to plan their schedule (Allen & Armstrong, 2006). Seasonal work does not always do well at facilitating this. Particularly, unknown hours of work are a real barrier to these health outcomes.

Assumption three: Improving seasonal worker wellbeing will improve retention and productivity for organisations.

The point of this report is to validate what a wellbeing focused rostering tool would look like. To prove that the horticulture industry would benefit from this, it must be established that employers would gain something from boosting the wellbeing of their staff. In this area, the literature appears to be fairly conclusive.

(Best, Visser, & Conradson, 2021) conducted a study with a specific lens on New Zealand's forestry sector, a growing member of New Zealand's primary industries. Their study highlighted specific opportunities to reduce stress and enhance wellbeing in this industry. They believed that companies that could successfully do this would see an increased value. They noted that successful companies would need to move away from just focusing on harm elimination (which is a bare minimum) to improving a worker's quality of life which would enhance their productivity at work. Shifting the focus to wellbeing could mean significant financial benefits for the company.

(Black, 2008)said that "the nature and characteristics of the jobs that employees do are vitally important in terms of satisfaction, reward and control" and goes on to say that supporting staff and providing good wellbeing will lead to improved job performance.

(Robertson & Cooper, 2010)said that focusing on "employee well-being is a better basis for building sustainable benefits for individuals and organizations".

(Pryce-Jones, 2010) identified that happy employees are nearly 50% more productive than the least happy employees.

Clearly, the literature suggests that improving staff's overall wellbeing will have positive impacts on the business. Having reviewed these texts, there does not appear to be one single element or one single group of changes that an organisation can make to do this. The approach of an organisation needs to be to embody this philosophy through the entire journey of an employee. With that in mind, focusing your rostering on wellbeing will not fix all the problems that are being experienced by the seasonal worker. However, it will empower organisations to prioritise the wellbeing of their staff in at least one area of their business. To change the retention rate of staff, more than this needs to be done in the rural sector, however, this is out of the scope of this report.

4. Methodology

Two key methods have been chosen to fulfil the aims of this report. Those methods are:

1. Nine semi-structured interviews were conducted and will be thematically analysed
2. Competitor Feature Analysis

This section of the report will lay out how these methods were completed.

4.1 Semi-Structured Interviews

Method

1. Key horticulture organisations were identified by considering businesses which employed a large number of seasonal staff.
2. Relevant people from those organisations were contacted. Relevant people were those that managed the roster for their seasonal staff and usually were either human resource managers or operational staff.
3. A set of questions designed to understand the organisation's attitude to wellbeing (including what they were currently doing, and what barriers they saw for their seasonal staff) were written. These can be found in Appendix B.
4. Of those organisations that responded, interviews were set up.
5. Interviews were audio recorded. All nine interviewees were asked the same base questions and then further questions were asked based on their answers.
6. These interviews were reviewed through thematic analysis which is broken down in more detail below.
7. The interview findings are reported below and whilst every endeavour has been made to validate the quotes and themes that were drawn out, all interviewees were kept anonymous.

Due to the nature of what was discussed in this interview, all interviewees were guaranteed anonymity so that they were encouraged to talk freely about their organisation's current approach to staff wellbeing, without feeling pressured to overstate or exaggerate their current efforts in this space. All interviewees did consent to being identified by role and type of organisation which is laid out in Table 1 below.

The key regions of interviewees were:

- Hawkes Bay
- Bay of Plenty
- Nelson

- Gisborne

The key sectors were:

- Apples
- Kiwifruit
- Ornamental flowers
- Avocados

Table 1. ***Breakdown of interview participants by business type.***

Summary of Interviews	Operations Managers	HR/ Office Managers
Post-harvest facilities	1	2
Single-site horticulture ventures (indoors)	3	
Multi-site contractors (outdoors)	1	2
Total Interviewed		9

The interviews have been evaluated through thematic analysis. Using the methodology laid out by (Braun & Clarke, 2006) the analysis will follow six key steps:

1. Becoming familiar with the data – all the interviews were recorded (mostly by audio with one written) and then transcribed into a spreadsheet which laid out each responder and their answers for each question.
2. Generating codes –For each data point, key codes were assigned. Not every word or phrase was turned into code. For example, "We provide EAP for staff and encourage them to use it" would be coded to EAP (employee assistance programme).
3. Search for themes - (Braun & Clarke, 2006) said there were no fast rules about what makes a theme. Themes were identified by grouping various codes. As an example, almost every interviewee mentioned concern around staff fatigue, staff's emotional well-being and staff's mental health. This falls into the theme of "concerns about staff well-being."
4. Review those themes – this step ensures themes make sense and are genuinely backed by data. Given that the end goal was to prove the concept of a product would add value to the sector, this section was done with particular care to make sure unconscious and confirmation biases were not obtusely present.
5. Define the themes – At this stage, the themes were reviewed to find overarching messages and key takeaways.
6. Report the findings – the findings were reported below.

4.2 Competitor Feature Analysis

Competitor Feature Analysis was a technique devised for this research project. Porter's five forces models (Porter, 1985) covers an in-depth competitor analysis of entire market landscapes, but here the focus is on Porter's force one: "Competition in the industry". Porter recommends analysing a number of businesses who compete with one another and identifying the specific products and or services they offer. The method described below took this and did the analysis through a competitor scoring card.

The scope of this research did not extend to investigating a business case beyond the product features (such as market size, distribution model, or pricing strategy), hence Porter's other forces were not examined.

The aim of this research was to understand if there is a need or gap in the market for wellbeing-focused rostering software, and so a feature analysis was undertaken to examine if and how competitor products consider wellbeing and what other features they offer in order to compete in the space.

Method

1. The products for this competitor feature analysis were selected (see the limitations section below for more detail).
2. Each product was reviewed briefly. From this brief overview, a range of features were picked out.
3. Each product was reviewed against these features.
4. After analysis was completed and all research was reviewed (interviews, literature etc.) then further wellbeing-focused features were added.
5. The proposed software solution (the details of which are laid out in the findings and discussions section below) was then added to the list of selected products for review.
6. Finally, all products were reviewed again, this time with the additional features added on. This was done within a "multiple competitors scoring card" matrix which will be explained below.

For each criterion, each product was ranked on a score from 1 – 5. The scores are explained below:

Table 2. ***Description of Scores for Competitor Feature Analysis***

Score	Description
1	Little to no functionality for this feature existed in the software.
2	Functionality existed but it was manually controlled. For example, one of the criteria was whether a product could automatically create a roster based on a labour budget. Many products, like Agendrix and Employment Hero (referenced in Appendix A), had good functionality for entering and comparing budgets to actual spending, but it appeared to do nothing to build this budget into an automated roster. In other words, people still manually built the roster alongside the budget and the only thing happening automatically was the cost calculation. Therefore, under this point, both organisations received a score of 2 for this feature.
3	This score requires some degree of automation. For example, Roster Elf requires you to build your own roster, but they have a "perfect match algorithm" which means as you allocate, it highlights which of your staff meets the "qualification match" for the role you are trying to roster.
4	This score was given when the software had a high degree of automation for this feature that would work well in most, but not all, scenarios.
5	The product appeared to perfectly execute the feature.

Selection of competitors to be analysed:

When trying to decide the parameters of the scope of competition that would be analysed, a few roadblocks were met. Whilst this report will recommend a product targeting the horticulture industry's seasonal workforce, not all products reviewed will have the same target audience.

The competitor matrix lays out the way we can group these competitors. There are not enough products focused on seasonal staff to have kept the scope to only these kinds of products. Instead, the products reviewed as part of the competitor analysis are the ones which appear to be the most highly ranked online and seem to have gained some reasonable market traction. A number of the products sit within the leaders section, whilst the rest will be scattered around the other three sections.

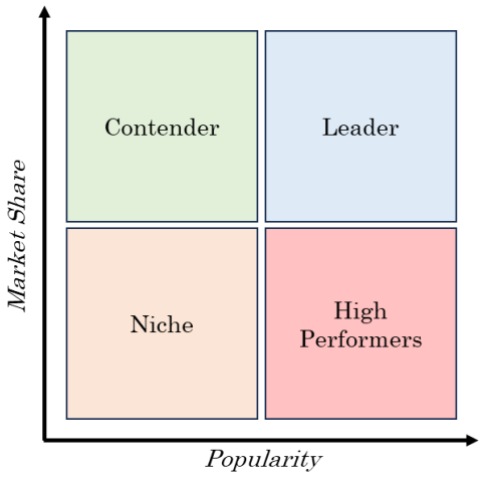

Figure 9: Competitor Quadrant.

Limitations:

It is important to note that there is a limitation in this research as not every product in this field could be evaluated and selections may have been made with unconscious bias. Other products were excluded from this analysis because of a lack of similarity in offering and features to the concept being discussed and therefore getting further from the definition of "competition". Reviews of products are best done when the tester has had extensive time to test and work with each product. For this report, a focus was on extracting information from trials, online tutorials and website feature lists. Features may exist that are not outlined in any of the above areas and were missed in observations. It is worth noting that many sites have customisable features. In this example, some of the products allow organisations to create rules. These rules, on an organisational level, may be created with wellbeing in mind. So even though a product may not advertise a feature which would not allow a person to work more than six days in a row, an organisation may be able to custom build this into the way they use the system. This report considers this feature less effective. Whilst it may do the same thing on the surface, how these rules interact with each other and drive the software is not always clear. These customisable features are present but do not encourage/ empower organisations to prioritise wellbeing by default, it will only be done by a savvy organisation.

The scope of this project did not extend to considering whether the concept product would have time-clocking functionality or other features such as payroll. Lots of these products have useful clock-in features but these will not be considered as part of this analysis.

All of these products claim to be timesaving and help organisations stay on budget for staffing. This is something that customers like to see as it is reoccurring through almost all of the products. Almost all products also talk about integration with payroll software or provide their own payroll software. As mentioned above, this is out of scope for the current report.

5. Analysis

5.1 Semi-Structured Interviews

The goal of conducting these interviews was to establish several factors:

- What factors employers considered important in terms of their staff wellbeing
  These factors would help shape the final product and exactly what it would offer in terms of the factors it would consider when making a rostering decision.
- How much effort organisations were making to contribute positively to staff wellbeing
  This helps validate several things: a) organisations buy into the concept that wellbeing is positive for their business and b) they would consider a product with a wellbeing focus to be of potential use.
- How much value do organisations see in having a well-structured roster
  It was interesting to see how many companies have resisted specific software solutions for rostering and continue to create an Excel spreadsheet and text staff their working hours. For the concept going forward, there needs to be further validation that organisations will pay to improve their rostering.

The interviews covered a number of challenges and ideas which are investigated below.

Business challenges:

If we look at what "the average Kiwi wants for a work week… the [busy] season can be well beyond that."

(From an HR manager within the post-harvest sector of fruit/ vegetables)

All interviewees were invited to discuss what they thought the biggest challenges were when they were trying to roster people and get them to show up at work.

One interviewee, another HR manager in the fruit sector, said that: **"Each season each position can be turned over three to four times."** This highlights that retention was a massive issue for them. They also noted that: **"Absenteeism on an average shift sat at 10%."** And they noted that Covid could impact this and had made it much higher in recent years.

Several organisations mentioned that **weekend work** was more of a challenge. This was a factor mentioned by both HR and operational staff and applied to people who worked outdoors across sites and those who worked in a fixed site. A number of these organisations noted that they had resisted working weekends as

much as possible but the trend in interviews was that weekend work was becoming more and more common as the food and fibre sector continues to grow.

The challenge for most organisations was that they were competing with other operations to attract people. One interviewee, an HR manager from an orchard/ farm management team discussed their goal to be the "**preferred employer"** in the region through all sorts of measures including increased pay but noted that the seasonal/ rural nature of the jobs they offered meant that, despite the higher wages, they still struggled to get people in the door.

Many of the companies talked about the importance of good management. An operations manager in the kiwifruit sector discussed how their retention of staff throughout the season was noticeably improved when they had highly performing managers. Lots noted that the "old-school" worker or manager took more time to accept changes to their wellbeing and health and safety policy and that **changing their attitude and the culture of the business was a gradual one.**

Wellbeing – what does it mean to them?

Every interviewee had multiple features they could point to that their business did for staff wellbeing. Some required some prompting on this, which suggested that wellbeing wasn't necessarily something they thought about every day however on discussion there was a clear belief in promoting staff's wellbeing. Having said that, interviews conducted with people from the HR space often gave fuller answers.

Figure 10 below describes the key themes of what wellbeing meant to each interviewee and what actions they were taking to meet their staff's needs in each area.

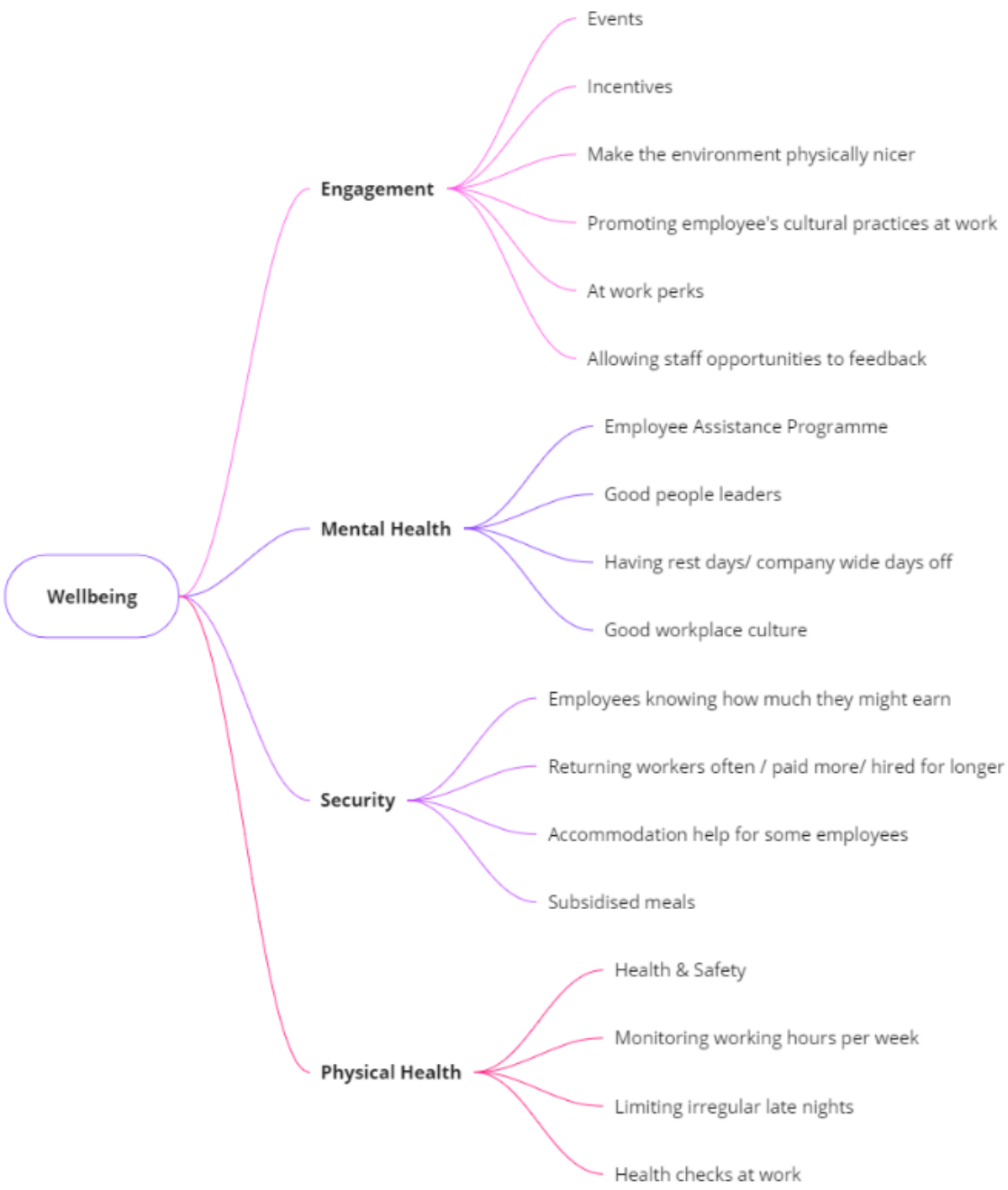

Figure 6: A diagram of the key themes of wellbeing drawn out from interview participants.

As exemplified by the above diagram, four key themes were identified when people were asked what wellbeing meant to their organisation and what they were doing to promote that wellbeing.

When asked about staff wellbeing, most interviewees first mentioned mental wellbeing. Two-thirds of the organisations offered an EAP (employee assistance programme) to their staff to assist with any work or non-work-related mental distress. Whilst mental wellbeing was often the first topic mentioned, it was not always the theme with the most investment. All organisations could list

engagement activities that they were undertaking, whilst mental wellbeing was often something organisations were "aware of". Often the actions being taken for mental wellbeing were less palpable than those in other themes. For example, for physical health, a new policy could be implemented to use a new type of PPE that the organisation provided whereas in regards to mental wellbeing, organisations didn't have quick fixes. Whilst the quick fixes didn't exist, organisations were often investing in their supervisors and leaders to make them better at being conscious of mental wellbeing and so actions do exist, but they are not easy solutions.

Engagement was another theme that seemed to come to mind for people reasonably quickly. 100% of the organisations interviewed talked about organised activities ("paint and sip", team barbeques and pizza Fridays were all referenced as specific examples). This was the topic that had the most diverse list of responses, particularly in regards to security. Most organisations only volunteered information around security after thinking for longer periods of time and even at that point, organisations could point to one or two actions, like recognising that staff need to know their income ahead of time, rather than the long list of engagement activities. It appears that engagement activities were easy wins for organisations and positive for their branding when they go to market looking for new employees.

It was after prompting that most people identified that they had reasonable practices in place to protect their staff's physical wellbeing and security too, but it was obvious that people did not associate this as quickly with the phrase "wellbeing". Lots of the organisations had policies around monitoring staff's working hours either by days in a row or hours within a week (although hours were more common).

One observation is that there was not a huge amount of formal professional development on what staff can do to or are owed around their wellbeing. One or two companies could point to available training, with one interviewee having recently completed training on mental health and a plan to roll out that training to the rest of their team.

When interviewees discussed what wellbeing meant to their organisation and the benefits of their wellbeing lead programmes there were several keywords (these keywords are listed below in Figure 11). Figure 11 is a word cloud of all those key words laid out where the largest words were the most commonly discussed.

Figure 7: Word Cloud of Responses to the question on the benefit of good staff wellbeing.

It was clear from these discussions that organisations bought into the benefit of better wellbeing for their staff and their organisation. This was a theme throughout nearly every interview conducted. This is exemplified by the fact that the word "productivity" was used in almost every interview at some point as one of the key benefits to having a staff pool with high wellbeing.

Barriers to wellbeing

Having established what organisations understood wellbeing to mean and what benefits they saw from it, but it was also interesting to learn what the biggest barriers were to providing improved wellbeing to their staff.

The main barriers to wellbeing in the horticulture industry, according to the interviewees, could be categorised into four themes. These themes, and sub-themes, are displayed in the diagram below.

Figure 8: Diagram of the key themes on the barriers to wellbeing.

It is important to note that these themes are not mutually exclusive from one another. The physical nature of the work is somewhat caused by the fact that it is seasonally demanding. Because there is a time limit on the completion of many tasks the physical demand is increased in order to make sure it is done in a timely way. Absenteeism also increases the physical risk involved in this type or work. Where there are less staff, the same (or nearly the same) amount of work has to be completed within the season. This means that those remaining staff must take on more of the physical burden. So whilst this report will suggest solutions for these themes in isolation it appears that all must be working in order for any to be met. This inter-reliance on each other means employees may fail to meet their staff's wellbeing unless they can offer a solution for all issues simultaneously.

Two thirds of those interviewed noted that absenteeism was a huge pain point in their organisation during their seasonal highs. One common theme appeared to be that whilst the minimum wage increased, there was a number of staff that were happy to earn the minimum amount they needed to live and would not show up for additional shifts in a week. It would be very unfair to say all seasonal employees had this mind-set, but it was an observation made by a number of interviewees.

A repetitive theme from the interviews was that it is much more challenging to get workers to commit and show up on the weekend. In smaller organisations, this seemed to be easier to manage with smaller workloads generally allowing for most people to have one of the two days off. Even some larger operations were still trying to operate six days a week, but most felt that this would not last for much longer. Generally, absenteeism was an issue. Interviewees observed the extra pressure that absent staff had on those who did show up. All of the organisations had some amount of physical strain in the roles that people were completing although many had limited mitigations in place to prevent injury – potentially because there is a limit on the possible mitigations.

To conclude, it is fair to say that most organisations interviewed agreed that having staff with high wellbeing was a goal of theirs. The organisations being interviewed tended to be concerned with staff working too many hours and were actively doing something to try and stop this. Most organisations were managing this manually or creating shift patterns that should avoid long hours. Not many organisations were using technology to monitor this. Beyond fatigue and over-work, most organisations were aware of the physical and mental toll a role can take on staff but there was variation in what each company was doing to help with this. Not many people went further on their roster creation than thinking about over-working and therefore, this concept may have some way to go to get an organisation's buy-in on a product like this. Having said that, most interviewees responded very positively to having a wellbeing focused rostering system even if technology was not something they had used historically to manage it.

5.2 Competitor Feature Analysis

Context:

An observation made during this research was that the market is saturated with a large number of software solutions for rostering. This can be verified by googling "rostering software". The capabilities of each product vary massively, with some products doing little more than a spreadsheet and some running complex algorithms. There were a few overarching themes. One is that most products don't have a sole focus on rostering. For example, lots of payroll and HR products have rostering options as an aside such as Xero. Often these aren't sophisticated or automated. Conversely, the benefit to the customer is that they have a system that becomes their one-stop shop for all HR/ Staffing/ rostering and payroll. This means less repeating of secure data, easy staff training who utilise the software and the seamless flow of data from one process to the next. It is clear that if a new product went to market that didn't immediately identify as a one-stop shop, there would need to be easy system integrations with other products within the HR space. Another key takeaway was that the focus tends to be on selling products which will help with:

- Productivity
- Time tracking
- Accurate payroll
- Compliance

As part of validating the concept of a well-being focused rostering system, this report sees that the focus on "staff", rather than businesses and their bottom lines, is a unique value proposition. It is important to note that these two things are not at odds with each other. The point of being people-focused and giving employees high standards of well-being is partly because many businesses feel it is an ethical duty, but equally it has a positive impact on their financial output. People are more motivated to work and people stay in jobs longer. These are two things we know can be improved in the horticulture industry specifically. Even during their peak season when people can be employed for weeks, many of our interviewees mentioned that it was a real pain point to lose employees during this time as they are under time pressure to hire and train more replacements.

General Observations:

Six rostering products that are currently in the market were evaluated. Formal references for each of these products' websites should be referred to and can be located in Appendix A of this report.

Based on the analysis done in Table 3 the following observations were made.

There were a few products with a focus on farming (RosterElf and Deputy) and at least one that clearly identified itself as focused on seasonal and shift workers (Agendrix) however, most other products were advertising to a wider market.

One product, Roubler, scored highest in our direct comparisons. It has much more of a lens on health and safety obligations and fatigue issues than lots of other products. Roubler also allows staff – who each have an employment profile – to have an ideal number of hours against them. Roubler was not targeted at one industry.

Whilst Roubler did some features well, there was no product on the market that sold itself as "wellbeing focused". This is clear when the second half of the features list is examined on table 3, as the scores drop for all businesses at this point. This feature list is created through the analysis and findings section of this report. The businesses will be re-examined in comparison with the recommended product that will come later in this report.

It was observed that whilst all the products offer a "better than spreadsheet" layout design for rostering, not all products attempted to automate. Instead, some products nicely lay out data and others will have rules and logic which prevent certain types of shifts from being assigned to certain people, but beyond that, the roster still must be made manually. It is noted that the products were not scored on some of the more basic offerings such as the way they communicate out to staff as it is a given that these software types will have some sort of "publish" function which will send some sort of push notification to staff.

It is important to remember that not all functions are perfect. Almost all the products offer shift swapping and many allow shift bidding. Shift swapping allows one employee to trade or give away their shift to another employee. Shift bidding allows companies to post open shifts (usually only to those that "qualify") and allow them to bid for it (usually adopting the first come, first served model). To qualify, generally, staff will need to have the relevant skill/ training/ qualification for the role. For example, if a quality coordinator shift in a pack house for post-harvest was posted for shift bidding, then only someone with the relevant quality training could see the shift was on offer. This functionality is discussed further in the findings and discussions section of this report but could be at odds with staff's wellbeing needs in some circumstances.

Whilst the scoring card below (Table 3) gives an insight into the analysis done, Appendix A lays out a more detailed description of the function of each of the products reviewed for the competitor feature analysis.

Table 3: Competitor Scoring Card

Competitor Scoring Card	How well does the software:	Roubler	RosterIt	Agendrix	Employment Hero	RosterElf	Deputy
Rostering functionality	present a well formatted roster for staff?	5	5	5	5	5	5
Automated rostering based on availability	allow staff to input their own availability for the roster?	4	4	2	2	4	2
Automated rostering based on demand	consider work availability and match staff to this demand?	4	4	2	2	3	1
Automated rostering based on labour budget	consider business budget and staff pay rates and allocate work accordingly?	5	1	2	2	4	2
Automated rostering based on qualification/ experience	consider the experience and qualification of staff for individual jobs?	5	5	1	1	3	3
Automatic rostering based on location	compare the work site with the staff's location to make an informed decision about who should work?	4	2	1	1	2	1
Shift swap	allow staff to swap shifts with one another dynamically?	5	5	5	5	5	5
Shift bidding	allow an organisation to create open shifts which staff can bid on?	5	1	5	5	1	4
Availability rating	do at creating a list of staff from least to most available?	2	1	1	1	2	1
Considers normal patterns of work	consider staff's regular working days and attempt to match them?	1	2	2	2	2	2
Automatic rostering based on fatigue	factor in fatigue (days worked in a row, hours done over the week etc.)?	4	1	1	3	1	1
Consider the amount of work wanted by staff	factor in the staff's requested amount of hours/ shifts when assigning work?	4	1	1	1	1	1
Environmental conditions	factor in the staff's exposure to extreme environmental conditions?	1	1	1	1	1	1
Productivity metrics	consider staff's productivity metrics when considering them for work?	2	1	1	1	1	1
Total		**51**	**34**	**30**	**32**	**35**	**26**

6. Findings and Discussion

Through analysing the literature review, competitor analysis and the responses from semi-structured interviews, a number of findings can be drawn.

POINT ONE: Is there a problem with retaining good seasonal workers in the horticulture industry?

New Zealand's dedicated ministry to the primary industries has collated data which shows that retention in the industries (of which horticulture is a huge player) is lower than the national average. This allows us to question what can be done to help in this area.

During the research period of this report, no verified statistics were identified that targeted seasonal employee retention rate and this is a limitation in the findings, however, the themes that were drawn out in the literature and thematic analysis support the hypothesis that retaining the seasonal worker is a unique challenge.

POINT TWO: Are current seasonal work practices in the horticulture industry contributing to negative staff wellbeing?

There is a unique problem facing those staff that are seasonal. Seasonal staff often work unusual hours/ weekends in the horticulture industry. Seasonal demands tend to go up and down and so there is inconsistency in workload. Absenteeism and ACC claims are higher in the seasonal workforce (see Figure 13). The psychological impact of work uncertainty as well as the physical impact of fatigue are some of the large contributors which see seasonal workers at risk of not having good wellbeing. Due to the short-term nature of their roles, seasonal staff often don't feel as engaged in a job and therefore feel less commitment and dedication to their employer. Clearly, improvements could be made.

POINT THREE: Will improving seasonal worker wellbeing improve retention and productivity for organisations?

There is clear evidence which supports the fact that organisations that invest more in their staff's wellbeing have a more productive workforce.

Not many interviewees could point to hard data in this area, but every one of them had wellbeing programmes in place. This is telling that the move towards improving staff wellbeing in the workplace is a consistent one.

POINT FOUR: How can wellbeing be improved for the horticulture industry's seasonal workers?

As an industry, we have to start taking a more people-forward approach to the way we manage our staff. Staff feeling valued and having their wellbeing needs

met has been proven to impact their commitment to staying within a business for a longer period.

Thompson's Horticulture Limited (as highlighted in NZKGI's Kiwifruit Book (New Zealand Kiwifruit Growers Incorperated, 2021)) is a great example of employers getting great gains from investing more in wellbeing. As a business with vineyards and kiwifruit orchards, Thompson's relied on seasonal staff but had a huge problem with absenteeism. They have made substantial changes to their business to improve their retention rates. These include:

- Guaranteed minimum work of 8 hours a week.
- An education and training programme which had had 80 participants at the end of 2020.
- A horticulture apprenticeship

This business claims that focusing more on the wellbeing of their staff has been a huge benefit for their business.

Key themes were identified during this research on how to increase wellbeing:

- Reduce fatigue – staff work long hours due to the seasonal peaks in many of these industries. Fatigue puts staff at risk of physical harm because it means slower reaction times and has a negative impact on their capacity to think clearly and mental wellbeing.
- Reduce the uncertainty of working days – Again and again the themes of uncertainty come up. Whilst seasonal workers appear to have an understanding that the nature of their work brings uncertainty with it, it still appears to have a negative effect. Many of the companies interviewed were striving for the same day off each week. The literature talks about the importance of having time for personal activities and inevitably, seasonal work challenges the ability to plan and organise these types of activities.
- Meet staff expectations – several interviewees mentioned that staff like to know how much they will be paid on a given week and fluctuating their working hours away from these expectations can be harmful to the wellbeing of the worker. The issue is not just that people want more money. Often, people only want to work a certain number of hours each week and no more.
- Reduce physical strain and injury – health and safety is something that all businesses must give serious consideration to. Every time that staff work in harsh conditions or are exposed to risks, businesses should make attempts to mitigate their employees' exposure to harm under their obligations in the Health and Safety Act. Figure 13 shows the number of ACC claims in horticulture spiked in 2021 showing that the industry still has significant exposure to this risk.

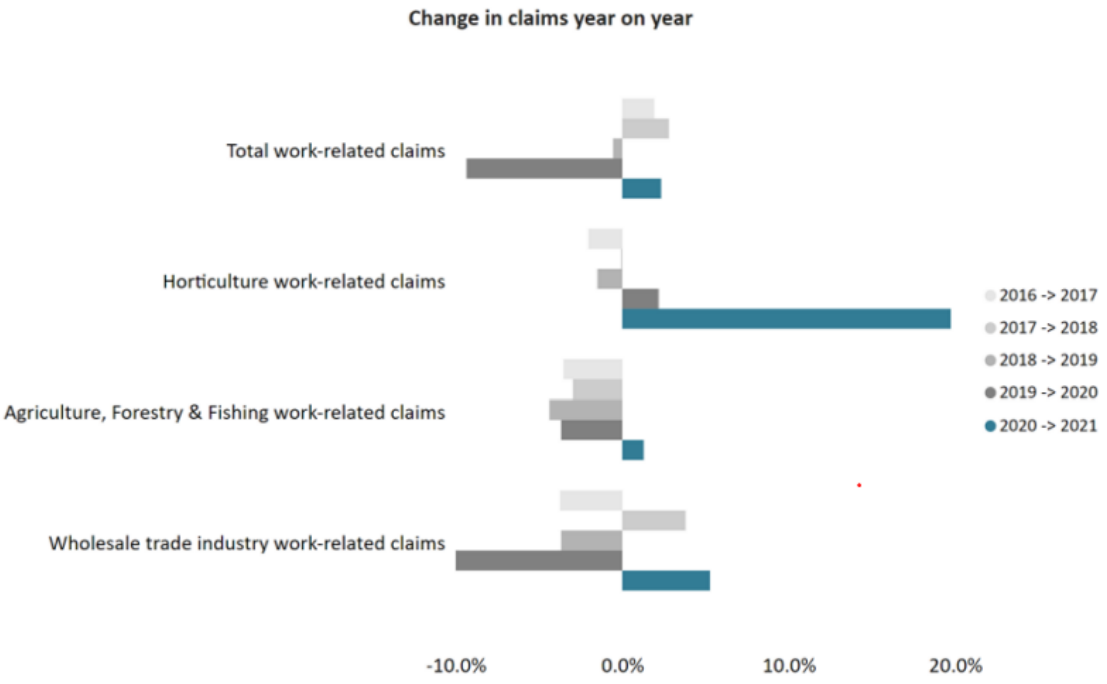

Figure 9: ACC Claims from 2016 – 2019 in various industries. (2021). (From https://www.hortnz.co.nz/assets/Jobs-and-labour/Health-and-safety/Building-Systems-Capability-to-Reduce-Harm-in-Horticulture-Full-Report.pdf)

POINT FIVE: What would an automated rostering product with a focus on wellbeing look like?

These findings show there is clear value in increasing staff wellbeing through rostering. So, what can be done in the rostering space to help organisations to prioritise wellbeing?

As exemplified in the competitor analysis, there are a huge number of products in the market that do automated rostering with various features. The product that this project proposes would look different.

Every employee would sit within a central system. Based on a number of features which will be discussed below, every worker will be given a "ready to work" score each day. The highest scoring employees should be prioritised for work. This score will be generated with their wellbeing at the forefront of the software's decision-making. The below list will present all the possible features that would be considered by the software when it calculates someone's ready to work score. These can be custom removed depending on the relevance of each one to an individual organisation. For example, the "proximity" feature, which considers how close the employee lives to a site would be removed where the employer is only based at one site. It should be noted that some of these features will require input from the individual staff.

The features listed below originate from the factors identified through this research which directly affect the wellbeing of seasonal workers, as illustrated in Figure 14.

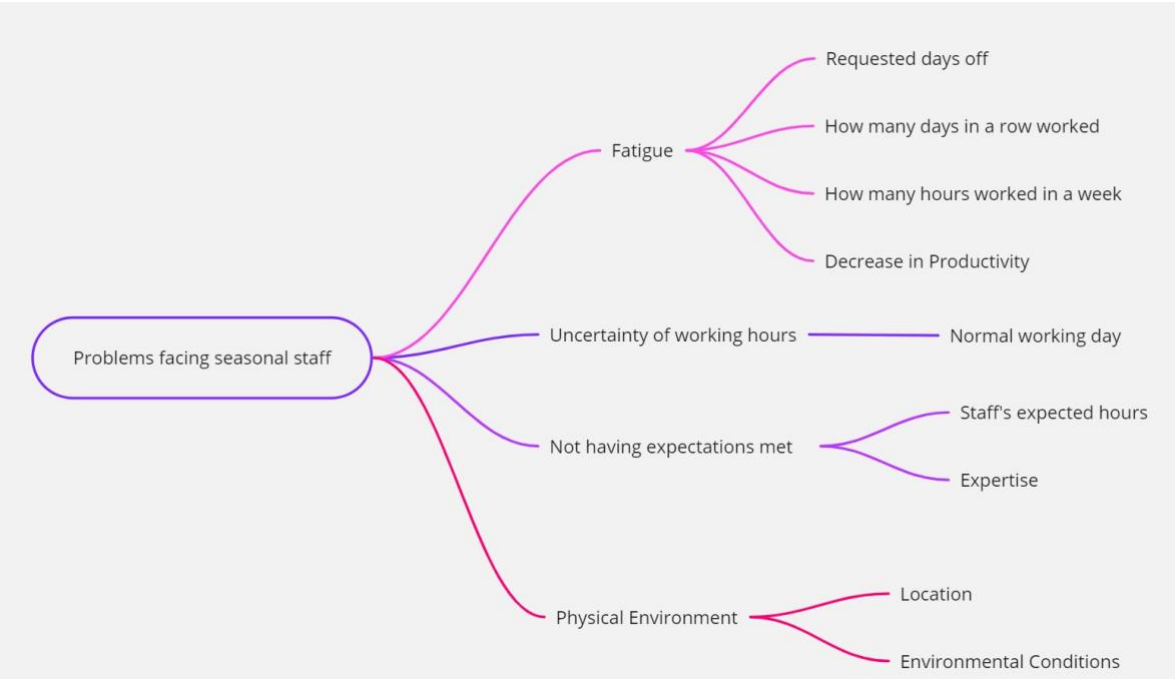

Figure 10: Key problems facing seasonal staff and the proposed rostering software features to help overcome these.

Each feature is expanded on below:

Fatigue

The features listed below would help protect seasonal workers from being exposed to fatigue. It was noted that this issue is something that many employers were aware of according to interviews but not many organisations were formally monitoring this and doing something about it.

Table 4. ***Fatigue – Features and Description***

Feature Name	Description
Requested Day off	This feature can be found in almost every piece of rostering software. If the employee has requested the day off then this would drop their score. The amount the score would drop would be dependent on several factors. If the request was approved by a manager in the system then the score would drop to 0 as the day off would be an expectation of the member of staff. If the requested day off was not approved then the score would drop but not to 0.
How many days in a row worked	A number of interviewees acknowledged that part of their current attempts to meet staff's wellbeing needs were to enforce a maximum amount of days and or hours they worked in a week. Each business would be required to go in and set a rule that said no person can work more than X days in a row. This gives staff a level of consistency that we know they crave. It means you are lessening the risk of fatigue. If worker X had

	worked their maximum days in a row, then their ready to work score would drop to 0.
How many hours worked in a week	As above, lots of companies attempt to/ monitor their staff's working hours per week. If a person went over a certain number of hours in a week then their score would drop. This number could be customisable for each company and could be tailored for different roles. E.g. office admin staff may be allowed to go to 45 hours whereas drivers start to lose points after 40 hours because the health and safety risk is different.
Decrease in productivity	Generally, if someone performs at a certain level regularly and this suddenly changes then there could be something wrong. A decrease in productivity can be an early indicator of fatigue, disengagement at work or other personal problems for the worker. The software may need to integrate with other platforms to automatically pull productivity information into its decision making. The practicality of this would be reviewed at the build stage. However, conceptually this feature would allow the software to look at staff's average performance and identify drop-offs/ reductions in their productivity output. Whilst this software does not aim to replace the role of a manager who should be checking in with this staff. In the short term, the software can prioritise this person for a day off. The aim of this would be to allow the worker time to recover physically or emotionally or potentially deal with personal issues which may have been the cause of this drop in efficiency. Individual organisations using this software could create their own parameters around what a concerning drop might look like and consider whether it would be one day off or two days off following this. Employers would also need to consider whether the productivity data always tells the true story. For example, an individual worker may have had a low productivity score because they needed to step out for a health and safety rep meeting which is not recorded as a separate workflow in the system. This would require active management and it is suggested that staff would get in the habit of clocking their time differently for the times when they were not completing the measurable job that they had been allocated. Some companies may not be able to measure productivity so this feature could be turned off.

Uncertainty of Working Hours

The psychological impact on seasonal workers of uncertainty of work was a concern that was raised in the literature review. Whilst lots of organisations hope that people have steady rosters, there was still an acceptance that busier days require more staff so absolute consistency is hard to find for seasonal workers.

Table 5. ***Uncertainty of Working Hours – Features and Description***

Feature Name	Description
Normal Working Days	One thing the literature suggested was that workers feel workload consistency gives them a better ability to manage their personal lives. The rostering system would use historical data to establish whether each day was a normal working day for that person or not. If person X had worked 4 out of 5 of the last Tuesdays then Tuesday would be considered a normal working day and so the software would increase their ready to work score on Tuesdays. If person Y had been off work for the last 3 or 4 Tuesdays out of 5 then the software would decrease their ready to work score. This means the software would be striving to give staff consistency across their weeks in terms of regular working days.

Expectations

Trying to meet staff's expectations on how long they will be working and what skills they will be using is also important for staff to have good wellbeing. The expectations of staff was one that was often raised in interviews. When organisations were asked how they built their roster, it was clear that most tried to do it collaboratively with their staff and this would allow that to continue but reduce the risk of human error.

Table 6. ***Expectations – Features and Description***

Feature Name	Description
Staff's expected hours	Another feature which would be included is the ideal amount of work an employee would like. Some people might be happy with 20 hours a week whereas others would prefer to work 45. These preferences would help determine their ready to work score. E.g. if Harry had worked 40 hours when his preference was 35 hours and Sally had worked 20 hours with a preference for 35 then their scores would reflect that Harry has worked enough and Sally would like more hours. The literature acknowledges that a lack of security of income has a negative impact on the stress of seasonal workers.
Expertise	Some staff may have more qualifications than others and this can be factored in by the software. For example, a more complex job may require someone who has completed additional training and so if the complex job is happening, then employers can tell the software and it can be prioritised by staff accordingly. In terms of work satisfaction, the hope is that by allowing staff to perform in the roles they are trained

	in, they will be more satisfied with their role. This aligns with Maslach and Leiter's pillars of engagement.

Physical Environment

Physical health was a theme drawn out in literature and interviews when the question was asked: what does wellbeing mean? To look after staff's wellbeing, the literature suggested that proper rest breaks were key. For staff to have the most meaningful rest, the software should be able to identify when they have been physically pushed and when they are making unnecessarily long travel for work that could otherwise be done by someone in closer proximity.

Table 7. ***Physical Environment – Features and Description***

Feature Name	Description
Location	About half of the people interviewed during this project had workers potentially going to multiple sites or different sites every day. The software would be able to prioritise people for work due to their proximity to work. This would be beneficial to workers as it shortens the commute each day for staff and reduces the risk of driving or travelling with fatigue. It means more of their life can be spent at home. For the employers, it is also beneficial to have staff with familiarity with areas/ sites that they are working on and if employers pay for any element of the travel between or to and from sites, then it will be efficient for them.
Environmental Conditions	Part of the software's logic would be to consider whether a member of staff has been working in adverse conditions. Adverse conditions would mean any extreme weather including, rain, high winds, hail, snow or temperatures which exceed or fall below a certain norm. Whilst all of these apply to people working outdoors, only some will be relevant to those working inside and employers will need to proactively ensure this information is kept up to date. If two workers are being compared on the same ready to work scale e.g. fruit picking, then the person who had spent more time in adverse weather conditions would receive a lower ready to work score than the person who had spent less.

Further points around the software

- It requires upkeep from the employer and participating staff. E.g. in environmental conditions, the employer will need to ensure that every worker has a valid status of working indoors or outdoors at a given location to help inform the software around this decision making.
- Not every feature is relevant for every business e.g. location. There will be plenty of employers with one site e.g. a fruit or vegetable pack-house. In

this case, the employer will have the ability to switch off the location element of the software.

- Setting their own scales – This software needs to be malleable to different businesses. For example, one organisation may see a drop in productivity at 10% as highly concerning, whereas for another business 3% may feel significant. Because of this, each organisation that adopted this software would need help upfront defining the parameters at which the software makes the decisions.
- Different roles within an organisation – Each business would need to think about the different roles they have within their operation that could undergo this assessment. They would need to consider how different their scales are for the different roles. It may be quite useful for companies to consider whether they have blanket policies or more specific ones. As mentioned earlier, staff doing long days of driving or more intense physical work e.g. courier drivers or labourers may have a different amount of hours in a week before they are at risk of fatigue as compared to an office administrator.

There appears to be an appetite for shift swapping and shift bidding as it is offered to some degree by all competitors. If implemented, either of these functions would override the "ready to work score" of the proposed software and take the focus away from wellbeing. A fix for this could be that shift swapping may be allowed in certain circumstances e.g. where someone wants to swap a shift, it would be available only to people with a similar "ready to work" score. Going any further may undermine the concept of the product recommended in this report. This point could be seen as a weakness of the recommended product or it could be used as an argument that some widely adopted features in the current software offerings do not align with wellbeing.

Example Scenario

Table 8 below lays out a scenario where there are 6 seasonal orchard employees in a company. Underneath this table, the rostering algorithm is detailed to demonstrate how the proposed software will decide which employee will work on Sunday.

Table 8. ***Company Roster (incomplete for Sunday)***

Staff Name	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Sam	Doctors Appoint.	Approved rostered day off	Worked	Worked		Typical Day Off	Unapproved rostered day off
Alex	Worked		Approved rostered day off	Typical Day Off	Worked	Worked	Approved requested day off
Lesley	Worked	Worked	Worked	Worked	Worked	Worked	
Rawhiti	Worked	Worked	Approved rostered day off		Worked		
Toni	Worked	Worked	Worked a half shift (5 hours)			Typical Day Off	
Billy	Typical Day Off	Worked	Worked	Worked			

Context

- Each shift was approximately 10 hours
- Green cells represent one 10-hour shift and red cells represent a day of no work
- The white cells represent Sunday for which the roster hasn't been made yet.
- Each shift was worked outside on an orchard.
- On Friday and Saturday heat levels rose to over 30 degrees Celsius for over 3 hours (working at more than 30 degrees for over an hour has been flagged as a fatigue risk by this organisation)
- Every one of the staff would like to work 40 – 50 hours a week except Toni who is looking for 25 - 30 hours a week
- This business has a rule that no member of staff should work more than 6 days in a row

On Sunday, the business requires four people to work. The software ranks the staff from highest to lowest for who should be prioritised for work. The outcome is:

1. Billy – Billy has worked 30 hours this week (Billy is looking for 40 – 50 hours per week). Billy did not work in the heat of Friday or Saturday and has not requested time off. Therefore Billy has received the highest ready to work score.
2. Rawhiti – Rawhiti has worked 30 hours this week (Rawhiti is also looking for 40 – 50 hours). Rawhiti did work in the heat on Friday, making their score less than Billy's, however, Rawhiti had Saturday off so there are no real concerns about their fatigue levels. Sunday is a typical working day

for Rawhiti and they have not requested leave therefore Rawhiti has a high ready to work score.

3. Toni – Toni can work and although completing a full shift might send Toni slightly over their ideal working hours, there is no requested leave and Toni often works on Sundays.
4. Sam - Sam appears to have the capacity to work and giving Sam more work will align better with their expectations around working hours. Although Sam has requested a day off on Sunday, it was not approved by a manager. Alex's leave was approved and therefore Alex has ranked lower than Sam.
5. Alex – Alex has an approved requested day off and therefore should not be at work, hence Alex has a low ready to work score.
6. Lesley – Lesley has the lowest ready to work score as Lesley has worked 6 days in a row. It would be out of company policy to let Lesley work on Sunday.

Table 9 shows the roster created by the proposed software based on the ready to work scores described above.

Table 9. ***Company Roster (complete for Sunday)***

Staff Name	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Sam	Doctors Appoint.	Approved rostered day off	Worked	Worked		Typical Day Off	Worked
Alex	Worked		Approved rostered day off	Typical Day Off	Worked	Worked	Approved requested day off
Lesley	Worked	Worked	Worked	Worked	Worked	Worked	
Rawhiti	Worked	Worked	Approved rostered day off		Worked		Worked
Toni	Worked	Worked	Worked a half shift (5 hours)			Typical Day Off	Worked
Billy	Typical Day Off	Worked	Worked	Worked			Worked

The point of this software is to take the human error out of rostering. The software will be able to automatically generate a suggested roster based on the ready to work score. Like other rostering software, this product will save companies time and reduce mistakes in the roster. However, the unique feature of this software is that it prioritises the wellbeing of the staff. This benefits the workers directly and should increase their productivity and willingness to stay with a company too.

To get this product from concept to business idea, there will need to be early adopters, like the one referenced in Roger's diffusion of innovation theory. This theory identifies that there are different adopter categories and so any business

that aims to get this product to market will need to identify the innovators – those that will take the risk and be the very first to adopt the product – and early adopters. Early adopters will generally be leaders in their fields and generally be groups/ organisations that are very comfortable with change. These groups will be made up of organisations that champion wellbeing and are seen as good employers to the seasonal workforce of New Zealand.

Table 10 below shows the competitor feature scoring card, now with the recommended software included. It is now the highest scoring of all the products. It is important to note that the feature list includes the original features observed when the current market players were examined, plus the additional wellbeing features that were drawn out in this research. This shows that the useful features of the current products do not need to be eliminated, it is simply that they need to interact with the additional wellbeing features.

Clearly, the addition of the wellbeing features allows the product recommended by this research to stand out as advantageous to buyers.

Table 10. Competitor Scoring Card with new recommended product

Competitor Scoring Card	How well does the software:	Roubler	RosterIt	Agendrix	Employment Hero	RosterElf	Deputy	Proposed Software Solution
Rostering functionality	present a well formatted roster for staff?	5	5	5	5	5	5	5
Automated rostering based on availability	allow staff to input their own availability for the roster?	4	4	2	2	4	2	4
Automated rostering based on demand	consider work availability and match staff to this demand?	4	4	2	2	3	1	4
Automated rostering based on labour budget	consider business budget and staff pay rates and allocate work accordingly?	5	1	2	2	4	2	2
Automated rostering based on qualification/ experience	consider the experience and qualification of staff for individual jobs?	5	5	1	1	3	3	5
Automatic rostering based on location	compare the work site with the staff's location to make an informed decision about who should work?	4	2	1	1	2	1	4
Shift swap	allow staff to swap shifts with one another dynamically?	5	5	5	5	5	5	2
Shift bidding	allow an organisation to create open shifts which staff can bid on?	5	1	5	5	1	4	2
Availability rating	do at creating a list of staff from least to most available?	2	1	1	1	2	1	5
Considers normal patterns of work	consider staff's regular working days and attempt to match them?	1	2	2	2	2	2	5
Automatic rostering based on fatigue	factor in fatigue (days worked in a row, hours done over the week etc.)?	4	1	1	3	1	1	5
Consider the amount of work wanted by staff	factor in the staff's requested amount of hours/ shifts when assigning work?	4	1	1	1	1	1	4
Environmental conditions	factor in the staff's exposure to extreme environmental conditions?	1	1	1	1	1	1	5
Productivity metrics	consider staff's productivity metrics when considering them for work?	2	1	1	1	1	1	4
Total		**51**	**34**	**30**	**32**	**35**	**26**	**56**

7. Conclusion

This research has come to five key conclusions:

CONCLUSION ONE: There is a problem with retaining good seasonal workers in the horticultural industry.

A number of statistics and studies discussed in section three of this report indicate the problems with retaining seasonal staff. Two thirds of interviewees identified that the retention of staff throughout one season is a huge pain point for their business as it requires additional effort and cost to be put into re-hiring and re-training new staff. Therefore, the horticulture industry needs new innovations to increase their ability to retain these staff and make financial savings on the cost of employing and training a replacement.

CONCLUSION TWO: Current seasonal work practices in the horticulture industry contribute to negative staff wellbeing.

The very nature of seasonal work can often be at odds with what staff seem to need to have their wellbeing needs met. This was exemplified by the fact that staff crave certainty in their work life. Generally, seasonal roles sway up and down with peaks that are dependent on the environment or overseas markets which means there is less deliverable certainty to give them.

So what does this mean for the horticulture industry? Seasonal staff have lower wellbeing, and as discussed in several sections of this report, this impacts on their productivity and their willingness to come to work, meaning it is damaging for employers. This is why the horticulture industry needs to seek to improve their staff's wellbeing.

CONCLUSION THREE: Improving seasonal worker wellbeing will improve retention and productivity for organisations.

The benefits of being focused on staff wellbeing for organisations have been well documented. It is strongly supported by literature that it is a good business move to focus on their people and deliver them better outcomes. An argument could also be made that this also allows employers to meet their ethical duty to their staff, although this was not presented as part of this project.

CONCLUSION FOUR: Wellbeing can be improved for horticulture industry's seasonal workers.

Particularly through interviews, it was clear that companies are aware of the need for staff to have good wellbeing. All organisations were actively trying to improve wellbeing outcomes through engagement activities, mental health

support and good health and safety practices. However, these organisations also identified that there were significant barriers in seasonal work in delivering perfect outcomes for their seasonal staff.

Given that businesses are trying to improve wellbeing, but still meeting some barriers, there is still room for new innovation to help these businesses to keep improving and remove these barriers.

CONCLUSION FIVE: Horticultural seasonal workers can have improved wellbeing through automated rostering software.

Through competitor feature analysis, it was identified that there was a clear gap in the market for an automated rostering software that prioritised staff's wellbeing and held this focus as the core of its decision making. Having established what changes could be made to improve wellbeing, a recommended product was developed. Having drawn out what interviewees wanted to see, what issues the literature identified as risks for staff and what current systems offer their customers, a product concept with key features was developed. This product's key feature is that it generates a "ready to work" score for each employee with an end goal of having the most satisfied and productive workforce available that will stay in the business for longer.

8. Recommendations

1. **Horticulture businesses in New Zealand that employ seasonal staff should improve wellbeing because it improves financial and ethical outcomes.**

2. **A business plan should be created to commercialise the software solution described in the findings and discussion section.**

The scope of this report restricted discussion to just the base features of the software solution. To make the solution accessible to the industry, a commercialisation plan needs to be created and executed which would include things such as prototyping, pricing strategy, market validation and team building. This would need to be done by an individual or organisation that understands the value offer of this product, who has a technical ability to understand what the product requires and has an understanding of the industry they are selling in to.

3. **Horticulture businesses in New Zealand that employ seasonal staff should adopt wellbeing focused automated rostering software such as the one described here.**

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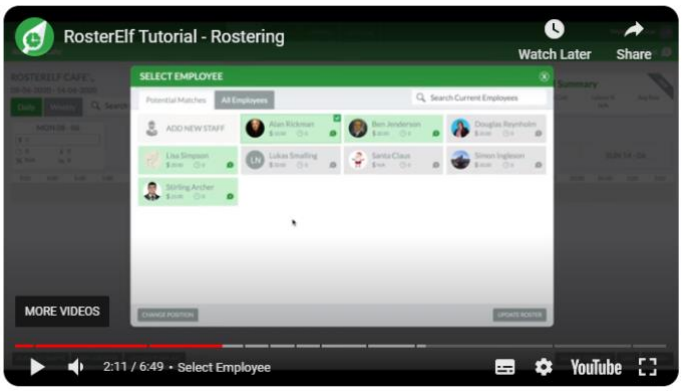
10. Appendix

Appendix A – In-depth analysis of Competitor Companies

- Roubler
  - By far, the most similar product to the concept created in the findings and discussion part of this report. The difference is the more in-depth focus on wellbeing features are not included in Roubler, but they are both similar in basic functionality.
  - Fatigue: they consider the "minimum time off required between shifts" and "limits around maximum working hours"
  - Part-time: You can define someone's ideal working hours in their employee profile and define different shift patterns for part-time and full-time
  - Leave and availability: viewable whilst the roster is being created
  - Automated: It does automate rostering to an extent but only considers: location/ fatigue/ qualification and staff rating
  - Productivity: Staff can have a manually entered ranking in their employee profile which an employer could use to prioritise workers who are operating at best capacity. However, this would be very hard and manual to maintain.
- RosterIt
  - Observation – they have focused in on a couple of features including availability/ shift swapping and location. Their goal is simply to reduce the time it takes to create and publish rosters.
  - Big focus on communicating the roster easily
  - In terms of location the only feature they offer is GPS clock-in and clock-out but the software does not factor in the proximity of staff to the work site. This shows they are aware of the issue, but it doesn't feel like a full solution.
  - Normal patterns of work – they allow you to copy rosters from one week to the next but don't encourage this feature where the shifts have a large degree of variation
- Agendrix
  - Also focused on seasonal staff and reducing turnover
  - Not creating automated rostering, just presenting data for someone to manually create the roster
  - Also encourages you to copy and paste schedules from one week to another but only for user ease
- Employment Hero
  - "Rosters built to budget"
  - They do not allow someone to be rostered if they exceed maximum work hours so there is an element of fatigue
  - Built as part of a payroll platform

    - Also not about automating rostering, just a well-presented platform for someone to create their own roster with data laid out in front of them
- RosterElf
    - Focused on agriculture and farming
    - Allows you to roster for unique locations but their algorithm does not appear to factor in their location when showing available employees. It does stop you from scheduling them to multiple sites
    - Good display of labour costs but only to be managed manually
    - Perfect Match algorithm



    - Copy shifts
- Deputy
    - Also focused on farmers
    - Only opens up shift swapping/ bidding to those who are qualified

Reference for each website referred to:

- Roubler: https://roubler.com/nz/
- Roster it: https://rosterit.co.nz/
- Agendrix: https://www.agendrix.com/
- Employment Hero: https://employmenthero.com/nz/
- RosterElf: https://www.rosterelf.com/
- Deputy: https://www.deputy.com/

Appendix B – Interview Questions

Business Overview

1. What's your current role title/ main responsibilities?
2. Please tell me about your organisation and the staff you employ that are rostered.
3. What is your involvement in creating rosters or scheduling work for employees?
4. How many staff help manage the roster?
5. How many staff are being rostered?
6. How many sites are involved in your rostering?
7. Which factors do you consider when you decide who is working?
8. What are the current challenges you face with scheduling/ rostering?
9. What is your experience with technology in the scheduling area? (Potential follow-up questions: which features do you like; which factors are missing?)

Wellbeing:

1. What does wellbeing mean to you within your company?
2. What is your company doing to promote staff's wellbeing?
3. How do you think rostering can impact someone's wellbeing?
4. What current wellbeing factors do you consider when you create the roster?
5. What are the current barriers for you to delivering good wellbeing outcomes to your staff?

Software

1. What barriers have you experienced when integrating software into your business?
2. If there are problems:
    a. How have the barriers affected the business?
    b. Why have the barriers affected the business