



Prepared for the Food and Fibre Centre of Vocational Excellence
(FFCoVE)

Attraction and Retention Research Programme

Evaluating performance measurements of
attraction and retention initiatives through
impact modelling

April 2023



Contents

Executive summary	2
Introduction	2
Key findings	2
Implications for the future design and implementation of initiatives	2
Introduction	4
Context.....	4
Attraction and retention research programme	4
Evaluating performance measures.....	4
Findings from comparative analysis	6
Findings for attraction initiatives.....	6
Findings for retention initiatives.....	7
Implications for the future design and implementation of initiatives	10

Executive summary

Introduction

For many years, the food and fibre sector has struggled to attract and retain people into its workforce despite the efforts of industry stakeholders trialling and implementing different strategies and initiatives. In the absence of empirical data, it is difficult to understand what impact attraction and retention initiatives are having on reducing the sector's workforce shortage. As part of the FFCoVE's Attraction and Retention research programme, we have built an impact model to analyse how different types of initiatives might be expected to reduce the sector's workforce shortage. This report presents the key findings from this analysis and the implications for the future design and implementation of initiatives.

Key findings

Two comparative analyses – one for attraction and one for retention – were developed to understand what an initiative needs to achieve to reduce the workforce shortage by 50%. The key findings from the analysis of attraction initiatives include:

- Intentionally targeting specific population segments with attraction initiatives could be five times more efficient at reducing workforce shortages than running untargeted programmes,
- It would require between \$50 and \$400 million to be invested in industry and government-led attraction initiatives to reduce the workforce shortage by 50%,
- The current level of investment in industry and government-led attraction initiatives is probably not enough to generate a measurable reduction in the workforce shortage,
- Attraction initiatives have a delayed, but enduring effect on reducing the sector's workforce shortage.

Whereas the key findings from the analysis of retention initiatives include:

- An initiative improving retention rates of first-year employees could be five times more efficient at reducing the sector's workforce shortage than randomly improving retention rates for individuals across the sector's wider workforce,
- Targeting an improvement in retention rates has a relatively quick effect on reducing the workforce shortage compared to improving attraction rates but the effects are less enduring without sustainable funding,
- A retention initiative is a more efficient approach to reducing the food and fibre sector's workforce shortage than an attraction initiative.

Implications for the design and implementation of future initiatives

The key findings from this report's analysis have validated that an initiative targeting an improvement in the retention rates of first-year employees is the best approach to reduce the workforce shortages across the food and fibre sector compared to an attraction initiative. It is noted, however, that a retention initiative of this nature would require sustainable funding to have an enduring reduction in the sector's workforce shortage.

While this report has validated the conclusions communicated in earlier work, this work has not addressed what can be done practically to improve the retention rates of first-year employees. To develop an effective retention intervention, it would be valuable to undertake additional primary research as a next step to understand:

1. Employee intentions and behaviours during their first year of employment, and
2. What interactions or engagements would be required to reverse an employee's decision to leave the workforce.

Introduction

Context

For many years, the food and fibre sector has struggled to attract and retain people into its workforce, and to attract students to food and fibre related studies. In response to this challenge, industry organisations, government agencies and employers, have researched, trialled, and implemented a range of strategies and initiatives to address workforce shortages. These initiatives have focused on attracting people to the workforce and, to a lesser extent, retaining people in the workforce and improving productivity to reduce the workforce requirement.

Despite these efforts, businesses across the sector continue to struggle to find and keep the employees they require to operate. Workforce shortages have been exacerbated in recent years by the COVID-19 pandemic, and the closure of New Zealand's borders during this time. These challenges are not unique to the food and fibre sector – they are shared by many other industries also.

Attraction and retention research programme

The Food and Fibre Centre of Vocational Excellence (FFCoVE) have contracted Scarlatti to undertake the attraction and retention research programme. Key activities of this work include:

1. Undertaking a situational analysis (including desk research as secondary research, and an IDI analysis and an employee exit survey as primary research)
2. Evaluating performance measurements
3. Piloting retention initiatives
4. Writing a final insights report

This report presents the findings from the impact model built to evaluate which performance measurements of attraction and retention initiatives are good indicators of success (i.e. activity 2 of the list above).

Evaluating performance measures

In the absence of robust empirical data to measure the impact of different attraction and retention initiatives, it is difficult to be certain of what impact initiatives could generate for the sector. Here, we refer to the impact of an initiative as being the influence it has on the workforce shortage or surplus.

To address this gap, we have built an 'impact model'. By considering the logical steps for how different initiatives influence the attraction and retention of employees in the food and fibre sector, and making quantitative estimates at each stage, it is possible to arrive at *indicative* estimates of how different initiatives could be expected to influence the sector's workforce.

As the impact model is not expected to be precise, we use the term 'semi-quantitative' to describe the model's outputs. However, we expect that the magnitude of the outputs will be sufficient to gain insights about what will and will not work, and what suitable performance measures may be.

Model logic

The impact model developed for this project is an agent-based model where all of New Zealand's working-age population (from aged 18 to 65) is modelled. The working-age population are employed

across all of New Zealand's economic sectors, one of which is the food and fibre sector. The size of the food and fibre workforce changes over time as individuals enter (e.g. as school leavers, graduates, migrants, career changers, etc.) and leave (e.g. as career changers, emigrants, retirees, etc.).

Each individual in the New Zealand working-age population is modelled to have a likelihood of entering the food and fibre workforce in any given year. This likelihood changes as they engage with different experiences over their lifetime. Experiences can either have a positive or negative influence on an individual's likelihood to enter the food and fibre workforce. Some experiences are naturally occurring (e.g. having a rural upbringing, becoming older) while others are planned with the intent of attracting people to the sector. Examples of planned experiences could include listening to a farmer describe their work during a school visit, or viewing a website built as part of marketing campaigns promoting food and fibre careers. These planned experiences can be designed to either instigate a short-term change in those engaging with an experience, after which it reverts to the base case, or a long-term sustainable change.

The impact model also considers retention in the sector. The probability of an individual staying in the sector in any given time period is calibrated using data extracted from Statistics NZ's Integrated Data Infrastructure.

The impact model is designed to track the size of the food and fibre workforce as natural and planned experiences influence the number of people attracted to and retained by the workforce. The outputs of the model illustrate how the workforce shortage or surplus changes as a result.

Measurement approach

Two comparative analyses – one for attraction and one for retention – have been developed to understand the performance of initiatives designed to reduce the workforce shortage.

The efficacy of initiatives is assumed to be closely related to the total time that individuals spend experiencing them. Therefore, initiatives that reach more people, and engage their audiences for longer, will be the most effective. A key performance measure of any given initiative is the total engagement hours that it generates. The cost of an initiative is also assumed to be closely linked to the total engagement hours generated.

The impacts of initiatives are measured in the comparative analyses in two ways:

1. By estimating the number of *engagement hours* that an attraction or retention initiative would need to generate to reduce the workforce shortage by 50%.
2. By estimating the reduction in the workforce shortage that could be expected from a 'real-world' example of an attraction or retention initiative in which the budget available to fund activities (and hence the hours of engagement) is limited.

Baseline workforce shortage

As of 2022, the workforce shortage across the food and fibre sector is estimated to be about 10%¹ of the total workforce size (roughly 17,000). For this work, we assume that, in the absence of planned initiatives, the workforce shortage will remain constant from 2015 to 2040; the timeframe imposed on the impact model.

¹ This is extrapolated from the workforce shortage estimated in previous work for the New Zealand dairy industry also at 10% of the total workforce size.

Findings from comparative analysis

In this section, we summarise the findings from the two comparative analyses. The first compares several attraction scenarios, while the second compares two retention scenarios. Both analyses consider what an attraction or retention initiative needs to achieve to meaningfully reduce the workforce shortage in the food and fibre sector.

Findings for attraction initiatives

The analysis of attraction initiatives addresses three research questions:

1. How many engagement hours would a five-year attraction initiative² **randomly targeting the working population** need to generate to reduce the workforce shortage by 50%?
2. How many engagement hours would a five-year attraction initiative **targeting individuals between 18 and 30 years with a high probability of entering the workforce** need to generate to reduce the workforce shortage by 50%?
3. What reduction in the workforce shortage could **realistically be achieved from the engagement hours generated from a realistic short-term attraction initiative**?

Intentionally targeting specific population segments with attraction initiatives will be more efficient than running untargeted programmes

An attraction initiative which runs for five years from 2024 to 2029, and which **randomly targets** any agent over the age of 18, regardless of their affinity to enter the food and fibre workforce, would need to generate approximately **50 million engagement hours** annually to reduce the workforce shortage by 50%. This is the equivalent of reaching every person in New Zealand's working-age population (~4.1 million people³) for an average of approximately 12 hours each. To put this in context, the government campaign to promote COVID-19 vaccinations in 2021 probably didn't generate as much as 12 hours of engagement per person (albeit the wider media coverage and public discussion about the pandemic almost certainly would have).

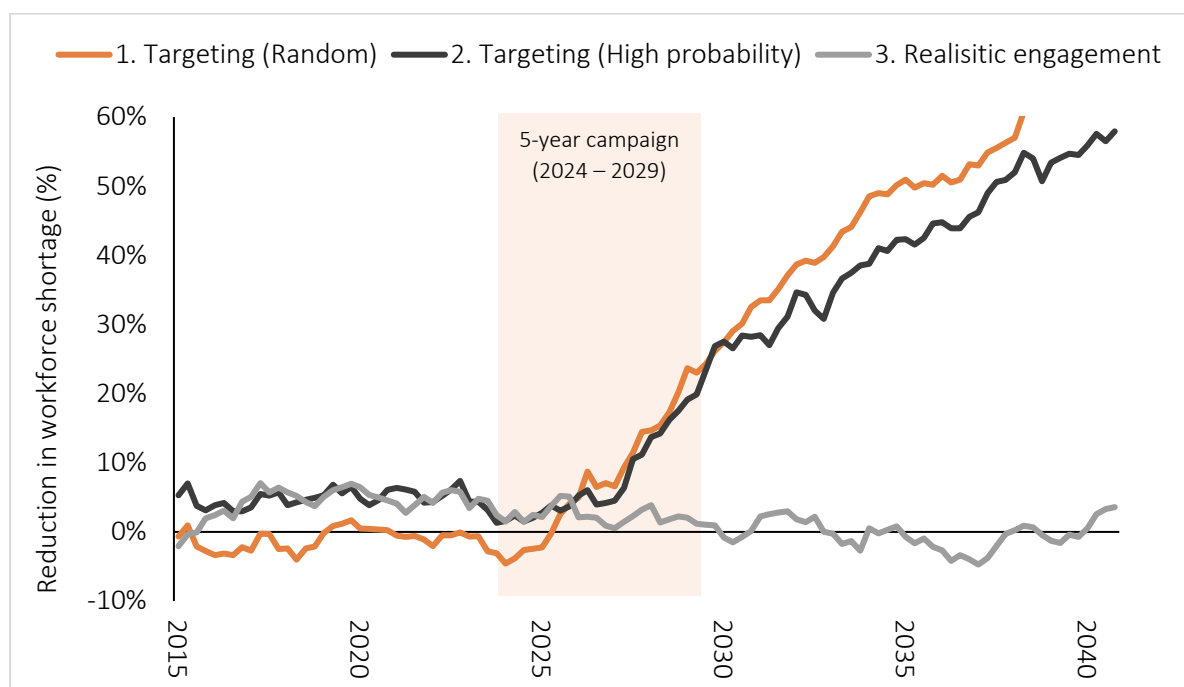
An attraction initiative which runs for five years from 2024 to 2029, and which is **targeted** at people between 18 and 30 years of age who have a high existing probability to enter the food and fibre workforce, would need to generate approximately **10 million engagement hours** annually to reduce the workforce shortage by 50%. This is the equivalent of reaching every person in New Zealand's working-age population for an average of approximately 2.5 hours each. That is, we estimate that careful targeting could increase the impact of talent attraction programmes by up to five times.

Figure 1 below shows how the workforce shortage would change over time in each of these two scenarios above (orange and black lines).

² The three attraction initiatives are fixed term initiatives delivered from 2024 to 2029.

³ <https://figure.nz/chart/IQKtMdrtmVOOE03k>

Figure 1: Reduction in the food and fibre workforce shortage by different attraction initiative



It would require a significant level of investment in attraction initiatives to meaningfully reduce the workforce shortage in the food and fibre sector

From the findings during the situational analysis (part 1 of this project), we estimate that talent attraction initiatives cost between \$5 to \$10 per engagement hour. This implies that between \$50 million and \$500 million would need to be invested each year in industry and government-led attraction initiatives to achieve a reduction in the workforce shortage of 50%.

The current level of investment is probably not enough to generate measurable results

Figure 1 also shows the result of a scenario in which a five-year campaign from 2024 to 2029 generates 500,000 engagement hours per year (grey line). This number is roughly comparable to the total engagement hours of all industry and government initiatives running this year. The analysis suggests that the impact of this campaign would be almost indistinguishable against the background of random variation. That is, the total effect of all current food and fibre sector talent attraction initiatives on the workforce shortage is probably unmeasurably small.

Attraction initiatives have a delayed, but enduring effect on reducing the workforce shortage

Attraction initiatives have a delayed, but enduring effect on reducing the workforce shortage in the food and fibre sector. This is because people do not necessarily enter the workforce immediately following their engagement with an attraction initiative. In the very long term, we would expect to see the workforce shortage return to the baseline level as the effect of the initiative dissipates, but the time for this to happen is measured in decades not years.

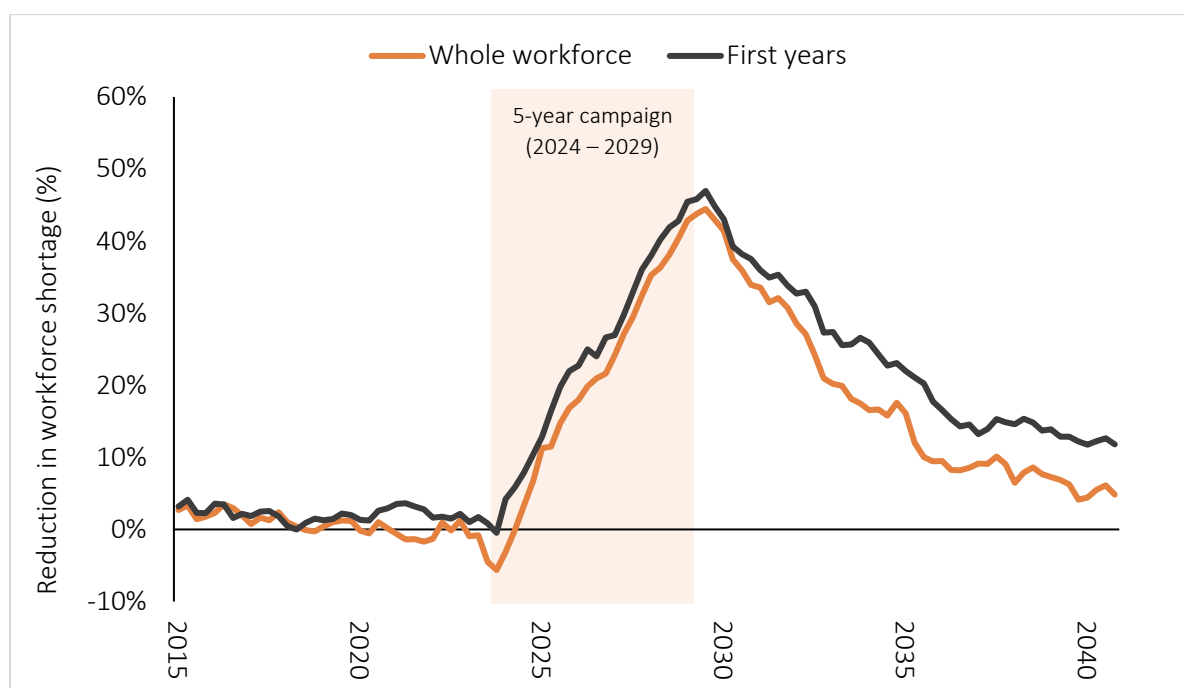
Findings for retention initiatives

The analysis of retention initiatives using the impact model focuses on addressing the following two research questions:

1. How many people would a five-year retention programme need to reach to reduce the workforce shortage by approximately 50%, if that programme:
 - a. Reaches current employees in the food and fibre workforce at random, and
 - b. Improves their retention rates by 25%.
2. How many people would a five-year retention programme need to reach to reduce the workforce shortage by approximately 50%, if that programme:
 - a. Targeted people in their first year of employment, and
 - b. Improves their retention rates by 25%.

Due to the lack of reference points, a third research question to evaluate the reduction achieved by a realistic example of a retention initiative is not included in this analysis. Figure 2 below presents the estimated reduction in the workforce shortage for the above two scenarios.

Figure 2: Reduction in the food and fibre workforce shortage by different retention initiatives



Targeting an improvement in retention rates of first-year employees is more efficient at reducing the workforce shortage than randomly targeting the population

To reduce the workforce shortage in the food and fibre sector by about 50%, a:

- **Randomly targeted** retention initiative would need to reach at least ~60,000 employees from the whole food and fibre sector workforce, while a
- **First-year targeted** retention initiative would only need to reach about 12,000 employees.

Targeting a retention initiative at first-year employees, as opposed to randomly across the workforce, could be five times more efficient at reducing the workforce shortage in terms of the number of people needing to be engaged/reached by an initiative.

Targeting an improvement in retention rates has a relatively quick effect on reducing the workforce shortage compared to improving attraction, but is less enduring

Retention initiatives are modelled to have an almost immediate impact on reducing the workforce shortage in the food and fibre sector. This is because the expected outcome of the initiative, retaining people in the workforce, is quicker to achieve by nature (e.g. they don't leave the sector). However, when the improvement in retention rates disappears at the end of the 5-year campaign, the workforce shortage starts to grow again. This emphasises the value of linking an initiative to a sustainable funding source⁴. If a retention initiative could be sustainably sourced and improve retention rates, by say 25%, then the workforce shortage would be expected to continue reducing as the retention rates following the first year of employment are considerably higher than within the first 12 months⁵. Creating an initiative to support employees through their first 12 months of employment over the long term creates a considerable opportunity to address the current and anticipated workforce shortage.

A retention initiative is a more efficient approach to reducing the food and fibre sector workforce shortage than an attraction initiative

As highlighted earlier in this document, the most efficient attraction initiative at reducing the workforce shortage by 50%, an initiative targeting people in the population with the highest existing probability to enter the workforce, would need to reach the equivalent of New Zealand's working age population (~4.2 million people) for approximately 2.5 hours each – a rather tall ask. A targeted retention initiative, by comparison, would only need to reach about 12,000 first-year employees to reduce the workforce shortage by 50%. Even the least efficient retention initiative considered in this report requires a reach of about 60,000 employees.

⁴ FFCoVE A and R Situational Analysis – Part A

⁵ FFCoVE A and R Situational Analysis – Part B

Implications for the design and implementation of future initiatives

In this section, we seek to infer from the key findings and consider what their implications are for the design and implementation of future attraction and retention initiatives.

Retention initiatives with a first-year focus are validated as the best approach to reducing workforce shortages across the food and fibre sector compared to attraction focused initiatives

In the second report submitted to the FFCoVE as part of the situational analysis activity, we highlighted that retention was an area with considerable opportunity to address the workforce shortages across the food and fibre sector. The key findings in this report validate this conclusion suggesting that the number of people needing to be reached by a retention initiative to reduce the workforce shortage by 50% is between 0.30% and 1.50%⁶ of the number of people needing to be reached by an attraction initiative to achieve the same outcome. Further, the reduction in the workforce shortage is expected to be realised almost instantaneously. The resources saved by focussing on retention as opposed to attraction, in terms of time and money, are expected to be considerable as a result.

Focussing on retaining employees during their first year provides a more efficient option to reduce workforce shortages

We identify and compare two types of retention initiatives which could keep employees from leaving work in the food and fibre sector:

1. Initiatives randomly targeted to people across the food and fibre workforce, and
2. Initiatives specifically targeting people within their first 12 months of employment.

Of these two initiatives, the key findings from the previous section provide empirical evidence to suggest that initiatives targeting first-year employees would be five times more efficient at reducing workforce shortages across the food and fibre sector.

An enduring improvement in retention rates across the food and fibre sector will require initiatives to be sustainably funded

The analysis in the previous section assumed that retention initiatives were only improving retention rates of first-year employees between 2024 and 2029. While the reduction in the workforce shortage over this time was quick and significant, the reduction decreased as soon as the retention rates reverted to the former level before funding, and continued to decrease. If the improved retention rates could be sustained over the longer term via a sustainable funding source, the reduction in the workforce shortage would be more enduring than that illustrated in Figure 2.

It is unclear, however, what activities are required to improve retention rates for the first-year employees

While this report has indicated that improving retention rates of first-year employees by 25% provides a large opportunity to reduce workforce shortages, it is unclear what exactly can be done practically to

⁶ Note that these percentages are dependent on the amount of time each person is engaged for. These percentages are estimated using the engagement hours presented in this report.

improve retention rates for this segment of the population. To develop a retention intervention to target an improvement in the retention rates of first-year employees, it would be valuable to first understand things like:

Segmentation of employees and their reason for leaving	<ol style="list-style-type: none"> 1. What are employees' intentions upon starting in the sector? 2. Why are people leaving in their first year? What proportion of people leave for each reason?
Initiative design	<ol style="list-style-type: none"> 3. For each segment, what interactions / engagements would it take to change employees' decisions or plans to leave? 4. What initiatives are needed to deliver those interactions / engagements? 5. What approaches to working with employers are needed to reach the target segments and deliver those initiatives?
Initiative efficacy	<ol style="list-style-type: none"> 6. What proportion of each segment could be persuaded to change their decision or plan to leave because of those initiatives?
Business case and implementation	<ol style="list-style-type: none"> 7. What would the initiatives cost to provide at a sector-wide scale? 8. Would the benefits justify these costs? 9. If so, can we envisage a model in which initiatives could be funded sustainably? For example, <ul style="list-style-type: none"> - Can we design a model in which some of the avoided employer costs of staff leaving are used to pay for the initiatives? - Could the tertiary training system pay some of the costs? What is the case for providers? For taxpayers? 10. How would the delivery of the initiatives be managed and governed?

Additional research to understand the above research questions would be beneficial to improve the design of a first-year retention initiative

The above research questions could be addressed in a combination of the following activities before designing and implementing a retention initiative:

1. **Primary research** – We could address, or partially address, all the above questions (except for Q6) by:
 - a. Working with employers to understand the reasons employees are leaving within their first 12 months of employment (questions 1 and 2),
 - b. Working with employers and employees to co-develop ideas for retention initiatives and refining these in iterative steps (questions 3 to 5), and
 - c. Testing the business case and implementation of possible initiatives to test their cost-effectiveness (questions 7 to 10).
2. **Field research** – Question 6, as it is a focus on the efficacy of an initiative, would require field research to answer it. This could involve a case-control study tracking two cohorts of employees through their first year, one of which engages with a retention initiative proposed during the business case testing above. Initial thoughts suggest this would not be a small pilot study as the sample size would need to be large enough to ensure the measured impact of the initiative is statistically significant.