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# The Mackenzie Study

A Cross-sectional Study of  
Nuffield and Kellogg Scholars'  
Entrepreneurial Leadership Skills.

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The Mackenzie Charitable Foundation has undertaken research alongside the New Zealand Rural Leadership Trust, in collaboration with Otago Business School and the Department of Economics, investigating the contribution of Kellogg and Nuffield Alumni to Food and Fibre. The research period covers 72 years of Nuffield and 43 years of Kellogg Rural Scholarship.



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# Abstract

The objective of this report is to collect data measuring within-person gains in entrepreneurial leadership in the service of accumulating a world-class evidence base that documents the entrepreneurial capability-building that occurs as a result of the Kellogg and Nuffield leadership development programmes.

We conducted our first alums survey<sup>3</sup> with the New Zealand Nuffield Alums (178 at the time of the survey). Through this process, we learned several ways to refine the survey and then ran a similar survey with Kellogg Alums (960 at the time of the survey).

The results from the New Zealand Nuffield and Kellogg Alums are remarkable. One of the extraordinary findings is the very high rate of self-employment compared to New Zealand as a whole (over 60% for Nuffield and 40% for Kellogg), compared to 7.5% nationally,<sup>4</sup> 28% in the dairy industry and 30% in the red meat and wool industries<sup>5</sup>.

Entrepreneurship is frequently measured in economics as the proportion of workers in self-employment. By that admittedly broad measure, farm entrepreneurship is sky-high and very much alive and well among alums. We have seen very few data sets in New Zealand with self-employed proportions that large.



**NUFFIELD**  
NEW ZEALAND  
FARMING SCHOLARSHIPS



**KELLOGG**  
RURAL LEADERSHIP  
PROGRAMME

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<sup>3</sup>The first survey used upper-band data sets. This final report uses mid-band data sets to generate a more conservative measure of in-person gains attributable to either the Nuffield or Kellogg Programmes.

<sup>4</sup>Fabling, R., (2018), *Entrepreneurial beginnings: Transitions to self-employment and the creation of jobs*, [Motu Working Paper 18-12], Motu Economic and Public Policy Research, p. 3, Retrieved from [https://motu-www.motu.org.nz/wpapers/18\\_12.pdf](https://motu-www.motu.org.nz/wpapers/18_12.pdf) (Accessed 15 October 2022).

<sup>5</sup>Ministry of Primary Industries, (2022), *Food and Fibre workforce: snapshot*. Retrieved from: <https://www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot>

# Introduction

The Mackenzie Study aims to build a rigorous evidence base documenting within-person gains in entrepreneurial leadership skills (using before-after surveys for individual cohort members) attributable to participation in the Kellogg or Nuffield programmes.

This report builds on the initial progress report dated February 2022. It focuses on the Nuffield and Kellogg alums surveys conducted in June and November 2021. The methods used to measure entrepreneurial leadership skills (ELS) draw on international peer-reviewed academic literature in experimental economics, psychology, and management science. In addition, we measured 30 theory-based ELS behaviours, and more than 10 ELS-influenced real-world outcomes and collected demographic information such as age, sex, ethnicity, geographic region, farm type(s), and which industries in New Zealand's agricultural economy participants have worked in.

Among the most widely cited and influential academic approaches to ELS are Lumpkin & Dess's (1996) entrepreneurial orientation<sup>6</sup> (EO) and dynamic capabilities (from New Zealand's own David Teece and colleagues<sup>7</sup>), which the NZ Productivity Commission is currently using and MBIE as a framework for designing policies that increase productivity, export revenue generated by New Zealand's primary industries, and improve well-known economic development outcomes. EO is defined as innovativeness, proactiveness, and willingness to pursue purposeful risk-taking. Teece's dynamic capabilities have been defined as sensing opportunities (and threats), seizing opportunities, and transforming or reconfiguring production processes (including both intangible and tangible assets). Experimental economists have focused on measuring risk tolerance, future-orientedness, and trust. We have applied the best available measurement techniques and extended them to focus on entrepreneurial network formation (size, quality of information flows, trust, and frequency of interaction<sup>8</sup>).

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<sup>6</sup>One of the most highly cited articles influencing management science and the overlapping behavioural sciences that work on measuring entrepreneurial behaviour, Lumpkin & Dess (p. 136) define EO as "processes, practices, and decision-making activities that lead to new entry" (i.e. new product development and/or new business starts).

Lumpkin, G.T. and Dess, G.G. (1996) Clarifying the Entrepreneurial Orientation Construct and Linking It to Performance. *Academy of Management Review*, 21, 135-172. <https://doi.org/10.5465/amr.1996.9602161568>

<sup>7</sup>Teece, D.J. (2007). Explicating dynamic capabilities: the nature and micro foundations of (sustainable) enterprise performance, *Strategic Management Journal*, 28(13), 1319-1350.

Teece, D.J. (2016.) *Dynamic capabilities and entrepreneurial management in large organizations: Toward a theory of the (entrepreneurial) firm*. *European Economic Review*, 86, 202-216.

Teece, D. & Brown, K. (2020). *New Zealand Frontier Firms: A Capabilities-Based Perspective*. White Paper: NZ Productivity Commission.

Teece, D., Pisano, G. & Shuen, A. (1997). *Dynamic Capabilities and Strategic Management*. *Strategic Management Journal*, 18 (7), 509-533.

<sup>8</sup>Berg, N., Boyle, Z., Clink, R., Cummings, S., Pirini J. (2020), *Entrepreneurship Nurturing Organisations (ENOs) foster business growth and well-being [with foreword by the Minister of Economic Development]*. *NZ Entrepreneur* (Sept. 11, 2020).

<https://nzentrepreneur.co.nz/entrepreneurship-nurturing-organisations-enos-foster-business-growth-and-well-being/> (Accessed 15 Oct, 2022)

Clink, R. and Berg, N. (2021) *Measuring multiple dimensions of Entrepreneurial Capital (EC): How to do it and why it matters for NZ's productivity, standard of living and wellbeing*. White Paper: Ministry of Business, Innovation and Employment, NZ.

# ■ Introduction - *continued*

Finally, we have measured real-world entrepreneurial achievements by counting new business starts, FTE jobs created, export revenues, the number of leadership roles of various kinds. The result is a long list of theory-based, real-world measures specific to each participant referred to as the participant's ELS profile.

Nuffield and Kellogg Alums provide a valuable survey population. Each programme is longstanding. The Nuffield Farming Scholarship has been operating continuously in New Zealand since 1950 and has international linkages through Nuffield International. The Kellogg Rural Leadership Programme has been operating in New Zealand since 1979 and has international linkages through the International Association of Programs for Agricultural Leadership (IAPAL). While Scholars are selected for each programme and produce a substantive individual research report, the programmes have distinctly different approaches.

Nuffield Scholars are, on average, in their 40s. They are rigorously selected and undertake a largely self-guided international exploration of significant Food and Fibre challenges and opportunities. The Nuffield Scholarship is conducted over 15 months and includes at least 16 weeks of international travel. Scholars travel some of the time with an international cohort in their year group. The Programme aims to develop insight and foresight that helps keep New Zealand at the global forefront of Food and Fibre-producing nations. Leadership development is an outcome of each Scholar's experiential journey rather than an output of the Programme. At the time of the survey, 178 Nuffield Scholars had been selected since 1950.

By contrast, Kellogg Scholars are, on average, in their 30s. The Kellogg Programme is a facilitated programme run over six months. Again, Scholars are selected for the Programme. Each programme can take up to 24 Scholars, meaning more Kellogg Scholars graduate than Nuffield Scholars. Leadership capabilities are a defined learning output of the Programme. At the time of the survey, New Zealand had produced 960 Kellogg Scholars.

# ■ Overview of work completed

Two populations of leadership programme alums were surveyed: the Nuffield alums and Kellogg alums. There were 68 survey participants from Nuffield alums and 234 survey participants from Kellogg alums.

The ‘strength of evidence’ in the evidence base can be quantified using the technical concept of ‘statistical power,’ which is the probability of detecting unusual achievements in farm-related entrepreneurship of a hypothesized size and type. The motivation for constructing this evidence base is so that, as its sample size increases through time, the signal-to-noise ratio increases with the sample (i.e., the precision of measurement improves as a function of sample size or, equivalently, that ‘noise,’ which is defined as sampling error, decreases).

The design’s objective is to measure the multiple factors that determine ELS, which, in turn, influence substantial real-world outcomes such as new business starts, job creation, export revenue generation, leadership roles, and productivity gains.

Once measured precisely and meaningfully enough, the ELS can be made observable and measured to compare genuine differences between the Nuffield and Kellogg alums populations’ achievements in entrepreneurial leadership against population averages, or, with an appropriately defined control group, compared with non-alums that had similar opportunities to demonstrate entrepreneurial behaviours and achievements in leadership. Thus, as the sample size increases in the future, the evidence base we are building will give increasingly precise results with increasing ‘statistical power’ to detect gains in entrepreneurial-leadership skills.

Drawing on international peer-review literature backed by numerous replication and validation studies, the multiple outcome variables summarised in this report (measuring frequencies or proportions of specific professional outcomes achieved and theory-based behaviours and attitudes exhibited) should be interpreted as a measurement of the multiple factors that define entrepreneurial leadership.

# ■ Overview of work completed - *continued*

With the current sample sizes, we can be increasingly confident that the results reported in the previous Progress Report showing significant gains in entrepreneurial-leadership capability, from baseline through programme completion among the current cohorts of Nuffield Scholars and Kellogg Programme Participants, are real and well-distinguished from sampling error. This evidence base, therefore, provides a meaningful way to assess how Rural Leaders' Nuffield and Kellogg programmes influence participants' ELS profiles which, in turn, translate into expected economic and social benefits of substantial size.

The MacKenzie Study is also undertaking collection of before-after data from individuals from recent Kellogg cohorts to obtain foundational data for longitudinal research. The analysis of the data collected thus far is currently underway.

The alums' surveys recorded the professional accomplishments of the Nuffield and Kellogg alums, such as new business starts, jobs created, and the number of senior leadership roles alums have served across different sectors of society. The alums' surveys also document participants' views on how they benefited from participating in the Programme.

# Nuffield Alums Survey

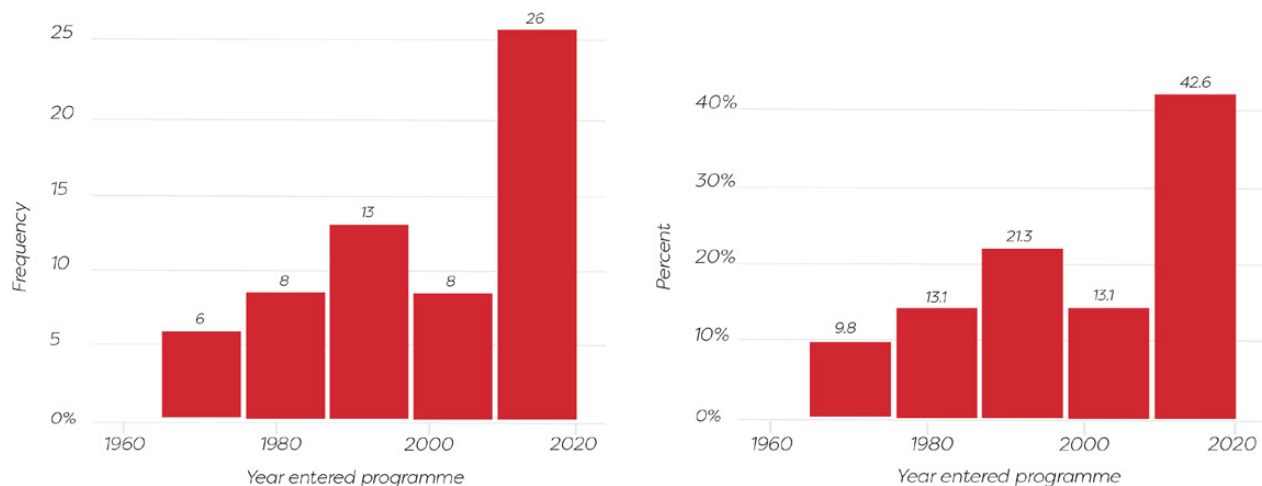


Invitations to 128 Nuffield alums were sent in June 2021. Over half participated in the survey, achieving an unusually high participation rate despite the floods in the Canterbury region, which unfortunately coincided with the timing of email survey invites.

*A point to note regarding the data representations that follow is that not all participants (N) answered all the questions asked. The result is variation in 'N' per question.*

## Key results

**Figure 1.** Year Entered Programme in 5-year bands starting in 1965, frequencies (left) and percentages (right), N = 61



**Figure 1** shows the year in which Nuffield alums entered the Programme. It indicates the alums network's broad range of ages and 'year-of-entry' cohorts are binned into 5-year bands (1965-1969, 1970-1974, 1975-1979 ... to the present).

When the Programme started, the issuance of scholarships was limited to one to two scholars per year. From 1994 to 2012, scholarships expanded up to three. Since 2013 up to five scholarships have been awarded per year.

**Table 1.** As a result of being a Nuffield Scholar, I was better able to...  
(N = 59 participants)

Variable	Frequency	Percent	Description
BA2 farm	49	83.1	Improve my own farming systems and production.
BA2 create new product	17	28.8	Create new brand or product.
BA2 start business	15	25.4	Start a business.
BA2 start organisation	18	30.5	Start another type of new organisation.
BA2 create jobs	22	37.3	Create jobs.
BA2 export	16	27.1	Export to overseas markets.
BA2 productivity	32	54.2	Improve productivity in an organisation that I worked for, (e.g., improve yields, product quality, revenue per full-time worker, reduce waste etc.)
BA2 info/network	55	93.2	Expand my social network of people with high-quality information/expertise.
BA2 earn	22	37.3	Earn more money than I would have otherwise.
BA2 wellbeing	39	66.1	Achieve greater overall wellbeing than I would have otherwise.
<b>Total # ways they benefit cited:</b>	<b>285</b>		
<b>Serve in governance or leadership role...</b>			
BA2 leadership corp. board	37	62.7	On a corporate board or for-profit industry group.
BA2 leadership industry good	42	71.2	In an industry good organisation.
BA2 leadership not 4 profit	35	59.3	In a not-for-profit or charity organisation.
BA2 leadership education	15	25.4	In an education/training organisation.
BA2 leadership other	4	6.8	In another type of organisation.
<b>Serve in government...</b>			
BA2 government appointed	26	44.1	In an appointed or invited role.
BA2 government elected	13	22	In an elected role.
<b>Serve in leadership roles in local community organisations...</b>			
BA2 community volunteer	35	59.3	As a volunteer.
BA2 community employee or consultant	9	15.3	As a paid consultant or employee.
BA2 other	2	3.4	Another thing I was better able to do as a result of being a Nuffield Scholar. (e.g., Maori investment trusts).
<b>Total # leadership roles of note:</b>	<b>218</b>		

The mean number of ways in which Nuffield Scholarship alums were able to do better than they would have otherwise (i.e., boxes selected in the table above) was 5.8 per alumnus (503 among 59 respondents), which includes 3.7 different types of leadership roles per alumnus (218 leadership roles types among 59 respondents). Note that this table does not count the number of leadership roles (shown on a later table), because many alumni serve in multiple leadership roles in a single category.

**Table 1** shows specific ways alums report having benefited from their participation in the Programme: “As a result of being a Nuffield Scholar, I was better able to...”

(**Table 1**, above), most alums (83.1%) reported that the Nuffield Programme allowed them to improve their farming systems and production. One in four alums (28.8%) were able to create a new brand or product after the Programme. Similarly, one in four alums (25.4%) started a business after the Programme.

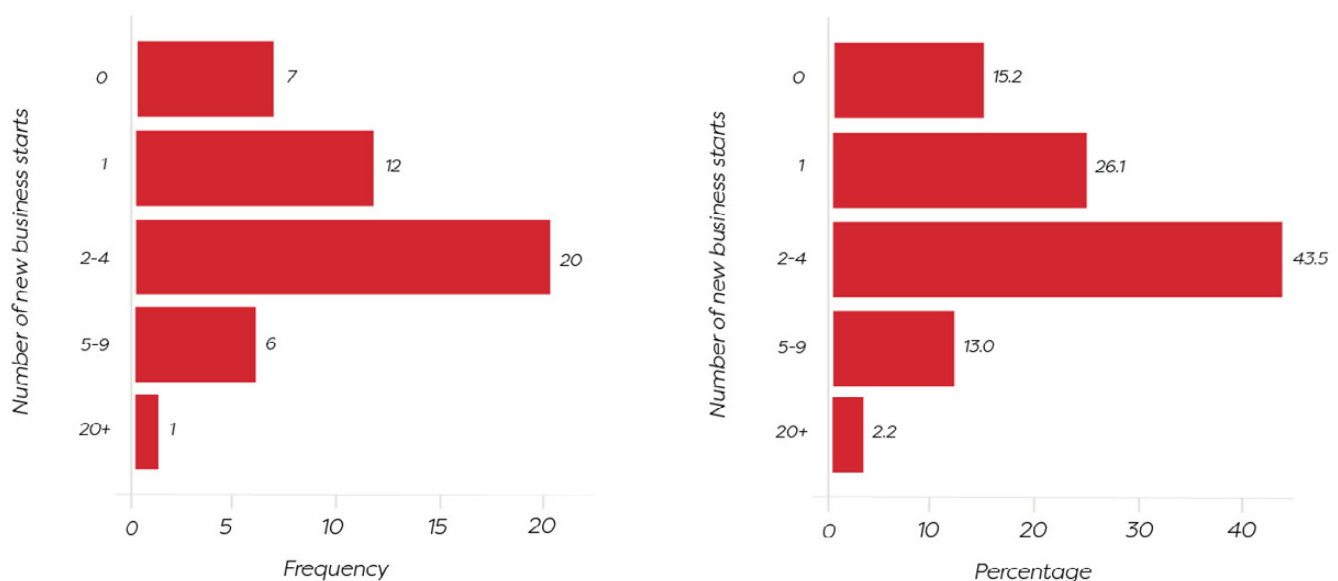


The following data is from **Table 1** on the previous page. Due to the Programme, almost one in three alums (30.5%) started another type of new organisation or created jobs (37.3%). One in four alums (27.1%) exported to overseas markets, and one-third of the alums reported being able to earn more money than they would have otherwise after the Programme. Notably, half of the alums (54.2%) improved productivity in the organisation they worked for. Almost all alums (93.2%) expanded their social network of people with high-quality information or expertise. Two-thirds of the alums (66.1%) reported achieving greater overall well-being than they would have had otherwise as a result of participating in the Nuffield Programme.

**Table 2.** How many businesses have you created?, N = 46

Number of businesses created	Frequency	Percent
0	7	15.2
1	12	26.1
2-4	20	43.5
5-9	6	13
20+	1	2.2

**Figure 2.** “How many businesses have you created?”  
Frequencies (left) and percentages (right).  
Note - The frequency of 10-19 businesses created was 0.  
(N = 46 participants)



**Table 2** and **Figure 2** (previous page) demonstrate remarkable entrepreneurial achievement as measured by count data measuring the number of new businesses created. For the Nuffield cohort, 85% of alums have started one or more businesses. In comparison, the national average in New Zealand is less than 25% (computed as the ratio of existing enterprises [approximately 0.5 million] to the working-age population [approximately 2 million]), which is an over-estimate due to multiple enterprises being owned by the same person and many inactive businesses included in the 0.5 million.<sup>9</sup> Nevertheless, nearly all alums have created significant numbers of jobs and served in a large number of leadership roles.

**Table 3.** Number of governance and senior leadership roles held

Type of leadership role	# Respondents	Total # of senior leadership roles served in sample	# of roles per alumnus	Projected total (sampled + unsampled) among current alumni network
<b>NRoles 1</b> - "Industry-specific or publicly-listed NZ enterprises (e.g., Fonterra, Zespri, NZ Merino, Synlait, CRT, Farmlands, etc.)"	51	<b>127</b>	2.5	443.3
<b>NRoles 2</b> - "International firms or industry-specific organisations."	39	<b>61</b>	1.6	278.4
<b>NRoles 3</b> - "Other national firms/ organisations."	38	<b>85</b>	2.2	398.2
<b>NRoles 4</b> - "Other regional firms/ organisations."	39	<b>100</b>	2.6	456.4
<b>NRoles 5</b> - "Social/community organisations/initiatives."	48	<b>134</b>	2.8	496.9
<b>NRoles 6</b> - "Environmental organisations/initiatives."	33	<b>77</b>	2.3	415.3
<b>Total leadership roles (excluding government).</b>		<b>584</b>	<b>14</b>	<b>2488.5</b>

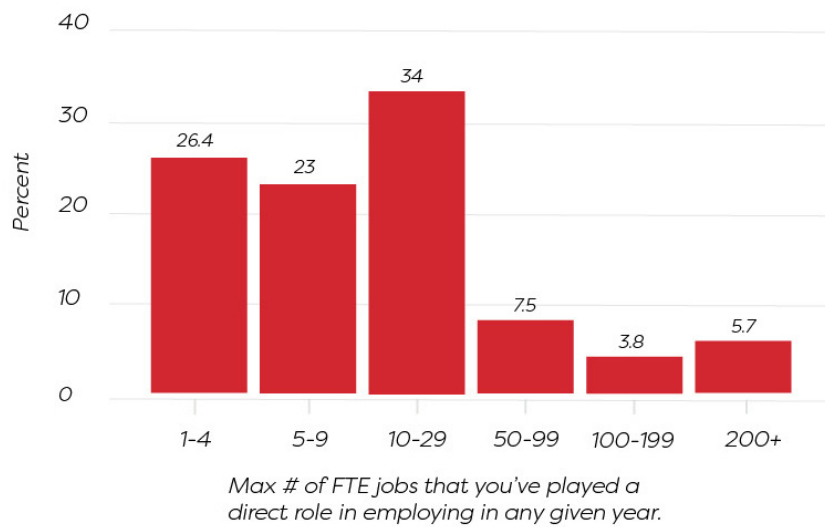
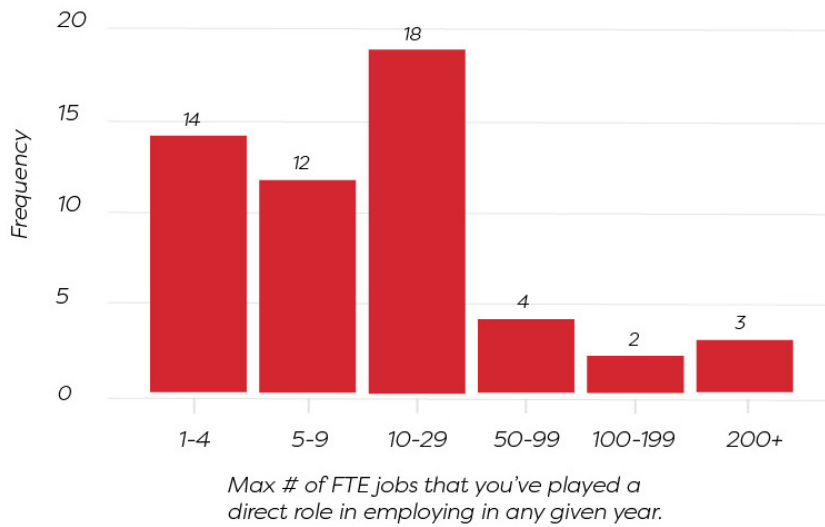
**Table 3** (above) is based on self-reported counts of leadership roles of different types, projected from the sample onto the known alums population size. The results are estimated counts of the numbers of specific senior leadership roles (listed in the summary on previous page).

The typical Nuffield alumnus has:

- started 3.6 businesses,
- played a direct role in creating 46.6 FTE jobs (**Figure 3, Table 4**, pages 11 and 12), and
- served in 14.0 senior leadership roles, which include:
  - 2.5 New Zealand corporate boards or for-profit industry groups
  - 1.6 international boards or industry groups, and
  - 5.1 social/community/environmental organisations.

<sup>9</sup>The alums population's proportion of business creators compares very favourably with even the most entrepreneurial overseas population averages. Statistics New Zealand (2022) Available at: <https://www.stats.govt.nz/information-releases/new-zealand-business-demography-statistics-at-february-2020>

**Figure 3.** Job creation measured as “the maximum number of full-time-equivalent (FTE) jobs that you’ve played a direct role in employing in any given year?”, (Top) frequency, (Bottom) percent, N = 53  
 Note - The frequency of 30-49 FTE jobs created was 0.



**Table 4** shows how the projected number of jobs created per alumnus depends on the representative value for the unbounded highest band (200 or more jobs created), ranging from the most conservative assumption (200) upwards to 800.

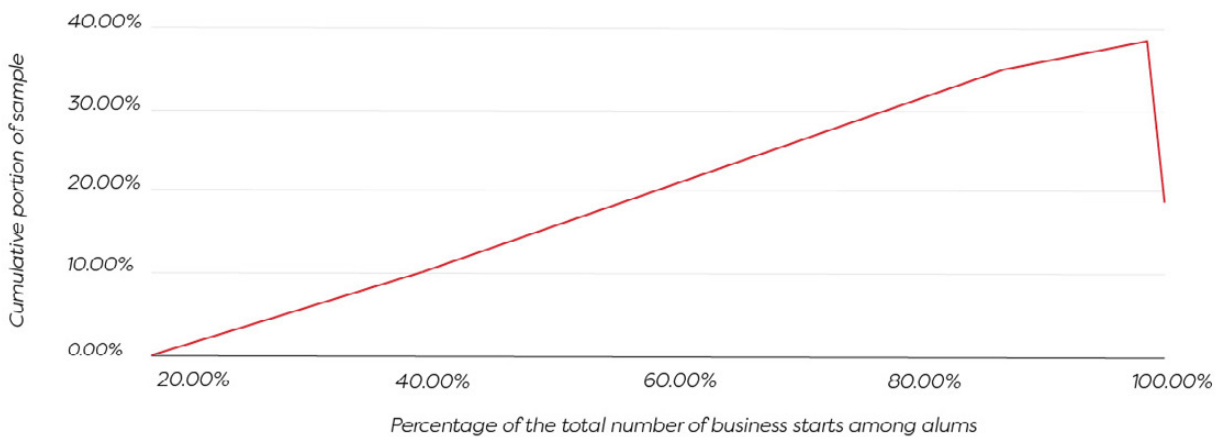
*Table 4. Low/medium/high assumptions about the top bracket in highlighted boxes below*

<b>Sample proportions</b>	<b>Low</b> "response band average assumed"	<b>Medium</b> "response band average assumed"	<b>High</b> "response band average assumed"
26.4	2.5	2.5	2.5
22.6	7	7	7
34.0	15	15	15
7.5	75	75	75
3.8	150	150	150
5.7	200	500	800
<b>Expected # of jobs created per alumnus:</b>	<b>30.1</b>	<b>46.6</b>	<b>63.7</b>

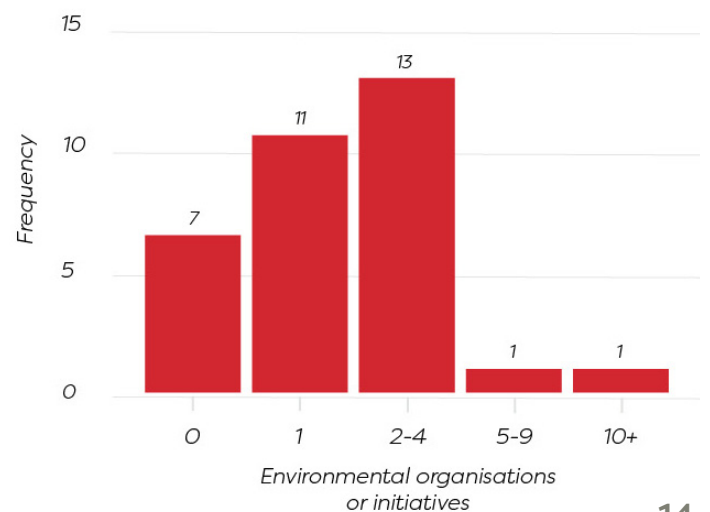
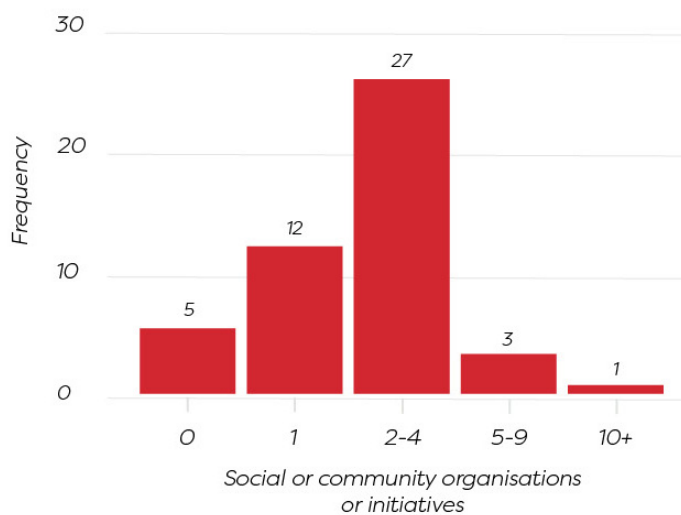
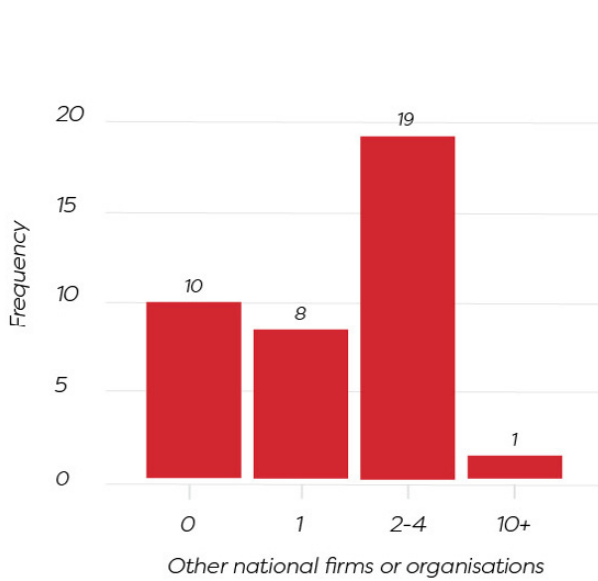
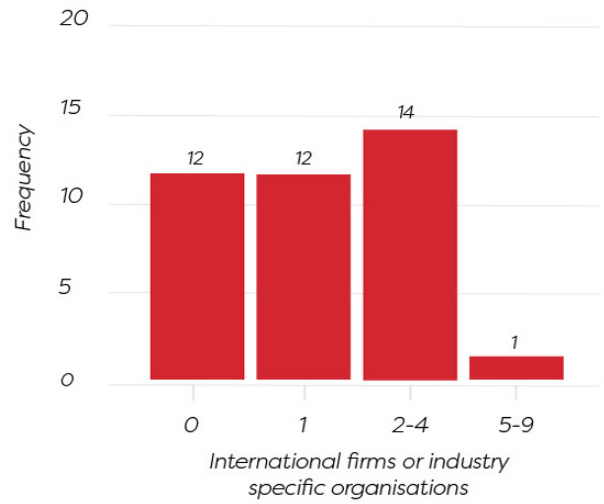
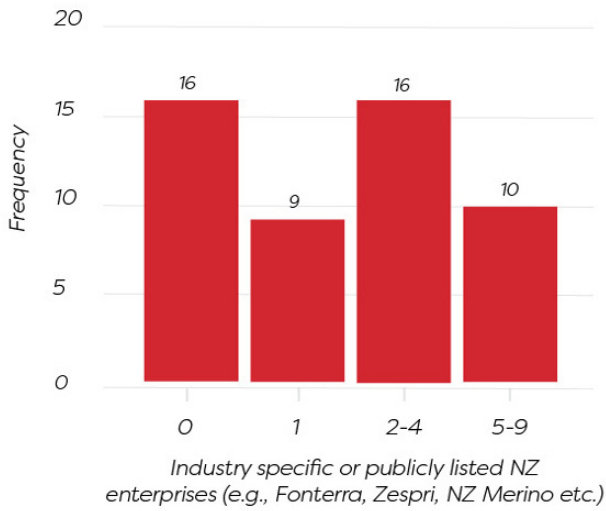
**Figure 4** below shows that the Nuffield alums sample exhibits the so-called Pareto principle, qualitatively replicating a well-documented finding from numerous academic studies of entrepreneurs and entrepreneurial ventures: rather than a bell-shaped curve in which the average is representative of the entire population.

We can infer from **Figure 4** that a relatively small proportion within this elite alums' population generates an out sized proportion of new businesses. For example, approximately 55% of the businesses started were generated by the top 15% of alums who generated between 5 to 20 and over businesses.

**Figure 4.** Percentage (y-axis) of the total # of business starts among all alums in the sample generated by different proportions of the alum sample (x-axis)



**Figure 5.** “How many governance and senior leadership roles have you had in....?” Note - The frequency of “Other national firms/ organisations” for 5-9 category, was 0.

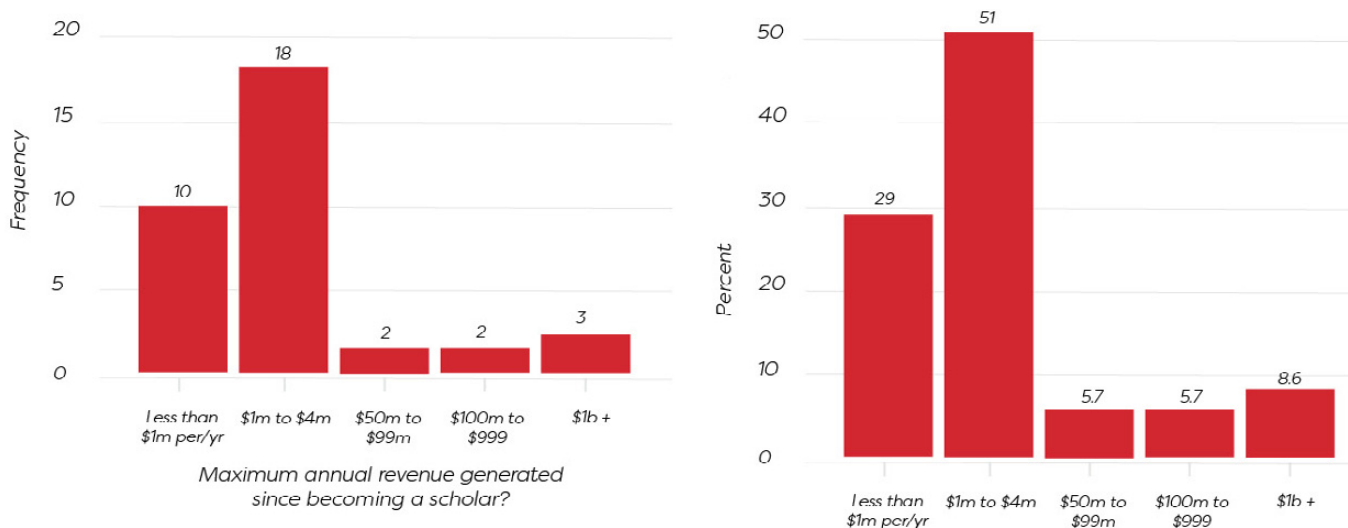


Approximately two in five alums (40.6%) have served in government in an appointed or elected leadership role (**Figure 5**, previous page).

At the time of data collection, New Zealand had produced 178 Nuffield Scholars since 1950<sup>10</sup>; extrapolating the results from the alums survey across the total alums network of 178 members allows the total number of leadership roles that Nuffield Scholars have held over time to be estimated. The estimated number of leadership roles is 2489, which includes:

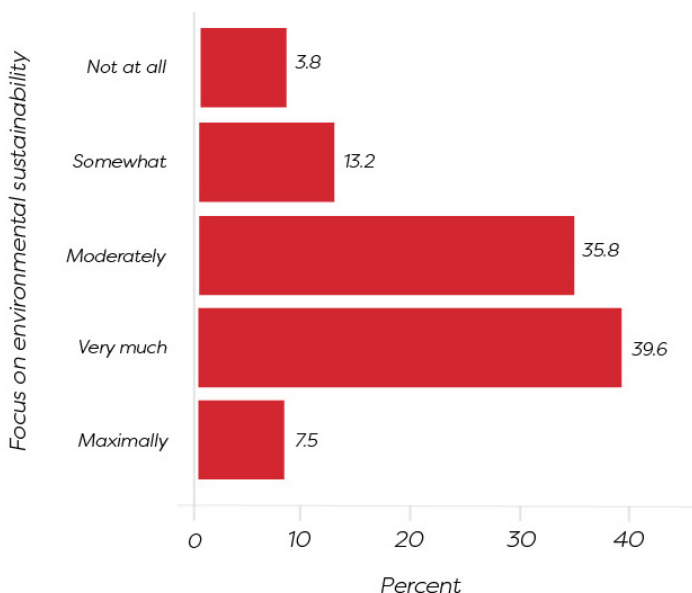
- 443 board roles in industry-specific or publicly-listed New Zealand enterprises (e.g., Fonterra, Zespri, NZ Merino, Synlait, CRT, Farmlands, etc.
- 278 international firms or industry groups
- 398 other national firms/organisations, including ‘industry-good’ group
- 456 regional/local firms/organisations
- 497 social/community organisations/initiatives, and
- 415 environmental organisations/initiatives.

**Figure 6.** Maximum Revenue Generated: “Approximately what was the maximum annual revenue (or other gross value flow) in today’s dollar equivalents that your work has generated in any year since you became a scholar?” (Left) Frequency, (Right) Percent, N = 35. Note - The frequency for category 5m to 49m, was 0.



<sup>10</sup>Between 1950 and 2023 185 Nuffield Scholarships have been awarded.

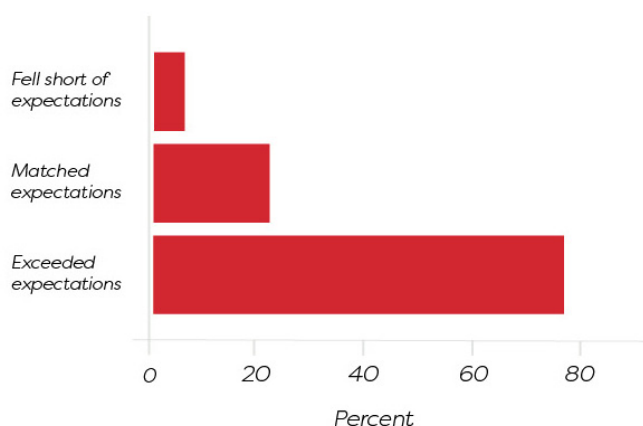
**Figure 7.** Focus on Environment Sustainability: “To what extent has your work focused on improving environmental sustainability in New Zealand’s agricultural sector?”, N = 53



Half of the alums reported having generated annual revenue between \$1 to \$4 million in a given year (**Figure 6**, previous page). In comparison, national firms with 1-19 employees generated an average revenue of \$846,574 per annum<sup>11</sup>. More than 96% said their work focused on improving environmental sustainability (**Figure 7**, above).

**Figure 8.** Expectation of Nuffield Scholarship Programme, N = 53

*Expectation of Scholarship vs. what actually happened*



When asked about how alums felt about the Nuffield Scholarship Programme, nearly all alums reported that the Nuffield Programme had met or exceeded their expectations (**Figure 8**, above).

<sup>11</sup>Ministry of Business, Innovation & Employment. (2016) Annual Enterprise Survey. Available at: <https://www.mbie.govt.nz/assets/30e852cf56/small-business-factsheet-2017.pdf> (Accessed: 20 Oct, 2022)



## Nuffield Alums' Characteristics

The majority of the alums identified as New Zealand European (72.1%) and as male (see **Table 5** and **Figure 9**). 23.5% of alums identified as coming from the Canterbury region (see **Table 6**). 27% of alums indicated year born as falling between the late 1970's and late 1980's, (see **Figure 10**, page 19).

**Figure 11** demonstrates that the proportion of female alums joining in recent years has increased as the Programme continues running. Only male scholars were accepted during the Nuffield Programme's early years.

**Table 5.** Ethnic Group(s): "Which ethnic group do you belong to? (Select all that apply to you)."; N = 54

Ethnicity	Frequency	Percent
New Zealand European	49	72.1
Maori	5	7.4
Samoan	0	0.0
Cook Islands	0	0.0
Tongan	0	0.0
Niuean	0	0.0
Chinese	0	0.0
Indian	1	1.5
Other	2	2.9

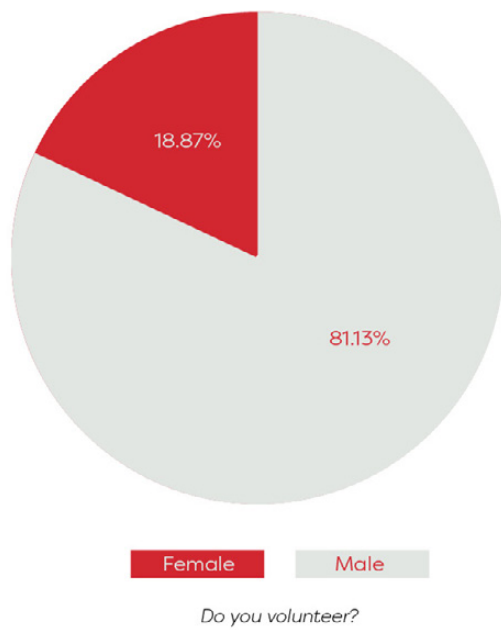
\*Alums can select more than one ethnic group they identify with.

**Table 6.** Region Alums are from: “Which region do you most strongly identify with as “where you’re (originally) from?”; N = 56

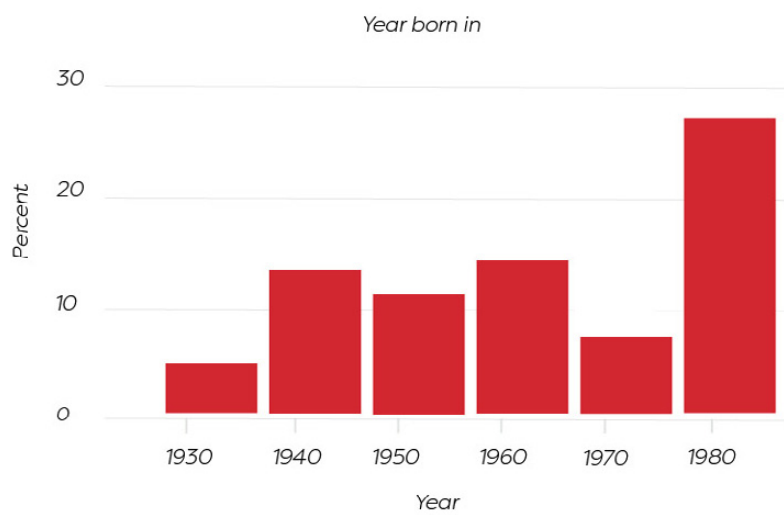
Region	Frequency	Percent
Northland	3	5.4
Manawatū-Whanganui	5	8.9
Auckland	0	0.0
Waikato	7	12.5
Bay of Plenty	8	14.3
Gisborne	0	0.0
Taranaki	4	7.1
Wellington	1	1.8
Tasman	4	7.1
Nelson	0	0.0
Marlborough	2	3.6
West Coast	1	1.8
Canterbury	13	23.2
Otago	2	3.6
Southland	2	3.6
Hawkes Bay	1	1.8
Overseas	3	5.4
<b>Total</b>	<b>56</b>	<b>100</b>

\*Alums can select more than one region which they identify from.

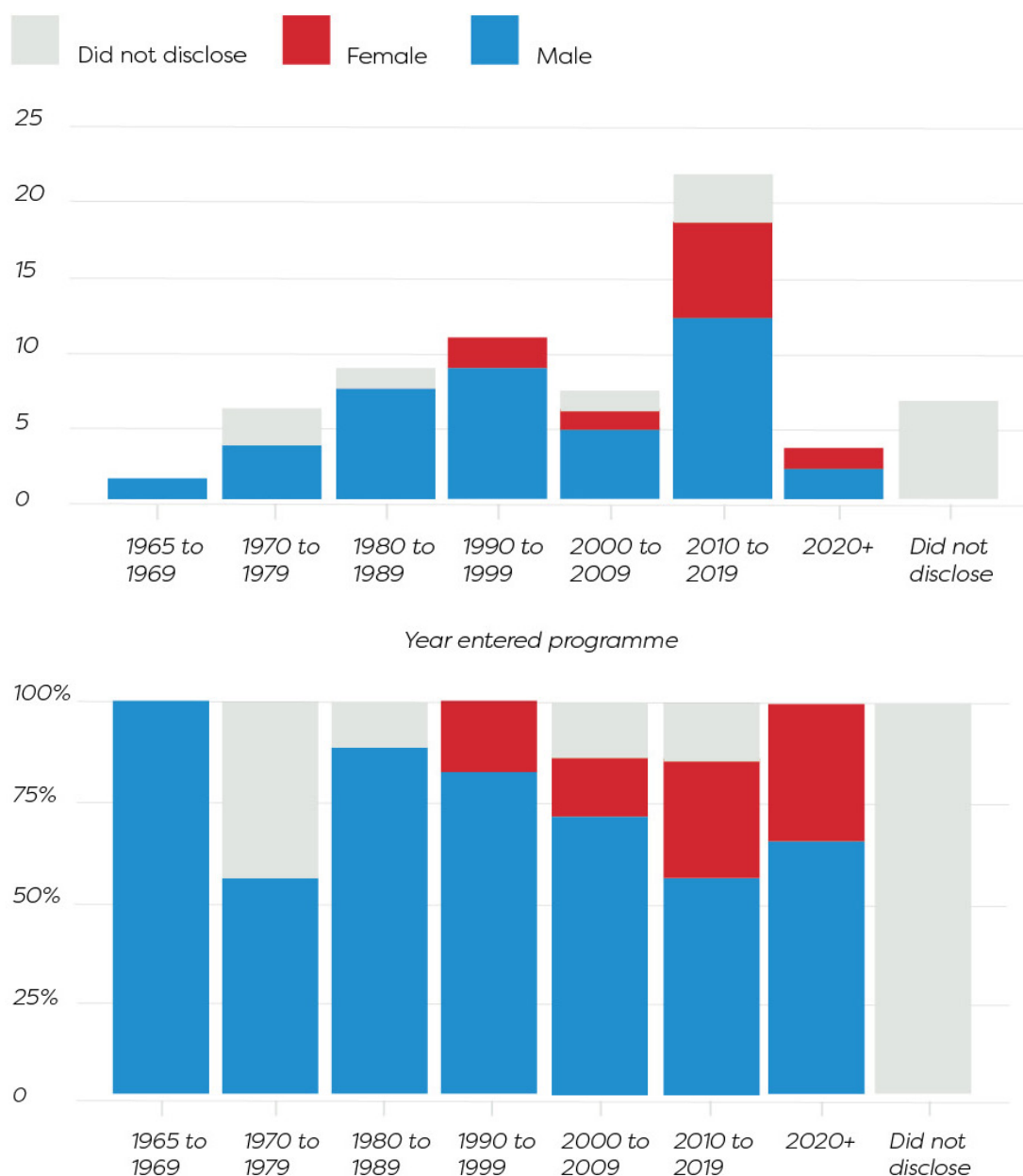
**Figure 9.** Gender, N = 53



**Figure 10.** Year Born, N = 61

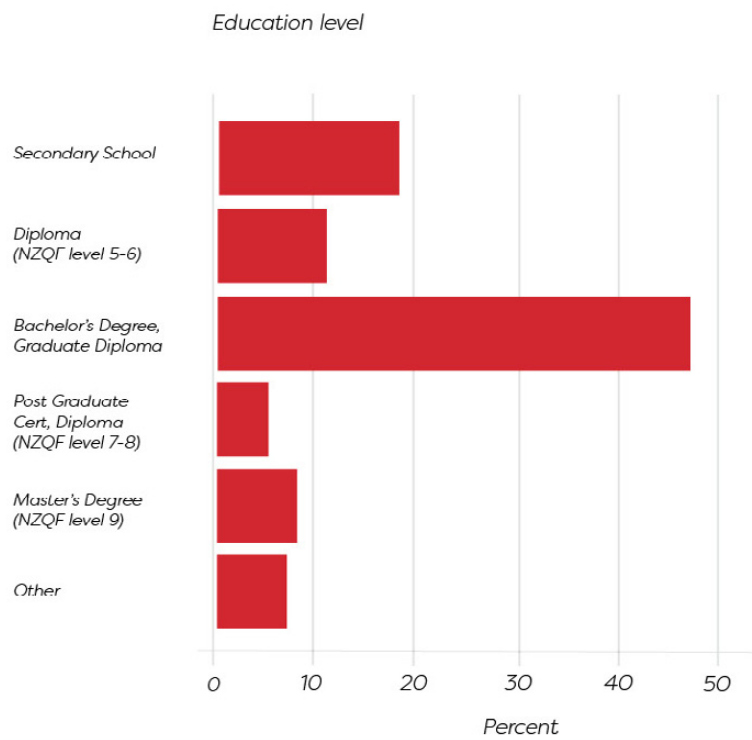


**Figure 11.** Gender of Alums as a function of when they entered the Programme, (Top) frequency, (Bottom) percent.  
 Note - There were two questions asked 'gender' and 'year entered programme', some participants did not disclose one of these.

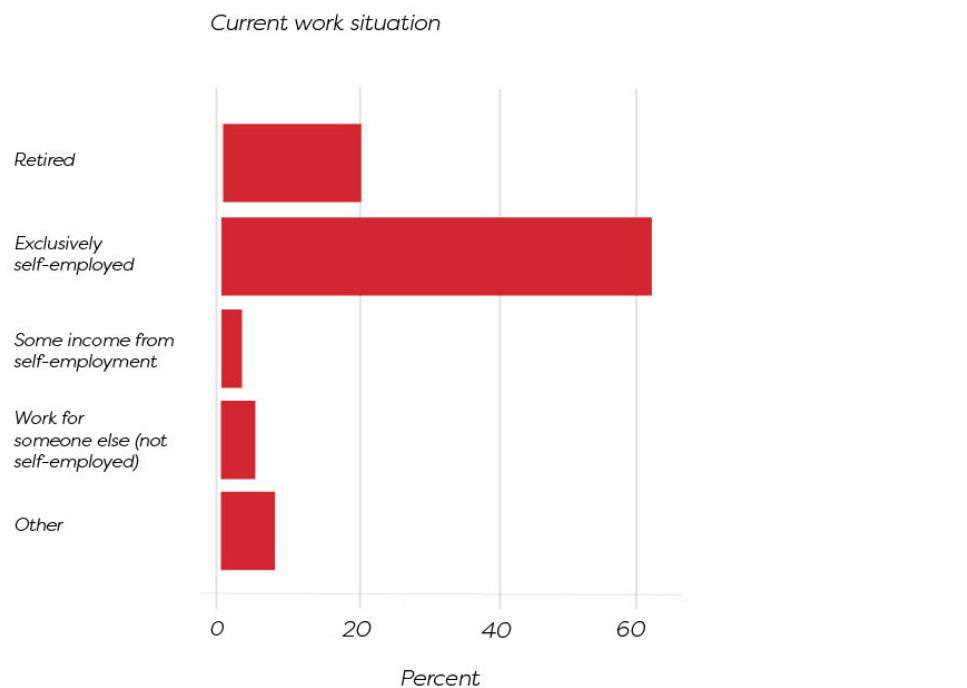


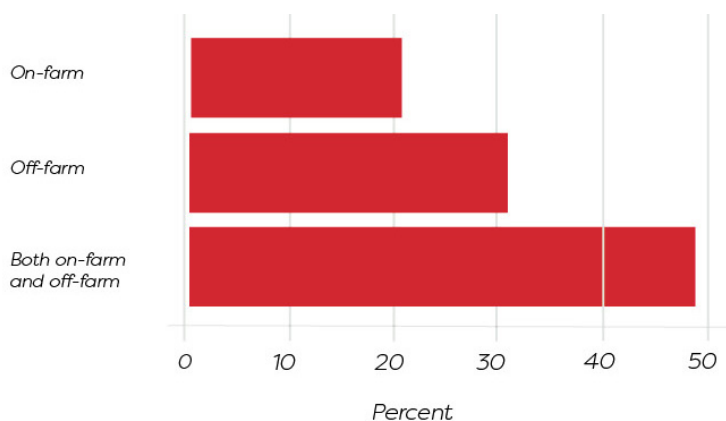
47.2% of Nuffield alums hold a Bachelor’s Degree or a Graduate Diploma, and almost two-thirds (62.3%) reported being exclusively self-employed (**Figure 12 and 13**). Half (49.0%) reported having a professional role on and off farms (**Figure 14**), and 41.5% of alums reported working in multiple industries such as Beef & Sheep, Horticulture, Dairy, and Forestry (**Figure 15**). Additionally, a majority (84.6%) of alums reported being a volunteer (**Figure 16**). However, it is essential to note that volunteering was a desirable criterion when deciding on the issuance of the Nuffield Scholarship.

**Figure 12.** Qualification: “What is your highest academic qualification?”, N = 53



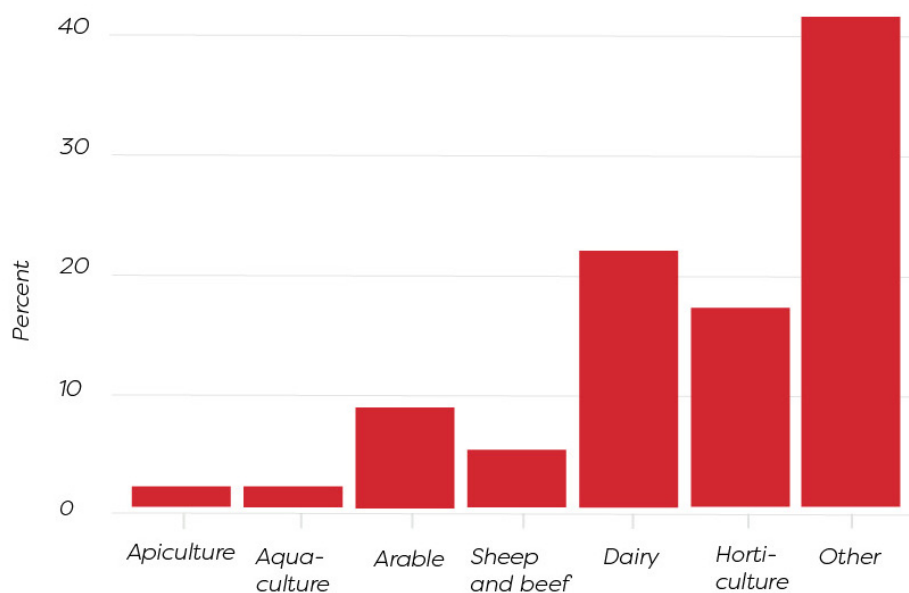
**Figure 13.** Current Work Situation: “How would you describe your current work situation?” N = 53



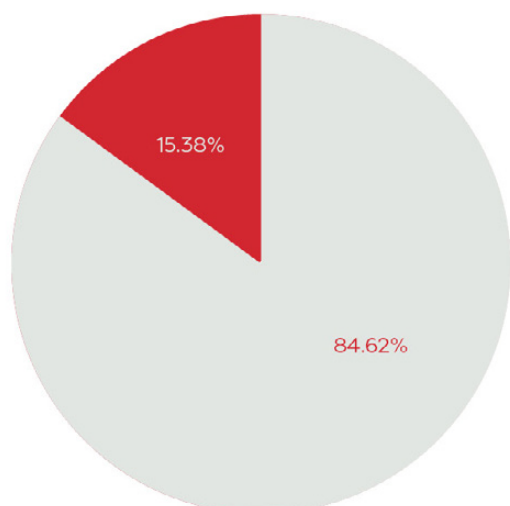


**Figure 14.** Whether Alums work On or Off-farms: “Regarding your current professional roles, would you describe your primary roles as...”. N = 49

**Figure 15** summarises which industry in New Zealand’s Food and Fibre sector the alums were professionally active in. Although many alums’ careers were active across multiple industries, this question was a forced-choice item asking about the alum’s last professional role or industry they were ‘predominantly’ associated with.



**Figure 15.** Applicable Industry Sector: “In which of the following industries do you carry out your primary professional roles? (select all that apply)”, N = 54



**Figure 16.** Volunteer: “Do you volunteer?”, N = 52

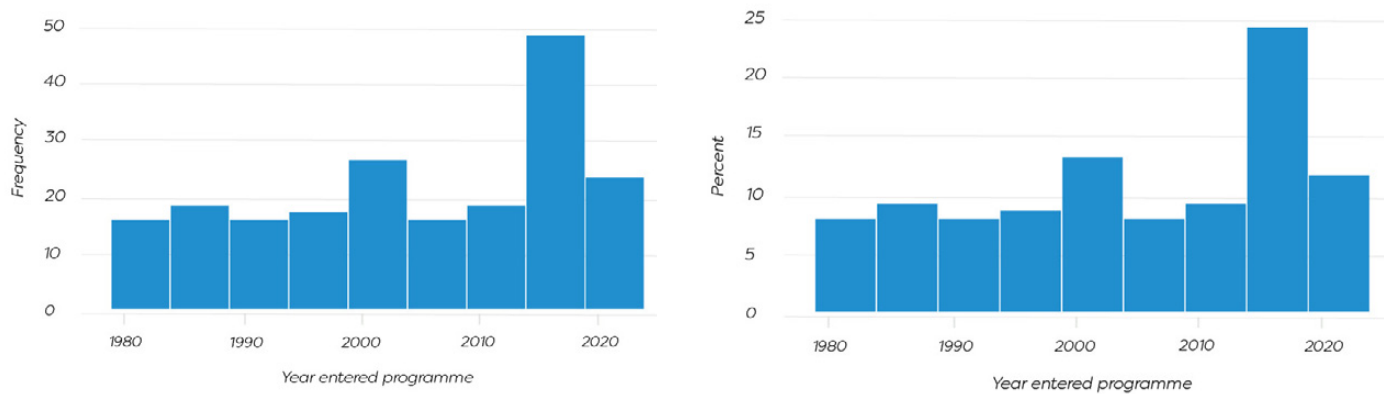
No Yes

# Kellogg Alums Survey

Invitations to 799 alums were sent in November 2021, resulting in 234 survey participants.

## Key results

**Figure 17.** Year Entered Programme in 5-year bands starting in 1965, frequencies (left) and percentages (right), N = 202



**Figure 17** shows the year in which Kellogg alums entered the Programme. It indicates the alums network’s broad range of ages and ‘year-of-entry’ cohorts are binned into 5-year bands from (1975-1979, 1980-1984, 1985-1989 ... to the present). Between 1979–2014 the Kellogg Programme was run once a year (with exceptions 1981, 1987, 1991, 1993, 1997 and 1998, where no programme ran).

Since 2015 the Programme has been run twice a year, except for 2021 and 2022, when it was run three times a year. Consequently, programme capacity has doubled since 2015.

**Table 7.** As a result of being a Kellogg Scholar, I was better able to...  
(N = 234 participants)

BA2 farm	62	26.5	Improve my own farming systems and production.
BA2 create new product	23	9.8	Create new brand or product.
BA2 start business	28	12	Start a business.
BA2 start organisation	14	6	Start another type of new organisation.
BA2 create jobs	22	9.4	Create jobs.
BA2 export	13	5.6	Export to overseas markets.
BA2 productivity	79	33.8	Improve productivity in an organisation that I worked for. (e.g. improve yields, product quality, revenue per full-time worker, reduce waste etc.)
BA2 info/network	168	71.8	Expand my social network of people with high-quality information/expertise.
BA2 earn	44	18.8	Earn more money than I would have otherwise.
BA2 wellbeing	107	45.7	Achieve greater overall wellbeing than I would have otherwise
<b>Total # ways they benefit cited:</b>	<b>560</b>		
<b>Serve in governance or leadership role...</b>			
BA2 leadership corp. board	88	37.6	On a corporate board or for-profit industry group.
BA2 leadership industry good	102	43.6	In an industry good organisation.
BA2 leadership not 4 profit	104	44.4	In a not-for-profit or charity organisation.
BA2 leadership education	59	25.2	In an education/training organisation.
BA2 leadership other	10	7.7	In another type of organisation.
<b>Serve in government...</b>			
BA2 government appointed	43	18.4	In an appointed or invited role.
BA2 government elected	35	15	In an elected role.
<b>Serve in leadership roles in local community organisations...</b>			
BA2 community volunteer	125	53.4	As a volunteer.
BA2 community employee or consultant	35	15	As a paid consultant or employee.
BA2 other	2	0.9	Another thing I was better able to do as a result of being a Nuffield Scholar. (e.g., Maori investment trusts).
<b>Total # leadership roles of note:</b>	<b>611</b>		

The mean number of ways in which Kellogg Scholarship alums were able to do better than they would have otherwise (i.e., boxes selected in the table above) was 2.4 per alumnus (560 among 234 respondents), which includes 2.6 different types of leadership roles per alumnus (611 leadership roles types among 234 respondents). Note that this table does not count the number of leadership roles (shown on a later table), because many alumni serve in multiple leadership roles in a single category.

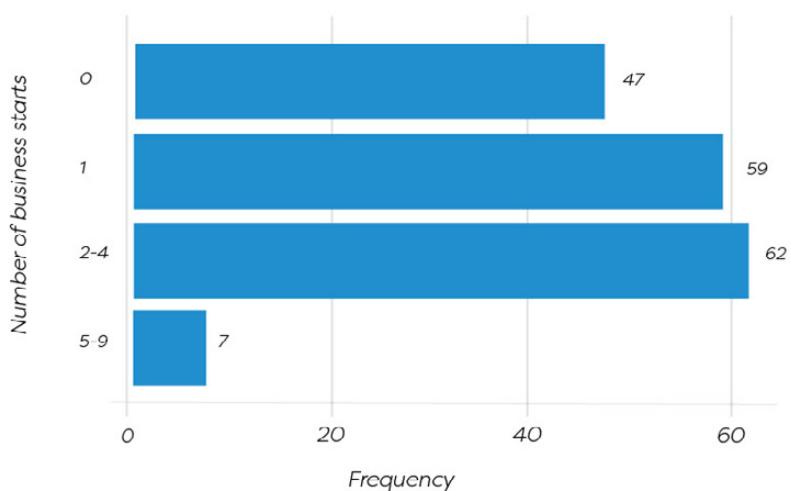
**Table 7** shows multiple ways alums report having benefited from their participation in the Programme: “As a result of being a Kellogg Scholar, I was better able to...”. Close to half of the alums (45.7%) reported achieving greater overall well-being than they would have otherwise after participating in the Kellogg Programme.

One in ten alums (9.8%) was able to create a new brand or product after the Programme. Similarly, one in ten alums (12.0%) started a business after the Programme. One in sixteen alums (6.0%) reported that the Kellogg Programme allowed them to start another type of new organisation.

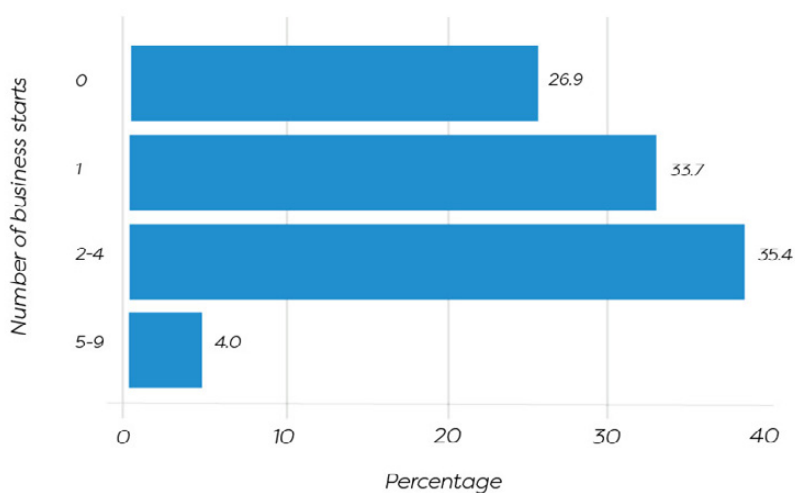


One in ten (9.4%) alums created jobs as a result of the Programme, one in eighteen alums (5.6%) exported to overseas markets, and one in three (33.8%) improved their farming systems and production.

While one-fifth (18.8%) of the alums reported being able to earn more money than they would have otherwise after the Programme, we noted that more than two-thirds (71.8%) expanded their social network of people with high-quality information or expertise after participating in the Kellogg Programme.



**Figure 18.** “How many businesses have you created?”, frequencies (top) and percentages (bottom), N = 175  
 Note - The frequency for categories 5 to 9, and 10 to 19, was 0.



**Table 8** (next page) and **Figure 18** (above) demonstrate remarkable entrepreneurial achievement as measured by count data measuring the number of new businesses created. For the Kellogg cohort, 73.0% of alums have started one or more businesses. In addition, nearly all alums have played a direct role in creating significant numbers of jobs and have served in multiple leadership roles.

**Table 8.** “How many businesses have you created?” N = 175

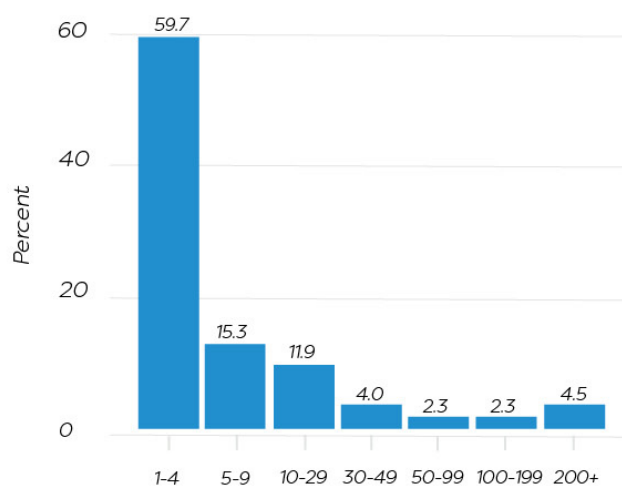
Number of businesses created	Frequency	Percent
0	47	26.9
1	59	33.7
2-4	62	35.4
5-9	7	4

**Table 9.** “Number of governance and senior leadership roles held.”

Type of leadership role	# Respondents	Total # of senior leadership roles served in sample	# Roles per alumnus	Projected total (sampled + unsampled) among current alumni network
<b>NRoles 1</b> - “Industry-specific or publicly-listed NZ enterprises (e.g., Fonterra, Zespri, NZ Merino, Synlait, CRT, Farmlands, etc.)”	157	287	1.8	1645.2
<b>NRoles 2</b> - “International firms or industry-specific organisations.”	39	95	2.4	2192.3
<b>NRoles 3</b> - “Other national firms/ organisations.”	38	194	5.1	4594.7
<b>NRoles 4</b> - “Other regional firms/ organisations.”	39	176	4.5	4061.5
<b>NRoles 5</b> - “Social/community organisations/initiatives.”	48	486	10.1	9112.5
<b>NRoles 6</b> - “Environmental organisations/initiatives.”	33	131	4	3572.7
<b>Total leadership roles (excluding government):</b>		<b>1369</b>	<b>28</b>	<b>25,179</b>

**Table 9** is based on self-reported counts of leadership roles of different types, projected from the sample onto the known alums’ population size. The results are estimated counts of the numbers of specific senior leadership roles (listed in the summary above).

**Figure 19.** Job creation measured as “the maximum number of full-time-equivalent (FTE) jobs that you’ve played a direct role in employing in any given year?”, (Right) percent, N = 176

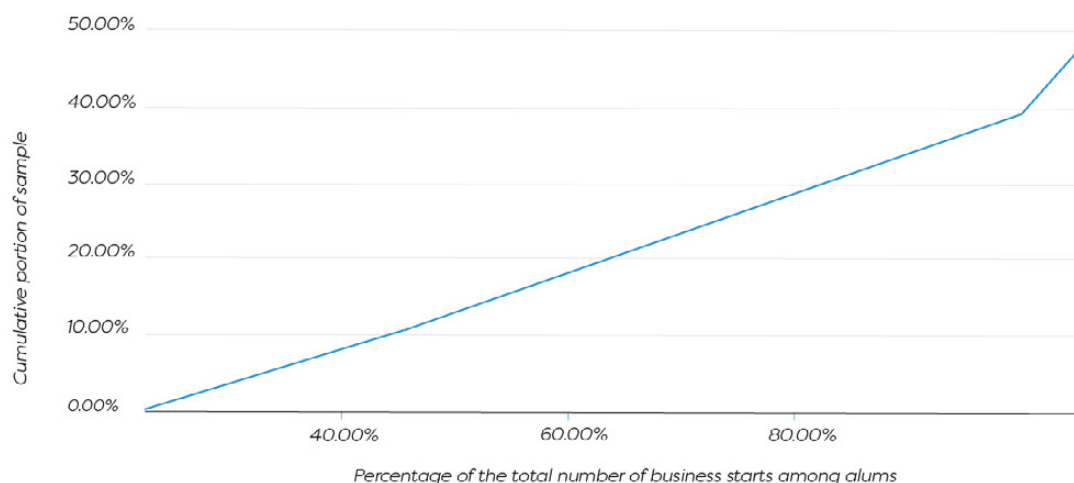


Max # of FTE jobs that you have played a direct role in employing in any given year

On average, the Kellogg alums have:

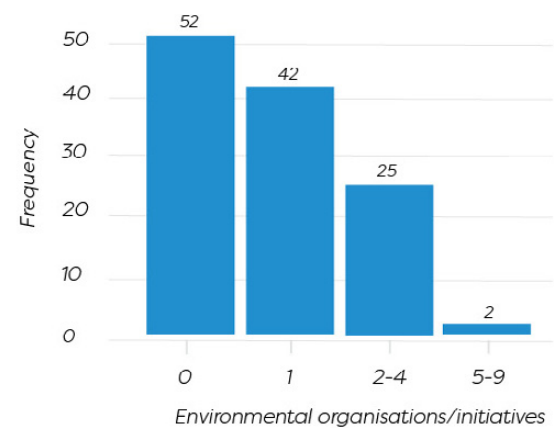
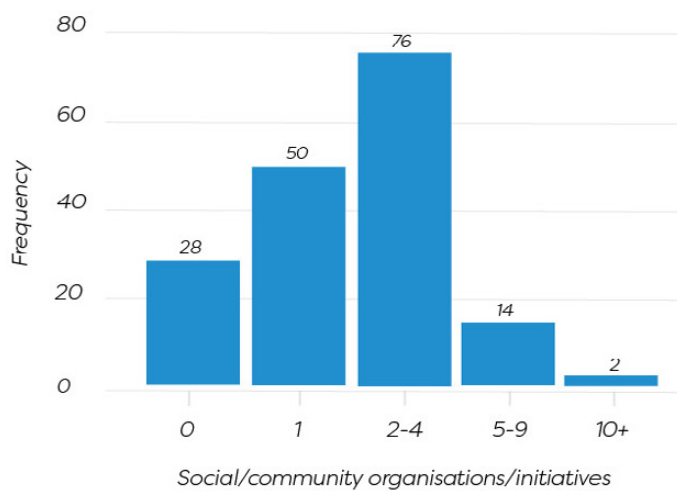
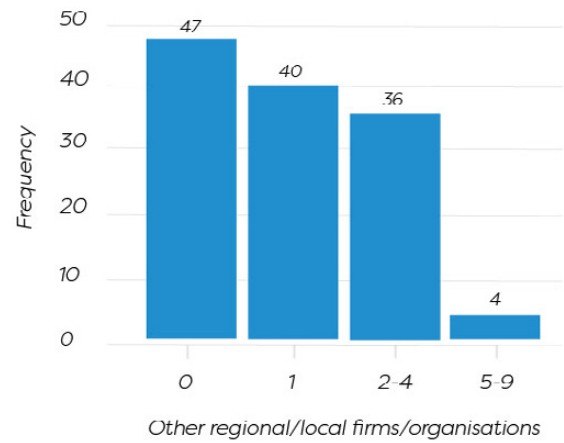
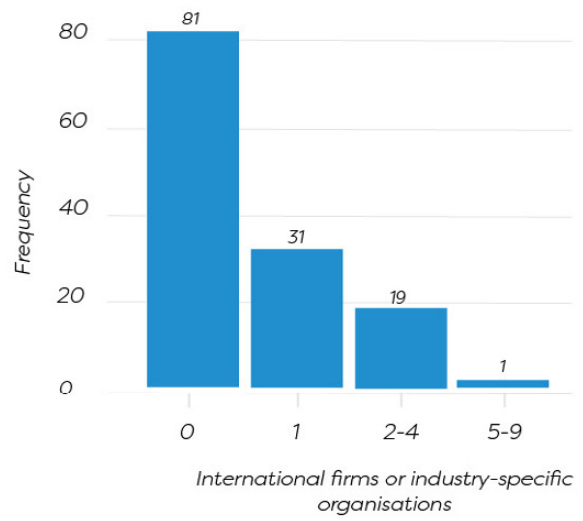
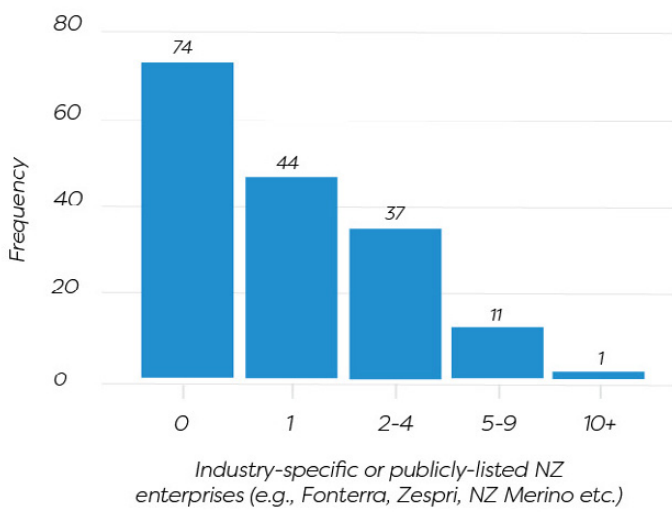
- started 1.7 businesses
- played a direct role in creating 35.0 FTE jobs (**Figure 19**, previous page).
- served in 14.0 senior leadership roles, which include, but are not limited to:
  - 1.8 New Zealand corporate boards or for-profit industry groups
  - 2.4 international boards or industry groups, and
  - 5.1 social/community/environmental organisations.

**Figure 20.** Percentage (y-axis) of the total # of business starts among all alums in the sample generated by different proportions of the alum sample (x-axis).



**Figure 20**, similar to **Figure 4**, also shows that a relatively small proportion within this elite alums' population generates an out sized proportion of new businesses. For example, approximately 43% of the businesses were created by the top 4% of the alums who created 20 or more businesses.

**Figure 21.** “How many governance and senior leadership roles have you had in....?”

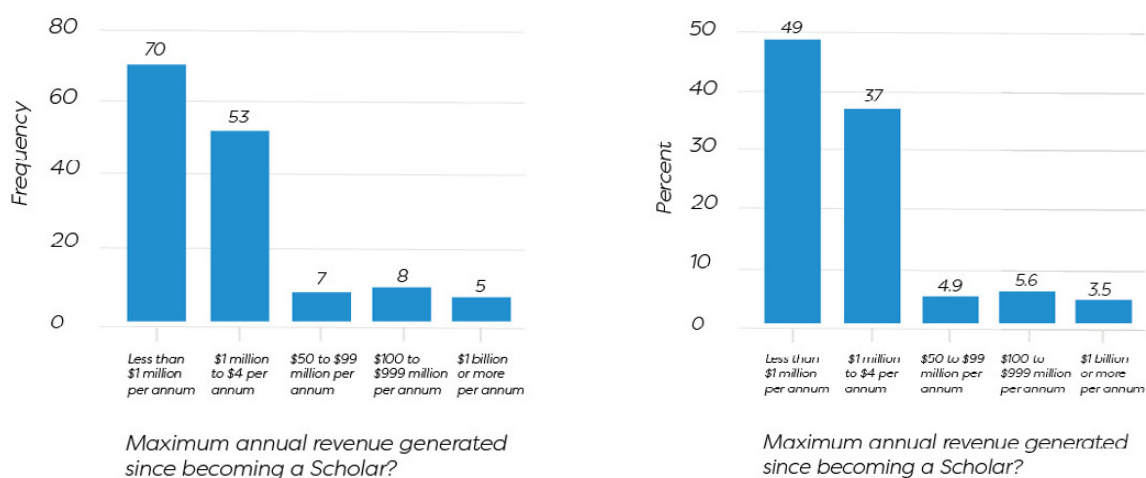


Approximately one in four alums (26.96%) have served in government in an appointed or elected leadership role (**Figure 21**, previous page).

At the time of the survey, there were 960 alums<sup>12</sup>, and the estimated number of leadership roles held is approximately 26,858, which includes:

- 1,755 board roles in industry-specific or publicly-listed New Zealand enterprises (e.g., Fonterra, Zespri, NZ Merino, Synlait, CRT, Farmlands, etc.)
- 2,339 international firms or industry groups
- 4,901 other national firms/organisations, including industrial goods groups
- 4,332 regional/local firms/organisations
- 9,720 social/community organisations/initiatives, and
- 3,811 environmental organisations/initiatives.

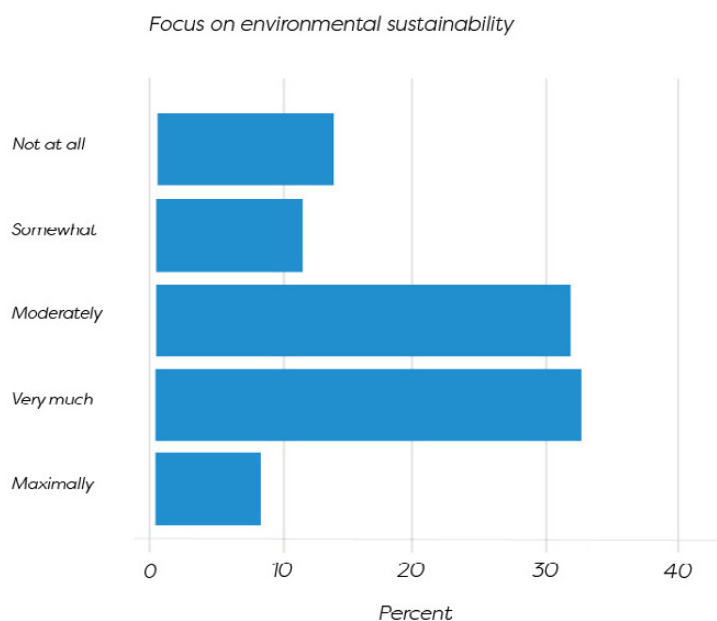
**Figure 22.** Maximum Revenue Generated: “Approximately what was the maximum annual revenue (or other gross value flow) in today’s dollar equivalents that your work has generated in any year since you became a scholar?” (Left) Frequency, (Right) Percent, N = 143. Note - The frequency for category 5m to 49m, was 0.



Most Kellogg alums reported having generated annual revenue below \$1 million in a given year (49.0%) (**Figure 22**). Almost half of the Kellogg alums said their work had focused on improving environmental sustainability (33.5% reported ‘very much’ while 7.7% reported ‘maximally’; a total of 41.2%) (**Figure 23**).

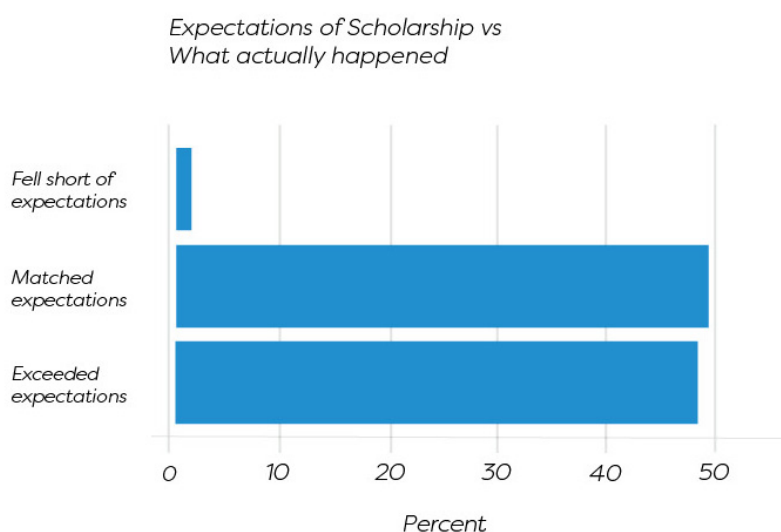
<sup>12</sup>However, at the time of reporting, there are approximately 1030 New Zealand Kellogg scholars who have completed the Programme to become Kellogg alums (as defined in this study).

**Figure 23.** Focus on Environment Sustainability: “To what extent has your work focused on improving environmental sustainability in NZ’s agricultural sector?”; N = 194



When asked how alums felt about the Kellogg Scholarship Programme, 98.0% of the alums reported that the Kellogg Programme had met (49.5%) or exceeded their expectations (48.5%), (**Figure 24**, page 31).

**Figure 24.** Expectation of Kellogg Scholarship Programme, N = 198



The majority of the alums who participated in the survey identified as New Zealand European (77.4%), and a majority identified as male (**Table 10** and **Figure 25**). 21.8% of alums identified as coming from the Canterbury region (**Table 11**, page 33). Additionally, **Figure 26** (page 32) puts late the 1950's, early 1960's as a frequently indicated 'year born' of survey participants. **Figure 27** demonstrates that the proportion of female alums joining in recent years has increased as the Programme continues running. Of note, since 2010, there has been a 26% increase in female attendance on the Kellogg Programme, resulting in an approximately equal distribution of males and females (58% females between 2020-2022).

## Kellogg Alums' Characteristics

**Table 10.** "Which ethnic group do you belong to? (Select all that apply to you)."; N = 234

Ethnicity	Frequency	Percent
New Zealand European	181	77.4
Māori	13	5.6
Samoan	0	0
Cook Islands	0	0
Tongan	0	0
Niuean	0	0
Chinese	0	0
Indian	1	0.4
Other	14	6

\*Alums can select more than one ethnic group they identify with.

Figure 25. Gender, N = 193

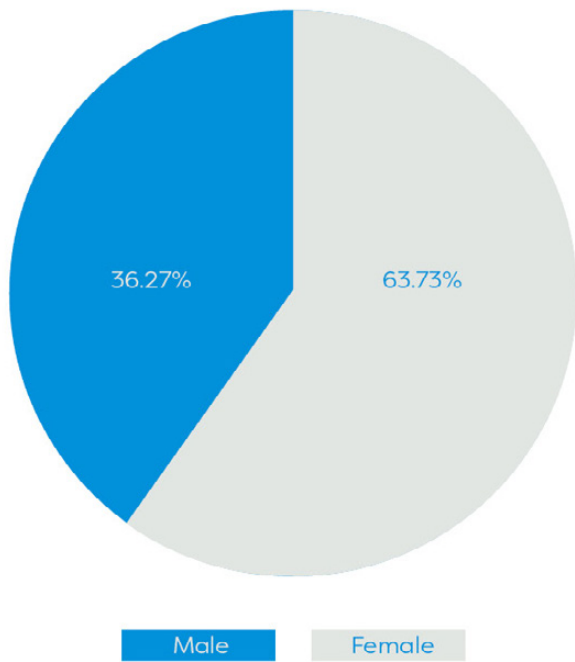
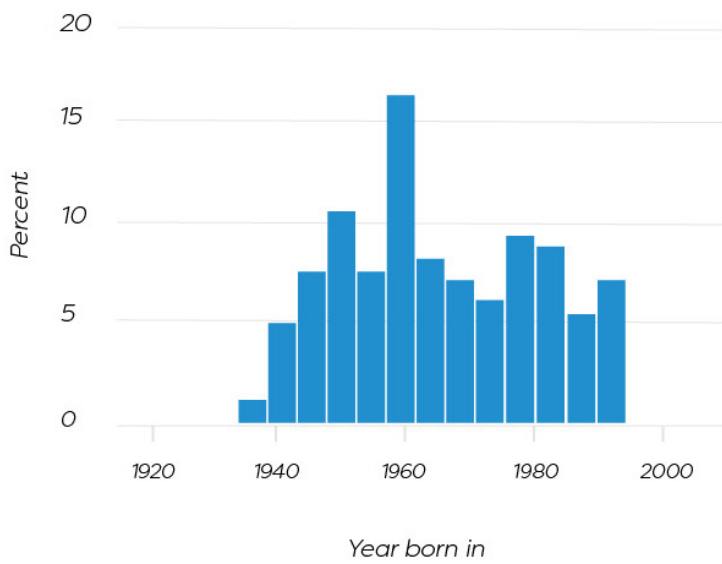


Figure 26. Year Born, N = 186



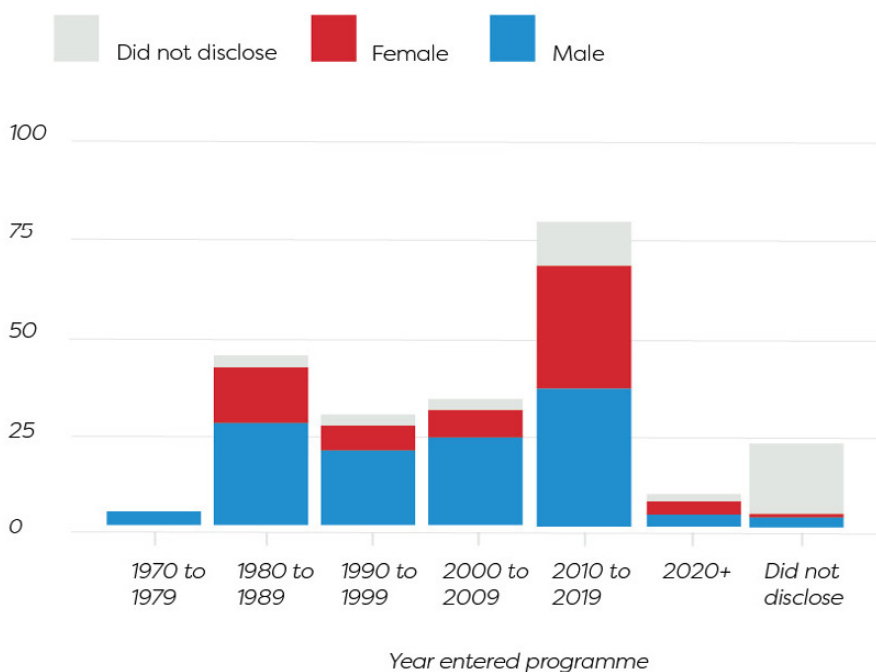


**Table 11.** Region Alums are from: “Which region do you most strongly identify with as “where you’re (originally) from”?”; N = 225

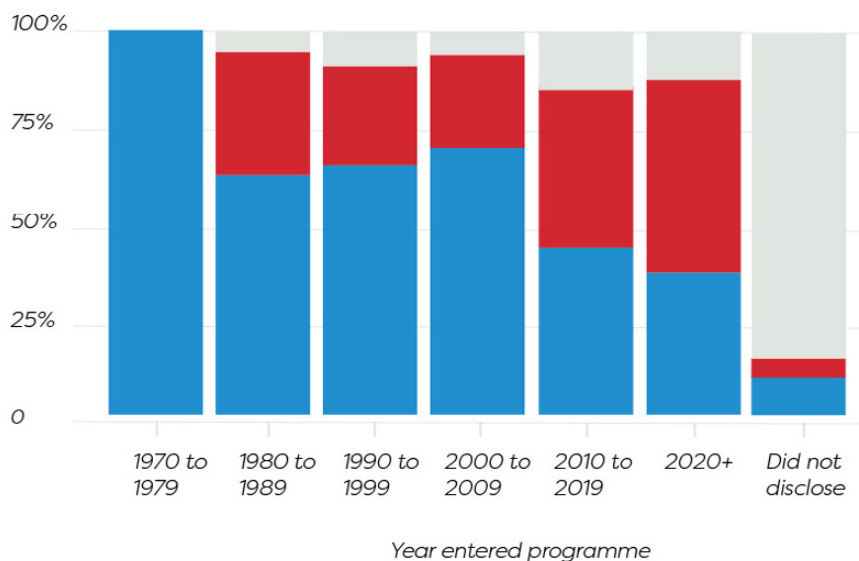
Ethnicity	Frequency	Percent
Northland	13	5.8
Manawatu-Wanganui	17	7.6
Auckland	5	2.2
Waikato	28	12.4
Bay of Plenty	33	14.7
Gisborne	1	0.4
Iaranaki	5	2.2
Wellington	8	3.6
Tasman	5	2.2
Nelson	1	0.4
Marlborough	7	3.1
West Coast	4	1.8
Canterbury	49	21.8
Otago	15	6.7
Southland	12	5.3
Hawkes Bay	14	6.2
Overscas	8	3.6
<b>Total</b>	<b>225</b>	<b>100</b>

\*Alums can select more than one region they identify with.

**Figure 27.** Gender of alums as a function of when they entered the Programme, (Top) count, (Next page) percent. Note - There were two questions asked 'gender' and 'year entered programme', some respondents did not disclose one of these.

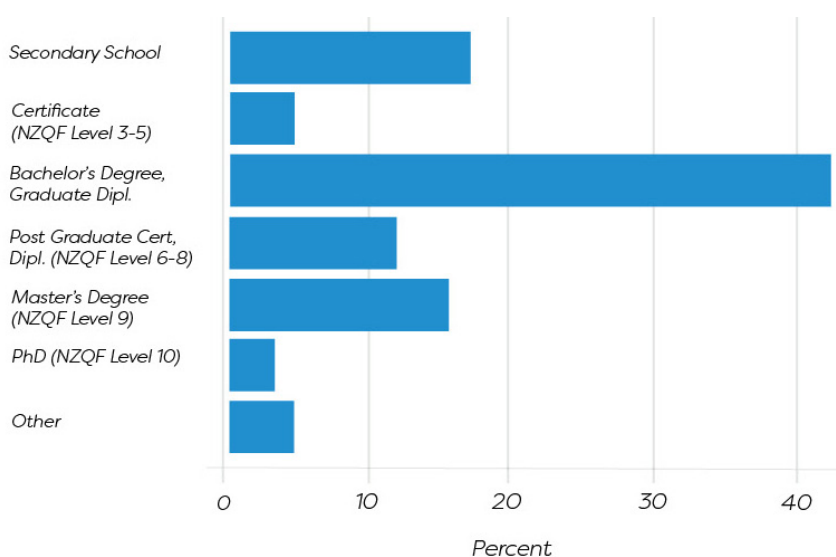


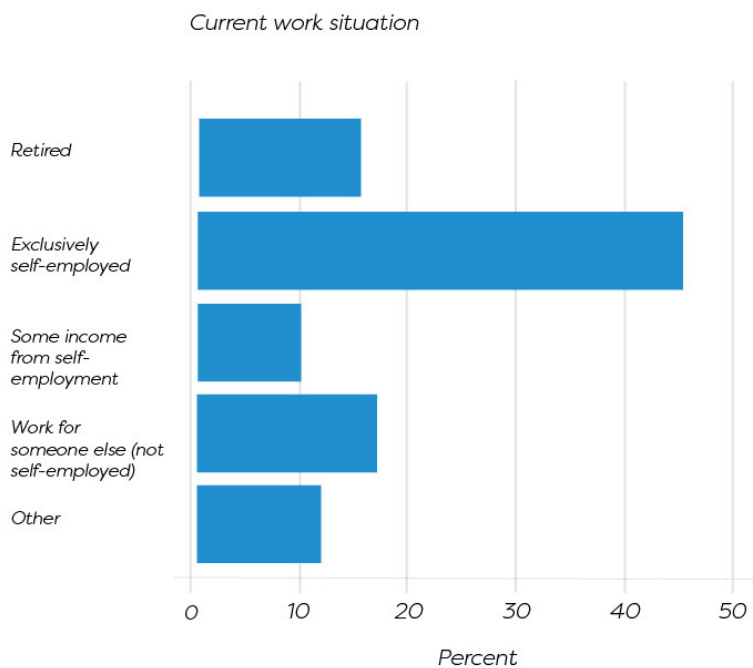
**Figure 28.** Percent.



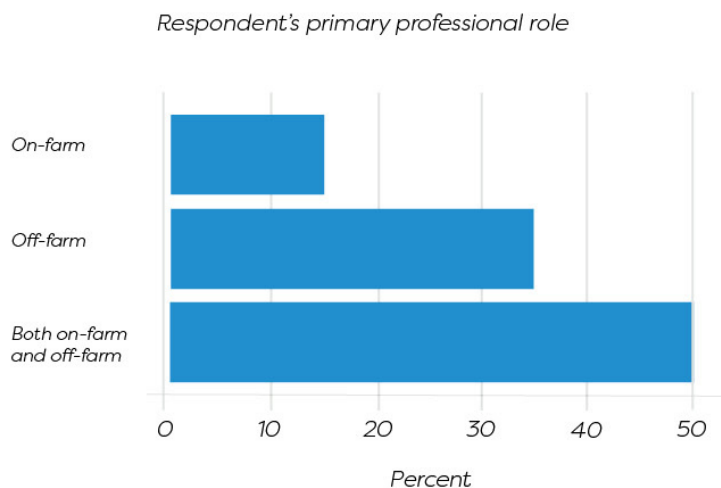
**Figure 28**, (above), indicates year entered programme as a function of gender, while **Figure 29**, (below), indicates 43.4% of Kellogg alums hold a Bachelor’s Degree or a Graduate Diploma, and 42.6% reported being exclusively self-employed (**Figure 30**, page 35). Half of the alums (50.0%) reported having a professional role on and off farms, (**Figure 31**, page 35), and 31.1% of the alums reported working in the Dairy industry, followed up by Beef & Sheep (20.1%) and then ‘Other’ (25.2%). Additionally, a majority (80.8%) of alums reported being a volunteer (**Figure 33**, page 36).

**Figure 29.** Qualification: “What is your highest academic qualification?”, N = 173





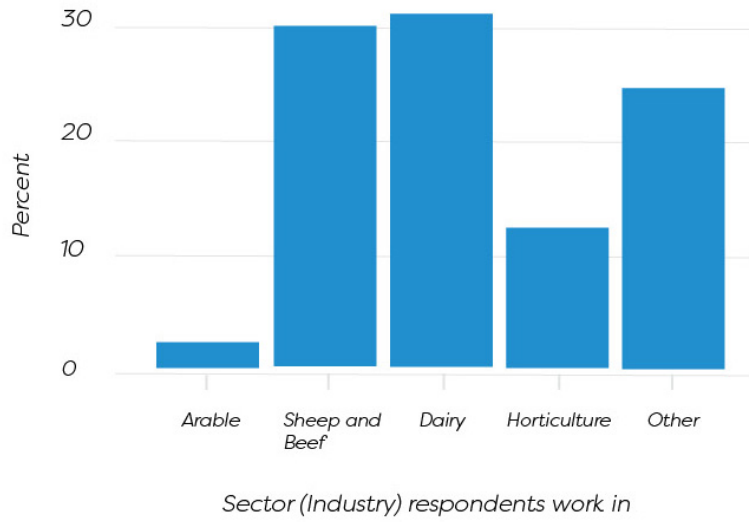
**Figure 30.** Current Work Situation: “How would you describe your current work situation?” N = 195



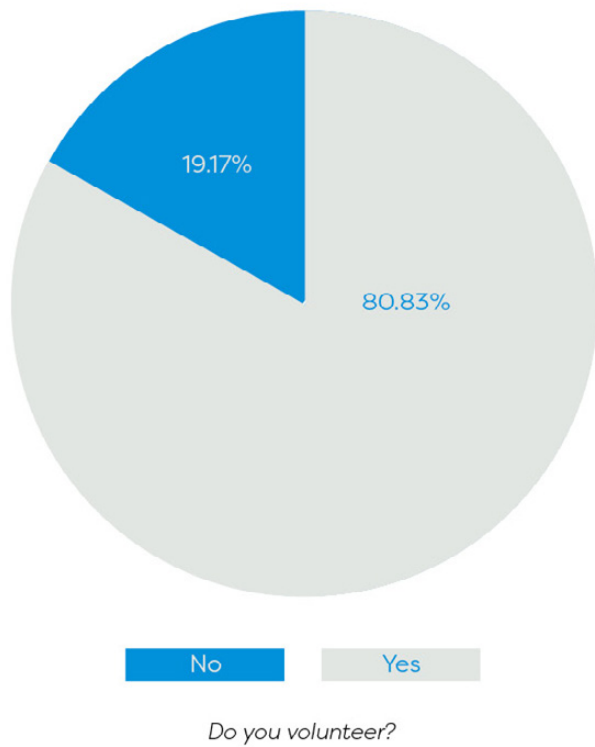
**Figure 31.** Whether Alums work On or Off-farms: “Regarding your current professional roles, would you describe your primary roles as...”. N = 182

**Figure 32** (next page) summarises which industry of New Zealand's agriculture-related industries the alums were professionally active in. Although many alums' careers were active across multiple industries, this question was a forced-choice item asking about the alum's last professional role or sector they were 'predominantly' associated with. Half of Kellogg's alum reported professional roles both on and off farms (50.0%).

**Figure 32.** Applicable Agricultural Industry: “In which of the following Industries do you carry out your primary professional roles? (Select all that apply)”, N = 182



**Figure 33.** Volunteer: “Do you volunteer?”, N = 193



# Conclusion

We are on the way to building a world-class evidence base documenting the entrepreneurial capability building during the Kellogg and Nuffield leadership development programmes. To our knowledge, this is a first-of-its-kind cross-sectional study designed to rigorously compare each participant at multiple time points and thereby document within-person gains. In addition, statistical software is being developed so that the evidence base of before-after comparisons can be efficiently carried out and continued in future years.

This will give New Zealand's Food and Fibre sector a world-leading insight into the art and science of building entrepreneurial capability. During this reporting period, we conducted our first survey with the New Zealand Nuffield alums (68 participants). We have learned several ways to refine the survey, including clarifying the wording of some questions. We then ran a similar survey with Kellogg alums (234 participants).

The results from the New Zealand Nuffield and Kellogg Alums are remarkable. The average Nuffield alum has started **3.6 businesses**, played a direct role in creating **46.6 FTE jobs**, and served in **14.0 senior leadership roles**. **Over 40% of Nuffield alum have served in government-appointed or elected leadership roles**. At the time of survey, **178 Nuffield alums had served in an estimated 2,489 leadership roles (other than government roles)**, played a direct role in creating an estimated **641 businesses**, and **8,295 FTE roles**.

On the other hand, in comparison, the average Kellogg alum has started **1.7 businesses**, created **35.0 FTE jobs**, and served in **14.0 senior leadership roles**. Approximately **26.9% of Kellogg alum have served in government-appointed or elected leadership roles**. Since the inception of the New Zealand Kellogg Rural Leadership Programme, **960 Kellogg alums have served in over 26,858 leadership roles (other than government roles)**, played a direct role in creating an estimated **1,632 businesses**, and **33,600 FTE roles**.

# Conclusion - continued

Taken together, the Nuffield and Kellogg contribution to New Zealand has included the creation of an estimated **2,273 businesses, 41,895 jobs**, and service in **29,347 leadership roles**. Just as importantly, both alum groups reported better personal outcomes after attending the programmes, including better well-being, expanded social networks, and higher earnings. This is an impressive contribution. Both alum groups demonstrated economic, social, and environmental contributions to New Zealand's Food and Fibre sector.

One of the notable findings is the very high rate of self-employment compared to New Zealand as a whole (over 60% for Nuffield and Kellogg, respectively, compared to 7.5% nationally<sup>13</sup>, 28% in the dairy industry, and 30% in the red meat and wool industry<sup>14</sup>). Entrepreneurship is frequently measured in economics as the proportion of workers in self-employment. By that admittedly broad measure, farm entrepreneurship is thriving among alums. We have seen very few data sets in New Zealand with self-employed proportions that large.

Whilst the findings of this cross-sectional research alone are compelling, The Mackenzie Study also includes foundational data for longitudinal research, the analysis of which is currently underway. The longitudinal study is focused on collection of before-after survey data for the Kellogg Programme (only). The intention is for this data collection to continue as future cohorts' baseline and exit surveys are added. This, in order to achieve greater statistical precision and an ever-strengthening evidence base documenting gains in entrepreneurial leadership associated with participation in the Kellogg Programme.

Furthermore, the Otago team working on The Mackenzie Study has developed purpose-designed measurement instruments and computer code to provide consistent statistical evaluation of the Kellogg before-after evidence base and each additional cohort's contribution. To the greatest extent possible, analysis of each additional round of survey data will be automated to ensure consistency across cohorts and specific leadership programmes. This work on automation is currently ongoing and the goal is to stand this up to allow for the Rural Leaders' evidence-base to continue accumulating indefinitely following the completion of this study.

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<sup>13</sup>Fabling, R., (2018), Entrepreneurial beginnings: Transitions to self-employment and the creation of jobs, [Motu Working Paper 18-12], Motu Economic and Public Policy Research, p. 3. Retrieved from [https://motu-www.motu.org.nz/wpapers/18\\_12.pdf](https://motu-www.motu.org.nz/wpapers/18_12.pdf) (Accessed 24 Oct, 2022)

<sup>14</sup>Ministry of Primary Industries, (2022), Food and Fibre workforce: snapshot. Retrieved from: <https://www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot>