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Transition to Digital Data Collection

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Abstract and Paper

Decreasing participation in our surveys is one of the biggest challenges facing NSOs, and Statistics NZ is no exception. To address this challenge Statistics NZ has taken a multi-faceted approach to minimize the level of direct surveying whilst making it as easy as possible for data suppliers to provide the data required.

Statistics NZ has a high level strategy of using administrative data first, re-using existing data, using modelling and other statistical techniques whenever possible, and only carrying out direct survey to fill data gaps. For those respondents that we do need to survey, Statistics NZ is focusing on improving their experience to help ensure a good response to surveys. A key part of this is to move to a Digital First collection strategy.

In addition Statistics New Zealand is trialing development methods to enable fast delivery of projects that deliver outcomes that are fit for purpose rather than perfect and polished.

This presentation will cover Statistics New Zealand’s move to online surveying including a discussion of how we moved at pace, our Minimum Viable Product (MVP) approach, and what we learnt through the process.





Transition to Digital Data Collection

Paper presented at UNECE
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3–5 October 2016

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Introduction

Statistics NZ has set itself the ambitious challenge of having a ‘paper switch off moment’ by 2026. This desired future state means that in 10 years Statistics NZ will only collect data through digital channels, by phone, or face-to-face interviewing.

Statistics NZ is already moving to a ‘digital by default’ approach, with the aim of online self-complete survey forms being the predominant mode for survey respondents as soon as possible. We are aiming to have all surveys online by May 2018. The benefits of this will include a better respondent experience, timelier and possibly more accurate data, and a reduction in costs.

This paper will cover our experiences so far as we transition to a fully digital environment for data collection. It will discuss:

- the rapid development approach taken
- how we used the agricultural survey to help research collection strategies for the upcoming population census
- mode analysis carried out to date
- changes to our collection strategies
- what we have learnt about our online respondents
- our next steps in the journey to move to a paperless collection environment.

Background

The majority of Statistics NZ’s total data volume comes from administrative sources. The New Zealand tax department (Inland Revenue) is Statistics NZ’s largest data source. Statistics NZ expects to source over 60 million tax records from Inland Revenue in 2016/17.

By comparison, data volumes from direct surveying are low. In 2016/17, Statistics NZ expects to survey around 74,000 businesses and 64,000 people in households. Over the next 10 years, Statistics NZ expects to continue surveying a number of businesses and households. This is because administrative data does not provide all of the data needed to produce official statistics.

Currently most of our business surveys are paper-based and our three household surveys are interview administered. The five-yearly population census uses a combination of online and paper self-complete forms.

Statistics NZ has, however, put a number of surveys online over the last 10 years.

The first was the 2006 Census of Population and Dwellings which achieved a 7 percent uptake online despite very little promotion of an online option being available. This ‘soft launch’ approach was used to give us experience and confidence with an online mode, and because we weren’t confident that the NZ telecommunications infrastructure (at the time) could handle even a 10 percent online uptake. In the following census held in 2013¹ there was greater publicity of the online option which resulted in an online uptake of 34 percent.

Statistics NZ is pursuing a ‘digital by default’ strategy for the 2018 Census and we have an online response target of 70 percent. Achieving this target will mean a significant reduction in the use of paper census forms in 2018.

¹ The 2011 Census was postponed for two years due to the 2011 Christchurch earthquake.

Statistics NZ's largest business survey, the Agriculture Production Survey, went online in 2015 with half of respondents choosing this mode.

An online option was introduced in June 2016 for three business surveys - the Quarterly Business Survey, the Quarterly Economic Survey of Manufacturing, and the Quarterly Wholesale Trade Survey. Online uptake was 95 percent.

Our rapid development approach

As well as starting to offer an online survey mode, Statistics NZ is trialing some new development approaches – not new to the world, but new to Statistics NZ.

In early 2015 we decided to put the Agricultural Production Survey online and to do so by adopting a more agile development approach. This was driven by a desire to move all our data collection to a digital first approach, but also to:

1. meet the needs of the 2018 Census testing programme
2. prove to ourselves we could deliver a project quickly.

2018 Census testing programme

Census wanted to test how effective mailing out an internet code would be in terms of response rate², and to test the effectiveness of different reminder options. We used three different reminder letters and two postcards (excluding the control group versions). We were also testing formats, hence the two different postcards. While previous censuses have relied on field staff to distribute and collect census forms, the 2018 model will instead rely on the majority of respondents completing their forms without any contact with census staff.

Census recognised that the Agricultural Production Survey³ would be a good ‘test environment’ for some specific non-response follow-up testing. The collection methodology for the Agricultural Production Survey (APS) is very similar to census, and its survey respondents are very similar to an average census respondent. This meant that the APS was considered a very suitable survey within which to embed census testing⁴.

Obviously the 2015 Agricultural Production Survey needed to be online in order for the census testing to occur.

This embedded testing focused on respondent behaviours, specifically:

- How do people respond when given paper forms?
- How do people respond to legal compliance messaging?
- How do people respond to a reminder postcard compared to a reminder letter?
- Why do people prefer to complete surveys on paper?

The section called Researching Collection Strategies discusses the results of this testing in more detail.

Moving at pace

At the same time as wanting to enable cost effective census testing, we were grappling with how we could move faster as an organisation. The Executive Leadership Team had put together a working group to come up with some suggestions to help us move at pace. Putting the 2015 APS online quickly seemed like a good option to solve two problems:

1. enabling the census testing programme (as discussed above)
2. creating a prototype project using agile methodologies to show that we can deliver fast – and help change the organisational culture.

² 2018 Census collection strategy is to mail an internet code to almost all households and only provide paper on request. We are aiming for 70 percent online uptake.

³ This survey collects information about land use, livestock farming, arable and horticulture crop growing, forestry production, and farm practices in New Zealand. It's an annual survey of around 30,000 farming businesses.

⁴ In the 2013 Census, we ran an embedded test to test a new collection methodology. This was very successful. Although we had not run an embedded test in a non-census survey before, the positive census experience gave us confidence to do this in a non-census survey.

Our Executive team gave us a mandate to try running a project quite differently with:

- less paperwork
- less governance/reporting overhead
- a small team
- using an external vendor
- authority to do what we needed to deliver fast (the project was delivered in under five months).

Why use the Agricultural Production Survey?

At first glance the selection of the APS as the first non-census survey to transition to online may seem like an unusual choice because:

- It is our largest business survey in terms of sample size – 30,000.
- It is a relatively large and complex survey with a significant amount of routing (28-page questionnaire with 78 questions). Online respondents may expect to be able to complete some of the form online, save it and come back later.
- Some information is pre-populated on the paper questionnaire to make it easier for respondents. This meant we needed to make the same pre-populated information available for respondents who were using the online version.
- The respondents to this survey were not expected to be as tech-savvy compared to respondents in our other business surveys.
- Rural New Zealand has less internet connectivity than urban New Zealand.
- It is an annual survey, meaning there is only one chance per year to introduce changes – providing additional risk if the development goes over time or if there are data or response rate issues with introducing a new mode.

Despite these potential challenges, Statistics NZ decided in March 2015 to set up a project to try to put the APS online quickly – in time for the July 2015 survey start date. This rapid development approach would meet the needs of census, meet the organisation's desire for a new development methodology and would start the digital transition for non-census surveys.

Minimum Viable Product

We used what we have described as a 'minimum viable product (MVP)' approach in the development of the 2015 APS online option. This development approach proved successful so we used it again in 2016 to offer more business surveys online.

The 2015 Agricultural Production Survey

Part of our MVP thinking was to move away from the long held internal view that in order to put surveys online we would have to:

1. offer respondents the ability to save and then resume their survey form
2. have some respondent information prefilled onto the form (as occurred on the paper form).

We knew that both of these features required external access management capability (to logon and manage your access) and integration with our existing response databases (to retrieve previous answers). This type of development would require a lot of investment and time – which we didn't have.

So our approach was to push ahead without either prefill or the ability to save – but to find ways to make it easy for our respondents. While this made it technically faster to deliver an online

option, it did make it much harder from an internal stakeholder management perspective. But having a mandate from our Executive enabled the project team to push through any resistance.

Our solution to not offer respondents the ability to save their form and resume it later, was:

- to tell people they couldn't save (Appendix 1)
- to provide a checklist of information that they would need to gather before starting their survey form (Appendix 2)
- to provide the business specific information that was pre-printed (prefilled) on the paper form, in the information pack that respondents received with their online access code (Appendix 3)
- to make some changes to the way the questions were presented online. Respondents online would complete a checkbox near the beginning of the survey form indicating the type of agricultural activities they were involved in. This meant that only the relevant questions were presented, reducing the timeframe for survey completion (Appendix 4).

In general we didn't make too many changes to the online form compared to the paper form – we essentially copied the paper form question wording and routing. Ideally we would design the online form specifically for this mode but our approach was to go fast and deliver a form that met the minimum requirements. We did add a few edits to the online form. An example of an edit relating to land area is shown in Appendix 5.

We did limited usability testing of the online questionnaire – this was a lot less testing than we would traditionally do.

Our MVP approach also extended to who was offered an online option. We decided to offer the online option only to 'simple' farming businesses - not the more complex ones. Any farming business with more than two farms or who traditionally provided information to us via a spreadsheet was not offered the online option⁵. This enabled us to keep the online solution development as simple as possible.

To raise awareness of the online option with those respondents being offered this option a pre-notification postcard was sent. This advised that the 2015 Agricultural Production Survey was moving online and that they would soon be receiving a request to complete the online survey. Appendix 6 shows the pre-notification postcard.

Respondents accessed the survey form by typing in a short url that was printed on their letter. This short url was created to make it easier for respondents to type in. This short url looked like this:

<http://stats.nz/KrNfN4P>

Behind the short url was a long url that took the respondent to a unique survey form. The long url looked like this:

<https://snzonline-uat.cwp.govt.nz/SFC/201606/TEST9999999999/B1/MF/01>.

Our non-response follow-up included phoning respondents and, if possible, completing the survey over the phone. We did not develop a separate interviewer-administered / CATI⁶ questionnaire. Instead we asked contact centre staff to seek verbal permission from the respondent to logon as the respondent and complete the questionnaire with them over the phone. This decision was made very quickly and without the usual amount of analysis and consultation. Four percent of all responses in the 2015 APS were received via this method.

50 percent of responses to the 2015 APS were received online. This was considered a very successful outcome.

⁵ About 10 percent of businesses.

⁶ CATI – Computer Assisted Telephone Interview. Traditionally we have developed a separate survey form for conducting an interview-administered (telephone) survey.

2016 Online Surveys project – another MVP approach

We continued this MVP type approach in 2016 to offer three more surveys online: the Quarterly Business Survey, the Quarterly Economic Survey of Manufacturing, and the Quarterly Wholesale Trade Survey. These surveys involve five different questionnaires sent to 1500 businesses.

These surveys collect sub-annual financial data and are sometimes referred to as SFC later in this paper. This project was completed in 2.5 months.

A goal of this project was to try to find a way to reduce the unit cost of each online survey. The 2015 APS online project was fast and small but we wouldn't want to spend that much for each additional online survey. For the 2016 project we considered outsourcing, purchasing a tool, or building a tool ourselves. Statistics NZ had relatively recently done a market scan and in 2013 purchased Adobe Livecycle⁷ as an in-house tool. But we only used it for 12 months, finding it expensive and not user-friendly for our questionnaire design team.

We asked our 2015 online vendor to build us a prototype tool that our questionnaire designers could use to create and update survey forms themselves. This was a successful prototype exercise – fast, cheap and very promising in terms of in-house questionnaire development. So the project went ahead and built enough capability in this in-house tool to create and ‘publish’ five more questionnaires.

The MVP approach again enabled us to make decisions quickly and deliver just enough functionality to make it easy to respond online. Appendix 7 contains some screen shots from the online quarterly business surveys.

Our online uptake for these quarterlies surveys was 95 percent.

⁷ Note Statistics NZ uses Survey Gizmo for testing. Currently we choose not to use this tool for producing surveys due to the data being stored outside New Zealand.

Researching collection strategies

Statistics NZ has researched a number of reminder techniques⁸ to understand the impact on response rates. This section discusses the results.

Our research questions were:

1. What is the impact to response rates from providing a paper questionnaire versus just providing an online code?
2. What is the impact to response rates if reminders contain a compliance message and Government branding?
3. Is a postcard an effective reminder? Does it impact response rates?
4. Is email an effective reminder? Does it impact response rates?

Each of these will be discussed in turn.

Providing paper

We were interested to find out what happens to self-response⁹ and online response rates when we introduce paper.

A sample ($n = 23205$) of Agricultural business units received a letter with instructions on how to complete the form online. A control sample ($n = 5811$) of business units received the same information, but also received a paper form with a prepaid return envelope.

Data and analysis

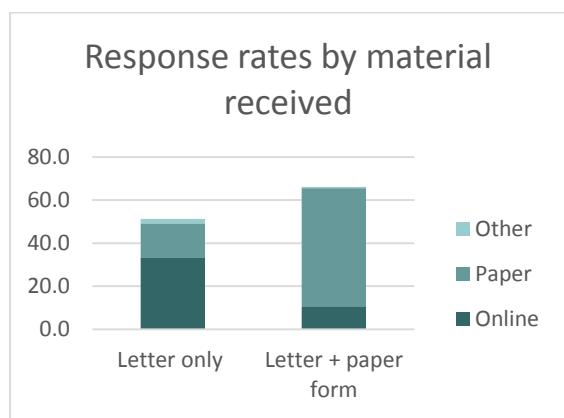
A chi-square test showed that the relationship between response rates and material received was significant, $\chi^2 (3, N = 29016) = 4032.6, p < .001$.

- Self-response: Respondents who received paper forms were more likely to respond than those who only received a letter with an online code
- Respondents who received paper forms were less likely to respond online.
- Response rates were consistently higher after each reminder phase for those who received paper forms.
- Online response: Online response rates were higher for those who only received an online option. But these respondents were less likely to respond at all.

⁸ Research questions 1-3 were tested in the 2015 Agricultural Production Survey.

⁹ Self-response means a respondent completes their survey form without us having to phone them. Responding after receiving a reminder letter was still considered a self-response.

Figure 1
Response rates by material received



Source: Statistics NZ

Note: The APS allows for collection of responses by phone. These responses are classified as 'other'.

Table 1
Response rates by material received

Response rates by material received				
	Letter only (n = 23205)		Letter + paper (n=5811)	
Response mode	Number	Percent	Number	Percent
Online	7706	33.2	625	10.8
Paper	3707	16.0	3180	54.7
Other	471	2.0	37	0.6
Total responses	11884	51.2	3842	66.1

Source: Statistics NZ

Conclusion

Self-response rates were higher for the group that received a paper form with their initial letter. Online response rates were much lower for this group. It is recommended that paper be introduced late in the reminder / follow-up phase. In this way we provide enough opportunities for respondents to go online, and then provide paper forms later on to improve self-response rates.

Compliance messaging

We wanted to test whether New Zealand Government branding and legal compliance¹⁰ messaging would lead to different response rates. Of the 23,205 business units, half received letters, envelopes, and postcards that featured the Statistics NZ brand, the NZ Government brand, and a message on legal compliance. See Appendix 8 for an example letter.

The remaining half of the group received material that only featured the Statistics NZ brand and messaging encouraging the respondent's participation.

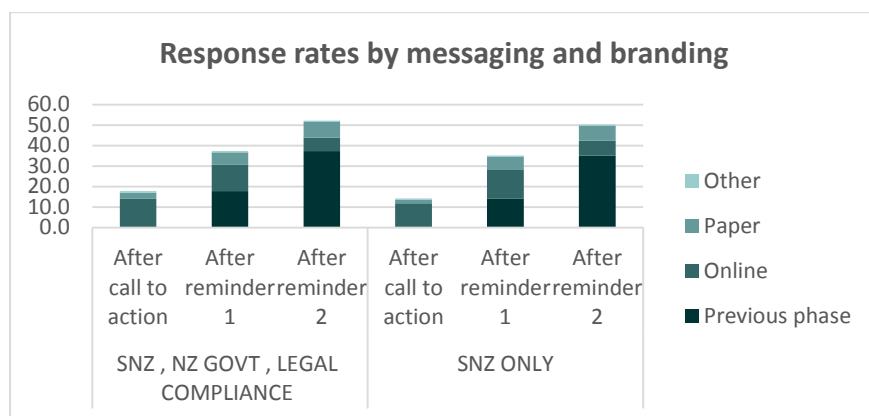
¹⁰ The Statistics Act 1975 – participation in Statistics NZ surveys is a legal requirement.

Data and analysis

Chi-square tests indicated that branding and messaging did have a significant relationship with response rates, but only for one phase.

- After the initial letter (call to action), respondents who received materials that included the Statistics NZ and NZ Government brands as well as emphasising their legal responsibility to complete the survey were more likely to respond [$\chi^2 (3, N = 23223) = 67.6, p < .001$] compared to those whose materials only featured the Statistics NZ brand and no mention of legal compliance.
- There was no significant difference in response rates between the groups during either of the reminder phases. Response rates were similar regardless of branding or messaging.

Figure 2
Response rates by messaging and branding



Source: Statistics NZ

Table 2
Messaging and branding

Messaging and branding												
Responses by phase	SNZ / NZ Govt / Legal compliance						SNZ only					
	After call to action (n=11608)		After reminder 1 (n=9556)		After reminder 2 (n=7264)		After call to action (n=11615)		After reminder 1 (n=9969)		After reminder 2 (n=7486)	
Response mode	n	%	n	%	n	%	n	%	n	%	n	%
Online	1630	14.0	1484	15.5	765	10.5	1373	11.8	1602	16.1	852	11.4
Paper	343	3.0	712	7.5	873	12.0	204	1.8	747	7.5	828	11.1
Other	94	0.8	72	0.8	76	1.0	79	0.7	76	0.8	74	1.0
Total	2067	17.8	2268	23.7	1714	23.6	1656	14.3	2425	24.3	1754	23.4
Overall response rate	6049 (52.1%)						5835 (50.3%)					

Source: Statistics NZ

Conclusion

Businesses were more likely to respond when they received materials that included legal compliance messaging and New Zealand Government branding, but this effect was only seen in one phase. Further testing may be undertaken to determine if legal compliance messaging works best in the first phase, or if it leads to an increase in response rates only once, regardless of when it is introduced.

Postcards

Will people respond to a reminder postcard? The postcard removes one step for the respondent, as the information they need is readily available and does not depend on opening an envelope. In order for this format to be useful, it had to include information that enables the recipient to respond which, for online surveys, would include the access code. There was some concern that respondents may perceive this as a privacy or security risk. However we didn't receive any respondent feedback related to this. (Appendix 9 contains an example of the postcard).

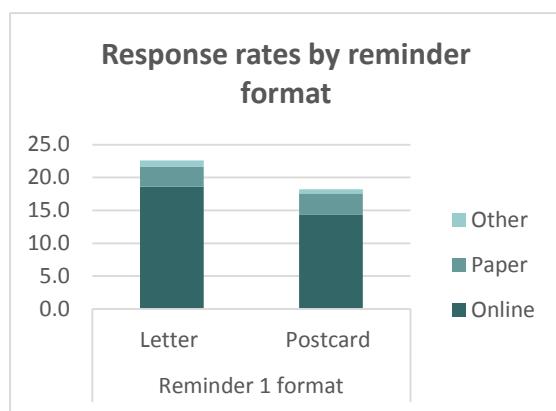
To test whether this format would be effective against the traditional reminder letter format, half the business units received a first reminder in a postcard format, while half received a reminder letter.

Data and analysis

Chi-square tests showed that there was a significant relationship between the reminder format and response rates. Respondents who received a reminder postcard were less likely to respond compared to those who received a reminder letter, $\chi^2 (3, N = 17762) = 66.3, p < .001$. While not as effective as the reminder letter, however, the reminder postcard still led to self-response and online responses.

Figure 3

Response rates by reminder format



Source: Statistics NZ

Table 3

Response rates by reminder format

Response mode	Reminder 1 format			
	Letter (n=8925)		Postcard (n=8837)	
n	%	n	%	
Online	1661	18.6	1264	14.3
Paper	279	3.1	296	3.3
Other	84	0.9	57	0.6
Total	2024	22.7	1617	18.3

Conclusion

While the postcard was effective in encouraging responses, it was not as effective as a reminder letter.

Email

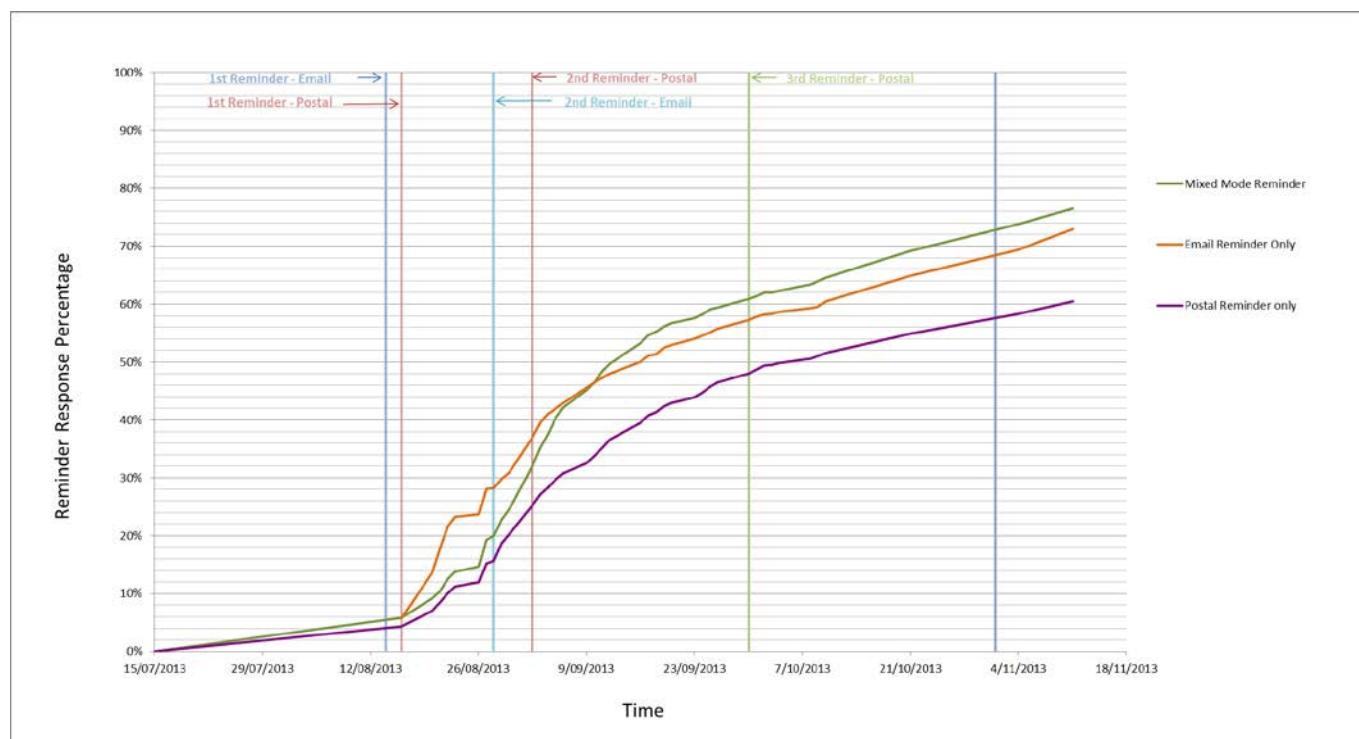
Statistics NZ has to date made limited use of email reminders, having only used these for selected respondents and surveys. This is due to factors including concerns about the quality of email addresses, security and because our email management process (until recently) has been manual.

In the 2013 Agricultural Production Survey we took the opportunity to test the effectiveness of email reminders for the 17,799 non-respondents who were split into three groups for reminders:

- postal reminders only (13,441 non-respondents)
- email reminders only (1,115 non-respondents)
- mixed mode reminders – paper followed by email and then paper (3,243 non-respondents).

The group that were sent postal reminders only consistently displayed a lower response rate throughout the non-response follow-up period. This group achieved the lowest response rate overall. The group that were sent email reminders only were initially showing a higher response after the first reminder. However the response rates achieved after the second and third reminders were not as high as for the mixed mode reminder group. This is shown in the graph below.

Figure 4
Response Rates by Reminder Mode for the 2013 Agricultural Production Survey



Source: Statistics NZ

The results show that mixed mode reminders (using email and post) perform better than reminders based on a single mode.

Mode analysis

Over time there has been much written about the impact on data quality from introducing new modes. Statistics NZ's switch to online surveying has so far only moved from a paper self-complete form to an online self-complete form.

Some high level analysis on the 2015 APS data comparing online and paper form data shows no significant difference in data quality between modes.

The following table shows that slightly more responses were received using the online form compared to paper. Note that these figures exclude responses received by phone, duplicate responses and responses received via spreadsheets from large farming groups.

Table 4
Responses by mode for the 2015 APS

Response mode	Number of forms received	Proportion of forms received
Total online responses	13,536	54.8%
Total paper responses	11,162	45.2%
Total responses	24,698	100%

Source: Statistics NZ

Once received, responses are loaded into the processing system for editing, imputation, and validation. Whenever possible these steps have been automated to improve efficiency and consistency of approach. This has resulted in very few manual changes being made.

The following table shows that proportionately, when compared to the number of online forms received, there was no difference in the number of manual changes made to the online form compared to the paper form.

Table 5
Manual changes during processing by mode for the 2015 APS

Response mode	Number of manual changes made	Proportion of manual changes made
Manual changes to responses received via online forms	1,823	54.6%
Manual changes to responses received via paper forms	1,517	45.4%
Total manual changes made	3,340	100%

Source: Statistics NZ

Note: this table refers to the number of changes made, not the number of forms as a form can have one or more changes.

Further analysis is underway comparing the 2013 Census online responses with the paper responses to understand any data quality effects. Additional analysis will occur later in 2016, looking at the data from the three quarterly business surveys where an online option has been introduced. This analysis was not available at the time this paper was written.

Changing our collection strategy

A collection strategy is defined here as the actions taken to get a response from a respondent.

Moving to online surveying has enabled us to develop some different collection strategies:

- Real time information has enabled us to streamline our collection strategies so that we have less differentiation between surveys. Over time we have evolved survey specific collection strategies rather than more generic strategies based on our respondent groups. Our new approach is to:
 - shorten and standardise our respondent's timeframe for survey completion to 14 days
 - send four reminder letters (currently mainly paper/post but soon we will add email and SMS)
 - have a standard number of days between reminders
 - make fewer follow-up phone calls - calling starts at the same time as the third reminder¹¹
 - not send paper questionnaires (unless the respondent requests it) and hold out until the last possible moment. This requires some 'holding of one's nerve'. By not sending paper questionnaires too early we have shown we can increase our online uptake.
- We know as soon as a respondent has completed a form – we don't need to wait for the postal service to return the paper to us. Having this real-time information means we send out fewer unnecessary reminder letters – this is cheaper for us and less of a burden for respondents. In addition we can get the initial survey notification to the respondent faster as we don't need to wait for questionnaires to be printed.
- As mentioned, we now allow our contact centre to 'logon' as the respondent and capture their data over the phone if the respondent prefers that¹². Again this means we get the data faster and it makes it simpler for our staff. Four percent of forms were completed in this manner in the 2015 APS.

We are only just beginning our transition to digital data collection so we will continue to evolve our collection strategies as we learn more and can offer more surveys in a digital mode.

¹¹ Analysis has shown that calling over the first eight weeks of a collection campaign only added about 2.1 percentage points to the response rate (over and above those who would have responded if we had not made contact).

¹² We asked for verbal permission from the respondent. There is no prefill or saved data in the form.

Who are our digital respondents?

This section looks at who completes forms online, their behavioural traits and what respondents have told us about their experience.

Predictors of mode choice

What do we know about who completed their forms online?¹³ Analysis of the 2013 Census data provides some information about which characteristics are the strongest predictors of mode choice. The subject population for this analysis was restricted to New Zealand usual residents aged 15 years or over, who spent census night in a private dwelling with internet access.

We used multivariate logistic regression analysis to measure the extent to which certain characteristics are uniquely associated with an increased or reduced likelihood of online response, independent of other factors.

Six characteristics stand out as being predictors of mode choice.

- **Highest qualification** is a strong predictor of mode choice. The odds of online response to the census increased steadily as the level of qualification increased. Doctoral graduates had nearly twice the odds of online response compared to those with no formal qualification.
- **Urban/rural profile** Rural locality is a strong predictor of paper response. People in highly rural or remote areas had notably lower odds of online response than those in more urban areas. While rural areas were more likely to have lower rates of Internet access in general, this effect was found to exist independent of Internet availability.
- **Ethnicity** Asian ethnicity is a strong predictor of online response. Once confounding variables had been controlled for, respondents of other ethnic groups each had similar odds of online response.
- **Income and work** Income is a moderately strong predictor of mode choice. In general the probability of online response increased as income increased for all labour force categories, though its effect was more pronounced for unemployed and full-time employed respondents, than it was part-time workers or those not in the labour force.
- **Age** Respondents aged 30-39 had the highest odds of online response, with the odds being (unexpectedly) slightly lower for respondents aged 15-29, and declining steadily and markedly from the age of 40 upwards. Age was also shown to interact strongly with household composition, with the highest odds of online response coming from 15-49 year olds living in couple-only households.

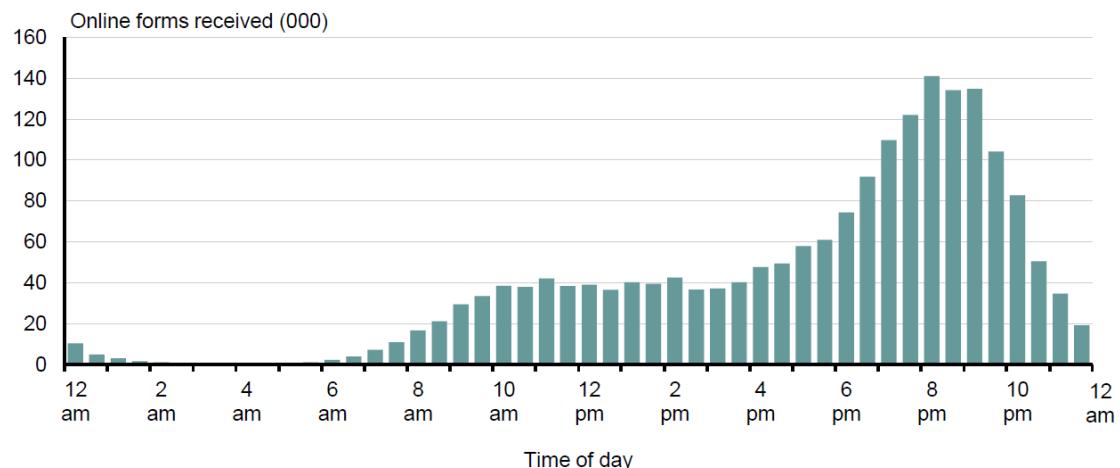
In general, the characteristics of respondents who were most likely to complete their 2013 Census forms online reflected a profile of New Zealand Internet users.

¹³ Online response in the 2013 Census: Respondent behaviours and characteristics, by Statistics NZ, March 2014. <http://www.stats.govt.nz/Census/2013-census/methodology/online-response.aspx>. This paper is available online and provides much more detailed information.

Respondent behaviour

Online surveying allows us to see what time of day respondents complete their survey. This means we can start to better meet their needs by being available when respondents need us.

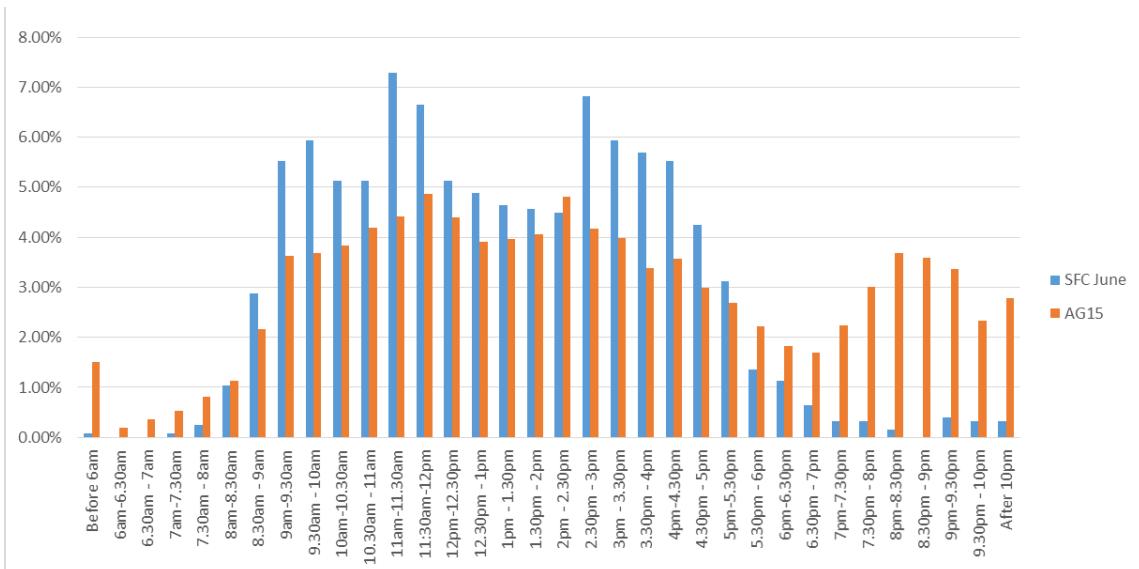
Figure 5
Time of day online forms were completed for the 2013 Census



Source: Statistics NZ

As expected, the majority of respondents completed their forms in the evening. The most popular hour of the day to complete the census online was between 8pm and 9pm, and the least popular was between 3am and 4am.

Figure 6
Time of day forms were completed for Agriculture and Quarterly Business Surveys



Source: Statistics NZ

Figure 6 compares the 2015 APS submission time with the 2016 quarterly business survey submission time. For the business survey respondents (SFC), 87.58 percent of respondents completed the survey between 9am and 5pm, while only 63.87 percent of APS respondents responded during this timeframe. The APS respondents were active earlier and later in the day compared to business survey respondents.

While these results are not surprising, especially for quarterly business survey respondents, we have not had this type of information available before now. It is providing good information about our respondent's behavior and is especially useful when planning resources in our contact center and other respondent support teams.

Why do respondents prefer paper?

We wanted to understand more about why some respondents prefer paper so asked a sample (n= 779) of these respondents from the 2015 APS why they wanted a paper form.

Table 6
Reasons for requesting paper forms for the 2015 Agricultural Production Survey

Reasons for requesting paper forms (n = 779)	n	%
Paper is easier, more familiar	555	71.2%
Not confident using computers/net	416	53.4%
No computer/internet connection	239	30.7%
Internet connection slow/unreliable	193	24.8%
Internet/computer not working	103	13.2%
Confidentiality/security reasons	50	6.4%
Instructions too confusing	42	5.4%
Other	25	3.2%

Source: Statistics NZ

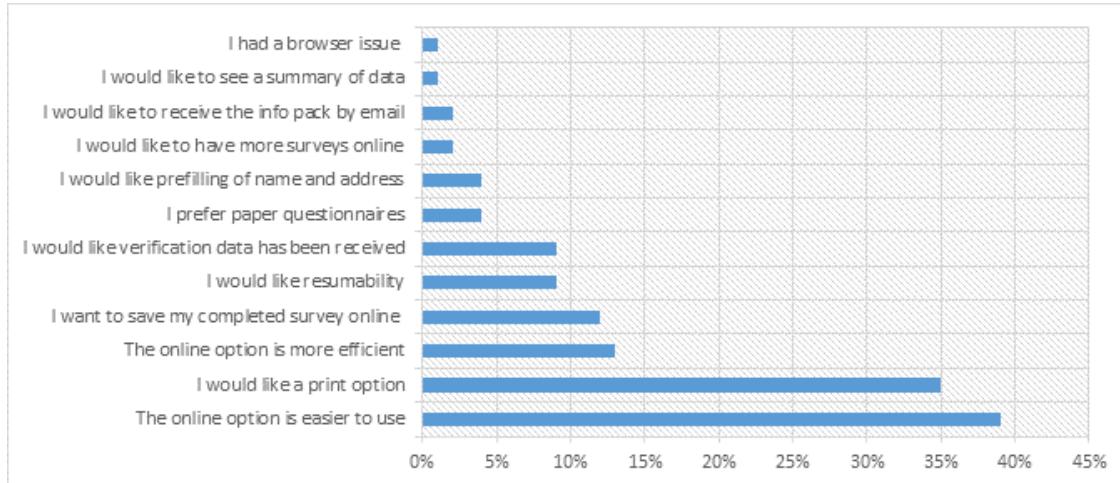
The most common reasons why people preferred paper were due to perceptions and access to the internet.

Respondent feedback

In the 2016 APS and 2016 quarterly business surveys once a form is completed and submitted, respondents receive a thank you notification and an invitation to provide feedback.

A review of 100 feedback submissions indicates that 44 percent of respondents were positive about their online survey experience, 39 percent were neutral, while 17 percent reported a less favourable experience. Figure 7 summarises the types of feedback comments received.

Figure 7
Initial review of supplier feedback for online surveys



Source: Statistics NZ

The most common feedback subcategory was that people found it easier to respond (39 percent), followed by wanting the option to print (35 percent). The third most common theme was by feedback that the online survey was efficient (13 percent), followed by people asking for an option to save/resume the questionnaire (eight percent).

This is a sample of quotes received from respondents about their online experience:

- “The survey is easy to do so online is an efficient way to complete them (I have four surveys to do)”.
- “To make comments on large variances to last period’s survey and a better way to print it out would be nice.”
- “Every year we are asked to complete this survey at one of our busiest times of the farming calendar. It is a struggle to find a spare half hour to answer these questions. The online survey was, however, quite straightforward.”
- “This survey took an incredible amount of time to complete. Your previous survey took no more than 5 minutes, however this time you requested a breakdown of expenditure less salaries and wages, depreciation etc. which required a lot of extra work from this end. All the information had to be keyed from our monthly accounts into excel and then the final figure entered into your survey. It would have been a lot easier if the survey calculated figures like excel.”
- “Though I found the online survey fairly easy to complete, I think that it might prove a bit more daunting to someone who had never done the survey before. As I've done the paper version for quite a few years, I had a very good idea of what sort of detail would be required, and was able start the survey with all my information set to go.”
- “Well done! Quick and easy, most impressed with the way the information which didn't apply to our business just dropped off.”

What we have learned so far

We have started our transition of non-census surveys to a digital first approach and we have shown that we can deliver projects at pace.

We achieved approximately a 50 percent online uptake in the 2015 Agricultural Production Survey and a 95 percent online uptake for our three 2016 quarterly business surveys. These results are quite significant considering this is the first time Statistics NZ has had an online option for these surveys.

Key lessons learnt

- Respondents really like having an online option and are using it.
- There has been no measurable impact to data quality from adding an online mode.
- We can use a rapid development approach successfully – the MVP (minimum viable product) approach worked.
 - Any fears about respondents not being able to successfully complete an online option without prefill or save functionality have been allayed.
 - Our approach to online form design is considered successful. We would of course like to expand the functionality to take advantage of more online features and thus improve the respondent experience.
- One of the benefits of online surveying is that we now have a large amount of real time information about user experience and system performance. We have captured information on:
 - how long respondents took to complete forms
 - when they completed forms
 - how often help was accessed
 - which edits were tripped most often
 - types of devices and browsers used
 - the typical paths user took through the website.
- We now have more accurate information about how close we are to reaching our response rate targets. This means we can respond more quickly during the collection campaign. The nature of our discussions with respondents has also changed by removing the slow paper and mail system. We can focus respondents on giving us the information quickly by doing it online. It also means we are sending less unnecessary reminders to our respondents.

However the journey is not over yet.

Where to next?

Statistics NZ is continuing to push towards its goal of a paperless collection environment as well as striving to improve the experience for respondents in our surveys.

We have a specific target of having a digital mode for all surveys by mid-2018. In most cases this means providing an online option for respondents, especially for business surveys. We expect that our household surveys will continue to be collected by field staff who will continue to use laptops or similar to conduct an interview. We aim to offer a self-response online option for the Household Labour Force Survey which is currently only interview administered (determines employment/unemployment rates).

Although we have taken the approach of essentially putting paper surveys online we will be making online forms as user-friendly and intuitive as possible. This will help improve the experience we provide to respondents.

Online surveys also support us in our move to streamlining the way we collect data from businesses. The statistical architecture for economic statistics has defined a future whereby we focus on collecting the data once from businesses, rather than sending them multiple survey forms. The online collection mode will help us achieve this goal by routing respondents to the specific questions that apply to them depending on the information they provide to us. This will make it easier for respondents as well as improving efficiency at the data collection stage.

This paper has focused on the move to online surveying. Statistics NZ is also developing better direct data feed options for business respondents. An example is the use of APIs¹⁴ that will enable respondents to send data electronically to us.

A future state we are driving towards is one where businesses and individuals can interact seamlessly with us, regardless of whether they are using our data or completing a survey. We envisage a ‘portal’ type environment where a customer can see their current and past data requests and subscriptions to data releases, and their past, current and future surveys. All interactions can easily be managed in one place by the business or individual.

Although Statistics NZ has already made significant reductions in its level of direct surveying we are continuing to look for more opportunities to use administrative data and statistical techniques such as data modelling to source data rather than surveying.

¹⁴ API = Application Programme Interface.

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Appendix 1 Letter in the information pack

This was sent to online respondents in the 2015 Agricultural Production Survey.

New Zealand Government



Giving your time ensures the agriculture sector counts.

Your business has been selected for the Agricultural Production Survey.

At Statistics New Zealand we gather information on a lot of topics – including the agricultural sector, a vital part of New Zealand's economy.



Did you know? There were 29.8 million sheep in the national flock in 2014 (APS 2014)

We need your help

By completing this survey you're making sure your sector has the right information to identify and plan for needs like irrigation, processing, and transportation.

Complete the survey online

We know your time is valuable, so we're now offering the survey online. Completing your form online is secure, quick, and easy.

Or request a paper form

If you prefer a paper form, call 0800 333 104 or email ag@stats.govt.nz as soon as possible, and we will post them to you. Please tell us your reference number when you contact us.

If you are no longer the person responsible for this survey

We thank you for your time. Please forward this or call/email us so we can contact the right person.

Thank you for doing your part.

Yours sincerely

A handwritten signature in black ink.

Liz MacPherson
Government Statistician

To complete the form online:

See 'Before you begin' checklist
Use the checklist in this pack to make sure you have everything you need.



Go to
This code is case sensitive and unique to:



Complete the form in ONE session
The online form is easier and faster to complete, but partial data cannot be saved.



When you're finished, click

Submit ✓

Your responses will be protected and kept confidential by Statistics NZ.

Please complete your form online by



AG1.00001

For more information:

See the FAQs on the back of this information pack or call 0800 333 104 or email ag@stats.govt.nz

Appendix 2 Check list in the information pack

This information was provided to online respondents in the 2015 Agricultural Production Survey.

New Zealand Government



Before you begin checklist

Agricultural Production Survey 2015

If your farm includes:	You will need the following information before you begin:
Sharemilking	<input type="checkbox"/> Contact details of person/business who owns/leases the land sharemilked on <input type="checkbox"/> Dairy company supply numbers
Location, land details, and use	<input type="checkbox"/> Location details of farm being surveyed, and farm owned/leased by sharemilker, or new address <input type="checkbox"/> Total land area of farm and land purchased or leased during 2014/15 year <input type="checkbox"/> Activities and land use of farm
Forestry	<input type="checkbox"/> Area totals of exotic forest planted, replanted, and harvested
Livestock including poultry	<input type="checkbox"/> Number of livestock (cows, sheep, deer, pigs, poultry, other) born alive during year ended 30 June 2015 <input type="checkbox"/> Number of livestock on farm on 30 June 2015 by type (all) and breed (eg beef)
Supplementary feed crops	<input type="checkbox"/> Total area grown on the farm or leased of pasture, lucerne, maize, cereal, and other crops harvested for hay, silage, and balage <input type="checkbox"/> Total area grown on the farm or leased of lucerne, maize green feed, forage brassicas, and other for forage, fodder, or green feed crops
Grain/seed crops	<input type="checkbox"/> Harvest on the farm or leased land in tonnes of grains, pulses, and seeds <input type="checkbox"/> Harvest on the farm or leased land in hectares of grains, pulses, and seeds
Farm practices	<input type="checkbox"/> Tonnes of fertiliser by type applied to the farm <input type="checkbox"/> Area spread with effluent <input type="checkbox"/> Area of vegetation burned
Cultivation/direct drilling and pasture renewal	<input type="checkbox"/> Area of land cultivated or direct drilled for any purpose <input type="checkbox"/> Area of land cultivated or direct drilled for pasture renewal

Appendix 3 Business information provided in the information pack

This was provided to online respondents in the Agricultural Production Survey to help them complete the survey.

New Zealand Government



Your business information:

Business Address details

Farm Details

Legal name

Trading or station name

RAPID or road number
and road name

Locality

Nearest town or city

TOTAL land area



Appendix 4 Question about agricultural activities

Question included in the online 2015 Agricultural Production Survey to indicate relevant agricultural activities.

<p>Survey progress</p> <p>Need Help?</p> <p><input checked="" type="checkbox"/> Instructions</p> <p><input checked="" type="checkbox"/> Sharemilkers</p> <p><input checked="" type="checkbox"/> About my Farm</p> <p><input checked="" type="checkbox"/> Land use</p> <p><input checked="" type="checkbox"/> Forestry</p> <p><input type="checkbox"/> Livestock</p> <p><input type="checkbox"/> Dairy and Beef Calves</p> <p><input type="checkbox"/> Dairy Cattle</p> <p><input type="checkbox"/> Beef Cattle</p> <p><input checked="" type="checkbox"/> Lambs & Sheep</p> <p><input checked="" type="checkbox"/> Fawns & Deer</p> <p><input checked="" type="checkbox"/> Piglets & Pigs</p> <p><input type="checkbox"/> Poultry & Eggs</p> <p><input checked="" type="checkbox"/> Other livestock</p> <p><input type="checkbox"/> Grazing</p> <p><input type="checkbox"/> Supplementary feed</p> <p><input type="checkbox"/> Grain crops</p> <p><input type="checkbox"/> Farm practices</p> <p><input type="checkbox"/> Cultivation and direct drilling</p> <p><input type="checkbox"/> Pasture renewal</p> <p><input type="checkbox"/> Comments</p> <p><input type="checkbox"/> Declaration</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p>23a For the year ended 30 June 2016, please indicate the types of livestock farmed here on this farm, whether they were owned by the farming business or not.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Dairy calves or beef calves</td> <td style="text-align: center; padding: 5px;"><input checked="" type="radio"/> Farmed here</td> <td style="text-align: center; padding: 5px;"><input type="radio"/> Not farmed here</td> </tr> <tr> <td style="padding: 5px;">Dairy cattle</td> <td style="text-align: center; padding: 5px;"><input checked="" type="radio"/> Farmed here</td> <td style="text-align: center; padding: 5px;"><input type="radio"/> Not farmed here</td> </tr> <tr> <td style="padding: 5px;">Beef cattle</td> <td style="text-align: center; padding: 5px;"><input checked="" type="radio"/> Farmed here</td> <td style="text-align: center; padding: 5px;"><input type="radio"/> Not farmed here</td> </tr> <tr> <td style="padding: 5px;">Lambs and/or sheep</td> <td style="text-align: center; padding: 5px;"><input type="radio"/> Farmed here</td> <td style="text-align: center; padding: 5px;"><input checked="" type="radio"/> Not farmed here</td> </tr> <tr> <td style="padding: 5px;">Fawns and/or farmed deer</td> <td style="text-align: center; padding: 5px;"><input type="radio"/> Farmed here</td> <td style="text-align: center; padding: 5px;"><input checked="" type="radio"/> Not farmed here</td> </tr> <tr> <td style="padding: 5px;">Piglets and/or pigs</td> <td style="text-align: center; padding: 5px;"><input type="radio"/> Farmed here</td> <td style="text-align: center; padding: 5px;"><input checked="" type="radio"/> Not farmed here</td> </tr> <tr> <td style="padding: 5px;">More than 25 poultry birds</td> <td style="text-align: center; padding: 5px;"><input checked="" type="radio"/> Farmed here</td> <td style="text-align: center; padding: 5px;"><input type="radio"/> Not farmed here</td> </tr> <tr> <td style="padding: 5px;">Any other farmed livestock (eg horses, goats, llamas)</td> <td style="text-align: center; padding: 5px;"><input type="radio"/> Farmed here</td> <td style="text-align: center; padding: 5px;"><input checked="" type="radio"/> Not farmed here</td> </tr> </table>	Dairy calves or beef calves	<input checked="" type="radio"/> Farmed here	<input type="radio"/> Not farmed here	Dairy cattle	<input checked="" type="radio"/> Farmed here	<input type="radio"/> Not farmed here	Beef cattle	<input checked="" type="radio"/> Farmed here	<input type="radio"/> Not farmed here	Lambs and/or sheep	<input type="radio"/> Farmed here	<input checked="" type="radio"/> Not farmed here	Fawns and/or farmed deer	<input type="radio"/> Farmed here	<input checked="" type="radio"/> Not farmed here	Piglets and/or pigs	<input type="radio"/> Farmed here	<input checked="" type="radio"/> Not farmed here	More than 25 poultry birds	<input checked="" type="radio"/> Farmed here	<input type="radio"/> Not farmed here	Any other farmed livestock (eg horses, goats, llamas)	<input type="radio"/> Farmed here	<input checked="" type="radio"/> Not farmed here
Dairy calves or beef calves	<input checked="" type="radio"/> Farmed here	<input type="radio"/> Not farmed here																							
Dairy cattle	<input checked="" type="radio"/> Farmed here	<input type="radio"/> Not farmed here																							
Beef cattle	<input checked="" type="radio"/> Farmed here	<input type="radio"/> Not farmed here																							
Lambs and/or sheep	<input type="radio"/> Farmed here	<input checked="" type="radio"/> Not farmed here																							
Fawns and/or farmed deer	<input type="radio"/> Farmed here	<input checked="" type="radio"/> Not farmed here																							
Piglets and/or pigs	<input type="radio"/> Farmed here	<input checked="" type="radio"/> Not farmed here																							
More than 25 poultry birds	<input checked="" type="radio"/> Farmed here	<input type="radio"/> Not farmed here																							
Any other farmed livestock (eg horses, goats, llamas)	<input type="radio"/> Farmed here	<input checked="" type="radio"/> Not farmed here																							

Question 23a was included in the Agricultural Production Survey online so that respondents could select whether they farmed certain livestock or not. They were then only directed to the livestock questions relevant to them. The section progress indicator to the left of the question pane 'greyed out' the sections that didn't apply based on the response to Q23a.

Appendix 5 Land area edit

From the online form of the 2015 Agricultural Production Survey.

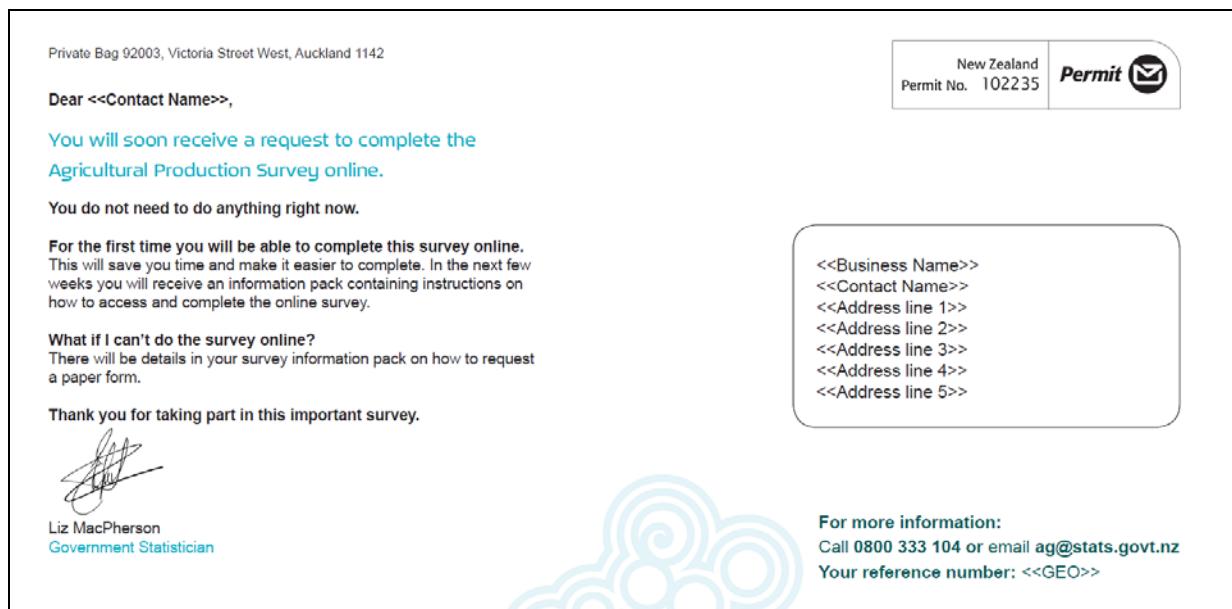
TOTAL land area of the farm as at 30 June 2016. This value is calculated automatically from what you have entered in the above fields.	
	Hectares

The answers for 8 and 20 need to be the same as they both relate to total land, but currently they are different. Please either revise 20 or go back and revise 8 so that they match.

This is an example of an edit relating to the land area of the farm. This information is collected in two places so we want to ensure consistency in the answers. We had an edit in the form to ensure that these two values agreed, at least within a 10 percent tolerance. So if the respondent said total land area was 80 hectares (in the previous related question) and the sum of areas given in Q20 was 75, the discrepancy was within tolerance and was accepted.

Appendix 6 Pre-notification postcard

This was used to advise respondents that the 2015 Agricultural Production Survey is moving online.



Appendix 7 Online Quarterly Business Surveys

Introductory page from the Quarterly Economic Survey of Manufacturing for the quarter ended 30 June 2016.

Welcome to the Quarterly Economic Survey of Manufacturing for the quarter ended 30 June 2016

Please read the information below before starting your survey using the button at the end of this page.

Purpose of this survey

To collect statistics from a cross-section of New Zealand businesses involved in manufacturing and to provide short-term economic indicators for the manufacturing sector. In addition, the financial data collected by this survey is used in the compilation of Gross Domestic Product (GDP), which measures economic activity in New Zealand. These statistics help government and other organisations in planning and decision-making.

Your legal obligation

The information you provide contributes to important economic measures for New Zealand. This is why the survey is a requirement under the Statistics Act 1975. For more information, visit www.stats.govt.nz/obligation or call 0800 333 110.

Protecting privacy and confidentiality

Your privacy is important to us. At Statistics New Zealand, we are committed to keeping your information completely secure and confidential. We recognise the value of data and ensure that the data we collect benefits everyone, and is only used for research or statistical purposes to inform good decision-making by government, business, and all New Zealanders.

Thank you for completing this survey. Your information contributes to statistics for business decision-making. To find out how we can help your business grow, visit www.stats.govt.nz.



Liz MacPherson
Government Statistician

Start

Questions from the online Quarterly Business Survey, quarter ended 30 June 2016

The screenshot shows the Statistics New Zealand Quarterly Business Survey homepage. The header features the Statistics New Zealand logo and the title "Quarterly Business Survey". Below the header, there are two tabs: "Help" and "System Requirements", with "System Requirements" being the active tab. A green banner titled "Read this first" contains two numbered sections: 1. How to answer and 2. Please provide amounts excluding GST if possible. The "How to answer" section includes instructions for recording time spent, rounding amounts, and entering negative values, along with examples. The "excluding GST" section asks whether amounts given in the questionnaire will exclude or include GST. A green bar at the bottom of the page is labeled "Operating Income".

**Statistics
New Zealand** TATAURANGA AOTEAROA

Quarterly Business Survey

Help **System Requirements**

Read this first

1 How to answer

- Keep a record of the time you spend on this questionnaire, and record it at the end.
- Round all amounts up or down to the nearest thousand dollars (New Zealand currency).

For example, enter \$31,788,524 as **\$ 31789 ,000**

- If amounts are negative, show them with a minus sign.

For example, enter -\$473,000 as **\$ -473 ,000**

2 Please provide amounts excluding GST if possible. The amounts given in this questionnaire will:

exclude GST

include GST

Operating Income

Appendix 8 Reminder letter with legal compliance messaging

Reminder letter used in the 2015 Agricultural Production Survey.

New Zealand Government

<<GEO>>

Statistics New Zealand
TATAURANGA AOTEAROA

September 2015

<<Business Name>>
<<Contact Name>>
<<Address line 1>>
<<Address line 2>>
<<Address line 3>>
<<Address line 4>>
<<Address line 5>>

Dear <<Contact name>>

Your response is required for the Agricultural Production Survey.

In July we asked you to complete the Agricultural Production Survey. It is a legal requirement to complete the survey.

If you have completed your form
Thank you very much – your responses will help plan for needs like irrigation, processing, and transportation.

If you have not completed your form
Please complete the paper form and return it in the freepost envelope provided as soon as possible. Or if you prefer, complete the form online. Please complete the survey as soon as possible.

If you are no longer the person responsible for this survey
We thank you for your time. Please call/email us as soon as possible so we can contact the right person.

Thank you for doing your part.
Yours sincerely

Liz MacPherson
Government Statistician

To complete the form online:
See 'Before you begin' checklist
See the information pack we sent in July.
Make sure you have everything you need.

Go to <<URL>>
This code is case sensitive and unique to <<BUSNAME>>.

Complete the form in ONE session
The online form is easier and faster to complete, but partial data cannot be saved.

When you're finished, click **Submit ✓**
Your responses will be protected and kept confidential by Statistics NZ.

Please complete your form online or return the completed paper form by <<DATE>>.

For more information:
see the FAQs on the back of this letter
or call 0800 333 104 / email ag@stats.govt.nz



Appendix 9 Reminder postcard

This was used in the 2015 Agricultural Production Survey.

