

2018 Census – a modernised, digital- first census

A summary of the key operational phases and changes
to the way we are conducting the 2018 Census



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Purpose and background

2018 Census – a modernised, digital-first census explains the operational and process changes for the 2018 Census of Population and Dwellings. These changes are driven by a digital-first, modernised approach.

Background to the 2018 Census strategy

The 2018 Census of Population and Dwellings will differ from previous censuses. Guided by the [2018 Census strategy](#), we modernised the processes, methodologies, systems, and tools across the census programme. Our aim is to make the census as cost effective as possible, while ensuring we deliver high-quality data to our customers. The census programme team will work closely with external vendors and suppliers to integrate census systems and services with other Stats NZ systems.

In previous censuses, census staff visited every dwelling in New Zealand to deliver and collect paper census forms. In 2018 we are moving to a digital-first approach where most dwellings will receive an internet access code in the mail. We will encourage respondents to complete the census online without prompting from a census field officer. The digital-first approach will be supported by a comprehensive marketing and communications campaign. Dwellings that don't respond will receive reminder letters to encourage them to do so. Failing this, they will receive a visit from a census field officer. Field collections staff will use a needs-based rather than a uniform approach, allowing us to get the most value from field collections.

As the 2018 Census moves to a digital-first approach, we expect 70 percent of respondents to complete the census online. We optimised the online experience so it should be quick and easy, with functionality built in to make the forms as intuitive and accurate as possible.

To help us manage the changes to the census model and to ensure our processes are robust, we conducted several tests – a few independent tests and two larger census tests in 2016 and 2017. The testing process is still ongoing – results from this will enable us to be confident about our methodological decisions and our business processes.

We changed the way census forms are processed. Innovating the process allows for more automation and less manual intervention. Increased automation will mean fewer processing operators, offering a more consistent approach to how errors are treated within the data.

In 2018 there will be increased levels of imputation. Imputation improves both the quality of the data overall response. We hope the higher-quality data will better meet our customers' needs and help them better understand New Zealand and its people.

With the many changes to the way we are going to run the 2018 Census, there may be potential impacts on data quality. We are currently investigating these impacts, and will continue to do so throughout the process, so that we understand the impacts of these changes, and the ways they can be managed to ensure the best-quality data is produced.

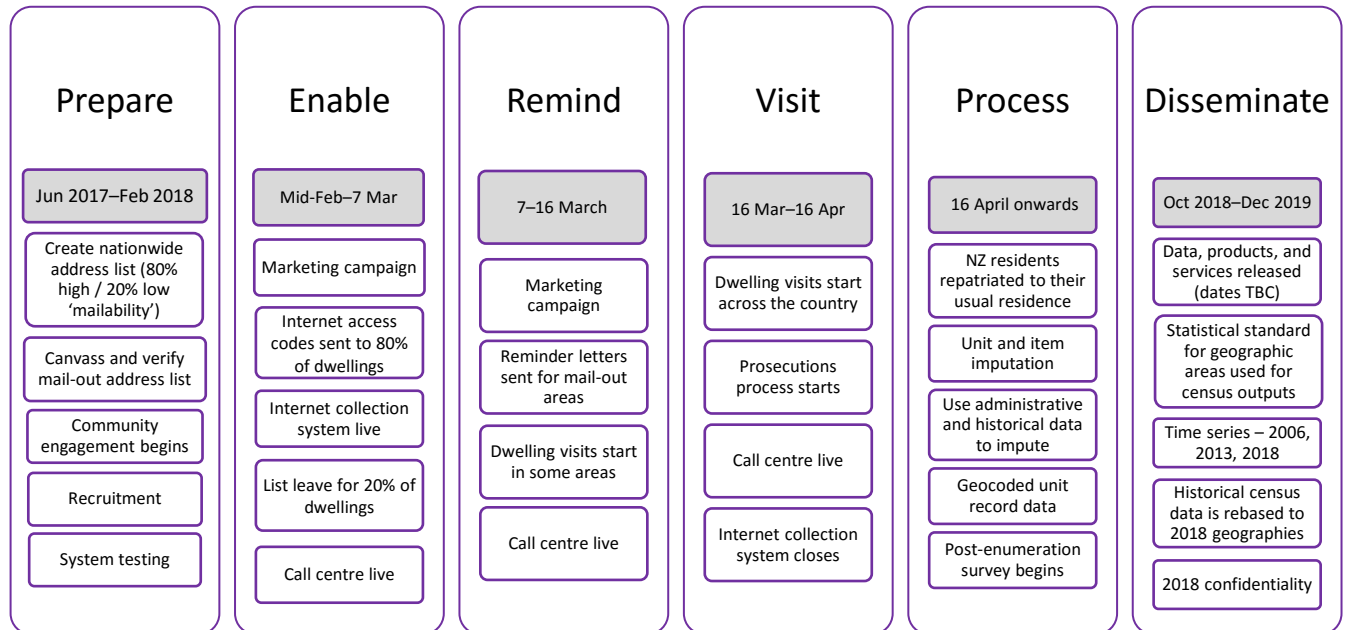
Census data will be used to create customer-focused products and services. There will be products and services that will showcase census data alone, while others will use census data with other information held by Stats NZ. Combining census data with other Stats NZ data will allow customers to access a broad range of information about a particular topic.

2018 Census phases

The operational and process changes for the 2018 Census are driven by a digital-first, modernised approach.

Figure 1 illustrates each of the census phases from June 2017 through to the final release of census data, and the key aspects within each of them. We discuss each phase in this section.

Figure 1
2018 Census phases



Source: Stats NZ

For each phase we use key principles to measure the efficacy and success of the census programme.

Prepare

The first phase runs from mid-2017 up to two weeks before census night. We are using this period to determine a mode of delivery for all meshblocks and establish field management and community engagement teams and processes.

Other aspects of the census programme will be ongoing during this phase, including ensuring the systems being used in later phases are robust, preparing for the data to be received, and deciding which products and services to produce.

The prepare phase has 10 key principles:

1. develop and implement an address list
2. canvass all mail-out areas
3. contact respondents where necessary (during address canvassing)
4. verify address to validate birthed addresses and review canvassing decisions
5. rules determine mode assignment
6. 1 workload = 1 meshblock for canvassing and list-leave areas

7. outsource recruitment and employment of general field staff
8. field staff will use work allocation technology
9. undertake pre-enumeration of larger non-private dwellings
10. begin community engagement.

Principles 1–5 address the ways in which field operations will contact dwellings.

For the prepare phase we developed a high-quality address list. We will mail census materials to approximately 80 percent of dwellings. The address list is a key component of a mail-out census, and is created from the Statistical Location Register, which has a complete list of addresses in New Zealand.

A census field officer will visit all the addresses on the list to verify and update addresses to ensure the list is of the highest quality. They will visit addresses in mail-out areas and the information from these visits will be used to create a mail-out file. Canvassing of list-leave (non-mail-out) areas will happen the enable phase to avoid re visits. Census field officers can enter the land the property sits on to collect the necessary information and may speak to occupants.

How respondents will receive materials

In the next phase, dwellings will receive census materials by mail. If they are unable to receive them, a field officer will have to deliver their census materials. We will determine the ‘mail-ability’ of each meshblock in New Zealand based on the mail-ability of private addresses and the proportion of commercial and non-private addresses.

If we deem that a mail-out approach is less likely to be successful, we will take a list-leave approach. Areas not deemed appropriate for a mail-out approach include those where mail-ability is low and where an area is not predominantly residential.

Recruitment and staff

Census field staff will be allocated workloads by meshblock. Where possible, field officers will be assigned workloads close to their home to minimise travel time and costs. Each field officer will have a handheld device to manage their work and allow them to receive dynamic workload allocation based on where they are needed.

Historically, Stats NZ recruits about 7,000 staff to conduct the census. For the 2018 census, Madison Recruitment will recruit and manage field staff for the prepare, enable, remind, and visit phases. Stats NZ’s census team will continue to recruit and employ field regional managers, area managers, and community engagement team leaders.

During November and December 2017 we will contact most non-private dwellings to let them know the census is happening and to outline their obligations. In late January or early February 2018, field team leaders will get in touch with these dwellings to confirm their expected occupancy and any special delivery instructions.

Community engagement

During the prepare phase we will begin engaging with communities. This engagement aims to get as many community groups and individuals aware of the census. We will encourage these groups to make their contacts aware of the census and the importance of completing it.

We will use targeted strategies to engage communities that are difficult to reach and may have lower response rates. These targeted strategies can be tailored to groups and communities to best meet their needs.

Immediately following the prepare phase is the enable phase.

Enable

During the enable phase, which will run from 23 February to census day 6 March 2018, all New Zealand dwellings should receive a call-to-action letter or a census pack with a call-to-action letter and paper forms. The internet collection platform will go live at the start of the enable phase. We will encourage respondents to complete their census forms on 6 March or earlier if they know who will be present on census night.

The enable phase has 11 key principles:

1. during list-leave most dwellings will receive a call-to-action letter with an online access code
2. customise materials distributed in the field based on the phase in which they will be distributed
3. field officers in some targeted areas will leave paper forms and call-to-action letters
4. we will mail a letter with an access code to approximately 80 percent of dwellings
5. optimise self-response
6. prioritise self-response via the internet
7. use targeted strategies to enable hard-to-reach populations
8. marketing and communications to encourage respondents to participate
9. content is the same for online and English and bilingual forms
10. adopt a minimum data requirement for online responses
11. contact respondents where necessary during list-leave.

Dwellings will receive census materials either by mail or the list-leave process. Respondents will be encouraged to complete the census online. Most respondents will receive a call-to-action letter with an online access code. Respondents will need to request a paper form ('paper by request') by calling the contact centre for mail-out areas or by requesting materials from the field officer in list-leave areas if they are unable or unwilling to complete the census online.

Paper by request is a key part of the census strategy to reach a 70 percent online response rate.

During the list-leave process field officers will combine canvassing and delivery tasks. In most cases they will check addresses and leave materials in letterboxes. In some instances, field officers may need to enter private land or contact respondents.

Targeted strategies

Field and collection staff will target hard-to-reach populations, such as homeless people and new migrants, to ensure they can complete the census forms. This strategy may involve bespoke communication, contact with census field staff, and customised collection strategies. The special enumeration team will be work towards getting the best coverage and response rates for target populations.

Dwellings in some targeted areas will receive a call-to-action letter, an online access code, and paper forms. We expect online participation to be lower in these areas. While we prefer respondents to

complete the census online, giving paper forms in the first instance to dwellings in some targeted areas decreases the number of visits needed, therefore reducing costs.

Most people will not have any interaction with field officers, so the messages we convey in our marketing and communications will be important. Census marketing and communications are working with Clemenger BBDO to encourage participation in the census. To maximise coverage, we will use a range of channels, including social media and television adverts.

A contact centre will be live during the enable, remind, and visit phases to help respondents with any queries or issues they have.

Data-quality assurances

Maintaining data quality is our highest priority even as we make changes to our processes. To ensure this, we provided the same content in English and Māori for both online and paper forms. Respondent experience is optimised for both modes to enable completion of census forms as easily as possible.

One motivation for maximising online response is the improvements we expect to see in data quality. Editing and operator intervention can be reduced with online responses. Online respondents will benefit from automatic routing, auto-fill and as-you-type functions, and piped information (eg they will be asked to confirm the displayed address is their usual address rather than having to enter it).

In the online forms, respondents will not be able to submit responses until they complete these fields:

- name
- sex
- date of birth
- ethnicity
- Māori descent
- usual residence address
- census night address.

These questions are priority 1 variables and directly contribute to census counts or are required for electoral purposes. The first respondent in each dwelling must also list the occupants and confirm the address of the dwelling. For more information about the priority levels of different variables, see the [2018 Census data quality management strategy](#).

We anticipate that most respondents will complete their census forms during the enable phase. However, for those who don't, targeted strategies within the remind phase will encourage them to do so.

Remind

The remind phase runs from census day 6 March to 16 March 2018. During this period we anticipate respondents will progressively self-respond to the census. Two waves of reminders are planned for non-responding dwellings in mail-out areas.

The remind phase has five key principles:

1. self-response by internet or paper
2. no form packs will be sent out, unless requested
3. non-responding dwellings may receive up to two reminders
4. marketing and communications are ongoing
5. pick the most efficient way to remind respondents, which may be an early visit.

We will continue to focus on encouraging respondents to self-respond to the census via internet or paper. Non-responding dwellings with a mailable address will receive up to two reminder letters. The reminder letters are part of our changing methodologies on how we approach our respondents, the public, and visitors. We anticipate that reminder letters will prompt most respondents to complete their census. By sending reminder letters, we can reduce the costs associated with visiting dwellings.

We will send the first reminder letters to NZ Post on 5–6 March, for delivery on 7–8 March. A second set will be sent to NZ Post on 10–11 March.

Because we want respondents to complete the census online, reminder letters will not include paper forms, but they can still request them. Paper forms will be printed and sent on demand to reduce print costs and wastage. We anticipate that the reminder letters will encourage self-response.

The marketing and communications strategy will continue with similar messages as in the enable phase.

The focus of the remind phase is to prompt respondents to complete the census without requiring intervention from census field staff, but sometimes an early visit is deemed appropriate. In this phase we will decide whether visits are required so that we only deploy staff where they are needed.

While we anticipate that most respondents will complete their census during the enable and remind phases, some of them will not. To maximise responses to the census, we have a targeted 'visit' phase to encourage non-responding dwellings to participate.

Visit

The visit phase has six key principles:

1. all non-responding dwellings will get at least one visit, and then further contact will be prioritised
2. all non-responding dwellings will be given paper materials
3. non-responding dwellings are the focus
4. workloads for visiting dwellings are dynamic
5. data is exchanged between processing and field staff, informing field decisions and priorities
6. there will be a prosecutions policy.

All non-responding dwellings will receive at least one visit from a field officer. We expect that contact with a census field officer will encourage some respondents to complete the census. Census field officers will also provide non-responding dwellings with paper forms. The objective of this phase is to achieve any response, unlike other phases where the priority is to encourage online response.

The visit phase is the first reminder for dwellings in list-leave areas without a mailable address because they did not receive reminder letters in the remind phase.

Non-response strategies

We will prioritise non-responding dwellings with a follow-up visit based on the response rates in the area. Non-responding dwellings in low-response areas will be targeted before those in high-response areas.

We will use imputation for variables with no response. More about imputation is explained in the processing section.

Alongside targeting low-response areas, entire non-responding dwellings will take priority in field visits over partial dwelling response (where one or more individuals in a dwelling have not completed their census forms). We are taking this approach because our key focus is on gathering and producing high-quality data.

To help field officers visit dwellings which are of highest priority, workloads will be allocated and updated when field officers sync their devices. This will allow field operations to send field officers to targeted dwellings and areas. Responding dwellings are removed from the allocation when the devices are synced so field officers are not making unnecessary visits, and workloads are allocated based on the home address of the field officer to minimise travel time and ensure efficiency.

A greater uptake in online response, and some improved efficiencies gained by connecting with external vendors, will allow the census programme to receive updates in real time when online census forms are received. This will enable census field operations to prioritise resources and send field officers to targeted non-responding dwellings.

Some individuals and households will refuse to respond to the census. A census produces high-quality data only when a high response rate is achieved. It is a legal requirement to complete the census in New Zealand under the Statistics Act 1975. Because of the importance of the census and the legal requirement to complete it, a prosecutions policy is in place to prosecute individuals who do not complete the census. Stats NZ wants to avoid prosecutions where possible. Our priority is to enable every individual to complete the census in order to provide high-quality data for our customers.

The visit phase of the census process marks the end of the field operations. At the end of this phase the internet collection system will be closed to respondents.

Processing

The processing phase will run throughout the enable, remind, and visit phases. This enables census operations to feed information back to the field operations tool to direct the field effort to low responding areas.

Running the processing systems at the same time as the field effort also allows the data to begin flowing through the system. The data coming through can be assessed for quality and changes made to the system to correct errors.

During the processing phase, there are a number of principles the team will focus on to ensure the data produced at the end is high quality. These principles, which will be further expanded on in this section are;

1. Data is managed as an asset. Customers using census data should be able to identify where manual coding, imputation, editing, or derivations were applied

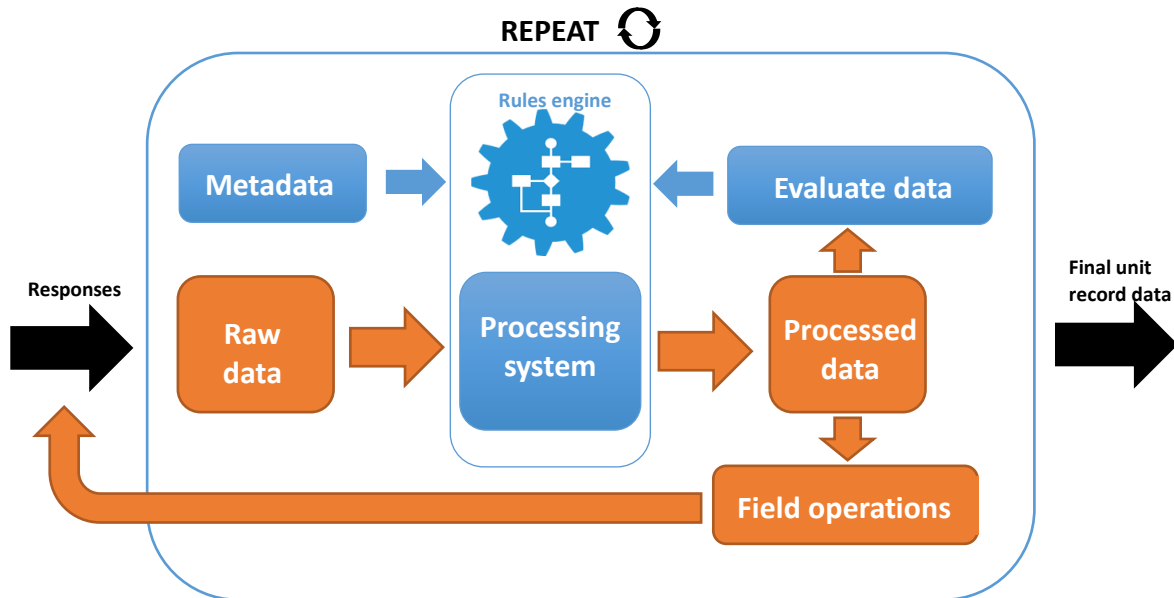
2. New Zealand residents will be ‘repatriated’ to their usual residence
3. imputation will be used as much as possible where necessary to improve data quality
4. administrative and historical data will be used to impute where appropriate
5. a number of tools and solutions will be used to gain efficiencies and data-quality improvements in editing and imputation.

We will carry out various procedures during the processing phase to ensure high-quality data is produced. During this phase we will flag changed data so customers can identify where manual coding, imputation, editing, or derivations were applied.

Figure 2 illustrates how the data will flow through the processing system. Unlike previous censuses, the system is no longer linear. The data will be continually processed, meaning any micro or macro edits will change the system and be applied to the data when it is processed again.

Figure 2

Flow of 2018 Census data through the processing system



Source: Stats NZ

To provide more useful data to our customers, one change we will make is that New Zealand usual residents away from their usual residence on census night will be ‘repatriated’ or assigned to their usual dwelling during the processing phase. Previously, we repatriated them to their usual meshblock. Feedback from customers show an interest in information about families and households. Repatriating people to their usual residence increases the quality of this data.

Imputation

Imputation is a key part of the processing phase, and we are going to do more of it in 2018 than in previous censuses. We will encourage all respondents to complete as much of the census as possible (eg mandatory questions on the online form), but there will be cases where information is missing. We group missing information into two types of non-response:

- item non-response – a respondent submitted a census form with one or more unanswered questions

- unit non-response – no response from a dwelling and/or an individual (the unit).

We will use imputation where appropriate to improve the quality of the data, particularly to reduce non-response. We will examine variables on a case-by-case basis to assess how suitable imputation is. The imputation approach uses a combination of donor imputation and imputation from administrative or historical sources. We will use imputation to ensure final census data reflects as closely as possible the population structure and its characteristics.

The 2018 Census will benefit from an increasingly sophisticated statistical environment, particularly around the availability of administrative data. Work in Stats NZ's Census Transformation team with support from the 2018 Census programme has strengthened capability and understanding in the administrative data area, meaning we can make more use of administrative and historical census data to impute a greater range of variables.

The primary purpose of the census is to provide high-quality data and statistics for our customers to inform good decision-making that will benefit New Zealand. The last phase of the census process called 'disseminate' is part of this objective.

Disseminate

The disseminate phase focuses on releasing the most useful data for our customers in a timely manner. This is in response to our customers' suggestions about what data they would like to see and how this data would be of most use to them.

Products and services

A review of 2013 Census products and services showed customers find it useful to have a time series to compare census data with, and to have information about small geographic units as they have in previous censuses

In 2018, as in previous censuses, the standard time series we will publish is for three censuses (2006, 2013, 2018). Three censuses allows for a 12-year change to be shown. This level of detail is generally enough for most purposes. A three-census time series, not more, ensures our products and services do not get too large to be displayed on screen.

Geographies

For geographic data to be compared across time, we will rebase data from the last four censuses (1996, 2001, 2006 and 2013) to the 2018 meshblock pattern. The 2018 data will not be published at a meshblock level, but at a new level called statistical area 1 (SA1), which is a geographic unit composed of one or more meshblocks. By using this geographic level we will be able to publish more detailed information about small geographic areas with less suppression than if we were to use meshblocks.

Another change for 2018 is the creation of the statistical area 2 (SA2) geographic unit. These units will replace area units and are built from SA1s to reflect communities of interest. The new statistical areas were created as a result of the Statistical Standard Geographic Areas Review 2018 (*insert link to the standard that is being released on 7 December*)

Release schedule

The first release of 2018 Census data to the public will be in October 2018, with all releases concluded by the end of 2019. We will provide a more detailed plan when this is available.

More information about the first census release will be provided in April 2018. All information will be published on our new website. Customers say they have difficulty finding the data. The new site has been designed to make browsing more intuitive, with the aim of making our tools and statistics easier to access.

A range of products and services will be available over the disseminate phase, including configurable tables, summaries, and profiles.