Report of the Statutory Review of New Zealand's 2023 Census

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Contents

Executive summary

This is the final report of the statutory review of the 2023 Census required by the Data and Statistics Act 2022. It covers assessment of 2023 Census operations and support functions from design through to the completion of field operations, data delivery plans and progress through to the end of January 2024, including the use of administrative data, and considerations for future census design.

This report will be submitted to the Minister of Statistics and be published on the Statistics New Zealand (Stats NZ) website, as required by the Act.

Conclusions

The 2023 Census was planned as a "combined" approach involving digital, field, and planned use of administrative data. Stats NZ was diligent in learning the lessons from the 2018 Census experience and reflecting these in the design of the 2023 Census.

The detailed business case outlined three investment objectives for the 2023 Census:

1. Deliver a census that produces data of enough statistical quality to meet statutory requirements.

2. Provide customers with timely and equitable access to rich and statistically sound data to support nationally and locally significant decisions.

3. Deliver a census model that positions Stats NZ to meet future needs for customers.

Overall, the 2023 Census is on track to exceed its target coverage rate of 98% and meet its statutory requirements. An up-lift in the general population response rate to 88.3% and continued development of administrative data will provide improvements in the quality and timeliness of outputs that will help satisfy the second investment objective.

In terms of the third objective, the 2023 Census has seen further development of the use of administrative data which will be valuable for future censuses. The 2023 Census has also confirmed the challenges to achieve desired response rates from full enumeration are persistent and the rates achieved have come at significant cost. We comment further on the implications in Chapter 4.

With increased focus and investment, response rates for Māori and Pasifika improved but still fell short of expectations.

The 2023 Census was affected by the extent of remediation required for the 2018 Census and had to deal with significant disruption in the form of COVID-19, which impacted the 2022 census test and the Northland and Auckland floods and Cyclone Gabrielle in 2023 which impacted collection operations in those areas. The 2023 Census Programme demonstrated flexibility in resourcing and approach as it pivoted in response to the challenges these events presented.

Several aspects of the 2023 Census went well. In particular:

- the 2023 Census Programme Board and strengthened management capabilities worked well. Specifically, the use of independent board members and an independent chair, and greater disciplines in programme planning, management and reporting, risk and issue management, and assurance, proved valuable

- as was the case in 2018, the online system supporting digital response ran well and was able to manage the increased traffic of 2023, so that respondents could complete their census forms online

- the plan to increase field staff numbers was implemented, with improvements in diversity to reflect local communities

- the field collection design focus on enablement and an Assist workstream supported by sufficient paper forms was successful

- the use of an iwi-led collections pilot was innovative and provided important lessons

- the use of external providers in testing, technology, marketing, and recruitment was mostly effective and, in some cases, critical to delivery.

The detailed closure reports prepared by the Census Programme point to issues that affected execution. The most significant areas included:

- A technology issue with application programming interfaces (APIs) and the Mark-in system that had multiple effects on the efficiency of field operations and potentially affected trust in the census. This was exacerbated by the time it took to resolve the issue.

- Data processing systems that were developed late and were unable to be tested in the 2022 census test. This put added stress on the Census Programme.

- An address-frame that did not prove to be as accurate as anticipated. This affected field operations and added confusion and effort in the iwi-led collections and the additional collection efforts in Auckland.

Stats NZ has increased its focus and made genuine and significant efforts to develop its relationships and collaboration with Māori both at the senior executive levels and within the Census Programme. Nonetheless, there remains work to do to embed the levels of co-design and data capability desired by Māori.

The improved outcomes in the 2023 Census have come at a significant cost, estimated at $316.3 million. This, together with the improvements in the availability and use of administrative data in recent years, provides a great incentive to consider, as Stats NZ is, moving from a combined census model to an administrative data first model.

However, moving from a traditional census to administrative data to enumerate the population is very complicated. Safe and ethical methods or practices for the intake, use, and storage of large-scale records from various programmes and sources need to be in place. Also, the

statistical agency needs to have "social licence" to access, combine, use, and store these data – in other words, statistical agencies must have the trust of the public and be able to sustain that trust, to conduct an administrative census.

The decision is a difficult one that must be made at a point that allows sufficient time for effective contingency plans to be put in place and to be successfully deployed should an administrative data first census not be feasible for 2028.

The work Stats NZ has undertaken to date is impressive, but much remains to be done to successfully implement an administrative data first census. It is also clear that whichever option is chosen will represent a major change from previous censuses and will consequently bring significant risks for Stats NZ. Understanding these risks and the required contingency and mitigation plans, together with strong governance and strengthened capabilities, will be critical to an outcome that meets the expectations of customers and stakeholders. Chapter 4 provides matters for further consideration as planning continues.

Lessons and insights

The 2023 Census Programme has completed a thorough lessons-learned process covering all the workstreams, with the outcomes presented in the relevant closure reports. These contain many detailed insights and recommendations for consideration should a future census follow a 2023 Census design or employ elements of it.

There are key lessons and insights to be drawn from the 2023 Census experience:

- The strengthened governance exercised through the Census Programme Board focused accountability of the Census Programme and struck an effective balance between challenge and support. The use of independent board members, an independent chair, and willingness to use external advisors and experts, added value and gave confidence.

- The strengthened programme management capabilities and programme management disciplines were crucial to getting the programme back on track. It is noted these are not yet core strengths in Stats NZ.

- There is work needed to continue to build on the partnership with Māori. Whilst there is a strong relationship focus at the senior levels in Stats NZ, within the Census Programme the relationship defaults to a transactional rather than a partnership one, as the census design and timetable are set early in the census cycle. Co-design, collaboration and partnership skills are important in underpinning the way the Census Programme and Māori work together. Engagement with the Census Programme must start early (in model design and planning) and be sustained throughout.

- The iwi-led pilot as designed is not likely to be scalable across the country at a level that is affordable. Nonetheless, the pilot did provide lessons on the need for early engagement,

what is required to give effect to a relationship-led model, and the nature and level of support needed by communities.

- The issues with technology highlight the importance of having the right capabilities and disciplines. This applies both within the Census Programme and corporate technology services.

- Greater emphasis in planning and delivery needs to be given to data processing and delivery systems. Late delivery compromises testing creating issues later in the census life cycle.

- Inaccuracies in the address-frame created inefficiencies and frustrations in field operations. It is noted an accurate address-frame will be more critical in any shift to an administrative census.

- There are opportunities to increase census response rates and Stats NZ may want to consider the following design changes for any future field operations.

  o All mailout or information drop-off after the initial wave should only be targeted to non-responding dwellings. There was a reminder that went out to all mailable dwellings around the time of census day, creating confusion within dwellings that had already responded. This confusion was confounded by a new secure access code being provided in those reminders.

  o Post-census day reminders were sent during a concurrent non-response follow-up (NRFU) operation. There is an opportunity for greater response rates or cost reduction, if NRFU begins only after a period when the post-census day reminders are allowed to have their intended effect. A post-census day reminder period without concurrent NRFU would allow collectors to then focus on a smaller number of non-responding dwellings, thereby increasing the potential for more visits by collectors, or fewer collectors (increasing field resource efficiency).

  o In 2023, collection was extended because of Cyclone Gabrielle. This has demonstrated that good quality data can be achieved a number of weeks after census day, while increasing response rates overall. Stats NZ may want to consider a longer field operations period for the 2028 Census.

The opportunities noted illustrate the potential for what are quite detailed tweaks to shift response and/or generate efficiencies.

Recommendations

The recommendations are based on the findings of the 2023 Census review and therefore reflect a census that has a full enumeration component. A future administrative data first census will still have a survey component but at a reduced scale. As a result, some of the recommendations will need to be reviewed by Stats NZ for relevance once the 2028 Census design has progressed sufficiently. Many of the recommendations are relevant whatever design is deployed.

Governance and management

1. Continue to utilise a board structure with independent members and an independent chair to provide oversight on the Census Programme.

2. Build programme and project management capabilities, and best practice programme disciplines and frameworks within Stats NZ so that these are core competences within the agency.

Relationship with Māori

3. Review the approach to partnership to ensure that the intended relational focus on collaboration and co-design is embedded in the Census Programme. This implies alignment of expectations, early and sustained engagement, and building of the necessary skills and capabilities. It may be necessary to review governance and process arrangements to ensure inclusion of relevant groups as part of this process.

Planning, design, and collection

4. Plan for stronger coordination between field operations and community engagement.

5. Devote sufficient resources for the address-frame to be properly maintained between censuses. Consider building ongoing canvassing of the address-frame into the broader Stats NZ survey programme.

Technology

6. Plan to build systems to a quality the allows for their re-use in future censuses.

7. Increase planning oversight of post-collection steps such as data processing and delivery.

8. Build and test processing and data delivery systems earlier in census cycle, to ensure maximum opportunities to test and feedback for improvements and minimise potential for delays to downstream processes.

9. Ensure best practice technology management practices are implemented, including those that govern the relationship between the census and corporate IT. For example, ensure system ownership is well-defined early in the census cycle, clarify who can provide and document the business requirements (statements of work) and train those individuals on how specifications should be received by the IT staff responsible for building the product,

and use professionally qualified project management, adequate documentation of systems, and appropriate change control.

10. Consider the census systems for corporate use by other surveys, as well as any other census system that has similar functions in other parts of Stats NZ.

Testing

11. Consider moving the field test earlier in the census life cycle to provide discipline to finalise key census design changes early and allow sufficient time to remediate issues and implement lessons from the field test.

Introduction

Purpose and scope of the review

A post-census review is a requirement under section 37 of the Data and Statistics Act 2022. The Act requires the Government Statistician to undertake a review of the operation of the census within 12 months of the date of the census. A review report is to be presented to the Minister of Statistics and published on an internet site maintained by, or on behalf of, Stats NZ.

The Government Statistician determined that the review of the 2023 Census Programme operations ('this Review'), the first under the Data and Statistics Act, would be an independent review.

The overarching purpose of this Review is to provide an assessment of the effectiveness of the 2023 Census Programme, and the lessons and insights that may be valuable for 2028 Census planning and delivery.

The scope of this Review includes:

- governance and management

- design, planning, collection (including the Iwi-led collections pilot), and delivery performance

- census support functions including technology, communications, marketing, and engagement

- data delivery plans and progress, including the use of administrative data and release planning

- census results including return rates, response rates, and quality measures.

Comments and observations on the emerging approach and plans for the 2028 Census are also included within the scope of this Review.

It is noted that given this Review report is due to the Minister of Statistics by 7 March 2024, the scope of this Review does not include the data releases or the results of the Post-enumeration Survey, which will confirm response and coverage rates when completed.

Approach and report structure

This Review was conducted in two phases:

- Phase one covers assessment of 2023 Census Programme operations and support functions from design through to the completion of field operations, and data delivery plans and progress through to mid-November 2023, including the use of administrative data.

- Phase two covers further review of data delivery progress, and results at the time of the production of the provisional CURF (Census Unit Record File). The lessons and insights that are useful for the 2028 Census are further refined.

The approach involves review of key Census Programme artefacts and documentation, including detailed closure reports for each workstream, independent assurance reviews, the internal collections phase review, and independent evaluations.

Interviews were held with key Census Programme staff, Stats NZ management, the Minister of Statistics, and a selection of external stakeholders.

Details of the key documents and interviewees are included in Appendix 2.

This final report is set out in four chapters. The first two cover the effectiveness of Census Programme execution and data delivery plans and progress, Chapter 3 deals specifically with the Iwi-led collections pilot, and Chapter 4 with considerations for future censuses.

Acknowledgements

The reviewers wish to acknowledge all those who generously provided their time in support of our work, including Stats NZ management and staff, and external stakeholders.

We received the full cooperation of Stats NZ and were provided with full access to the people and information we required.

Chapter 1: Effectiveness of 2023 Census design and execution

1.1 Context for the 2023 Census

Work on the initial business case began late 2018, at a time when material effort was being expended to remediate the impacts of the very poor response rates recorded in the 2018 Census. These remediation efforts continued throughout 2019, and the extent and intensity of this effort did impact resourcing and timing in the initial stages of 2023 Census planning.

Learning from the experience of the 2018 Census, the 2023 Census was planned to be design-led with greater community engagement, more field staff, and stronger enablement and non-response follow-up (NFRU) supported by more paper forms. Material improvements in governance and management, including programme management disciplines, were put in place. Improvements in the use of administrative data continued. The 2023 Census evolved from the digital-led focus with remediation using administrative data of the 2018 Census, to a more "combined" approach involving digital, field, and planned use of administrative data.

The detailed business case outlines three investment objectives for the 2023 Census:

1. Deliver a census that produces data of enough statistical quality to meet statutory requirements.

2. Provide customers with timely and equitable access to rich and statistically sound data to support nationally and locally significant decisions.

3. Deliver a census model that positions Stats NZ to meet future needs for customers.

The 2018 Census was seriously disrupted by external events, principally the 2016 earthquake and the evacuation of Statistics House. It is noted that the 2023 Census also had to deal with significant disruption in the form of COVID-19, which impacted the 2022 census test, and the Northland and Auckland floods and Cyclone Gabrielle in 2023 which impacted collection. How the Census Programme dealt with these challenges is discussed further in this chapter.

1.2 Governance and management

This section reviews the governance and management arrangements, including programme management, risk and issue management, assurance, and costs and benefits.

1.2.1 Governance

The 2023 Census Programme Board was the principal body charged with oversight of the Census Programme. Its roles, responsibilities, and accountabilities were clearly set out in its terms of reference.

The board membership was made up of three independent members, the Government Statistician, the Senior Responsible Officer (SRO), and a number of Stats NZ's Executive Leadership Team (ELT) members. Whilst in the early stages of the programme all ELT members were board members, over time this reduced to those whose functions provided significant support to the Census Programme.

The independent members were constant throughout and brought significant expertise in governance of large and complex programmes, international census programmes, and Māori/iwi perspectives. From November 2020 one of the independent members chaired the Board. The value of the independent members and having an independent chair was significant and widely acknowledged.

The Board met regularly throughout the programme, varying its tempo in response to the stages and issues of the Census Programme. It was an active board, providing leadership and support, ensuring that the Census Programme was being robustly managed, properly resourced, and adequately funded.

The overlapping membership of the Board and the ELT did ensure that the ELT was actively involved in governance and oversight of the Census Programme. The Government Statistician was an active participant in the Board and fully engaged with the Census Programme.

The Board received regular and detailed reporting covering all aspects of the programme. The reporting was highly structured and including status and risks and issues, and clearly outlined decisions required. Regular deep dives were conducted in specific areas enabling the Board to fully understand issues the Programme was dealing with.

The Board worked effectively with the Programme and Stats NZ leadership in dealing with the response to Cyclone Gabrielle. Resourcing and technology were two areas with issues that proved difficult to resolve and from which there are lessons to be learned.

The quality of governance was a material step up from the 2018 Census. The experience of the 2018 Census did result in the Board having a tight operational focus for the 2023 Census. With stronger management capability and quality governance there is an opportunity to shift more operational matters to management, with the Board remaining focused on oversight and strategic issues.

1.2.2 Management

The early stages of business case development in 2019/20 required high-level model design and planning, and initial organisation establishment was led by the Census Business Manager.

Subsequently, the Census Programme came under the leadership of a full time SRO, who was also a member of Stats NZ's ELT.

A Programme Director with significant experience in large complex programme delivery was appointed in September 2020, and all Census Programme functions reported to the Programme Director. The programme structure evolved over the course of the programme. The structure as it was during the collection phase is shown in Figure 1; earlier structures were similar.

The Programme Director introduced best practice project management disciplines and reporting processes. These were a material step up from those previously in place and took considerable effort and time to implement. An external maturity review in September 2021 assessed the maturity of the Census Programme Management Office as 'foundational'. After changes in leadership and a lift in capability, a second review in May 2022 noted a 'seismic' shift in maturity (most areas rated at 'mature' level).

It is clear from interviews that there were tensions within the Census Programme as a result of the introduction of these best practice processes. With the departure of the Programme Director (and SRO) there is a risk that these disciplines will not be sustained.

Figure 1: 2023 Census Programme structure
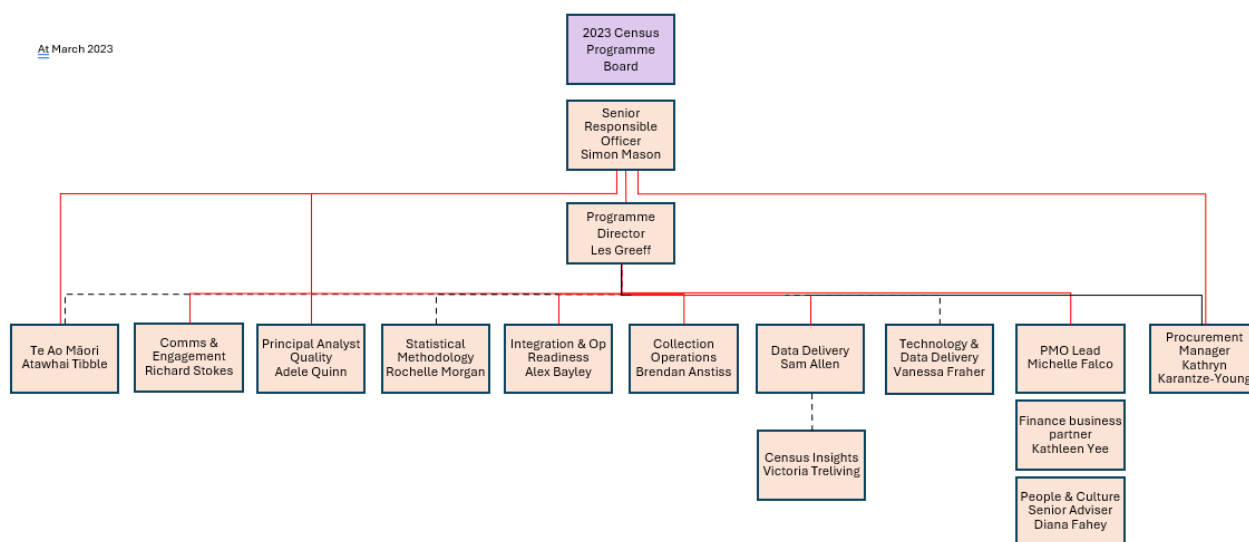
The Programme Director chaired the Programme Leadership Team that comprised the leadership of all relevant functions. This group was accountable to the Board for the successful delivery of the programme with responsibility for day-to-day operations and issue resolution.

Within the Census Programme, the Collection Operations function established the Operational Leadership Team (OLT). Collection operations was responsible for census data collection including all processes that supported field operations (for example recruitment, on-boarding,

training, and scheduling of 3,600 field staff, and workforce health and safety), and enablement (paper, mailouts, assist, non-response follow-up). Effective performance required strong active management and integration with other parts of the Census Programme.

The OLT adopted the CIMS (Coordinated Incident Management System) methodology which provides a robust framework for operational management, including incident response.

When operations were at their peak there was a daily and weekly cadence of meetings and reporting with a focus on required actions.

As with the programme management disciplines, the rigor of the CIMS approach was a material step up for the programme team. The more "command and control" approach resulted in tensions. However, the nature of collection operations requires strong structure and a level of intensity if they are to be successful.

A key aspect of the management process for the 2023 Census was greater use of operational data for management. Daily dashboards displaying the national and regional situations (for example, weather warnings, COVID-19 status, media, and events) and details of field staff numbers, forms received, enablement, and incidents were available online, and utilised in planning active responses to issues.

1.2.3 Risk and issues management

The increased level of discipline in programme and operational management approaches provided a strong base for the recording and management of risks and issues. At an operational level the CIMS methodology drove incident reporting on matters affecting collection and field operations.

A review of the risk and issues registers indicates they were thorough and compliant with best practice. There were two themes in particular that were present through most of the Programme:

- Resourcing: Issues varied from the slow speed of the establishment of the initial census organisation, to concerns relating to programme and project management capability (especially within technology) and the ability to attract sufficient field staff. Active mitigations were implemented, and while they ultimately addressed the issues sufficiently, there is a sense that in some cases faster action would have helped.

- Technology: Unanticipated incidents occurred that had significant impacts on field operations, and the delivery of processing systems was late. Mitigation took longer than desired. Technology issues are explored in more details in section 1.4 (p 22) of this chapter.

Cyclone Gabrielle hit New Zealand early in the field operations of the 2023 Census. Stats NZ needed to make quick and effective decisions on how the census operations should respond and did so very effectively. Operations were shut down in cyclone-affected parts of the country and a management team was introduced that would allow for the appropriate (from the respondent perspective) and safe re-introduction of field activities.

1.2.4 Assurance

The Census Programme established a comprehensive assurance programme based on the three lines of defence model.

Internal quality management and assurance was built into the programme and internal audit was utilised where required. A Design Integration Forum and, in the early stages an Enterprise Design Authority, were also utilised.

Scheduled Gateway and independent quality assurance (IQA) reviews were put in place at appropriate points in the programme life cycle. Gateway assessments evolved from 'Amber' in 2019 and 2020, where it was recognised that the programme was behind schedule, to 'Amber green' in December 2022 with delivery success rates as probable.

IQA #2 in November 2020 rated the programme 'In doubt'. This rating reflected the immature state of programme management and organisation establishment. Subsequent IQAs noted the ongoing improvements to programme management and governance. The most recent IQA #6 in October 2023 rates the ability to deliver the initial releases as planned as 'Highly likely'. Issues of concern relate to data quality, as a result of late delivery of processing systems, and the uncertainty of the nature of the transition from the 2023 Census to the future census.

The Department of the Prime Minister and Cabinet also completed a readiness assessment.

All assurance reports were reviewed by the 2023 Census Programme Board. The Census Programme team has been diligent in the follow-up of assurance recommendations, including lessons from the 2018 Census.

The scheduled assurance activities were augmented at different points by the use of external, including international, experts to test thinking on specific risks and issues. This willingness to engage with others is positive.

As with aspects of 2023 Census design, the assurance programme partly reflected a level of conservatism as a result of the 2018 Census experience. In future, there are potential opportunities for a more risk-based approach aligned to census design.

1.2.5 Costs and benefits

The 2023 Census is funded through a multi-year appropriation from financial year 2020/21 through to 30 June 2024. Increases to the initial appropriation for the increased costs of field staff, the iwi-led pilot, and to respond to the impact of Cyclone Gabrielle resulted in a final appropriation of $319.6 million, of which $278.9 million had been spent by 30 June 2023. The remaining appropriation to 30 June 2024 provides funding for census data dissemination. If the Census Programme tracks to plan to 30 June 2024, total spend is expected to be $314.4 million.

Of the total spend, approximately 45% is for collection operations, 13% for programme management, and 12% for communications, marketing, and engagement. The remainder is for methodology, technology, operations, and processing and insights.

A census that meets its statutory requirements of coverage and quality provides outputs critical to determining the number of electoral districts and the electoral boundaries, underpinning health funding allocations, informing important national and regional policy and decisions (for example, on infrastructure investments) and private and public sector research.

There is a thorough approach to benefits management, based on independent assessment of the value to New Zealand of a quality census, outlined in the detailed business case. The total value of the census is estimated at $2.8 billion (Carl Bakker, 2021). The benefits and key performance indicators (KPIs) linked to the investment objectives are set out in Figure 2.

Figure 2: 2023 Census investment objectives, benefits, strategic initiatives, and key performance indicators

Investment objectives	Benefits	Strategic initiatives	Key performance indicators (KPIs)
Investment objective 1: Deliver a census that produces data of enough statistical quality to meet statutory requirements **Investment objective 2:** Provide customers with timely and equitable access to rich and statistically sound data to support nationally and locally significant decisions **Investment objective 3:** Deliver a census model that positions Stats NZ to meet the future needs of its customers	**Benefit 1:** Value to New Zealand **Benefit 2:** Improved legislated use of data (electoral) through timely availability of new census data **Benefit 3:** Improved quality, accessibility, use, and application of census data provided to customers	**Initiative 1:** Drive high response rates **Initiative 2:** Deliver quality data to meet customer needs **Initiative 3:** Build trust to gain commitment **Initiative 4:** Build trust and value for Māori through data equity	**KPI 1:** National response rate total population ≥ 90% **KPI 2:** National response rate for people of Māori descent ≥ 90% **KPI 3:** National net coverage rate total population ≥ 98% **KPI 4:** National net coverage rate of people of Māori descent ≥ 98% **KPI 5:** A first release of census data will occur by 31 May 2024 **KPI 6:** Improve the quality of iwi affiliation data: (a) Priority level for iwi affiliation increases from 2 to 1 (b) Iwi affiliation quality metric 1 quality score improves from 0.71 (very poor) to ≥ 0.90 (moderate or above) **KPI 7:** Percentage of Māori who have medium to very high trust and confidence in a 2023 Census by census day ≥ 90% **KPI 8:** Improved trust and confidence of Tangata Moana – Pacific in the 2023 Census: (a) Percentage of Pacific Peoples who have medium to very high trust and confidence in a 2023 Census by census day ≥ 90% (b) National response rate for Pacific Peoples ≥ 90%

At the time of this Review, Stats NZ was on track to meet KPIs 3 and 5 and looked to be close to meeting KPIs 1 and 4. KPI 6(a) had been delivered. KPIs 2, 7, 8a and 8b will not be met. The outcome of KPI 6b will be known as part of the individuals and dwellings data release in October

2024. The final outcomes for KPIs 1, 2, 3, 4 and 8(a) will be measured by the Post-enumeration Survey (PES). The results from the PES will not be available until late 2024. The Census Programme will produce interim response and coverage assessments before first release (in April 2024). The outcome of KPI 5 will not be known until the data processing and delivery phases are complete and the first release made available.

1.3 Planning, design, and collection

1.3.1 Overall design

The 2023 Census was planned as a census with minimal change, improving upon the approach for the 2018 Census, which involved considerable modernisation. It is described broadly in the business case as a 2023 Census that would use the successful parts of the 2018 Census, changing only where needed to 'fix' what did not work well and deliver a census to a bigger and more diverse population.

The approach to the 2023 Census had a few key features that differentiate it from the 2018 Census design. For example, there was a significant planned increase in field staff – "boots on the ground" – to make sure that everyone had access to a census form before census day and that anyone who had not completed their form was actively followed up. As a result, the 2023 Census was expected to deliver improved response rates and higher-quality data. It was also designed to increase trust in the general, Māori and Pasifika populations. For Māori, there were specific goals to build statistical capacity and capability, increase collaboration and establish co-design partnerships.

Based on expertise developed following the 2018 Census, the 2023 Census would be the first time that the New Zealand census would be designed to be a "combined census", or one which consisted of a full field enumeration and planned use of administrative data to fill gaps resulting from non-response. It was expected that 90% of the population would respond during the 2023 Census. The remainder of the population would be found in administrative data available to Stats NZ, with an overall coverage rate expected to be in the range of 98%. New Zealand's 2023 Census was the first within major English-speaking countries of the world to adopt and label their census as a "combined" census.

As with the previous census, both online and paper forms were planned, with added emphasis in the 2023 Census on ensuring a full "enablement" of the population to respond through a much-increased availability of paper forms. Enablement would also be increased in 2023 through an Assist stream, providing additional in-person support via field staff (census collectors), in areas of the country where increased barriers exist for people to respond on their own, or where for other reasons response has been relatively low. In Assist stream and Deliver stream parts of the country, census forms packs including an internet access code and paper forms would be delivered by field staff (15% and 15% of the population, respectively), although most of the population (70%) would receive their census information (either letters with internet

access codes or census packs with an internet access code and paper forms) via the postal service as a part of the Mailout stream.

For the 2023 Census, there was limited change to the questions asked, with the most important changes being the addition of questions on gender, sexual identity, and variations of sex characteristics. There remained two form types: a dwelling-level form, and a form to be completed for each individual who was in the country on census cay, 7 March 2023, for both paper and online. Online presented an extra household set-up form. As demonstrated in Figure 3 below, preceding census day was a three-week period where materials were made available to respond, and the importance of completing the census form was communicated. A reminder letter campaign began just before census day, and continued into the 30-day follow-up period, when census collectors were to go door to door and encourage or collect completed forms.

The mailout of census packages and subsequent operations were designed to get response from all individuals living in dwellings identified in the address-frame, a list of in-scope dwellings maintained by Stats NZ.

Figure 3: 2023 Census collection model
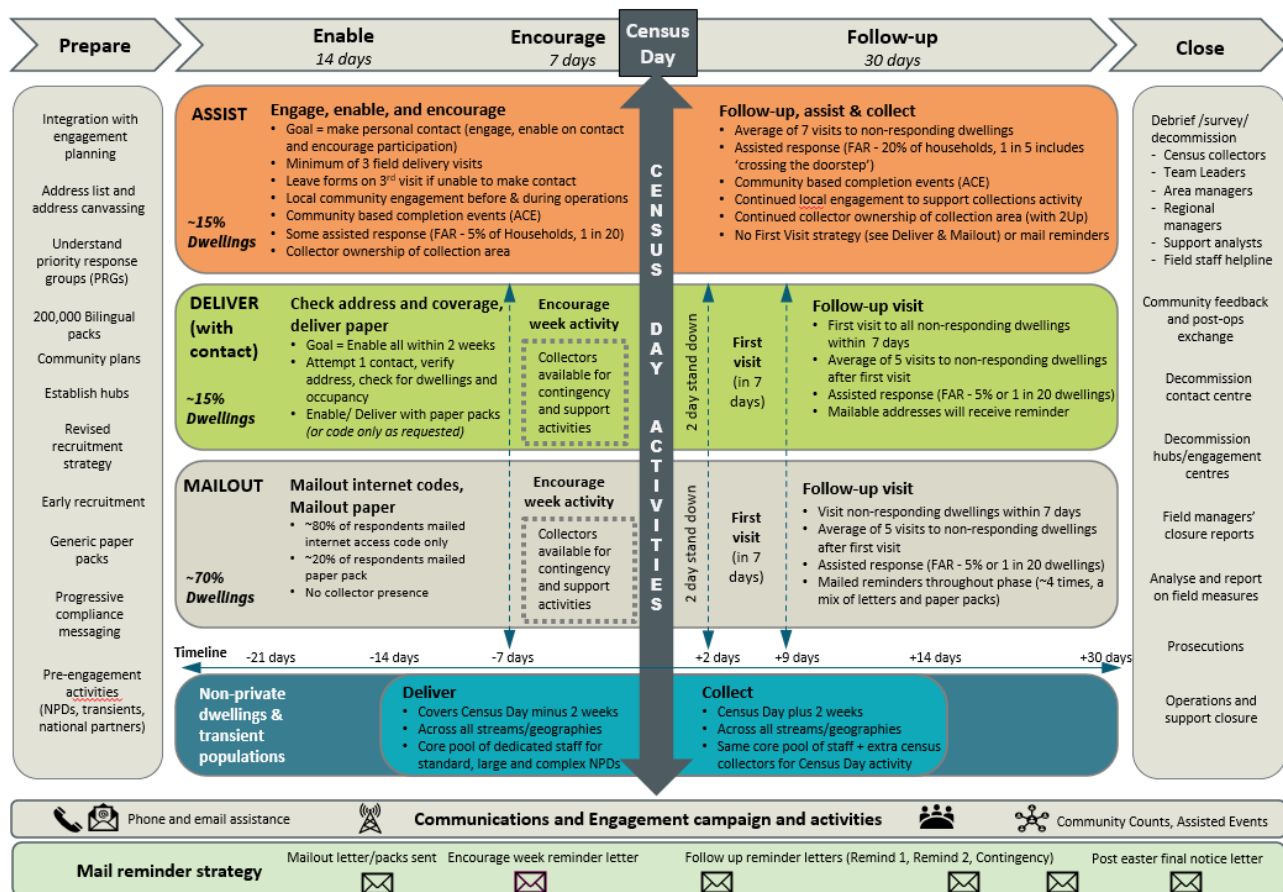
1.3.2 Design and planning effectiveness

The design of the 2023 Census was effective, with the return rate meeting expectations and available administrative data on track to provide the anticipated 98% coverage rate. These targets will be met despite considerable issues created when Cyclone Gabrielle hit an already rain-soaked North Island early during field operations.

Stats NZ responded effectively to the issues that Cyclone Gabrielle created for the census. Loss of life and damage to structures and property meant that collection in certain parts of the country needed to be suspended. Stats NZ understood very quickly that census taking in cyclone-impacted parts of the country was not possible and may not be feasible or appropriate for an extended period. As a result, a taskforce (called Te Ahu Kauawhi) was stood up that allowed a proper pause and re-start of operations in the Tairāwhiti and Hawke's Bay regions. Additional funding of $36.67 million to support the increased collection activity was sought and approved.

In the lead up to the 2023 Census, Stats NZ executed well on its plans. High-level targets for hiring sufficient staff were hit, throughout the country. Systems for internet collection functioned very well and the amount of paper census forms produced was enough to ensure proper enablement of census response.

Figure 4: Estimated daily individual form return rates[1] for the 2018 and 2023 Censuses
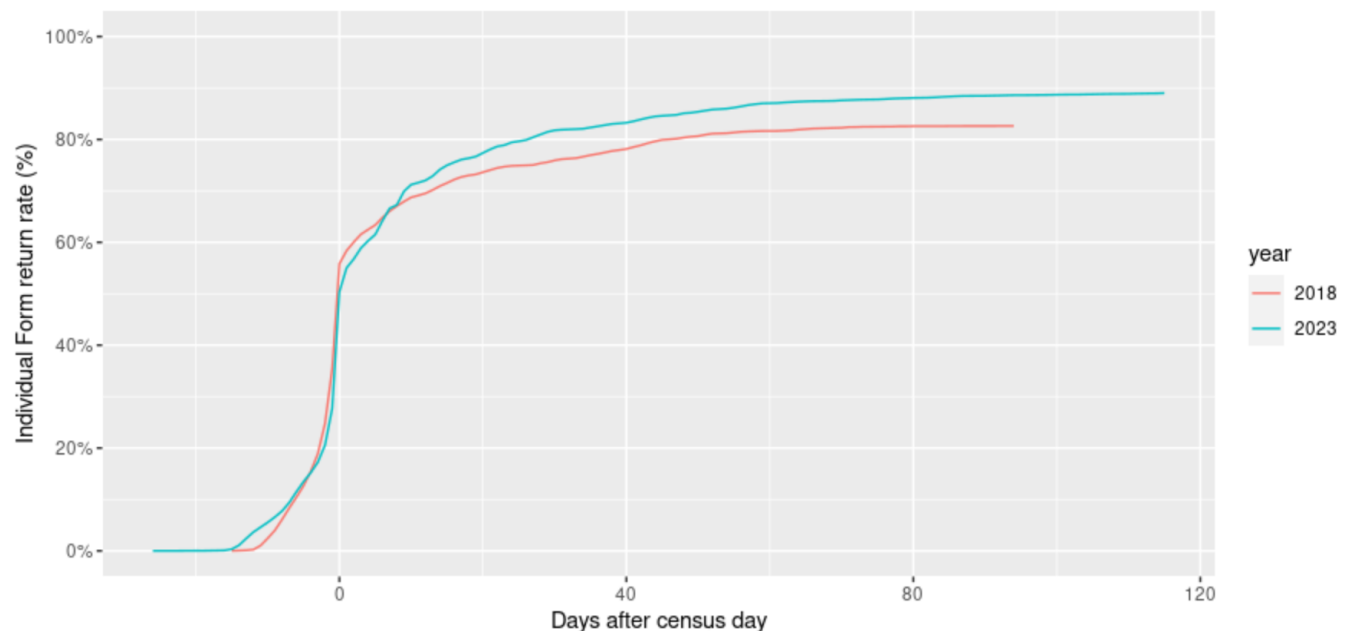
[1.] Measured as individual forms received as a percentage of the estimated resident population.

The daily return rates through the collection period shown in Figure 4 demonstrate the improved effectiveness of field operations relative to the 2018 Census. Return rates for the 2023 Census were initially similar to those in the early period of the 2018 Census, but increased engagement

and field collector support in the 2023 Census resulted in a return rate that is much improved on 2018.

Figure 5 provides interim 2023 results at the time of finalisation of this report.

Figure 5: Interim coverage and response rates

	2013 target	Achieved	2018 target	Achieved	2023 target	Interim[1]
National population net coverage rates:	98.0%	97.6%	98.0%	97.4%	98.0%	99.1%
Sub-group coverage rates:						
Māori	97.0%	93.9%	96.0%	95.6%	98.0%	98.0%
Pacific Peoples	97.0%	95.2%	96.0%	95.1%	98.0%	98.4%
Asian	97.0%	97.0%	96.0%	96.7%	98.0%	99.4%
15-29-year-olds	97.0%	95.2%	96.0%	95.3%	98.0%	98.5%
National population response rates:	95.0%	93.2%	94.0%	85.8%	90.0%	88.3%
Sub-group response rates:						
Māori	94.0%	89.7%[2]	92.0%	73.4%	90.0%	76.7%
Pacific Peoples	94.0%	90.8%[2]	92.0%	72.0%	90.0%	79.9%
Asian	94.0%	93.3%[2]	92.0%	85.6%	90.0%	91.5%
15-29-year-olds	94.0%	90.3%	92.0%	79.5%	90.0%	84.8%

[1.] It is noted these results are interim because they do not yet include information from the 2023 Post-enumeration Survey.

[2.] Ethnicity was not imputed in 2013 Census data. These response rates are estimates based on imputation of level 1 ethnicity indicators for population estimates published in NZ.Stat. These assume that ethnic imputation is applied at the same rate.

Notwithstanding the improvements to design and field execution investment, the interim national response rate falls just short of target. However continued development of administrative data techniques has enabled an interim national coverage rate that exceeds target.

Although improved, it is noted that response rates for both Māori and Pasifika were below expectations. The response for Māori is further elaborated in section 1.6 (p 27) of this chapter.

Pasifika response rates improved from 72% in 2018 to 79.9% in 2023 as a result of a stronger investment in engagement. However, there is an opportunity to utilise earlier and sustained engagement based on the learnings from the 2023 Census about the relative effectiveness of events and channels utilised.

While response rates improved, this was achieved while adding an emphasis on employee health and safety. It can be challenging to do both, as census collectors need to be insistent with non-responding dwellings to get high response, but this insistence can be what causes issues of health and safety. In 2023, with added emphasis on health and safety (for example, the use of the Stay Safe app used in the field) there were only 10 high-rated health and safety incidents amongst the 3,600 field staff, of which six were dog bites.

However, there was some deviation from the field operations plans:

- Quality issues with the address-frame were identified during field operations which may have been avoided if a field canvassing had taken place prior to collection operations. These quality problems created backlogs in a process of address verification and therefore delays in the enumeration of some dwellings. In addition to an ongoing frame maintenance programme to address these issues, Stats NZ should be regularly assessing the quality of its frame.

- A last-minute change to the underlying IT infrastructure resulted in slow transfer of information on which dwellings had responded via the internet, to collectors in the field following-up on non-response. As a result, some effort by collectors was wasted, as there were many visits to dwellings which had already responded. In addition, the issue created mistrust in the metrics in field operations reports used by census managers. Response to correct the problem was slow. This issue is discussed later in section 1.4 (p 23) of this chapter.

- Coordination between field operations and engagement teams was not optimal, resulting in missed opportunities to engage respondents.

In addition, while the design of the 2023 Census field operation is on track to achieve its target response rate and despite some major challenges, there are opportunities to increase response rates and Stats NZ may want to consider the following design changes for any future field operations.

- All mailout or information drop-off after the initial wave should only be targeted to non-responding dwellings. There was a reminder that went out to all mailable dwellings around the time of census day, creating confusion within dwellings that had already responded. This confusion was confounded by a new, secure, internet access code being provided in those reminders.

- Post-census day reminders were sent during a concurrent NRFU operation. There is an opportunity for greater response rates or cost reduction, if NRFU begins only after a period when the post-census day reminders are allowed to have their intended effect. A post-

census day reminder period without concurrent NRFU would allow collectors to then focus on a smaller number of non-responding dwellings, thereby increasing the potential for more visits by collectors, or fewer collectors (and increasing field resource efficiency).

- In 2023, the census collection was extended as a result of Cyclone Gabrielle. This has demonstrated that good quality data can be achieved a number of weeks after census day, while increasing response rates overall. Stats NZ may want to consider a longer field operations period for 2028.

1.4 Technology

1.4.1 Technology plan

The 2023 Census made great use of a diverse suite of technology products, much of which was developed from what was used during the preceding cycle. This included the field management system (Salesforce), the Workload Creation and Allocation Tool (WCAT) used to assign cases to collectors, the Internet Collection System (ICS), and the census processing system, as well as a number of other systems.

Census systems are built and maintained using a combination of internal (Stats NZ) staff and external vendors. Some census systems are built for and used exclusively within the Census Programme (for example, ProMS, WCAT, and the Operational Intelligence dashboard), while others were shared with non-census programmes at Stats NZ (for example, the health and safety module in Salesforce, census R-environment, and already existing corporate systems updated for census such as TrAK, Salesforce, and Mark-in).

The approach for the 2023 Census was for managed change to technology and systems, from the similar tools built for the 2018 Census. Changes to technology and systems would be made to address any necessary change in the census design, as well as to adapt to shifts in technology since the previous census. By design, any proposed change to the systems would be assessed against resourcing impacts and available time for adaption. In general, systems were built, tested, and delivered on time, with a few exceptions.

1.4.2 Technology performance

As was the case in 2018, the ICS ran well and was able to manage the increased traffic of 2023, so that respondents could complete their census forms online. By the end of the census collection, 77.9% of individual and household forms from private dwellings were completed online, a decrease from five years earlier (87.9%). This decrease is most likely a result of the increased availability of paper forms. Since it is the primary response channel, the risk associated with an ICS failure during operations was high. However, for two consecutive cycles, the system ran well and was available throughout field operations.

1.4.3 API/mark-in issue

Other major systems functioned as expected, however, the communication between systems was impeded by challenges related to the application programming interface (API) used by Stats NZ. Late changes to the API left it unable to transfer the large volume of the data between census systems, at the pace required for proper census operations.

Although the API change was flagged quickly within the census incident management process, a resolution was slow and was not fully fixed prior to field operations. During field operations the insufficient capacity of the API manifested itself in the mark-in problem. Essentially, the ICS was receiving high response. While the completed forms were being submitted securely to the Stats NZ environment, the API could not properly manage the transfer of information to the Salesforce system used by census collectors. Collectors in the field could not see, therefore, that many dwellings had already responded online. The result was a large number of visits to dwellings that had already responded, an effort that would have been better placed in pursuing non-responding dwellings.

The API/mark-in issue had multiple effects. First, it prevented census managers from optimising the use of the collector workforce. Second, a mistrust in field reports began to set in, impacting the effectiveness of the management information systems, which were running as expected. Third, for those living in the dwellings unnecessarily visited by collectors, trust in Stats NZ was impacted, as some would wonder if census forms previously submitted on the ICS were received or managed properly by Stats NZ. In addition, there were downstream impacts to other operations of the census, such as the reminder mailouts, for which manual work arounds were developed.

Even though the problems were identified and appropriately designated as an incident with high significance, the resolution to the issue was slow. For approximately one month during the height of the field operations, the incident response team was working to find a solution to the mark-in issue, which was only closed in late March when the Mark-in system was functioning at a speed sufficient for that point in the collection. In the end, the API/mark-in issue resulted in significant missed opportunity for Stats NZ, which would have likely exceeded the return rate target, had it not been for this technical problem.

The API/mark-in issue demonstrates three opportunities for improvements:

- Change control on corporate systems that the census depends upon should be improved. Consideration should be made on "brown-out" or "black-out" periods preceding and during peak census operations. All systems should be thoroughly tested, particularly for performance, in advance of those periods, with limited to no change during the high-risk period of peak census activities.

- Incident management procedures should set very fast target resolution times, for high severity incidents such as the API/mark-in issue. For example, "all hands-on- deck" and 24-hour work periods should be applied for urgent census incidents that impact response and

have significant downstream impact. Systems support to census incident resolution should take priority over every other programme during peak census operational periods.

- IT support to the census should have sufficient redundancy to allow for more than one individual to provide support on any given IT system.

1.4.4 Processing system development

The census processing system is the IT system used to integrate individual and dwelling responses into an accurate and complete database for use in data dissemination. It is a crucial part of the technology used during the 2023 Census.

A functioning system was ready in time for its planned use, however with minimal features for its initial delivery only. Although it is now completed and has operated well, its development was last minute. Because of unclear ownership of the system, there were assumptions about which part of the Census Programme would produce specifications to develop it. In addition, it was originally assumed that minimal changes from the 2018 Census would be required only for it to function during this census. In reality, the changes that were required were larger and more complex than anticipated as the 2018 system was poorly documented and therefore difficult to adapt.

Despite repeated efforts, material progress on resolving these issues only occurred in late 2022. New staff were required and were brought on and produced a system for the 2023 Census in record time (about six months). A functioning system is now operating (in full production environment) and weekly updates produced while concurrently using the system.

There is a sense that there was a much stronger emphasis by the Census Programme on communications, marketing, engagement, and collection relative to processing and delivery. Planning and oversight were very high on preparations and execution of all stages of the 2023 Census up to collection, but for post-collection steps there was less emphasis. The late delivery of the processing system may be symptomatic of this tendency.

Considerations that would strengthen technology delivery include:

- increase planning oversight of post-collection steps such as processing

- ensure IT system ownership is well-defined, early in the census cycle. Establish who can provide and document the business requirements and train those individuals on how specifications should be received by the IT staff responsible for building the product

- build and test processing and data delivery systems earlier in census cycle, to ensure maximum opportunities to test and feedback for improvements.

- consider the system for corporate use by other surveys, as well as any other census system that has similar functions in other parts of Stats NZ.

1.5 Field testing

The overall approach to testing was set out in the 2023 Census Programme Test Strategy. The proposed coverage was across all aspects of the programme utilising specific test patterns and plans, and encompassing end-to-end, acceptance, business process, performance, integration, and system testing.

There are many business processes and technology systems and applications that enable the collection, processing, and dissemination of census data. Many of these are tested discretely as they are built. In addition, there are two critical testing events that pull together the disparate processes and systems to enable both the individual elements and the way they operate together to be tested under 'live' conditions. It is noted that in both cases participation by respondents is voluntary.

A census test (internally called the "dress rehearsal") is typically carried out in March of the year before census day. By this time processes and systems for collection and processing are expected to be developed, and, where applicable, subject to unit testing. The purpose is to test the components and the way they work together end-to-end.

A field test also typically takes place a year before the dress rehearsal. By this time process and system development is not expected to be complete but be sufficiently advanced to be able to test critical design elements. The focus for the 2023 Census was to test the new elements of collections design (for example, Assist stream and community counts). The systems (or workarounds) used in this field test were only needed to enable testing of the new field processes.

The original plan for the 2023 Census was to conduct a field test in October 2020, and the dress rehearsal in October 2021. By early 2020 it was becoming clear that the delays in ramping up the Census Programme, including effort in completing delivery of the 2018 Census, meant that the October 2020 timing for the field test could not be met. A number of options were considered and ultimately the Census Board agreed that the dates would be pushed out to March 2021 for the first field test, and March 2022 for the dress rehearsal. A consequence of this decision was a reduction in the time to be able to remedy identified issues identified by the dress rehearsal in time for census day.

The 2023 Census Programme utilised a main external test partner plus specialist test companies for security testing and accessibility testing to provide testing expertise and resources to augment internal resources. Close-out reports indicate that this initiative worked well except for performance testing, which was initially problematic, resulting in delays to commencing this testing.

Close-out reports also point to issues with the quality of some technology systems, with issues that did require remediation and had impacts on operations, as noted in section 1.4 above. Late delivery of technology elements did affect the ability to execute efficiently on the testing strategy.

1.5.1 2021 field test

The field test was conducted as re-planned in March 2021 and involved around 20,000 dwellings in Hamilton and Huntly. Assist, deliver, online collection and scanning, and elements of communications and engagement were tested. Processing systems were out of scope.

The return rate for the voluntary field test was 55% (comparable with other census tests) and 60% were online. COVID-19 impacted some of the visit activities.

Overall, of the five success criteria two were partially successful (due to lack of data) and three were successful. There were 17 recommendations for the various census teams to take forward into their planning and design.

1.5.2 2022 census test

The "dress rehearsal" took place as re-planned in March 2022. The timing coincided with severe weather events in Auckland, a COVID-19 outbreak, and anti-government sentiment arising from protest activity in relation to vaccine mandates. This resulted in de-scoping testing of the Assist stream design in South Auckland and Eastern Bay of Plenty. In addition, the processing systems were not fully ready for testing. NRFU and non-private dwelling (NPD) activities could not be tested fully due to the COVID-19 situation and limitations as to where the collectors could go and what they could do there (for example, a care home was originally in-scope but had to be removed).

Ultimately, 18,000 dwellings voluntarily responded for a 42% return rate and 11 out of 15 external suppliers were involved in the test. Of the seven objectives six were partially met. As with the Field Test several learnings were available to the census teams.

It is noted that the test did reveal issues with mark-in (which affected the ability of field staff to understand who had already completed forms), and the operational frame (the register of addresses). Both these would prove to be issues post census day.

The absence of the processing systems meant that the 2022 census test could not complete performance and end-to-end testing.

Whilst the timing and scope of the two primary tests were compromised to a degree, the impacts were able to be successfully mitigated and, although contributing to operational inefficiency, did not have any significant effect on 2023 Census outcomes.

The experience with testing, given the number of processes and systems and the end-to-end complexity, indicates that more formal processes in managing technology development and single accountability for testing are needed.

1.6 Responsiveness to Māori

Successive censuses have struggled to achieve the desired response rates from Māori and the desired quality of data relating to iwi affiliation. The 2018 Census External Data Quality Panel (formed in 2019 to assist with 2018 Census remediation) and the Independent Review of New Zealand's 2018 Census both provided recommendations to deepen and strengthen the relationship with Māori and build collaboration through governance arrangements, early engagement, and co-design.

Several initiatives were progressed over the period of the 2023 Census.

- The Mana Ōrite relationship agreement with the Data Iwi Leaders Group underpins the partnership for 2023 Census data dissemination, especially for iwi affiliation and Māori descent data.

- A Te Ao Māori team was established within the 2023 Census Programme to help build awareness and capability. This team also facilitated interactions between the Census Programme and Māori/iwi groups.

- Te Hapai Mana Taurite (Enabling Data Equity) high-level plan was developed and approved by the Census Programme Board in May 2021. This plan, and the detailed implementation plan that followed, set out how the 2023 Census Programme would focus its leadership and resources to achieve measurable outcomes for Māori.

- The Iwi-led collections pilot (Te Mana Whakatipu) was designed and implemented to test the effectiveness of locally led collections and to help build data analysis capability (which is still in progress).

- Ongoing investment in regional engagement to build sustainable relationships with iwi and in local communities.

- There was an increased level of investment in marketing tailored to Māori communities, including the use of an agency with specific Māori experience in the campaigns.

- The Data Iwi Leaders Group Lead Technician was a member of the Census Programme Board, providing a strong voice in governance.

- Senior Stats NZ leadership devoted material time to building relationships at senior levels.

- A focus on recruiting collectors from the local community – collectors should be representative of the people in the community (whether Māori, Pasifika, or other)

Further initiatives were undertaken during the 2023 Census as it became clear that Māori return rates were lagging expectations. A specific example was the ad hoc involvement of the Whānau Ora Commissioning Agency (WOCA) to provide assistance by collecting responses from 10,000 households or 50,000 individuals in Auckland that had not responded. WOCA leveraged their own database and channels with significant face-to-face contact, using approaches that had been successful with other services they provide to their communities. Ultimately, they were

successful in getting returns from 29,426 individuals, representing approximately 10,000 different households. Efforts were impeded by inaccuracies in the address-frame, delays in getting training and forms, and negative sentiment post COVID-19. WOCA also reported that the final reminder letter from Stats NZ threatening fines for non-response was also unhelpful.

Overall Māori response rates in the 2023 Census improved from 73.4% in 2018 to 76.7%, but fell short of expectations. The increased focus on Māori participation would have assisted in this result, as would the much stronger field (and paper) presence in Assist and NRFU.

Stats NZ has increased its focus and made genuine and significant efforts to develop its relationships and collaboration with Māori in a way that exceeds efforts in other countries such as Canada who have significant indigenous populations. However, further work is required to meet the expectations of Māori. Key areas for focus include:

- whether changes in governance are needed to better reflect the desired balance in, and approach to, the relationships with Māori

- how to build in early involvement of Māori in the development of the census model, design, and processes

- collaborative design of contingency plans to activate should return rate issues become evident

- opportunities to increase partnering and co-design capabilities within Stats NZ.

- build contingency plans as part of the collection design; these can then be activated quickly where daily operational reporting indicates response rates are tracking below expectations.

Chapter 2: Approach and plans for data delivery

After the initial intake of census forms, a number of key steps are necessary to produce high-quality data. For example, blank responses or errors on forms must be corrected, non-response must be mitigated with administrative data, historical census data, and statistical imputation, and codes must be applied to write-in responses to questions like the person's industry or occupation. Once it has cleared a number of steps, subject matter experts will examine the results, to ensure quality and to prepare analysis to be presented when the data are released.

The initial release of 2023 Census data will be in May 2024. Stats NZ is on track to meet the initial and subsequent releases and is finalising the required steps. A substantial amount of data is planned for delivery throughout 2024 and into 2025.

In general, data delivery has gone well, despite some tighter timelines related to the Cyclone Gabrielle related extension of the collection period. The administrative data production was successful, with all programme performance measures met. This means the administrative data were integrated well into the production database, along with the data collected from census forms. A key gain in local area quality is expected relative to the 2018 Census, as there was a significant increase in the proportion of individuals found in administrative data that were able to be "placed" into dwellings, rather than at a higher level of geography.

There were some work backlogs in the coding (manual intervention) step, in part caused by delays in the complete delivery of the processing system as well as team members being unable to shift to coding tasks because they were occupied on previous steps. To account for the backlog, Stats NZ brought on new staff, to increase the contingent dedicated to coding. Those and other manual intervention staff have completed their tasks and have subsequently left Stats NZ. Some have been retained to ensure any ongoing support, as needed through the completion of the data delivery phase. Stats NZ should exercise caution and ensure sufficient manual intervention staff and subject matter expertise for the duration of the remaining data delivery work.

Although tools now exist to increase the automation of coding, the 2023 Census was not designed with emphasis in this area. Instead, a relatively large number of manual coders was required but there remains efficiency and potential for quality gains through automation with future cycles. Stats NZ should examine international best practices related to the automation of coding, including new machine learning techniques.

One challenge before Stats NZ will be the varying level of quality of the data the 2023 Census will produce. While overall the main population counts will be of very high quality, in some parts of the country where both census form response and available administrative data were lower, quality will be affected. Also, for variables that cannot be found in administrative data, historical data, or statistical imputation, the question-level coverage will be lower than the overall national average, and therefore quality is likely to be impacted.

Chapter 3: Effectiveness of iwi-led collections initiative

3.1　Background

As indicated in Chapter 1, Stats NZ looked to increase its investment in capability and modify its design approach in response to ongoing issues with low response rates for Māori. The iwi-led collections and data analytics pilot initiative (called Te Mana Whakatipu) was one important aspect of this increased focus.

After consultation three areas were selected for participation in iwi-led collections for the 2023 Census: Ōhua (a collective of iwi within Te Taitokerau), Toitū Tairāwhiti (a collective of iwi within Tairāwhiti), and Te Whānau-ā-Apanui.

Funding for Te Mana Whakatipu was included in the Government's Budget in May 2021.

The key objectives of the pilot include:

- generation of accurate census data that accurately reflects iwi Māori

- implementing a census process that elevates the mana of participating iwi

- building data collection and analysis capabilities within iwi communities.

3.2　Approach

By the time the iwi communities participating in the pilot began their involvement (in August 2022), the key design decisions for field collection had been made. Iwi communities could implement the processes designed by the Census Programme, with the Census Programme providing the necessary technical support and resources.

Within the collection approach each of the pilot areas innovated to suit local conditions and characteristics and, where appropriate, learning from experience with COVID-19 vaccination rollouts.

Initial plans and approaches were materially impacted by the Northland floods (Ōhua) and Cyclone Gabrielle (Ōhua, Toitū Tairāwhiti and Te Whānau ā Apanui). The time extension to 1 June 2023 was critical in ensuring enablement of response.

3.3 Outcomes

The independent Te Mana Whakatipu Programme Evaluation Report (draft dated September 2023) concluded that on the two key questions of quality of activities and how well the collection design and delivery met participating iwi needs, the Census Programme was very effective.

Nonetheless, the report identifies several areas that created issues for participating iwi. These included, for example, inefficient project-level communications, inflexible recruitment, late deployment of resources, technology, and toolkits, small size of the support team in the Census Programme, and the inaccuracy of the address-frame.

In terms of metrics, the outcomes are mixed. Interim response rates for those of Māori descent in the reported locations indicate significant improvements over the 2018 Census for Toitū Tairāwhiti (70.6% to 80.1%) and Te Whānau-ā-Apanui (63.5% to 79.0%), with a small improvement for Ōhua (69.1% to 69.6%).

These results come at a collection cost of $40 (on a population basis) as against a nationwide cost of $13. This differential likely reflects the high digital take up nationally, the small scale of the pilot, and the face-to-face emphasis on enablement.

Assessing the achievement of capability building is difficult as this part of the pilot was still being delivered at the time of writing this report. It is clear the participating communities were highly motivated, committed significant resources to the collection process, and directly engaged with significantly more people than would be typical. There is without doubt a much greater knowledge of the census and of data and its use.

It is important to acknowledge the significant effort participating iwi contributed to the completion of the iwi-led collections with processes that were unfamiliar and in the face of challenging conditions.

3.4 Learnings

The experience of the Te Mana Whakatipu initiative provides several learnings:

- By its nature and design the census is highly structured, has multiple dependencies, and operates on a critical path that requires many decisions to be made throughout its course. Such a programme has limited capacity for variation in the sense of designing and supporting multiple collection models.

- The design of the pilot with iwi communities managing collection and the Census Programme controlling design and support does not sit comfortably with the values of partnership.

- If a future census is to build on the good work done in 2023 and the pilot experience, then engagement with Māori on the collection-approach process design and support needs must start now.

- 2023 Census, whilst a significant step up from prior censuses, did not achieve the level of partnership and co-design expected by Māori. This will likely require increased capability within Stats NZ and refreshed governance arrangements with Māori.

- The pilot as designed is not likely to be scalable across the country at a level that is affordable.

Chapter 4: Future census considerations

Stats NZ is more advanced than many other major statistical agencies in its access to and use of administrative data. The 2023 Census in New Zealand is the first within major English-speaking countries to be designing and labelling its census as a "combined" or "hybrid" census, with the other countries only using administrative data to enumerate the population as a back-up to the main design of a full, traditional census. As a result, Stats NZ may be in a better position than many other similar statistical organisations to be moving to a full administrative-based census.

There is great incentive for statistical agencies to be looking at administrative data for their censuses. First, the availability of datasets and the capacity to combine them has improved dramatically in recent years. Data now exist from numerous sources and statistical agencies are increasingly well-positioned to make safe use of administrative data sources as a part of the national data infrastructure. Techniques to intake and process these data now allow broad coverage of the population and, furthermore, modelling techniques are improving which allow for statistical agencies to determine if the individuals found in administrative records are in scope for a census and place them into the right dwellings on census day. Stats NZ reports an important increase from the 2018 Census in their ability to place individuals found in administrative data, where they live.

There are financial and burden-management incentives which are enticing. Conducting traditional and hybrid censuses can be very expensive and grow as populations increase. There may be increased expectations in the current period that governments make better use of the data that citizens have already provided, through tax, health, driver licences, or other records. Less traditional census taking means less burden on the population to complete and return forms.

However, moving from a traditional census to administrative data to enumerate the population is very complicated. In principle, great care and caution should be used by any organisation attempting the shift. While administrative data availability has grown considerably and techniques are improving, the move to an administrative census should only occur if it can produce data *which are of similar quality or better*, relative to the traditional or hybrid methods. Safe and ethical methods or practices for the intake, use, and storage of large-scale records from various programmes and sources need to be in place. Also, the statistical agency needs to have social licence to access, combine, use, and store these data – in other words, statistical agencies must have the trust of the public and be able to sustain that trust, to conduct an administrative census.

Furthermore, it would be extremely difficult and expensive for Stats NZ or any other similar statistical agency to concurrently plan a traditional/hybrid census and an administrative one. Therefore, a decision to move to an administrative census would   make it very difficult to have in place a "plan B" to conduct, on a five-year timeline from 2023, a traditional/hybrid census should the plan for an administrative census fail.

Thus, the decision is a very difficult one. On the one hand, there are obvious financial and public burden advantages but one has to consider the overall readiness of access, technique and social licence, and have <u>all</u> the evidence of that readiness available at the time of decision making, a decision which should be made with sufficient time to ramp up the administrative data programme. The decision must also be made at a point that allows sufficient time for effective contingency and risk mitigation plans to be put in place and to be successfully deployed should an administrative data first census not be feasible for 2028.

It is also noted that Stats NZ is undergoing significant organisational transformation alongside its consideration of options for the 2028 Census. This has the potential to add execution risk. Lastly, notwithstanding Stats NZ's expertise in the use of administrative data, the transition to an administrative census is still a very large and complex programme of work.

At this point in time Stats NZ is in the process of elaborating a set of options for 2028 Census ranging from administrative data first plus full enumeration for variables not found in administrative data, to administrative data first plus the use of attribute surveys. There are several options for the use of surveys involving choices about frequency and integration with existing surveys. The design of these options has involved considerable research and what is proposed are options that may offer a greater suite of variables and added timeliness to the statistical system. Stats NZ may be faced, however, with loss of data quality for small domains on attribute indicators or challenges with the interpretability of any data aggregated over a number of years.

Stats NZ is in the early stages of socialising and consulting on the shape of future censuses. Decisions are expected to be made in the mid-2024, based on input from these consultations, as well as a thorough set of evaluation criteria being developed and analysed by a team of experts. While the design of options and their evaluation appears to be very well conducted, the main concern should be the timing of the decision on the 2028 option and the ability to deliver in the relatively small window between that decision date and the next expected census. We note that broader public consultation is not scheduled to take place until mid-2024.

Given the consideration of the options is still underway, we are not able to comment on the feasibility of the options under consideration. Rather, we set out below matters that are likely to be critical to a successful evolution to an administrative data first census without full enumeration.

1. In the context of a general decline in trust and an expanding desire for governments to share data, the establishment of a level of social licence for the move to an administrative data first census is essential. Transparent consultation is a pre-condition, and it is not clear that the timeframes for decision-making with allow sufficient time for meaningful consultation. Furthermore, Stats NZ may want to consider the possibility that social licence may not be stable over time. That is, even if social licence could be established/confirmed in the short term, there may be a need for efforts to sustain over time a high level of trust in the large-scale use of administrative data to enumerate the population.

2. There is a critical need to collaborate with Māori to ensure their concerns are heard and where agreed acted on. It will need to be demonstrated that moving to an administrative data first census will be beneficial.

3. A new architecture is needed that re-positions census in the broader context of government collected, curated, and shared data. For example, census data could move to a smaller core of data continuously maintained, whilst attribute surveys could be aligned to customer (including government) needs, leveraging off core census data. That new architecture could leave the statistical system with added data and improved timeliness relative to the current census approach, but it may come at the cost of reduced quality for small domain estimates for the attributes data traditionally collected through the census. Any effort to pool such data over a number of years may offset the reduction in data quality, but affect the interpretability of the data since it would no longer refer to a particular point in time.

4. Separate from building social licence is a need to consult collaboratively with key customers, including government agencies, the private sector and the research and academic community. The latter are important as any change creates anxiety that the access to high-quality data in support of their work programmes may be compromised. There is a need for a specific change management workstream.

5. Objective evaluation of the readiness to proceed is critical. As examples this should cover an assessment of social license, key stakeholder and customer readiness, technical design, systems, survey design and collection processes. In addition, the evaluation should include an assessment of the readiness to adapt to new ways of assessing census under-coverage and over-coverage, which are essential components of a successful population estimate programme at any statistical agency.

6. Effective governance and leadership will be important. There are many decisions that need to be made around overall design, priorities for enhancing administrative data, strategy for design and collection of attribute surveys, design and build of processing systems as examples. A single accountable SRO, fit-for-purpose governance and an engaged ELT are crucial, however complicated the adaption to a new architecture might be. Sufficient census experience will need to be included in governance and at the ELT.

7. Having a strategy that is clear about what is achievable for 2028 and what the longer-term development plan will be. There is high potential for scope creep to occur in the early stages (either in response to feedback through consultation, attempts to clear the existing backlog of requests, or because of discovery as detailed design progresses. Stats NZ may want to consider the advantages of timing its next census to be in-line with other major nations, whose census days are on years that end with 0 or 1.

8. Given the complexity and scale of the programme, together with Stats NZ's broader organisational change programme there will be a heightened need for risk management and contingency planning.

9. At a broader level it is likely that there will be a need to consider institutional arrangements that will provide ongoing confidence to the public, and to all users that administrative data (and other data) held, shared, and disseminated by Stats NZ is done so safely and to the highest ethical standards. Among the requirements could be a regular (for example every three of five years) external review of the policies, practices, processes, and systems adopted by Stats NZ for safeguarding data, and their effectiveness.

The work Stats NZ has undertaken to date is impressive, but much remains to be done to successfully implement an administrative data first census. It is also clear that whichever option is chosen will represent a major change from previous censuses and will consequently bring significant risks for Stats NZ. Understanding these risks and the required contingency and mitigation plans, together with strong governance and strengthened capabilities will be critical to an outcome that meets the expectations of customers and stakeholders.

Appendix 1: Review terms of reference

Background

The Data and Statistics Act 2022 makes provision for a review after each census as follows:

37   Review after each census

(1)   Within 12 months after the last day in the period appointed under **section 34(3)**, the Statistician must –

(a) conduct a review of the operation of the census; and

(b) present a report of the review to the Minister.

(2)   The Statistician must publish the review on an Internet site maintained by or on behalf of Statistics New Zealand.

The period appointed under **section 34(3)** is 7 March 2023 (Census Day).

The Government Statistician has decided that the review of the 2023 Census will be an independent external review.

Purpose and objectives of the review

The intent is to conduct a review of the 2023 Census, in a format this is suitable for presentation to the Minister, and for publishing as prescribed by section 37 of the Data and Statistics Act 2022.

The review will:

- build on the insights provided by other internal and external reviews

- provide an overall prognosis of:

  o   the effectiveness of the 2023 Census design and execution, including interim response rates and achievement of the agreed key performance indicators (KPIs)

  o   the approach and plans for data delivery

  o   the functioning and effectiveness of iwi-led collections, including draft interim response rates, cost-of-serve, and impact on the 2023 Census

  o   of the effectiveness of the results from the 2023 Census, based on the data included in the First Release.

- capture key learnings and insights that can be utilised in the design, setup, governance, and delivery of the 2028 Census.

Review scope

Internal collections phase review:

Review of the internal collections phase report (completed July to August 2023) and 2023 Census Programme workstream closure reports (produced June to August 2023).

Independent quality assurance review #6 (IQA #6):

Review of the results of IQA#6 produced by Independent Quality Assurance New Zealand (IQANZ) in October 2023.

Delivery performance:

Review the effectiveness of execution of the 2023 Census design, including operational readiness, operational leadership, the performance of the Operational Leadership Team, response reaction effectiveness, recruitment results, enablement results, delivery of all respondent materials, delivery of the marketing, communications, and engagement materials, and the operation of the enabling technology.

Collections results:

Review of collections results, including draft interim response rates, to be derived from the provisional CURF (census data set).

Data delivery plans and progress to date:

Review of the plans and progress of the data delivery workstream, including plans to combine admin data, and plans and progress to produce the CURFs and data releases.

Functioning of the Iwi-led collections initiative:

Review of the effectiveness of the Iwi-led collections initiative (Te Mana Whakatipu), including draft interim response rates, cost-of-serve, and the impact on the 2023 Census.

The reviewers and their role

The reviewers are Mr Murray Jack, independent consultant and Mr Geoff Bowlby, Director General Statistics Canada. Mr Jack conducted the independent review of the 2018 Census.

The reviewers will exercise independent judgement regardless the process they follow as part of the review, the nature and depth of their investigation, and the communication of their findings and advice.

Reviewers will have access to all Stats NZ documentation, personnel, and internal and external communications that they deem to be relevant. They will engage with Stats NZ staff, and where appropriate third-party providers, and key stakeholders and are expected to see a wide range of perspectives and views of the 2023 Census, including from Māori and iwi.

The first phase of the review will focus on assessing the design, planning, and collection phases of the census (as these phases are already completed). This will include information gathering and analysis, making use of the census business case, planning documentation, operational management information, project closure reports, internal effectiveness reviews, and interviews with staff.

Where appropriate, it will also include gathering information from key stakeholders and interest groups on their experience of the 2023 Census.

The second phase of the review will focus on providing any further findings arising from consideration of the data processing and analysis phase of the census.

A final report of the review will be delivered to the Minister of Statistics and Government Statistician no later than 7 March 2024.

The final report will be publicly released on the Stats NZ website as soon as practicable.

Review phases

The review will be conducted in two phases, recognising that processing and analysis of 2023 Census data is ongoing.

The first phase will be conducted from November 2023, and will focus on the results of IQA6, collection results including draft interim response rates, delivery performance, data delivery plans and progress to date, the review of iwi-led collections, and the internal collections phase review.

The second phase will be conducted by 7 March 2024 and include a high-level overview of the processes in place to manage the quality of the data to be included in the First Release, interim response and coverage rates, together with the approach and plans to produce the final data releases.

Appendix 2: Information sources

Documentation

Artefacts produced by or for the 2023 Census Programme including:

- 2023 Census design documentation and business case

- Planning, status reporting and governance documents

- 2023 Census closure reports

- Independent Quality Assurance NZ reports

- Gateway reviews

- Te Mana Whakatipu Evaluation Report – Final Draft

Organisations and individuals consulted or interviewed

Minister of Statistics

2023 Census Programme Board

Government Statistician

2023 Census Programme leadership and team members

Te Mana Whakatipu

Te Taumata Whakaritenga

Whānau Ora Commissioning Agency

Te Ahu Kauawhi Taskforce