

## The Census and Administrative Records – What Form of Consensual Union for 2023?

LEN COOK\*

### Abstract

As in most countries, the New Zealand Census of Population and Dwellings has long been at the core of a wider system of population statistics. Studies of populations depend heavily on statistical aggregates derived from the census as well as government administrative records. The latter also now plays a key part in the planning, enumeration and estimation stages of censuses. This research note examines the changing contribution of the census to population statistics and reflects on how the increasing use of administrative data might improve the quality of future censuses, with a particular focus on Census 2023.

**Keywords:** census, administrative records, inclusiveness, public trust.

As in most countries, the five-yearly New Zealand Census of Population and Dwellings has long been at the core of a wider system of population statistics and is one of the most established and visible cornerstones of social and economic policy (Kukutai et al., 2014). A census is much more than a population count: censuses unveil our past, tell us who we are now, and point to who we will probably become, while census-based analyses of demographic change and the impacts on family and household structures and communities inform our understanding of the population now, and how it is likely to change. The census has constitutional importance in New Zealand,<sup>1</sup> and is the main means by which the government is obliged to make contact and learn something of the living conditions of the entire population.<sup>2</sup> The rich detail in the resulting statistics is essential for public policy.

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\* Len Cook is a research associate at the National Institute of Demographic and Economic Analysis, University of Waikato. Email: len\_cook@xtra.co.nz

In 2018, New Zealand took a significant step in joining those countries that use administrative records to augment an area-based enumeration (Schulte Nordholt 2018; Durr 2020). The experience of 2018 demonstrated that administrative records do not substitute for all that a census can gather (2018 Census External Data Quality Panel, 2020). However, there are a number of potential benefits to their usage including to strengthen the means of contact and manage non-responses in census enumeration. This research note examines the changing contribution of the census to population statistics and reflects on how the increasing use of administrative data should improve the quality of future censuses. In so doing, it draws on insights accumulated over two decades of close involvement with population censuses in New Zealand, England and Wales.

## **The population statistics system**

The population statistics system is essential for monitoring changes in population size, composition, location and status. The various sources that form the system of population statistics vary with respect to quality, frequency, scope and content.<sup>3</sup> The sources are aligned through applying common metadata including standards, definitions and classifications.

In New Zealand, the census has been the central anchor of this system, and usually provides the resources for reviewing and ensuring the continued relevance of this metadata. As government administrative records become more readily available and less varied in quality, they will become increasingly important to the wider population statistics system. The enumeration, processing and estimation stages of the census have all advanced through methodological developments. Some have taken the form of methods of imputation or, since 1996, the use of post-enumeration surveys. In most population censuses, technological change regularly triggers methodological change in previously tried and tested methods. The decision to place a high level of dependence on web-based technologies for Census 2018 was not exceptional in that regard. In the 2016 Canada census, for example, the internet response rate was 68.3% (Statistics Canada, 2016)

For now, the New Zealand census is still primarily a single information-gathering exercise, albeit in a process of transformation (Bycroft, 2015). This is quite different from the systems in countries (mainly in Europe and Scandinavia) that rely primarily on linking the records in

registers already held by states for the administration of laws. The governance of statistical sources based on the traditional census model is less complex than for register-based systems, but still needs to be transparent, accountable and responsive to external challenges.

### *The constitutional importance of a census*

When population statistics are referred to in statutes, it is the Census of Population and Dwellings to which they usually refer. A census has been a central element of official statistics in New Zealand since 1851, each enumeration being one event in a cohesive series. The legal obligation to carry out a Census of Population and Dwellings is set out in the Statistics Act 1975. The right to be able to be properly counted in a census is a key foundation of a democracy where governments are accountable. Electoral boundaries, for example, are drawn from information sourced from the most recent census when the results become available, and Māori descent has a major role in setting electoral district numbers, electoral boundary determination and in local government statutory representation (Statistics New Zealand, 2007). Māori descent and iwi affiliation informs Crown/Māori relations and the Treaty Settlement process initiated in the 1990s (Kukutai & Cormack, 2018). Iwi affiliation has been included since the 1991 Census. The process of establishing Treaty claims has often led to the first significant actions to encourage recognition of a particular iwi in the census. This has particular importance for governance and public trust.

### *Population statistics, inequalities and redistribution*

The reach of governments into the lives of citizens spans social, economic and cultural dimensions. Population statistics have been central to the national and subnational knowledge base that informs policy. Pool (1997), Bedford (1994) and Kukutai (2011) have all identified population issues in New Zealand that are pervasive and invisible in policy. Census enumeration planning has increasingly been seeking to balance risks of non-response in the population. Contact and engagement strategies need to achieve a high coverage, often countering difficulties of language, literacy, impairment, accessibility, homelessness or fear of state intrusion. Requirements for inclusiveness, along with a high degree of granularity, necessitate this drive for contact and engagement.

The topics gathered in the system of population statistics inform not only the statutory obligations of government but also policies that seek to advance social and economic conditions across the New Zealand population. Population statistics need to span every distinct population group, most particularly from ethnic communities who, in almost all other arrangements of government, are unequally represented.

*Capturing the changing dynamics of regions, communities, families and households*

Population statistics include the form, structure, size and dynamics of social groups, particularly the family, ethnic communities, women, children and the aged. They show the heterogeneity and diversity in age, gender, ethnicity, income and place along with the other characteristics obtained in the census. Regardless of their size, cultural, social, economic and geographic communities require statistics of comparable quality and granularity.

Simultaneity in recording information is a critical attribute of a population census (United Nations, 2008). This enables a rich temporal snapshot of cultural, social, economic and geographic communities to be assembled from the aggregated information of their members. What is special about a census is how all of this combines at one specific time to inform our knowledge of large and small communities with comparable confidence. To be effective, the census enumeration should aim for contact with all residents, regardless of who they are and where they live.

The census plays an especially important role in producing information about Māori and Pasifika communities because it is the only statistical source that comprehensively reports on these communities with reliability and depth comparable with the European population. The usual size of sample surveys means that almost all major regular statistical surveys cannot provide anywhere near the depth of analysis as the census. The concepts on which standard statistical classifications are founded often fail to take sufficient account of cultural differences, such as those that affect social organisation, forms of blood connection or non-market roles.

Pasifika communities are often aggregated into a single Pacific Peoples category in statistics, despite their different cultures, community structures and migration histories. Before 2018, the census had been the

long-standing exception, with the capability to report statistics at a high level of ethnic granularity. In the 2018 Census, just over half of the approximately 500,000 individuals whose information was not obtained from self-enumeration in the census were identified as Māori or Pasifika from other government data. For these people, what is most reliably known about them as a group is what the state already knew from its administrative records.

### *Scientific methods and the system of population statistics*

The intellectual integrity of population statistics is evidenced from transparency in the conceptual frameworks that are used (i.e. demographic frameworks), the methodologies (survey design, quality assurance, survey analysis, classifications and standards, models), practices (contact management, population frames, questionnaire design) and the political setting (independence, impartiality, transparency, confidentiality). Conformance with international standards has a high weight. Methods and practices are not protected by commercial secrecy because trust is most vital. The methodological underpinnings of the system of population statistics inform the quality of cohort studies, life course and other models as well as distributional studies. They also inform microdata research, Statistical processes that apply to the production and analysis of population statistics include modelling, categorisation, sampling, estimation and imputation. Analytical measures, including projections and life tables as well as population estimates, are standard analyses of the system of population statistics. The need for assurance of scientific integrity will increase the greater the departure from a traditional census model. Official statistics are major enduring investments, and their integrity depends on the place of science to ensure the richness of the analyses they enable.

### *The increasing accessibility of government administrative records*

The development of the Integrated Data Infrastructure (IDI) provided a technological platform for Stats NZ to link census responses since 2013 to many government administrative data sources, including from justice, inland revenue, welfare, employment, immigration, housing and health (Stats NZ, 2018). While the IDI is well known among researchers, knowledge of its existence is not widespread among the public (Nielsen, 2018). A major

constraint of the IDI is that the range and qualities of most of the variables available in it are limited by the requirements of specific statutes, rather than determined by scientifically proven concepts. The Netherlands is at the forefront of countries in using administrative records instead of self-enumeration. The development path there took over 30 years (Schulte Nordholt, 2018). However, key variables such as complex family structures or occupation are not available, despite the comprehensive legal registration systems that underpin their success. There is no means to establish or measure how well any administrative data set covers the total population. Durr (2020) notes that a “common challenge for countries attempting to use administrative sources such as the UK is that the accuracy varies and is poor at small geographical levels, and that some sources cover only a sub-population” (p. 7).

### **The experience with administrative records in Census 2018**

The use of administrative data was put to the test in the 2018 Census after the usual field collection resulted in an estimated response rate of just 83.3 per cent for the total population, and 68.2 and 65.1 per cent, respectively, for Māori and Pasifika peoples (Stats NZ, 2019b). It was quickly recognised that the census collection alone could not provide the promised five-yearly statistical analysis of the population. The administrative record research of within Stats NZ was one immediately available avenue for investigation of the IDI as a substitute for missing responses. This delayed the availability of census results by nearly a year. The consequent successful integration of the available administrative records with the enumeration responses was a major methodological achievement. The initial risk that Stats NZ's statutory obligations to the Representation Commission might not be met did not eventuate.

The 2018 Census External Data Quality Assurance Panel (EDQP) contributed to the validation of the methodological developments that enabled administrative data to play such a significant part in the 2018 Census results. The EDQP examined the quality of the statistical results with a strong focus on the uses to which they would be put. The EDQP (2018 Census External Data Quality Panel 2019a, 2020) identified where quality limitations prevented expectations from being met. During the evaluation of the quality of the ethnic statistics, differences between the perspectives of the EDQP and Stats NZ on the importance of the granularity of the results

were highlighted. The quality of measures of intercensal change reduced because of the approach to managing non-response. The EDQP confirmed the necessity of checking the fitness for use of any analyses that include attributes that can be obtained solely from census questionnaires. This was particularly important for the family and household statistics from the 2018 Census (2018 Census External Data Quality Panel, 2020). Bedford (2020) has expanded on some of these issues.

The significant variation in response rates to the 2018 Census has been charted by the EDQP (2018 Census External Data Quality Panel, 2019a) in interactive graphs showing the effect of geography and ethnicity on key 2018 Census individual variables. The graphs show the extent to which data for 2018 Census variables were sourced by responses to the 2018 Census or from other sources (administrative data, 2013 Census data, forms of imputation). Plots are available down to SA2 level of geography, and for level 1 of the ethnicity classification. In highlighting issues with the 2018 Census, the plots demonstrate the extent to which a significant share of highly granular census information needs could not be met using administrative records. Except for income and industry, there is currently little substitute information in administrative records that could replace the missing information about iwi affiliation, te reo Māori ability or living conditions.

### *Economic and social value of the census*

A statistical system is a major investment, not only in statistical sources but also metadata including classifications, standards and definitions. The economic, social and demographic concepts embodied in the measures should reflect the uses to which the resulting statistics are put.

The uses to which population statistics are put are many, and a large share will not be known to Stats NZ. The report *Valuing the Census* quantified the identified benefits at just over \$1 billion (Bakker, 2014). When all benefits are included, the value of a census might be up to 10 times its cost. Benefits of this magnitude will not prevent quality and timeliness being at risk of becoming traded off against short-term cost savings in the fiscally demanding post-Covid-19 fiscal environment. The EDQP highlighted the unevenness of the effect on quality when such trade-offs occur (2018 Census External Data Quality Panel 2019b, 2020).

Over the next three decades, many difficult decisions about the location, size and form of schools, health services, transportation infrastructures, housing and economic development will be needed. The quality of public services, utilities, the electoral system and the long-term viability of businesses would be adversely affected without trustworthy population estimates and projections.

*Selected comparisons of censuses and administrative data*

The integration of different statistical sources tests the coherence of application of the core metadata of definitions, standards and classifications, and the capability to have timely access. Data linkage needs to be trusted, with sufficient commonality in the periodicity of different sources. While censuses have much in common around the world, this is less the case with administrative records. Countries will vary in their constitutional arrangements, the scope of their statutes, the extent of their administrative registers and the nature of their information protections. The 2018 Census experience generated the need to determine the most important attributes of a successful integration of administrative records with future censuses in New Zealand. An annual statistical analysis of the whole population using variables from administrative records that are gathered by the state could result in less frequent censuses. Table 1 presents what I judge to be key attributes of the system of population statistics essential for comparing the strengths and weaknesses of censuses and administrative records.

**Table 1: Key attributes of the system of population statistics: Comparison of an enumeration-based census and administrative records**

Key attributes	Census enumeration characteristics	Administrative record characteristics
<b>Meets social, economic and cultural purposes</b>		
	<p>Census content can adapt to current and future policy needs without change in the law.</p> <p>Characteristics of those in families and households can be consistently measured across the whole population.</p>	<p>Information content is determined solely by need to administer existing statutes.</p> <p>Can measure transitions that are not otherwise available.</p> <p>Increased quality of some variables (income and industry).</p>
<b>Inclusiveness</b>		
	<p>Almost all in population measured over the course of their lifetime.</p> <p>Serious recent deficiencies in contacting Māori and Pasifika communities.</p> <p>For many communities, the census is the main way they are visible in evidence used in policy.</p>	<p>Integration of information across agencies that citizens have contact with, enabling inclusion of all in longitudinal analyses.</p> <p>Includes people who are hard to make contact with otherwise.</p> <p>Capacity to connect individuals to current dwellings is not strong.</p>
<b>Granularity</b>		
	<p>Provides analyses of comparable quality for large and small groups.</p> <p>Validity of information available at a highly granular level across the population.</p>	<p>Measures transitions of small groups that are not possible in censuses and cross-section surveys.</p> <p>Variable granularity inconsistent, as is coverage.</p> <p>Granularity determined by agency practice rather than set by user needs.</p>
<b>Public trust</b>		
	<p>Strong history of meeting trust of public.</p> <p>A census is the largest peacetime activity in New Zealand that involves every person in the country.</p>	<p>Privacy issues need to be reconciled across different information sources.</p> <p>Record linkage places additional demands on trust.</p>

## Looking ahead to Census 2023

The recently released decisions by Cabinet on funding for the 2023 Census recognise the limitations of the 2018 strategy (Treasury, 2020). Increasing the share of the population who receive paper questionnaires to 50 per cent from 3 per cent will address one of the most significant failings of 2018. Ministers have not addressed the huge differences in response rates across communities and have risked embedding these differences in the performance measures they have set (Treasury, 2020). Ministers approved an overall target response rate of 92 per cent that includes target response rates for Māori and Pasifika of 88 per cent. This is an unfortunate narrowing of expectations for Māori and Pasifika that must inevitably limit the aspirations of enumerators and those overseeing the enumeration. It is a real concern that more tolerance of low response rates is planned for those groups for whom the census is of disproportionately greater importance because of the inadequacy of other statistical information activities of government. This will undermine estimation of take-up rates for public services in health, education and welfare. Response rates to any census are affected by issues of the times as well as the nature of the public awareness programmes of the statistical office and the political context. The 2013 Census resulted from the deferral of the 2011 Census because of the Christchurch earthquake, which had a particularly damaging effect because that was where census operations were centred. The 2013 Census was itself of a lower standard than earlier censuses. The poor response rates of 2013 and 2018 should not set aspirations for 2023, or any other census.

The 2023 Census is of even more importance now as government needs to understand the long-term distributional consequences of the Covid-19 pandemic and its effect on families and household structures as well as the economic position of disparate communities. Because it will be undesirable for the 2023 Census to imitate the processes used in 2018, this means that measures of population change between both 2013 and 2018, and 2018 and 2023 will be disturbed. There will have to be three different approaches to obtaining information for three consecutive censuses. Unfortunately, this is at a time when the New Zealand population is facing a combination of major fluctuations in migration flows, historical low fertility rates, rapid aging, and large differences compared with European communities in the demographic drivers of Māori and Pasifika communities.

The concept of social licence needs to be tested across distinct communities as their diverse histories in relating to the state may require legitimacy to be established in different ways. This will be reflected in the form of engagement expected by each community if this is to be accepted without later adverse effects on trust in information gathering. Public agency performance measures rarely recognise that accountability and transparency are just some of what is needed to gain trust from diverse communities. Performance targets for response rates are at risk of becoming embodied in behaviours and limit expectations of the outcomes. To counter this, testing and quality assurance should be independently assessed, with a strong capacity to deal with unplanned enumeration issues. Greater independent oversight is needed so that trust can be properly placed in the processes being used and legitimacy is sufficiently established among all communities (2018 Census External Data Quality Panel, 2020; O'Neill, 2009). The extensive interest in both the statistics from the census and the methods that produce them reinforces the importance of maintaining high levels of public trust so that public compliance with statutory obligations will be near to universal. The governance arrangements for Census 2018 demonstrated the consequences of insufficient independent vindication of methods and practices for the large-scale nationwide involvement in a census.

The administrative records of the state are disproportionately weighted in their content by information from engagement with welfare, health, education, taxation and justice processes. Many of these agencies, particularly justice and welfare, have records for just part of the population, and the likelihood of being included differs by socio-economic position, ethnicity and gender. As the censuses become increasingly linked to administrative records, trust in the census will become dependent on trust not only in the quality of the administrative records but in the statutory processes that produce them. There may not be a common acceptance across communities in the use of administrative records for this reason. The EDQP report highlighted several reasons why it is critical that stronger action is taken to build awareness among the wider public of the existence of the IDI and the direct connection with it (2018 Census External Data Quality Panel, 2020). The involvement of the Privacy Commissioner in overseeing this significant shift in data linkage across the state has been a critical first step. This endorsement is of particular importance given that, until the last

decade, it had been longstanding practice not to link the censuses of population to administrative records other than in exceptional circumstances, including quality assurance.

### *Re-examining the governance of the census programme*

Because of the experiences of 2018, the governance of the 2023 Census of Population will need to reflect the need for much closer scrutiny than has ever been faced before by Stats NZ. Māori data sovereignty concerns over the extensive use of administrative data in the Census 2018 have highlighted the wider need for vindication of both governance and methods prior to the next census (Te Mana Raraunga, 2019). Governance should not only involve fiscal oversight but also focus strongly on those matters that influence public trust and affect the relevance of the planned approach and the capacity of the organisation to deliver on it. Strengthening the means by which users can challenge and inform future censuses will improve New Zealand's population statistics system.

Kukutai and Cormack (2018) have stressed the critical role that the census has in matters affecting Māori that are constitutional, political, economic and community focused. Māori expect to be involved in decisions relating to changes of a methodological or conceptual nature that affect the quality of their data. Response rates, methods of imputation, definitions and operational practice are widely recognised as disproportionately influencing the quality of census statistics about Māori. The enumeration failures in 2018 had a major effect on the quality of information available to Māori. These failures were partly obscured in the range of quality tests set by Stats NZ. Census content, form and operations are different from what they would be if Māori were a discrete population (Kukutai, 2011). Not accounting for differences can make Māori an outlier, not only in statistics but in policies based on them.

The Ministerial appointment of an external governance board for Stats NZ is one response to governance concerns. A commitment by Stats NZ to follow the Mana Orite (equal mana) agreement to govern the sharing of decisions signals perhaps the strongest-ever commitment to collaboration by the agency.<sup>4</sup> For nearly a decade from 1993, the Māori Statistics Forum provided strong oversight of the 1996 and 2001 Censuses of Population and Dwellings. This was a model for its time, but the 2023 Census needs a form of governance of contemporary relevance. Governance tests for the 2023

Census would be expected to span content relevance, contact and coverage assurance, enumeration and processing capability as well as ensuring confidence in the integrity of future censuses.

## Conclusion

The statistical sources of the system of population statistics are varied in quality, frequency, scope and content. The census has long been the central anchor of the system of population statistics in New Zealand. Census 2023 will be of particular importance as we seek to understand and mitigate the consequences of the Covid-19 pandemic. This will require the census statistics to provide a high level of granularity and inclusiveness. While the Census 2018 experience was not an effective test of what a properly run census should deliver, it has provided a window into not only the limits of administrative records but also their potential. There is an opportunity to substantially improve the self-enumerated census as the core of the system of population statistics. By extending the analytical richness of population estimates, it may be feasible to change the periodicity of population censuses, perhaps to seven years. As the use of administrative records increases, trust in the census will become dependent on trust in the statutory processes that produce those records. While technology and methodology are vital catalysts in expanding the potential of the statistical information of the state, it may well be that the speed with which that will happen will be determined by how well public trust is being retained.

Administrative records can now be used as a response to the current rate of non-contact by changing how the field and online enumerations for a census are managed and monitored. If this were the prime focus for Census 2023, it is most likely that coverage rates would increase. There is a short time available for preparation of this census and it is critical that there is advance testing of all systems and processes. The core information found in administrative records about age, sex, ethnicity and location will improve the methods needed for adjusting census responses to counter the effects of missing data (akin to the 2018 approach). This approach recognises the expertise and experience of Stats NZ in methodology and provides a safety net when contact is not achieved during the collection period. In addition, there are longstanding census variables that may be better gathered from administrative records than from the census questionnaire.

Trust in the census has a huge impact on the quality of decision making, and consequentially in determining the level of confidence in the decisions of government, business and community organisations. Government cannot escape from ensuring that public trust in the conduct of Census 2023 can reach the levels obtained before 2018, which will be determined by how the Government funds and shapes the governance mechanisms that will challenge census development and provide independent assurance of census quality.

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## Notes

- 1 For example, the statutory role of the census in the setting of electoral boundaries, and in giving effect to matters of constitutional importance. The census is also a critical window on the monitoring of the obligations of the Crown to Māori from the Treaty of Waitangi.
- 2 The Statistics Act 1975 established the compulsory nature of the census and lists the questions that must be asked at each census. The Act also requires a census to occur every five years and prescribes key elements of how a census is to be carried out.
- 3 In some countries, the information that censuses have gathered by the enumeration of the population at a particular time has been obtained instead through the use of administrative records often based on registers of taxation, health, welfare and employment records. This may also be augmented by statistical survey information. France and the USA have established surveys specifically for this purpose.
- 4 *Aide memoire to the Minister of Statistics: Meeting with the Data Iwi Leaders Group*, 27 February 2020.  
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