

Counting what matters: Rethinking Aotearoa's population statistics without a census

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Summary

Our statistical tools need sharpening to meet current and future challenges. Population data sources, estimates, and projections are having to evolve to meet the needs of climate change, large scale infrastructure investments, housing, health and care in circumstances that they were not designed for. Ethnic diversity and a rapidly ageing population combine with volatile migration flows to give each place a distinctive challenge in balancing population focused services with who lives there. Patterns of ageing now differ across places and within population sub-groups around the country. The regular population census has long been the window on places, communities and families that monitors such change. Statistics NZ now wish to change our key window on the population dynamics that drive population change in many parts of Aotearoa New Zealand. This Briefing proposes that before such changes, the scientific implications be transparent.

This Briefing summarises some of the critical needs and challenges that our national population statistics need to meet. It then reviews plans^{2 3} for a shift away from a 5-yearly

Census to the use of administrative data instead. We argue that this shift needs to be carefully considered.

Needs and challenges for population statistics

There is no time over the past 50 years when the scope and quality of population statistics¹ has been of such importance in public life in Aotearoa New Zealand as now. Population data are essential to know the different demographic characteristics (particularly age, ethnic and socioeconomic composition) of populations within geographic areas, for understanding the specific health care needs particular to each region.

Changing nature of population change - For most of the 20th century, natural increase has been the main driver of population change. However, over the last ten years, the balance between flows of people into and out of the country has made a larger contribution to population growth than natural increase. We now have more variable and volatile patterns of population change, nationally and locally. The scale of differences is making it hard to reliably predict the impact of population change on productive capacity, demand for services, infrastructure needs, and community services^{4 5}.

By 2040, the population of Aotearoa New Zealand is likely to have trebled in size compared to that of 1960. However, the number of births is projected to be relatively constant: varying around 60,000 per year over that whole 80-year period. This pattern, though, differs already, and will continue to be different, across the country

Migrant flows have become large, volatile and variable, making national population projections as they are now done, out of date very quickly.

Industrial restructuring expanded in the late 1980s and has continued, with technological change transforming business models and sources of added value.^{11,12} Meanwhile the growing disconnect between access to housing and labour demand leads to households relocating to where they can most afford to live.

The high cost of uncertainty - The opportunity cost of future knowledge gaps is high, and the poor quality of both the 2018 and 2023 censuses have magnified the policy risks this brings. An unprecedented amount of public investment in infrastructure, housing, and climate responses is occurring at this time of massive disruption to historic patterns of demographic change. Some \$200 billion of infrastructure investment is planned over the next decade⁶, while central and local government policies need to establish where house building is to be placed, and of what type⁷. The potential influence of climate change on human settlements will involve huge losses by individuals and businesses, and financial commitments by central and local government^{8 9}.

Under the current policy settings, population ageing is likely to reduce the economic potential of the Aotearoa New Zealand population by some 25% over the next 20 years.¹⁰ Underestimating the economic potential of younger Māori and Pacific populations brings a high opportunity cost over this period.

Statistics to support equity - High quality, timely population data are also critical to monitoring improvements in Māori health and elimination of ethnic health inequities. Low quality and missing administrative and survey data is more likely for those that experience health inequities, thus rapid and poorly managed changes to the population statistics infrastructure are likely to exacerbate inequities.

Revitalising the population statistics infrastructure

A major rethink and a redirection are required of the statistical information sources and infrastructure that underpin the knowledge^{11 12 13} we need about the population. There is a need for statistical frames to include climate, topographic, and biosystem information and diverse approaches to areal classification, including grid squares, meshblocks and geographic coordinates.

The census is the key element of the population statistics infrastructure, the backbone of all population statistics in Aotearoa New Zealand. The census is the only data collection with a mandate to reach everyone regardless of circumstances, and the only national dataset of lived housing conditions. Without a high-quality census and the statistical foundations on which it has been built, it becomes more difficult to integrate new statistical sources including administrative records.

Proposed shift to use of administrative data to replace census

Statistics NZ have proposed a move towards a model that 'uses admin data first and foremost'. This change involves dependence on data that agencies routinely collect for their day-to-day operations. Administrative data¹⁴ have an increasing role in our national data toolkit but have been shown to not be up to the task in many areas, such as understanding households or people's health and wellbeing, compared with survey data.

The changes already signalled by Statistics New Zealand must not escape broad-based scrutiny^{15-16 17}. Whatever is to happen in the future must be informed by those with the needed expertise across the public sector, local government, universities and non-government bodies. All users of population statistics rely on full, recent and accurate information to make decisions about where to invest our resources. This briefing highlights the critical need to engage on the issues described here, as sweeping changes are sought that will undermine or limit our statistical infrastructure.

What is new in this Briefing

- High quality and up-to-date population data are fundamental to the design, resourcing, delivery and monitoring of the health system in Aotearoa New Zealand.
- Low quality and missing administrative and survey data are more likely for those that experience health inequities, therefore adding a further equity barrier.
- Population projections and estimates need to adapt to the different ways in which change is occurring to the population around New Zealand. The scale of increased variability and volatility in population changes presents a challenge for the government and other end-users of population statistics.
- Statistics NZ have signalled a move from five-yearly population censuses to use of administrative data instead.

Implications for public health policy and practice

- There are opportunities now in the use of administrative data, but they have yet to be fully developed, including for population estimates and projections in localities.
- This Briefing proposes that before plans to change the nature of the 2028 population census are finalised, that the scientific implications are made transparent, recognising the demands population statistics now must meet. The opportunity cost of future knowledge gaps is high and will take years to repair therefore any changes to the population data infrastructure, including the census, must be carefully governed, planned and reviewed.

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Appendix: The statistical limitations of administrative records as sources for official statistics

The coherence of the information from the census of population and compatibility with other statistical sources is anchored in the global statistical infrastructure for population statistics. This infrastructure enables the integration of information from different statistical sources of population statistics. A conceptually robust statistical infrastructure is central to the integrity, efficiency and scope of official statistics, and this comprises statistical frameworks, survey frames, classifications, standards and methods. It includes systems for the classification of location that must be adapt now to the needs we now face. All underpin the quality of integrated measures obtainable from the linking of diverse sources, including those produced in the absence of any integrating structure.

Enabling comparisons over time of information that connects demographic, social, economic and environmental change for places, regions and New Zealand as a whole requires a strong integrating framework, determined by knowledge of what the key uses of official statistics will be in the future. The strength of the core statistical infrastructure used in economic and population statistics in particular is that they are international standards developed after lengthy experience, and endorsed by international bodies, and in the case of economic statistics, compliance is expected by international credit rating agencies.

No integrating framework exists for administrative records, so the qualities of each administrative record are unique and unrelated. They lack the adaptability, coherence, comparability and consistency that comes from information sources designed with the statistical infrastructure of official statistics. It is quite rare for the information contained in administrative records to be designed to meet even a few of the long-standing standards and definitions on which official statistics are based. The quality of the information created by the integration of administrative records not only with official statistics but with other administrative records cannot be assured without case-by-case assessment (Judson, 2005, 2007). Administrative record systems cannot adapt with the same speed as a properly resourced statistical survey. For administrative records that are eventually used in official statistics, there is a need to be able to confirm how far they meet the standards of data governance required of statistical surveys and censuses and their fit with statistical infrastructure. This narrows their use for multivariate measures, while their ever-expanding accessibility lifts our understanding of where and how change is occurring, in a way that statistical sources usually cannot do. This is especially important for integrating information about place. In statistical surveys and the population census, data governance, which involves the exercise of authority and control over the management and transformation of data, operates through expert design specification and transparency that is not usually

possible with administrative records.

Access to the administrative records of government creates a rich and expanding resource for new statistics. Their importance has been focused on improving service delivery, compliance, surveillance, and enforcement. Comparison of the potential value of administrative records with statistical surveys needs to be explained in the context of the challenges now faced by official statistical offices with public compliance (Judson, 2005, 2007). Such a comparison would make transparent the nature of any discontinuity and information loss that would inevitably result from a switch to using administrative sources. Users could then anticipate the impact on the population statistics system's future statistical integrity. This is particularly so for the quality assurance essential to mitigating data-related risks.

The weakness in understanding of how the uses of population statistics would be negatively affected by differences between the nature of administrative records and a normal census is exemplified by the just published Report of the Statutory Review of New Zealand's 2023 Census¹⁸ (page 35).

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.

The Integrated Data Infrastructure is a world leading tool, limited by uncertainties about the provenance of the contents, and constrained by the backwards looking nature of the contents that make up most administrative records. Recent population censuses are also integrated into the IDI. A significant share of the studies that draw on the IDI would have access to fewer of the variables relevant to their work were the census not to exist.

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