Illuminating the intergenerational value of regular population censuses whilst amidst a population storm[1]

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Abstract

Most countries are facing unprecedented demographic change as increased longevity and declining fertility coincide with large and volatile migration flows. Some, like New Zealand, also have indigenous populations whose distinctive characteristics had been long ignored in public policy but are now significant contributors to the economic potential of the population. Fast growing new migrant communities are also contributing to the population's economic potential. The value added from population statistics is obscured in cost benefit analyses because of the weak connection between producers and users. In the population storm we now have, the diversity, scale and speed of change demands we adopt the oversight mechanisms common elsewhere. While the focus of analysis in this paper is on population statistics, there is weakness in accountability to citizens in many other areas of public sector management that can be made visible by such an economic lens.

[1] This paper was initially presented at the July 2024 annual conference of the New Zealand Association of Economists "Managing population statistics as a central element of national infrastructure". It is reprinted here by the PIE hub as an important contribution to debate about the role of statistics, especially the Census, in a time of rapid demographic change.

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Background

Population statistics, both historical population analyses and population projections, are a critical part of the national infrastructure, on which long term planning depends. Long term population projections are usually more reliable than almost anything else we can say about the long term. Ensuring the integrity of these statistics requires them to be adequately resourced, expert driven and responsive to evolving needs, while ensuring transparency in their quality. Without them, budget overruns may far exceed the cost of producing these statistics.

The intention of officials and Ministers to anchor the system of population statistics of the future in the administrative records already held by government departments will move the statistical infrastructure in New Zealand to become like that seen in the Nordic countries, Israel and the Netherlands. However, without the public and political commitment to population registers and other legal obligations that citizens face in those countries, this approach will have few precedents. As such, and until proven in practice, this approach would usually be considered as experimental, or have an overlap period involving both methods. That we are now amidst a population storm not only complicates the policy responses needed for climate change, housing, infrastructure development and fiscal policy, but also makes policy delivery more vulnerable to yet more unintended change to the quality of population statistics. This highlights the need to have ongoing expert oversight by users of official statistics. If this had not been ignored after 2014, the mistakes made in the 2018 census and problems with the 2023 census would most likely have been foreseen. Significant changes in oversight by users that can provide assurance of trustworthiness are overdue, whether or not the proposed experimental approach to changing the foundation of population statistics were to be adopted.

Parliamentarians, Ministers, expert users and the public must have confidence that influences on the ongoing integrity and relevance of population statistics are known, and that official statisticians can be properly held to account for how these are maintained and developed. The producers of population statistics need to be vigilant in maintaining awareness of where the statistics are needed, both for the present and the future, but users with such knowledge are weak in engaging with producers on their needs. For key official statistics it is imperative that the oversight processes are sufficient to enable experts within government to have confidence in advance that the situation being reported in the statistics is accurate.

Designing long term policies to be fit for volatile times, while facing the uncertainties of rapid population change

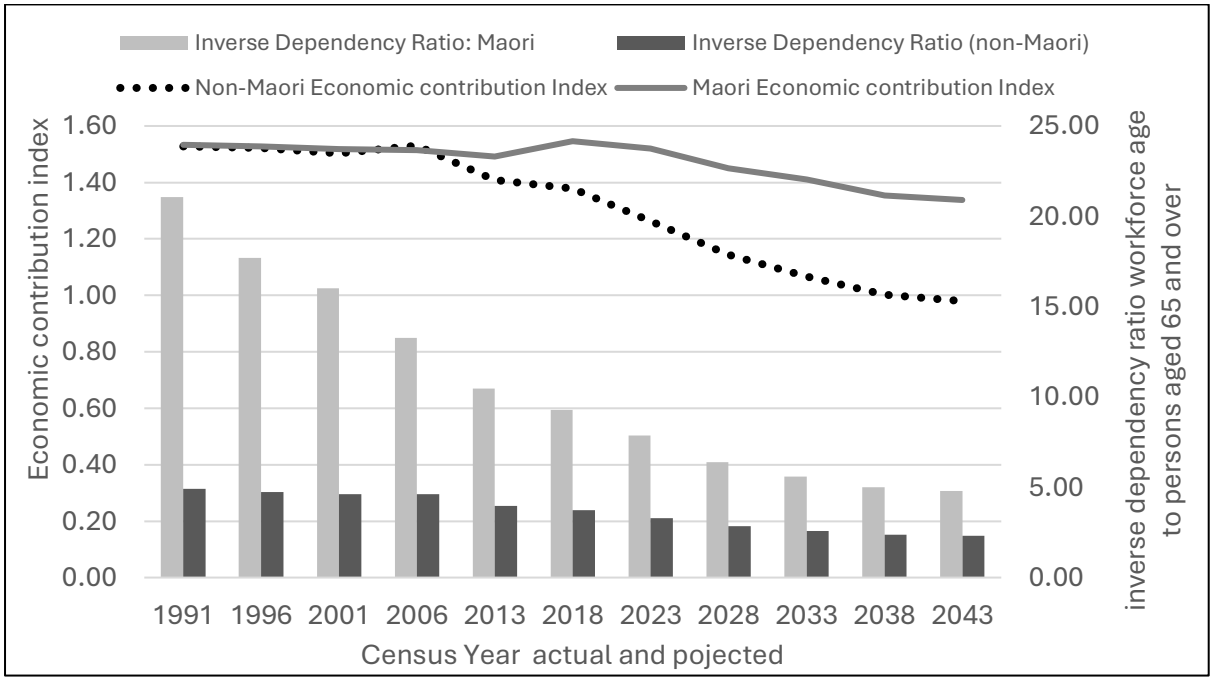
Population statistics, estimates and projections must compete with slogans, stories, and stereotypes, on an increasing range of matters of public importance. Sometimes these can drive change that flies in the face of statistical evidence. Population statistics, estimates and projections of known reliability are of critical importance for long term fiscal policy, as developed by Treasury, MBIE and others. This will be especially true for the Infrastructure Commission. Selecting population predictions appropriate for the investment response relevant for each locality has become more critical because of the imperatives of climate change and the proper allocation of some $200 billion of infrastructure investment. The variability in the scale and causes of population change at both the national level and among places requires predicting who and where the affected future populations will be. Demographic projections need to be supported by additional information when planning some long-term investments. There are very different and distinct investment risks involved in each aspect of climate change, managing ecosystem integrity or placing large scale infrastructure investment and housing. This is also true for long term fiscal projections, which now point to such a significant reduction in the fiscal outlook that future governments cannot ignore the necessity of major changes to the current tax base and the scale and scope of universal services. Large scale changes to redistributive policies would have intergenerational consequences that would usually be informed by the array of information obtained in the five yearly census of population and dwellings. Not only do the weaknesses in how population estimates and projections are often used as predictions need to be resolved, but statisticians need to give priority to adapting and extending the area frameworks that underpin the growing range of uses of population statistics. There is more place-specific information of varied frequency, granularity and connectedness now obtainable but not readily linked. The facility for this data to be rapidly integrated with existing spatially identified population statistics is overdue.

The declining economic potential of the population resulting from large age structure shifts (Figures 1, 4) amplifies existing concerns about New Zealand productivity. Projections point to a need to recruit increasing numbers of new entrants to the workforce into services which support the fast-growing population groups. The implications of this extend not only to community run services but to the capability of those who work outside paid employment, and these will all influence workforce productivity. Raising productivity will depend on the interaction between education, health, housing, working hours, occupation, and industry of employment, for which the regular census of population has been the prime statistically designed information source. The combined impact of increased longevity and fertility decline is contributing to a steady fall in the economic potential

(Figure 1) of the non-Māori population of some 35 percent between 2011 and 2043. This fall will inevitably have massive significance for the overall future taxable capacity of the New Zealand population, and the scope of the tax base. It will affect the scale of transfers, and the capacity for universal free provisional of some long-standing services. While Māori in comparison are expected to experience only a gradual decline in their current estimated economic potential from their population structure as it evolves over the next 20 years, they will also be affected by the coming decline in taxable capacity.

The quality of population statistics will play a larger part in determining the effectiveness of economic policy than any time since the 1970s as a consequence of the significant weakness in the projected fiscal outlook, and the scale of investment in the pipeline..

Figure 1: Economic contribution index and inverse dependency ratio 65 and over: Māori and non-Māori



Source: StatsNZ, Author calculations, New Zealand Treasury Working Paper 13/13 July 2013

Compared to statistical surveys, the content of administrative records will usually be frozen once their administrative systems are designed. Good practice sets up quality standards when a new administrative database is created. These standards address completeness of metadata; coverage of the intended population; duplication of records, accuracy of data fields, etc. But often there is not ongoing monitoring to see whether these standards are still met as is the case with ongoing surveys. This will have profound consequences for the necessary continuity, adaptability and continuing relevance of long-standing population statistics, and the policies and investments that they help shape. Official statisticians have minimal authority to determine or adapt the content or coverage of government

administrative records, compared to the statistical surveys and censuses that it is proposed they replace. The rigidity of government administrative sources is at variance with the known importance of the adaptability of statistical sources. All sources need to be responsive to the needs of known developments such as physical infrastructure investments, climate change response and housing, and these depend on a major transformation of place-based statistics. There is a potential opportunity cost that needs more than the mantra, "administrative data first," to be justified to expert users and those with large scale investments. Given the population uncertainties we face, all changes need to be assessed not only in terms of cost efficiency, but also tests of dynamic and allocative efficiency because of the certainty that what we need in the future will change again.

Confidence in the continuing intention of officials and Ministers to use administrative records as a purportedly lower cost substitute for population censuses and surveys (Statistics NZ, 2012), needs the vindication by experts in statistics, demography and geography, as well as a cost benefit analysis. Ministerial decisions on such a vital part of statistics infrastructure as the census should be informed by a comprehensive cost benefit analysis that users can trust. In addition, the proposals being consulted on in 2024 do not address the necessity of new geographic frameworks in addition to meshblocks that would enable the ready integration of relevant climate, geophysical, ecosystem information, as well as support the place-specific measures that communities themselves regard as important for their own distinct needs. Little has been formally documented about what official statisticians know about the need of change to the current population statistics system. The Infrastructure Commission (New Zealand Infrastructure Commission (2023) propose a National Population Plan as a precursor to finalizing investment plans.

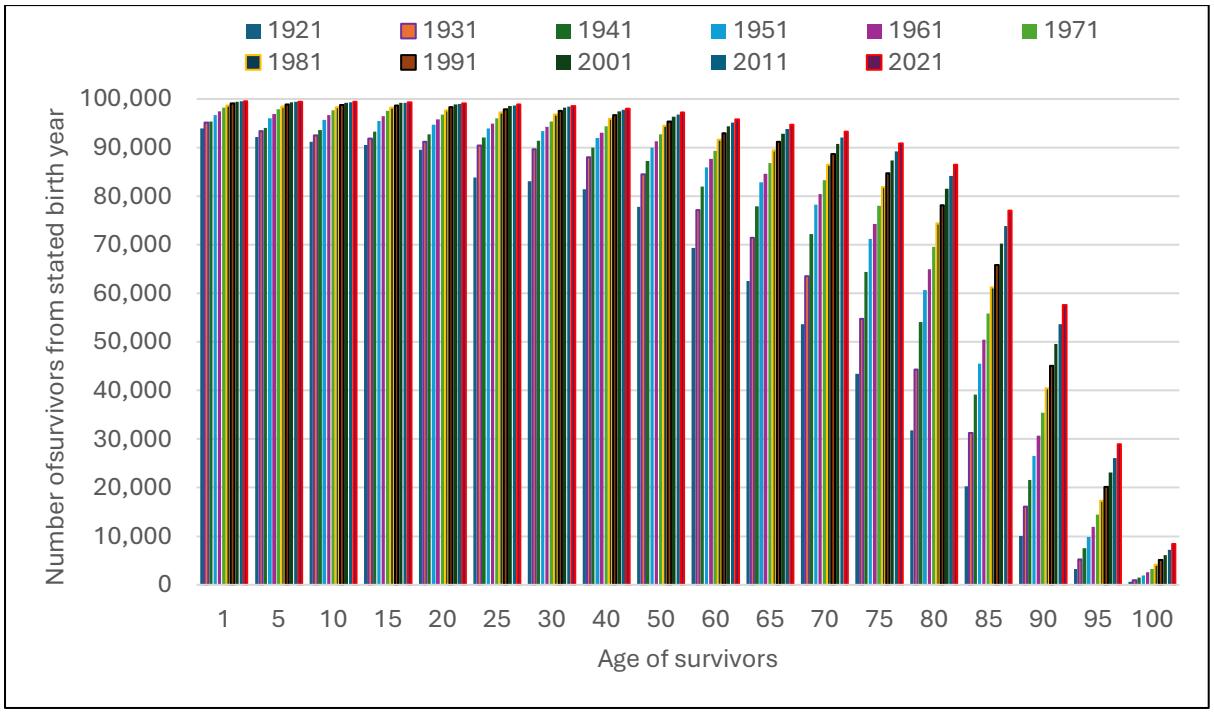
The volatility of immigration, population ageing and the size of ethnic communities with different demographic dynamics combine in varied ways to affect who lives in each place in New Zealand. What characterised population structures and dynamics up until 30 years ago is not relevant today. They will be different again in 20 years' time. Long standing demographic sources and methods for estimating and projecting populations must respond to this. The variability and volatility now of demographic, social, economic, and environmental change has increased the difficulty of planning in an increasingly fiscally constrained environment for whatever mix of people will live around New Zealand in the future, and for monitoring their quality of life. Call to recognise these concerns are not new (Jackson, 2015).

Dimensions of the population storm in Aotearoa New Zealand

While public policy in New Zealand has long been developed and applied with little regard to the distinctive characteristics and needs of Māori, the Māori population size and dynamics now add to the population storm we face from increasing longevity (Figure 2),

declining fertility and volatile migration. Together they disrupt national patterns that were anchored in past population structures and dynamics and have implications for not only productivity and fiscal policy, but all aspects of social services provided by government, the community and business.

Figure 2: Survivorship (male) per 100,000 births 1921 to 2021



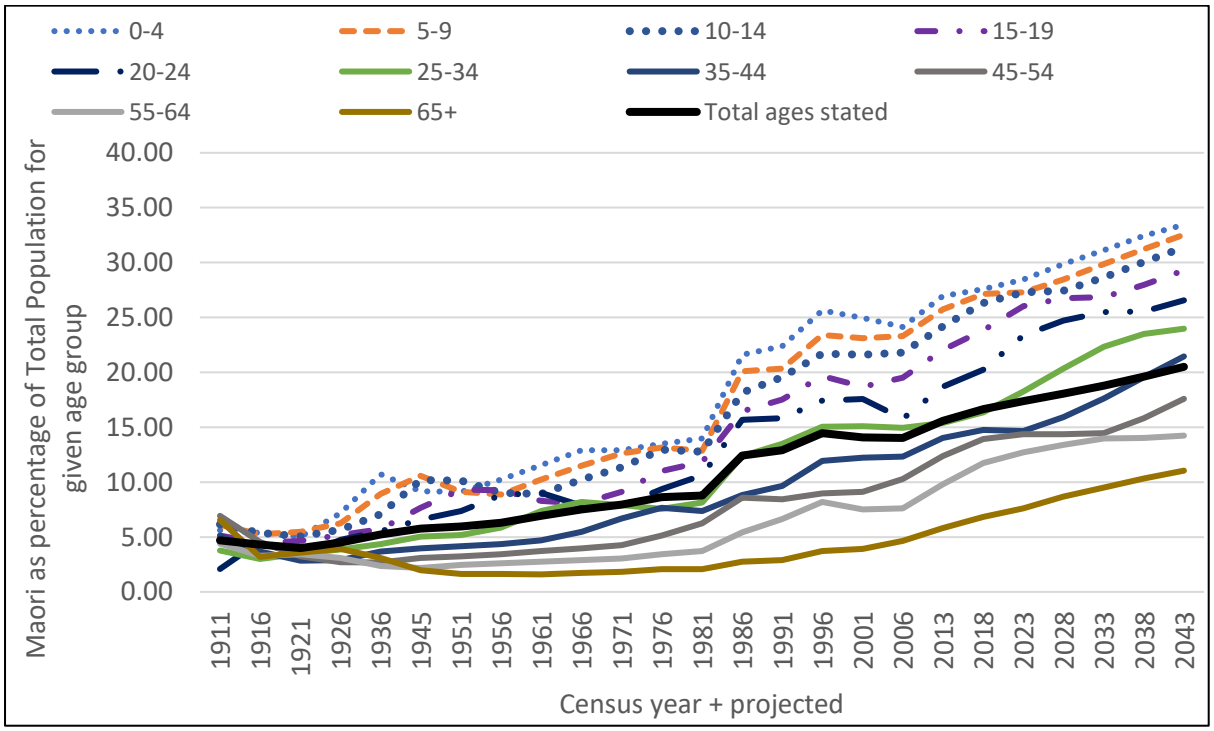
Source:: StatsNZ

For Māori, the greatest influence on population growth up the 1970s was the decline in infant mortality and maternal mortality that began early in the 20th century. Life expectancy since then of Māori who have reached older ages has crudely mirrored the improvements seen for non-Māori, but with a persistent large gap. The Māori descent population in 2023 has a very similar age structure to the non-Māori population of 1966, and as non-Māori were then, Māori are at their most dynamic and beginning to experience a significant demographic dividend from past fertility. Of the New Zealand population aged under 20 years, the share of the population in each five-year age group that is of Māori descent is now above 25 percent and is projected to keep rising (Figure 3).

Māori population dynamics contribute to the population storm driven by the effect of global experiences of volatile migration, declining fertility and increasing longevity. There is considerable variation in the effect of this storm on the urban settlements and communities around New Zealand. For the New Zealand population overall, following the fall in fertility in the 1960s, there was a long period from the early 1970s until around 2007/8 where quite varied trends in age specific fertility rates were experienced. Since then, fertility rates for all age

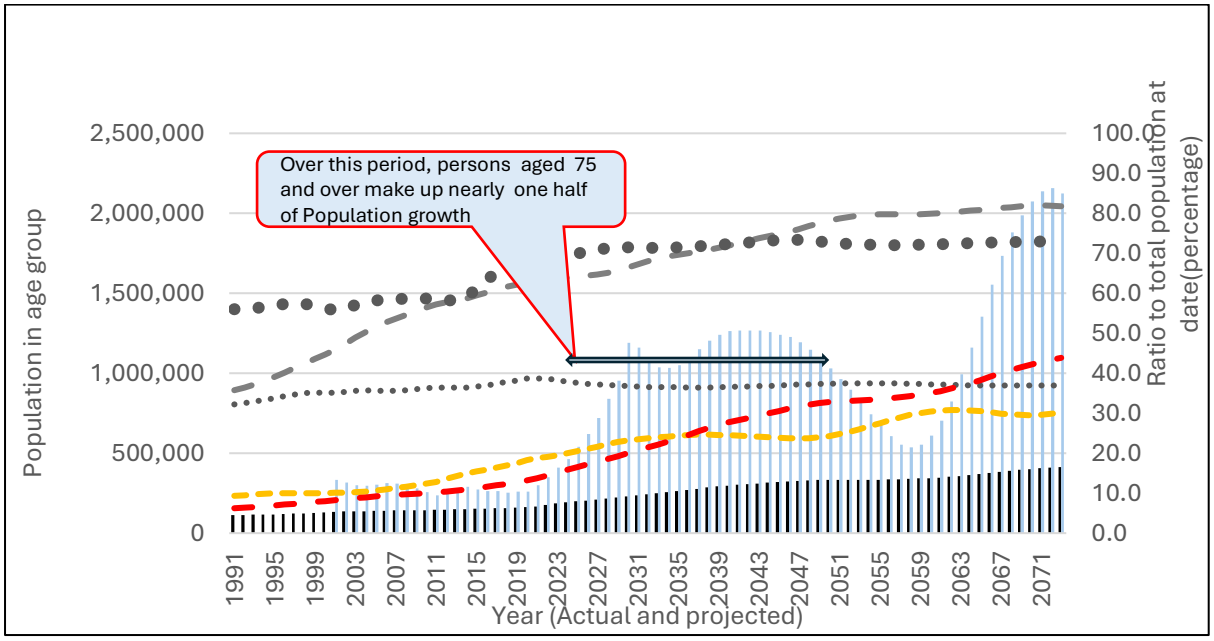
groups have been falling. For the European population, life expectancy at age 60 changed little between the 1940s and the late 1970s, but there have been continuing increases since. Some key turning points in the age structure (Figure 4) will occur around 2036, when the share of population aged 75 and over will be greater than that aged 65-74 years. Around 2041, the number of people aged 40-64 years will exceed the number aged 20-39 years.

Figure 3: Māori as percentage of total population by age group 1911-2043



Source: StatsNZ, Author calculations

Figure 4: Impact of population aged 75 and over on the population age structure

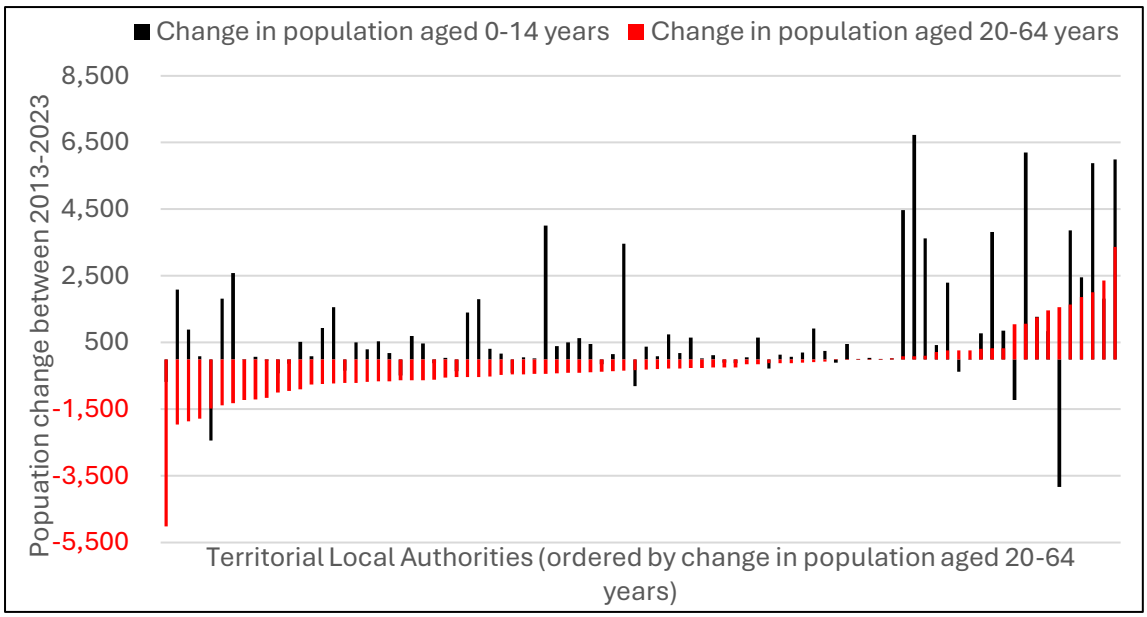


Source: StatsNZ, Author calculations

The most marked change between 2023 and 2043 is the projected increase in the population aged 75 and over (354,000), and this age group will make up some 45 percent of the projected increase (775,000) in the total population. In addition to the fiscal constraints, there will be a major impact on care and health services. The disruptive effect of ageing on this scale on the nature of new housing stock was highlighted in the Long-Term Insights Briefing by the Ministry of Housing and Urban Development (Ministry of Housing and Urban Development, 2023). Births are projected to change little over that whole period and are projected to continue to range around 60,000 births a year, which was first reached in the late 1950s. In most Local Authorities (LA) in New Zealand there are now fewer people reaching workforce age compared to those reaching the age range when people tend to withdraw from paid employment (Jackson, 2015).

Figure 5 shows the recent workforce shortfalls by comparing the difference between the increase in the number aged 65-74 and the number aged 20-29, for all Territorial Authorities including Auckland Local Boards between 2013 and 2023. We have seen a rise in the labour force participation rates over the past two decades (Figure 6), particularly of those aged 60 and over

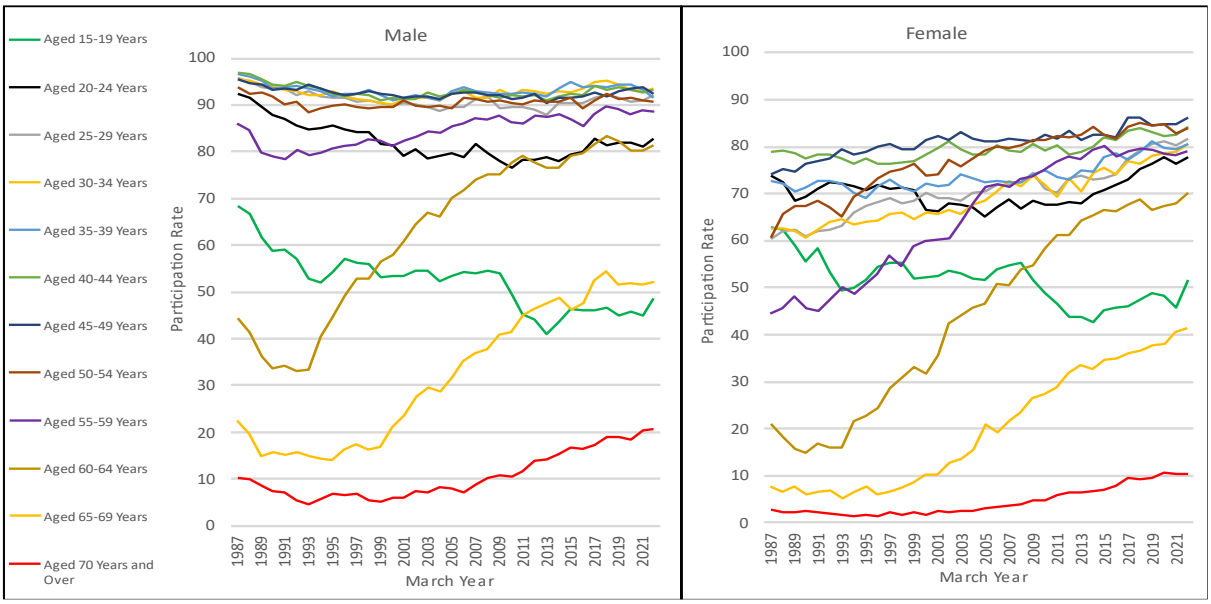
Figure 5: Comparison of Population Aging effects on workforce change among Territorial Authorities (2013-2023)



Source: StatsNZ, author calculations

In New Zealand, the very high participation rates of people aged 65 and over (Figure 6) indicate that we have already obtained a large share of the potential benefits from such a dividend compared to the majority of OECD countries. The response to the workforce gaps around all parts of New Zealand has been an unprecedented rise in the scale and volatility of immigration and emigration over the last decade.

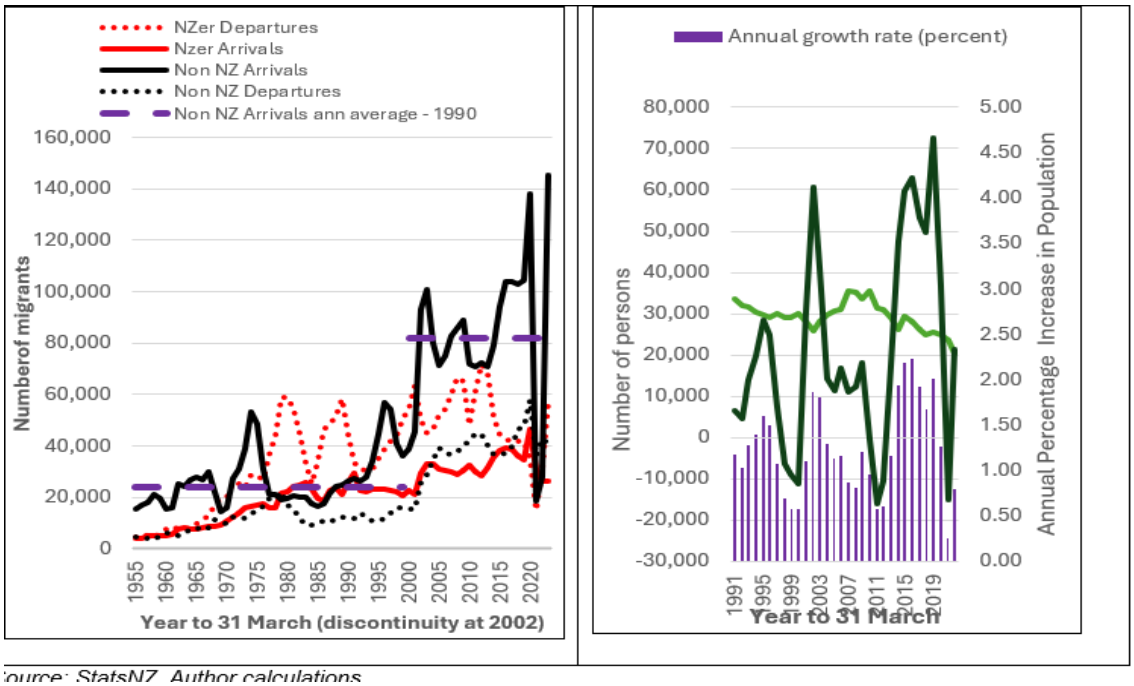
Figure 6: Male & Female Labour Force Participation Rates 1987-2022



Source: StatsNZ,

International immigration and emigration, and migration within New Zealand, have displaced natural increase as the prime driver of population change since 2014 (Figure 7). This has brought a much-increased volatility and unpredictability to population change, affecting the reliability of national and sub national population estimates and projections at a time of large-scale planning of physical infrastructure and housing investments. It has also brought volatility to change in demand for school, care and health services.

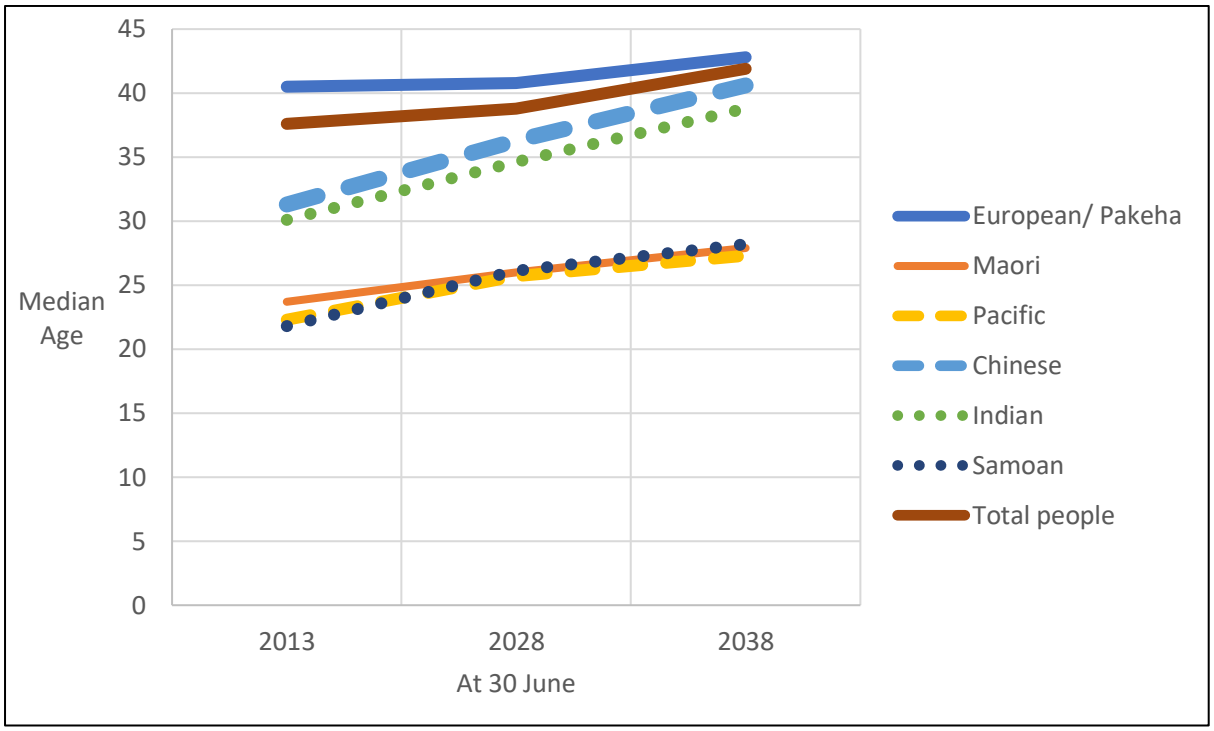
Figure 7: Contribution of Migration and Natural Increase to Population Change



Source: StatsNZ, Author calculations

Demands at a national level for new infrastructure can be far greater than indicated by projected population growth depending on how much some places are more attractive for domestic and international migrants. The diverse characteristics of the distinctive communities formed by immigrants from different places and cultures is poorly explored in official statistics, as are differences in international mobility (New Zealand Productivity Commission, 2022). The immigrants from both China and India who have become NZ residents are not evenly spread around New Zealand, and the ethnic composition of Territorial Authorities can change rapidly when they are a preferred destination.

Figure 8: Projected median age of New Zealand's ethnic communities 2013-2038



Source: StatsNZ,

Papakura (Table 1) is an example of the rapidity with which the mix of ethnic communities in places can change. The different age structures among ethnic communities (Figure 8) and the volatility of migration will see such trends amplified in the future.

Table 1: The largest ethnic communities in Papakura Local Board (2013-2023)

Census Year	European	Māori	Pacific	Asian
2013	26,064	11,979	6,201	5,448
2018	28,305	15,438	9,750	13,497
2023	26,541	17,811	14,811	24,732

Source: Statistics NZ

Nationally critical policies and programmes depend on reliable and relevant statistics about place

Climate change responses, mass infrastructure investment and housing shortfalls are among the growing mix of activities that have expanded the demand for place-based statistics.

> *"Climate data include current and expected biophysical changes, such as changes to temperature, sea level and precipitation. With geospatial data, it is possible to map current and projected impacts and build baselines for long-term analysis – such as light detection and ranging (LIDAR), Earth observations, and topographic and geographic data. When combined, these data can help to generate modelling and scenario-planning tools tailored to the needs of different users. With those tools, users can then assess climate consequences in areas such as health, employment, tourism, businesses and terrestrial and freshwater ecosystems." (Ministry for the Environment, 2022, p.44)*

These needs cannot be adequately supported without advances in place-based population statistics, and the statistical infrastructure that would enable the integration of population statistics with information from many other sources. The opportunity cost from misdirected or poorly timed investments in infrastructure, housing and climate change responses will far exceed the costs of the investment in population statistics that would be needed. The rapid shifts in the age distribution of the population exacerbate the pressures for rethinking the core statistical frameworks in which statistics about place are anchored. Given the needs of those of school age, working age or those likely to have care demands, the pressures are there now. Official statistics not only monitor but contribute to the efficiency and effectiveness of government performance and are of particular importance to trust in government.

Predictions and projections are both estimates of the future. For demographic projections, the user selects which of the alternative assumptions that may be available for their particular use. When planning long term investments, the population path that is predicted will reflect not only those judgements but will take account of the very different and distinct investment risks involved in climate change, managing ecosystem integrity or placing large scale infrastructure investment and housing. In such situations users might need to have a wider information base that could vary among localities. This may lead to developing projection methods which adapt to structural differences among localities.

The Infrastructure Commission (New Zealand Infrastructure Commission (2023, p20) notes:

Infrastructure has features that make it different from other goods and services. These features relate to how infrastructure is made and how it's used. This affects how infrastructure is funded and how the organisations that provide it are structured and operate. All infrastructure sectors share these features to some degree:

Infrastructure is intergenerational. With good maintenance, infrastructure assets may last for over a century.

Infrastructure investment is lumpy as it involves large up-front costs to develop and upgrade.

Infrastructure can be interconnected and interdependent. For instance, a new water pipe can only supply a home with drinking water if it connects to other water pipes that link it to a water source. A hospital can't function without electricity and wastewater.

Infrastructure often provides shared services to a large number of people. For example, when a residential power line fails, every home served by that line loses power.

Infrastructure generates spill-over effects. For example, a new road or a passenger transport service can make an existing road quieter or busier. It may also help people to get to a hospital or to work more quickly.

The system of population statistics is a key element of statistical infrastructure in New Zealand. Since 1851 the (usually) five-yearly census of population and dwellings has provided the backbone that enables the integration of sources for whether they be statistical surveys or administrative records, bringing long term coherence. The system of population statistics is a large investment concentrated in one agency, and is a near monopoly, providing the statistical sources, methodologies, analyses and reporting that underpin further study by independent analysts. In those countries that depend instead on administrative records for their population statistics, the backbone has to be provided by a population register (Cook, 2004). Costs are spread across agencies. Whatever community people live in, the public availability of population estimates, projections of integrity and relevance matters hugely, particularly where there are competing political imperatives in regional public investment. Some important attributes of national infrastructure that official statistics generally have are:

i. They enable past, current, and future generational differences in populations to be measured consistently, and their varying contribution and connection to family formation, the labour market, places, and communities, and need for investment in services and infrastructure.

ii. The backbone of population statistics, as with other official statistics, is a large, lumpy investment in periodic population censuses, international standards and classifications and demographic expertise.

iii. Statistical frameworks, common classifications, survey frames, standards and definitions enable the integration of diverse statistical sources, by design, regionally, nationally, and internationally.

iv. It is difficult to find an aspect of government, business or community life that is not informed in some way by population statistics.

v. Official statistics have huge spillover benefits in how they contribute to trust in government, which is reinforced by the independence of the Government Statistician, and the commitment that they should have to public accessibility of statistical information.

vi. Statistical infrastructure is the outcome of the consistent application of rules, processes and practices designed to enable information contained in disparate sources to be integrated in a system that can produce a range of statistical measures of known quality that would not exist unless all the sources adopted the rules, processes, and practices of the system.

There are many examples of other key benefits that significantly affect the accountability of others than the Government Statistician and need to be specifically recognised when making major change to the system of population statistics.

a) Protecting the constitutional integrity of the State

b) Making widely known information about population and society relevant for holding governments to account.

c) Enabling public confidence in the quality of political decision-making and trust in government and institutions of society influenced by the evidence on which it is based.

d) Ensuring policy responses and operational practice in education, health, housing, care and justice respond equitably to the social/ economic characteristics of the population, and where they live and work

e) Understanding the nature, condition and dynamics of distinct communities in the population, society and the economy

f) Enabling the intergenerational durability of tax/transfers system

g) Increasing awareness of sources of wealth creation, its distribution and use.

h) Adaptability of infrastructure and services to emerging scale of future requirements (climate, environment, catastrophe

i) Updating New Zealand's long historical knowledge base of population structures and dynamics, and capacity to foresee ahead decade by decade

j) Enabling public, community and business services to make long term plans.

Essential ways for governments to know the full worth of population statistics

New Zealand has become quite narrow in how producers of statistics engage with users on statistical matters, in comparison with the countries with which we most often engage.

Many countries such as Australia and the United Kingdom have strong user communities which engage with official statisticians about the quality, methodology, relevance and accessibility of statistics. Even so it is rare for the worth of official statistics to be tested against economic concepts. The worth of statistics is likely to be poorly revealed when producer/user interaction is weak. This paper points to several ways that this could be rectified.

Economic tests of worth

Among high-income countries, New Zealand has a very low rating in efficiency of public capital investment (NZ Infrastructure Commission, 2021). For some official statistics, it would be inevitable that government will have an immediate obligation to explain their implications, making it imperative that experts within government can have confidence in advance that the situation described is represented accurately in the statistics. Among the most critical of these situations in New Zealand are:

- Retaining International financial trust (Credit agencies, IMF, UN) in measures of inflation, national accounts and balance of payments.
- Enabling trustworthy determination of Electoral Districts for Parliament and Local Bodies.
- Population based funding formulae.
- Ensuring reliable international benchmarking and comparison (human rights).
- Publication of fiscal projections.
- Measures of unemployment.

Problematic characteristics of official statistics should be identified by recognized economic tests to ensure that the public, Parliamentarians, Ministers, and expert users can have confidence in them.

I. Principal/Agent issues are endemic in official statistics.

    - Official statisticians are responsible for producing population statistics, but accountability for the decisions on which they are based, and the impact on citizens of those decisions, rests with future governments.
    - Even where official statisticians are aware of who uses statistics, they are less likely to be aware of how they influence policy, or their consequent impact on the lives of citizens.
    - The Government Statistician determines which oversight mechanisms are available to users.
    - Citizens are the subject, beneficiary or target of policy initiatives and their application, yet are rarely engaged with the statistical information which establishes policy and practice, or even able to have access to it.
    - Statutory independence limits the political bias in statistics, but not the selection of the statistical sources for what is to be measured from annual budgets.

- As with any other public service, in times of severe fiscal pressure the immediate cost of official statistics may determine where cuts occur rather than the value they bring. Situations can arise where there are perverse incentives from Ministers for short term cost reductions.
- Many who determine and monitor public policy lack the quantitative capability to recognise where shifts are occurring among the populations of importance to their sector.

II. Official statistics are non-rival, so use by one person at the same time does not reduce the value another obtains. Official statistics have in the past been a more accessible public good, but access in New Zealand is now limited, after the cessation of publications, by the necessity to use a poorly designed and continually changing web system.

III. The worth of population statistics is weakly revealed, because:

a) Producers of official statistics are unlikely to be aware of most of the uses of the statistics they publish

- Loss of structured expert interaction, and weakened public access to outputs
- Inadequate mechanisms to recognise deterioration in quality (population projections/ estimates)
- Integration of measures unlikely unless made explicit in statistical design
- there appears to be insufficient capacity to distil the knowledge we already have about population that would provide more informed foresight when anticipating the future course of policy and practice in key areas.

b) Users take insufficient interest in integrity and evolution of statistics

- The opportunity costs of inadequate population statistics are borne by taxpayers and consumers of services, rather than the producers of statistics, the designers of services or the officials and Ministers who authorise their form.
- Maintaining service levels in health, education, care, security and housing necessitates predication of future demands the recruitment, training and equipping of those that maintain service level, a most critical influence on this is the quality of population estimates and projections (teacher/pupil, elderly citizen/geriatrician, persons in care/care workers).
- Diminishing quantitative expertise within the policy advice community
- Diminished scientific capability at higher levels of public service (DOC, MBIE)
- Explosion of non-expert managers overseeing public sector scientific capability reduces capacity to achieve critical mass and leads to the fragmentation of expertise held by government as a whole.

c) *The advantages and disadvantages of and statistical surveys and censuses and administrative records are poorly explained.*

- Administrative records gathered by a statutory authority and commercial records are very different in their adaptability to changing statistical requirements. Both can add to the means for earlier recognition of disruptive influences on population estimates and projections, whenever they are quickly available and classified by place.
- The quality of the coherence, coverage, comparability and consistency that comes from information sources designed for producing official statistics is lacking in administrative records. Whatever their prime purpose, there is little need for the information contained in administrative records to be designed to meet the standards and definitions central to official statistical measures.
- The information that can be extracted about individuals and their households relates to diverse and often unknown periods, dependent on when they are reported and transferred from the relevant administrative agency, unlike the commonality of period usually found in statistical surveys and censuses.
- Administrative record systems that report on statutory processes adapt with changes in statutes or regulations rather than statistical needs. This is not the case with administrative records such as those about climate, and commercial transactions (EFTPOS) are highly adaptable. Access to historical records is affected by disparate information management practices among agencies.
- 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 required of statistical surveys and censuses, and their fit with the statistical infrastructure. Their quality cannot be assured without case-by-case assessment.
- Without a population register (Statistics NZ, 2011) or address register, no integrating framework exists for administrative records, so the qualities of each administrative record are unique and not usually related.
- In statistical surveys and the population census, quality and relevance involves the exercise of authority and control over the management and transformation of data, through expert design specification and a level of transparency that is not usually feasible with administrative records.

Internationally practiced oversight arrangements for official statistics

The very serious flaws in the 2018 Census of Population and Dwellings could have been foreseen had the established ways for the oversight of official statistics not been abandoned in 2014. Problems with that census that provided a challenge to its operations then continued with the poor response in the 2023 census enumeration. The Data and Statistics Act 2022 ignored the need for oversight mechanisms in official statistics to be fit for the oversight of statistical systems, as did the brief Regulatory Impact Statement prepared by the Treasury. The continued weak oversight brings an adverse effect on population statistics, as there is still little means for expert users to oversee and challenge what will be the third consecutive major change for the census of population.

The population census is the largest statistical investment that is made every five years in New Zealand. It is the backbone of population statistics, all investments that span several generations, and in trust in electoral processes. The current population storm in New Zealand coincides with a massive infrastructure investment while huge social change from ageing and population mobility is occurring. The opportunity costs from faults in a third transformation that has not been able to be challenged by user evaluation will be very high.

Expert users (Cook et al, 2024) have expressed deep concern about the loss of information and weak statistical and demographic evaluation of current plans of officials and Ministers, anchored in the policy "administrative data first" and an unvalidated promise of cost savings. The multiplier effects from having sound knowledge of the reliability of population estimates and projections are very large. They also enable a measure of the opportunity costs if there was a third failure. They must be considered in the cost benefit analysis that should be overseen by the Treasury and reviewed by the Auditor-General, so that confidence in this transformation can be assured before it is implemented. Internationally there are many well tried initiatives which sharpen oversight. In New Zealand any processes that were not prescribed in the Statistics Act 1975, or in the Data and Statistics Act 2022 in diluted form, were left entirely to the Government Statistician of the times to determine. Up until 2014, in general there was a gradual increase in oversight processes. The independence of the Government Statistician in the methods and release practices of official statistics is vital for public trust. There are well established ways that enable a Government Statistician to provide assurance of the fitness for purpose and methodological soundness of the resulting statistics from decisions made.

The approaches outlined below are designed specifically to reduce the likelihood that the worth of key official statistics will be hidden at any time, most particularly at times such

as the present of major change or inertia. They are complementary approaches that increase the oversight.

i. Giving effect to the critical importance of expert advisory bodies

The trustworthiness of official statistics is harmed when risks to integrity and relevance are opaque, as a result of insufficient validation of methods, and a lack of transparency, comparability, timeliness, reliability and relevance. Ongoing expert advisory bodies are an important element in providing the public, Ministers and Parliament that the producers of official population statistics are well informed on population matters. As far back as 1918, the UK Report of the Machinery of Government Committee, p11, para34 noted:

> *So long as advisory bodies are not permitted to impair the full responsibility of Ministers to Parliament, we think that the more they are regarded as an integral part of the normal organisation of a Department, the more will Ministers be enabled to command the confidence of Parliament and the public in their administration of the services which seem to be likely in an increasing degree to affect the lives of large sections of the community affected by the activities of the department.*

The engagement of producers of statistics with users in New Zealand has lessened since the Ministerial Advisory Committee on Official Statistics and other longstanding expert advisory committees on statistical subject areas were abandoned by the then Government Statistician in 2014. Te Mana Raraunga was formed in 2015 to enable Māori Data Sovereignty and to advance Māori aspirations for collective and individual wellbeing by asserting Māori rights and interests in relation to the protection, integrity and governance of data about Māori. In the United Kingdom, the Statistics User Forum is hosted by the Royal Statistical Society and supported by the UK Statistics Authority. The Statistics User Forum was formed in 2004, with initial funding from the Economic and Social Research Council, as the successor to the long-established Statistics User Council. These bodies are examples of where the users of statistics manage user forums, where there is sufficient interest. Given the scale and variety of investment over the next few decades that will be dependent on population statistics, the proposals of the Infrastructure Commission could point to a need for such users to lead this collaboration. Because New Zealand is attempting to be make major changes not yet common elsewhere, as was tried and failed in 2018, international expertise would be very important to ensure that any radically new census methodology is fit for purpose. This is now relatively inexpensive using Zoom.

ii. Effective recognition of the special constitutional position of Māori

The Māori Statistics Forum, chaired by Bishop Manuhuia Bennett that was established in 1993 was the forerunner to the current Mana Orite Agreement, in that recognition of the

unique constitutional position of Māori was reflected in membership. This special collaboration led to the introduction of a bilingual census questionnaire, establishing the Te Kupenga survey, the evolution of collaborative arrangements in census enumeration, and indigenous statistical frameworks were additional to engagement on the statistical content, focus and form of statistical measures generally. To extend this early framework for collaboration and advance beyond a series of one-off moves, the Mana Ōrite Relationship Agreement was signed between Stats NZ and the Data Iwi Leaders Group of the National Iwi Chairs Forum on 30 October 2019. Unfortunately, in 2018 and 2023, the inclusion of Māori in both censuses of population and dwellings has been below 80 percent. When there are overall failures in enumeration, it is well known that the consequences are not evenly shared among communities, and they need to play an appropriate role in all stages of census planning.

iii. A National Population Plan?

With implications for much more than infrastructure development, recent proposals of the Infrastructure Commission and the Helen Clark Foundation for a National Population Plan are seen as an essential precursor to finalizing investment choices and managing depreciation. The Infrastructure Commission defines the scope of a National Population Plan.

- *Presents a likely population pathway over the next 50 years and identifies requisite supporting policies.*
- *Provides direction for regional spatial plans.*
- *Identifies supporting policies required for New Zealand to capitalise on the benefits of a larger population, while managing and minimising the costs of growth.*
- *Regularly review and publish best-practice advice to improve population projection accuracy.*
- *Require local governments and other public infrastructure providers to test significant infrastructure projects and investment plans against high, medium, and low projections.*

The usual approach to enabling users to select which projection options best fit their needs may no longer be the best way for how population projections are used as predictions that inform investment decisions. This issue needs to be confronted more effectively by official statisticians, otherwise confidence in population projections will falter. Collaboration between demographers, economists and human geographers may be needed to advance these concerns.

In a second overview of infrastructure planning, WSP (2024)[3] similarly emphasised the impossibility of planning without sound population projections, in a summary of some of the population uncertainties. New Zealand has been lacking a strong national-level analysis of population measures and how they integrate with social, economic, environmental and other matters of future importance, comparable to the "Australian Intergenerational Report 2023: Australia's future to 2063" (Australian Government, 2023). Where reports have been prepared, they are ignored, as that of the "Royal Society of New Zealand Our Futures Te Pae Tāwhiti" (Royal Society of New Zealand Te Apārangi, 2014), and the "New Zealand Productivity Commission" (NZ Productivity Commission, 2022).

iv. Enriched oversight arrangements of the use of official statistics by governments

In the United Kingdom, since 2007 the UK Statistics Authority has had a statutory independent role to challenge both the producers and users of official statistics and represent the interests of the public. The role was established as a remedy for the loss of confidence by the public in government statistics after continued political interference particularly from the1970s. It gives effect to the special nature and importance of some official statistics in that their dissemination includes the obligation on government to respond. Our Ministers gave no consideration of the need to implement a New Zealand version of the UK Statistics Authority when the Data and Statistics Act was proposed.

v. A Centre for Population

The Australian Government established the Centre for Population in the Australian Treasury in 2019 to better understand how Australia's population is changing and the implications of these changes. Its objectives are: *Engage and collaborate*, *Enrich the evidence base*, *Inform policy*. The Centre produced the 2023 Intergenerational Report (Australian Government, 2023). The Australian Centre for Population produces population projections to inform policy makers and the public about Australia's future growth. They aim to take account of the latest available demographic information and include adjustments to account for the impact of the COVID-19 pandemic.

The Centre is a collaborative venture between the Australian Treasury and the Australian Bureau of Statistics. There is no body in New Zealand that at present brings together the key centres where population studies are taking place, which has a downstream effect on weakening collaboration between the small research groups across the public sector. Māori and Pacific populations need to be analysed as distinct communities. The leadership of the Treasury in such a venture reinforces the critical contribution of population statistics, estimates and projections to the quality of fiscal forecasts, and the costing and placement

[3] See https://www.wsp.com/en-nz/who-we-are/our-story

of investment in infrastructure, service provision and income support, as well as climate change responses. The Population Monitoring Group of the NZ Planning Council had been an excellent vehicle but was abandoned in 1990.

vi. Encouraging university collaboration

A Population Centre has much to offer if replicated in New Zealand, and it could partner with Te Ngira Institute for Population Research, Compass and other comparable groups. New Zealand's universities must be encouraged to recognise the benefits from widening and formalising collaboration on population issues by using existing mechanisms, for example the Centres of Research Excellence. Such collaboration would connect demographers, geographers and other social scientists. It could play a critical part in maintaining these skills where needed within the wider public service.

vii. Seeking the voice of citizens.

Despite the fact that it is citizens as consumers, traders, producers, parents and householders that are the most affected by public policy, it is rare for their views to be sought other than as translated by those that produce the services that they need. The Statistics Act 1975 required the Government Statistician to have a conference of users and producers of statistics every five years. These lasted until 2011. From the first such conference in 1980, all Government Statisticians took them seriously. They provided a wider context for official statisticians to understand how the surveys and consequent statistics were valued. The first Māori Users of Statistics Conference was organized in 1997 by the Māori Statistics Forum. A handbook for survey-taking by community organisations is one of the initiatives after a conference with Māori users of statistics. The capacity to connect locally selected measures into the national statistics infrastructure will require strong local pressure before their necessity is recognized.

The measurement of ethnicity in official statistical surveys and censuses in New Zealand is anchored in an ethnic classification developed with those communities. Apart from the United Kingdom and the USA, New Zealand is rare in the world in the extent to which ethnicity is regularly included in censuses and surveys, and the measures themselves reflect the needs of those communities as much as government. No administrative records have adapted in the same way. This would be a problem also with the measurement of Iwi, which has been included in the population census since 1991, but that completed for 2018 and 2023 does not meet statistical standards. Intercensal studies are able to observe the association of other characteristics with changes in occupation, ethnic affiliation, gender identity, for example.

viii. Giving effect to the needs of citizens by the dissemination of statistics and trusted statistical narratives

The consequences of the population change for each new population census, population estimates or projections on service planning are often of such significance that service delivery agencies (health, education, utilities, housing, transport) along with local authorities and the Treasury could have an obligation to explain them. An effective dissemination process by official statisticians can reduce doubts about the quality of the measures. Some users will have an immediate need to explain the implications of the statistics at the time of their release. Those users who are placed in such situations need to have developed in advance to their satisfaction sufficient awareness of the quality of population statistics. The proposals by the Infrastructure Commission noted above, and the more recent report by WSP, highlight the depth of concern that now exists about the fitness for purpose of population statistics. As with the concerns of leading demographers in New Zealand, they need to be addressed, and supported by an effective public dissemination strategy.

Conclusion

Over the past 50 years there has been no time when public confidence in the scope and quality of population statistics has been of such importance to our future in New Zealand as now. This is because of the range of difficult choices that we are slowly beginning to face up to, and the uncertain context. Confidence in population statistics has fallen, influenced by a mix of challenges about the quality and relevance of sources and methods and their responsiveness, and the limited accessibility of statistical results. These concerns cannot be addressed by a rushed consultation process, as has been put in train to consult on the form of the 2028 Census of Population (StatsNZ, 2024).

Climate change, massive housing deficits and unprecedented infrastructure investment sorely test the quality of population estimates and projections. Although all these needs have not been comprehensively identified, it is clear that they are not able to be met without fundamental change in the statistical frameworks that underpin statistics about place. A vast range of information from diverse sources needs to be able to be readily integrated with population statistics, and this will challenge the adequacy of existing approaches to data integration, and their structural constraints.

New Zealand like many countries is now facing unprecedented population change as large and volatile migration flows coincide with increased longevity and declining fertility. It is no longer possible to ignore in public policy the distinctive characteristics of Māori, as their contributions to the economic potential of the population have strengthened but remain invisible to most. Similar concerns exist about Pacific peoples and other rapidly changing

migrant communities. This population storm is not addressed by the narrow focus of the current proposals of Statistics New Zealand to use administrative records to substitute for the usual census enumeration.

The quality of population estimates and projections is not adequate to the requirements of the scale of investment that depends on them. Managerial failures that led to poor results from the 2018 census of population and dwellings, were followed by an inability to obtain a better enumeration result in 2023 despite doubling the cost and lowered expectations. In this context, expert vindication of the practicability and statistical integrity of proposals to substitute the usual census enumeration with administrative records must happen before irreversible commitments are made by Ministers and officials.

The ever-changing uses and importance in public life and decision-making across New Zealand of population statistics need to be more effectively recognised in plans and in structured consultation approaches, as with any other part of national infrastructure. There are institutional actions that must be considered with some urgency by Ministers, such as the proposed population plan, and a New Zealand version of the Australian Treasury Centre for Population, lest these current needs remain hidden from producers. The means for the dissemination of key population statistics estimates and projections are currently inadequate and not up to the task of ensuring that all who provide population related services or manage investment both now in the future have access to the most trustworthy statistics when they need them. This is a responsibility shared across government and public institutions, with the core design and delivery of statistical sources and their analysis anchored in the office of the Government Statistician. The value of this to the community is dependent on the analysis and reporting that each sector of government must provide to make transparent the effective political and public oversight on the continued relevance of their activities. Access to official statistics must include contextual information and explanation, for which data extraction alone is not a substitute.

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