Clare Salmond MSc, Honorary Fellow, Department of Public Health, University of Otago, Wellington.

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Thank you for the opportunity to provide a statement of what I consider to be the major issues and trends facing New Zealand society in the area of Health, and on how the census results may have implications for our understanding of the health sector. I am a semi-retired biostatistician, having an extensive work history in the development of social indicators and in epidemiology. I discuss briefly, below, my thoughts on current major health issues and future prospects; and then offer a comment on the current major uses of census data in the health sector with which I am familiar, followed by the issues I see for the future of those, and similar, uses.

Current major health issues and future prospects

Health care

The provision of suitable and cost-affordable health services for the changing population will require not only ongoing monitoring of the population structure, but also monitoring of trends in ill-health such as trends in cancer incidence and survival, psychiatric illness, drug and other addictions, etc.; and trends in new therapies including, for example, new and expensive pharmaceuticals that are only applicable to a small fraction of the community, increasing transplant and other high-cost surgical procedures, or the ability to save the lives of people with ever more dire injuries and disabilities.

The provision of health services requires trained professionals and support workers, so any changes in specific services needed by the changing population, or available through changing technology or patterns of service delivery, will require potential changes in workforce provision, education and training, and ways to keep trained personnel in New Zealand.

The costs of the provision of health services, and the costs of training health personnel, may escalate beyond the apparent means of the nation. Work needs to be done to re-think both. Can the costs of pharmaceuticals be contained? Can more nurse–practitioners or other trained health workers safely and more cost-effectively do a lot of the work currently done by junior-doctors or general practitioners? Can/should more community workers be trained to provide supportive care in the community, rather than in hospital or long-term care beds, for people with continuing physical or mental limitations?

Major health problems

The major health problems facing New Zealanders now are well publicised. Examples include obesity, cancer and heart disease in the older groups, and allergies among the young, with concomitant risk factors such as sugar- and salt-laden food manufacture, lack of exercise, and so on. These will be exacerbated by an aging population, and one with an increasing proportion having

Pacific and Maori heritage. Both age and ethnicity are not homogeneously spread throughout the land, so the provision of health services will also have to be redistributed from time to time to match changing local needs.

Current uses of census data in the health sector

Use of census data to understand the populations served

Clearly census demographic information, aggregated by regions such as District Health Boards or large neighbourhoods (Area Units), is information necessary to plan suitable services for local populations. Changes in demographic profile need to be monitored by providers since the demography is continually changing, for example through the gentrification of inner city suburbs and the expansion of outer city suburbs, as well as through the aging of the population.

Use of census data to create social indicators for use in health studies and in the provision of health services

Indicators can be both individual variables and indexes formed from several variables that have a single theoretical underpinning or latent variable.

Individual variables from the census can be, and are, used (as proportions) at the lowest Statistics NZ administrative boundaries (Meshblocks) or at higher aggregations such as Area Units. Variables such as income, labour-force status, benefit status, house ownership, crowding (created from several census items), educational attainment, and so on, are all used to explore variations in health and well-being across groups and regions, with the long-term view of guiding efforts to ameliorate inequalities in health and health-care provision.

Groups of census variables that are aspects of deprivation have been used to develop a census-based index of deprivation, also used in exploring the existing inequalities in health and health service provision, and in addressing inequalities by their use in health-care funding formulae.

Specifically, I have contributed to the development and continuing provision of NZDep – a national index of relative deprivation for small areas created from anonymous unit-record census data – since 1995. We will be creating NZDep2013 from the 2013 Census early next year, and expect to publish the free index, online, about May 2014. This will be the fifth NZDep index, the earlier ones being NZDep91, NZDep96, NZDep2001 and NZDep2006.

The last published index (NZDep2006) was based on nine socioeconomic deprivation variables in the 2006 Census. It was calculated from a basis of 24,000 small areas containing a median of approximately 90 people. The deprivation index has a value from 1 (low) to 10 (high). It is mapped to standard administrative areas and is available free of charge. The index is easy to visualise and deprivation maps are widely used. The index is used in many and continuing applications in research and social epidemiology; and routinely by the Ministry of Health, both to explore health variations across the country and to allocate central government funds to local health care providers.

The advantages of a national unit-record census-based information over administrative data include: (1) the fine detail that the census can provide *for everyone* unlike administrative data, allowing pockets of deprivation to be identified, for example, that would otherwise be largely unrecognised; and (2) a consistency across studies, regions and time (baring an earthquake-delayed census) not guaranteed to be available in many administrative data bases.

Uses of census data to explore the health status of New Zealanders

The 2013 census results are not directly concerned with health status. Indirectly, however, information on smoking, income, labour-force status, education, crowding (computed from census data), house ownership, age, sex and ethnicity, which are all related to health status, will inform communities and health care providers about likely trends from current health status patterns. But the census data are also being used in more creative ways to explore trends in health status by linking anonymous information.

Two major initiatives to use unit-record Census data to explore the health status of New Zealanders are both the work of Professor Tony Blakely and his colleagues at the Wellington School of Medicine. The first, the New Zealand Census-Mortality Study, is a pioneering study linking the national censuses with mortality data – probabilistically and anonymously – to allow monitoring and research on ethnic and socioeconomic inequalities and the contribution of smoking to mortality (the census periodically includes questions on smoking). The second study, Cancer Trends, probabilistically and anonymously links New Zealand Cancer Registry data, census records and mortality data to enable studies linking socioeconomic variables and cancer incidence and survival.

These studies can be updated with 2013 census and other data to continue the exploration of trends.

Future uses of census data in the health sector

The most serious issue for the future exploration of the relationships between social circumstances and health, and for the provision of equitable health services, is the debate around the continuation or otherwise of the census.

Much of the work cited above could not continue without the ongoing and regular availability of census data. For example, there is no alternative data set that could be used to create an NZDep-like index; and neither the Census-Mortality Study, nor the Cancer Trends Study could continue without census data; and any new population based research could not begin. Furthermore, if the census were to cease in its current form (either at all, or as a decadal exercise, for example), the loss of continuity would hinder, if not prevent, any ongoing study of any population-based health trends.

A second major issue facing the future health of New Zealand society is in documenting the rapidly changing population structure due to aging, immigration, birth and death rates, earthquake-disruption, and so on. Census information gives the clearest view of this structure, which is needed if appropriate health services are to be provided as and where needed, and not based on historical but out-of-date provisions that could result in social and structural inequity.