Using Census Data to Further Understand New Zealand Society

Charles Crothers
School of Social Sciences & Public Policy
Auckland University of Technology
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The major methodological strength of census data is that is allows fine-grained investigation – also over time and in relation to highly granular spatial scales – of a range of topics on which there is no other data source. Much of the focus on census data is description and interpretation of the rather 'more readily quantifiable social characteristics' such as gender, age-group, education qualification level, income-category etc. together with some more complex characteristics which have been classified into a few categories. Information from these characteristics can be readily handled in data analyses, and analyses of them is common.

However, there is also an array of more 'detailed' characteristics which are less easily handled. The topics involved include work-related characteristics and broader socio-cultural characteristics, such as (number of categories at low-level included: higher order groupings are also available and these can be used alongside the 'more quantifiable' characteristics):

Industry c500
Occupation c1000
Field of Study c450
Ethnicity: c100
Country of Birth c100
Language c140
Religious affiliation c60
Iwi c140.

To these can be added the geographical hierarchy of meshblock, area unit, ward/community board, district/city and region. Although most spatial data is released in terms of residential address some is also available in terms of workplace address: also potentially available at each of the levels.

These 'complex data' are often under-utilised as they are (mainly) available ONLY in fairly aggregate form, because of the limitations imposed by StatsNZ privacy requirements but also difficulties in handling. Some interesting variables tend to get 'suppressed' (or perhaps ignored) by StatsNZ. Yet, there is a broad movement in the social sciences to endeavour to recover the granuality of social life and so the aggregation imposed as a constraint. On each of the above census variables the individual has some degree of choice in expressing their

self-classification – although of course many of these areas are shaped by conventional classifications and StatsNZ post-codes the terms that respondents provide. But this allows an element of important subjectivity not available elsewhere in the census questionnaire: in several respondents are explicitly invited to indicate their 'affiliation'. This fits with a particular direction in social class studies (mainly focusing on occupation – advanced particularly by David Grusky) and also in spatial studies (where there has long been an interest in how spatial arrangements and causal effects differ at different scales).

For some of these (language seems the most obvious since few languages allow ready sharing of meanings with other languages) any meaningful analysis must remain at the detailed level as aggregated results are relatively unhelpful as they are too heterogeneous mixes.

Another, albeit less complex, hierarchy which needs consideration is that of families, households and dwellings. Much data is available at each of these levels – together with the personal level from which some of the higher level information is derived. In particular, income and sources of income is widely available at each of these levels and the implications of using one versus others needs to be traversed.

Another combination is that of the characteristics of 'partners'. A wide range of further combinations of data are possible although these sorts of more complex uses of census data are rare. And of course some combinations are more difficult, such as mixing information from the personal and the dwelling questionnaires.   There has been debate, for instance, as to whether 'ethnicity' is a concept which can be applied to families, households etc.

For the 2006 census under the University-linked StatisticsNZ arrangement I arranged (through Mike Moore: then StatsNZ university liaison officer) that detailed tables of each of these (apart from iwi) were produced using a standard template that included: gender, age and urban/rural location. These tables are (cost-free) available to researchers and form a good platform for comparison with 2013 results. However, it may be more difficult to use these variables for the 2013 census.

Stats NZ have a somewhat questionable release schedule for 2013 census data, which is seems unnecessarily elongated since, once cleaned, the data is surely 'ready to go' – apart from logistics issues, and some need for checking re confidentiality (although since results are automatically randomly rounded to 3 I'm not sure how necessary this is). In particular, data (including crosstabulations) relating to (paid) employment won't be available until April next 2015 and yet this is essential data. Those with deeper wallets though can obtain data earlier by paying for runs and some tables seem to be securable if one is working with a

relevant Stats NZ staff member. I think this is a major limitation to the timely use of census data.

My more general interest in relation to the 2013 census is in endeavouring to make census (& other) data available to wider groups of potential users. This requires recasting the numerical data provided by StatsNZ into more user-friendly form and making these available as excel files together with some guidance notes. Some education is required as there is a tendency to use census data with insufficient care for its limitations so there is a need for more accessible and used guidance material to use of census data.

Community Profiling is a major way in which many users access census data. I prepared a 'how to do it' paper for the E-SocialScience Hub re issues/advise in using community profile data and have also supplied downloadable xls files so that potential analysts can more readily access information about their community. (Stats NZ now have profiles 2013 Census QuickStats about a place and mappable data is also available at sites such as 'Auckland Counts'. However, because this information isn't percentaged it is very difficult to use unless analysts have capabilities in calculating percentages and other useful indices.) Also these sources deal with limited ranges of variables at a time when it is often more useful to have access to a wide array.

There are disciplinary differences in use of census and related data and in general earlier interest in use of census data in sociological studies of NZ have waned in popularity quite considerably. In a *New Zealand Sociology* Editorial (Crothers, 2013) commenting on International Year of Statistics 2013 I reviewed extent to which quantitative data used in *New Zealand Sociology* articles.

Within this broader concern I am interested in interpreting census data in terms of societal change: and in particular endeavouring to trace the effects of some changes on other areas of society. In carrying out this project, I can draw on a variety of overseas research programmes have utilised an array of data (often including census data) to assess long term trends in their societies. These all stem from the famous US 'Ogburn Report' commissioned by President Herbert Hoover's Committee on Social Trends - 1930 to 1933 and from the Russell Sage Foundation's funding of census analysis in the US over the last 6 decades. Previous publications have included Fischer and Hout (2006) & Katz and Stern (2006). The current *U.S. 2010* project which is "…an investigation of the subtle shifts and long-term trends in American life and an analysis of what these developments may mean for the future". There are many one-off projects based on census data: e.g. one collective project has been the 'International Research Group on the Comparative Charting of Social Change in Advanced Industrial Societies' project, which generated trend data in a somewhat standard format for various countries with a range of volumes on different countries and some comparison volumes – all published by McGill Queens' University Press. Local sources include Carlyon & Morrow (2013) & Thorns & Sedgwick (1997).

It is important that any change project is theory-driven at least broadly so. Some of the major drivers of such change include:

- Technology, especially flowing from industries and into occupations
- Differential Industry change
- Immigrant/ethnic groups with their internal dynamics
- settlement change (e.g. land use change, Housing intensification)
- etc.

To ascertain the domains in which New Zealand society seems more rapidly changing percent changes for each characteristic will be calculated. Within each of these the particular categories which are changing will be identified. This overall summative examination will be followed up with more detailed studies of ethnic and related dimensions making up the NZ mosaic, the industrial/occupation matrix, and the role of education qualifications. Social Change Parameters: The regional summary tables (issued in December 2013) included 2006 and 2013 data and since NZ total is included I have prepared a set of tables comparing 2006 and 2013 proportions and calculating change ratios in order to gain an overall picture of social change in NZ. The Meshblock dataset (issued in March 2013) included a wider range of variables (although fewer categories within some of these) and allows 2001 -2013 comparisons so I repeated this descriptive exercise.

In addition, some more focused supplementary data-analysis exercises are necessary:

- Industry provides a fine-grained measure of the structure of and changes in the economy and readily links up with an array of economic information obtained outside the census, although the census source remains the main way in which industry differences in personnel can be tracked and investigated. (Other official economic information does not have social characteristics and surveys usually don't have information on industry.)

- In particular, numbers and characteristics of those in industries and occupations are important as they provide a conceptualisation of the pivot between the socio-economic and the socio-cultural. The economy is organised along industry lines, but society begins with occupations - so how occupations nest with industries is analytically highly significant. (Harvey Franklin used the inter-industry matrix to trace economic linkages that held the NZ economy together and in the UK Gershuny has used the industry/occupation matrix to specify ways in which the relations between production and servicing has changed over time.) Occupations remain important bases for identities and many constitute active social groupings of their members. So it is important to track these over time. One area of investigation is the

mobility of occupational groupings themselves. I have already published a research note drawing on GSS and census data concerning occupations (Crothers, 2014). I have also arranged for updates to the articles on social class (Ongley) and Household Indicators (FWWP) to be included in a soon-to-be published extended edition. Census data related to class: published in NZS as part of continuing series on class/inequality.

Analysis of the impact of the long-term impact of the education system on workplaces and people and society more generally is usually confined to the differential effect of level of educational qualification. But field of study is equally important as skill shortages abound and in general the 'fit' between work and education needs analysis.

The set of available census items allows close examination of socio-economic and socio-cultural groupings, their characteristics (using the wide availability of other census data) and how they have changed over time. For some of these (language seems the most obvious since few languages allow ready sharing of meanings with other languages) any meaningful analysis must remain at the detailed level as aggregated results are relatively unhelpful as they impose a relatively meaningless level of ordering of the information. Ethnic group profiles: - the NZ Mosaic have assembled data for the set of c200 ethnicities in NZ by assembling information from a range of tables available (and relating these to languages spoken, official languages, religion, place of birth, length of stay in NZ etc. Overtime comparisons are also made. Some of these will feed into the RSNZ languages report which has recently been updated.

NZ's settlement hierarchy and the factors shaping differential growth in terms of its different levels is an important area of study. Consistent settlement data can be readily assembled back to 1981 and need only minor tweaking to allow analysis. This sort of straightforward 'demographic' analysis seems to be seldom attempted these days in NZ but is (I think) very useful. Within urban area social patterns are also important, with – in my case – this taking the form of an investigation into Suburban Change in Auckland. Socio-demographic etc. continuity/change within Auckland suburbs can be traced from at least 2001 (and likely 1991) with one interest being the impact of Asian (and other) migration. In addition to census data other information has been added in. This is intended as a major study but so far I've focused on developing a typology of the c20 Local Boards (largely to ascertain the extent to which they indicate that LBs can be fitted into the often-cited pattern of North/East and West/South v Central.

Finally, the census is a perhaps rather blunt, but nevertheless very useful data-source for studying cultural reproduction over time (and generations). The most obvious example of this is StatsNZ tables on language retention amongst various (selected) ethnic groups. However, similar analyses could bring in a wider range of information. Another is the way ethnicities become 'diluted' through inter-marriage which may have consequences for their assimilation on the one had but their cultural survival on the other.

This overall project will be supplemented by consideration of more specific inquiries:
- the fit between educational qualifications and occupations (important for investigating the success of government tertiary policies)
- the spread of landline-less households and the extent of household internet connections (the technological changes are making life increasingly difficult for market and social research which for so long has relied on a sampling frame of landlined households).

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