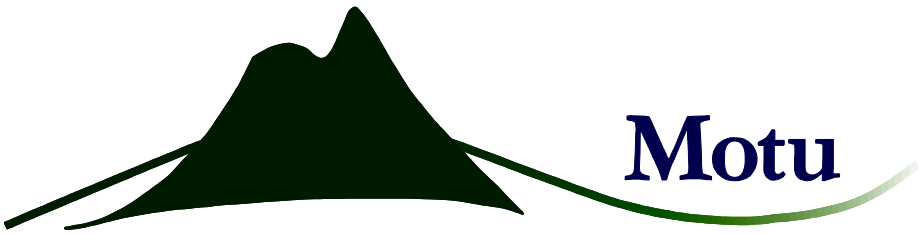

Investigation of Options for a New Longitudinal Household Survey: Issues and Options Paper

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Abstract
We examine arguments for a new Longitudinal Household Survey (LHS) in New Zealand, and design and governance arrangements that would best realise the value of a new LHS. Other instruments such as cohort studies, cross-sectional surveys, the census and longitudinally linked administrative data will only go part way in filling the gap left by the end of SoFIE (Survey of Family Income and Employment Dynamics). There are some key areas of social science and policy focus, such as the dynamics, causes and consequences of poverty spells, that will only ever be clarified by data from an LHS. In addition, a purpose-designed LHS will enable a wide range of phenomena to be investigated in a multidisciplinary and household context using internationally comparable concepts that can be supplemented over time in response to emerging issues. The next step is to define a specific option for a new LHS, and evaluate prospective research and policy benefits against the costs.

JEL codes
C83, C10

Keywords
Panel survey, longitudinal household survey, social science research infrastructure, New Zealand, SoFIE

Contents

1. Introduction

Over the last several decades a number of high quality national Longitudinal (panel) Household surveys (LHSs) have become established in Europe, the United Kingdom, North America, Asia and Australia. As they mature, they are shedding new light on a wide range of social and economic phenomena and their effects on well-being. At the same time they have provided another channel for evaluating policy. In effect they have become core elements of the social science infrastructure in their respective countries. Their immense contribution has led directly to the establishment of the new *Understanding Society* survey in the United Kingdom (with wave 1 having commenced in 2009), the piloting of new LHS in Canada leading to the first wave of the Longitudinal and International Survey of Adults (LISA) in 2011[1], and the expansion of a number of other surveys (see Appendix Table 1).

New Zealand recognised the value of surveys of this type when Statistics New Zealand designed and administered the Survey of Family, Income and Employment (SOFIE) over eight waves between 2002 and 2010. The cessation of SOFIE has created a gap in New Zealand's social science infrastructure and raises the question of whether a new LHS should take its place.

The purpose of this paper is to canvass the case for a new LHS in New Zealand and to set out issues and options for its design, governance and administration. A preliminary draft of this paper was used to gauge the level of support among a range of potential funders, administrators and end users, and to seek views on a range of design, governance and funding issues that would help shape the development of a new LHS. The response to this consultation process is set out in the accompanying feedback document. This shows fairly wide, though not unqualified, support for a new LHS, with a minority of responses dubious about the potential value compared to alternatives. Feedback also provided specific comment on design, governance and funding issues.

This exercise has shown that evaluating the case for a new LHS needs to be an iterative process. The potential contribution to social science research and policy formation will depend on many design and governance parameters. These, in turn, will affect the cost. In the meantime, the potential for other instruments (such as linked administrative data) to provide some of the benefits of a new LHS continues to develop. The feedback received suggests that the next step

[1] The detailed design features of LISA, its intended duration and thus how far it matches the established international LHSs is not clear from the Statistics Canada website. Statistics Canada has also recently instituted a large longitudinal survey of aging (to last 20 years) and has for some time run a biennial longitudinal survey of youth. From June 2012 it discontinued publishing longitudinal data from the Survey of Labour and Income Dynamics (SLID) apparently because LISA is seen as a substitute.

should be to develop a more defined proposal that enables the benefits and costs of a new LHS to be evaluated in more detail against alternatives.

This options paper is set out as follows. Section 2 provides a brief history of selected LHSs, and more generally of longitudinal surveys in New Zealand. Section 3 evaluates in broad terms the case for a new LHS in New Zealand. In particular it covers the unique contribution of longitudinal data, why a nationally representative household panel is desirable (as opposed to other longitudinal designs) and why longitudinally linked administrative data are unlikely to be able to match the contribution of an LHS to research and evaluation. Section 4 sets out, from international experience, the salient characteristics needed in a successful LHS. Section 5 covers options in the design and administration and Section 6 options for the governance and administration of an LHS. Assuming the choice of particular options, Section 7 sketches indicative costs. Section 8 draws conclusions.

2. Background

2.1. International Longitudinal Household Surveys

Wooden (2001) notes that "most industrial nations now conduct large-scale, representative household-based panel (i.e., longitudinal) surveys designed to collect a large amount of information about households and the members of those households." He lists the following:

(i) (Canadian) Survey of Labour and Income Dynamics (SLID)[2];
(ii) (German) Socio-economic Panel Study (SOEP);
(iii) Indonesia Family Life Survey;
(iv) Korean Labor and Income Panel Study;
(v) Dutch Socio-economic Panel;
(vi) Swedish Panel Study of Market and Nonmarket Activities;
(vii) Swiss Household Panel Survey;
(viii) British Household Panel Survey (BHPS); and
(ix) (United States) Panel Survey of Income Dynamics (PSID).

To this list can be added:

(x) Household, Income and Labor Dynamics in Australia Survey (HILDA)

[2] The longitudinal dimension of this survey has now been discontinued (see footnote 1).

(xi) *Understanding Society* (USoc) – the successor to the British Household Panel Survey.

There are of course significant differences in the history, design, management and administration of these LHSs (see Appendix 1, Table 1). For example, the PSID, established in 1968, is the world's longest running panel focusing on household, income and labour dynamics. It is an indefinite life panel that interviews only the heads of family units, the initial sample covering 4,800 families. For the first 30 years it was conducted annually but is now conducted every other year. The PSID is hosted by the Institute for Social Research at the University of Michigan, and fieldwork is carried out by the Survey Research Center, a separate unit within the Institute. PSID data is freely available from the survey website. A vast array of academic studies in many disciplines have utilised PSID data.

HILDA commenced in 2001 and was based on common practice across the main LHSs extant at the time. It was funded by the Australian Commonwealth Government but based at the Melbourne Institute of Applied Economic and Social Research at the University of Melbourne. The survey fieldwork is administered by a private sector market research company, currently Roy Morgan Research. In its first wave, the survey covered more than 7,000 households and almost 14,000 respondents aged 15 years or more. After a refresher sample was added in 2011 it now covers over 9,000 households.

USoc represents a new generation design both in terms of its size, the scope of its domains and its flexibility. It covers 40,000 families in total, or around 100,000 individuals. Commencing in 2009 it aims at annual interviews carried out over two years in each wave. It has a substantial ethnic minority sub-sample (in Britain this is primarily a sample of immigrants and their descendants), incorporates the surviving BHPS members, and also includes an "innovation" panel of 1,500 households that allows testing of new approaches to data collection. Both biometric and attitudinal data are being collected periodically for sub-samples of participants. All original household members over the age of 10 are interviewed in each wave, including through a self-administered questionnaire. USoc is funded by the British Economic and Social Research Council and run by the Institute for Social and Economic Research at the University of Essex. Field work for the first five waves is being carried out by staff from the National Centre for Social Research.

The value of longitudinal household survey data for academic and policy research is illustrated by the growing contribution to understanding of social and economic phenomena made by the large volume of articles produced using the LHSs referred to above. For instance, by 2002, after it had run for 34 years, more than 2,000 peer-reviewed articles using PSID data

had been published in academic journals and books[3]. Eleven years later the number now stands at more than 3000 articles[4]. In 2002, the SOEP literature database contained 2,250 entries (after it had run for 18 years) (Watson and Wooden, 2002); it currently (2013) has 7,331 entries.

2.2. Longitudinal Surveys in New Zealand

While New Zealand lacks an indefinite life HPS of the type discussed above, it has a number of notable longitudinal surveys that can provide some, but not all, of the benefits of such surveys (see Appendix 1, Table 2). In particular there are two longitudinal studies following birth cohorts from the 1970s with a focus on the life course determinants of health and development. The Dunedin Multidisciplinary Health and Development Study (DMHDS) and the Christchurch Health and Development Study (CHDS) have stimulated a large and wide-ranging body of internationally recognised academic research in these fields. While the benefits of these studies have been immense for international research on human development, they do not, however, provide a nationally representative picture of current family, income and labour market dynamics. Consequently they are relatively less useful for informing current and emerging issues in these areas of research and policy. In addition, compared to international cohort studies such as the National Longitudinal Study of Youth (NLSY) access to data has been relatively restrictive.

Growing Up in New Zealand (GUINZ) is a new generation birth cohort study based in Auckland, following a cohort of around 7,000 children born in 2009. The intention is to follow these children for 21 years. Because of its larger size, recent developments in developmental science and the fact that it is following a later generation of children, the study has the potential to add considerably to the contribution of the DMHDS and the CHDS. Nevertheless, it cannot be expected to provide on-going nationally representative information on current household, family income and labour dynamics in New Zealand.

Statistics New Zealand from 2002 managed and ran an eight wave household panel, the Survey of Family Income and Employment (SoFIE) covering over 11,000 nationally representative households. The core subject matter, the sampling frame, household focus and subject matter corresponded quite closely with those of the international HPSs discussed above. However, because of its limited life span it is not able to make the same contribution to understanding the longer term effects of current household and family circumstances on

[3] These cover, for instance, poverty, income mobility, labour market outcomes, aging, fertility, marriage, marital separation and divorce, changing family composition, health and geographic location and mobility (Watson and Wooden, 2002)

[4] See the PSID website http://psidonline.isr.umich.edu/

outcomes of interest to researchers and policy makers. We are not aware of a consolidated list of all articles based on SoFIE but have identified in excess of 20. There are likely to be more.[5] The smaller body of research (compared to international LHSs) may reflect SoFIE's shorter duration, the shorter period since longitudinal data from SoFIE has become available, the smaller number of social science researchers in New Zealand, and restrictions on access to the data.

A number of other New Zealand longitudinal surveys are limited in terms of one or more of the sub-population of interest, the subject matter and time frame. These include the Pacific Islands Families Study, the "Best Outcomes for Māori, Te Hoe Nuku Roa" study, the Competent Children Project, the Longitudinal Immigration Survey and the New Zealand Longitudinal Study of Aging (NZLSA). Most recently, in 2011 the National Centre for Lifecourse Research headquartered at the University of Otago commenced administering the Graduate Longitudinal Study of New Zealand. This covers almost 9,000 university graduates in 2011 and plans to follow them at two, five and 10 year intervals. The Household Labour Force Survey (HLFS) incorporates a revolving two year quarterly interview panel design that allows investigation of short term household and labour dynamics. While all these studies have made or are making a valuable contribution to understanding aspects of life in New Zealand, they do not together add up to a comprehensive picture of the on-going experiences of the current national population. In short, New Zealand presently lacks a survey instrument that is well-placed to meet the research and policy needs met in many developed countries by indefinite life or even medium length LHSs.

3. Benefits of a New Longitudinal Household Survey in New Zealand

New Zealand currently does not have an LHS of the type typically used in many developed countries to provide information on family, income and labour market dynamics (as well as on a wide range of other subjects of current research and policy interest) – at first sight, a significant gap in our social science infrastructure. This section looks traverses the broad advantages of this type of survey in comparison to other sources of information, with examples of the insights for research and policy obtained from similar surveys. The discussion is organised around why the information gathered needs to be longitudinal, based on a household sampling

[5] A substantial body of research has been published on health issues (see http://www.otago.ac.nz/wellington/research/hirp/projects/otago020394.htm) Other research identified by Statistics New Zealand covers income mobility and deprivation (University of Otago School of Medicine); housing and retirement (the Treasury); adequacy of retirement savings (the Treasury); home ownership and neighbourhood wellbeing (Motu); and the impact of economic shocks on wellbeing (Motu).

frame, and how a survey can contribute information that is not available in longitudinally linked administrative or census data.

3.1. Why Longitudinal?[6]

Some phenomena are inherently longitudinal and only individual level longitudinal data can provide an accurate picture of how they evolve. These include, for example:

- Poverty persistence;
- Recycling through low pay episodes and unemployment;
- Geographical mobility;
- Household and family formation and dissolution; and
- Whether people's expectations are realised in practice.

Repeated cross-sectional data can be used to look at the experience of particular cohorts of individuals over time. For instance, Maani (1999) used census data from 1981 to 1996 to track changes in the relationship between qualifications, age and earnings for successive cohorts of men and women in New Zealand. But data of this sort hides the variation over time in the experience of individuals who share the same characteristics at the beginning; and the correlates, causes and consequences of such variation (Wooden and Watson, 2000). The ability to draw research and policy relevant conclusions from such data is thus limited.

Overcoming this limitation has proved to be particularly important for understanding the experience and effects of poverty over time. Short-term poverty is likely to have different causes and effects than persistent poverty and only longitudinal data can shed light on differences in duration and recurrence of poverty and the causes and effects of these differences.

[6] Brown (2011) provides a careful New Zealand analysis of longitudinal information needs for research and policy evaluation purposes.

Jenkins (2011) makes extensive use of data from the BHPS to reveal the duration and causes of spells of poverty in Britain. He shows that the proportion of the population experiencing poverty at least once in a 4-year period (around one third) is nearly double the proportion of the population that are poor in any given year. He also shows that the proportion of individuals in persistent poverty (poor three or four years over a four year period) fell from around 15 per cent in the 1990s to around 10 per cent in the 2000s. This fall was mostly for families with children and reflected changes in the British tax-benefit system. Transitions into and out of poverty were due both to 'labour market events' (e.g. gaining or losing a job) and 'demographic events' (e.g. gaining or losing a partner, birth of a child). Because of its obvious relevance, this research has attracted the attention of British policy makers.

Illustrating the value of New Zealand longitudinal data in studying poverty, Carter and Gunasekara (2012) use seven years of data from SoFIE to show that about 50 per cent of people surveyed experienced one of more years of low income (defined as below 60 per cent of the median household income) at some stage between 2002 and 2009. This compares to 'point-in-time' snapshots of low income of around 23-25 per cent per year. Moreover, approximately two-thirds of people with a low income at any one point-in-time, are chronically in low income, having a household income below $27,000 over the seven year period. Of those households who are initially on low income, 65 per cent remain in low income in the next year. Cross-sectional data underestimates the proportion of the population that experiences poverty, while not clearly identifying the sub-population that experiences persistent poverty and its adverse consequences.

Longitudinal data is also necessary to disentangle age, period and cohort effects. This helps answer the question whether observed cross-sectional phenomena are peculiar to people of a particular age across time periods, to a particular period in time, or to a particular cohort of individuals as they age (Wijesekere, 2009). The distinction is important for understanding and the design of appropriate policy responses.

As the previous discussion suggests, many research questions are focussed on causal relationships, such as: "What is the effect of family income on children's educational participation and achievement?" or "How does class size affect student achievement?" Statistical techniques have been developed by social scientists to try and disentangle such relationships from cross-sectional (contemporaneous) data. In practice, without longitudinal data, it is difficult to determine in which direction causality runs and whether omitted variables can explain the observed correlation between possible cause and effect. For example, the relationship between

low family income and educational achievement might at least in part be explained by the genetic inheritance of ability. Longitudinal data allows researchers to look at the sequencing of events, and to take account of time unvarying factors (such as genetic inheritance) in estimating causal relationships.

> Lillard, Brien and Waite (1995) used data from the PSID to look at the relationship between prior cohabitation and the probability of subsequent marital dissolution. It had long been recognised that these two conditions were positively correlated. However, longitudinal data made it clear that people who cohabit have characteristics which make their subsequent marriages more likely to end in dissolution, with no direct causal relationship between cohabitation and dissolution. A study using cross-sectional data would not have revealed this.

While the value of longitudinal data is clear, it is also worth noting some of the limitations (Wijesekere, 2009). These include the cost of a panel, attrition and the measures needed to reduce it, issues of on-going representativeness, panel conditioning meaning respondents may change their attitudes and behaviour as a result of previous participation in the panel, and seam effects which mean that reference periods affect the way that events are reported and possibly lead to over-reporting of changes. As far as possible these sorts of limitations need to be considered in the design of a new LHS to minimise their adverse effects (see below).

3.2. Why Household?

The distinctive feature of a household survey is that the household is the basis for sampling and, generally, information is collected on the relevant individuals comprising the selected household. A longitudinal household survey follows persons from the original sample households over time. Unlike cohort surveys, individuals are not selected based on age, or birth in a particular year. Because household composition changes over time and individuals move between households, longitudinal household surveys have to develop protocols for which individuals to follow over time, and information on whom to gather information within their current households. While the individual is thus necessarily the unit of longitudinal analysis, their changing family and household contexts and relationships are important to understanding their on-going outcomes.

Poverty (however defined) and its causes and effects can only be studied in a household context because income and costs are shared within households. For instance, Jenkins (2011) uses data from the BHPS for the 1990s and 2000s to show that married mothers who divorce typically experience large income falls because they often remain primary custodial parent and work attachment falls in many cases. Household-based demographic events like this account for about one third of poverty entries and about one fifth of poverty exits in Britain. Without a household (or family) context this sort of analysis would not be possible.

With suitable following rules and eventual refreshment of the original sample a household panel survey can remain reasonably representative of the current national population over extended periods of time. In contrast, other longitudinal surveys that focus on individuals and their life-course development (such as birth cohort studies) are not representative of the overall national population. Nor do they represent the experience of following generations of the same initial age. Also, their focus on development means that they sometimes collect less complete (and generally less frequent) information on household income and labour market dynamics than do longitudinal household panels – and this is true of the three New Zealand cohort surveys. Without this data, it is more difficult to draw reliable evidence on the precise effects of some aspects of current policies and social and economic arrangements. The particular advantage of cohort studies is in understanding the nature and strength of determinants of life-course development that are relatively stable over generations.

3.3. Why a Survey (and not Census or Administrative Data)?

Modern information technology and administrative systems make it technically feasible to link administrative data on individuals both contemporaneously (for instance current health services data could be linked to employment data) as well as longitudinally. Census data on individuals can also be linked over time. Linking can use unique identifiers or be probabilistic. The potential for this approach to fulfil at least some of the needs met by an LHS is illustrated by the experience of Nordic countries, where, since the late 1960s, data has been collected in a set of administrative registers covering the population, families, households, businesses, housing, education, employment and income. The data has contributed to the compilation of census data since the 1970s. The census has been based entirely on register data since 1981 in Denmark, 1990 in Finland and 2011 in Norway and Sweden.

While the main focus appears to have been substituting administrative data for cross-sectional census data collected through periodically administered instruments designed

specifically for the purpose, the administrative data can also be linked across time. A number of "income dynamics" studies have been carried out on this basis (see Jenkins, 2011 Chapter 3 for a brief review). While the data in Nordic administrative registers is based on individuals, it appears to be possible for some countries to construct proxies for total household market and disposable income (Aaberge et. al, 2002) using available data on the income of other household members, particularly married spouses. In countries (such as New Zealand) where income tax liabilities are individually based, constructing longitudinal family or household level income variables could only be done through longitudinally linked household survey data[7].

The construction and use for research and policy analysis of longitudinal datasets on businesses and employees is well established in many developed countries including New Zealand. This can illustrate both the uses and limitations of this type of data.

For instance, based on substantial experience with administrative data over more than a decade, Statistics New Zealand is currently developing the Integrated Data Infrastructure (IDI) based on its recently completed prototype (Statistics New Zealand, 2012a, 2012b). This has brought together into a single infrastructure a number of separately integrated datasets and will allow a much more wide-ranging use of the data than in its precursors. In particular, the prototype linked Department of Labour migration and international movements data with a link through to Statistics New Zealand's Longitudinal Business Database (LBD).

Previously, the Linked Employer-Employee Data (LEED) had been created by linking a longitudinal employer series from the Business Frame (BF) to a longitudinal series of Employer Monthly Schedule (EMS) payroll data from Inland Revenue. The data is available from 1999. A range of other survey data (such as the Business Operations Survey) and administrative data (such as tertiary education data) has been linked to LEED to support research into a range of areas. For instance, linking tertiary education data on graduates entering the labour force has produced the Employment Outcomes of Tertiary Education (EOTE) which has been used to look at annual income outcomes of graduates over the years following graduation (see for instance Scott, 2009). A new link through the IDI with international movements data will enable research into which types of graduates are more likely to emigrate and when. LEED linked to BOS has also been used to study the relationship between firm management practices, firm performance and employee earnings (Fabling and Grimes, 2009).

[7] Hyslop (2000) provides an example of the use of New Zealand tax data to investigate individual income dynamics. The short length panel structure of the New Zealand Household Labour Force Survey (HLFS) data could be used to assess household level income dynamics for a maximum period of eight quarters.

Another example that supports social policy research is the Benefit Dynamics Database (BDD) created and managed by the Ministry of Social Development. It links benefit administration records for the same individual and can be used to study spells of benefit receipt by type of benefit. It has also been linked to LEED with data from 2001 onward – so that longitudinal data on annual incomes when not in receipt of benefits is available, while LEED based analyses now have data on the types of benefits being received, as well as richer information on individuals who have been in receipt of a benefit. In addition, student loans and allowances administrative data is being integrated into the IDI and a feasibility study for linking data from the Household Labour Force Survey (HLFS) to LEED has already been completed.

Linked census data can also yield useful longitudinal information, as in the Census Longitudinal Study in England and Wales. This is based on a one per cent sample linking decennial census and administrative data on vital events (births, deaths and marriages) from 1971 through 2001. This has been used to support a wide range of analyses with a focus on demographics and health-related research (Brown, 2011). The Australian Bureau of Statistics is pursuing a similar approach, starting with a five per cent sample from the 2006 census to create the Statistical Longitudinal Census Database.

Based on New Zealand and international experience, Brown (2011) has carried out a careful analysis for Statistics New Zealand of the strengths and weaknesses of using linked administrative data, linked census and administrative data, and cross-sectional survey data linked to administrative data to satisfy a broadly defined range of longitudinal information needs across domains and topics. Her conclusions about the potential contribution of existing sources are summarised in a table which is replicated here in Appendix 2. Generally, Brown argues that taking account of the expense of a longitudinal survey and the burden on respondents, it is better to look first to making better use of existing data to meet longitudinal information needs. While the tenor of her argument does not favour a new LHS, she notes that existing data sources will never be able to address all longitudinal information needs. The question therefore is whether the cost of a new LHS is justified to meet information needs that cannot be met from existing sources.

In this respect, Brown (2011) summarises the limitations of existing data sources as follows:

> Existing data sources … cover too narrow a range of information to be regarded as a complete replacement for surveys. For example, they do not contain information on savings and their contribution to retirement income. The narrow range of explanatory variables in administrative-based datasets limits their usefulness for informing cause and effect questions. The linked census contains a wider range of explanatory variables than

linked administrative data, but the measurement of transitions and their causes and consequences is restricted to 5-yearly intervals. Adding administrative data, such as tax data on incomes to the linked census could overcome this problem to some extent.

Thus, while the potential for research and policy evaluation has already been well established, the use of linked administrative and/or census data for research purposes nevertheless faces limitations[8] caused by:

- A lack of some variables of relevance to current research and policy interests (for instance, *Understanding Society* collects biometric and attitudinal information from sub-samples and in some waves). It is unlikely that administrative data will ever contain such information.
- In many, if not all areas administrative data is limited to those who use services and participate in programmes (for example, people who are currently well may not use health services, but may still exhibit variations in health status that are relevant to research on contemporaneous and subsequent outcomes). This does not cause a problem for many types of analyses, but falls short of representativeness for the overall population.
- Administrative data generally cannot be placed in a household context. Where it can (for instance by linking cross-sectional household survey data[9] to administrative data), it cannot track changing household or family composition. Some areas of interest, such as poverty dynamics, can be studied meaningfully only in a longitudinal context that takes account of household incomes and income sharing arrangements within households and how these change over time.
- The way in which the data is collected reflects administrative needs –which does not necessarily achieve the accuracy, frequency and specific detail desirable for research purposes (for instance the timing of events such as a change in family composition may not always be well-captured in administrative data).
- Linking administrative data is technically difficult and experience has shown that progress in its being available for research purposes is generally slow.
- Census data is too infrequent to provide useful information on spells in particular states (such as labour market participation, incomes and family formation and dissolution).
- While censuses offer the advantage of a large number of respondents, for reasons of cost, they are correspondingly limited in the time that can be spent gathering information from each respondent, and thus in the extent and breadth of retrospective and current information that can be captured. The ability to understand the causes and consequences of observed states at a point in time is thus additionally limited.

[8] The Ministry of Business, Innovation and Employment (MBIE) (Labour) responded to an earlier draft of this paper by providing an analysis of topics of interest that would be addressed by longitudinal data of the type provided by HILDA compared to data available from administrative sources. Areas where administrative data was lacking (compared to HILDA) included the housing stock and housing expenditures, hours, wages and occupations, unemployment and underemployment, and type of employment (e.g. temporary or casual), child-care arrangements, and non-formal education and training. Many questions of interest to MBIE about labour market experience and outcomes would thus not be adequately addressed by longitudinally linked administrative data.

[9] As part of the IDI Statistics New Zealand is looking at linking longitudinal administrative data to the Household Labour Force Survey (HLFS).

- A survey may be better able to respond quickly to emerging social and economic issues by designing new questions and methods of obtaining data from respondents (Wooden, 2001, notes that this content flexibility is a recognised characteristic of the LHSs discussed above).

The availability of administrative data for research purposes is also restricted by the legal environment (where informed consent may be required) and public acceptance. It is likely to be difficult to replicate the Nordic experience in the use of administrative data here, or in other Anglophone countries where there is a relatively strong aversion to the state holding consolidated comprehensive information on individuals.

4. Desirable Characteristics of a New LHS

Given the wide range of different design elements discussed below in sections 5 and 6, establishing a case for a new LHS will require defining (and costing) an option that best suits New Zealand's circumstances and complements its developing social science infrastructure. Without pre-empting the outcome of such an exercise, this section sets out a number of desirable characteristics that a new LHS will need if it is to realise the full potential for meeting the research and policy evaluation needs discussed above, rank with the other recognised LHSs internationally, and fulfil its role in the New Zealand social science infrastructure.

A new LHS needs:

- To be able to address the longitudinal information needs of a broad range of disciplines and to provide confidence to stakeholders from those disciplines and to funders and policy makers that governance and scientific oversight of the LHS will enable those needs to be met into the future. An LHS needs to establish its value for disciplines such as economics, sociology, psychology, political science, epidemiology, gerontology, geography and education. Scientific oversight from representatives of those discipline should focus on how new insights can be obtained through linking of concepts across disciplines at the individual and household level.

The PSID is housed at the Institute for Social Research, University of Michigan, funded by agencies representing a wide range of disciplinary interests, and, since 1982, has had a Board of Overseers to foster "input from the national community of scholars, researchers, and policy makers" (McGonagle et al. 2012). The SOEP is based at the German Institute for Economic Research in Berlin and funded by government through the German Joint Science Conference. Currently scientific oversight is provided through a SOEP Survey Committee comprising distinguished international scholars from a range of social sciences and epidemiology. HILDA is based at the Melbourne Institute at the University of Melbourne, and funded through the Australian Commonwealth Department of Families, Housing, Community Services and Indigenous Affairs (FaCHSIA). Scientific input is provided through an External Reference Group and a Technical Reference Group. The former currently comprises academics from Australasian universities representing a range of social sciences and the Australian Institute of Family Studies. USoc was set up from the beginning to cover a wide range of disciplines as mandated by the principal funder the United Kingdom Economic and Social Research Council (ESRC) and a consortium of contributing Government agencies. It is based at the Institute for Social and Economic Research (ISER) at the University of Essex, and responsibility for its development and management is shared with the University of Warwick and Institute of Education. Content priorities both for the first wave and for the longer term have been established only after a thoroughgoing process of consultation with the user community. Successful international LHSs all have multi-stranded mechanisms for structuring ongoing input from the scientific community.

The Dunedin Multidisciplinary Health and Development Study (DMHDS) and the Christchurch Health and Development Study (CHDS) provide New Zealand models for the promotion of such a multidisciplinary approach which has resulted in a rich seam of research being realised focused on the disciplines represented in the governance arrangements.

A sample of recent publications abstracted on the DMHDS website (http://dunedinstudy.otago.ac.nz/publications) covers a wide range of disciplines – physical and mental health; family, social and interpersonal behaviour and relationships, and parenting; cognitive skills and personality traits; sexual behaviour and sexuality; and crime. Papers typically look at interactions among these dimensions using data following study members for up to 32 years (interviewing for study members at age 38 took place in 2010 and 2011). For instance, Moffitt et al. (2011) looks at the relationship between a measure of self-control in childhood and health, wealth, and public safety in adulthood (even allowing for intelligence, social

background, and "mistakes" made as adolescents). The policy advantages of this multidisciplinary approach are illustrated by the authors' conclusion: "Interventions addressing self-control might reduce a panoply of societal costs, save taxpayers money and promote prosperity".

- An LHS needs to last long enough to answer envisaged research questions (as well as allowing for new ones to emerge). The range of economic and social dynamics that can be investigated with data from short and medium length panels is limited. In particular, they provide no information on the longer-term effects of current events, policy settings and states. Nor can they shed much light on the inter-generational transmission of characteristics and endowments. Generally a very long (20 year) or indefinite life panel is needed for these purposes. Short and medium term panels are usually more suitable for investigating the evolution of labour market states, income and family composition, and the more immediate effect of these on outcomes. In many cases, research based on short and medium term panels is simply cross-sectional in nature.

  Headey et al. (2012) use 25 years of data from the German SOEP to look at the relationship between parental happiness and children's happiness both in childhood and adulthood. They find that transmission of happiness to children in adulthood is partly due to genetics and partly due to transmission of a set of values associated with happiness – including "giving priority to pro-social and family values, rather than material values, maintaining a preferred balance between work and leisure, active social and community participation, and regular exercise". They also find that the life satisfaction of adult children continues to be directly influenced by the life satisfaction of their mothers, but only indirectly by that of their fathers – through the transmission of values. This research would be impossible without 25 years of data that follows the adult children of original sample members and which contains rich data on subjective life satisfaction, values and behaviours. The longitudinal data allows the effects of genetics to be disentangled from the transmission of values, and from the direct effects of parental happiness.

- An LHS should be flexible enough in structure and content to respond to emerging areas of research interest – but to cover these in a way (for instance, through the use of recurrent modules not used at every wave) that does not compromise core data being collected. However, innovation needs to be balanced against possible negative effects on response rates and attrition.

The new British USoc survey has already collected "a range of anthropometric measures such as height, weight, waistline, grip strength, lung function and blood pressure which are key to understanding well-being as part of a healthy lifestyle as well as being risk factors associated with disease onset. In addition, blood samples have been taken which will enable a range of markers to be extracted which are known to be associated with the onset of medical conditions such as cardio-vascular disease or diabetes for example" (ISER News, 2012). The longitudinal dimension and large sample offered by USoc will, once the panel has matured sufficiently, enable more sophisticated study of the causes and consequences of conditions such as obesity, which have become a strong focus of health policy in developed countries.

- An LHS should be nationally representative, and representative of sub-populations of particular interest. In New Zealand ensuring a sufficient representation of people identifying with the Māori ethnic group in particular is important for both research and policy evaluation purposes. An over- sample needs to be large enough to capture heterogeneity within this group. New Zealand also has very large migration flows as a proportion of the total population, and an initially representative sample will gradually become less representative of the current population over time as a result. The experience with this in other LHSs has been mixed. After careful consideration, HILDA for instance, decided not to add a new sample of immigrants, but instead increased the size of the main panel from 2011 (ten years after HILDA commenced) so that it could better represent the current population. USoc was set up with an ethnic minority booster sample from its inception (as well as incorporating the longstanding BHPS sample). Eventually the need for renewing the sample in some way will arise, and some commentators have suggested that it would be better to institute regular incremental refreshment to address this issue. Obviously, it is also important to keep response rates (both at the household and individual level) high and to reduce attrition. There are a number of recognised strategies used internationally to achieve this. While they often add to the cost, they should be considered to help ensure that a new HPS fulfils its potential into the future and provides a return on the investment of resources.

  While SoFIE had a target to survey a particular number of Māori, this appears to have been only to maintain the proportion in the sample at similar levels to the population proportion. This may reflect the fact that SoFIE was designed to have a relatively large initial sample size. As a result, however, it was not expected that analyses for the Māori population could be carried out with the same precision as for the non-Māori population (see Statistics New Zealand, 2001).

- An LHS should have a credible commitment of funds and management and administrative arrangements that match the envisaged length and size of the panel. In practice, governments generally only commit funding for relatively short periods of time – though experience shows that this has not been an insuperable barrier to LHSs continuing for decades in some jurisdictions. It is desirable, nevertheless, to create a presumption of continuation in funding, subject to periodic evaluation of a panel's success in meeting statistical and research objectives. This evaluation needs to be realistic in allowing a sufficient length of time for the pay-offs from longitudinal data analysis to be established. In some cases, funding is channelled through an intermediary body (at arm's length from Government), which has a well-assured stream of funding into the future (such as the ESRC in the United Kingdom, which funds USoc).

- An LHS should produce data that allows international comparison of social and economic phenomena. Data from a number of LHSs (including HILDA and the BHPS) are lodged at Cornell University comprising the Cross-National Equivalent File (CNEF), and made available to researchers in a form that is harmonised across countries (see, for instance, Burkhauser and Lillard, 2007). This enables each country readily to be the subject of cross-national international social and economic research that compares and contrasts the experience in each country. Given its small size and relatively small research community this option would have particular advantages for New Zealand. Participation requires survey and instrument design to be consistent with current international best practice.

  > Jenkins and Van Kerm (2006) use CNEF micro-data on income inequality trends in the United States (using the PSID for the years 1980 to 1993) and West Germany (using data from the SOEP from 1984 to 2000) to look at the relationship among trends in income inequality, income mobility (movement of individuals across the income distribution) and income growth. They find that, once the picture from individual-level data is used, income growth is pro-poor (more so in West Germany than the United States) in that it is a force for inequality reduction, but this is offset by income mobility which is associated with increasing income inequality. Using repeated cross-sectional data on incomes across population sub-groups would fail to pick up these relationships. The comparison across countries shows that the patterns are qualitatively similar but different in magnitude, drawing attention to the role that country differences in labour market institutions may play.

- An LHS should gain 'buy-in' from the user community, and to allow appropriate low-cost access to suitably confidentialised output (while restricting access where confidentiality could be compromised, for instance where links to administrative data increase the risk of identification of individuals). This may have implications for which sort of agency is best place to manage the design and operation of a new HPS. International experience suggests that data from LHSs are generally more readily

accessible to researchers and at low cost when it is managed by an agency at arm's length from Government.

> HILDA and the SOEP both require users of their data to register and to establish their *bona fide* research credentials. Subject to registration and ongoing compliance with data use protocols, access to "general release" data is relatively straightforward (through data DVDs) and low cost[10]. PSID general release data is readily downloadable from the survey website at the University of Michigan subject to a simple registration procedure. Data from USoc is available for free download through the United Kingdom Economic and Social Data Service website also subject to registration. In contrast, access to data from official LHSs such as the Canadian SLID or New Zealand's SoFIE are both much more restrictive (generally requiring access on official or approved premises) and much more expensive.

- An LHS should use the most efficient and cost-effective means to gather the desired data. This refers both to interviewing methods (for instance face-to-face, telephone, computer-assisted, "dependent", self-completion questionnaires) and whether or not links are made to administrative data, and includes effects on response rates and attrition. Accumulated New Zealand and international experience should be the guide to choices in this sphere.

5. Design Issues and Options

Based on the previous discussion this section covers in more detail choices that would need to be made in the design of a new LHS for New Zealand to ensure that it can play the same role in our social science infrastructure that recognised HPSs fulfil internationally.

5.1. Content

The core content of LHSs generally focuses on:

- Income dynamics;
- Labour market dynamics; and
- Family dynamics.

As Wooden and Watson (2000) note, even this core content is potentially very broad and actual data gathered is constrained by the need to keep interviews to a reasonable length. It is common, therefore, for some content areas to be surveyed periodically at less frequent intervals. This might, for instance, include data on health, assets and participation in education, as well as attitudinal data on happiness and life satisfaction. To facilitate this, it is usual to design blocks of questions that can easily be added to or removed from different waves of a survey. Ensuring a

[10] The current cost of a release of data from HILDA to an overseas-based individual is A$121.

broad range of subject matter will help a new LHS build a multidisciplinary constituency, and increase the chances of making connections and discovering new relationships across domains. This requires flexibility in the design and timing of blocks of questions to balance time and resource constraints against the advantages of breadth of content.

Appendix 1, Table 3 sets out some of common core and periodic content of selected international HPSs.

USoc incorporates an "Innovation Panel" that is used to trial new survey methods and new content. The idea is that this can be done without risking the integrity of the main sample. It is unlikely that it would be appropriate, given limited resources in a small jurisdiction, for New Zealand to take a similar approach.

USoc has also begun collecting biometric data (an approach that is not likely to be possible in LHSs managed by official statistical agencies). However, refusal rates in the supply of such data are reported to be quite high (personal communication Mark Wooden) particularly when it involved blood or saliva samples. There was a greater willingness to consent to simpler measures like weight and grip strength. This experience suggests the need for caution in including this type of content, and, at least, to delay requesting such data until respondents' confidence in the survey has been consolidated[11]. Further study of successful collection of biometric data in household surveys should inform decisions in this area, and should cover which data, at what stage in a panel's life and how it was obtained, refusal rates and possible effects on survey response rates and attrition.

5.2. Links to Administrative Data

Linking data from an LHS to administrative data (requiring the informed consent of participants) has an obvious advantage for reducing respondent burden, providing an independent check on data collected in an LHS, and expanding the range of information available for research and policy evaluation purposes. However, the issues involved in linking LHS data to administrative data are generally the same as those canvassed in section 3 above involving the use of longitudinally linked administrative data.

Experience shows that the availability of longitudinal administrative data is subject to strong concerns about maintaining confidentiality, and, maintaining the reputation of the collection agencies for protecting confidentiality. This concern is particularly strong for agencies responsible for tax collection and official statistics. Official statistics agencies usually operate

[11] Birth cohort studies such as the DMHDS and the CHDS which establish intensive relationships between respondents and interviewers have generally not experienced any difficulty in obtaining this type of data.

under statute that makes participation in their surveys compulsory, and a *quid pro quo* is providing watertight assurances that confidentiality of information provided will not be breached. These concerns appear to be much stronger in Anglophone countries than in the Nordic countries (for instance).

As a result of these concerns, data linkage was not initially pursued in the design of SoFIE (Statistics New Zealand, 2001), nor of HILDA (Wooden, 2001). Wooden noted in 2001 that of all the then extant LHSs only the Canadian SLID undertook significant data linkages (asking for the equivalent of respondents' tax file numbers) and, as a result, access to the unit record data was highly restricted. Subsequently, the emphasis in HILDA has been on maintaining high response rates and low attrition rates, as well as relatively easy access to data for researchers, and for this reason data linkage has not been pursued.

The sensitivity of official agencies to reputational risks in linking survey to administrative data have been well-expressed by Statistics New Zealand in the feasibility study that led to the establishment of SoFIE (Statistics New Zealand, 2001). Despite or perhaps because of these reservations, Statistics New Zealand carried out field tests asking respondents for consent to link individual IRD data on income. The rate of positive responses was relatively low (about 55 per cent) and the income data that would be available was judged to be too limited to justify the cost of establishing a linkage. However, since that time, New Zealand Statistics has gained considerably more experience in the construction and use of linked administrative data, and it may be possible to revisit this question in the design of a new LHS. In particular data from SoFIE was successfully linked to health administrative data, without apparent ill effects on attrition and response rates.

A very different model is provided by USoc which was designed from the beginning to incorporate data linkages (as well as other content innovations such as collecting biometric data from respondents). All respondents in the main panel over the age of 16 were asked for permission to link to individual education and health administrative records both for themselves and for any children for whom they were responsible. Respondents in the innovation panel were asked for permission to link to economic data held by the Department of Work and Pensions and Her Majesty's Revenue and Customs. The scope of the data covered is still being developed. However, effective individual first wave response rates in USoc are low compared to HILDA, falling even further in the second wave as might be expected. Moreover the BHPS subsample experienced substantially more attrition when it joined USoc than between previous waves. While the reasons for this are not clear, caution is indicated in using design features that may lower response rates and increase attrition.

Other types of panels, the CHDS and the DMHDS are New Zealand birth cohort examples, do use links to administrative data including to courts and police data, without apparently negative effects on attrition. Both studies have however are smaller in scale and have established substantially closer on-going relationships with study members and expend significantly more resources per member on interviewing and maintaining contact than would be usual in an LHS.

Overall, experience suggests that effects on response and attrition rates of links to administrative data would need to be carefully considered. At the very least, many commentators argue that seeking consent for such links should be delayed till later waves once confidence in the survey has been established (Watson and Wooden, 2000).

5.3. Panel Length

The discussion set out above clearly favours an indefinite life LHS that will last for at least fifteen to twenty years. Short to medium term panels of up to ten years cannot deliver all the benefits in terms of understanding the long term effects of current events, states and policies of an indefinite life longer term panel.

A significant disadvantage of an indefinite life panel is the difficulty in its remaining representative of the current population. Attrition and migration flows together work against this. This implies that the initial design should put great emphasis on keeping response rates high and attrition rates low, and thus caution is needed about features that may work against this. At some stage a means to refresh the panel to improve its representativeness will need to be implemented. In New Zealand, with high gross migration rates (both immigration and emigration) the need for this is likely to come earlier than in most other jurisdictions. It may be feasible to refresh a New Zealand panel incrementally. HILDA instituted a refresher sample after 10 years.

An alternative approach, exemplified by the (now discontinued) Canadian SLID is a six year revolving panel design. Over the life of the survey new sub-samples are rotated in and old ones rotated out. While this helps maintain representativeness, it does not solve the problem of providing a means to gauge the long term effects of current events.

5.4. Panel Size and Sampling Strategy

A panel roughly the size of SoFIE or HILDA would clearly be large enough to fulfil the basic requirements for a New Zealand LHS. A number of international LHSs are of a smaller size (see Appendix 1, Table 1). A balance between smaller size and other features to improve the

on-going representativeness of the sample and data quality needs to be maintained. SoFIE appears to have cost far less than HILDA to run (see below). Some of the reasons may be that HILDA offers incentive payments to respondents that appear to cost in the order of A$0.6 million per annum. HILDA also puts substantial resources into data processing and dissemination for research purposes, as well as hosting research conferences, conducting on-going research into methodological issues, and publishing statistical and annual reports. It also maintains an on-going reference group. In addition, SoFIE was an exception amongst LHSs in conducting interviewing continuously over a year to reduce costs, making data processing more complex in harmonising spell data with 12 different reference periods. The use of event histories would reduce this difficulty. Experience suggests that, compared to SoFIE, a smaller size or a substantially higher rate of funding that allows more resources to be put into the sorts of features illustrated in HILDA may be justified in a new LHS.

A smaller sample size would make it more important to consider over-sampling of some sub-populations – in New Zealand's case the most obvious of which is Māori. While this adds to the complexity of analysis and reduces the precision of estimates, it is cheaper than a larger general sample of sufficient size to allow precise estimates for selected sub-populations. Neither SoFIE nor HILDA has over-sampled specific sub-populations. Consistent with this, Wooden and Watson (2000) argue that oversampling tends to provide only limited improvements in the sampling of small subgroups unless the sampling distortions are major, with consequent More severe impacts on the statistical efficiency of the overall survey. Similar considerations appear to have led to SoFIE not adopting over-sampling. In the end, the balance between the extra costs incurred in a larger sample, greater precision in estimates for sub-populations of interest and reduced overall efficiency are empirical matters that need to be worked through before decisions are made. Other refinements may also help, such as using a random sub-sample of an over-sampled group to maintain statistical efficiency in the overall survey.

The reference population for most LHSs is all residents in the nation who live in private households. Most nationally representative surveys use a cluster design to reduce travel costs, but this involves a trade-off with statistical efficiency. Given that in a longitudinal survey respondents may be expected to disperse geographically over time as they move households, the cost advantages may be less marked than in a cross-sectional survey. On the other hand, as there is significant migration from rural to urban areas (which are easier for interviewers to reach), rather than the reverse, there may be little change in costs over time. Most LHSs, including HILDA and SoFIE, use a cluster design. Typically census data is used to select clusters and to enumerate dwellings within a cluster from which a sample is drawn.

5.5. Maintaining Panel Representativeness and Following Rules

Experience has shown that following rules are an important aspect of managing the cross-sectional representativeness of an LHS over extended periods of time (Wooden and Watson, 2000). By using appropriate following rules the PSID remained representative for 21 years despite losing 50 per cent of the original sample.

A household (which needs to be appropriately defined) is the basic data collection unit in an LHS. Following rules that have proved useful in maintaining representativeness (and which have been adopted in HILDA) involve:

- Following original eligible members of households in Wave 1;
- Following children born to or adopted by original sample members, collecting information on them from their parents (and interviewing them from the time they reach the age of 15);
- When an original sample member moves into a different household, other people in that household are treated as "temporary sample members" for the purpose of interview;
- When new people move into a household with the original sample member, they are also treated as "temporary sample members".
- Temporary sample members become permanent sample members if they become the parent of a child born to an original sample member.

All permanent sample members are traced and followed in subsequent waves. The practice in HILDA and the BHPS is to follow them into institutions (but not prisons), though the ability to interview people may be compromised due to incapacity. Original sample members who emigrate are not followed, though if they return (and can be traced) interviewing is recommenced. The inclusion of new births in the sample helps it to remain representative over long periods, but external migration flows will make the survey less representative over time. Some commentators argue that sample members should be followed into institutions and overseas, possibly using Skype or internet based survey instruments.

Eventually long-life panels need to consider refresher samples to improve the representativeness of the sample. Sometimes refresher samples focus just on immigrant groups (as in the PSID after 29 years and the Socio-economic Panel (SOEP) after 10 years) and sometimes on a new sample of the whole population (HILDA after 10 years – see Watson, 2011). Experience has shown that a decade or more can elapse before the need for a refresher sample to maintain representativeness is significant. However, given that New Zealand has comparatively high migration flows as a proportion of the total population more frequent

refresher samples may be desirable. A strategy for a refresher sample should be considered early in the life of a new LHS.

5.6. Managing Non-Response and Attrition

Minimising non-response (both at the household and individual level) and attrition is clearly important for on-going sample representativeness and maintaining a survey of sufficient size to generate precise estimates and maintain confidence. Various strategies have been developed in LHSs over the years to address this (Wooden and Watson, 2000). These include effective ongoing communication with households to be interviewed, scheduling interviews at convenient times, making extensive but non-aggressive efforts to establish and maintain contact and overcome resistance to participation, and collecting extensive contact information that makes it easier to track participants across waves. In turn this requires selection of a fieldwork agency with an established capability to meet the required standards, adequate interviewer selection and training, and providing for sufficient time in the field in each wave to allow procedures to be fully implemented. Some LHSs, including USoc and HILDA use financial or other incentives to encourage participation. HILDA pays responding participants $30 for each wave, with a further $30 being paid to households with complete responses. Providing panel members with feedback (for instance through brochures) on the value of the information collected and how it has been used can also build loyalty and contribute to higher response rates.

Despite these sorts of methods, LHSs typically have achieved response rates of only around 75 per cent at the individual level (representing combined response rate of eligible households and eligible individuals within those households) in the first wave, with attrition being most marked between wave 1 and wave 2. There is some evidence that response rates have been falling over recent decades (Wooden and Watson, 2000). HILDA however managed to achieve a response rate of almost 70 per cent in its new top-up sample commenced in 2011. It has been maintaining annual re-interview rates of over 95 per cent in its main sample over the last four years. In contrast the first wave of USoc achieved an individual response rate of only 47 per cent in the first wave of the main sample in 2009 (a 58 per cent household response rate, with 82 per cent of eligible individuals in those households responding). The design of an indefinite duration HPS needs to give priority to maintaining high response rates and minimising attrition. Design elements that may compromise this require caution.

For many analyses, though, significant non-random attrition does not unduly compromise relevant estimates of effects (see for instance Lillard and Panis, 1998 and other

articles in the same issue of the *Journal of Human Resources*; Jenkins, 2011). Suitable cross-sectional and longitudinal (for a balanced panel) weights can be used to address representativeness.

Despite all this, it is relevant to note that attrition is a selective process and may reflect attitudes that are not directly observed (such as patience and willingness to comply with social norms). These could also influence the way that respondents behave over time (such as staying in jobs or relationships). Even if a longitudinal survey appears to be cross-sectionally representative, it may nevertheless not be so longitudinally (Moffitt, 2010). As Jenkins says, whether or not this is a significant issue will depend on the type of analysis (length of panel and from how late in the panel data is required, as well as the topic of interest) (Jenkins, 2011). The volume of peer-reviewed research being generated by mature LHSs suggests that attrition does not significantly limit the value of longitudinal household survey data.

5.7. Interviewing Frequency, Method and Length

While all members of an original household are in scope, generally only members above a certain age are interviewed. In HILDA and a great many LHSs this is 15 years and above. USoc aims to interview younger household members 10 years and over through the use of a self-administered questionnaire. The PSID and SLID interview only one household member, reducing costs but also increasing measurement error for data on other household members and making more subjective questions difficult (Wooden, 2001).

It is usual in most LHSs to interview participants at annual intervals. More frequently would be costly and burdensome to the participants; less frequently would make it more difficult to recall events such as periods of employment and changes in income accurately. This reflects an interest in the long term and short-term causes (predisposing conditions and triggers) and immediate and longer-term effects of short term dynamics (such as employment spells, poverty episodes). An indefinite life HPS with annual interviews is better placed than most data sources to address these sorts of questions. Without short-term dynamics many respondents would look observationally equivalent, though their experience is in fact substantially different.

Most LHSs conduct interviews over a 'window' within an annual wave. For HILDA, for instance, this is from August to February. SoFIE, for costs reasons, conducted interviews continuously over a full year, creating in effect, 12 different reference periods (Statistics New Zealand 2001). Each wave of USoc takes two years to complete, with wave 2 commencing while wave 1 is still in the field. Allowing an extended period to make contact, interview and follow-up responding households is likely to increase response rates and reduce attrition.

Face-to-face interviews are still the most commonly used method in LHSs, particularly in the early waves where personal contact is believed to raise response rates and reduce attrition (for evidence on this see Wooden and Watson, 2000). Face-to-face interviews also make it possible to use show cards to assist with more difficult questions. It is common practice (for instance SoFIE and HILDA) to use computer assisted personal interviewing (CAPI) that leads to more consistency in how interviews are conducted and makes it easier to check data quality and to process data[12]. An issue that arose in SoFIE was the need to strike a balance between designing interview questionnaires to simplify the task for respondents and collecting the data in a way that supported data processing and output. Dependent interviewing uses material from past waves to assist in the current interview.

While telephone interviewing is obviously less expensive[13], it is associated with lower interviewee attention. HILDA initially proposed to move to telephone interviewing as the main mode from waves 2 and 3 mainly as a means to manage within a constrained budget (Wooden and Watson, 2000). In practice less than 10 per cent of interviews are currently conducted in this mode, with funding for HILDA having become more generous over time. A study of LHSs that make wider use of telephone interviewing and with what success would be useful.

Both HILDA and *Understanding Society* use *s*elf-completed questionnaires to supplement face-to-face interviews (in HILDA it is 20 pages long). This is partly designed to allow people greater comfort in answering questions in more sensitive areas, and to reduce the amount of time spent in interviews. Questionnaires are left with participants (creating an increased risk of non-response which HILDA attempts to reduce by the relatively costly strategy of having interviewers return to a household to collect them). Audio Computer Assisted Self Interviewing (used in the NLSY97) is an alternative and presumably less expensive way of dealing with questions in sensitive areas.

Some consideration has recently been given to the use of internet interviewing (Moffitt, 2010) as a means to reduce costs. While little research has been done on this option for an LHS, it is likely that such an approach will under-represent lower income households.

The length of interviews will have a bearing on the willingness of survey members to participate in later waves. HILDA aims to keep this to a minimum in order to reduce effects on

[12] When HILDA moved from paper-based to computer-assisted interviewing, a split-sample trial was conducted to identify any differences in the quality of the data collected. Few differences were identified, and where they did, they suggested that computer-assisted interviewing enhanced data quality (Watson and Wilkins, 2011).

[13] Wooden and Watson (2000) also note other disadvantages with face-to-face interviewing including a trade-off with sample size to keep within a constrained budget, looser supervision of interviewers, respondent discomfort with strangers in their homes, and a loss of statistical efficiency from having to use a clustered design.

attrition. The current practice is to spend an average 35 minutes per person and an additional 12 minutes per household (Mark Wooden, personal communication). This contrasts with the BHPS a decade ago, where an average 60 minutes was spent for a one person household, with 40 minutes for each additional adult (Wooden and Watson, 2000).

Information is collected through a range of instruments which may include (as in the BHPS and HILDA)

- A contact sheet recording basic characteristics of and interviewer contacts with a household;
- A household interview questionnaire that collects information about the household;
- An individual interview questionnaire;
- A self-completion questionnaire (which may allow more sensitive information to be collected compared to a face-to-face interview, and which reduces the length of such interviews); and
- A tracking form (which records information that will help keep contact with panel members across waves)

5.8. Data Dissemination and User Support

A majority of surveys (for example PSID, BHPS and HILDA) that are run by non-Governmental organisations have a principal aim to make micro-data available to researchers at low cost and in an easily accessible form. Those that are run by Government statistical agencies are generally much more restrictive in making data available, and usually make it more expensive to do so as a way to recover costs. International experience shows that it is in fact possible to make unit record data widely available while at the same time addressing confidentiality concerns – sometimes by being more restrictive where the nature of the data (geocoding, links to administrative data) increases the risk.

Making data easily available to the research community also requires a well-thought-out data processing infrastructure, file structure[14] and documentation and a strategy for user support which needs to be built into the design of a new LHS from the beginning. Good user support includes training and research workshops and advice on data use. Again, in the New Zealand case, building on an existing infrastructure such as that developed for HILDA would have obvious advantages.

[14] See for instance the recommendations for HILDA in Frick and Haisken-DeNew, 2001

5.9. Planning and Development and Data Processing and Output Time-Frame

Wooden (2001) notes: "International experience strongly suggests that a realistic timetable is important in delivering a high quality product. Most studies, for example, provide for a two-year planning period. Second the fieldwork period for each wave typically extends up to anywhere from 6 to 9 months. Third, most studies allow at least 9 months for the processing of data from each wave." At the same time adequate on-going resources need to be devoted to planning and development and data processing and output activities – a lesson learnt in New Zealand from the experience with SoFIE.

6. Governance and Administrative Arrangements

There are three important interacting issues that will shape the choice of governance and administrative arrangements for an indefinite life HPS:

- The need for a commitment of substantial funding with a presumption that it will be on-going for decades into the future;
- The need for scientific stewardship that provides for continuing multidisciplinary input into the design of content to meet a broad range of research needs. This in turn will help maintain a wide constituency of support for on-going funding; and
- The need for sufficient organisational capacity and infrastructure to ensure the successful design and operation of a survey and provision of data outputs and user support for the community of end users.

In addition, New Zealand's small size relative to most countries running an LHS will constrain options. In particular, funding of a survey will represent a greater proportion of social science outlays than in larger jurisdictions and there are few organisations with the scale, experience and existing infrastructure that would make them an obvious choice for the design and operation of a new survey of this scale.

6.1. Funding

Most LHSs, in recognition of their unique role in the social science infrastructure, receive substantial funding directly or indirectly from Government. The BHPS and USoc surveys, for instance, are funded by the United Kingdom Economic and Social Research Council (a non-departmental body established by Royal Charter and funded through the Department for Business, Innovation and Skills) and designed and managed by the Institute for Social and Economic Research at the University of Essex. The PSID has been funded from its inception in 1968 by the United States National Science Foundation. It is administered by the Institute for

Social Research at the University of Michigan. HILDA is funded by FaHCSIA (an Australian Commonwealth Government Department), and designed and managed by the Melbourne Institute at the University of Melbourne. In contrast, SoFIE was funded, designed, managed and its fieldwork administered by Statistics New Zealand. The Canadian SLID and the Dutch Socio-economic panel are also entirely funded and managed by Statistics Canada and Statistics Netherlands, respectively. While at least part private funding of an LHS is possible, we are not aware of any examples and, given New Zealand's small size, this not likely to be feasible here.

The choices for New Zealand appear to be for direct funding through a Government agency or a consortium of agencies, or funding through social science infrastructure funding. If a new LHS were to be designed and managed in-house by Statistics New Zealand, then obviously funding would most appropriately be included in its annual budget. Funding through a consortium of Government departments or provision for social science infrastructure might be more suitable if the LHS were to be designed and managed by an independent organisation. A presumption of long term funding might be best conveyed by a choice of a social science infrastructure funding route. Current core funding administered by the new Ministry of Business, Innovation and Employment, for Crown Research Institutes provides an example of the type of funding mechanism that could work for a New Zealand LHS.

6.2. Scientific Stewardship

A range of options for scientific stewardship are available. These need to be multi-disciplinary (as discussed above) and recognise and be responsive to desirable changes in the content of LHSs arising from emerging social and economic issues (Wooden, 2001). HILDA, for instance, has an external reference group that is paid sitting fees. The initial funding arrangements also involved the Australian Council for Educational Research and the Australian Institute for Family Studies (Wooden and Watson, 2000) though this is not currently the case. The design of USoc has strong input from the funding body, the ESRC, which has put emphasis on an innovative approach to survey design and extending content across a wider range of domains. USoc also involves extensive consultation with the research community and other potential users. ISER, the agency that manages USoc, has built up an international reputation, through the operation of the BHPS, in the design and management of LHSs to a high scientific standard and this is reflected in the large body of academic research that it has published on these topics. The Institute for Social Research at the University of Michigan plays a similar role in the design and management of the PSID.

Surveys that are run by official statistics agencies, such as the SLID and SoFIE have the advantage of bringing with them a concentration of in-house resources that have experience with large-scale household survey design and management. On the other hand, because the main focus of official statistical agencies is on large scale cross-sectional collections, they are typically less familiar with and geared to the administrative demands of a panel that tracks individuals who move households or households that move addresses and the extended field periods that this entails. An official statistical agency will also need to look further afield through reference groups, or consultation with the user community or other mechanisms to get appropriate input into more specialised topic areas.

6.3. Organisational Capacity to Manage a Survey

A first option for New Zealand would be for a new LHS to be run by an official or non-Governmental agency taking responsibility for its design, management and administration. This could involve fieldwork being sub-contracted, particularly if the host organisation had no experience with carrying out fieldwork. A lesson from SoFIE is that it would be helpful to establish links with organisations in other countries responsible for LHSs, particularly in the development phase – this would assist learning from the experience of other successful LHSs, while adapting the design to New Zealand's needs.

This would require either:

- locating the design, management and operation of the new survey in Statistics New Zealand which is currently the only organisation with experience with a survey of this type and the organisational capability and infrastructure required to run it. An alternative to a new survey would be to build a panel on to an existing official cross-sectional household survey (Brown, 2011)[15]; or:
- developing the capacity and infrastructure of a non-Government agency, probably one that has experience with other types of surveys. This could be a research institution or a university or a consortium of such agencies.

Building the capacity of another organisation to run a new LHS independently would take time, and may also entail greater risk of non-delivery given the scale and scope envisaged. However, HILDA provides an example of a university-based organisation that has successfully designed, managed and run an LHS from scratch, without previous experience of running a survey.

[15] Whether or not a panel is added to an existing survey, the full range of design issues outlined here would still need to be considered, and entailed costs met. A panel added to an existing survey would arguably be more consistent with an intention to run a medium term and/or revolving panel type of longitudinal survey.

A number of complex issues need to be resolved if a new panel survey (or a panel added to an existing survey) is to be run by Statistics New Zealand. These revolve around statutory requirements that make participation mandatory; that put a strong emphasis on the protection of the confidentiality of data collected and which entail broader reputational issues that may impact on the ability of such an agency to fulfil its overall mandate. Arguably the role of an official agency may lead it to be overly cautious in the design and administration of a survey and in making data available at low cost to the research community. It may be for these reasons that the more common practice is for the design, management and administration of such surveys to be carried out at arm's length from official agencies. Nevertheless, whatever governance arrangements are instituted, the potential contribution of a new LHS to the system of official statistics needs to be considered.

Given its small size (and the small size of non-official agencies that might be considered for the role), New Zealand may get better value for money, and increase confidence in success, if it were to link with an already well-established survey in another country (though most of the costs are driven by the sample size rather than by overheads). One appealing possibility would be to link with the Melbourne Institute which administers HILDA.[16] A link with HILDA would have the additional advantage of making it easier to track and interview panel members who migrate across the Tasman in either direction. This in turn would lead to a better understanding of the social and economic drivers and consequences of such migration. A range of possibilities for a link with HILDA could be considered:

- The Melbourne Institute could be contracted by the relevant New Zealand government agency to design and manage a New Zealand survey parallel to HILDA. This initiative would build as appropriate on the HILDA design with any modifications required for New Zealand. A New Zealand based organisation could be contracted to undertake fieldwork (a number of market research firms operate in New Zealand for instance). The Institute would undertake data processing and manage data release for the New Zealand survey as it does for HILDA. Governance arrangements for the new survey would be separate to those for HILDA.

- The relevant New Zealand government agency together with FaHCSIA could jointly fund an expanded survey that incorporates the current HILDA and a New Zealand survey. New Zealand would join the governance arrangements for the expanded survey. The New Zealand survey need not be identical in design to HILDA (for instance in the United Kingdom, Understanding Society incorporates the old BHPS but different elements of the expanded survey follow different designs). This option

[16] This option is speculative at the moment. The Melbourne Institute have indicated an openness to discussions but there is currently no commitment to pursue any form of cooperation or collaboration.

would require some form of cross-Tasman inter-Governmental agreement.

- A third option could be for the Melbourne Institute to be contracted to collaborate with a New Zealand organisation for the design and management of a New Zealand based survey. The precise division of responsibilities would be a matter of negotiation between the New Zealand funder and the two organisations charged with collaboration. This would allow a New Zealand organisation to take responsibility for aspects of the design, management and administration of the survey where there was sufficient New Zealand based resources and expertise to achieve success, and where this was efficient. However additional complexity would be added in managing the involvement of two organisations. It would probably require the establishment of some sort of joint venture between the Melbourne Institute and the contracted New Zealand organisation.

Nevertheless, some commentators have raised a number cautions about a New Zealand survey becoming overly reliant on a link to an international survey (including HILDA). They argue that it is important for New Zealand to develop and maintain its own capability. This will help ensure that the design and administration of a survey can be freely adapted to New Zealand's needs without being too constrained by arrangements in another jurisdiction. With its own capability, New Zealand will also have a better range of options in the future, and the presence of expertise within New Zealand is likely to better stimulate and support the local use of LHS data for research and policy evaluation purposes. In the end, the best arrangement will depend on a range of design and funding details and needs to be further evaluated as a concrete proposal develops.

7. Costs

The design, development and operating costs of a New Zealand LHS will depend on a range of factors, including:

- Whether a New Zealand survey is substantially built on the design of an existing LHS,
- Whether survey management costs could be shared with an existing survey (such as HILDA),
- The size of the survey sample,
- The geographic distribution of the survey sample,
- The precise scope of and methods used in interviews,
- Incentives offered to participants, and
- Economies that can be obtained by contracting out aspects of the survey administration – particularly fieldwork.

HILDA provides a ballpark picture of annual operating costs of a survey design that may suit New Zealand circumstances. Its current overall budget runs at over A$7 million per wave (budgeted to increase to around A$10 million over the next four years).

From inception, it had a sample size of around 7500 households or 14,000 people. There is no over-sampling of sub-populations, though its size was increased in 2011 by 2000 households to enable the sample to maintain representativeness of the national population given immigration (and emigration) since the survey first began in 2001. Most interviews are still carried out face to face, though an allowance is made for 10 per cent of them to be carried out by phone. There are incentive payments of A$30 per person with an additional A$30 per household for participation. Interviews take 35 minutes per person with an additional 12 minutes for collecting household information. There is also a 20 page self-administered questionnaire which interviewers have to return to the household to collect. Fieldwork is carried out in three phases across 7 months (from August to February) in each annual wave

The Melbourne Institute employs around 8 FTE staff for the on-going design and management of the survey, and the management and dissemination of data collected. The budget also supports a biennial research conference, an external reference group (paid sitting fees) and an Annual Report and Annual Statistical Report. Fieldwork is currently contracted to Roy Morgan Research.

When fully operational SoFIE cost roughly $2 million per wave at today's prices, with additional development costs in the order of $3 million (though it is likely that there was substantial input from other Statistics New Zealand staff not directly covered by these costs). This was a relatively large survey designed, managed and administered by Statistics New Zealand that covered 11,000 nationally representative households or more than 22,000 individuals (reducing to around 17,500 by wave four), running for eight waves from 2002 to 2010. Computer assisted, face-to-face interviewing was employed, with supplementary questions on assets and health administered in alternate years. Participation in the survey was mandatory under the Statistics Act 1975 and so incentive payments were not employed. The lower cost of SoFIE compared to HILDA is also undoubtedly reflected in its less developed data use infrastructure.

Many successful international HPSs began with a smaller sample size than either HILDA or SoFIE (often in the order of 5,000 households) and labour and other costs in New Zealand are lower than in Australia which means that a well-designed New Zealand HPS could cost substantially less than HILDA.

8. Conclusion

The completion of SoFIE has raised the question whether New Zealand should establish a new representative longitudinal household survey to meet the anticipated needs of the research and policy evaluation communities into the future. This is linked to the question of the design features required to ensure that an LHS will meet those needs, and thus the costs. An initial scan suggests that there are some key areas of social science and policy evaluation (such as the nature of, the determinants and consequences of extended periods of low income in households) that are only ever going to be addressed by data from an LHS. At the same time, the international evidence shows that an LHS can provide insights into a wide range of other issues across disciplines. The task remains to get a firmer bearing on the social and economic importance of better understanding such issues, and the extent to which alternative sources both local and international are adequate.

A number of successful continuing international indefinite life LHSs (almost invariably substantially funded by government) are producing a large and ever-growing volume of research and policy evaluation, apparently justifying the considerable cost involved. Whether the cost would be justified in New Zealand, a small country with limited social science resources, requires further investigation. This should focus on defining an option that will be best meet New Zealand's specific needs and evaluating the costs involved and the potential benefits to be derived.

Feedback on an initial draft of this paper has provided substantial support for proceeding to defining a more concrete option for an LHS in New Zealand, and evaluating its costs and benefits. It has also provided guidance on a range of design and governance issues that should help in defining a more concrete option.

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Appendix 1, Table 1: Selected International Longitudinal Household Surveys: A Comparison

	SOEP	BHPS	*Understanding Society*
Host organisation	German Institute for Economic Research (DIW)	Institute for Social and Economic Research, University of Essex	Institute for Social and Economic Research, University of Essex
Design	Indefinite life panel	Indefinite life panel	Indefinite life panel
Commenced	1984	1991	2009
Initial/current sample size	5,900/11,000 households	5,500 households	40,000 households (including BHPS)
Reference population / data collection unit	All private households All members aged 16 years or over are interviewed	All private households All members aged 16 years or over are interviewed	All private households All members aged 16 years or over are interviewed. 10-15 yrs have self-completion questionnaire
Over-sampling	At Wave 1 a separate sub-sample of foreign-born households was selected; Immigrant booster sample in 1994 & regular refresher samples.	None at Wave 1, but a low-income sample from the European Community Household Panel Sample added in 1997 and new Scottish and Welsh sub-samples added in 1999.	Ethnic Minority Booster Sample (EMBS) 4000 households
Frequency	Annual	Annual	Annual
Collection mode	PAPI. Mix of personal and self-completed questionnaires typically collected by interviewer. Began shifting to CAPI from 1998. WAPI tested.	Personal PAPI with short self-completion questionnaire. Shifted to CAPI in wave 10 (2000)	CAPI with some CATI.
Proxy interviews	No.	Yes (3.4% of interviews in wave 1)	Yes
Wave 1 response rates	61% West Germans; 68% foreigners (but note that incomplete households omitted) 1998 refresher sample – 54% 2000 new sample – 51%	69% including proxies (74% of households supplied at least one interview). 1999 Scottish / Welsh sample – interviews completed with at least one person at 63% of households.	47% in GPS, with a household response rate of 57.6%; 37% in EMBS.
Attrition (a)	10% wave 2; 7% wave 3. 3% by wave 7. Stable since	12% wave 2; 10% wave 3, 3.4% by wave 8.	23% wave 2 in General Population Sample, 33% wave 2 in EMBS
Fieldwork	Full range of data collection, management and processing functions contracted out to TNS in Munich.	Only data collection contracted out. Management of panel and cleaning of data undertaken in house.	Data collection, processing and output conducted by National Centre for Social Research
Data Distribution	CD-Rom. Access restricted to bona fide researchers for specific purpose research.	Deposited in UK Data Archive	Deposited in UK Data Archive, available through Economic and Social Data Services

	Dutch Socio-economic Panel	PSID	SLID
Host organisation	Statistics Netherlands	Institute for Social Research, University of Michigan	Statistics Canada
Design	Indefinite life panel	Indefinite life panel	Rotating medium life (6 years) panel
Commenced	1985	1968	1993
Initial/current sample size	5,000/ households	4,800/8,700 families	Approx. 15,000/ households in each panel
Reference population / data collection unit	All private households All members aged 16 years or over are interviewed	Heads of family units who have been continuously resident in the USA for at least 2 years.	Private households in the 10 provinces with the exception of the Indian reserves. Interviews conducted with only one member of the household.
Over-sampling	None	A sub-sample of 1872 low-income families was drawn from an earlier survey conducted by the US Census Bureau. A new Latino supplement was added in 1990 but discontinued after 1995.	Sample based on the Labour Force Survey and hence sample selection probabilities vary across regions (i.e., smaller regions over-sampled).
Frequency	Twice yearly prior to 1990. Annual since.	Annual until 1997; every other year since.	Annual (but with 2 interviews conducted 6 months apart).
Collection mode	Personal PAPI before switching to CAPI in the early 1990s. Self-completion for income questions (returned by mail).	Personal PAPI from 1968 to 1972. Mainly telephone since 1973. CATI introduced in 1993.	CATI.
Proxy interviews	Yes – widespread	The need for proxy information is a fundamental feature of the survey design.	The need for proxy information is a fundamental feature of the survey design.
Wave 1 response rates	Approx 55%. Top-up samples added each year and average just 35%.	76% (but "real" response only about 69%).	
Attrition (a)	High. Only 30% of original sample left after 12 waves.	11.5% wave 2. Between 1.5% and 3.1% thereafter.	
Fieldwork	Undertaken entirely in-house.	Undertaken by Survey Research Center, a separate unit within the Institute for Social Research.	Undertaken entirely in-house.
Data Distribution	A highly priced CURF	Freely available from website.	Currently available only via remote access or on-site access at StatCan. (First two waves had been released as CURFS.)

	NLSY79 (b)	**NLSY97** (b)
Host organisation	Center for Human Resource Research, Ohio State University	Center for Human Resource Research, Ohio State University
Design	Single cohort panel	Single cohort panel
Commenced	1979	1997
Initial/current sample size	12,686 individuals	8,984 individuals
Reference population / data collection unit	Persons aged 14-21 as of December 31, 1978.	Persons aged 12-16 as of December 31, 1996, and one of their parents (d).
Over-sampling	Supplemental samples were drawn so as to over-sample: (i) Hispanic, black and economically disadvantaged youth ©; and (ii) Members of the military	Supplemental samples were drawn so as to over-sample Hispanic and black youth.
Frequency	Annual until 1994; every other year since.	Annual
Collection mode	Personal PAPI until 1992. CAPI from 1993, CATI also increasingly used.	CAPI, CATI and ACASI
Proxy interviews	No (not a household based survey)	No (not a household based survey)
Wave 1 response rates	87% (but "real" response rate only about 81%).	92%
Attrition (a)	4.3% wave 2. Average of 1.9% thereafter.	6.7% wave 2; 15.7% by wave 7.
Fieldwork	Undertaken by NORC, a survey centre based at the University of Chicago. All data processing functions undertaken by CHRR.	Undertaken by NORC, a survey centre based at the University of Chicago. All data processing functions undertaken by CHRR.
Data Distribution	Freely available from web-site	Freely available from web-site

	HILDA	SoFIE
Host organisation	Melbourne Institute, University of Melbourne	Statistics New Zealand
Design	Indefinite life panel	Medium life panel (8 waves)
Commenced	2001	2002
Initial/current sample size	7,700/9,000 + households	Approx. 11,500 households
Reference population / data collection unit	All private households, except those in remote and sparsely populated areas. All members aged 15 years or over are interviewed	All private households. All members aged 15 years or over were interviewed.
Over-sampling	None, but top-up sample of 2000 households from 2011.	None
Frequency	Annual	Annual
Collection mode	Personal PAPI until 2008, CAPI from 2009, CATI used for less than 10% of interviews. Self-completed questionnaire delivered and retrieved by interviewers	CAPI.
Proxy interviews	No (initial intention to allow proxy interviews abandoned due to privacy concerns)	Yes (for labour market information)
Wave 1 response rates	61%. 2011 top-up sample – 75%.	62% (77% of households responded, of which 80% of eligible individuals responded)
Attrition (a)	13% wave 2; Less than 5% by wave 7.	13% wave 2; Cumulative attrition 37% by wave 7.
Fieldwork	Currently undertaken by Ray Morgan Research. All data processing functions undertaken by the Melbourne Institute.	Undertaken entirely in-house.
Data Distribution	CD-ROM distributed at cost to approved institutions and individual researchers	Via on-site access at Statistics New Zealand

Notes to Appendix 1, Table 1

Table is substantially based on Table 1 in Wooden (2001) updated to include information on *Understanding Society*, HILDA and SoFIE.

Acronyms

ACASI	Audio computer assisted self-interview
BHPS	British Household Panel Survey
CAPI	Computer assisted personal interviewing
CATI	Computer assisted telephone interviewing
CHRR	Center for Human Resource Research
CNEF	Cross-National Equivalence File
CURF	Confidentialised unite record file
HILDA	Household, Income and Labor Dynamics in Australia
NLSY	National Longitudinal Study of Youth
NORC	National Opinion Research Center
PAPI	Pencil and paper interviewing
PSID	Panel Study of Income Dynamics
SLID	Survey of Labour and Income Dynamics
SOEP	(German) Socio-economic Panel
SoFIE	Survey of Family, Income and Employment Dynamics
StatCan	Statistics Canada
WAPI	Internet based self-interview

a Attrition rates are typically adjusted for deaths.

b The NLSY79 is one of a number of longitudinal studies conducted as part of the NLS program within the US Bureau of Labor Statistics.

c The Economically disadvantaged / non-Hispanic supplemental sample was dropped after the 1990 interview.

d A parent was interviewed in wave 1 on family background information, and in waves 1 – 5 on household income.

Appendix 1, Table 2: Characteristics of selected longitudinal studies in New Zealand

	DMHDS (a)	CHDS	Māori (b)	PIF	GUINZ
Ownership	Dunedin Multidisciplinary Health and Development Research Unit, University of Otago	Christchurch School of Medicine and Health Services, University of Otago	Research Centre for Māori Health & Development, Massey University	Faculty of Health and Environmental Sciences, Auckland University to Technology	Centre for Longitudinal Research, University of Auckland
Contact	Prof Richie Poulton (Director)	Prof David Fergusson (Executive Director)	Prof Chris Cunningham	Prof Janis Patterson (Director)	Dr Susan Morton (Director)
Focus	Nature and prevalence of some development & health problems	Health, education and life progress of the cohort	Cultural, economic and personal factors in Māori households	Health, cultural, environmental, economic and psychosocial factors	Evidence to inform policies to improve population health and development
Start Year	1972	1977	1993	2000	2009
Population/cohort	Cohort	Cohort	Population Sample	Cohort	Cohort
Eligibility	Born in Queen Mary Hospital between 1.4.72 and 31.3.73 & still in Otago at first follow-up	Born in Christchurch between 15.4.77 and 5.8.77	Stratified random sample to represent Māori geographic, cultural, economic and social circumstances.	Children, with at least one parent of Pacific ethnicity who is a New Zealand permanent resident, born at Middlemore Hospital between 15.3.00 and 17.12.00	Children born to pregnant women in the Auckland, Counties Manukau & Waikato DHB regions, whose births were due between 25.4.09 and 25.03.10
Cohort size	1,139	1,310	600 households, 1,600 individuals	1,398	6,846
Retention rate wave2	91%	89% at age 5 follow-up		93%	94% at 9 months follow-up.
Retention of living members	96% at age 26 follow-up	82% at age 21 follow-up		89% at 12 months follow-up, over 72% at age 6.	
Frequency	Ages 3, 5, 7, 11, 13, 15, 18, 21, 26, 32 and 38	Ages 4 months, 1-16 years (annually), 18, 21, 25 & 30	Every 3 years.	Ages 6 weeks, 12 months, 24 months, 4, 6, 11.	CAPI - Antenatal, 6 weeks, 9 months, 2 & 4 years, CATI 16, 23 & 31 months.

	DMHDS (a)	CHDS	Māori (b)	PIF	GUINZ
Ethnicity	2.6% of mothers Māori, 0.8% Other Pacific	12.2% Māori at age 25	All Māori	(Mother) 48% Samoan, 21% Tongan, 17% Cook Islands, 4% Niuean, 3% Other Pacific, 7% Non-Pacific	(based on mother's identification of baby's ethnicity at 9 months) 69% European, 24% Māori, 21 % Pacific, 17% Asian, 7% other.
Methodology	½ or full-day assessments for interviews, tests & examinations (including parents up to age 13); hospital & police records; blood samples	Interviews of parents (till age 16); self (from age 8), teacher questionnaires (age 6-13), hospital records (to age 16); police records (14, 21 ,25 & 30 years).	One hour interviews using a broad questionnaire approach	Interview mother at 6 weeks, mother & father at 1 & 2 years, child assessment 4 years, hospital and plunked records, interviews with parents and child at 11 years.	Personal & telephone interviews of parents (see above). Developmental & anthropometric assessments of child at age 2. Health records.
No. publications	900 (by 2005) – 700 listed on web-site in 2012	390 (by 2012)	10 (by 2005)	84 (by 2012)	8 (by 2012)

Notes to Appendix 1, Table 2

This table is substantially based on the table in the Appendix to Poland & Legge (2005). It has been abridged and updated to include information on *Growing up in New Zealand*.

Information on SoFIE is covered in Appendix Table 1 to facilitate comparisons with international longitudinal household panel surveys of a similar design.

Acronyms

CAPI	Computer assisted personal interviewing
CATI	Computer assisted telephone interviewing
CHDS	Christchurch Health and Development Survey
DMHDS	Dunedin Multidisciplinary Health and Development Study
GUINZ	Growing up in New Zealand
PIF	Pacific Islands Family Study

a The DMHDS has been extended through three additional studies that build on the original. These are: "The Family Health Study" which was conducted between 2003 and 2006 and gathered data on the physical and emotional health and attitudes of the parents of the original cohort, and sometimes their uncles and aunts. 90% of eligible parents participated; the Next Generation study which aims to interview, assess and collect biometric data on the children of the original cohort when they turn 15 years, to enable comparisons with the original cohort at the same age; and: The Parenting Study is designed to investigate the parenting style of original sample members and compare this to their own parents' parenting style, and involves them in an interview and video-taping of play interactions with their three year old child. This study has generated three publications to date. http://dunedinstudy.otago.ac.nz/studies/sub-studies/next-generation-study

b Best Outcomes for Māori, Te Hoe Nuku Roa.

Appendix 1, Table 3: Illustrative core and periodic content of Longitudinal Household Surveys

Note: This list is based on a scan of content in SoFIE, HILDA and *Understanding Society*.

First wave retrospective (background) content

- Individual demographics (including ethnicity, languages, educational attainment, disabilities)
- Family background
- Marital history
- Number and age of children (including those living elsewhere)
- Employment history

Core content on household

- Household composition and relationships
- Size, condition, value and ownership status of residence
- Housing related expenditures
- Other selected household expenditures (e.g. fuel, consumer durables)

Core content on individuals

- Self-reported health status
- Individual incomes from all sources
- Labour market activity
- Current employment & job satisfaction
- Experiences of persons not in paid employment
- Marital status
- Current child care arrangements

Periodic modular content (added to core survey)

- Savings and wealth;
- Retirement planning;
- Time use & leisure participation;
- Commuting behaviour;
- Literacy and numeracy;
- Psychological traits;
- Career aspirations;
- Recent training and education experiences;
- Health (physical and mental) and subjective well-being;
- Family relationships and parenting style;
- Financial behaviour and attitudes;
- Political and social engagement and values;
- Religion;
- Environmental related behaviour and attitudes.

Appendix 2: Summary of longitudinal information needs by domain and the extent to which these needs can be addressed by re-use of existing data (source: Brown, 2011)

Domain & Topic	Information Need	Linked admin data	Linked census and admin data	Linked survey and admin data
Population				
Fertility	• number, timing and spacing of births over life course		✓✓✓	✓
	• factors influencing the number, timing and spacing of births		✓✓	
Geographical mobility	• nature and extent of geographical mobility over life course	✓	✓✓✓	
	• antecedents and consequences of geographical mobility	✓	✓✓	
Migrant settlement	• settlement outcomes of migrants	✓✓✓	✓✓✓✓	✓✓✓
	• factors that facilitate and hinder successful outcomes	✓	✓✓	✓
	• outcomes of children of migrants		✓✓	
Health				
Life-time health	• health transitions and pathways over life course	✓✓	✓✓	✓✓
Health inequalities	• causes and correlates of health transitions and outcomes	✓	✓✓✓	✓✓✓
	• impact of health status on health utilisation patterns			✓✓✓
	• effect of health interventions on health outcomes			✓✓
Knowledge and skills				
Social and economic returns on education	• learning trajectories and transitions over life course	✓✓✓	✓✓✓	✓✓✓
	• determinants of learning participation and outcomes	✓	✓✓	✓
	• effect of student loans on economic and social outcomes	✓	✓✓	✓
	• inter-generational transfers of human capital		✓✓	
Paid work				
Labour force mobility	• extent of mobility into and out of the labour force	✓✓✓	✓✓✓	✓✓✓
	• antecedents and consequences of labour market transitions	✓✓	✓✓✓	✓✓

	• persistence of unemployment	✓✓✓	✓✓	✓✓✓
	• intra- and inter-generational occupational mobility		✓✓✓	✓
	• earnings mobility	✓✓✓✓	✓✓	✓✓✓
Economic standard of living				
Income and wealth mobility	• nature and extent of income mobility for individuals and families	✓✓✓	✓✓✓✓	✓✓✓✓
	• persistence of low income and recurrent low income among individuals and families	✓✓✓	✓✓✓✓	✓✓✓✓
	• persistence of welfare dependence and recurrent welfare dependence	✓✓✓	✓✓✓	✓✓✓
	• determinants of individual and family income transitions	✓	✓✓	✓✓
	• nature and extent of wealth mobility			
	• adequacy of households' savings and wealth accumulation for retirement			
	• determinants of savings and net worth			
	• inter-generational transfers of net worth			
Housing				
Housing careers	• dwellings and tenure mobility		✓✓	
	• antecedents and consequences of housing transitions		✓	
	• impact of home ownership on outcomes in other domains		✓✓✓	
Safety and security				
Offender life history	• offending trajectories over life time	✓✓✓	✓✓✓	
	• determinants of criminal offending	✓	✓✓	
	• extent of recidivism	✓✓✓	✓✓✓	
	• effect of criminal justice interventions on outcomes	✓✓✓	✓✓✓	
Culture and identity				
Inter-ethnic mobility	• extent of mobility between ethnic groups	✓✓	✓✓✓✓	✓✓
	• determinants of inter-ethnic mobility		✓✓✓	✓
	• impact of inter-ethnic mobility on growth of ethnic groups		✓✓✓✓	

Cross-cutting topics				
Family dynamics	• number and types of family transitions		✓✓	
	• duration of time spent in different family types		✓	
	• antecedents and consequences of family transitions		✓	
Social mobility	• extent of inter-generational social mobility		✓✓✓	
	• extent of intra-generational social mobility		✓✓✓	
Social exclusion	• extent of persistent multiple disadvantage		✓✓	
	• causes and correlates of persistent multiple disadvantage		✓✓	
Child development	• impact of childhood experiences on child, adolescent and adult outcomes		✓✓✓	
Ageing	• combined effect of social, economic and environmental factors and transitions on the wellbeing of individuals as the age	✓	✓✓✓	✓✓
Economic shocks	• impact of economic shocks on the outcomes of individuals and families	✓	✓✓	✓

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