Small area Indicators of Wellbeing for Older Australians (IWOA)

PREPARED BY

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For the Benevolent Society

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ABOUT NATSEM

For over 20 years NATSEM, part of the Institute for Governance and Policy Analysis at the University of Canberra, has been and remains one of Australia's leading economic and social policy research centres, and is regarded as one of the world's foremost centres of excellence for microsimulation, economic modelling and policy evaluation. NATSEM undertakes independent and impartial research, and aims to be a key contributor to social and economic policy debate and analysis Australia-wide and throughout the world through expert economic modelling of the highest quality, and supplying consultancy services to commercial, government and not-for-profit clients. Through its research NATSEM is an active contributor to social and economic policy debate.

It must be emphasised that NATSEM does not have views on policy. All opinions are the authors' own and are not necessarily shared by NATSEM.

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THE BENEVOLENT SOCIETY

We help people change their lives through support and education, and we speak out for a just society where everyone thrives. We're Australia's first charity. We're a not-for-profit and non-religious organisation and we've helped people, families and communities achieve positive change since 1813.

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Foreword

The Benevolent Society commissioned NATSEM to develop a geographic index of wellbeing among older people. While similar indexes exist for the population as a whole and for sub-sections of the population such as children and youth, no such index has existed in Australia that gives a picture of geographic patterns of wellbeing among older people. If it is true that we measure what matters, then in the context of an ageing population, the absence of good data on the wellbeing of older people is a striking omission.

The index is intended to be a tool for a range of stakeholders including policy-makers and planners in government, service providers and researchers. It will enable them to identify and monitor the characteristics of the older population within local geographic areas, compare the effectiveness of policies, programs and services across different areas and provide information to assist in the development and targeting of services.

But more than this. We hope that this research will be a catalyst for community-wide discussion about how well older people are faring in Australia. Where do the most disadvantaged older people live, and what factors contribute most to their disadvantage? And how well are they being served by current policies and programs?

Where people live affects their wellbeing at all ages. But location has particular importance for older people as they tend to be much less mobile than younger people, especially in the later years when health problems become more common.

Older people make an immense contribution to our communities in many ways. Yet so much of the public discourse about older people is negative. Older age does bring challenges but it should not be regarded as a failure that people become frail, and of course eventually die. The costs associated with ageing clearly have implications for individuals, families, communities and governments. So we must pay particular attention to ensuring we have the right policies and services in place to support people through the transitions of older age and to ensuring that policies and services are reaching older people with low levels of wellbeing, wherever they live.

Our thanks go to Professor Robert Tanton and colleagues at NATSEM (Dr Yogi Vidyattama and Dr Riyana Miranti), authors of the report. The research also benefitted greatly from the input and wisdom of an external expert advisory group. However, the analysis and opinions expressed are those of the authors and do not necessarily represent the views of the advisory group, nor their organisations. The group was comprised of:

Dr Kirsty Nowlan (Chair)	The Benevolent Society
Sarah Fogg	The Benevolent Society
Dr Helen Kimberley	Brotherhood of St Laurence
Professor Yvonne Wells	Lincoln Centre, La Trobe University
Sue McGrath	COTA Australia
Barbara Squires	Consultant
Dr Anthony Brown	Australian Association of Gerontology
Kathryn Mandla, Naomi Rogers, Anita Davis, Jenny Phong and Chris Gordon	Department of Social Services

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Executive Summary

Wellbeing is an important concept in society, and there has been much international research recently about the importance of measuring wellbeing in a society. The Organisation for Economic Co-operation and Development (OECD) *How's Life? 2015: Measuring wellbeing* (OECD, 2015a) states that wellbeing is multi-dimensional, ranging from civic engagement to housing, from income to work-life balance, and from skills to health status. It is a concept that includes both positive and negative aspects of life (capabilities and vulnerabilities), rather than just negative aspects, like an index of disadvantage. The indicators are then usually combined to form an index (see www.oecdbetterlifeindex.org). Other indexes of wellbeing include the OECD's Human Development Index (HDI), Bhutan's Gross National Happiness measure and, in Australia, the proposed Australian National Development Index (ANDI). All of these indexes take a broad approach to wellbeing, using a number of different indicators in a number of domains.

Generally the technique used to develop an index of wellbeing is to identify a number of indicators of wellbeing (which may be for the total population, but can also be for a sub-group), and then combine these into a single index. This provides a summary measure that represents each of the component indicators to some extent. An index of wellbeing for older people is going to use different indicators to an index of wellbeing for children or youth because the two groups are at different stages of the life cycle and have different priorities. As an example, an index of wellbeing for older people may have whether they are employed, where this will not be relevant for a child.

These indicators and indexes may be national (like the HDI and ANDI mentioned above), or for small areas. Examples of small area indexes include indexes of social exclusion at a small area level created for children (see Barnes et al, 2008; Bradshaw et al, 2008; Tanton et al, 2010 and Miranti et al, 2015), and for youth (see Abello et al., 2015). This report extends this work to develop an index of wellbeing for older Australians at a small area level.

This work has identified a number of indicators of wellbeing for older people, and then brought these together into an index. This index shows that areas where older people experience low wellbeing tend to be in cities rather than regional Australia and that areas with the highest proportion of older people experiencing low wellbeing are on the outskirts of capital cities. Generally older people in regional areas experience reasonable levels of wellbeing and areas with the highest levels of wellbeing are in the cities. So areas with very high and very low areas of wellbeing are in the cities, whereas older people living in areas outside the cities generally experience moderate wellbeing.

One interesting point is that there are clusters of low wellbeing on the outskirts of capital cities, whereas low wellbeing in regional areas is not as clustered – it is interspersed with areas of moderate and high wellbeing. Further work looking at spatial clusters of low wellbeing using spatial analysis is planned to further investigate this.

The other major finding is that low wellbeing has a lot to do with housing. Housing stress contributed the most weight to the index, and rent assistance also had a very high weight. This has implications for income support policies and housing policies like rental assistance for older people. Older people still paying rent after retirement are some of the most vulnerable in our society to changes in circumstances, as a great deal of their income is going on housing costs, reducing their ability to deal with other costs like health or transport.

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Introduction

Wellbeing is an important part of a fulfilling life, and while indicators of wellbeing for the overall population are increasingly available (see the ABS Measures of Australia's Progress and the Australian National Development Index, ANDI, as examples of national indicators), there are currently few indicators of wellbeing for older people (for examples, see Lui et al, 2011; and Miranti and Yu, 2015). These indicators are important as they can provide a basis for research on what is associated with higher wellbeing for older people. If calculated at a community level, they can also provide important information on what community factors impact on wellbeing for older people. Similar indicators for children have been used to identify the community level factors that affect educational outcomes (see Goldfeld et al, 2015).

Older people form an important part of any community. They may, for example, be involved in community organisations, assist with childcare for their family, provide care and support to other family members, and act as mentors to younger generations. Everyone in a community contributes to the community in different ways, and older people help to provide diversity and life experience in any community.

However, like any population group, there are particular costs associated with older people, and these include increased health and support costs, as well as less tax revenue coming in as this age group retire. Population projections from the ABS show that the proportion of people aged 65 and over is expected to increase from 14 per cent at 30 June 2012 to 22 per cent in 2061, and the proportion of people aged 15 – 64 (traditionally defined as the working age population) is expected to decrease from 67 per cent of the population at 30 June 2012 to 61 per cent in 2061 (ABS, 2013a). This means that the number of people aged 65 and over per working age population (the 'aged dependency ratio') will increase from 21 people age 65 and over for every 100 workers on 30 June 2012 to 37 in 2061 (ABS, 2013a).

With this increasing proportion of older people comes increasing health costs which are of concern to federal and state governments. The 2015 Intergenerational Report from the Commonwealth Government reported an expected increase in health costs from 4.2 per cent of GDP to 7.1 per cent of GDP by 2054/55 (under a no change in policy scenario) (Commonwealth of Australia, 2015, p. xvi). This increase is attributed partly to the ageing population, but also to new health treatments and higher incomes (which provides access to more expensive health treatments) which would affect all age groups. So not all of this increase is due to the ageing population.

An increasing number of older people also means potentially higher levels of some other forms of government assistance, including age pension payments and aged care. The Intergenerational Report has estimated that Australian Government expenditure on the age pension will increase from 2.9 per cent of GDP in 2014/15 to 3.6 per cent in 2054/55 (Commonwealth of Australia, p. xvi) and on aged care will increase from 0.9 per cent of GDP in 2014/15 to 2.1 per cent in 2054/55 (Commonwealth of Australia, 2015, p. 71)[1].

While these figures are estimates, they do suggest a challenge for governments. Moreover, it needs to be remembered that in many ways, older people are also part of the solution. It has been estimated that the economic benefits of mature age people (aged 45 and over) in the workforce are

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[1] All estimates for the Commonwealth of Australia's Intergenerational report are from the no change in policy scenarios.

$27.4 billion per annum, their uncosted contribution as carers of people with a disability and carers of grandchildren is $22 billion per annum and their contribution through volunteerism is valued at $16.3 billion per annum. These are substantial figures that are equivalent to nearly one sixth of total Commonwealth expenditure in 2013/14 (National Seniors Australia (2015).

An increasing number of older people finance their retirement wholly or partly through superannuation savings and many also have private health insurance, thus partly shifting the cost of expensive medical procedures to private health insurers and individuals. Much debate exists as to whether tax concessions for superannuation and private health insurance are unduly generous towards better-off people and unsustainable in their current form, as they cause greater inequities in older age. However, the budgetary situation is not as severe as it could have been in the absence of compulsory superannuation and private health insurance.

The increasing proportion of older people, and the increasing costs associated with this group, mean that it is important to have an understanding of the wellbeing of this group, and more importantly, where areas of high and low wellbeing are, to assist policy development and service provision to this group.

Previously, NATSEM has created Child Social Exclusion (McNamara et al, 2009 and Miranti et al, 2015) and Youth Social Exclusion (Abello et al., 2015) indexes at a small area level, and the indicators used in these indexes were targeted towards these groups. These indexes have been used to identify areas which may require more service provision for children experiencing social exclusion. Miranti and Yu (2015) recently measured the extent of social exclusion among older people in Australia using HILDA data at the individual level and examined why social exclusion persists in Australia. Gong et al. (2012; 2014) have also estimated indicators of advantage and disadvantage among older Australians at a small area level. However, so far there has been no comprehensive index of wellbeing for older people in Australia for small areas, and this work aims to redress this.

This report outlines the results from the index of wellbeing for older Australians (the IWOA). This index has been based on an extensive literature review of wellbeing for older Australians, and an extensive data search for small area indicators of wellbeing for older people.

The Framework

Important in developing any index is to use a framework that provides a firm foundation for the final index. The framework used for this index is based on a concept of wellbeing published in a literature review by Miranti et al (2010). This framework focusses on five concepts, and then six domains. The domains may be associated with any one or a number of the five concepts. The concepts may also be associated with each other, recognising the fluidity of ideas between the concepts.

The concepts provide the conceptual framework for the index and are Inequality, Vulnerability, Capabilities, Resources, and Location and Mobility. The domains are Participation, Education, Health, Security, Resources and Wealth and Housing. There are then a number of indicators measuring each of these domains. The framework is shown in Figure 1.

The Concepts

Inequality is a concept based on the observed differences between those who have, and those who do not have. For this report, the concept of inequality cuts across many of the domains used – so, for example, there are inequalities in income, education, wealth, access to transport and many of the

other domains used. There are also inequalities that we have not covered – for example, gender inequality, racial inequality, etc.

The concept of vulnerability is about how certain groups are at greater risk of experiencing low wellbeing. Low income may be seen as a vulnerability as those who have a low income are at greater risk of health problems. Capabilities are things that protect people from low wellbeing, for example, a higher education may give you a greater ability to learn about new health procedures, or to present a coherent argument for the pension, or arrange your financial affairs in a way to maximise your pension.

The concept of resources is about having the income and wealth to be able to protect yourself from low wellbeing, so, for example, being able to continue driving to maintain relationships, or to pay for preventative health procedures. Location and mobility are about being able to access different resources to increase wellbeing – so, for example, being able to travel to a capital city for a particular health procedure only available in the city.

It can be seen that many of these concepts will use similar indicators – so low income is a sign of vulnerability, as well as low resources.

The Domains
It can be seen that these concepts are fairly high level and can be difficult to measure, so they are then given some more structure using domains in our index. This then means indicators can be identified for each domain to provide measures for the domains. We are moving from some fairly high level esoteric concepts, which feed into some more concrete domains, which can then be measured using some measurable indicators.

The participation domain is about how well older people can participate in society, and includes labour force participation, volunteering, access to motor vehicles and internet, and whether the person is caring for others.

The education domain is about the level of education that the individual has, and includes completed year 10, completed year 12, and post school qualifications indicators.

The health domain is about the person's health and physical capabilities, and includes indicators on whether the person needs assistance, including whether they use community care programs. In the final index, this domain was renamed 'functional ability' as there were no small area health indicators available. A future index could use administrative data from hospitals, or NATSEM's small area modelled data as the modelling techniques develop.

The security domain is about how safe the person feels, and includes indicators like crime rates and whether the person feels safe at night. Unfortunately, while many indicators were assessed for this domain (including crime victimisation rates for those aged 65 and older and feelings of safety - a full list of all the assessed indicators can be requested from the authors), none were available for the small areas and for the sub-group of the population (those aged 65 and over), so this domain was not included in this version of the index. It may be added to future versions of the index as data becomes available. These indicators could also be modelled in the future as NATSEM's small area modelling techniques develop.

The resources domain covers what resources the person has, and includes indicators like income, financial stress, and whether the person is paying housing costs on a low income.

The wealth and housing domain is about what wealth the person holds, as well as their housing situation. The indicators include whether the person is in housing stress, in public housing, still with a mortgage, or homeless.

Due to the inclusion of concepts like vulnerability and capabilities, this index has been called an index of wellbeing. It can be seen that these domains can be associated with low or high wellbeing. The indicators used within each of the domains are also associated with either low or high wellbeing – so, for example, the participation domain is about how older people participate in the community, and includes volunteering. So this index includes both positive, and negative, aspects of an older person's life.

Figure 1: Conceptual framework for the index of wellbeing for older Australians (IWOA)
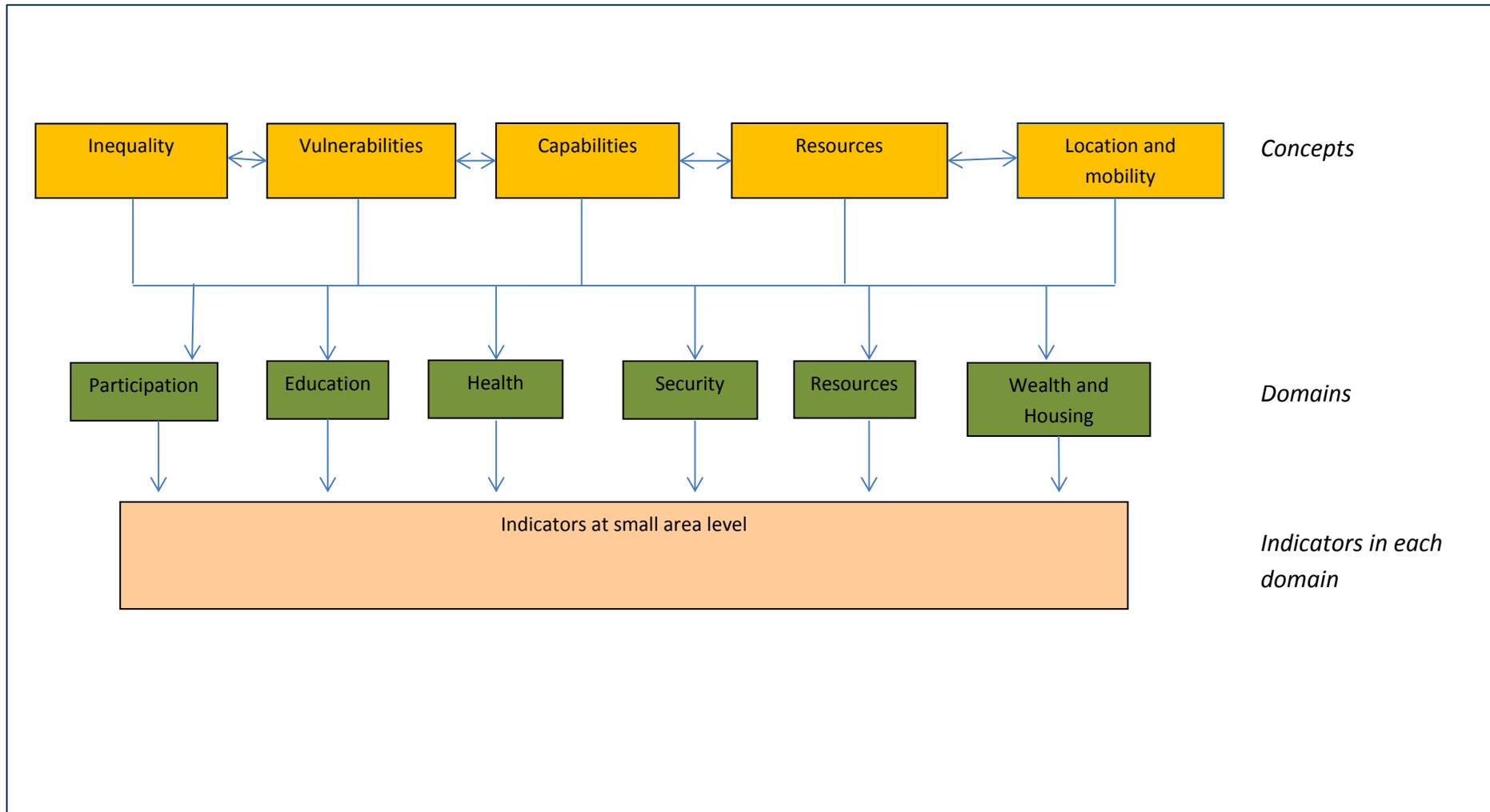
The Indicators

Within this framework, a number of ideal indicators were identified, and then data sources for these indicators were identified. The availability of the indicators for small areas across Australia limits the list of indicators for the final index, as many of the ideal indicators were not available for the geography being used.

The list of ideal indicators is available from the authors, and the list of indicators used, the domains, and the source of the data, are shown in Table 1. Note that the method used for creating the indexes (principal components analysis) excludes some of these indicators if they do not contribute much to the final index. This is described more in the Method section of this report.

Table 1: List of indicators, domain and source

Indicator	Domain	Source
Labour force participation rates for older people	Participation	Census Population and Housing 2011
Employment rates for older people	Participation	Census Population and Housing 2011
Unemployment rates for older people	Participation	Census Population and Housing 2011
% of older people who provided care to children who were not their grandchildren	Participation	Census Population and Housing 2011
% of older people who provide care to their children and/or grandchildren (daily)	Participation	Household, Income and Labour Dynamics of Australia (HILDA): Modelled small area estimates from NATSEM
% of older people who provide care to their children and/or grandchildren (daily and several days a week)	Participation	Household, Income and Labour Dynamics of Australia (HILDA): Modelled small area estimates from NATSEM
% of older people who had no access to a car to drive	Participation	Census Population and Housing 2011
Annual cost of older people using public transport (bus, ferry, rail or taxi)	Participation	Household, Income and Labour Dynamics of Australia (HILDA): Modelled small area estimates from NATSEM
% of older people who have no Internet in the house	Participation	Requested table from ABS Census Population and Housing
% of older people providing care to others	Participation	DSS Survey of Disability, Ageing and Carers: modelled small area estimates from DSS
% of older people who cannot speak English well or not at all	Participation	Census Population and Housing 2011
% of older people who are volunteers	Participation	Census Population and Housing 2011
% of older people who completed Year 12	Education	Census Population and Housing 2011
% of older people who completed Year 10	Education	Census Population and Housing 2011
% of older people with post school qualifications	Education	Census Population and Housing 2011
Poverty Rate for older people	Resources	ABS Survey of Income and Housing: Modelled small area estimates from NATSEM
% of older people receiving an age pension	Resources	AURIN: SA2 Income Support provided by PHIDU
% of older people with the Age Pension as the major source of income	Resources	ABS Survey of Income and Housing: Modelled small area estimates from NATSEM
% of older people who have no superannuation payments	Resources	ABS Survey of Income and Housing: Modelled small area estimates from NATSEM
% of older people who could not raise a certain amount of money in an emergency within a week.	Resources	ABS General Social Survey: Modelled small area estimates from NATSEM
% of older people who pay public/private rent and are in the bottom income quintile of the equivalised household income distribution	Resources	ABS Survey of Income and Housing: Modelled small area estimates from NATSEM
% of older people who are still paying mortgages	Wealth and Housing	Census Population and Housing 2011
% of older people who are still renters	Wealth and Housing	Census Population and Housing 2011
% of older people living in public housing	Wealth and Housing	Census Population and Housing 2011
% of older people in housing stress	Wealth and Housing	ABS Survey of Income and Housing: Modelled small area estimates from NATSEM
% of older people who are homeless	Wealth and Housing	Census Population and Housing 2011
% of older people who are homeless from GSS	Wealth and Housing	ABS General Social Survey: Modelled small area estimates from NATSEM
% of older people receiving rent assistance	Wealth and Housing	ABS Survey of Income and Housing: Modelled small area estimates from NATSEM
% of older people who need assistance with core activities	Functional ability	Census Population and Housing 2011
% of older people who use aged care services	Functional ability	Census Population and Housing 2011
% of older people who need assistance for 1 to 4 activities	Functional ability	DSS Survey of Disability, Ageing and Carers: estimates for small areas
% of older people who need assistance for 5 or more activities	Functional ability	DSS Survey of Disability, Ageing and Carers: estimates for small areas
% of older people who have an unmet need for assistance for 1 to 4 activities	Functional ability	DSS Survey of Disability, Ageing and Carers: estimates for small areas
% of older people who have an unmet need for assistance for 5 or more activities	Functional ability	DSS Survey of Disability, Ageing and Carers: estimates for small areas
% of older people who are home and community care clients	Functional ability	DSS Home and Community Care clients

Hours of assistance for Home and Community Care per older person	Functional ability	DSS Home and Community Care clients
% of older people with low level community packaged care	Functional ability	DSS Ageing and Aged Care Data Warehouse
% of older people with high level community packaged care	Functional ability	DSS Ageing and Aged Care Data Warehouse
% of older people in community with packaged care	Functional ability	DSS Ageing and Aged Care Data Warehouse

The Data

To be able to collect the data, a decision had to be made on how to define older people. It was decided that for this index, we would use people aged 65 and older. This choice is supported by Australian and international literature (OECD, 2015b).

All the indicators were collected or derived for areas called Statistical Area 2 by the ABS. These broadly match to suburbs in capital cities, but tend to be larger areas in regional and remote Australia.

The complexity of the index, and the framework identified above, means that there are a number of sources of data for the indicators. The main source of data was the 2011 Census. This data was extracted by NATSEM using the ABS Tablebuilder package or by special request from the ABS. The data were for a person's place of usual residence, so that we are looking at wellbeing for the area where the person normally lives, rather than where they were on Census night.

The next source of data was from a spatial microsimulation model that is run by NATSEM. Spatial microsimulation is a statistical technique that calculates estimates for small areas from survey and small area Census data. It has been applied to the ABS Survey of Income and Housing Costs; the ABS General Social Survey; and the HILDA survey.

A technical description of the model can be found in Tanton et al (2011). The model relies on a number of benchmarks, and these benchmarks determine what indicators can be accurately estimated from the model. The benchmarks used for each of the surveys are shown in Table 2.

Table 2: Benchmarks for the spatial microsimulation model

Survey of Income and Housing	General Social Survey	HILDA Wave 12
Age/Sex/ Labour force status	Age/Sex	Age/Sex
Education	Education	Education
Number of adults/children	Labour force status	Labour Force Status
Income	Proficiency in English	Proficiency in English
Housing tenure/landlord	Occupation	Occupation
Housing structure	Voluntary work	Voluntary Work
Family/household composition		

After estimates for each indicator are derived from the model, we validate the derived estimates against other data where available. This can be difficult (the reason for doing the modelling is because we don't have the data), but in most cases, we can aggregate the small area data and ensure that it matches to reliable aggregate estimates from the survey.

The third source of data was from the Australian Urban Research Infrastructure Network. This is a spatial data portal that NATSEM has been involved in over the last 5 years. The portal provides

access to spatial data from a number of different sources. The data from the AURIN portal was pension recipients from the DSS, provided by the PHIDU at the University of Adelaide.

The fourth set of data was small area estimates of need for assistance derived by the ABS for the Department of Social Services. The derived estimates were projected to 2015, and included:

- Number of activities for which assistance is needed by age;
- Number of activities for which assistance is always needed by age;
- Number of activities for which assistance is needed by unmet need for formal (organised) assistance (selected reasons) by age;
- Number of activities for which assistance is always needed by unmet need for formal (organised) assistance (selected reasons) by age;
- Number of activities (grouped) for which assistance is needed by age;
- Type of carer by age.

The estimates were modelled using the ABS Survey of Disability, Ageing and Carers (SDAC), the 2011 Census, and administrative data and population estimates from the Department of Social Services. The estimates were derived using a random effects logistic regression model with a separate model derived for each table. The method weighted the direct survey estimate and the modelled estimate, so where there were enough people in the area to provide a reliable estimate, the direct survey estimate was used; and where there were not enough people, the model estimate was used. Remote and very remote areas and areas that contained Indigenous Communities were excluded from the modelling as they were not part of the sample for the SDAC, so no estimates were available for these communities. The ABS conducted this modelling for the Department of Social Services.

The final set of data were administrative data from the Department of Social Services on users of the Home and Community Care program and of low level and high level community care packages[2].

A request was also made to the Australian Institute for Health and Welfare for hospital admission data for those aged 65 and over, but these data did not arrive in time for this report. These data may be included in the health domain of future indexes.

To reduce variability in the final index, any areas with less than 30 people aged 65 and above were excluded. The reason for this was that areas with low populations provide unreliable results when calculating a proportion – so with 20 people aged 65 or over in an area, an additional 1 person with the characteristic being measured by the indicator adds 5% to the indicator value. This is reduced to 3.3% when there are 30 people in the area, reducing the variability of the indicator. A similar method is used by the ABS (with a lower cut-off of 10 people) for the Socio-Economic Index for Areas (SEIFA).

Method

The method used for calculating the index was principal components analysis for each domain, and then adding the domains together using a transformation to ensure that each of the domains could be added. This is similar to the method used for the child and youth social exclusion index (see Miranti et al., 2015 and Abello et al., 2015) and has also been used for indexes of deprivation in

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[2] Now part of the Home Support Programme and Home Care Package Programme, respectively.

South Africa (see Noble et al, 2004). Principal components analysis is the same method used by the ABS for calculating the SEIFA indexes.

The first step in the method is to run a correlation matrix for all the indicators in the domain. Indicators that are too highly correlated are dropped from the domain. Indexes that are not correlated with other indicators will also be dropped in the next step as they will have a low loading (also called an eigenvector) against the overall index.

The next step is to run an initial principal components analysis and look at the weights for each indicator against the first component (which becomes the final index). Indicators with a weight less than 0.3 are removed as they do not contribute much to the final index. This is the same cut-off as used by the ABS for their SEIFA index. This is an iterative process, so the indicator with the lowest weight is removed and the principal components analysis is re-run until all indicators have weights above 0.3.

The next step is to look at the proportion of the correlation explained by the index (the eigenvalue). The first component should explain most of the correlation, with the following components explaining less. If the second component still explains a lot of the correlation, then this can be used as a second component in the final index. None of the domains calculated for this index had a high enough loading on the second component for it to be used in the index.

The final step is to ensure that the direction of the domain indexes is the same. For our index, a lower value meant a higher proportion of older people in the area with low wellbeing, and a higher value meant a higher proportion of older people in the area experiencing high wellbeing. So our index includes indicators of high wellbeing (like volunteering and the employment rate) as well as indicators of low wellbeing (like the unemployment rate and poverty rate).

These steps were conducted for all the domains, and then the domains were transformed using a log transformation which is described in the technical report available separately.

If there were missing values (i.e. where data were not available) for at least one domain in an area, the whole area was removed from the analysis as the log transformation could not be calculated for these areas. The final index was then calculated by averaging the five domain indexes after the log transformation.

One of the advantages of this method is that areas can be identified as having low wellbeing, but then using the domains, the reason for the low wellbeing can be identified – so is it to do with incomes in the area, or participation or some other factor. This then provides a powerful tool for additional analysis, and this will be demonstrated using the online maps later in this report.

Results

The full results from the modelling are shown in the technical report. This technical report shows the indicators that contributed to each index, and the importance of them in the final index (the loading or eigenvector). In the technical report, we have shown the first correlation matrix and any highly correlated indicators removed at this stage; and then each of the runs of the principal components analysis, to show which indicators were removed due to low weights. In this section, we just show the maps of the final index. We have also provided online maps of the overall index, and the index for each domain, at:

The results for the final index are shown in Figure 2. In this map, we show population weighted quintiles of wellbeing for people aged 65 and over. A population weighted quintile splits the population into 5 equal groups, with the same number of people in each quintile. Higher values (lighter colours on the map) are areas where a higher proportion of older people experience high wellbeing, and lower values (darker colours on the map) are areas where a higher proportion of older people experience low wellbeing.

One of the main things to note about the map is that for most areas in remote Australia (and some regional and metropolitan areas), estimates could not be derived. This was either because there were too few people aged 65 and over in these areas; that some of the data were not available for these areas (in particular, estimates of assistance provided); or that there were technical problems with modelling poverty rates and housing stress (see Tanton et al, 2011, for a technical description of the problems with convergence in the model used). These areas are shown speckled on the map. In some areas, the overall index is not available, but other domain indexes are available, and can be accessed using the online maps.

Figure 2: Map of older person wellbeing index, 2011

Legend
- Lowest well-being
- Quintile 2
- Quintile 3
- Quintile 4
- Highest well-being
- inadequate data
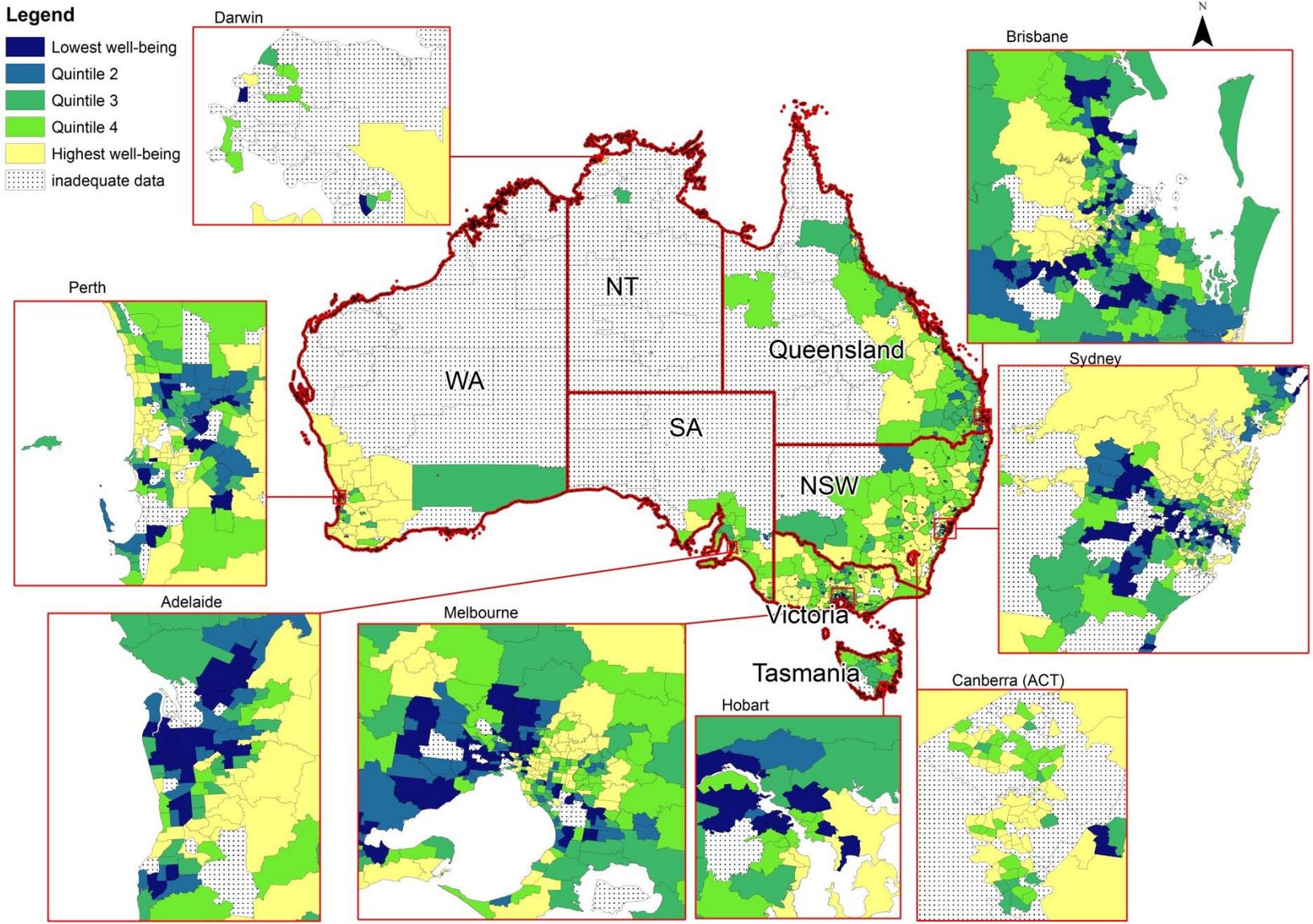
Analysis

Analysing the weights

The weights from the principal components analysis show how much a particular indicator contributed to the final index, so they show the importance of that indicator in the final index. Looking first at the weights for each of the domains from the technical report, the housing stress indicator had the highest weight (0.68) and the rent assistance indicator also had a high weight (0.57). This shows the importance of housing for older people. If an older person on a low income is still paying housing costs in terms of rent or mortgage, then this can take a large chunk out of their income. Rent assistance will help with paying rent, but the maximum amount is $121.80 per fortnight (for a couple with no children as at December 2015). In Sydney, the median rent for a new lease on an apartment is $1,000 a fortnight, with many suburbs costing much higher (NSW Department of Family and Community Services, 2015).

Analysing the maps

Looking at Figure 2, it can be seen that the largest concentrations of areas with the highest proportion of older people experiencing low wellbeing are on the outskirts of the cities – so the Western and South Western suburbs of Sydney and the Western and Northern suburbs of Melbourne. Areas in regional Australia tended to have moderate levels of wellbeing for older Australians (mainly quintiles 4 and 5), with the exception of some regional towns (quintiles 1 and 2)

Analysing the highest and lowest 5 areas in each State

The areas with the highest and lowest scores on the index in each State are shown in Table 3. The results for the Northern Territory are not shown in this table as only 18 of the 68 areas had values. Areas for the ACT were also excluded as there were no areas in the bottom 2 quintiles of wellbeing.

It can be seen that in all States, the highest and lowest 5 areas tended to be in the capital cities. Italicised areas in Table 3 are areas which the ABS has classified as being in 'Major Cities' in their remoteness area classification. It can be seen that there are very few areas in either the lowest or highest 5 outside capital cities.

Generally regional areas experienced higher wellbeing with most areas in quintiles 4 or 5 (see Figure 2), and they did not have the extreme values seen in major cities.

The online maps give a full list of available areas by quintile for each state/territory and for capital cities and rest of state.

Table 3: Communities[1] with the highest and lowest wellbeing by State

State	5 areas of Lowest wellbeing [2]	5 areas of Highest wellbeing [2]
NSW	*Cabramatta - Lansvale*	*North Sydney - Lavender Bay*
NSW	*Liverpool - Warwick Farm*	*Terrey Hills - Duffys Forest*
NSW	*Fairfield - East*	*Wahroonga - Warrawee*
NSW	*Guildford - South Granville*	*St Ives*
NSW	*Lakemba - Wiley Park*	*Pymble*
Vic	*Meadow Heights*	*Southbank*
Vic	*Footscray*	*East Melbourne*
Vic	*Roxburgh Park - Somerton*	*Flinders*
Vic	*Braybrook*	*Research - North Warrandyte*
Vic	*Broadmeadows*	*South Yarra - West*
Qld	*Woodridge*	*Fig Tree Pocket*
Qld	*Inala - Richlands*	*Chapel Hill*
Qld	*Darra - Sumner*	*Brookfield - Kenmore Hills*
Qld	*Riverview*	Broadsound - Nebo
Qld	Rockhampton City	*Brisbane City*
SA	*The Parks*	*Coromandel Valley*
SA	*Salisbury North*	*Aldgate - Stirling*
SA	*Hindmarsh - Brompton*	One Tree Hill
SA	*Elizabeth*	*Belair*
SA	*Smithfield - Elizabeth North*	*Glenside - Beaumont*
WA	*Balga - Mirrabooka*	*Nedlands - Dalkeith - Crawley*
WA	*Hamilton Hill*	*City Beach*
WA	*Willagee*	*Cottesloe*
WA	*Calista*	Gidgegannup
WA	*Nollamara - Westminster*	*Applecross - Ardross*
Tas	Ravenswood	Taroona - Bonnet Hill
Tas	Bridgewater - Gagebrook	Mount Nelson - Dynnyrne
Tas	Mornington - Warrane	Bruny Island - Kettering
Tas	Glenorchy	Kingston Beach - Blackmans Bay
Tas	Invermay	Dilston - Lilydale

[1]Note that the community names are those given by the ABS for the standard geographies used. In some cases, they may consist of two areas, for example, Roxburgh Park - Somerton

[2] Italicised areas are classified as being in Major Cities in the ABS Remoteness Area classification. There are no Major City areas in Tasmania.

Comparison to SEIFA

The next analysis was to compare the index to the ABS Socio-Economic Index for Areas (SEIFA) (ABS, 2013b). The SEIFA index is an index of general disadvantage for areas across Australia calculated every 5 years by the ABS from Census data. It is widely used as an indicator of general disadvantage for the whole population in an area.

Generally we would expect that areas experiencing general disadvantage will also have lower wellbeing for older people. It is disadvantaged areas that do *not* have a high proportion of older people experiencing low wellbeing, and vice versa, that would be interesting areas to look at to investigate why this is the case.

Table 4 shows a comparison of the population weighted older person wellbeing index to the ABS SEIFA index. This table shows that 10.19 per cent of people aged 65 and over in areas with a SEIFA quintile of 1 (the most disadvantaged) were also in areas with the lowest wellbeing for older people, and 12.72 per cent of older people living in the least disadvantaged areas (SEIFA Quintile 5) were also living in areas of high wellbeing. If the two indexes were exactly the same, there would be close to 20 in each of the shaded cells (although there would be variation as the SEIFA is population weighted and the IWOA is older person population weighted), and there would be 0's in all other cells. More than 40 per cent of people were in the same quintile, and another 35.9 per cent were different by one quintile.

There were areas where few older people experienced low wellbeing in the least disadvantaged areas (0.1 per cent of the older population lived in these areas) and there were areas where older people experienced high wellbeing in more disadvantaged areas (0.21 per cent of older people lived in these areas). The areas where these people live could be the subject of further investigation by NATSEM.

Table 4: Older person wellbeing quintiles and SEIFA Disadvantage quintiles[3]

SEIFA 2011	Index of Wellbeing for older Australians (IWOA)				
	1	2	3	4	5
1	10.19	4.71	3.52	2.53	0.21
2	4.29	4.86	4.60	4.91	2.22
3	1.86	4.50	5.53	4.60	3.46
4	0.93	2.33	4.81	6.93	4.29
5	0.10	0.31	1.45	4.14	12.72

Overall this analysis shows that the SEIFA index and the IWOA are similar, but there are differences which warrant further investigation.

Policy Implications

The increasing average age of the Australian population has figured largely in recent Australian Government policy. The intergenerational reports highlight the increasing costs of providing services to an ageing population, including health costs, income support costs, costs of community care and aged care. State governments are also increasingly focussing on the impact of the ageing of the population and changes needed to prepare and respond to it.

This means that services need to be provided to older people in the most effective and efficient way possible. Being able to identify areas of low wellbeing for older people, and the factors contributing to low wellbeing in these areas – using the domains and indicators available in this index – will allow

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[3] All quintiles are population weighted, and calculated only for those areas where data are available. This means the SEIFA quintile value for an area may not be the same as those produced by the ABS for that area.

governments to address any failures in the provision of core universal services to older people in areas of low wellbeing and to more finely target service provision such as community care services or low income support services.

These indicators will also allow government and non-government providers of services to older people to target their services appropriately – for example, areas with low levels on the participation domain may be areas where improvements to public and community transport will be most useful, allowing older people to continue to stay active members of their community when they have no access to a motor vehicle.

Obviously, the issues surrounding where services should be provided is much more complex than looking at some indexes, but these indexes, and in particular the online maps, will provide important input into a discussion on where to provide services, along with community consultation, cost/benefit analysis, and other considerations.

As well as shining a light on the wellbeing of older people, this analysis also draws out just how important economic resilience/security is in earlier life stages, particularly given the importance of housing stress in the index. Though there is no guarantee that the index components will remain the same over time, it could be argued that targeting policy to address the challenge of housing costs for younger people now could help mitigate wellbeing outcomes for the future's older people.

On the matter of housing stress, it could be expected that if someone aged 65 and over is still paying a mortgage or rent, then they will be some of the most disadvantaged in society – we would all hope, at this stage, to own a home, and retirement incomes and aged care policies are largely predicated on the assumption of home ownership. Rent assistance assists renters, but it is capped at a level that does not contribute much to rent in high rental areas like Sydney. This leaves little money after the rent is paid for essentials like food, transport, health costs and heating, and/or means that older renters are forced to move to areas with lower amenity and poorer access to services.

How to use the online maps – a case study

Online maps showing the population weighted quintiles for the summary index and for each domain, are available from:

http://web.natsem.canberra.edu.au/maps/AUS_OSE/atlas.html

This section shows how these online maps can be used to identify areas of low wellbeing, and then drill down into the domains and indicators to identify why.

The example we will look at is Tamworth West, an area in the bottom quintile for overall wellbeing, but with some higher values in 2 domains. The overall index for Tamworth is shown in Figure 3, with Tamworth West labelled. It can be seen that while Tamworth West is in the lowest wellbeing quintile, surrounding areas of Tamworth are in Quintile 2 (Tamworth North); and Quintile 3 (Tamworth East).

Figure 3: Index of Wellbeing for Older Australians, Tamworth West

Tamworth West – Quintile 1

- ■ Quintile 1(lowest well-being)
- ■ Quintile 2
- ■ Quintile 3
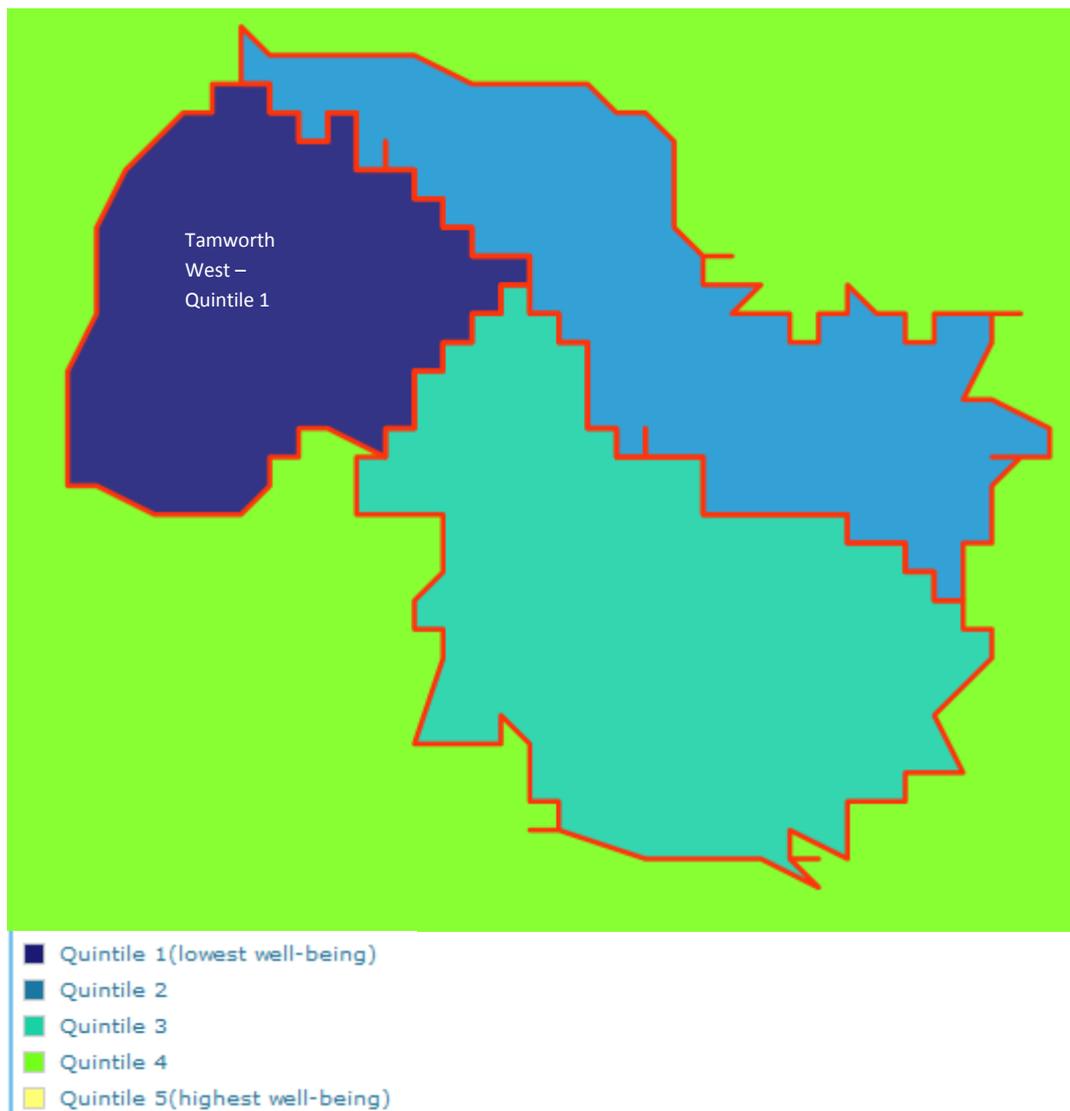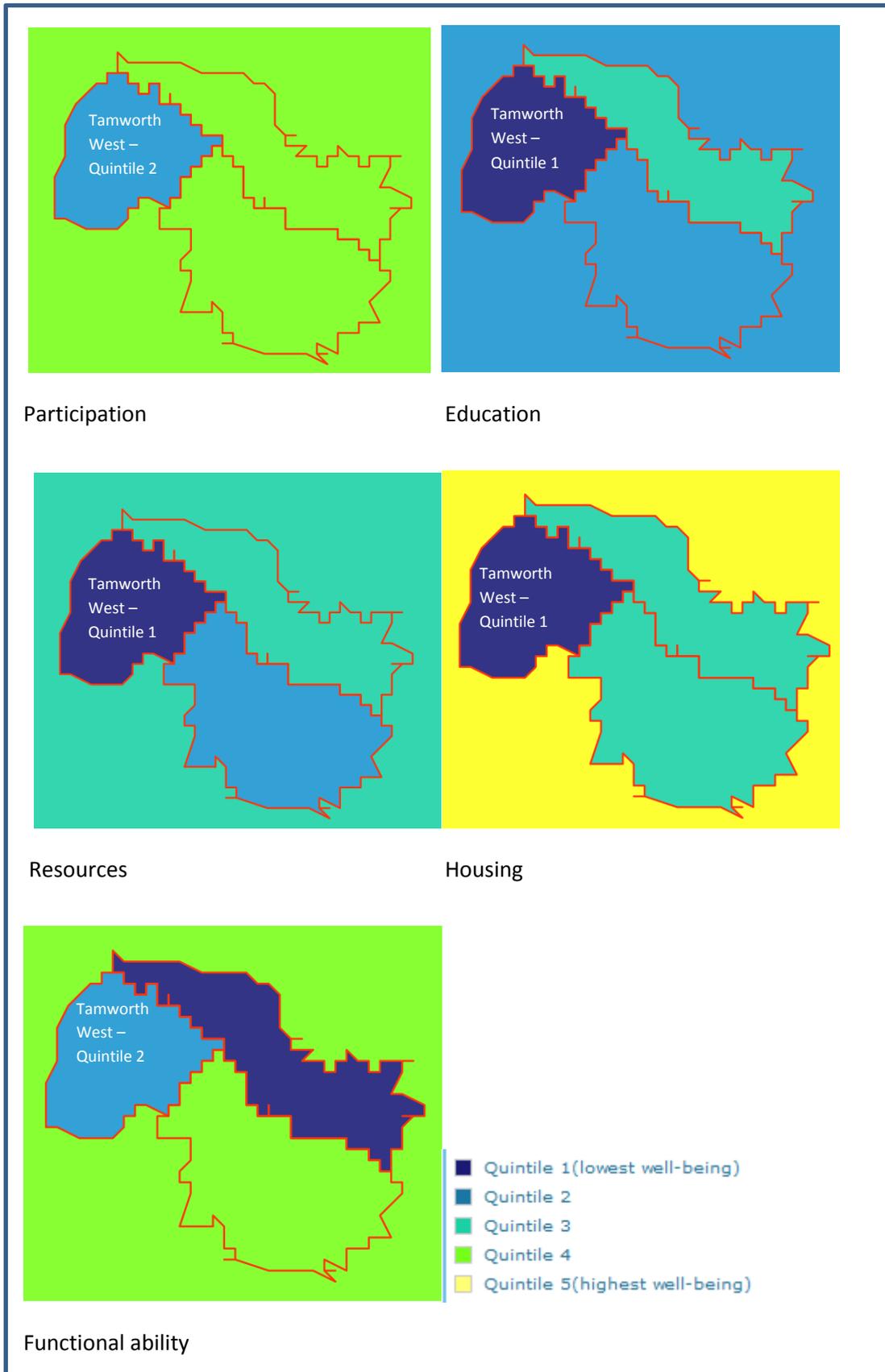- ■ Quintile 4
- □ Quintile 5(highest well-being)

Figure 4 drills down into each of the sub-indexes (participation, education, resources, housing, functional ability) to identify why this area has such low levels of wellbeing. It can be seen that participation and functional ability are both ranked in Quintile 2, but education, resources and housing are all in Quintile 1 (lowest wellbeing). This suggests that policies focussing on education, resources and housing will be important in this area.

Drilling down further, the resources index could potentially be further broken down into the component indicators. At the moment, this is not available in the online maps due to data confidentiality and sub-licencing provisions from some of the data providers. Future versions of the online maps may have the indicators available, where sub-licencing allows. (Indicators sourced from the Census are however freely available on the ABS website).

Figure 4: Index of Wellbeing for Older Australians, Tamworth West, by sub-index

Participation

Education

Resources

Housing

Functional ability

Quintile 1(lowest well-being)
Quintile 2
Quintile 3
Quintile 4
Quintile 5(highest well-being)

Further Work

This work has highlighted a number of areas of potential further study. They are:

1) Comparing the indexes of older person wellbeing to the SEIFA index and indexes of child and youth social exclusion. An interesting question will be which areas have low wellbeing for one index only? What areas have low wellbeing on all indexes?
2) Investigating further the clusters of low wellbeing on the outskirts of cities. This could be done using some spatial analysis tools, and would provide an interesting insight into the clustering of low wellbeing in cities compared to regional areas.
3) Deriving small area indicators of health status. Due to data limitations, the health domain was renamed functional ability as the indicators in the domain reflected functional ability. Ideally, a small area indicator of health status would be available to add in as an indicator for this domain. This could be small area self assessed health using a modelling procedure, or possibly hospital admissions for small areas.
4) Investigating further the 'off diagonal' areas (those disadvantaged areas for the population as a whole with low older person wellbeing; and less disadvantaged areas with high older person wellbeing). These are areas where the disadvantage (or lack of) in the overall community as measured by the SEIFA index does not translate to low wellbeing for older people. These 'neighbourhood' effects (as they are called) are important in communities, and NATSEM is already doing work on investigating the effect of neighbourhood disadvantage on childhood early development outcomes (see Goldfeld et al, 2015). This work would look at why older people experience higher than expected wellbeing in disadvantaged areas – whether it is about the services being provided, a strong community of older people in the area, or some other reason.

Some of this work will be considered by NATSEM in the near future, and some of it is part of longer term thinking between NATSEM and the Benevolent Society.

Limitations of the index

There are some limitations of this work that need to be mentioned.

1) The index was limited by what data were available for small areas;
2) The index does not allow us to differentiate between sections within the older population on the basis of gender, indigenous status or cultural and linguistic background; and
3) The indexes use area based data so not all older people in an area showing low wellbeing actually experience low wellbeing.

Data limitations

The index required data for one geography, and for one age group. Most surveys in Australia will not have the coverage required to produce estimates for a small area for a particular age group. This meant that most of the data was from the Census of Population and Housing, administrative data, or modelled small area data. In particular, the health domain had limited data available (and was renamed functional ability). For other domains, there was a great deal of missing data due to the modelling process which could not provide reasonable estimates for all areas. This limitation could

be reduced in future versions of this index by using administrative data as it becomes available (for example, hospital admissions or crime victimisations data).

The result of these data limitations is that we have not been able to calculate the index for most remote areas, and some parts of both regional and metropolitan Australia. However some information about these areas is provided by the domain indexes.

The index does not differentiate between sub-groups
Due to the data limitations, accessing data for sub-groups of the population was difficult. Data for one age group only was extracted, and classifying this further into another group in the population like indigenous or gender, would have made the reliability of the data much lower. The Census data would have been reasonable for many locations but the modelled data would have been unreliable and the administrative data was simply not available.

The indexes use area based data
It needs to be made clear that the indexes identify areas of general low and high wellbeing. This does not mean that in an area of low wellbeing, every older person in this area experiences low wellbeing – just that, on average, older people in the area experience low wellbeing. This is the same with any area level index (the ABS SEIFA index, the Child Social Exclusion indexes, etc).

Conclusions

Australia, like many developed countries, has an ageing population and the financial and social implications of this will be a significant challenge for future generations, as identified in recent intergenerational reports from the Australian Government. These include higher healthcare and aged care costs, and higher costs to Government of income support payments to older people. Social changes also mean older people may have more difficulty accessing government services as departments promote online provision of services, and fewer family support networks in regional areas as younger generations move to cities for work.

The implications of these changing financial and social trends will affect older people experiencing low wellbeing greater than they will affect older people who experience high wellbeing and have financial assets and strong health to fall back on. Those who experience high wellbeing will be able to use preventative health services, and will be able to travel more easily, for example using electric scooters to visit friends and relations or get to shops if they are no longer able to walk very far.

The indexes and indicators provided in this report identify where older people experiencing low wellbeing live, and this needs to be an important consideration for future government and non-government service provision. It is older people experiencing low wellbeing who are going to suffer the most from lack of services in the future, as they will not have the health, transport or money to access government services. This risks a very real demarcation of high and low wellbeing in the future, as older people experiencing low wellbeing cannot access services provided in other areas.

While the government has identified a number of costs associated with an ageing population, a significant point to be made is that these costs present a challenge to society, not a disaster. This challenge has already been recognised and policies like superannuation and private health insurance and recent increases in user fees and accommodation charges for aged care have been used to mitigate these potential future costs. Older retirees will add to the diversity of the future population,

and will continue to make an important contribution to society. These indexes and indicators, along with the online maps, will hopefully provide some useful tools for policy makers and others to use, to help target service provision to the most needy groups of older people, to enable them to continue making this contribution to their local communities.

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