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Using and index of wellbeing for older people in small areas of Australia to assist identifying services required

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Abstract

Background: For older people, place is crucial as it is where support networks, social relationships and family are. Older people develop a sense of belonging to their local community through participation and place is strongly linked to personal histories. For older people, ageing in their own home also allows for continuity of relationships and informal support networks in the area.

While there are significant benefits of ageing in place, for older people with low wellbeing, the provision of services is going to be essential to allow them to age in place. Therefore, this article aims to identify areas where older people have low wellbeing using an index of wellbeing developed using a range of data; and to show how the domains and indicators can be used to identify why older people in an area have low wellbeing. This analysis can then be used to help to identify what types of services are required to improve wellbeing in an area of low wellbeing best.

Methods: We use Principal Components Analysis (PCA) to create the Index of Wellbeing for Older Australians, for each domain and then adding the domains together using a 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.

A case study is used to show how low wellbeing can be attributed to a particular domain in the area; and then show how the indicators that were used for this domain can be used to identify exactly what is driving the low wellbeing for older people in the area.

Results: Our overall findings show that the participation domain matters as the proportion of older people who are volunteers has the highest contribution to the well being index followed closely by the employment rate of older people. In contrast, functional ability domain reveals the need for assistance indicator has the highest contribution to reduce the wellbeing.

Conclusion: We conclude that the index method used encourages the de-construction of the overall index, and provides a way to inform service providers in an area on the most effective ways to enhance wellbeing for older people in an area.

Background

Where you live, for an older person,represents an important dimension of ageing. Rowles (1993) suggested the concept of 'place in ageing'. The concept of place in ageing focuses on places which are selectively recalled based on personal histories as people's attachment to place is strongly linked to their personal history. The concept also argues that people tend to develop a physical attachment to place, therefore across time they develop an awareness of and become familiar with their surroundings, and develop a social connection to their neighbours and friends. Further, a sense of belonging to the local community through participation as part of group identification with places is also developed.

Thus, the importance of home for older people has been highlighted. Clifton (2009) suggested that part of the importance of ageing in their own homes for older people lies in the fact that remaining in the home allows for continuity of relationships and informal support networks. However, Olsberg and Winters (2005) argued that ageing in place depends more on an attachment to location rather than to the family home, as many people move from their family home in late middle age but stay close to the place. As Conahan et al. (2004, pp. 1–3) argued that the attachment of older people to their location depends on three factors which are (i) physical environment, (ii) social environment and (iii) support services. These factors are significant as older people are far less mobile in comparison to younger people, because physically they may have difficulty with mobility.

In details, the physical environment provides community infrastructure such as closeness to amenities like supermarkets and doctors. Clifton's (2009) discussion of the built environment relates to older people's well-being and includes the possible impact of a range of factors including a sense of safety, opportunities for physical activity and the maintenance of mobility and contact with the natural environment. In an Australian context, Kendig (2000) has noted the importance of an 'age-friendly environment' where older people preferring to live in locations close to amenities, usually located in the middle and outer suburbs where people first settled as young families in the 1960s and 1970s, and which have now experienced generational change. Ageing in place is now well developed in these suburbs where many older people continue to live once their children have left home.

On the other hand, there is a growing body of work which discusses increasing economic and social inequalities among older people in Australia, (Kendig 2000; Olsberg and Winters 2005; and Faulkner 2007). Research suggests that some groups of older people are among the most disadvantaged Australians. For instance, while many older people are outright home owners, others, unfortunately, are still renters or pay mortgages. While some older people achieve financial independence through substantial superannuation balances, in contrast, many others are wholly dependent on government pensions. Older people (including those who rely on the age pension as their main source of income) are among those at greatest risk of poverty (Saunders et al. 2008; Tanton, et al. 2009 and Miranti et al. 2011). Miranti et al. (2011) found that almost half of lone persons aged 65 and over were in poverty (47.4 per cent). Further, while the poverty rate for a couple with a reference person aged under 35 was at 2.1 per cent, Miranti et al. (2011) found that the poverty rate for couples with a reference person aged 65 and over was nine times higher at almost 19 per cent. Using Household Income and Labour Dynamics in Australia (HILDA) data, Miranti and Yu (2015) who measured the extent of social exclusion among older people in Australia also found that social exclusion persists in Australia for older people.

The importance of interplay between place and wellbeing has been noted. Abbott and Sapford (2005) have researched the importance of place and the geographical polarisation of neighbourhoods in relation to older people. They found that some older people lived in areas with concentrated deprivation and thus were especially affected by some forms of disadvantage including basic access to services as well as health and personal safety (fear of crime).

Differences in wellbeing between different areas may determine the quality and level of care and services to which older people have access. The Australian Institute of Health and Welfare (AIHW) notes that 'ageing in regional areas is affected most by the proportion and age structure of people entering or leaving an area, rather than influences such as fertility and mortality which underlie population ageing in Australia as a whole' (AIHW 2007, p. 7). This concentration may then have implications for service delivery.

So, while there are significant benefits of ageing in place, for older people with low wellbeing, the provision of services is going to be essential to allow them to age in place. Therefore, in this article, we develop an index of wellbeing using various data sources with the aims to identify areas where older people have low wellbeing; and to show how the domains and indicators can be used to identify why older people in an area have low wellbeing. The areas of low overall wellbeing for older people may require more services, and the domains and indicators can then help to identify what types of services are required in to improve the wellbeing of those areas.

This article is structured as follows: section two covers the data and methodology. While section three outlines results; in section four some analysis on domains and indicators are presented. Section five deals with limitations, followed by future work and a conclusion.

Methods

This section describes the domains and indicators chosen for the index, the data used for the indicators, and the index method.

The domains

The method we have used to develop the index of wellbeing for older Australians uses a domains approach. The choice of domains has been informed by previous studies on key indicator frameworks that focused on wellbeing of older people (for example, Brotherhood of St Laurence, 2009; Australian Institute of Health and Welfare (AIHW), 2007; UK Government, 2006; United States Federal Interagency Forum on Aging and Related Statistics, 2008).The domains are participation, education, resources, wealth and housing and functional ability.

The participation domain is about how well older people can participate in society. The main indicator is employment. Davey and Davies (2006) emphasise the benefits of working in later life in New Zealand and the United Kingdom. For older people, working in later life can boost confidence, self-esteem and even health. Other indicators in this domain reflect how older people may participate in society, and include 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. Education has been considered as investment in human capital and has been linked to higher incomes (Becker, 1962). We

have followed Brotherhood of St Laurence (2009) and included an education domain which covers completed year 10, completed year 12, and post school qualifications indicators.

The functional ability domain is about the person's physical capabilities. As Peel et al. (2004) argued, physical capability is the ability to function independently without reliance on care. In the index, it includes indicators of service use and provision including the proportion of older people in the area who need assistance with core activities; and administrative data on older people using Commonwealth Home Support Program services.

The resources domain covers what resources the person has. It provides a framework for thinking about the positive aspects of ageing and shows evidence of older people's strengths and contributions (Miranti et al., 2010). One of the most important indicators under resources is income, which for the elderly can including superannuation payouts and the pension. Indicators in this domain include income, financial stress, and whether the person is paying housing costs on a low income.

Another key resource of older people in Australia is wealth with home ownership as the most common asset among older people (Olsberg and Winters, 2005). Legge and O'Loughlin (2000) assert that home ownership is important not only to provide security/protection against institutional care, but also for intergenerational transfers of the use of the parental home by adult children. The wealth and housing domain is about what wealth the person holds, as well as their housing situation. The indicators include the proportion of older people in the area in housing stress, in public housing, or homeless.

The final list of indicators used, the domains, and the source of the data, are shown in Table 1.

Data Sources

Older people were defined as 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 2016 Census. This data was extracted using the ABS Tablebuilder package. The data were mainly 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 a spatial microsimulation model. Spatial microsimulation is a statistical technique that calculates estimates for small areas from survey and small area Census data. For this analysis, it was applied to the ABS Household Expenditure Survey 2015-16 and the 2016 Census data. 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 are shown in Table 2.

After estimates for each indicator were derived from the spatial microsimulation model, the results were validated against other data where available. This can be difficult (the reason for doing the modelling is because the small area data are not available), but in most cases, the small area data can be aggregated and compared to reliable aggregate estimates from the survey. The results from this validation showed that the estimates we had derived were reasonable, and these graphs are available on request from the authors.

The final set of data were administrative data from the Australian Institute for Health and Welfare on users of the Commonwealth Home Support Program services and Home Care Packages Program services - low level and high level.

Because incomes are shared across families, all the income data were aggregated to an income unit level before calculating the poverty rate (the proportion of older people living in poverty). The Australian Bureau of Statistics defines an income unit as “A unit based on the degree of income sharing between couples and their dependent children.” (ABS, 2019). So for all indicators, the person was the base level – so for example, for housing stress, it is the proportion of older people living in households experiencing housing stress, rather than the proportion of households in housing stress. This was because all indicators were for people aged 65 and over, so they all needed to be measured at the person level.

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 in the 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.

Index Methodology

The method used for calculating the Index was principal components analysis for each domain, and then adding the domains together using a transformation. This similar to the method used for child and youth social exclusion indexes calculated in Australia (see Miranti et al., 2015 and Abello et al., 2016) and has also been used for indexes of deprivation in South Africa (see Noble et al, 2004). Principal components analysis is the same method used for calculating the Socio-Economic Indexes For Areas (SEIFA) indexes by the Australian Bureau of Statistics (ABS).

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. Indicators that are not correlated with other indicators will also be dropped in the next step as they will have a low loading against the overall Index.

The next step is to run an initial principal components analysis and look at the loadings of each indicator against the first component. Indicators with a loading 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 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. Only the Functional Ability domain had a reasonable loading on the second component, but interpreting this component was difficult due indicators loading onto the first two components, so only the first component in each of the domains was used.

The final step was to ensure that the direction of the domain indexes was 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 the poverty rate).

These steps were conducted for all the domains, and then the domains were transformed using a log transformation. 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 later.

Results

Chosen final indicators and weights for each domain are presented in Table 3. The results show that the participation domain matters as the proportion of older people who are volunteers has the highest contribution to the well being index followed closely by the employment rate of older people. On the other hand, older people who cannot speak English well or not at all is the main contributor to lower well being followed by no access to a car to drive and then no access to internet from dwelling.

In the education domain, the post school qualification is the main contributor that increases wellbeing. In terms of resources, the poverty rate for older people and living in income units relying on the age pension as main source of income are the major factors that reduce wellbeing. In the wealth and housing domain, receiving rent assistance and being in housing stress are the major factors reducing wellbeing and these

factors have a greater impact on wellbeing than living in public housing. In functional ability the proportion of older people who need assistance with core activities is the main factor in reducing wellbeing.

The results reflect both vulnerability and capability concepts of wellbeing among older people and these may be associated with different cohorts of the older population. The need for assistance reflects the vulnerability of the oldest older cohort, who are more prone to sickness and frailty than the younger cohort of older people. Volunteering reflects the capability of the younger group of older people who are experiencing the transition from formal participation in the labour market to volunteering as their way to participate actively in society. Volunteering is a way for older people to make a contribution by participating socially and engaging in community life, and it has been argued that this not only improves morale, self-esteem and creates a larger social network, but also increases life satisfaction, (Burr et al., 2005) and wellbeing (Morrow-Howell et al., 2003).

The spatial 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 rather than the same number of areas. Higher values are where a higher proportion of older people experience high wellbeing, and lower values are where a higher proportion of older people experience low wellbeing.

For some areas in remote Australia, estimates for the index 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; or that there were technical problems with the small area modelling procedure (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.

It can be seen that some of the highest levels of wellbeing for older people are in regional Australia as well as in the outskirts of cities; and many of the areas of the lowest wellbeing are in the cities. Many areas of low wellbeing in the cities are areas of gentrification in the inner city, but they also extend to areas in Sydney's Western suburbs and Melbourne's East. These are examples of the areas described by Randolph and Freestone (2012) as middle-ring suburbs and which Forster (2004) identified as places 'strongly affected by ageing in place'. The gentrification in these areas is far less than the inner-city areas leaving more older people trapped in the area while the local government (councils) have difficulty maintaining services to older people in this usually high-density area. The capital city maps in Figure 2 further show how close these areas are to the outer suburban 'aspirational' fringe (Randolph and Freestone, 2012), where older people may have been able to move to and which has much higher wellbeing.

The maps show where older people are experiencing high and low levels of wellbeing. After low wellbeing areas are identified, the next step is to decide what services required to be provided to low wellbeing areas, and then target services to resolve this. The next section shows how the domain method used to calculate the index allows this analysis.

Discussion

The intergenerational reports from the Commonwealth Treasury has highlighted the increasing costs of providing services and assistance to Australian ageing population, including health costs, income support costs, costs of in community care and aged care. Not only the Commonwealth government, the State governments are also increasingly focussing on the impact of the ageing of the population and changes in services 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 and in the right place. Thus, it is essential to identify areas of low wellbeing for older people, and the factors contributing to low wellbeing in these areas as this will allow governments at all levels to address any failures in the provision of services to older people in areas of low wellbeing and to more finely target service provision such as health, housing assistance, community care services or low income support services.

This section shows how the method used for creating the final index of wellbeing for older Australians can be used to assist in the identification of why an area is experiencing low wellbeing. The analysis uses the overall index to identify areas of low wellbeing; and then uses the domains to identify whether an area has low wellbeing on all domains, or whether the area has high wellbeing on one domain and low on the others. This helps to target particular services to particular areas.

Figure 2 shows the index for Gunnedah in NSW, and shows it is in the bottom quintile of the index (low wellbeing). Figure 2 also shows the indexes for each of the domains, and it can be seen that the main drivers of low wellbeing in Gunnedah are housing and education which are both in the lowest wellbeing quintile. Participation is average at Q3, while resources and functional ability are the second lowest quintile.

Investigating the housing domain further using the indicators that contribute to this domain can help to show what is driving low wellbeing in this domain. Figure 3 shows the indicators that contribute to the housing domain. And these need to be read in conjunction with Table 2. The main driver of the low wellbeing in the housing domain is the percent of people in housing stress, and Table 2 shows that a higher proportion in housing stress is associated with lower overall wellbeing in an area (a negative weight). Receiving rent assistance is also a driver, and again Table 2 shows a higher proportion of those receiving rent assistance is associated with lower wellbeing in an area (a negative weight). There is a low proportion who are still paying a mortgage, and this would be associated with higher wellbeing as this indicator has a negative weight in Table 2.

From this analysis, we can say that low wellbeing in the area is driven partly by housing, and in particular high housing costs (as indicated by the housing stress indicator). This would be partly offset by a high proportion of people receiving rent assistance, but not fully offset as the rate of housing stress is still high. This appears to be renters rather than mortgagees as the percent still paying mortgages is low. This

means that policies around lowering rents for older people in Gunnedah would be an effective policy to increase wellbeing for older people in the area.

These indicators also allow government and non-government providers of services to older people to target their services at the spatial level more precisely and 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 although they have no access to a motor vehicle.

To make access to this type of analysis easier, online maps have been provided to allow any service provider to conduct a similar analysis for their community. These online maps use the ARCGIS online mapping capability, and are available at:

https://canberra.maps.arcgis.com/apps/webappviewer/index.html?id=071c7b8e4ff54eff811b944e66de97a5

All indicators that were modelled or that were open data were provided in the online maps. Some indicators were derived from special data requests and are not available through the online maps.

Obviously, the issues surrounding where services should be provided to older people is much more complex than looking at some indexes and indicators, but this type of analysis using the online maps can provide important input into a discussion on where to provide services, along with community consultation, cost/benefit analysis, and other considerations.

Limitations of the index

Despite its benefits, we acknowledge there are some limitations of this index. The development of Index was limited by what data were available for small areas; and that the Index does not allow disaggregation on the basis of gender, indigenous status or cultural and linguistic background

The Index required data that covers small areas and the age group of older people. Most surveys in Australia will not have the coverage required to produce estimates for a small area for a specific age group. This meant that most of the data was sourced from the ABS Census of Population and Housing, administrative data, or modelled small area data. For some domains, there was some missing data due to the modelling process which could not provide robust and reliable estimates for all areas.

Thus as the implication of these data limitations is that the Index could not be calculated for some remote areas, and some parts of both regional and metropolitan Australia.

Further, the functional ability domain was initially a health domain, but no small area estimates of self assessed health are available across Australia. This means the health domain has been called functional ability, recognising that the domain contains indicators of functional ability, not health.

Due to the data unavailability , accessing data for sub-groups of the population was difficult thus creating a disaggregated index is not possible. Furthermore, disaggregating and classifying the index further into another group in the population like indigenous or gender, would have made the data less reliable. 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.

Further Work

This work has highlighted a number of areas of potential further study. They are comparing the indexes of older person wellbeing to the SEIFA index; and deriving modelled small area estimates of self assessed health.

An interesting question that came out of this research was which areas have low wellbeing for older people but high wellbeing overall (using, for example, the SEIFA index). We expect these areas might be in cities where gentrification is occurring, or advantaged areas with a concentration of low wellbeing older people in aged care homes. If the situation is the former, then in terms of service provision, identifying these areas is important because services for low wellbeing people would normally not be provided in an advantaged area.

There is also significant work required on indicators for the health domain. Modelled estimates of self assessed health were derived for this work, but validation showed they were unusable. This work will continue using different imputation techniques to attempt to derive reasonable estimates of self assessed health.

Conclusions

The index of wellbeing for older Australians and the associated domain indexes and indicators can be used to identify where older people experiencing low wellbeing live. In this article, we have demonstrated a method of drilling down from an index to a domain index to an indicator to identify why an area has low wellbeing, and help identify what services might assist low wellbeing older people in the area. This will help to target specific services to those most in need, meaning more efficient service provision in the future.

The index is an important tool for current and future government and non-government service provision. It is older people experiencing low wellbeing who suffer the most from lack of services now and into the future, as they do not have the health, transport or money to access government services. This risks a very real demarcation of high and low wellbeing, as older people experiencing low wellbeing may not be able to access services provided in other areas due to low mobility or access to transport. The online map allows both government and non-government service providers to target services to particular locations that need these services the most, enhancing the lives of older people experiencing low wellbeing.

While our findings are based on a case in Australia, this work can be replicated using indexes calculated in the same way in other countries, so the method is applicable internationally.

Declarations

- Ethics approval and consent to participate

Not applicable

- Consent for publication

Not applicable

- Availability of data and material

All indicators that were modelled or were open data were provided in the online maps. Some indicators were derived from special data requests and are not available through the online maps here.

https://canberra.maps.arcgis.com/apps/webappviewer/index.html?id=071c7b8e4ff54eff811b944e66de97a5

- Competing interests

"The authors declare that they have no competing interests"

- Funding

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- Authors' contributions

RM undertook data analysis, construction of the index, analysis of the results and was a co-contributor in writing the manuscript. RT analysed the results and was a co-contributor in writing the manuscript. YV undertook spatial microsimulation technique to estimate indicators at small area level required for the index creation that cannot be sourced elsewhere, created the maps of the index findings and a co-contributor in writing the manuscript. ST collected and cleaned the data. All authors read and approved the final manuscript.

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Abbreviations

- PCA: Principal Components Analysis
- HILDA: Household Income and Labour Dynamics in Australia
- AIHW: Australian Institute of Health and Welfare
- OECD: Organisation for Economic Co-operation and Development
- SEIFA: Socio-Economic Indexes For Areas
- ABS: Australian Bureau of Statistics

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Minister

Tables

Table 1: List of indicators, domain and source, 2016 IWOA

Indicator	Domain	Source
Employment to population ratio for older people	Participation	Census Population and Housing 2016
% of older people who had no access to a car to drive	Participation	Census Population and Housing 2016
% of older people who cannot speak English well or not at all	Participation	Census Population and Housing 2016
% older people who are volunteers	Participation	Census Population and Housing 2016
% older people with no access to internet from dwelling	Participation	Census Population and Housing 2016
% older people who completed Year 12	Education	Census Population and Housing 2016
% older people who completed Year 10	Education	Census Population and Housing 2016
% older people with post school qualifications	Education	Census Population and Housing 2016
Poverty Rate for older people	Resources	ABS Household Expenditure Survey: Modelled small area estimates from NATSEM
% of older people living in income units where the major source of income is the age pension	Resources	ABS Household Expenditure Survey: Modelled small area estimates from NATSEM
% of older people who live in income units with no superannuation payments	Resources	ABS Household Expenditure Survey: Modelled small area estimates from NATSEM
% of older people living in households that could not raise $2000 in an emergency within a week.	Resources	ABS Household Expenditure Survey: Modelled small area estimates from NATSEM
% older people who pay rent and are in the bottom income quintile of the equivalised household income distribution	Resources	ABS Household Expenditure Survey: Modelled small area estimates from NATSEM
% of older people who are still renters	Wealth and Housing	Census Population and Housing 2016
% of older people living in public housing	Wealth and Housing	Census Population and Housing 2016
% of older people in housing stress	Wealth and Housing	ABS Household Expenditure Survey: Modelled small area estimates from NATSEM
% of older people receiving rent assistance	Wealth and Housing	ABS Household Expenditure Survey: Modelled small area estimates from NATSEM
% of older people who need assistance with core activities	Functional Ability	Census Population and Housing 2016
% of older people who use Commonwealth Home Support Program services	Functional Ability	National Aged Care Clearinghouse, Australian Institute of Health and Welfare
% older people with low level Home Care Packages Program services	Functional Ability	National Aged Care Clearinghouse, Australian Institute of Health and Welfare

% older people who use aged care services	Functional Ability	Census Population and Housing 2016

Table 2: Benchmarks for the spatial microsimulation model

Benchmark
Number of Persons Usually Resident in Dwelling by Total Household Income (weekly)
Tenure and Landlord Type by Total Household Income (weekly)
Family Household Composition by Total Household Income (weekly)
Rent (weekly) by Total Household Income (weekly)
Mortgage repayments by Total Household Income (weekly)
Age of person (15+) by Total Household Income (weekly)
Equivalised Total Household Income (weekly) by Total Household Income (weekly)
Labour Force Status by Age of person (15+)
Non School Qualification

Table 3: List of Indicators, Domains and Weights

Indicator	Domain	Weight
% older people who are volunteers	Participation	0.60
Employment to population ratio for older people	Participation	0.44
% older people with no access to internet from dwelling	Participation	-0.34
% of older people who had no access to a car to drive	Participation	-0.34
% of older people who cannot speak English well or not at all	Participation	-0.47
% older people with post school qualifications	Education	0.59
% older people who completed Year 12	Education	0.57
% older people who completed Year 10	Education	0.57
Poverty Rate for older people	Resources	-0.39
% of older people living in income units where the major source of income is the age pension	Resources	-0.38
% of older people living in households that could not raise $2000 in an emergency within a week.	Resources	-0.45
% older people who pay rent and are in the bottom income quintile of the equivalised household income distribution	Resources	-0.47
% of older people who live in income units with no superannuation payments	Resources	-0.53
% of older people living in public housing	Wealth and Housing	-0.44
% of older people who are still renters	Wealth and Housing	-0.57
% of older people in housing stress	Wealth and Housing	-0.58
% of older people receiving rent assistance	Wealth and Housing	-0.63
% older people with low level Home Care Packages Program services	Functional Ability	-0.38
% older people who use aged care services	Functional Ability	-0.39
% of older people who use Commonwealth Home Support Program services	Functional Ability	-0.53
% of older people who need assistance with core activities	Functional Ability	-0.65

Figures

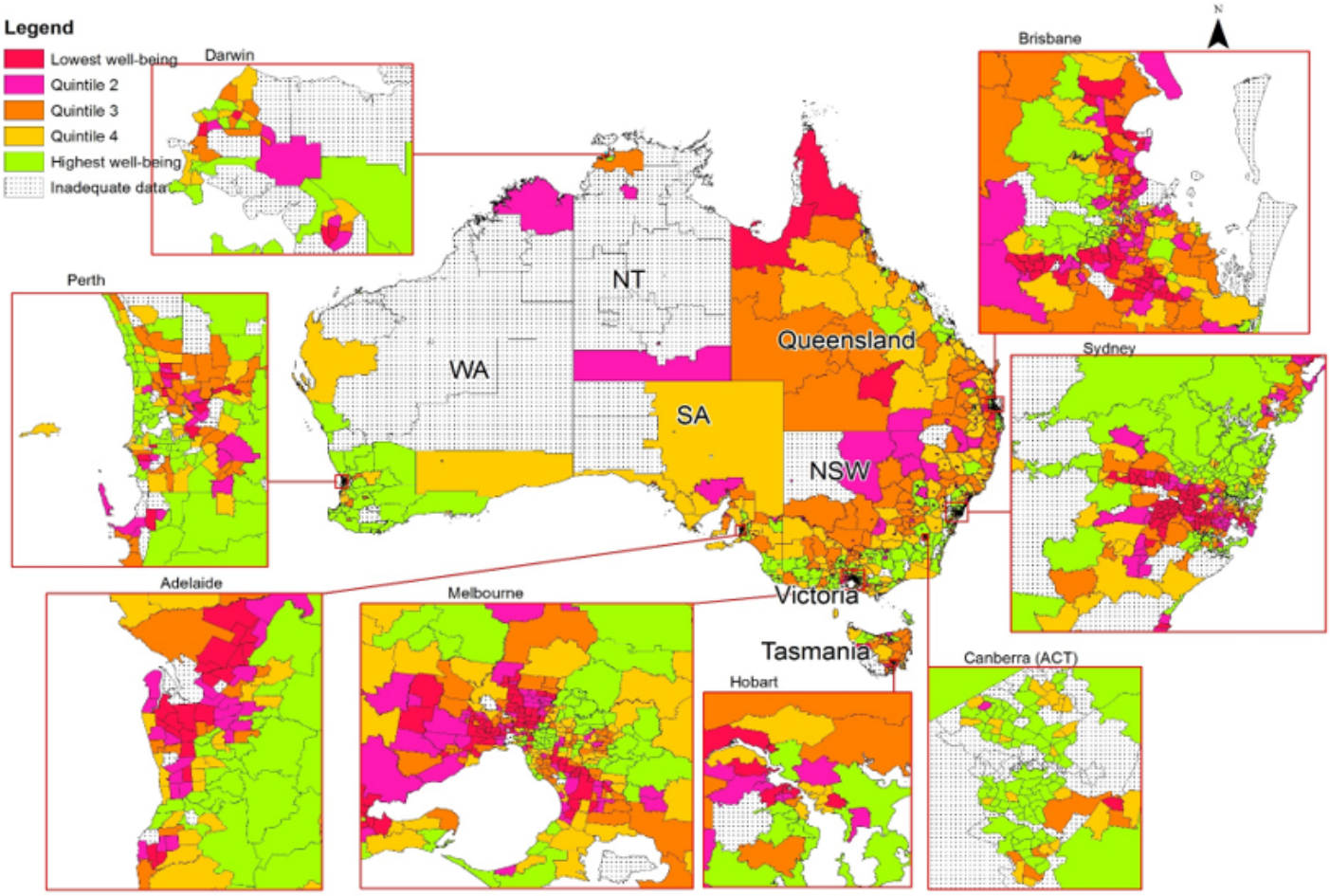
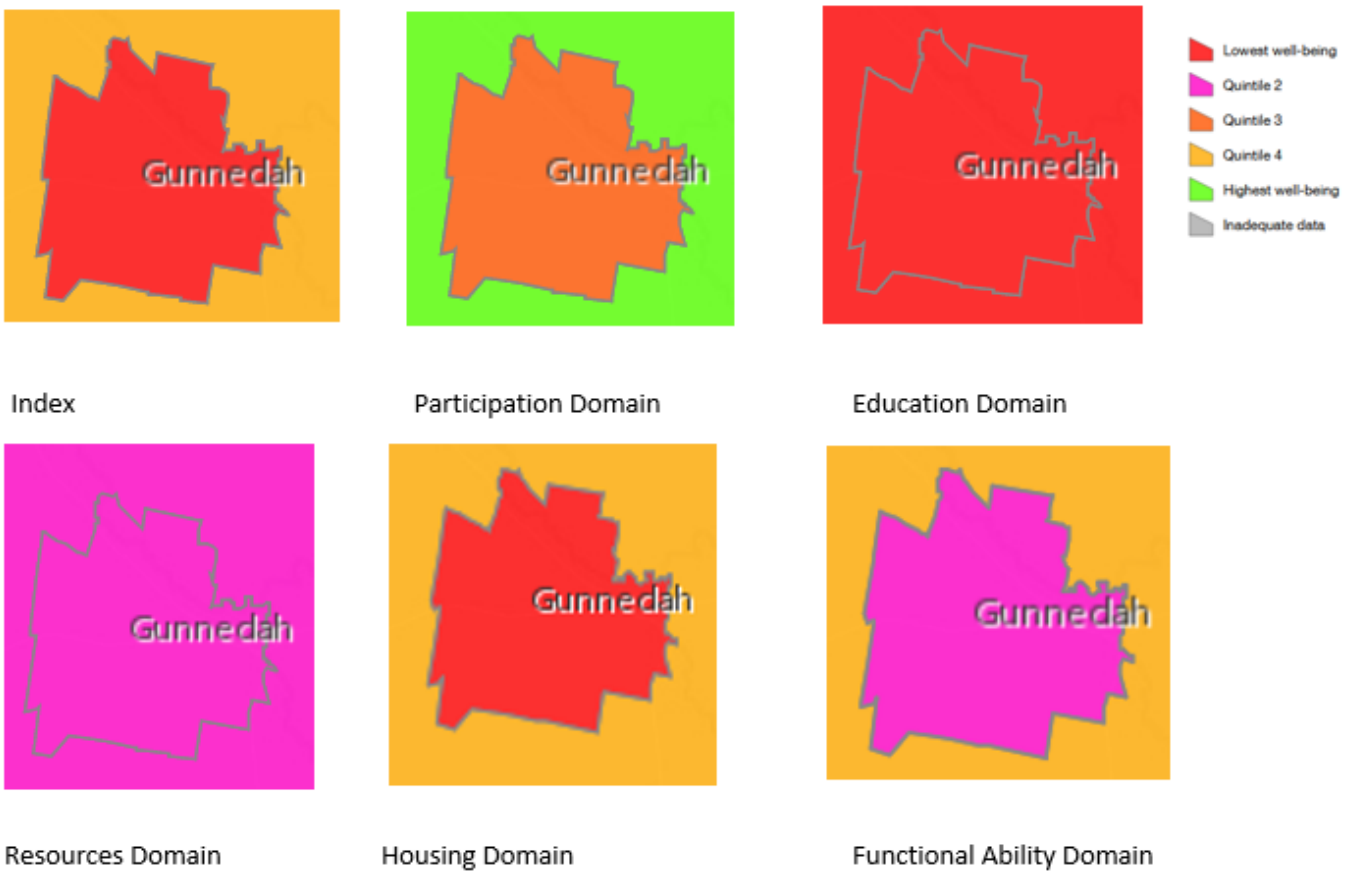


Figure 1

Map of older person wellbeing index, 2016; Source: Authors' summary



Source: Authors' summary

Figure 2

IWOA index and sub-index values for Gunnedah

Source: Authors' summary

Figure 3

Indicators in the housing domain for Gunnedah