UNIVERSITY OF CANBERRA | INSTITUTE FOR GOVERNANCE & POLICY ANALYSIS

NATSEM at the University of Canberra

Mapping Patient Experience Survey in New South Wales: TECHNICAL APPENDIX

SMALL AREA ESTIMATION METHOD AND VALIDATION

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ABOUT NATSEM

For over 25 years NATSEM has been one of Australia's leading economic and social policy research centres. NATSEM is also an international leader in methods that support strong policy through robust evidence. It is regarded as one of the world's foremost centres of excellence for microsimulation, economic modelling and policy evaluation.

NATSEM was initially established at the University of Canberra (UC) in 1993 with the support of the Federal Government. NATSEM is now a member of the Institute for Governance and Policy Analysis (IGPA) which was established in January 2014. The Institute has a strong social mission committed to the production of leading-edge research and research driven education programs with genuine public value and, by implication, policy impact. Based within the Faculty of Business, Government and Law at UC, NATSEM remains an independent and impartial source of specialist research.

At NATSEM, we are acutely aware that policy often has to be made without sufficient information about either the current environment or the consequences of change. NATSEM aims to be a key contributor to social and economic policy debate by undertaking independent and impartial modelling and research of the highest quality, including supplying commissioned research services.

In keeping with IGPA's core mission, NATSEM's research activities aim to have significant policy impact and lead to social and economic change.

NATSEM Director: Professor Brenton Prosser

All estimates in this report are modelled, and subject to model error and survey error in the ABS surveys. All care has been taken by NATSEM to calculate the most representative estimates, including validation of the models; however due to the modelling process, the estimates should be treated as estimates, rather than true values.

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BACKGROUND

In late 2020, the NSW Council of Social Service (NCOSS) and NATSEM, University of Canberra partnered to explore the relationship between economic disadvantage and the 'patient experience' of health services in NSW. This includes patient-reported experience of:

- current health status
- frequency and ease of access to health care, including medical and allied health
- cost of health care
- wait times to receive health care
- health care delivery
- any other measures available by small geographic area and relevant to patient experience.

This report is a companion to the main report, and shows the method used in the modelling including a flowchart of the model; the benchmarks; and the validation used. It is published as a companion to the main report.

DESCRIPTION OF THE PROJECT

This section provides a detailed description of the project. The work was conducted in three stages:

1) Identifying the most important measures to report on;
2) Identifying the most prominent patterns using modelling; and
3) Reporting and making the online maps

Stage 1 – Identify the most important measures

The first stage of this project was to review the data that are currently available including the Australian Institute of Health and Welfare (AIHW) Bettering the Evaluation and Care of Health (BEACH) and the Australian Bureau of Statistics (ABS) Patient Experiences in Australia survey data (PES). It was decided to use the 2018-19 ABS PES survey using tablebuilder because this was the most current dataset, and the richness of the available data.

There are various medical services covered in the PES. These include General Practitioner (GP) services, after hours GP services, dental professionals, hospital admissions, hospital emergency departments,

medical specialists and pathology tests. For each of these, there are several experience measures, such as:

- the reason for delaying visit to medical services (including "delayed visit or didn't visit due to the cost")
- frequency and ease of access (including "frequency of visit in the last 12 month" or "at least once need to visit but didn't")
- wait times to receive care (such as "length of time between making appointment and visit" or "wait longer than felt acceptable") and
- satisfaction of health care delivery (including "listened carefully", "showed respect" and "spent enough time").

In discussion with the NCOSS team, it was decided to focus on GP, dental professional and medical specialist services. This focus was based on patterns in the data around cost, waiting time, duration of consult and other notable aspects that emerged from an initial analysis of the data. This approach allowed analysis according to commonly recognised and cited influences on access and negative experience. Notable results were identified by large score variation compared to other scores in that measure. Our analysis also included a review of results to identify less common or unexpected findings.

Stage 2 – Identify most prominent patterns

The decision to select the PES data source had implications for the geographical classifications that were used. In discussion with NCOSS, it was decided to focus on mapping results at SA2 level because it would provide consistency with our previous partnership mapping economic disadvantage (Vidyattama et. al., 2019). However, PES data was only accessible at SA4 level. To resolve this, NATSEM used its experience in geo-spatial simulation to create SA2 results from the SA4 data. Besides conducting this analysis for the overall population, we also looked at patterns for different demographic groups according to economic disadvantage. This resulted in the following demographic groups for this analysis:

1. Men
2. Women
3. Young People
4. Working age

5. Older People
6. Employed FT
7. Employed PT
8. Unemployed
9. Adults not in the Workforce
10. Older people not in the Workforce
11. Couple only Households
12. Couple with children Households
13. Single Parents
14. Single Persons

Even though our selection of three service types and these fourteen groups reduced the scope of the work, the results from our modelling were still too large to analyse in one report. In addition, there were different results for different demographic groups for different health services. To summarise the results, we identified and interrogated patterns by key themes. These included regional/city aggregates, remoteness area (as shown in Appendix 1) and demographic groups. We also identified prominent (i.e, large score) results within the selected service types to identify groups that varied significantly in their access or satisfaction with services.

Stage 3 – Report and online maps

The high-level outcomes of this process are provided in the main report. Further and more detailed results are provided through the online mapping tool. The design of the mapping tools was conducted in partnership with the NCOSS team based on information needed by government, social service providers and communities.

THE MODELLING METHOD USED FOR STAGE 2

Patient experience data is available through the Australian Bureau of Statistics (ABS) micro dataset *4840.0 Patient Experiences in Australia*. While 2016-17 data is available via the ABS, this research accesses more recent 2018-19 data through the ABS DataLab. The data are available at the SA4 level. This is equivalent to a region, with a population of approximately 300,000 people. A key challenge for this project was the translation of patient experience data from SA4 to SA2 level so that comparisons and mapping could be done. SA2 areas usually equate to a suburb in cities with an average of around 10,000 people. The ABS

considers that this geography represents a community that interacts socially and economically. To translate the data from SA4 to SA2, we adopted a methodology that had been specifically developed for highly confidentialised data with relatively small sample size (Vidyattama et al, 2015).

The first step followed the reweighting process of Tanton et al (2011). This approach requires a Census (in this case the 2016 Census) for small area benchmarks and the unit record data from the ABS 2015-16 Survey of Income and Housing. The reason for using this survey was the large number of observations and that it has been proven to be able to be reweighted to produce reasonable estimates. The benchmarked variables needed to be available on both the population census and the survey, using the same definitions and the same categories. The benchmarks also needed to be related to the final variable that is required from the spatial microsimulation model – in this case, poverty rates. This means benchmarks like income and number of people in the household by age (so that the income can be equivalised to take into account the number of people in the household), and housing costs for after housing poverty, were required. The model used for this report uses 9 benchmarks from the 2016 Census as indicated in Table 1.

Table 1: Benchmarks for the modelling

	Benchmark	Description
1	NPRD_2*HIND_2	Number of Persons Usually Resident in Dwelling by Total Household Income (weekly)
2	TENLLD_2*HIND_2	Tenure and Landlord Type by Total Household Income (weekly)
3	HCFMD_2*HIND_2	Family Household Composition by Total Household Income (weekly)
4	RNTRD_2*HIND_2	Rent (weekly) by Total Household Income (weekly)
5	MRERD_2*HIND_2	Mortgage repayments by Total Household Income (weekly)
6	AGE_2*HIND_2	Age of person (15+) by Total Household Income (weekly)
7	HIED_2*HIND_2	Equivalised Total Household Income (weekly) by Total Household Income (weekly)
8	LFSP_2*AGE_2	Labour Force Status by Age of person (15+)
9	QALLP_2	Non School Qualification

In addition, in this report we:

- Used households from the Greater Capital City Statistical Area (GCCSA) to populate the SA2's in that GCCSA. This means we only used households from Sydney to populate SA2's in Sydney.
- Reduced the number of benchmarks if the model failed for an area. This is done according to the sequence in the table. The lower number of benchmarks means fewer constraints and a higher

possibility of achieving an acceptable result. If the estimate is produced with less than 7 benchmarks, then the estimate is excluded from the overall database as unreliable.

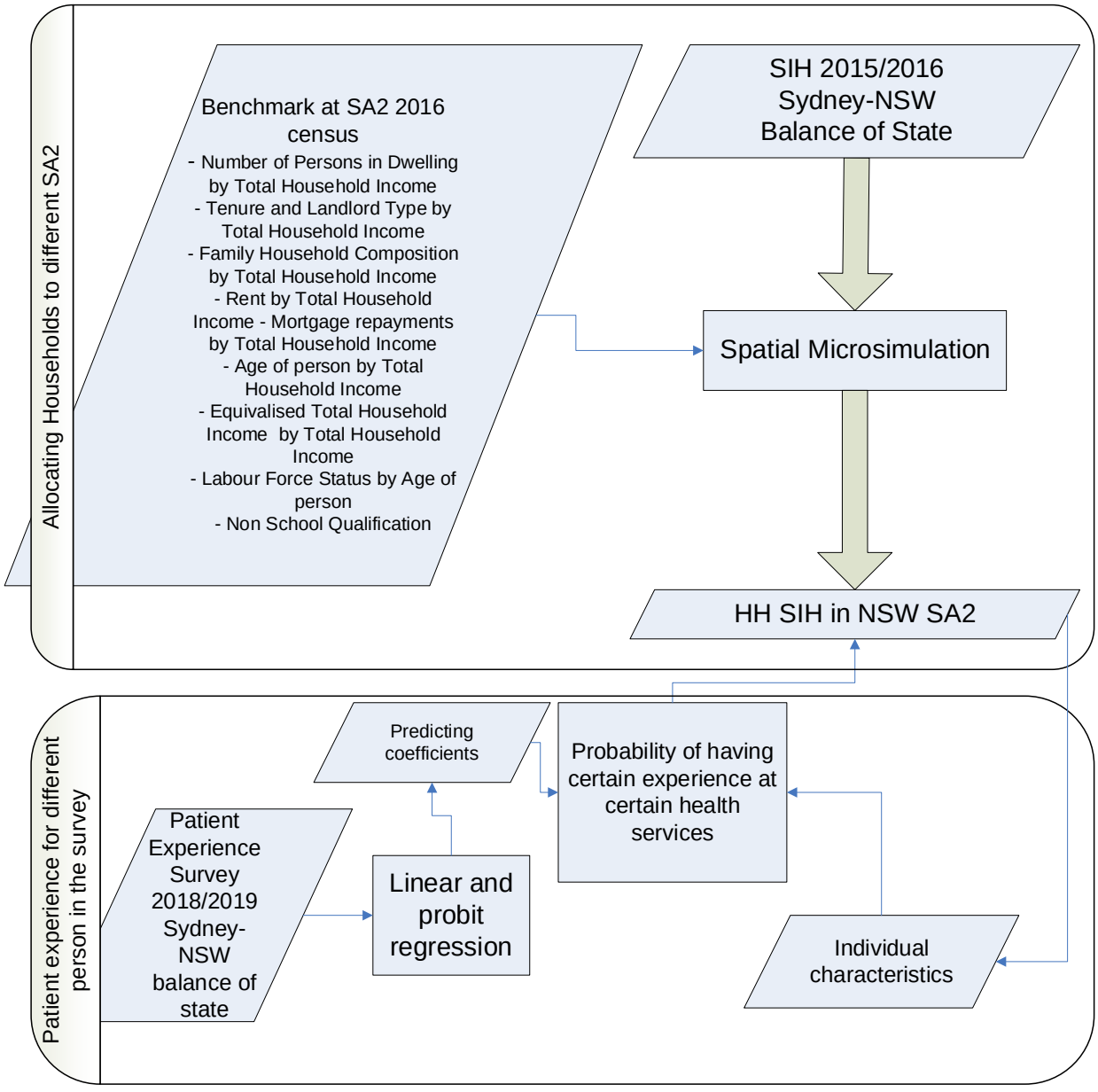
The technique then used a regression method to impute the specific conditions that were available from the Patient Experience Survey (PES) onto the synthetic database. The regression on variables of interest from the PES produced the coefficients needed for the imputation of the variables onto the available unit record data. The regression used binomial independent variables of whether the individual is in the demographic groups mentioned above. These include:

- Employed full time
- Employed part time
- Unemployed
- Not in labour force age 15-64
- Male
- Female
- Age 15-24
- Age 25-64
- In couple only household
- In couple with children household
- In single parent household
- In lone person household
- In household with equivalised income under $400/week
- In household with equivalised income between $400 to $1000/week
- In household with equivalised income between $1000 to $2000/week
- In household with equivalised income above $2000/week
- Different occupations
- each SA4

Given most of the variables of interest were binomial (two values - except for the number of visits), the model used was a probit regression model. The estimated coefficient for each independent variable listed above then allowed us to find the probability of the condition for each observation. The unit record data that we used for this regression was the PES 2018-19. We then applied the coefficients to the synthetic population estimated above for different SA2's. By using the SA2 synthetic population, we can utilise the

individual fixed effect of each SA4 as one of the predictors in imputing all the necessary variables from PES. The flowchart of this process is shown in Figure 1.

Figure 1: The patient experience at SA2 estimation process



VALIDATION

Validation of the modelling is essential. The validation of the small area estimates was carried out in three ways:

1. Looking at the proportion of areas for which we get convergence;
2. Comparing estimates from our spatial microsimulation model for low income with estimates from the Census to identify how close our model predicts incomes from the Census. If we get reasonable estimates of low income from our model, we would expect reasonable estimates of poverty rates; and
3. a comparison of the aggregate number of the indicators that can be derived from the survey.

The first method of testing the reliability of our model is to look at the percentage of areas that provided estimates given a number of benchmarks. Reducing the number of benchmarks means that the model works (converges), but the estimates are not as good as when we have used fewer benchmarks. At some point, we decide that the estimate was not good enough to be published. Areas without reliable estimates are usually remote areas; or areas with very low population (e.g. industrial areas or national parks). The proportion of areas that have converged in this model are shown in Table 2. It can be seen that 9 benchmarks have been mostly used to get estimates for small areas in Sydney and the rest of NSW.

Table 2: Number of Benchmarks Used

	Number of Benchmarks used						
GCCSA	3	5	6	7	8	9	8 or more
1GSYD	0.00%	1.28%	1.28%	1.92%	2.56%	92.95%	95.51%
1RNSW	0.00%	1.14%	0.38%	1.89%	3.03%	93.56%	96.59%
2GMEL	0.32%	0.32%	0.65%	1.62%	1.94%	95.15%	97.09%
2RVIC	0.00%	1.31%	0.65%	0.00%	3.92%	94.12%	98.04%
3GBRI	0.00%	0.85%	0.85%	1.27%	4.24%	92.80%	97.03%
3RQLD	0.00%	4.11%	1.71%	3.42%	4.11%	86.64%	90.75%
4GADE	0.00%	0.00%	0.91%	0.00%	1.82%	97.27%	99.09%
4RSAU	0.00%	3.23%	0.00%	3.23%	1.61%	91.94%	93.55%
5GPER	0.00%	1.73%	1.16%	0.00%	2.31%	94.80%	97.11%
5RWAU	0.00%	8.86%	7.59%	3.80%	20.25%	59.49%	79.75%
6GHOB	0.00%	0.00%	0.00%	0.00%	5.71%	94.29%	100.00%
6RTAS	0.00%	0.00%	1.56%	1.56%	0.00%	96.88%	96.88%
7GDAR	0.00%	4.55%	9.09%	13.64%	22.73%	50.00%	72.73%
7RNTE	0.00%	62.50%	8.33%	8.33%	4.17%	16.67%	20.83%
8ACTE	0.00%	3.82%	4.58%	3.05%	4.58%	83.97%	88.55%
Australia	0.04%	2.53%	1.62%	2.05%	4.02%	89.73%	93.75%

Note: G means Greater (Capital Cities Areas); R means the Remainder (of the State/Territory)

Based on this result, we decided to use the estimate produced using 7, 8 or 9 benchmarks. Areas where results could not be derived using less than 7 benchmarks were removed. A list of removed areas is shown in Appendix 2.

Another method to validate estimates at the small area level was to use the standard error around identity (SEI) (Edwards and Tanton 2012). To validate the small area estimates, we have calculated the proportion of people living in a household with equivalised income less than $300 a week from both the Census and from the model (SpatialMSM18F). Figure 2 indicates that we have achieved a reasonably close estimate (0.8722 R squared and 0.7795 SEI). In Figure 2, the vertical axis is the estimate from Census; and the horizontal axis is the estimate from our model for each SA2. If the Census and our model gave exactly the same result for all areas, we would see all points on the 45 degree line (shown as a solid line in Figure 2). The SEI is the variability of the estimates around this 45 degree line (the line of identity). For this model, the SEI shows a good result of 0.78. The R squared is the correlation between the Census and model estimates, and is higher at 0.87.

Figure 2: Validation of proportion of persons living with equivalised income less than $300/week (Spatial MSM and Census data)

The last validation of the estimates was to compare the estimated indicators at the aggregate level to reliable estimates from the survey (see Table 3). These estimates for larger areas from the survey (Sydney/Rest of NSW) have enough sample size on the survey to be reliable. These results show that the estimates we used in the study were reasonably reliable; however some estimates not used in the study were unreliable.

Table 3: Validation using reliable aggregate results (Spatial MSM and Census data)

GCCSA	Sydney			Rest of NSW		
variable	From survey	From Model	Accuracy (Survey / Model)	From survey	From Model	Accuracy (Survey / Model)
average number of visits to GP	4.36	4.65	0.93	4.47	4.73	0.94
average number of visits to medical specialist	1.30	1.36	0.96	1.26	1.43	0.87
average number of visits to dental professional	1.09	1.14	0.96	0.90	0.92	0.99
proportion of those who stated they need to visit GP	0.84	0.85	0.99	0.84	0.86	0.98
proportion of those who have visited GP	0.83	0.84	0.99	0.84	0.85	0.98
proportion of those who have visited GP for urgent medical care	0.75	0.76	0.99	0.74	0.76	0.97
proportion of those who have to wait 24 hours or more for GP urgent visit	0.02	0.02	0.86	0.04	0.04	0.96
proportion of those who have felt not often GP spent enough time	0.06	0.06	0.98	0.07	0.07	0.96
proportion of those who need but delay or not visit GP due to the cost	0.02	0.02	0.76	0.04	0.04	0.90
proportion of those who get referral from GP to visit medical specialist	0.36	0.37	0.98	0.35	0.37	0.95
proportion of those who stated they need to visit medical specialist	0.39	0.40	0.99	0.40	0.42	0.94
proportion of those who have visited medical specialist	0.37	0.37	0.99	0.38	0.40	0.94
proportion of those who have felt not often medical specialist spent enough time	0.02	0.03	0.71	0.04	0.04	0.96
proportion of those who need but delay or not visit medical specialist due to the cost	0.03	0.03	0.96	0.03	0.04	0.88
proportion of those who have felt the waiting time for medical specialist unacceptable	0.08	0.09	0.91	0.09	0.09	0.96
proportion of those who stated they need to visit dental professional	0.60	0.62	0.97	0.53	0.55	0.98
proportion of those who have visited dental professional	0.52	0.53	0.98	0.42	0.43	0.98

GCCSA	Sydney			Rest of NSW		
variable	From survey	From Model	Accuracy (Survey / Model)	From survey	From Model	Accuracy (Survey / Model)
proportion of those who have visited public dental professional	0.48	0.48	0.99	0.36	0.37	0.98
proportion of those who have to wait a month for dental professional visit	0.02	0.02	0.81	0.03	0.03	0.96
proportion of those who have felt not often dental professional spent enough time	0.01	0.01	0.89	0.01	0.02	0.61
proportion of those who need but delay or not visit dental professional due to the cost	0.09	0.10	0.88	0.12	0.13	0.95
proportion of those who have Arthritis or osteoporosis	0.15	0.16	0.96	0.26	0.26	0.98
proportion of those who have Asthma	0.09	0.09	0.93	0.11	0.11	0.99
proportion of those who have Cancer	0.03	0.05	0.29	0.05	0.05	0.98
proportion of those who have Diabetes	0.06	0.07	0.97	0.08	0.09	0.76
proportion of those who have Heart or circulatory condition	0.14	0.15	0.95	0.18	0.19	0.97
proportion of those who have Mental health condition	0.12	0.13	0.89	0.18	0.19	0.96
proportion of those who have Long term injury	0.08	0.09	0.90	0.12	0.13	0.94
proportion of those who have Other long term condition	0.16	0.17	0.93	0.18	0.18	0.98
proportion of those who have No condition	0.54	0.52	0.97	0.42	0.40	0.97

It should be noted that all the estimates provided in this report are modelled, and that the modelling process introduces errors. While all efforts have been made by NATSEM to get reasonable estimates, including validation of the estimates, as shown in this section, no estimate should be treated as perfect. All estimates suffer from model error, and survey error from the original ABS survey data. Other methods may produce different estimates, due to different assumptions and methods. The method we use is deterministic, meaning the estimates can be reproduced using the same method, data, benchmarks and assumptions we have used – there is no probabilistic (random) element in our model. The authors are happy to be contacted to discuss the method further.

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Appendix 1

LIST OF TABLES FOR THE PATIENT EXPERIENCE BY DEMOGRAPHIC GROUPS AND REMOTENESS AREA

Table A1: *The proportion of people who delayed seeing or did not see GP in last 12 months due to the cost among those who need services*

	Major Cities of Australia (%)	Inner Regional Australia (%)	Outer Regional Australia (%)	Remote Australia (%)	Very Remote Australia (%)
Overall	2.4	3.6	4.8	4.0	3.9
Aged 15-24	2.7	4.9	6.5	5.4	5.5
Aged 25-64	2.9	4.8	6.3	5.0	4.7
Aged 65+	0.4	0.7	1.0	0.8	0.8
Male	1.8	3.0	3.9	3.2	3.3
Female	2.9	4.2	5.5	4.7	4.6
Couple only	2.6	3.5	4.6	3.7	3.5
Couple with dependent children	1.4	1.7	2.4	1.8	2.0
Lone parent with dependent children	2.8	5.9	8.1	6.7	6.8
Lone person	5.0	5.6	7.2	6.1	5.7
Employed full-time	2.1	4.2	5.4	4.1	4.0
Employed part-time	2.5	4.9	6.4	5.6	5.9
Unemployed	5.5	6.3	7.8	6.3	5.2
Aged 15-64 not in labour force	3.9	4.7	6.1	5.0	4.9
Aged 65+ not in labour force	0.4	0.7	1.0	0.8	0.9
low income	2.9	2.6	3.3	2.7	2.8
medium and high income	2.3	3.8	5.0	4.2	4.1

Table A2: *The proportion of people who wait for more than 24 hours for urgent GP visit*

	Major Cities of Australia (%)	Inner Regional Australia (%)	Outer Regional Australia (%)	Remote Australia (%)	Very Remote Australia (%)
Overall	2.4	5.6	6.9	13.8	13.9
Aged 15-24	1.4	5.6	7.2	14.0	14.5
Aged 25-64	2.2	5.9	7.4	14.9	14.8
Aged 65+	3.5	5.1	5.8	10.9	11.3
Male	2.6	5.1	6.2	12.1	11.9
Female	2.2	6.1	7.6	15.2	15.9
Couple only	2.4	6.9	8.3	15.0	13.8
Couple with dependent children	3.1	5.3	6.2	12.9	14.5
Lone parent with dependent children	1.7	5.8	7.5	15.3	15.4
Lone person	3.3	6.1	7.6	14.1	13.5
Employed full-time	1.6	3.6	4.4	9.0	8.9
Employed part-time	1.2	5.3	6.4	12.3	12.7
Unemployed	8.1	16.6	21.0	35.6	34.7
Aged 15-64 not in labour force	3.1	8.2	10.3	18.4	17.3
Aged 65+ not in labour force	3.6	5.6	6.7	12.4	12.0
low income	3.1	6.5	7.7	14.1	13.7
medium and high income	2.3	5.5	6.8	13.7	13.9

Table A3: *The proportion of people who felt not enough time when visiting GP*

	Major Cities of Australia (%)	Inner Regional Australia (%)	Outer Regional Australia (%)	Remote Australia (%)	Very Remote Australia (%)
Overall	7.7	8.7	10.2	11.4	11.0
Aged 15-24	6.1	8.5	10.3	11.3	11.0
Aged 25-64	9.0	10.9	12.6	13.5	13.0
Aged 65+	4.0	4.2	5.1	5.7	5.6
Male	7.0	7.6	8.9	10.1	10.1
Female	8.2	9.7	11.2	12.4	11.9
Couple only	9.2	10.8	12.3	13.2	13.3
Couple with dependent children	7.0	5.8	6.8	7.3	7.2
Lone parent with dependent children	6.8	10.8	13.1	14.3	14.3
Lone person	10.5	15.1	17.5	19.2	18.3
Employed full-time	8.1	9.7	11.1	12.1	12.3
Employed part-time	7.7	9.6	11.0	12.3	12.9
Unemployed	12.7	8.9	10.0	9.3	7.6
Aged 15-64 not in labour force	8.8	12.0	14.4	15.7	14.5
Aged 65+ not in labour force	4.1	4.1	4.9	5.6	5.5
low income	7.8	11.7	13.4	14.9	15.3
medium and high income	7.7	8.4	9.7	10.8	10.4

Table A4: *The proportion of people who delayed seeing or did not see dentist in last 12 months due to the cost among those who need services*

	Major Cities of Australia (%)	Inner Regional Australia (%)	Outer Regional Australia (%)	Remote Australia (%)	Very Remote Australia (%)
Overall	15.3	23.0	26.1	25.8	25.9
Aged 15-24	11.7	12.9	13.8	16.3	17.8
Aged 25-64	17.6	29.0	33.0	31.2	30.7
Aged 65+	10.1	12.9	14.4	13.4	14.6
Male	14.0	20.7	23.5	22.1	23.1
Female	16.5	25.0	28.3	28.8	28.6
Couple only	17.4	28.7	32.6	31.0	28.2
Couple with dependent children	11.8	16.6	18.9	18.0	20.5
Lone parent with dependent children	13.6	21.5	25.5	25.6	26.6
Lone person	25.2	37.6	41.3	40.5	34.9
Employed full-time	14.3	19.6	21.8	19.6	20.4
Employed part-time	13.5	26.4	30.4	30.4	30.5
Unemployed	30.8	45.1	50.1	40.7	36.1
Aged 15-64 not in labour force	21.0	31.9	36.4	36.3	34.7
Aged 65+ not in labour force	10.3	12.6	14.1	13.8	14.8
low income	26.2	29.4	31.1	32.6	32.4
medium and high income	14.5	22.4	25.4	24.8	25.1

Table A5: *The proportion of people who wait for more than a month for public dentist visit*

	Major Cities of Australia (%)	Inner Regional Australia (%)	Outer Regional Australia (%)	Remote Australia (%)	Very Remote Australia (%)
Overall	3.7	6.2	7.2	10.1	10.0
Aged 15-24	3.8	6.4	7.8	12.8	17.3
Aged 25-64	3.2	6.6	7.8	10.5	9.0
Aged 65+	5.6	5.2	5.6	7.4	8.7
Male	3.2	5.5	6.2	8.2	9.2
Female	4.1	6.9	8.1	11.7	10.7
Couple only	7.0	11.3	13.4	16.4	12.2
Couple with dependent children	2.2	3.2	3.7	4.6	5.1
Lone parent with dependent children	1.9	4.1	5.1	7.3	7.2
Lone person	8.4	17.4	20.2	24.2	16.4
Employed full-time	0.5	1.3	1.4	1.7	1.6
Employed part-time	1.5	3.2	3.7	5.1	4.0
Unemployed	9.3	20.5	22.1	22.1	16.7
Aged 15-64 not in labour force	11.6	20.5	24.3	34.2	36.0
Aged 65+ not in labour force	6.8	5.9	6.8	9.2	9.7
low income	14.1	16.3	16.6	24.9	21.3
medium and high income	3.0	5.3	6.1	8.2	8.6

Table A6: *The proportion of people who felt not enough time when visiting the dentist*

	Major Cities of Australia (%)	Inner Regional Australia (%)	Outer Regional Australia (%)	Remote Australia (%)	Very Remote Australia (%)
Overall	2.7	2.3	2.7	4.3	4.1
Aged 15-24	2.3	1.2	1.4	2.7	2.7
Aged 25-64	2.9	2.7	3.2	4.9	4.6
Aged 65+	2.2	1.8	2.1	3.3	3.2
Male	2.5	2.2	2.6	4.1	3.8
Female	2.8	2.3	2.8	4.5	4.3
Couple only	3.5	2.0	2.5	3.9	3.0
Couple with dependent children	2.5	1.8	2.1	3.2	3.5
Lone parent with dependent children	1.8	2.3	2.9	5.2	5.0
Lone person	3.4	3.4	3.7	4.8	5.2
Employed full-time	2.5	1.9	2.1	3.0	2.7
Employed part-time	2.2	1.7	2.3	3.6	3.4
Unemployed	6.1	7.5	8.6	9.7	7.5
Aged 15-64 not in labour force	3.6	3.6	4.3	6.8	6.4
Aged 65+ not in labour force	2.2	1.7	2.0	3.1	3.1
low income	4.3	4.7	5.3	8.4	7.7
medium and high income	2.6	2.0	2.4	3.8	3.6

Table A7: *The proportion of people who delayed seeing or did not see medical specialist in last 12 months due to the cost among those who need services*

	Major Cities of Australia (%)	Inner Regional Australia (%)	Outer Regional Australia (%)	Remote Australia (%)	Very Remote Australia (%)
Overall	8.1	7.4	7.4	3.5	3.8
Aged 15-24	13.6	12.7	12.9	7.3	8.0
Aged 25-64	9.7	9.5	9.7	4.4	4.4
Aged 65+	2.2	2.6	2.5	1.0	1.2
Male	7.2	6.3	6.2	2.7	3.3
Female	8.8	8.3	8.5	4.3	4.4
Couple only	9.7	7.0	7.1	3.0	2.8
Couple with dependent children	5.7	4.3	4.2	1.9	2.5
Lone parent with dependent children	9.8	8.4	9.0	4.4	4.6
Lone person	11.7	18.7	20.2	10.6	10.0
Employed full-time	9.2	7.3	7.2	2.6	2.9
Employed part-time	8.1	8.4	8.3	4.0	4.2
Unemployed	23.2	28.6	28.6	11.9	10.1
Aged 15-64 not in labour force	10.5	10.1	10.3	4.6	5.0
Aged 65+ not in labour force	2.0	2.7	2.7	1.1	1.3
low income	11.8	8.7	8.2	4.2	3.9
medium and high income	7.7	7.2	7.3	3.4	3.8

Table A8: *The proportion of people who wait an unacceptable time for a medical specialist visit*

	Major Cities of Australia (%)	Inner Regional Australia (%)	Outer Regional Australia (%)	Remote Australia (%)	Very Remote Australia (%)
Overall	22.7	23.6	23.8	26.0	25.6
Aged 15-24	20.5	15.1	14.9	17.8	17.5
Aged 25-64	25.1	27.3	27.4	29.5	28.9
Aged 65+	18.2	19.4	19.5	20.4	20.6
Male	21.2	19.7	19.7	21.1	21.0
Female	23.9	27.0	27.3	30.0	29.8
Couple only	19.1	21.0	21.2	22.4	21.3
Couple with dependent children	20.5	21.7	21.9	23.1	23.6
Lone parent with dependent children	25.7	25.8	26.4	30.0	30.7
Lone person	29.7	36.7	37.6	41.8	41.2
Employed full-time	22.6	20.6	20.6	22.0	21.5
Employed part-time	23.0	28.3	28.9	32.2	33.4
Unemployed	31.4	29.2	29.0	28.9	26.3
Aged 15-64 not in labour force	26.6	30.3	30.5	33.4	31.9
Aged 65+ not in labour force	18.2	18.7	18.5	19.5	20.0
low income	23.4	28.8	28.5	31.4	31.7
medium and high income	22.7	23.0	23.0	25.0	24.6

Table A9: *The proportion of people who felt not enough time when visiting medical specialist*

	Major Cities of Australia (%)	Inner Regional Australia (%)	Outer Regional Australia (%)	Remote Australia (%)	Very Remote Australia (%)
Overall	6.8	10.6	9.9	9.5	9.5
Aged 15-24	7.0	5.4	4.6	4.9	5.1
Aged 25-64	8.2	14.0	13.2	12.2	12.2
Aged 65+	3.6	6.2	5.7	5.0	5.1
Male	5.1	9.1	8.5	7.8	8.1
Female	8.2	12.0	11.2	11.0	10.9
Couple only	6.6	12.8	12.0	11.0	10.8
Couple with dependent children	6.7	8.5	7.9	7.5	8.4
Lone parent with dependent children	7.4	10.5	10.0	10.0	9.9
Lone person	8.1	20.2	19.5	19.7	19.8
Employed full-time	7.6	12.4	11.5	10.4	10.7
Employed part-time	7.4	11.5	10.7	10.2	10.5
Unemployed	14.2	22.4	20.6	17.3	15.7
Aged 15-64 not in labour force	7.7	12.9	12.1	11.1	10.4
Aged 65+ not in labour force	3.6	5.9	5.4	4.8	5.0
low income	7.2	10.3	9.1	8.8	9.0
medium and high income	6.8	10.7	10.0	9.6	9.6

Appendix 2

LIST OF EXCLUDED AREAS FOR THE POVERTY RATE CALCULATION

Due to low estimation accuracy (< 7 benchmarks)

Lord Howe Island

Greenfield Park - Prairiewood

Kingsford

Lurnea - Cartwright

Canley Vale - Canley Heights

Far West

Badgerys Creek

Royal National Park

Chullora

Ettrema - Sassafras - Budawang

Blue Mountains - North

Deua – Wadbilliga

Additional exclusion due to low population

Illawarra Catchment Reserve

Newcastle Port - Kooragang

Prospect Reservoir

Banksmeadow

Port Botany Industrial

Wetherill Park Industrial

Yennora Industrial

Wollangambe - Wollemi

Port Kembla Industrial

Sydney Airport

Centennial Park

Holsworthy Military Area

Blue Mountains - South

Rookwood Cemetery

Smithfield Industrial

There are additional exclusion due to low denominator specific to demographic groups and indicators