

Rural Health Workforce Mapping Tool

technical notes

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Introduction

The National Rural Health Alliance (the Alliance) has developed these technical notes to support a deeper understanding of the sources, methodology and caveats in relation to the data presented in the Rural Health Workforce Mapping Tool (RHWMT).

This is the first version of these notes and is current as of November 2021.

Data sources

Four primary sources of data are presented in the RHWMT:

- Population
- Workforce supply, measured as full-time equivalent (FTE)
- Median age at death
- Proportion of the population living with three or more chronic conditions

The data sources for the RHWMT are shown in Table 1 below. The Alliance utilised the most recent data sources available and acknowledges the support from the Australian Government Department of Health (the Department of the Health) in supplying the most up-to-date population and health workforce data in terms of FTE. All workforce data was derived from the National Health Workforce Dataset (NHWDS) by the Health Workforce Division (HWD) in the Department of Health.

Table 1: Source of data in each map layer of the RHWMT

Map layer	Population (2020)	Workforce FTE (2020)	Median age at death (2019)	Chronic conditions (2017-18)
Local Government Areas 2020	Received directly from the HWD		Australian Institute of Health and Welfare. Mortality Over Regions and Time (MORT) books, 2015-2019 (2019) ¹	Australian Bureau of Statistics. Chronic conditions 2017-18 (Table 33: Small area estimates) ²
Commonwealth Electorate Divisions 2019				
Modified Monash Model 2019				

Map layers

Three different layers are available through the RHWMT: Local Government Areas (LGAs), Commonwealth Electorate Divisions (CEDs) and Modified Monash Model (MMM) regions.

The LGA map layer used the LGA 2019 geographic structure to display regional councils, local shires, towns and cities. The naming structure for the letters in brackets (e.g. "(R)") is specified by the Australian Bureau of Statistics³. Workforce data was in the LGA 2020 version, whereas correspondence files relied on the LGA 2018 version for transformation purposes. All merged data was validated to ensure accuracy with minor differences in LGA names between LGA versions corrected for.

The CED map was based on the CED 2019 version. More recent CED versions are available from the Australia Electoral Commission on Data.gov.au⁴ but the workforce, population and selected health

outcomes data were not available for this version at the time of the development of the RHWMT in late-2021.

Map layer spatial files were obtained from the Health Economics and Research Division in the Department of Health.

Methodology

Workforce

FTE

Workforce data by LGA, CED and MMM have been obtained directly from the HWD in the Department of Health. Across the 22 health professionals, total FTE is reported for those who are employed in Australia and (as at the time of the 2020 survey) were working in their registered profession. Workforce numbers reported in the RHWMT do not include health professionals who are:

- Employed in Australia in their registered profession but are on extended leave (except medical professionals);
- Employed in Australia outside their registered profession;
- Not employed in Australia and looking for work in Australia in registered profession;
- Employed in Australia outside of registered profession and not looking for work in Australia in registered profession;
- Employed overseas in registered profession and looking for work in Australia in registered profession;
- Employed overseas in registered profession and not looking for work in Australia in registered profession;
- Not employed In Australia and not looking for work in Australia in registered profession; and
- Retired from registered profession in Australia.

The Department suppressed all headcounts under 3.

For nurses and midwives who have dual registrations:

- If a person is an Enrolled Nurse (EN) or Registered Nurse (RN) and Midwife, then this person will be counted as both an EN or RN and a Midwife;
- If a person is both an RN and EN, then this person will be treated as an RN as they are more likely to work as an RN; and
- If a person is both an RN and an EN, and also a Midwife, then this person will be treated as an RN and Midwife, similar as directly above.

For further information about the health workforce data managed by the Department of Health, the HWD can be contacted via email⁵.

The FTE per 100,000 population is presented based on the 2020 population in each LGA, CED and MMM region.

Benchmarking

The RHWMT uses the MM2 health workforce distribution as the benchmark for health service delivery standards, in terms of FTE per capita and spending. The Alliance considers the use of this benchmark as being the most suitable due to caution from the Department of Health against the use of MM1 areas as a benchmark⁶, and due to the lower overall level of service provision in MM3-MM7

areas. Despite this, many communities within MM2 areas experience health workforce shortages and poor service availability. The Alliance considers that on the whole, however, it can serve as a useful benchmark to enable comparison of the state of the health workforce across a range of geographical areas.

Workforce spending

To compare workforce spending across areas using a common unit, the Alliance has developed the overall salary deficit/surplus measure. This unit applies the difference in workforce FTE between each region with MM2 (regional centres), then multiplies this difference with the estimated salaries of each type of health professional. The total salary deficit/surplus is the total of all salary deficit/surplus values of each health professional. The deficit/surplus figures are annual amounts and are used as a proxy of the overall state of the health workforce within each region. The salary estimates are as follows.

Table 2: Estimated salaries of AHPRA-registered health professionals

Profession	Annual salary - 1 FTE
Aboriginal and Torres Strait Islander Health Practitioners	\$75,000
Chiropractors	\$135,000
Chinese Medicine Practitioners	\$90,000
Dental Practitioners	\$130,000
Medical Radiation Practitioners	\$150,000
Enrolled Nurses	\$65,000
Midwifery	\$85,000
Registered Nurses	\$85,000
Occupational Therapists	\$90,000
Optometrists	\$130,000
Osteopaths	\$80,000
Pharmacists	\$95,000
Physiotherapists	\$100,000
Podiatrists	\$95,000
Paramedicine Practitioners	\$90,000
Psychologists	\$100,000
General Practitioners	\$400,000
Hospital Non-Specialists	\$130,000
Non-Clinicians	\$130,000
Other Clinicians	\$400,000
Specialists	\$400,000
Specialists-in-Training	\$130,000

The sources for these figures include recruitment agencies such as Seek⁷, Indeed⁸, Talent⁹ and Jora¹⁰, private employing organisations (e.g. Ochre Health¹¹, Silver Chain Group¹²), and state and territory health award rates (e.g. NSW¹³).

Median age at death

Local Government Areas

These were sourced directly from the Mortality Over Regions and Time workbook (2015-2019) from the Australian Institute of Health and Welfare. Only data from the most recent year of 2019 was used. Of the 544 LGAs, data for 123 LGAs were not available for male median age at death and 150 LGAs were not available for female median age at death.

Commonwealth Electorate Divisions

For Commonwealth Electorate Divisions (CEDs), the average of their LGAs (weighted on the basis of their correspondence ratio) was used to determine male and female median age at death. The data was only used from LGAs for which median age at death data was available (421 LGAs for males and 394 LGAs for females). Two resources to support the methodology for this weighted average formulation are available in the reference list^{14,15}.

Modified Monash Model

For MMM areas, the median age at death data for LGAs was used. This required, firstly, using two correspondence files from Data.gov.au to determine the MMM category for each LGA.^{16,17} There are approximately 60,000 Statistical Areas Level 1 (SA1) regions in Australia. Each one corresponds with (usually one of the 544) LGAs. Each LGA was assigned a single MMM category aligning with the most common MMM category for all SA1 regions that comprise each individual LGA.

Next, the 2020 population for each LGA was obtained directly from the Department of Health. This population data was used as the basis for calculating the weighted average for each MMM category in terms of median age at death for males and females separately.

Chronic conditions

The 2017-18 National Health Survey (NHS) results from the Australian Bureau of Statistics (ABS) were used to obtain data on the proportion of the total population with three or more chronic conditions. The ABS publishes this information and a variety of other information about risk factors and health outcomes through the NHS. This information is split into several demographic variables such as socioeconomic status and education levels. It is also split geographically into three remoteness categories (major cities, inner regional, and outer regional and remote), state and territory, and Statistical Areas Level 2 (SA2) regions.

For the RHWMT, SA2-level data on the population and rates of three or more chronic conditions², and correspondence files for LGAs¹⁶, CEDs¹⁸ and MMM regions^{17,17}, were used to transform the data and present it in terms of LGA, CED and MMM regions. A total of 2,163 SA2 areas were included and 129 were excluded. The NHS is conducted on a sample of approximately 21,300 people, including urban and rural areas. However, very remote areas and discrete Aboriginal and Torres Strait Islander communities were excluded, as were people residing in non-private dwellings such as hospitals, nursing homes and hotels. More information about the NHS methodology is available on the ABS website¹⁹ and within individual worksheets². Caveats in relation to this methodology are identified under 'Caveats'.

Local Government Areas and Commonwealth Electorate Divisions

To transform SA2-level data to LGA and CED regions, a weighted average was taken. This average is the rate of chronic conditions in the SA2 areas within each LGA or CED, weighted in accordance with the correspondence ratio that the SA2 contributes to each LGA and CED.

Modified Monash Model

To transform SA2-level data to MMM regions, the SA1 areas within each SA2 were assigned the SA2-level data by matching individual SA1 identifier codes to their hierarchical SA2 codes. Information about this coding is available on the ABS website²⁰. The public correspondence file for transforming SA1 to MMM regions¹⁷ was used to assign an MMM category to each SA1. The average rate of three or more chronic conditions was then determined for each MMM category.

In presenting this data, it assumes that each SA1 area has the same rate of chronic conditions as their hierarchical SA2 area. In practice, given that there is on average 25 SA1 areas within each SA2 area, there is likely to be significant variability between individual SA1 areas within each SA2 area. For caveats in relation to the chronic disease data from the 2017-18 NHS, refer to the 'Caveats' section.

Metropolitan areas

For all geographical layers, data for major metropolitan areas (i.e. MM1) is not shown. The purpose of the RHWMT is to present a single source of valuable local- and national-level information to support advocacy actions on behalf of rural Australians. Data on major cities is not presented as it is not used as a benchmark.

Local Government Areas

To assign an MMM category to each LGA, the population in each LGA was split up into its corresponding SA1 areas using SA1-level population data from an ABS consultancy for the Queensland Government²¹, and correspondence files for SA1-to-LGA data and SA1-to-MMM data.

The MMM category that comprises the largest proportion of the population in each LGA is presented in the RHWMT.

The LGA regions with more than 80% of their population within MM1 are not presented in the RHWMT. The Alliance has used this cut-off to include several LGAs that have the greatest proportion of the population within MM1 but nonetheless have a substantial proportion of the population residing outside MM1 as well. A list of several LGAs which are included even though the greatest proportion of their population lives in MM1 is as follows.

Table 3: Local Government Areas classified as MM1 included in the RHWMT

Local Government Area	Proportion of population outside MMM 1
Adelaide Hills (DC) – SA	40.4%
Cardinia (S) – Vic	20.5%
Hawkesbury (C) – NSW	33.2%
Moorabool (S) – Vic	52.0%
Murray (S) – WA	27.6%
Noosa (S) – Qld	33.6%
Queanbeyan-Palerang Regional (A) – NSW	38.5%
Serpentine-Jarrahdale (S) – WA	21.3%

Yarra Ranges (S) – Vic	23.1%
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Commonwealth Electorate Divisions

The CED regions which are not shown are those defined by the Australian Electoral Commission as having an Inner Metropolitan or Outer Metropolitan demographic classification²². Only those classified as being either Provincial or Rural are shown.

Caveats

The most important caveats in the RHWMT are discussed below.

Time lag in data

Firstly, there is a time lag in the Department of Health workforce data, which was recently identified as a limitation in conducting geospatial workforce analysis.²³ The Alliance has undertaken best endeavours to use the most up-to-date data available for the RHWMT. The year in relation to each of the data is shown at *Table 1*.

The Alliance acknowledges that live data on the health workforce within each area is not possible to report on. Notwithstanding, the volume of the health workforce tends to fluctuate each year, and steady increases or decreases are generally visible only over a period of several years. This data is therefore a snapshot in time utilising the most up-to-date sources available. The timing of the workforce data available to the Alliance is limited by AHPRA's annual registration renewal cycle and the subsequent process the Department of Health undertakes to cleanse, impute, produce and release this data.

Workforce location

The address of each health professional has been geocoded by the Department of Health using the process described on their website²⁴. The location of primary practice is the preferred address reported. Multiple sources were used to validate locations based on data in the NHWDS. For health professionals who work across more than one region, particularly in an outreach model of care delivery, only the primary location identified in the NHWDS is used in the RHWMT.

Number of health professionals

The data received from the Department of Health deidentifies the number of health professionals in certain LGA, CED and MMM regions where they have a small number of individual health professionals. Due to population-based figures in the RHWMT (in terms of FTE per 100,000 population), there may be inaccuracies in areas that have a very small number of specific health professionals.

Health professionals excluded

The Department of Health is the data custodian for information collected on health practitioners who are professionally registered with the Australian Health Practitioner Regulation Agency (AHPRA)²⁵. The RHWMT only presents data for these health professionals. However, not all health professionals are registered with AHPRA and presented in the RHWMT, including:

- Dieticians
- Audiologists

- Speech pathologists
- Nutritionists
- Exercise physiologists
- Social workers
- Community health, aged care and disability workers
- Genetic counsellors
- Sonographer
- Orthotists/prosthetists
- Orthoptists
- Primary health coordinators/health linkers

The Alliance is of the view that the exclusion of these health professionals results in an underestimate of the total workforce deficit across the majority of rural areas when compared to MM2 locations.

It is also noted that for several health practitioners reported in the RHWMT, such as dental practitioners, there is a wide range of more specific health professionals under this broad job title, including dentists, oral health therapists, dental hygienists, dental therapists and dental prosthetists. The RHWMT does not split up dental practitioners further to this level of detail.

General practitioner workforce

The Department of Health publishes data on the number of general practitioners (GPs) in Australia, in terms of FTE, using two different methodologies – the NHWDS method, and a second method that calculates their primary care service workload.

The GP FTE per 100,000 population presented using the NHWDS method is as follows.

Table 4: GP workforce using National Health Workforce Dataset

MMM	GP FTE per 100,000 population
MM1	113.7
MM2	122.4
MM3	140.9
MM4	147.0
MM5	86.2
MM6	140.4
MM7	175.9

The methodology and reports using this second method are available on the Department of Health website^{26,27}. It presents the GP workforce across MMM regions in 2020 as follows.

Table 5: GP workforce using new Department of Health methodology

MMM service location	GP FTE per 100,000 population
MM1	119.0
MM2	112.6
MM3	127.7
MM4	131.8
MM5	81.2

MMM service location	GP FTE per 100,000 population
MM6	78.1
MM7	67.3

It is clear that the number of GPs in each MMM region differs substantially between methods, especially in remote (MM6) and very remote (MM7) regions. The Alliance considers the second methodology to be a more accurate presentation of the number of GPs working in each region. It is more likely to reflect the amount of primary care services being delivered in the community. This is because the NHWDS methodology does not account for medical specialists who have a primary specialty registration as a GP but are also working as another specialist (e.g. obstetrician) as their second or third specialty and are only providing primary care services as part of their work. This is more likely to be the case for procedural GPs working as rural generalists in regional and remote areas. The NHWDS methodology also does not factor in time spent driving to and from patients as part of the GP's work (for example, if they are providing outreach services to aged care facilities), which is likely to take up more time in regional and remote areas than in major cities. This is likely to result in the NHWDS methodology overestimating the number of GPs providing primary care in an area, particularly in remote and very remote regions.

For the purpose of consistency with other medical specialist categories, the RHWMT presents data on the GP workforce in each region using the NHWDS methodology, as shown in *Table 4* for the MMM map layer. Consideration will be given to using the second methodology if other medical specialist groups can also be presented in this way in the future.

Workforce spending

One caveat of relying on a single salary figure for each health professional is that it is irrespective of location, setting and experience. There are significant differences in the salary of individual health professionals, and the salaries used for the RHWMT are not intended to be exact, or to be used for individual contract negotiations. Whilst there may be some under- or over-estimation in the annual salaries of health professionals, some buffer may be expected to account for on-costs (such as superannuation and leave entitlements), which are not presented. Salaries also change over time, although current wages have been estimated as accurately as possible.

Another caveat in relation to workforce spending is in the way that an overall figure is reported for each geographical area. The difference in workforce spending compared to MM2 areas takes into account all health professionals. As such, it does not consider particular professionals as "minimum core health services". There are certain health professionals, such as specific medical specialists, which are more available centrally within major cities and certain regional centres, and would not be present in outer regional and remote areas. This caveat is largely avoided through the use of MM2 areas as a benchmark instead of MM1.

Reporting chronic conditions

The 2017-18 NHS survey results rely on modelled small area estimates at the SA2 level which the Alliance has transformed using correspondence files to present the data across LGA, CED and MMM regions. The ABS notes that 'the modelled small area estimates can be interpreted as the expected prevalence of a health condition for a typical area in Australia based on the demographic information available for that area. These should be viewed as a tool that when used in conjunction with local area knowledge as well as the consideration of the reliability of the modelled small area

estimates, can provide useful information that can assist with decision making for small geographic areas.²

The ABS also notes that the exclusion of very remote areas and discrete Aboriginal and Torres Strait Islander communities will have only a minor effect on aggregate estimates for individual states and territories, except the Northern Territory where very remote residents make up 20.3% of the population.¹⁹ The Alliance acknowledges the difficulties in accurately reporting the rate of chronic conditions in remote and very remote communities. Numbers presented in these areas should be interpreted cautiously.

Another issue with reporting rates of chronic conditions using SA2-level data is that people are excluded if they reside in a non-private dwelling, such as a hospital or aged care home. It is likely that people residing in these locations experience long-term health conditions which require an extensive period of hospitalisation or long-term care. This limits the ability to interpret this data with complete accuracy. Additionally, of the 2,163 SA2 regions that were included for the purpose of analysis, 16 has a relative root mean square error of 25-50% and should be used with caution, and 43 were considered to have a relative root mean square error greater than 50% and are considered too unreliable for general use. Notwithstanding, the ABS notes in Table 33, 'The overall reliability measure for the model used to produce the below small area estimates is reliable and is suitable for general use.'²

Correspondence

The health outcomes data presented in the RHWMT has been transformed using correspondence files, except for median age at death data for LGAs. This has the caveat of not being as accurate as if the data was sourced directly for each geographic area without any transformation. The correspondence files from Data.gov.au show that of the 151 CEDs in the conversion from LGAs, only 81 are rated as 'Good' or 'Acceptable' and 70 have a 'poor' quality for conversion.²⁸ This is acknowledged as a limitation of the data and points to the need for more publicly available information about health outcomes broken down by a broader range of geographic groupings, including at the federal and state electorate levels.

Endnotes

¹ Australian Institute of Health and Welfare. Mortality Over Regions and Time (MORT) books – Remoteness area, 2015–2019 [data]. Commonwealth of Australia; 2021 Jun 25 [cited 2021 Nov. 24]. Available from: <https://www.aihw.gov.au/reports/life-expectancy-death/mort-books>

² Australian Bureau of Statistics. Chronic conditions – Table 33: Small area estimates [data tables]. Commonwealth of Australia; 2018 Dec 12 [cited 2021 Nov. 24]. Available from: <https://www.abs.gov.au/statistics/health/health-conditions-and-risks/chronic-conditions/latest-release#data-download>

³ Australian Bureau of Statistics. 1270.0.55.003 - Australian Statistical Geography Standard (ASGS): Volume 3 - Non ABS Structures, June 2020 – Local Government Areas (LGA). Commonwealth of Australia; 2020 June 16 [cited 2021 Nov. 24]. Available from: [https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1270.0.55.003~June%202020~Main%20Features~Local%20Government%20Areas%20\(LGAs\)~3](https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1270.0.55.003~June%202020~Main%20Features~Local%20Government%20Areas%20(LGAs)~3)

⁴ Data.gov.au. Commonwealth Electoral Divisions as at 2 August 2021. Commonwealth of Australia; 2021 Sep 29 [cited 2021 Nov. 24]. Available from: <https://data.gov.au/dataset/ds-dga-29ad551e-ca80-4fef-86e1-3394bc2f4d5d/details?q=>

⁵ Department of Health. Contact Us. Commonwealth of Australia [cited 2021 Nov. 24]. Available from: <https://hwd.health.gov.au/contactus/>

⁶ The Department of Health cautioned the Alliance against use of MM1 as the benchmark due to concerns in relation to the oversupply of services in major cities. However, numerous references have been made by the Government to the need for rural, regional and remote areas to have access to the same level of health services as metropolitan areas. For example, Senator the Hon Michaelia Cash stated the following in February 2020 ([here](#)):

“The Morrison government is committed to continually improving rural and regional health services. This is because we recognise regional, rural and remote Australians deserve the same access to high-quality health services as those who live in our cities.”

“Everything I have outlined—the investment that the government is making to ensure that rural, regional and remote Australians have the same level of health care as those of us who are able to live in metropolitan centres—is only because we manage a strong economy. It is only because we understand fiscal responsibility.”

⁷ SEEK. Salary Guide [cited 2021 Nov. 24]. Available from: <https://www.seek.com.au/career-advice/article/a-guide-to-salaries-in-your-industry>

⁸ Indeed. Find a career you’ll love. 2021 [cited 2021 Nov. 24]. Available from: <https://au.indeed.com/career/salaries>

⁹ Talent.com. Salary in Australia 2021. 2021 [cited 2021 Nov. 24]. Available from: <https://au.talent.com/salary>

¹⁰ Job Seeker Pty Ltd. Jora salaries. 2021 [cited 2021 Nov. 24]. Available from: <https://au.jora.com/salary>

¹¹ Ochre Health Ltd. Vacancies. 2021 [cited 2021 Nov. 24]. Available from: <https://ochrehealth.com.au/gp-jobs/>

¹² Silver Chain Group Ltd. Jobs available. 2021 [cited 2021 Nov. 24]. Available from: <https://silverchaingroup.mercury.com.au/>

¹³ Industrial Relations Commission of New South Wales. Health Professional and Medical Salaries (State) Award 2021. NSW Government; 2021 Feb 19 [cited 2021 Nov. 25]. Available from: <https://www.health.nsw.gov.au/careers/conditions/Awards/he-profmed-salaries.pdf>

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- ¹⁴ System Secrets. Using SUMPRODUCT to create a Conditional Weighted Average in Excel. 2014 Apr 4 [cited 2021 Nov. 24]. Available from: <http://blog.extrobre.co.uk/blog/2014/04/04/using-sumproduct-to-create-a-conditional-weighted-average/>
- ¹⁵ A.CRE. The Conditional Weighted Average – SUMPRODUCT with SUMIF [cited 2021 Nov. 24]. Available from: <https://www.adventuresinre.com/conditional-weighted-average-sumproduct-sumif/>
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- ¹⁸ Data.gov.au. ASGS Geographic Correspondences (2016) – CG_SA2_2016_CED_2018.xlsx [data tables]. Commonwealth of Australia; 2021 Oct 28 [cited 2021 Nov. 24]. Available from: <https://data.gov.au/dataset/ds-dga-23fe168c-09a7-42d2-a2f9-fd08fbd0a4ce/details>
- ¹⁹ Australian Bureau of Statistics. National Health Survey: First Results methodology. Commonwealth of Australia; 2018 Dec 12 [cited 2021 Nov. 24]. Available from: <https://www.abs.gov.au/methodologies/national-health-survey-first-results-methodology/2017-18>
- ²⁰ Australian Bureau of Statistics. 1270.0.55.001 - Australian Statistical Geography Standard (ASGS): Volume 1 - Main Structure and Greater Capital City Statistical Areas, July 2016 – Statistical Area Level 1 (SA1). Commonwealth of Australia; 2016 Jul 12 [cited 2021 Nov. 24]. Available from: [https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1270.0.55.001~July%202016~Main%20Features~Statistical%20Area%20Level%201%20\(SA1\)~10013](https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1270.0.55.001~July%202016~Main%20Features~Statistical%20Area%20Level%201%20(SA1)~10013)
- ²¹ Queensland Treasury. Population Estimates – Regions – Estimated resident population by SA1 (ABS consultancy) – Statistical area level 1 (SA1), Australia, 2011 to 2020p [data tables]. Queensland Government; 2021 Aug 27 [cited 2021 Nov. 24]. Available from: <https://www.qgso.qld.gov.au/statistics/theme/population/population-estimates/regions#current-release-estimated-resident-population-abs-consultancy>
- ²² Australian Electoral Commission. Maps and spatial data – Demographic classification of electoral divisions – Previous demographic classifications – 01-demographic-classification-as-at-1-january-2019.xlsx [data table]. 2019 Jan 1 [cited 2021 Nov. 24]. Available from: <https://www.aec.gov.au/Electorates/maps.htm>
- ²³ In relation to the health workforce data available from the Australian Government Department of Health, the Royal Australian College of General Practitioners noted the limitation of this “big data” due to its time lag at the public hearing on 4 November 2021 for the Parliamentary Inquiry into the provision of health services to outer metropolitan, rural and regional Australians. The Hansard reading for this public hearing is available via the Parliament of Australia website [here](#).
- ²⁴ Department of Health. National Health Workforce Dataset. Commonwealth of Australia; 2019 Dec 15 [cited 2021 Nov. 24]. Available from: <https://hwd.health.gov.au/resources/information/nhwds.html>
- ²⁵ Australian Health Practitioner Regulation Agency. Register of practitioners. 2021 [cited 2021 Nov. 24]. Available from: <https://www.ahpra.gov.au/Registration/Registers-of-Practitioners.aspx>
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²⁷ Department of Health. General Practice Workforce providing Primary Care services in Australia – General Practice Workforce (2014 to 2020 Calendar Years) [data tables]. Commonwealth of Australia; 2021 Sep 27 [cited 2021 Nov. 24]. Available from: <https://hwd.health.gov.au/resources/data/gp-primarycare.html>

²⁸ Data.gov.au. ASGS Geographic Correspondences (2016) – CG_LGA_2018_CED_2018.xlsx [data tables]. Commonwealth of Australia; 2021 Oct 28 [cited 2021 Nov. 24]. Available from: <https://data.gov.au/dataset/ds-dga-23fe168c-09a7-42d2-a2f9-fd08fbd0a4ce/details>