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General Practitioner workforce report 2022

Prepared for Cornerstone Health Pty Ltd

May 2022

Cornerstone Health's purpose is to increase access to quality healthcare for all Australians.

Cornerstone Health has commissioned this analysis of GP supply and demand in Australia to inform debate on this important issue.

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Glossary.

Acronym	Full name
ABS	Australian Bureau of Statistics
ACRRM	Australian College of Rural and Remote Medicine
ACT	Australia Capital Territory
AGPT	Australian General Practice Training
ASGS-RA	Australian Statistical Geography Standard Remoteness Areas
COVID-19	Coronavirus
DMS	Derived Major Specialty
DPA	Distribution Priority Area
DVA	Department of Veterans' Affairs
FTE	Full-Time Equivalent
GCCSA	Greater Capital City Statistical Areas
GP	General practitioner
GPW	General Practice Workforce
IMG	International Medical Graduate
MBBS	Bachelor of Medicine and Bachelor of Surgery
MBS	Medicare Benefits Scheme
MMM	Modified Monash Model
NHWDS	National Health Workforce Dataset
OTD	Overseas trained doctors
PBS	Pharmaceutical benefits scheme
RACGP	Royal Australian College of General Practitioners
SA3	Statistical Area Level 3
SEIFA	Socio-Economic Indexes for Areas
SRHS	Stronger Rural Health Strategy
VR	Vocationally recognised
WIP	Workforce Incentive Program

Foreword.

Cornerstone Health's purpose is to increase access to quality healthcare for all Australians. We commissioned this General Practitioner (GP) Workforce Report in 2022, after the 2019 report proved a valuable resource to help highlight the projected shortfall in the GP workforce by 2030.

Since the first report, Cornerstone Health has first-hand experience of the impact of the GP shortage on the community. Patients are experiencing longer wait-times or delaying seeing their GP for care altogether. Cornerstone Health kept its doors open every day throughout the pandemic, caring for patients prepared to wait to be seen, despite worsening access to GPs. Since 2019, policies have been aimed at simply reallocating existing resources, diverting available GPs from one area at the expense of another, rather than addressing the core GP supply crisis.

The 2022 GP Workforce Report has found:

- With an ageing and growing population, demand for GP services is projected to increase by 38% by 2032 (and by 47% in our cities)
- Despite this significant increase, supply of GPs will decrease by 15% in cities and by 4% overall
- This will result in a shortfall of 11,392 GPs by 2032, or almost 1 in 3 (28%) of the GP workforce.

This is unacceptable and means that the current GP workforce policy settings cannot remain in place and this critical issue must be addressed now.

Indeed, a key finding of the interim report from a recent Senate Inquiry into the provision of general practitioner services to outer metropolitan, rural and regional Australians, was that the Federal Government substantially increase the Medicare rebates for all levels of general practice. Using International Medical Graduates and Overseas Trained Doctors (OTDs) to solve the issues for remote and regional Australia is a short-term fix without a long-term vision. We should be prioritising improving funding for general practice via Medicare now, to attract Australia's own medical graduates to become GPs. The issue will worsen rapidly as the baby boomer GPs retire with the rest of their generation and demand for healthcare services increases.

Cornerstone Health also calls attention to a key shortcoming in the available data that it does not differentiate between the supply and demand for healthcare services in outer-metropolitan areas compared to inner-metropolitan areas. Outer-metro areas are growing rapidly and need to be better supported with access to primary health services. Fair and equal access to healthcare services should be available to all Australians regardless of where they live.

This is an issue that will affect all Australians and will take time to resolve. It should be an immediate priority that general practice is better funded, for the sake of the health of us all.

Henry Bateman
CEO & Managing Director
Cornerstone Health

1   Executive summary.

General practitioners (GPs) are the backbone of the Australian healthcare system and often serve as the first point of contact for a patient. GPs are medical practitioners who perform a key role in primary and preventative health care. They deliver advice, education and health care to their patients and may also refer patients to other types of medical professionals including specialists.[1] In 2020-21, GPs provided more than 170 million services to the Australian population.

In 2019, Cornerstone Health commissioned Deloitte Access Economics to prepare the report 'General Practitioner Workforce' (the 2019 Report). The 2019 Report found that – in the absence of workforce or policy reform – Australia would likely experience a substantial shortfall of GP availability relative to need by 2030. Specifically, a projected shortfall of 9,298 full-time GPs or 24.7% of the GP workforce, with urban areas expected to experience the greatest deficiency of GPs with a shortfall of 7,535 full-time GPs or 31.7% by 2030. The 2019 report defined urban and regional areas using the Australian Bureau of Statistics' (ABS) Greater Capital City Statistical Areas (GCCSA) classification system.

The GP workforce landscape has evolved since the 2019 Report. The underlying pace of change in practice patterns and scope of GP practice has been accelerated and diverted owing to the substantial impacts of the COVID-19 pandemic on the Australian Healthcare System. Further, the effect of policies introduced in 2018 to redistribute GPs from major cities to regional/rural areas have now had time to affect the workforce. It is timely to revisit the point-in-time assumptions that were utilised to develop the 2019 Report. Of note, there have also been improvements in the data available to estimate the model in this intervening period – improving the capacity of the model to approximate true projections of the future. The 2019 Report did not include non-Vocationally Registered (non-VR) GPs working in general practice in its definition of GPs. Further, owing to the nature of data available at the time of modelling, results were only considered across the greater capital cities and the rest of state/territory according to the definition in Greater Capital City Statistical Area (GCCSA).

Cornerstone Health have engaged Deloitte Access Economics to update the GP workforce model completed in 2019 and project supply and demand of GP workforce between 2021 and 2032. As part of this update, the model uses the latest release of GP Workforce dataset which includes non-VR GPs and further segregation of geographic markers to describe the supply and demand of GP services by Australian Statistical Geography Standard - Remoteness Areas (ASGS-RA), disaggregated into major cities, regional and remote areas of Australia.

Methodology

The modelling employed in this update is built upon the approach utilised in the 2019 Report. Supply of GPs is estimated as a function of the estimated opening stock of GPs in each year, plus relevant inflows, and net of outflows of GPs. Demand for GPs is estimated through a consideration of population size and indicators of need such as population demographic (e.g., age group and gender).

In this report, we report results according to the ASGS-RA. The ASGS defines Remoteness Areas into 5 classes of relative remoteness across Australia. These 5 classes of remoteness are Major Cities of Australia, Inner Regional Australia, Outer Regional Australia, Remote Australia, Very Remote Australia. Remoteness is defined based on road distance to the nearest urban centre.

The current model adopted the previous modelling approach by assuming that the market for GPs starts from an initial position of equilibrium and then tracks the gap between demand and supply over the future decade assuming that there is no workforce or policy reform from the current day. That is, if supply and demand continue to track in accordance with their current trend. The model does not consider the inequality of GPs access between the major cities versus regional and remote areas such as wait times as that is not available from the input dataset. This report does not make a judgment on the adequacy of the current supply of GP services; rather it looks at the direction of future demand and supply pressures for the GP workforce relative to the current position.

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[1] Health Workforce Australia, Health Workforce 2025 – Volume 3 – Medical Specialties (November 2012).

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Key findings

The 2022 modelling finds that the supply of GPs slightly decreases between 2021 and 2032 (FTE GPs of 30,736 in 2021 and 29,483 in 2032), noting some demographic changes taking part in the GP workforce. FTE GPs in major cities is projected to decrease by 15.0% over this period where in regional and remote areas, this is projected to increase by 27.4% in the same period.

Demand for GPs is estimated to grow between 2021 and 2032 by 33.0%. Demand for GPs in major cities is projected to increase by 35.4% by 2032, while demand in regional and remote areas is projected to increase by 25.9% in the same period.

Demand for GP services is forecast to outpace supply – resulting in a widening shortfall of FTE GPs from 2022 onwards. This shortfall is expected to reach 11,392 GPs (FTE) – that is, 27.9% of the workforce – by 2032.

In per capita terms, the average Australian in 2021 demanded 2.1 hours of GP care per annum. This is forecast to grow to 2.5 hours per annum by 2032. Meanwhile, supply of GP clinical hours per person is estimated to decline to 1.8 hours per annum by 2032 from 2.2 hours per annum in 2021. This indicates an average annual shortfall for Australians of 40.9 minutes of GP care per year by 2032.

Over the next decade, the volume of Medicare Benefits Scheme (MBS) services is expected to increase in major cities, however, this is met with a decreasing GP workforce in these areas. The opposite trend is seen for regional and remote areas of Australia, where MBS services are expected to fall but are expected to be met with an increasing GP workforce in these areas.

The model forecasts a deficit in major cities and a small surplus for regional and remote areas from a starting point of equilibrium in both regions. This deficit in major cities is more pronounced over the projection period than the surplus in regional and remote areas – with a deficit of 37.3% in major cities compared to 1.3% surplus in regional and remote areas.

Conclusion

Demand for GP services is forecasted to outpace supply, resulting in a widening shortfall of FTEs from 2022 onwards. By 2032, a shortfall of 11,392 FTE GPs across Australia is projected. Major cities are forecasted to experience the largest shortfall of 11,517 FTE GPs. This is in comparison to regional and remote Australia, where demand for GP services is met with a slight oversupply of FTE GPs by 2032.

At a national level, the shortfall in net supply will be driven by changing demographics in the workforce (which reduces the average hours supplied per GP), insufficient inflows to replace workforce exits, and demand for services that grows faster than underlying population growth.

Deloitte Access Economics

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# Will demand for GPs outstrip supply over the next decade?

A CRITICAL WORKFORCE

General practice is the backbone of the Australian healthcare system – never more so than in the healthcare environment of today. It is irrefutable that adequate supply and appropriate distribution of GPs – to keep pace with growing and evolving demand for their services – underpins the sustainability of the healthcare system as a whole.

In 2019, Deloitte Access Economics developed a model to project supply and demand for GPs over a 10 year period. The model assumes an initial equilibrium in the market and then projects the change in supply relative to demand if no further workforce or policy reform is undertaken. The model forecast a shortfall of **9,289 GPs by 2030 relative to demand**.

The 2019 model was developed with data that was available at the time. In light of the accelerated change experienced for GP services over the past two years and the availability of new and improved data, Deloitte Access Economics has again remodelled the ten year projection – this time to 2032.

THE GAP WIDENS ACROSS AUSTRALIA

Source. Deloitte Access Economics (2022).

WITH UNMET NEED CONCENTRATED IN METRO AREAS
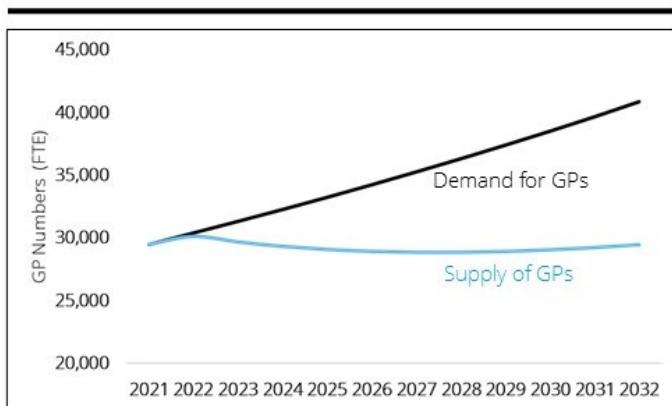
Source. Deloitte Access Economics (2022).
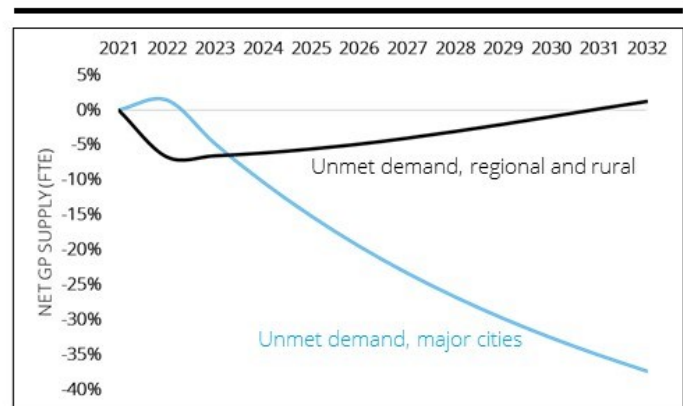
Aligned with the findings of the 2019 report, the 2022 Deloitte Access Economics modelling estimates that the shortfall in GPs will persist and grow to 2032. The model estimates that by 2032, the **shortfall will reach 11,392 GPs by 2032.**

The 2022 model findings differ from the 2019 findings in that the shortfall is now **notably concentrated in major cities relative to regional and remote areas**. The finding potentially reflects the impact of a number of demographic and policy changes realised over the past two years. This includes effects of the Stronger Rural Health policy which drives redistribution of workforce from major cities to regional and rural centres.

PRIMARY CARE

2   Introduction.

General practitioners (GPs) are the backbone of the Australian healthcare system and often serve as the first point of contact for a patient. GPs are medical practitioners who perform a key role in primary and preventative health care. They deliver advice, education and health care to their patients and may also refer patients to other types of medical professionals including specialists.[2]

In 2020-21, GPs provided more than 170 million services to the Australian population. Approximately 85% of the Australian population had at least one consult with a GP in that year.[3] Ensuring an adequate supply of GPs in Australia to meet demand is thus a crucial outcome for health workforce planning and in supporting the health and wellbeing of all Australians. The purpose of this paper is to model and forecast the demand for and supply of GPs from 2021 to 2032 across Australia.

Definition of a general practitioner

The definition of a GP is broad and can be subject to interpretation. Some, but not all GP services are delivered by individuals with specialist GP qualifications. There are a substantial number of doctors working in general practice without a specialist qualification, or who are not currently in a training program. In Australia, GPs can include[4, 5]:

- Fellows of the Royal Australian College of General Practitioners (RACGP) or Australian College of Rural and Remote Medicine (ACRRM)
- Registrars who have enrolled in a formal training pathway to GP Fellowship through the RACGP or ACRRM
- Overseas trained doctors (OTDs), who can perform a number of different roles depending on their prior experience and training
- Non-vocationally registered/non-specialist doctors working in general practice who are not training to be fellows of the RACGP or ACRRM
- Doctors working in approved placements under section 3GA of the *Health Insurance Act 1973*
- Salaried medical practitioners providing general practice services, for example District Medical Officers.

For the purposes of this report, the definition of GP includes[6]:

- Vocationally recognised (VR) GP, who is either a:
    - Vocationally Recognised GP: a doctor who has a postgraduate Fellowship qualification from either the RACGP or the ACRRM
    - Vocationally Registered GP: a doctor who had their name included on the Vocational Register for General Practice before it was closed in November 1996.
- Non-Vocationally Registered (non-VR) GP: a doctor who does not hold a postgraduate general practice qualification and who is not engaged in formal general practice training
- GP Registrar/Trainee: participants on the Australian General Practice Training Program (AGPT), the Remote Vocational Training Scheme (RVTS) or the ACRRM's Independent Training Program
- GPs who do not bill Medicare (i.e. hospital clinics) are not included in this analysis.

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[2] Health Workforce Australia, Health Workforce 2025 – Volume 3 – Medical Specialties (November 2012).

[3] Department of Health, Annual Medicare statistics: Financial year 1984–85 to 2020–21. Canberra: DoH, 2021.

[4] Health Workforce Australia, Health Workforce 2025 – Volume 3 – Medical Specialties (November 2012).

[5] Department of Health, 2021, *Fellowship requirements under section 19AA*, <https://www.health.gov.au/health-topics/doctors-and-specialists/about/19aa#workforce-and-training-programs-for-those-without-fellowship>, accessed 11 April 2022.

[6] Department of Health, 2022, *General Practice Workforce providing Primary Care services in Australia*, <https://hwd.health.gov.au/resources/data/gp-primarycare.html>, accessed 11 April 2022.

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2.1   The 2019 Deloitte Access Economics Report

In 2019, Deloitte Access Economics prepared the report 'General Practitioner Workforce' (the 2019 Report) for Cornerstone Health. The General Practitioner Workforce Report 2019 found that Australia is heading for a significant undersupply of GPs by 2030.

The report published the following key findings[7]:

- Demand for GPs services forecast to outpace supply, resulting in a widening shortfall of full-time equivalent (FTE) GPs from 2020 onwards
- By 2030, a projected shortfall of 9,298 full-time GPs or 24.7% of the GP workforce, with urban areas expected to experience the greatest deficiency of GPs with a shortfall of 7,535 full-time GPs or 31.7% by 2030
- There would be a 37.5% increase in the demand for GP services between 2019 and 2030 (139.8 million increasing to 192.1 million)
- The growth in demand would be primarily driven by increases in population size and demographic shifts to older age groups who consume a relatively larger proportion of services.

As is the case with all modelling, the underlying model used to inform the report was developed on the basis of a number of assumptions to allow the model to solve. The modelling reflected the best available data at the time, however, this data did contain data gaps. Of note, the model was not able to include non-VR doctors working in general practice in its definition of GPs. Further, owing to the nature of data available at the time of modelling, results were only considered across the greater capital cities and the rest of state/territory according to the definition in Greater Capital City Statistical Area (GCCSA).

2.2   The role of general practice has evolved over the past two years

The Australian Government has implemented a number of policies in response to the forecast shortage of GPs, in particular seeking to address issues such as reliance on OTDs and International Medical Graduates (IMGs) and the uneven distribution of GPs across the country, particularly in relation to rural and regional areas. Notably, in 2021 the Senate referred an **inquiry into the provision of general practitioner and related primary health services to outer metropolitan, rural, and regional Australians.** This inquiry and relevant policies are outlined in Section 3.1.

In 2020-21, there were 38,388 GPs in Australia, comprised of 30,379 (79.1%) VR-GPs, 2,954 (7.7%) non-VR GPs and 5,055 (13.2%) GP trainees.[8] A significant proportion (around 45%) of GPs are IMGs, a proportion which has been steadily increasing in recent years (see Section 3.2). The GP workforce in rural and regional areas is particularly reliant on IMGs, as migrant doctors are often used as a means to fill workforce shortages in regional and remote locations. However, the proportion of GPs working outside of major cities continues to fall. Further, the coronavirus pandemic (COVID-19) has had significant implications for the supply of IMGs.

The GP workforce and practice patterns have been substantially impacted by the COVID-19 pandemic. To limit face-to-face consultations and spread of the virus, new Medicare telehealth items were introduced on the Medicare Benefits Scheme (MBS). Despite the fall in face-to-face items, the GP workforce have also been on the frontline of the pandemic response in the last two years, delivering more than 80% of total vaccines administered since the start of the vaccine rollout.[9]

The GP landscape and the drivers of the demand for and supply of GPs are further detailed in Section 3.

2.3   Objective of this report

Cornerstone Health have engaged Deloitte Access Economics to update the GP workforce model completed in 2019 and project supply and demand of GP workforce between 2021 and 2032. As part of this update, the model includes non-VR GPs and further segregation of geographic markers to describe the supply and demand of GP services by Australian Statistical

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[7] Deloitte Access Economics 2019, *General Practitioner workforce report 2019*, for Cornerstone Health Pty Ltd, <https://www2.deloitte.com/au/en/pages/economics/articles/general-practitioner-workforce-report-2019.html>, accessed 12 April 2022.

[8] Department of Health, 2022, *General Practice Workforce providing Primary Care services in Australia*, <https://hwd.health.gov.au/resources/data/gp-primarycare.html>, accessed 11 April 2022.

[9] Kidd, M & Toca, L 2021, 'The contribution of Australia's general practitioners to the COVID-19 vaccine rollout', *Australian Journal of General Practice*, 2021.

Geography Standard - Remoteness Areas (ASGS-RA), disaggregated into major cities and regional and remote areas of Australia.

The remainder of the report is structured as followed:

- Chapter 2 summarises the key changes to the data inputs between the 2019 report and this report and provides a high-level summary of the supply and demand model methodology
- Chapter 3 discusses the key drivers and findings from the GP supply modelling
- Chapter 4 discusses the key drivers and findings from the GP demand modelling
- Chapter 5 builds on the analysis in Chapter 3 and Chapter 4 to forecast the supply and demand of GPs in Australia over 2021-32
- Chapter 6 outlines the caveats and limitations of the modelling and its implications on the findings
- Chapter 7 summarises the key findings from the updated model and discusses the implications for the Australian GP landscape.

A technical appendix is included to provide a detailed account of the modelling assumptions and model structure.

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3 The GP landscape.

Understanding the current general practice workforce landscape, and the drivers of supply and demand for GPs in Australia over the next decade will assist in efforts in workforce planning into the future. Ensuring an adequate supply of GPs in Australia is key to improving the health of Australians both now – as we emerge from the effects of the COVID-19 pandemic – and into the future, as we navigate challenges with a rapidly ageing population. This section describes the drivers of supply and demand for GPs and provides an overview of the changing policy landscape since the 2019 Report.

3.1 Major policies impacting the GP workforce since the 2019 Report

The Australian Government has implemented a number of policies in response to the forecasted shortage of GPs, in particular seeking to address issues such as reliance on OTDs and IMGs and the uneven distribution of GPs across the country. Figure 3.1 illustrates the changing policy landscape in the recent years, which is then discussed in further detail in the rest of this section.

Figure 3.1: Changing policy landscape in General Practice
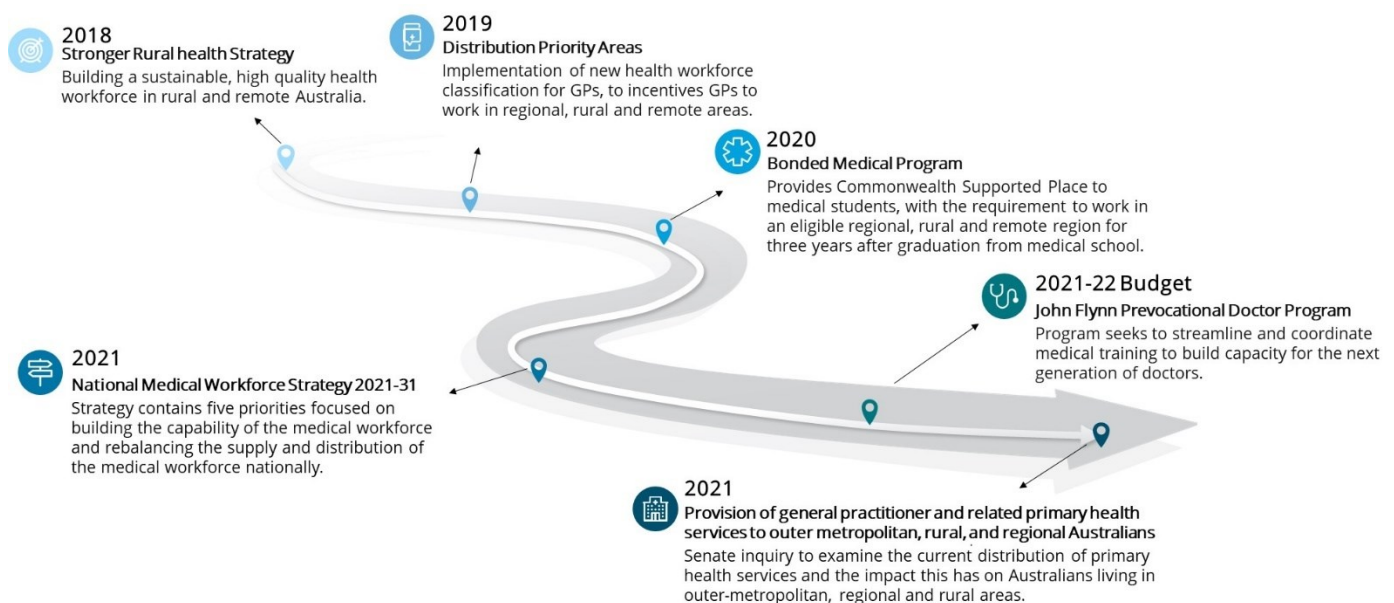
Source: Deloitte Access Economics (2022).

3.1.2 Overview of the GP policy landscape

The 2018 *Stronger Rural Health Strategy* (SRHS) has the objective of building a sustainable, high quality health workforce that is distributed across the country according to community need, particularly in rural and remote communities.[10] Features of the strategy include:

- **Junior doctor training.** This program creates two new streams to support training in rural primary care and in private hospitals: the Rural Primary Care Stream provides funding for educational support for junior doctors working and training in rural primary care settings; and the Private Hospital Stream provides salary support for junior doctors working in private hospitals. The two streams are intended to increase access to training in rural areas and the private system.
- **IMGs in areas of doctor shortage**. This program regulates the number and location of IMGs seeking to work in Australia.
- **Rural bulk-billing incentives.** Under this initiative, metropolitan areas no longer have access to incentives intended for rural and remote areas.

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[10] Department of Health, 2021, *Stronger Rural Health Strategy*, <https://www.health.gov.au/health-topics/rural-health-workforce/stronger-rural-health-strategy>, accessed 13 April 2022.

- **Streamlining General Practice training.** This initiative implements new arrangements to simplify existing GP training and qualification pathways and support non-VR doctors to attain specialist GP status. The nine current pathways to specialist GP status are rationalised into two, which are delivered through the RACGP and ACCRM.
- **Workforce Incentive Program (WIP).** This provides targeted financial incentives to encourage doctors to deliver eligible primary health care services in regional, rural or remote areas that have difficulty attracting and retaining doctors.

The **Bonded Medical Program** commenced in 2020 under *Health Insurance Act 1973.* The scheme provides medical students with a Commonwealth Supported Place at an Australian university in exchange for commitment to work in eligible rural, regional and remote areas for three years following graduation from university. [11]

The *National Medical Workforce Strategy 2021-2031* aims to ensure Australia's medical workforce has the capacity to meet Australia's ongoing health needs. The strategy contains five priorities, which includes both building the generalist capability of the medical workforce and rebalancing the supply and distribution of the medical workforce.[12]

As part of the 2021-22 Budget, the Australian Government announced the new **John Flynn Prevocational Doctor Program**.[13] This program seeks to streamline and coordinate medical training in regions and fund new rural primary care rotations to boost training capacity for the next generation of doctors. The program will:

- Increase rural primary care rotations for hospital-based doctors in rural areas from 110 full-time equivalent (440 rotations) in 2022 to 200 full-time equivalent (800 rotations) by 2025
- Expand eligibility to include doctors in their first 5 postgraduate years
- Allow a limited pool of metropolitan-hospital-based doctors to undertake rotations in rural primary care settings.

In August 2021, the Senate referred an **inquiry into the provision of general practitioner and related primary health services to outer metropolitan, rural, and regional Australians** to the Senate Community Affairs References Committee. The inquiry is set to report in June 2022, however an interim report was released in April 2022. The report outlined a number of key recommendations, including but not limited to[14]:

- That the Department of Health develops benchmarks for the optimal distribution of primary health professionals
- That the Department of Health conducts a comprehensive and wholistic review of the Stronger Rural Health Strategy and that performance benchmarks be established to assess the effectiveness of the overall strategy and of its programs
- That the Federal Government investigates substantially increasing the Medicare rebates for all levels of general practice consultations, as well as other general practice funding options
- That the Department of Education, Skills and Employment, in collaboration with universities, reviews the primary care components of the medical education curriculum, with a view to ensuring that general practice is a core component of the curriculum.

3.1.3   Workforce classification

In 2019, the Department of Health implemented a new health workforce classification for GPs, labelled **Distribution Priority Areas** (DPAs).[15] The classification system utilises the GP-to-population ratio, gender and age demographics, and Socio-Economic Indexes for Areas (SEIFA) scores in each GP catchment area to determine whether an area is considered a DPA. Some blanket rules apply, for example inner major cities cannot be classified as DPA and the Northern Territory is automatically deemed DPA. An area is also automatically classified as DPA when it is classified under the Modified Monash Model (MMM) as MM3 to MM7.[16] The MMM classification is based on the Australian Statistical Geography Standard which

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[11] Department of Health, 2021, *Bonded Medical Program,* <https://www.health.gov.au/initiatives-and-programs/bonded-medical-program>, accessed 13 April 2022.

[12] Department of Health, 2021, *National Medical Workforce Strategy 2021–2031*, < https://www.health.gov.au/initiatives-and-programs/national-medical-workforce-strategy-2021-2031>, accessed 14 April 2022.

[13] Department of Health, 2021, *John Flynn Prevocational Doctor Program*, <https://www.health.gov.au/initiatives-and-programs/john-flynn-prevocational-doctor-program>, accessed 14 April 2022.

[14] The Senate, Community Affairs References Committee, 2022, *Provision of general practitioner and related primary health services to outer metropolitan, rural, and regional Australians - Interim Report.*

[15] Department of Health, 2021, *Distribution Priority Areas*, <https://www.health.gov.au/health-topics/rural-health-workforce/classifications/dpa>, accessed 13 April 2022.

[16] Department of Health, 2021, *Modified Monash* Model, <https://www.health.gov.au/health-topics/rural-health-workforce/classifications/mmm>, accessed 13 April 2022.

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determines remoteness according to population and distance to services. Areas which are classified as DPA are subject to certain programs, incentives or policies that are designed to encourage doctors to work in these areas. For example, the *Health Insurance Act 1973* requires that IMG GPs must work in a DPA for a minimum of ten years in order to access Medicare benefits (this is known as the ten-year moratorium).

3.2   The supply of GPs in Australia

GPs were the most common health professionals seen in 2020-21, with over 83.1% of the Australian population having seen a GP in the last 12 months.[17] In 2020-21, there were 38,388 GPs in Australia, comprised of 30,379 (79.1%) VR-GPs, 2,954 (7.7%) non-VR GPs and 5,055 (13.2%) GP trainees.[18] The majority of GPs are non-referred attendances GP/VR-GPs (79.9%), followed by non-referred attendances (enhanced primary care) (12.9%), operations (3.0%) and non-referred attendances other (2.9%).[19]

3.2.1   Reduction in the GP workforce

While the number of medical graduates in Australia continues to grow, the proportion of those graduates choosing to enter pre-Fellowship training in general practice is in decline. The annual growth of non-GP specialists continues to grow faster than the growth of GPs specialists (4.5% compared to 3.5% per year) in the past five years.[20] The 2021 AGPT Program, however, saw the highest number of applicants to the largest single training pathway to a career in general practice (Chart 3.1). The interest in RACGP General Practice Experience Pathway has also increased since 2019.[21] Despite the growing number of applicants, the number of eligible applicants and positions filled in 2021 was lower than 2015.

Chart 3.1: The number of medical graduates applying to the AGPT Program
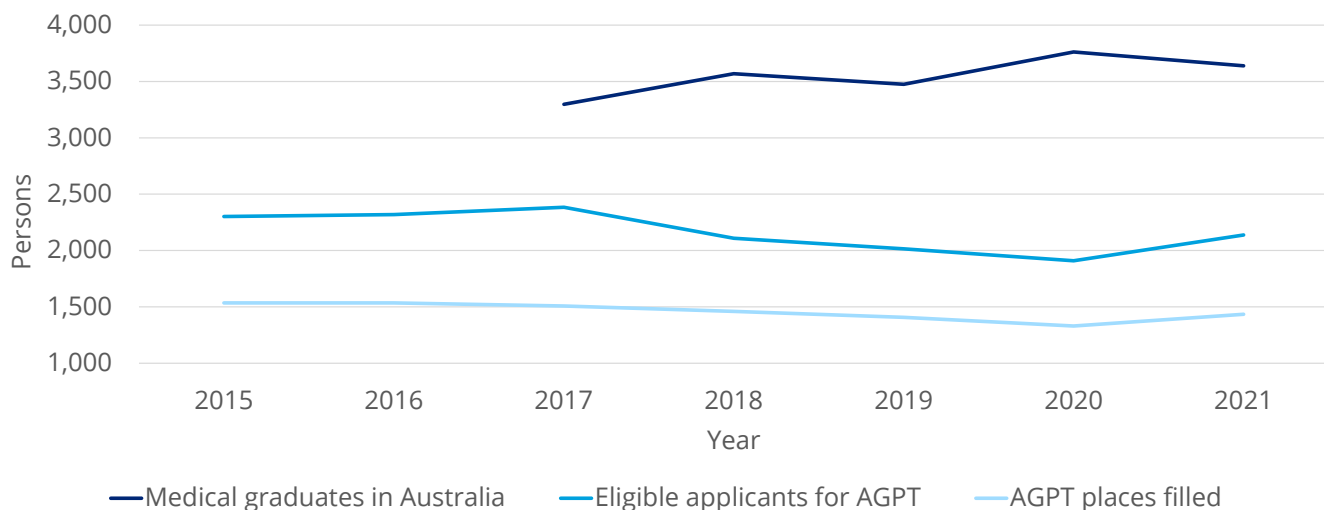
Source: Deloitte Access Economics adapted from RACGP (2021).[22]

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[17] Australian Bureau of Statistics (ABS) 2021, Data table 1, *Patient Experiences in Australia: Summary of Findings*, *2020-21* <https://www.abs.gov.au/statistics/health/health-services/patient-experiences-australia-summary-findings/latest-release#data-download>, accessed 15 April 2022.

[18] Department of Health, 2022, *General Practice Workforce providing Primary Care services in Australia*, <https://hwd.health.gov.au/resources/data/gp-primarycare.html>, accessed 11 April 2022.

[19] Department of Health, 2022, *General Practice Workforce providing Primary Care services in Australia*, <https://hwd.health.gov.au/resources/data/gp-primarycare.html>, accessed 11 April 2022.

[20] Scott, A, 2021, *The evolution of the medical workforce.*

[21] Royal Australian College of General Practitioners (RACGP), 2022, Interest in entering general practice training, <https://www.racgp.org.au/health-of-the-nation/chapter-5-the-future-of-the-gp-workforce/5-1-interest-in-entering-general-practice-training#ref-44>, accessed 15 April 22.

[22] Royal Australian College of General Practitioners (RACGP), 2022, Interest in entering general practice training, <https://www.racgp.org.au/health-of-the-nation/chapter-5-the-future-of-the-gp-workforce/5-1-interest-in-entering-general-practice-training#ref-44>, accessed 15 April 22.

GPs undergo significant training in medicine. A typical pathway in Australia includes the completion of a five-to-six-year Bachelor of Medicine and Bachelor of Surgery (MBBS), followed by two years of post-graduate hospital training and three years of supervised general practice training (Figure 3.2).[23]

Figure 3.2: Typical GP training pathway

Source: Deloitte Access Economics using RACGP (2020).

Practitioners who complete the three years of supervised GP training with RACGP or ACRRM become VR or 'specialist' GPs and receive a Fellowship with their training college. As outlined earlier in this section, approximately 79.1% of GPs in Australia are considered VR or 'specialist' GPs.

3.2.1.2   Decreasing number of GP trainees intake

The AGPT Program is the biggest Commonwealth funded general practice training program with more than 5,000 Registrars training towards fellowship at any given time. Each year, the AGPT Program adds 1,500 new training spots, which have all been filled until 2017. However, the number of medical graduates applying for a training position under the AGPT Program has recently decreased, resulting in the AGPT Program being undersubscribed.

The 2021 round has brought in 1,434 new GP trainees, still not quite filling the 1,500 available training places. 2017 was the most recent year all training places were filled, with numbers dwindling to a low of 1,329 in 2020 (Chart 3.2). [24]

The employment arrangements for GP Registrars are one of the causes frequently identified as contributing to the fall in the number of GP training places being filled. There are large disparities between what GP trainees consider important and their satisfaction with their training and employment arrangements. Just over half of respondents say they are dissatisfied with their salary, just under 40% say they are dissatisfied with their ability to negotiate salary, and just under half say they are dissatisfied with other employment terms and conditions.[25]

The GP workforce is also experiencing gradual ageing, with the percentage of GPs over the age of 65 gradually increasing year on year, from 11.6% in 2015 to 13.3% in 2019.[26] This is likely in part a reflection of the declining proportion of Australian medical graduates choosing to enter training as a general practitioner.[27]

[23] Royal Australian College of General Practitioners (RACGP), 2020, The role of specialist GPs, <https://www.racgp.org.au/FSDEDEV/media/documents/RACGP/Position%20statements/The-role-of-specialist-GPs.pdf>, accessed 16 April 2022.
[24] Royal Australian College of General Practitioners (RACGP), 2022, Interest in entering general practice training, <https://www.racgp.org.au/health-of-the-nation/chapter-5-the-future-of-the-gp-workforce/5-1-interest-in-entering-general-practice-training#ref-44>, accessed 15 April 22.
[25] General Practice Registrars Australia, 2021, GP Trainee Benchmarking Report <https://gpra.org.au/benchmarking-survey/>, accessed 15 April 2022.
[26] Productivity Commission 2021, Report on Government Services 2022 E Health, https://www.pc.gov.au/research/ongoing/report-on-government-services/2022/health, accessed 15 April 22.
[27] Scott, A, 2021, The evolution of the medical workforce.

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Chart 3.2: Age distribution of the GP workforce
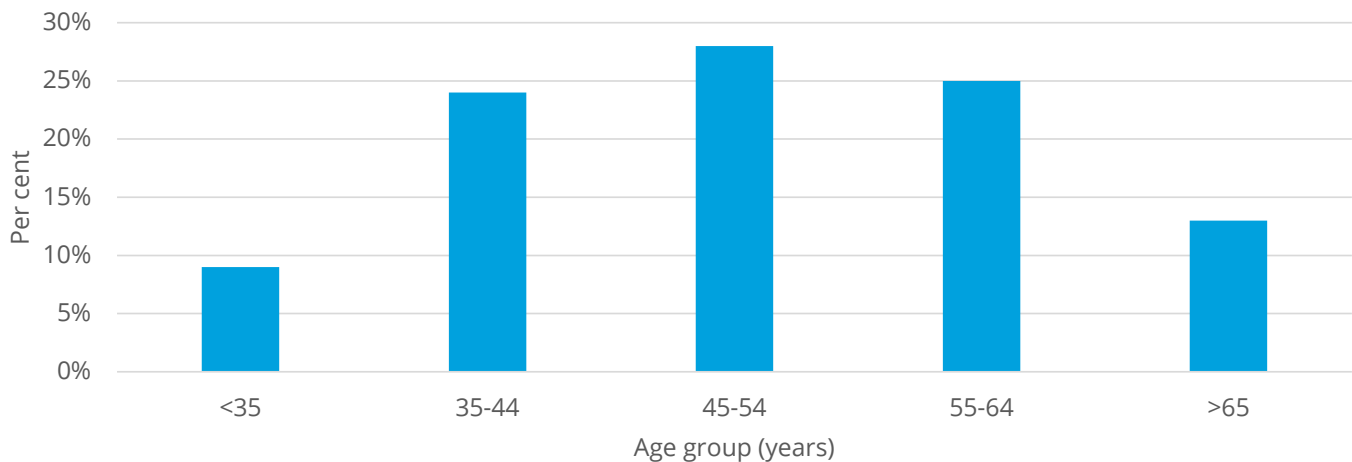
Source: Productivity Commission (2021).

3.2.2 Geographical redistribution of the GP workforce

GP supply has long been dependent on migrants despite recent policy efforts to increase self-sufficiency. The overall number of GPs and non-GP specialists who are international medical graduates (IMGs) has increased steadily over time. In particular, the per cent of GPs who are IMGs increased by 4.5% between 2013 and 2019.[28] Further, growth in the number of IMGs has exceeded that of Australian trained doctors for both GPs and non-GPs. It follows that the share of GPs who are IMGs has increased in recent years, from 43.1% in 2013 to 44.8% in 2018.[29] The GP workforce in rural and regional areas is particularly reliant on IMGs, as migrant doctors are often used as a means to fill workforce shortages in regional and remote locations. This is largely due to a strong preference of domestically trained doctors to work in major cities, a preference which is expected to persist over the horizon, with just one in four Australian General Practice Training (AGPT) Program participants indicating they would like to work in a rural or remote location in the future.[30]

Since 2013, the number of doctors working outside of major cities has grown faster than the number of doctors working within major cities. This has resulted in a slight increase in the percentage of all doctors working outside major cities from 22% in 2013 to 22.8% in 2019.[31] While the overall number the number of GPs in Australia has grown from 2016 to 2021, maldistribution remains a significant problem. The number of GPs in the Northern Territory has been declining since 2017 and in the 2019-20 period, New South Wales, Western Australia, South Australia and the Australian Capital Territory all experienced a decrease in the number of GPs.[32]

3.2.3 Impact of COVID-19

The COVID-19 pandemic has also impacted the supply of GPs. The slowing of migration and border closures have resulted in fewer recruitment of qualified overseas GPs to fill workforce shortages, which Australia has been reliant on the past decades.[33] There have also been negative impacts of COVID-19 on GP training, which has disrupted training and employment and the potential effects on trainees' careers and training progression. This includes a decrease in their patient numbers, and some trainees reporting decrease in working hours and some having their employment terminated as a result of COVID-19.[34]

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[28] Scott, A, 2021, *The evolution of the medical workforce.*

[29] Scott, A, 2021, *The evolution of the medical workforce.*

[30] Taylor, R, Clarke, L & Radloff, A., 'Australian General Practice Training Program: National Report on the 2020 National Registrar Survey', *Australian Council for Educational Research*, 2021.

[31] Scott, A, 2021, *The evolution of the medical workforce.*

[32] The Senate, Community Affairs References Committee, 2022, Provision of general practitioner and related primary health services to outer metropolitan, rural, and regional Australians - Interim Report

[33] ABC News, 2020, GPs concerned coronavirus migration drop will shrink pool of doctors across Australia, <https://www.abc.net.au/news/2020-07-17/gps-fear-coronavirus-migration-drop-will-cut-number-of-doctors/12464764>, accessed 15 April 2022.

[34] General Practice Registrars Australia (GPRA), 2020, New GPRA survey shows worrying impacts of COVID-19 on GP training, <https://gpra.org.au/2020/04/27/impacts-covid19-gptraining/>, accessed 15 April 2022.

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## 3.3   The demand for GPs in Australia

3.3.1   Population growth

Australia has one of the fastest growing populations of any developed country in the world.[35] Historically, the key factors impacting population size have been fertility, net migration and mortality rates. However, for the first time since World War II, Australia experienced negative net migration in 2021 as a result of COVID-19 and the associated border closures. While there continues to be much uncertainty going forward regarding immigration, Australia's population is expected to grow by around 22% between 2022 and 2041.[36] Recent years since emerging out of lockdowns and border closures, has shown a rapid growth in population in the fringes of capital cities and in regional centres.[37] A consequence of this growth is that areas on the fringes of capital cities and regional capital cities are experiencing a shortage of infrastructure including health and access to primary health care services such as GPs.[38]

3.3.2   The ageing population

Australia, like most high-income countries, has a large and growing elderly population with 16% of the population aged 65 years and over as of 2020, a proportion which is expected to grow to around 22% by 2066.[39] Life expectancy in Australia is among the highest in the world, and research has found it continues to grow in recent years, rising by 0.7 years for both males and females between 2019 and 2020, the largest increase in Australia since the 1990s.[40]

Chart 3.3: Projection of population over the age of 65 as a percent of overall population
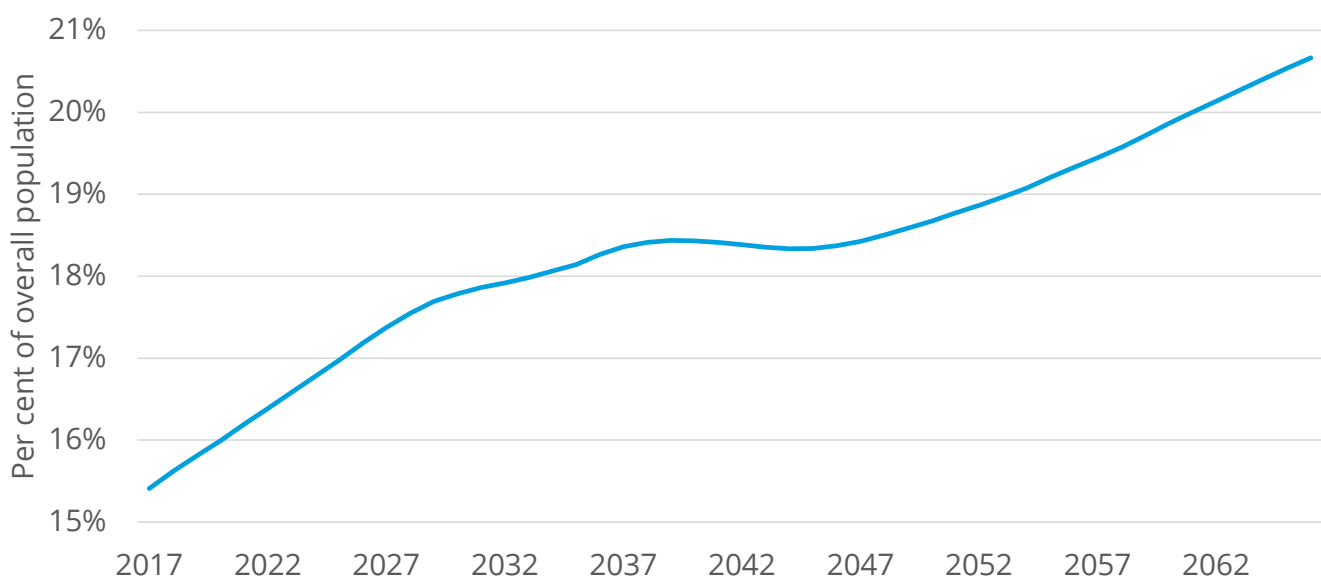
Source: ABS Population Projections (2018).

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[35] Organisation for Economic Co-operation and Development (OECD), 2016, OECD Factbook 2015-2016: Economic, Environmental and Social Statistics, OECD Publishing, Paris, https://doi.org/10.1787/factbook-2015-en.

[36] idCommunity, 2022, Welcome to the Australia population forecasts, <https://forecast.id.com.au/australia#:~:text=The%20Australia%20population%20forecast%20for,year%20between%202021%20and%202041>, accessed 20 April 2022.

[37] National Growth Areas Alliance, 2019, Catchup with outer suburbs, >https://ngaa.org.au/catch-up-with-the-outer-suburbs-campaign-launch>, accessed 19 April 2022.

[38] Parliament of Australia, 2018, 5. Urban sustainability, <https://www.aph.gov.au/Parliamentary_Business/Committees/House/ITC/DevelopmentofCities/Report/section?id=committees%2Freportrep%2F024151%2F25692>, accessed 19 April 2022.

[39] Australia Institute of Health and Welfare (AIHW), 2021, Older Australians, <https://www.aihw.gov.au/reports/older-people/older-australians/contents/demographic-profile>, accessed 20 April 2022.

[40] Canudas-Romo, V, Houle, B, & Adair T, (2022), Quantifying impacts of the COVID-19 pandemic on Australian life expectancy, *International Journal of Epidemiology*, 2022.

In 2019-20, the ABS Patient Experience Survey estimated that around 95% of Australians aged 65 and over see a GP.[41] Research has also shown that a person aged over 65 makes over 10 visits to a GP annually, more than double the rate of under-65 individuals.[42]

Additionally, 11% of people aged 65 and over live in outer regional, remote or very remote areas and relative to the overall population, a lower proportion live in major cities.[43] Given older people are more likely to demand GP services, this tendency for older Australians to live outside of major cities potentially has implications for further straining GP supply in rural and regional areas, which is falling as share of supply overall (Section 3.2).

3.3.3   Chronic conditions

Among other factors, the ageing population is leading to increased prevalence of chronic conditions and multimorbidity.[44] Combined with reduced mortality associated with these conditions due to improved treatment, this naturally increases demand for GPs, as GPs often play a notable role in managing chronic conditions and multimorbidity.

3.3.4   Impact of COVID-19

The GP workforce and practice patterns have been substantially impacted by the COVID-19 pandemic. To limit face-to-face consultations and spread of the virus, new Medicare telehealth items were introduced on the MBS. In April 2020, there were 4.7 million new telehealth services provided by GPs, which exceeded the fall in the number of face-to-face items to 2.7 million (reduction of 24.4%) in the same month.[45]

Despite the fall in face-to-face items, the GP workforce have also been on the frontline of the pandemic response in the last two years. General practice has delivered more than 16 million COVID-19 vaccine doses, accounting for more than 80% of total vaccines administered since the start of the vaccine rollout.[46] In an attempt to alleviate the increased strain on the medical workforce, a temporary pandemic response sub-register was set up which allowed medical professionals (including GPs) who had retired in the last three years to return to the workforce, particularly to assist with vaccine rollout.[47]

COVID-19 has also had a significant impact on mental health and as a result demand for mental health services has increased. The volume of mental health-related Pharmaceutical Benefits Scheme (PBS) prescriptions dispensed spiked notably in March 2020 when COVID-19 restrictions were first introduced, and from mid-May 2020 to early-August 2021, weekly volume trended above the same week one year prior. These patterns were observed across all Australian jurisdictions, and between 16 March 2020 and 19 September 2021, almost 21 million MBS-subsidised mental health-related services were processed.[48] General demand for mental health services increases demand for GPs as they play a key role in the referral of patients to other health professionals as well as often managing mental health conditions themselves.

Another significant impact of COVID-19 is the undiagnosed disease and delayed or avoided care of chronic conditions due to concerns of COVID-19. As a result of deferred and suspended medical care, it is anticipated to result in the diagnosis of more progressed and severe conditions, placing substantially increased burden on the health system.

Ensuring an adequate supply of GPs will enable GPs to support their hospital colleagues by preventing hospital admissions, coordinating care and providing patients with education and reassurance by providing all Australians equitable access to primary care.

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[41] Australia Institute of Health and Welfare (AIHW), 2021, Older Australians, <https://www.aihw.gov.au/reports/older-people/older-australians/contents/demographic-profile>, accessed 20 April 2022.
[42] Family Medicine Research Center, 2015, Care of older people in Australian general practice. University of Sydney (2015) <http://sydney.edu.au/medicine/fmrc/publications/BEACH-feature-2015.pdf>, accessed 20 April 2022.
[43] Australia Institute of Health and Welfare (AIHW), 2021, Older Australians, <https://www.aihw.gov.au/reports/older-people/older-australians/contents/demographic-profile>, accessed 20 April 2022.
[44] Australian Institute of Health and Welfare 2014 Australia's health 2014 Australia's health series no. 14. Cat. no. AUS 178. Canberra: AIHW.
[45] Scott, A., 2020, The impact of COVID-19 on GPs and non-GP specialists in private practice.
[46] Kidd, M & Toca, L 2021, 'The contribution of Australia's general practitioners to the COVID-19 vaccine rollout', *Australian Journal of General Practice*, 2021.
[47] ABC news, 2021, Retired doctors push to provide medical care in COVID-19 pandemic, disasters, <https://www.abc.net.au/news/2021-09-12/qld-covid-retired-doctors-reserve-force-for-disasters-pandemics/100445938>, accessed 20 April 2022.
[48] Australian Institute of Health and Welfare (AIHW), 2022, Mental health services in Australia, <https://www.aihw.gov.au/reports/mental-health-services/mental-health-services-in-australia/report-contents/covid-19-impact-on-mental-health>, accessed 20 April 2022.

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4 Methodology.

This chapter provides an overview of the modelling approach used in estimating the supply of and demand for GPs in Australia. Detailed description of the methodology and sources used are provided in Appendix A to Appendix B.

4.1 Key changes to the data inputs compared to the 2019 Report

The modelling employed in this update is similar and builds upon the approach utilised in the 2019 Report. The **key points of difference are:**

- The current model uses the most recent release of the General Practice Workforce (GPW) dataset, which captures the number of GPs providing primary care services, the number of services provided and the GP Full Time Equivalent
    - The GPW dataset uses a different counting method compared to the method previously used by the Department (such as that employed in the National Health Workforce Dataset), and now considers a broader range of primary care MBS items, which provides more detailed data to measure GP activity over the entire year
    - GPs who do not bill Medicare are not included in the GPW dataset. The GPW dataset enhanced the completeness of GP counts by counting all providers that mainly provide services that fall within a GP's scope of practice throughout the reference year.
    - Furthermore, the dataset counted specialist-in-training (if they are a GP trainee) and hospital non-specialist, other clinician, or non-clinician if they are on RACGP/ACRRM/RVTS trainees.
- The current model does not include specialists who are classified under the Derived Major Specialty (DMS) as a "GP" for one quarter of the year despite working the majority of the year as non-GP specialist, i.e. a GP has to provide mainly GP services for a year to be counted as GP[49]
- Various adjustments to the prior model have been made, including the reporting of data using more refined geographical classifications and the inclusion of non-VR GPs
- In this report, we report results according to the ASGS-RA. The ASGS defines Remoteness Areas into 5 classes of relative remoteness across Australia. These 5 classes of remoteness are Major Cities of Australia, Inner Regional Australia, Outer Regional Australia, Remote Australia, Very Remote Australia. Remoteness is defined based on road distance to the nearest urban centre.

Details pertaining to the differences in modelling approach between the 2019 report and the current report are detailed in Table 4.1.

Table 4.1: Comparison of 2019 model and the current model

	2019 model	Current model
GP headcount and FTEs hours	Opening stock of GPs was obtained from the National Health Workforce Dataset (NHWDS), stratified by state/territory, age, gender, and Statistical Area Level 3 (SA3).	Opening stock of GPs is obtained from the GPW dataset, stratified by state/territory, age group, gender, and MMM. This includes non-VR GP and GP trainees that provide GP services.
Non-vocationally registered (VR) GP	Non-VR GP was excluded from previous model.	Non-VR GP is included in the updated model.
Geographical classification	GP supply and demand was reported by the GCCSA. Urban and regional classifications were defined using the GCCSA.	GPW reported GP supply and demand in MM categories. Both demand and supply data are mapped to ASGS-RA, and the model output is reported by major cities and regional and remote areas.

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[49] Department of Health, 2020, Method papers for counting General Practitioners delivering primary care services, Headcount and workload methods, <https://hwd.health.gov.au/resources/information/methods-gp-workload.html>, accessed 20 April 2022.

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|	2019 model	Current model
GP service utilisation	Demand was calculated using Medicare Australia GP services utilisation (e.g., items 23 and all other GP relating items) and projected population growth.	Demand for services was calculated using the GPW dataset (the number of services by GPs providing primary care services) and projected population growth.
Similar services funded by the Department of Veterans' Affairs (DVA).	Applied utilisation rates to the matched veteran population for each year between 2019-2030.	Applied utilisation rates to the matched veteran population for each year between 2022-2032
GP FTE hours	GP FTE hours was estimated equivalent to 36.5 clinical hours per week.	The GPW defined a GP FTE as equivalent to 40-hour weeks over 46 weeks of the year.

Source: Deloitte Access Economics (2022).

4.2   Supply model methodology

This section provides an overview to the modelling approach used to estimate the number of GPs in Australia over 2022 to 2032. Similar to the 2019 Report, this report defines the supply of GPs as a function of the estimated opening stock of GPs in each year, plus relevant inflows and net of outflows. Analysis was undertaken by age group, gender and ASGS-RA. A detailed description of the supply modelling is provided in Appendix A.

A high-level schematic of the relevant inflows and outflows considered in the supply model is shown in Figure 4.1.

Figure 4.1: Model schematic for the supply of GP workforce
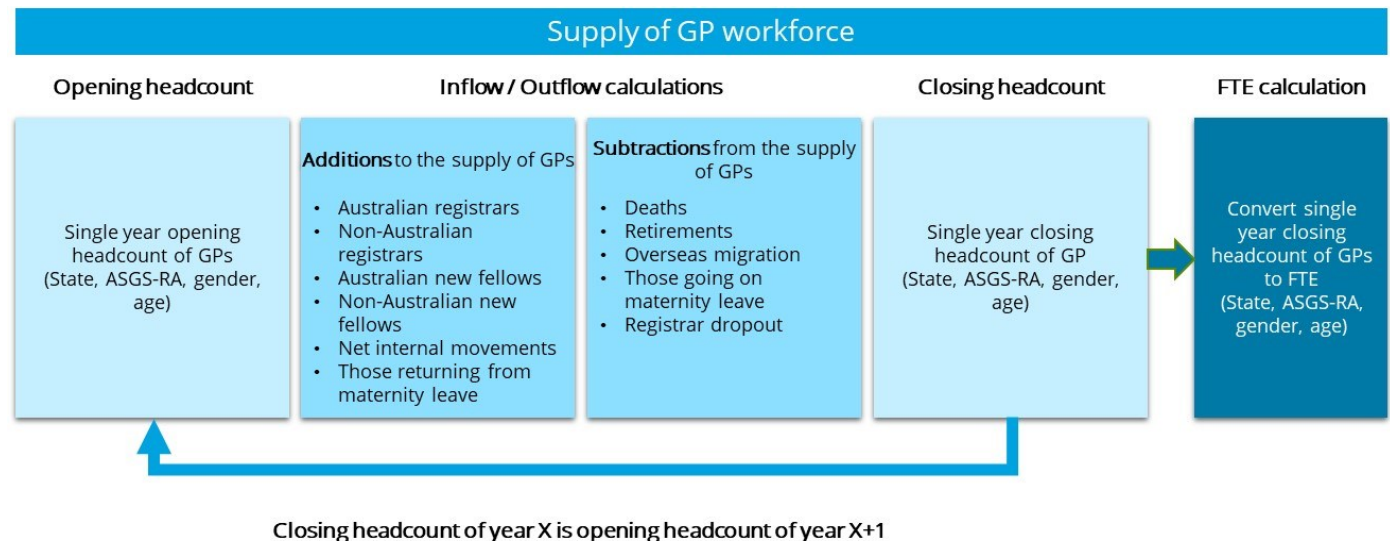
Source: Deloitte Access Economics (2022).

4.3   Demand model methodology

The demand for GPs – between 2022 and 2032 – was inferred from observing indicators of factors driving demand, such as changes in population growth and age structure and the utilisation of GP services. A detailed description of the demand modelling is provided in Appendix B.

Utilisation rates of services (through Medicare data) were used to estimate the demand for GPs in Australia. It is noted that utilisation is not equivalent to demand, and it is possible that utilisation rates reflect both demand for and supply of services. Utilisation rates are observable, as through Medicare statistics, but are driven by both the demand for and supply of services.

Demand for GP services was calculated using Medicare Australia GP services and similar services funded by the DVA. Data were stratified by calendar year, gender and age group of patients in receipt of service provision. Data were then split to

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major cities and regional and remote areas, based on Medicare item service data published by the Department of Health by MMM classification level.

Historical services data was converted to a measure of service utilisation, stratified by state/territory, gender, age, and remoteness area. To perform this conversion, services were divided by their matched population. Service utilisation rates per capita were then forecast for the 2022 to 2032 period of analysis using a variety of methods, and then multiplied out by matched population forecasts and average minutes per service to obtain an estimate of the total number of clinical GP hours demanded in Australia.

A high-level schematic of the demand model is shown in Figure 4.2.

Figure 4.2: Model schematic for the demand of GP workforce
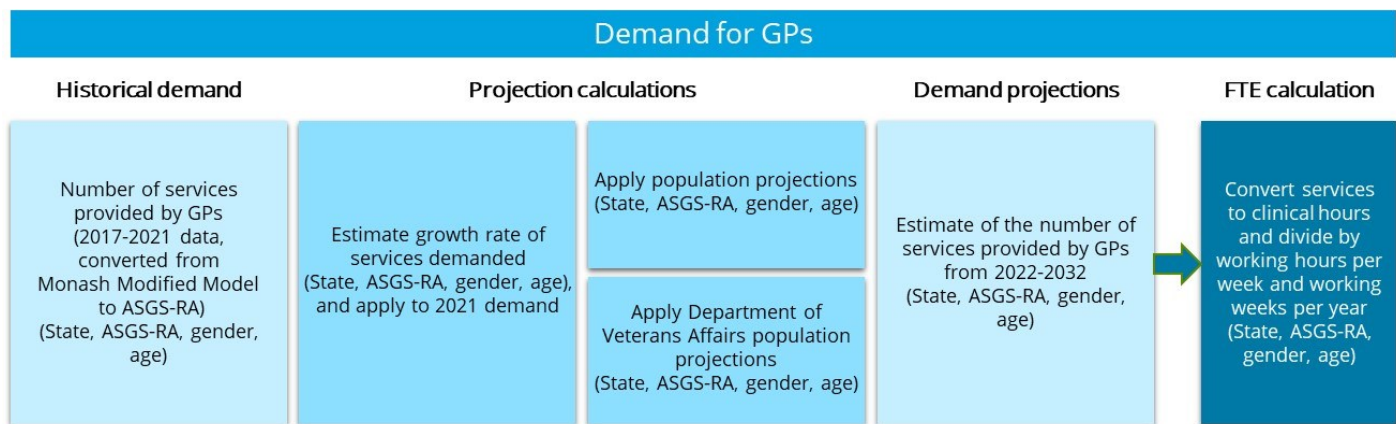
Source: Deloitte Access Economics (2022).

The current model adopted the approach from the 2019 Report, assuming that the market for GPs starts from an initial position of equilibrium and then tracks the gap between demand and supply over the future decade assuming that there is no workforce or policy reform from the current day. Future movements in supply and demand are relative to the initial position and the analysis is undertaken holding all other factors constant. This report does not make a judgment on the adequacy of the current supply of GP services, such as wait time, as that is not available from the input dataset.; rather it looks at the direction of future demand and supply pressures for the GP workforce relative to the current position.

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5   Results: Supply of GPs.

5.1   Findings

Table 5.1 presents the closing headcount of GPs and the FTE GPs supplied in each year, between 2021 and 2032 for major cities, and regional and remote areas. Overall, FTE GPs are estimated to decrease by 4.0% over this period. The model projected a 94.6% increase of FTE GPs at the 39 years and younger age group by 2032. On the other hand, the model also projected a decrease of 9.3%, 41.6% and 43.4% of FTE GPs by 2032 in the 40-54, 55-64, and 65+ age group, respectively. Female FTE GPs are expected to grow by 8.8% by 2032, while male FTE GPs are expected to decrease by 13.0% by 2032. FTE GPs in major cities are projected to decrease by 15.0% over this period. FTE GPs in regional and remote areas are projected to increase by 27.4% in the same period.

Table 5.1: Closing headcount of GPs and total FTE GPs supplied in 2021, 2025, 2029 and 2032

	2021	2025	2029	2032
GP headcount				
Region				
Major cities	27,635	25,316	24,327	24,192
Regional and remote areas	10,037	10,825	11,971	12,978
Age				
0-39	8,272	11,148	13,460	14,919
40-54	15,679	14,341	14,071	14,309
55-64	8,987	6,810	5,675	5,251
65+	4,734	3,842	3,091	2,691
Gender				
Male	22,042	20,341	19,738	19,787
Female	15,630	15,800	16,559	17,383
Australia	37,672	36,141	36,297	37,170
FTE GPs				
Region				
Major cities	22,799	20,619	19,596	19,369
Regional and remote areas	7,937	8,478	9,335	10,114
Age				
0-39	5,552	7,839	9,659	10,802
40-54	12,545	11,436	11,200	11,382
55-64	7,907	5,991	4,993	4,621
65+	4,732	3,831	3,079	2,678
Gender				
Male	18,164	16,532	15,859	15,799
Female	12,573	12,566	13,072	13,684

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	2021	2025	2029	2032
Australia	30,736	29,097	28,932	29,483

Source: Deloitte Access Economics analysis (2022). Note: totals may not add due to rounding.

Table 5.2: Summary of inflows and outflows of GPs (Australia, person) in 2021, 2025, 2029 and 2032

	2021	2025	2029	2032
Outflows				
Retirements	-1,935	-1,533	-1,267	-1,146
Death	-238	-189	-157	-141
Net temporary movements*	-76	-87	-121	-140
Overseas departure	-162	-165	-174	-183
Registrar departures	-134	-143	-153	-159
Inflows				
AMG registrars	1,029	1,094	1,156	1,200
Overseas doctors	802	847	894	929
Net internal migration	3	3	4	4

Source: Deloitte Access Economics analysis (2022). *Represents GPs leaving workforce for maternity leave subtract GPs returning to workforce after a period of maternity leave.

5.2   Interpretation of findings

Overall, the supply of GPs slightly decreases between 2021 and 2032 (FTE GPs of 30,736 in 2021 and 29,483 in 2032) throughout the projection period. There are a number of demographic changes taking part in the GP workforce. Between 2021 and 2032, the proportion of the female FTE GPs is expected to increase from 40.9% in 2021 to 46.4% in 2032. Young GPs (39 years and younger) account for 18.1% of total FTE GPs in 2021 and expected to grow to account for 36.6% of total GP workforce by 2032 (Table 5.1). Growth in GPs in the younger age group is attributable to the number of new registrars, newly trained doctors, and overseas trained doctors joining the workforce.

A main driver that is limiting supply growth in the GP workforce is the large number of workforce departures – primarily due to retirement and death associated with an aged workforce (Table 5.2).

In comparison to the 2019 model, the current model begins the projection with higher number of headcount (38,388) versus 29,705 in 2019 (Table A.1). This is due to the different input datasets used in each model. The current model uses the most recent release of the GPW dataset, which captures the number of GPs, non-VR GPs and GP trainees providing primary care services, the number of services provided and the GP FTE, whereas the 2019 model was limited to VR-GPs from the NHWDS dataset. Consistent with previous model, retirements and death continue to be the main limiting factors for supply growth in the GP workforce.

The current model projected a decrease for FTE GPs in major cities of 15.0% while GPs in regional and remote areas are projected to increase by 27.4% between 2021 and 2032 (Table 5.1). By comparison, the previous model projected GPs in urban areas to decrease by 2.0% and growth in regional areas of 20.0%.[50]

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[50] Deloitte Access Economics 2019, *General Practitioner workforce report 2019*, for Cornerstone Health Pty Ltd, <https://www2.deloitte.com/au/en/pages/economics/articles/general-practitioner-workforce-report-2019.html>, accessed 12 April 2022.

6   Results: Demand for GPs.

6.1.1   Findings

Table 6.1 presents the FTE GPs demanded, and the clinical hours demanded in each year, between 2021 and 2032 for major cities, and regional and remote areas. Overall, demand for FTE GPs is estimated to increase by 33.0% over this period. The demand for FTE GPs grew the most for people aged 85 years and older with the model projecting a 53.0% increase by 2032. Demand for FTE GPs grew the least for people aged 65 to 74 years with the model projecting a 18.0% increase by 2032. However, demand for FTE GPs was projected to increase between 18%-72% for the majority of age brackets by 2032. Demand for FTE GPs in major cities is projected to increase by 35.4% by 2032, while demand in regional and remote areas is projected to increase by 25.9% in the same period.

Table 6.1: Summary of demand findings in 2021, 2025, 2029 and 2032

	2021	2025	2029	2032
FTE GPs demanded				
Region				
Major cities	22,799	24,289	27,895	30,886
Regional and remote areas	7,937	8,978	9,528	9,989
Age				
00 - 04	1,245	1,641	1,859	2,026
05 - 09	679	824	963	1,072
10 - 14	690	761	809	868
15 - 19	988	1,187	1,354	1,477
20 - 24	1,313	1,455	1,711	1,918
25 - 34	3,617	3,723	4,075	4,393
35 - 44	3,750	3,978	4,460	4,822
45 - 54	3,908	4,127	4,816	5,612
55 - 64	4,307	4,553	5,056	5,453
65 - 74	4,680	4,872	5,334	5,535
75 - 84	3,774	4,065	4,457	4,633
85 +	1,787	2,079	2,528	3,067
Gender				
Male	12,725	14,149	15,894	17,338
Female	18,012	19,118	21,530	23,537
Australia	30,736	33,267	37,423	40,875
Services demanded per capita				
Region				
Major cities	7.1	7.7	8.4	8.9
Regional and remote areas	4.6	4.5	4.4	4.4

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	2021	2025	2029	2032
Age				
0-4	5.2	5.6	6.1	6.5
5-9	2.7	2.9	3.2	3.4
10-14	2.6	2.7	2.8	2.9
15-19	3.8	4.2	4.6	4.9
20-24	4.4	4.8	5.4	5.8
25-29	5.1	5.5	5.9	6.3
30-34	5.1	5.4	5.8	6.2
35-39	5.9	6.2	6.5	6.8
40-44	5.8	6.1	6.4	6.7
45-49	6.7	7.5	8.4	9.2
50-54	6.7	7.5	8.3	9.1
55-59	8.2	8.9	9.6	10.2
60-64	8.2	8.8	9.6	10.2
65-69	11.0	11.2	11.4	11.6
70-74	11.1	11.3	11.5	11.7
75-79	15.3	14.7	14.2	13.9
80-84	15.3	14.7	14.2	13.9
85+	19.8	20.9	22.0	22.8
Gender				
Male	5.7	6.1	6.5	6.9
Female	7.6	8.1	8.7	9.2
Australia	6.7	7.1	7.6	8.0

Source: Deloitte Access Economics (2022).

6.2   Interpretation of findings

Overall, the demand for GPs (FTE) and GP services has increased over the projection period, by 33.0% and 40%, respectively. This high level of growth is driven by relatively higher levels of growth in certain regions/jurisdictions compared to others. For example, over the projection period, FTE GPs demanded increased, on average, 31.7% for New South Wales, Victoria, Queensland and South Australia. However, for Western Australia and Australia Capital Territory (ACT), FTE GPs demand is projected to grow an average of 55%. These larger growth rates are partially offset by relatively lower growth rates in Tasmania and Northern Territory with an average growth in demand of 7% over the period.

A similar finding is present when comparing the change in demand between different remoteness areas. Over the projection period, demand for FTE GPs is expected to grow by 35.4% in major cities, while only growing an average of 25.9% in regional and remote areas. In comparison, the previous model projected demand for GPs in urban areas to increase by 40.3%, while in regional areas by 36%.

One driver of this is the rate of population growth in the respective jurisdictions, for example, Tasmania's population is expected to grow 5% over the period compared to ACT growing 19%. However, the population growth rate between different remoteness areas is not highly variable, with major cities' populations expected to grow 17%, and regional and remote populations expected to grow 15%.

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Another driver is the increasing utilisation of GP services. In major cities GP services demanded per capita is projected to grow 27% over the projection period, compared to an average decrease of 1% in regional and remote areas. This variance may reflect the data on GP service demand capturing the impacts of the COVID-19 period in which major cities were more greatly impacted relative to regional and remote areas. Prior to the pandemic, service utilisation levels tended to be higher for residents in major cities compared to those in regional and remote areas.[51] Additionally, recent research suggests 61.3%[52] of GP practices faced high/medium impact of an increased workload over the pandemic. This finding differs from the 2019 report which found in urban areas GP services demanded per capita is projected to decrease 0.2% over the projection period, compared to an average increase of 9% for regional areas.

In comparison to the 2019 model, the current model begins the projection with a higher number of GP services demanded (164.4 million in 2019) versus 139.8 million in 2019. This is due to the different input datasets used in each model. The current model uses the most recent release of the GPW dataset, which captures the number of GP services by GPs, based on the latest review of primary health care GP items on the MBS schedule. Whereas the 2019 model used Medicare item reports, calculating projections for Item 23 (representing almost 80% of GP services), and all other items.[53]

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[51] Australian Institute of Health and Welfare 2010. Australian health expenditure by remoteness: a comparison of remote, regional and city health expenditure. Health and welfare expenditure series no. 50. Cat. no. HWE 50. Canberra: AIHW

[52] Kippen, R., O'Sullivan , B., Hickson, H., Leach, M., Wallace, G. (2020). A national survey of COVID-19 challenges, responses and effects in Australian general practice. Australian Journal for General Practitioners. The Royal Australian College of General Practitioners (RACGP)

[53] These items were 3, 4, 24, 36, 37, 44, 47, 193, 195, 197, 199, 585, 594, 599, 2497, 2501, 2503, 2504, 2506, 2507, 2509, 2517, 2518, 2521, 2522, 2525, 2526, 2546, 2547, 2552, 2553, 2558, 2559, 5000, 5003, 5010, 5020, 5023, 5028, 5040, 5043, 5049, 5060, 5063, 5067, 90020, 90035, 90043, 90051.

7 Comparison of supply and demand.

This chapter builds on the analysis in Chapter 5 and Chapter 6 to forecast the supply and demand of GPs in Australia over 2022-32.

In considering the results in this chapter, the reader should note that a market economy such as Australia tends to adjust dynamically to changes in supply and demand to reallocate resources using price signals. For example, where the model shows demand exceeding supply over the period of analysis, the market would adjust through increasing wages (increasing supply through encouraging new entrants to the workforce) and/or through increasing consumers prices (reducing demand) such as through increasing out-of-pocket costs or reducing bulk-billing rates. However, there can be significant time lags to increasing the supply of ATDs given the length of GP registrar training programs.

The supply and demand projections presented in this report starts from a position of initial equilibrium. Thus, future movements in supply and demand are relative to the initial position and the analysis is undertaken holding all other factors constant.

7.1 Aggregate analysis (Australia)

Starting from an initial equilibrium in 2021, demand for GP services is forecast to outpace supply – resulting in a widening shortfall of FTE GPs from 2022 onwards. Chart 7.1 plots the number of FTE GPs demanded relative to FTEs supplied, as well as the percentage shortfall of FTE GPs relative to FTE GPs demanded. This shortfall is expected to reach 27.9% (or 11,392 FTE GPs) by 2032.

In per capita terms, the average Australian in 2021 demanded 2.1 hours of GP care per annum. This is forecast to grow to 2.5 hours per annum by 2032. Meanwhile, supply of GP clinical hours per person is estimated to decline to 1.8 hours per annum by 2032 from 2.2 hours per annum in 2021. This indicates an average annual shortfall for Australians of 40.9 minutes of GP care per year by 2032.

Chart 7.1: Supply and demand for FTE GPs in Australia, 2021 to 2032
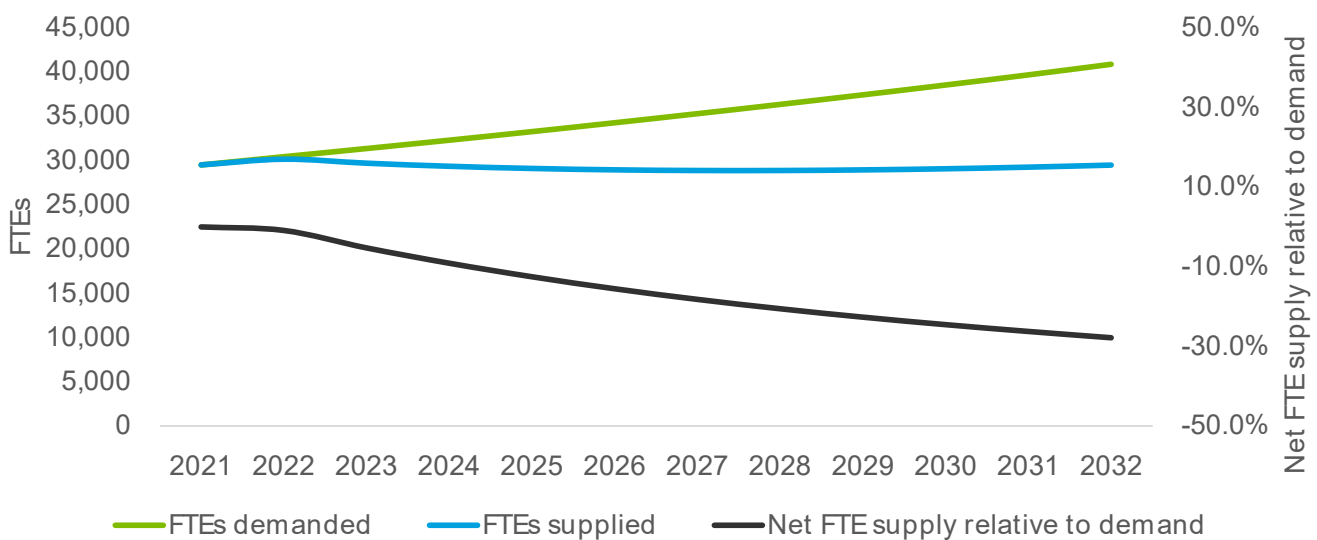
Source: Deloitte Access Economics (2022).

There are a number of factors underlying the slow growth in supply relative to demand. Over the forecast period, demographic changes in the GP workforce bring the male-female proportions in the workforce towards convergence. In 2021, the female share of the workforce was estimated to be 40.9%, which was projected to increase to 46.4% by 2032 (Chart 7.2). Research suggests that female GPs are more likely to work part time than their male colleagues[54]. Furthermore, the model incorporates female GPs taking maternity leave, which further reduces the supply of clinical hours relative to male GPs.

Chart 7.2: Share of the workforce by gender, 2021 to 2032
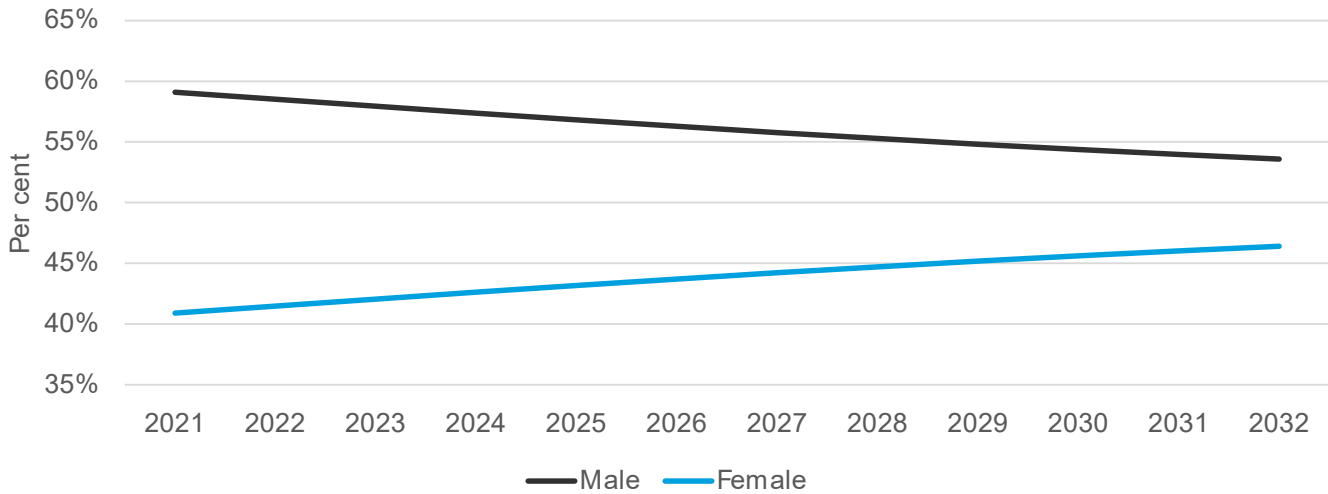
Source: Deloitte Access Economics (2022).

Another driver that is limiting supply growth in the GP workforce is a large number of workforce departures – primarily through retirements and deaths due to an aged workforce – which are expected to outstrip the supply of new registrar and overseas entrants to the workforce.

The nature of an ageing Australian population is partly reflected in the nation's GP workforce, with GPs aged 65 and over expected to peak in 2021 at 4,734 before declining to 2,691 by 2032 (Table A.1, Table 5.1). In 2021, 15.4% of the GP workforce is aged over 65 years – this share of the workforce is expected to fall to 9.1% by 2032 as people retire and are replaced with younger clinicians, although at a lesser rate – over the projection period new registrars represent 3.6% of the GP workforce on average per year. Similarly, there are estimated to be 238 GP deaths in 2021 which reduces to 141 deaths by 2032 (Table 5.2).

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[54] RACGP (2021), General Practice: Health of the Nation 2021, East Melbourne, Victoria.

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Chart 7.3: Proportion of GPs age 65 and over and the proportion of GPs retiring, 2021 to 2032
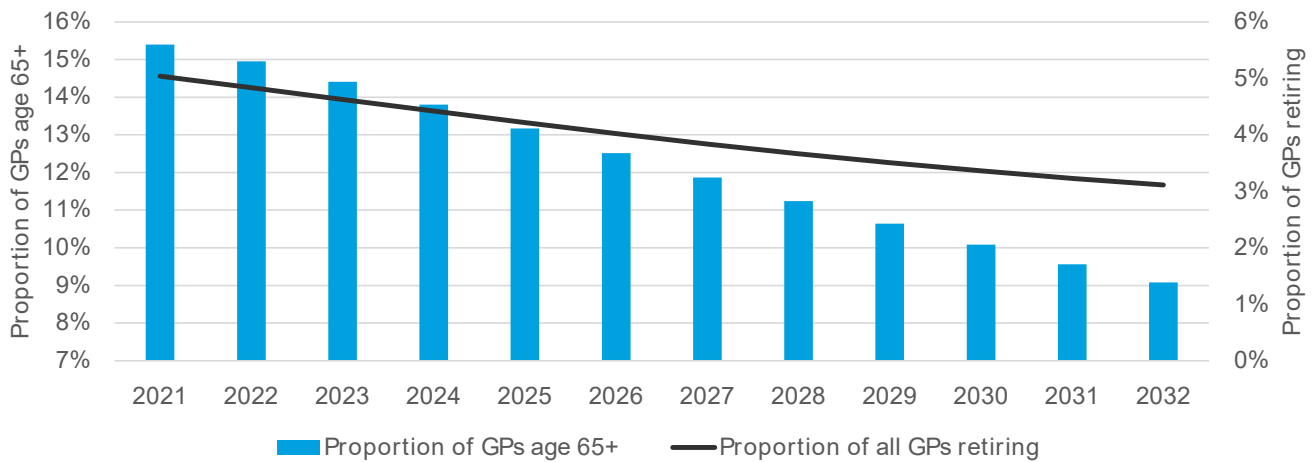
Source: Deloitte Access Economics (2022).

The RACGP's Health of the Nation report identified that older GPs work longer hours than their younger counterparts.[55] As older GPs retire over the next decade and are replaced with younger counterparts, this will contribute to the reduction in average hours supplied per GP.

7.2 Comparison of supply and demand by remoteness areas

As shown in Table 7.1, the model forecasted a deficit in major cities and a small surplus for regional and remote areas from a starting point of equilibrium in both locations. This deficit in major cities is more pronounced over the projection period than the surplus in regional and remote areas – with a deficit of 37.3% in major cities compared to 1.3% surplus in regional and remote areas (Chart 7.4).

Table 7.1: Supply and demand of FTE GPs in Australia, 2021 and 2032

	2021	2032
Major Cities		
Supply	21,012	19,369
Demand	21,012	30,886
Difference	**0**	**-11,517**
Regional and remote		
Supply	8,494	10114
Demand	8,494	9,989
Difference	**0**	**125**

Source: Deloitte Access Economics analysis (2022).

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[55] RACGP (2019), General Practice: Health of the Nation 2018, East Melbourne, Victoria.

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Chart 7.4: Comparison of FTEs supplied to FTEs demanded, by region, 2021 to 2032
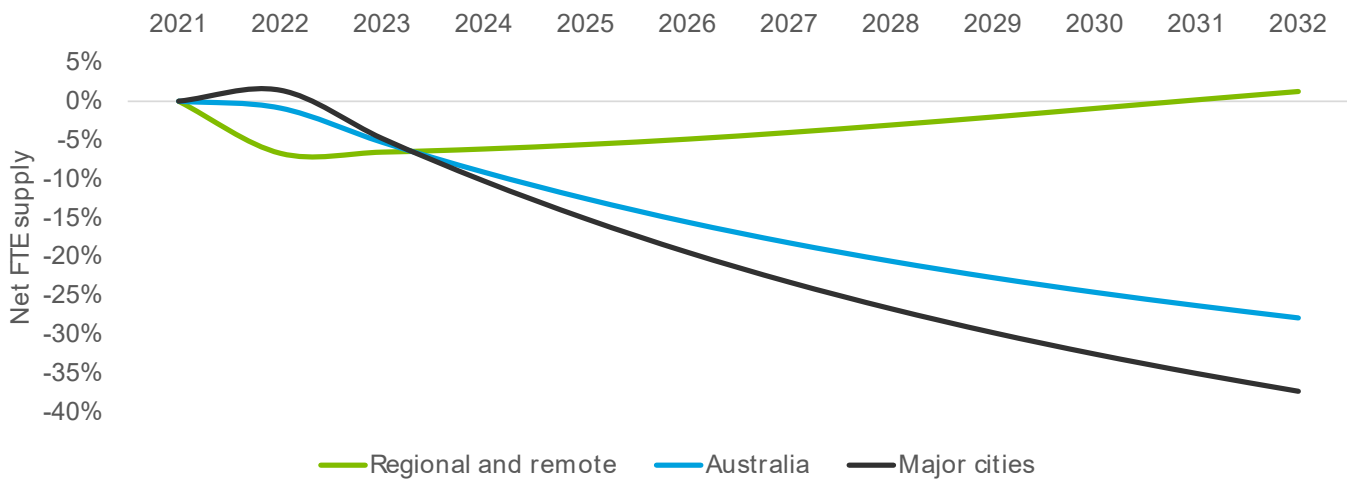
Source: Deloitte Access Economics (2022).

There are a number of contributing factors to this forecasted geospatial workforce trend. On the supply side, a greater than proportionate share (when measured against the distribution of demand for services) of registrars and OTDs are expected to enter the workforce in regional areas. This reflects the impact of SRHS on distributing GPs towards regional areas.

Meanwhile, growth in the demand for services in urban areas is expected to outstrip the growth in demand forecasted for regional areas. Over the period to 2032, average annualised growth in services demanded in major cities were forecast to grow by 3.6%. This compares to a projected growth rate of 1.5% per annum in regional and remote areas. A share of this growth is due to forecast population increases – with major cities and regional and remote areas populations set to increase by an average of 1.4% per annum. Additionally, service utilisation per capita rates are forecast to increase in major cities (at 1.9% per annum on average) compared to regional and remote areas which are forecast to decrease slightly (-0.3% per annum). This higher growth rate in major cities may reflect recent increases in demand for GP services coinciding with the COVID-19 pandemic. Furthermore, research suggests that living in major cities is associated with increased mental health problems, such as mood and anxiety disorders,[56] which would place additional demand on the GP workforce.

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[56] Peen J, Schoevers RA, Beekman AT, Dekker J. (2010). The current status of urban-rural differences in psychiatric disorders. Acta Psychiatr Scand.

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8   Caveats and limitations of the modelling.

A modelling exercise of this nature is necessarily a stylised characterisation of reality. For one, the model has not been designed to make a judgement on the current supply/demand of GP services – in fact, it assumes the market is currently in equilibrium which it may not be. Rather, the model has been designed to consider the direction of the future demand and supply of the GP workforce relative to the current position if there is no policy or workforce change. The findings of this report are useful only if taken in the context of which the modelling was designed. Further, it is important to remain mindful of the underlying assumptions and limitations of the modellings. The main considerations for interpretation of findings are discussed in this chapter.

8.1   Distribution of GPs in inner major cities and outer major cities

This modelling approach uses the MMM classification system to define whether an area is considered a major city, inner and outer regional area, or remote and very remote areas. Whilst the MMM classification is useful in better understanding the distribution of the health workforce across the MM categories, it does not show the distribution of the health workforce within a particular area, such as inner major city and outer major city areas. This distribution can be achieved using MBS activity data which is recorded against postcodes, and which would provide a more accurate understanding of service demand within inner and outer major cities. However, this data is not publicly available and therefore was not used in the analysis.

This is of particular relevance as recent years has shown a rapid growth in population in the fringes of capital cities and in regional centres.[57] A consequence of this growth is that areas on the fringes of capital cities and regional capital cities are experiencing a shortage of infrastructure including health, education and green facilities.[58] This means that residents residing in these areas have poor access to primary health care services including GPs, amongst other social, health and human services, which may led to negative impacts on the wellbeing of these residents.

This impact is further illustrated in two case studies in Penrith, New South Wales (Box 1) and Cranbourne, Victoria (Box 2).

Box 1: The changing community in Penrith, New South Wales

Penrith is located in Greater Western Sydney, 55km west of the Sydney central business district (CBD). The city is an established, but growing community with population projected to increase by 167,650 people between 2016 and 2041. Under the MMM classification system, Penrith is classified as MM1 and major city using ASGS-RA classification.

Compared to the state average of 3.30% growth in older persons (70+ years) as a proportion of total population, Penrith Local Government Area (LGA), of which the city of Penrith is a part of, is expected to experience the highest growth, at 6% between 2011 to 2026.[59] One important implication of the ageing population has previously discussed is the increase in chronic illness and associated specific illnesses and types of injuries. The increasing prevalence of chronic pain associated with ageing will need for an adequate health workforce, including general practice, to help coordinate chronic illness management.

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[57] National Growth Areas Alliance, 2019, Catchup with outer suburbs, >https://ngaa.org.au/catch-up-with-the-outer-suburbs-campaign-launch>, accessed 19 April 2022.
[58] Parliament of Australia, 2018, 5. Urban sustainability, <https://www.aph.gov.au/Parliamentary_Business/Committees/House/ITC/DevelopmentofCities/Report/section?id=committees%2Freportrep%2F024151%2F25692>, accessed 19 April 2022.
[59] Department of Health, Primary Health Network Nepean Blue Mountains 2016/2017 Needs Assessment.

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Box 2: The changing community in Cranboure, Victoria

Cranbourne is a municipality on the outskirts of Melbourne, and sits within the City of Casey, an area rich in cultural diversity with a rapidly growing population. The current population is 311,000 and is forecast to grow to 514,021 by 2041. Under the MMM classification system, Cranbourne is classified as MM1 and major city using ASGS-RA classification.

Chronic illness is the most significant health challenge for the overall population of City of Casey, including Cranbourne. For Casey residents, they have almost 10% chance of developing heart disease, 19% chance of developing arthritis and 2% of having a stroke.[60] Much of this burden of disease and injury is potentially avoidable either by preventing the conditions before they develop or identifying the problem early and treating them early. GPs are often the first point of contact of any illness and provide primary health care services such as diagnosing chronic disease and providing a management plan. They act as gatekeepers in following up with on-going treatment and monitoring progress and play a key role in ensuring a patient-centred approach is taken in the coordination of a multi-disciplinary team for managing chronic illness.

Whilst the findings from the modelling indicate there is growing demand for GPs in major cities across Australia, it is important to be mindful that the demand for GPs within a MM category varies, driven by the demographic change within a geographic area, and policy makers should consider this when undergoing health workforce planning.

8.2 Projecting services utilisation in regional and remote areas

It recognised that rural and remote populations have lower levels of healthcare access and are required to travel longer distances into inner regional and major city centres to seek primary healthcare services.[61] GP service utilisation per capita was observed to be lower in regional and remote areas in comparison to their major cities counterpart due to the limitation in service accessibility, i.e. extended travel time required to seek care and undersupply of service providers in the region.[62]

However, no research was identified which states what constitutes acceptable or equal access for patients with similar needs in rural and distant Australia. The use of GP services per capita is expected to rise in regional and remote areas if the number of GPs in the region increases.

The current model is limited since it assumes that GP service utilisation per capita will grow at the geometric average of historical growth rates and does not account for growth in utilisation per capita in regional or remote areas due to a surge in the supply of GPs through the implementation of SRHS. In effect, the model may underestimate the demand for GPs in regional and remote areas.

8.3 Growth rate assumptions

The GPW dataset data used in this analysis is only recorded back to financial year 2016. Due to the shortage of historical data available, the accuracy of the estimated growth rates for GP services demand is limited. In an ideal scenario, where extended historical data (classified by MMM) were available, a sample of data would be selected to estimate growth rates. These growth rates would then be tested against the historical data to assess their performance so the most appropriate rate can be used. In this analysis due to data limitations the estimated growth rates were unable to be tested.

Accordingly, the preferred growth rate estimation method from the 2019 analysis was assumed to remain the preferred method when updating the analysis. Without empirical evidence to support this, there is the potential that a more appropriate unobserved growth rate exists.

8.4 Stratifying data by ASGS-RA

Data used as input that was originally classified according to the MMM classifications, was reassigned to ASGS-RA classifications using a concordance between the two sets of categories. To stratify data by ASGS-RA, ABS (2016) Census data was used which records the postcode of respondents that can then be used to reassign populations from MMM to ASGS-RA

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[60] City of Casey, 2022, Municipal public health and wellbeing plan 2017-2021 adopted, <https://www.casey.vic.gov.au/policies-strategies/municipal-public-health-wellbeing-plan-2017-2021-adopted#:~:text=Introduction,wellbeing%20of%20all%20Casey%20residents.>, accessed 19 April 2022.
[61] Gardiner et al., (2020) Equitable patient access to primary healthcare in Australia.
[62] Gardiner et al., (2020) Equitable patient access to primary healthcare in Australia.

classifications. For example, this allowed for accurate reassignment of population data (by gender and age brackets) to different ASGA-RA categories. However, the accuracy of this is restricted when conducting a forecasting exercise because the reassignment is only accurate at the single point in time. The most up to date ABS Census reports were not published at the time of this analysis. Accordingly, it was assumed that the 2016 proportions used for data reassignment to ASGS-RA remained constant. This is a limitation of the analysis as it is possible the proportions have changed since 2016 – in particular since the population movement associated with COVID-19. Recent years since emerging out of lockdowns and border closures, has shown a rapid growth in population in the fringes of capital cities and in regional centres.[63]

8.5 Assumptions prior to COVID-19

Assumptions used in projecting fertility, mortality, NIM, and overseas departure were based on ABS population projections released in 2018. [64] Trends for fertility, mortality, NIM, and overseas departure might have changed during the COVID-19 pandemic. Possible impacts on model output are listed below:

Parameters	Changes	Impact on model output
Fertility rate	ABS assumption for total fertility rate was 1.8 from 2017-2027.[65] The observed fertility rate was 1.58 in 2020/21.[66]	Supply: The number of female GPs temporarily quitting the workforce may be affected by the lower fertility rate. However, because net temporary movement accounts for less than 1% of the entire GP workforce, we do not expect this to have a significant impact on the prediction.

Demand: Lower fertility rates may have an impact on natural population growth, i.e., population demand may be lower than expected. Until we have access to the new ABS projection assumptions, the effect size of this impact is unknown. |
| Mortality rate | The age-standardised death rate for 2020 was 4.9.[67] In the ABS assumption, 2020 and projected standardised death rate range between 5.0 and 5.2 throughout projection period. | Supply: The projected death rate may be higher than observed, and therefore the model may have overestimated number of GPs death. However, we are unable to ascertain that the GPs death rate will be same as general population death rate considering their nature of work during the COVID-19 pandemic.

Demand: Lower death rate might mean that there is less death in population, i.e., the demand might be higher than expected. |
| NIM and overseas departure | There's being a greater number of population migrating away from greater capital cities in 2021 (-11,800 vs -8,000 in 2018).

Overseas departure has decreased during the pandemic period compared to 2018 projection. | Supply: Variation in NIM affect the number of GPs moving in and out of state and regions, but we expect this impact to be minimum. Overseas departure affects the outflows of GPs in our model. Lower overseas departure might suggest our estimated outflow to be higher than reality.

Demand: Variation in NIM might affect our projection on number of people living in regional and remote areas, thereby underestimating the demand for services. Lower overseas |

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[63] National Growth Areas Alliance, 2019, Catchup with outer suburbs, >https://ngaa.org.au/catch-up-with-the-outer-suburbs-campaign-launch>, accessed 19 April 2022.
[64]Australian Bureau of Statistics (ABS), 2018, 3222.0 Population Projections, Australia, 2017 (base) – 2066, <https://www.abs.gov.au/statistics/people/population/population-projections-australia/latest-release>, accessed 19 April 2022.
[65]Australian Bureau of Statistics (ABS), 2018, 3222.0 Population Projections, Australia, 2017 (base) – 2066, <https://www.abs.gov.au/statistics/people/population/population-projections-australia/latest-release>, accessed 19 April 2022.
[66] Australian Bureau of Statistics (ABS), Australian fertility rate hits record low <https://www.abs.gov.au/media-centre/media-releases/australian-fertility-rate-hits-record-low>, accessed 19 April 2022.
[67] Australian Bureau of Statistics (ABS), Deaths, Australia <https://www.abs.gov.au/statistics/people/population/deaths-australia/latest-release>, accessed 19 April 2022.

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Parameters	Changes	Impact on model output
		departure might suggest the model underestimated population growth, especially in major cities where there is a larger proportion of population migrate overseas.
		The effect size of this impact is uncertain until we gain access to the updated ABS projection assumptions.

Source: Deloitte Access Economic analysis (2022).

9   Conclusion.

Starting from an initial equilibrium in 2021, demand for GP services is forecasted to outpace supply, resulting in a widening shortfall of FTEs from 2022 onwards. By 2032, a shortfall of 11,392 FTE GPs across Australia is projected (Chart 7.1). Major cities are forecasted to experience the largest shortfall of 11,517 FTE GPs. This is in comparison to regional and remote Australia, where demand for GP services is met with a slight oversupply of FTE GPs by 2032.

While our model – as with all models – is underpinned by assumptions, the findings are aligned with a logical interpretation of the evolving policy and GP workforce landscape.

The 2019 Report was published one year after the introduction of the 2018 SRHS, employed to build a sustainable and high-quality health workforce in areas of need, particularly in rural and remote communities across Australia. It has been four years since the initiative has been active, and our modelling results suggest that this strategy, including the diversion of OTDs to rural and remote areas, may be working and could potentially – in part - explain the met demand for FTE GPs in these areas, which has historically seen a shortfall of GPs supply. Such strategies and deployment of GPs to areas outside of major cities, while not increasing the total number of GP trainees intake, may explain the widening supply gap of GPs in these regions.

Another reason for the widening gap of GPs in major cities are high numbers of retiring GPs in these areas compared to regional and remote areas. In 2021, the modelling estimates that 16.7% of GPs in major cities are 65 years or older compared to 11.7% of GPs in regional and remote areas. These are important factors to consider as decision makers prepare for healthcare planning over the next decade, which would see the gap in FTE GP supply continue to widen given the growing population at the fringe of major cities (see Box 1 and Box 2 in Section 8).

Table 9.1 shows the distribution of demand and supply disaggregated by regionality in 2021 and 2032. Over the next decade, the volume of MBS services is expected to increase, in major cities of Australia, however, this is met with a decreasing GP workforce in these areas. The opposite trend is seen for regional and remote areas of Australia, where MBS services are expected to fall but are expected to be met with an increasing GP workforce in these areas of Australia. As such, the model findings represent the current geographical misalignment between supply and demand of FTE GPs.

Table 9.1: Distribution of services and workforce in 2021 and 2032, by regionality

Regionality	MBS Services (%)		GP clinicians (%)	
	2021	2032	2021	2032
Major cities	76.6	80.0	74.2	65.7
Regional and remote areas	23.4	20.0	25.8	34.3
Total	100.0	100.0	100.0	100.0

Source: Deloitte Access Economics analysis (2022).

This current misalignment will be further exacerbated over the decade to 2032, with demand for GP services in major cities of Australia growing faster than in regional areas (80.0% in major cities vs 20.0% in regional/remote areas). At a national level, the shortfall in net supply will be driven by changing demographics in the workforce (which reduces the average hours supplied per GP), insufficient inflows to replace workforce exits, and demand for services that grows faster than underlying population growth. Further consideration is needed regarding increasing the supply of GPs in major cities, particularly at the fringe of major capital cities of Australia.

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Appendix A　Detailed supply-side inputs.

A.1.　Key modelling parameters

The supply of general practitioners (GPs) is defined in this study as a function of the estimated opening stock of GPs in each period, plus relevant inflows and outflows of GPs.[68] The results were reported by age group, gender, and remoteness areas.

Relevant inflows were modelled as follows for each age-gender-location cohort in the model:

- New domestic registrars of the RACGP and ACCRM
- OTDs, including registrars and new fellows, relocating to Australia
- Net internal migration (NIM) from other Australian jurisdictions.

Relevant outflows were modelled as:
- Deaths
- Retirements
- Overseas departures (ODs)
- Registrars who fail to complete their specialist training
- Net temporary movements in the workforce – this was assumed to be equal to temporary departures from the GP workforce, net of subsequent re-entries to the workforce, representing female GPs going on maternity leave, and subsequently returning.

The supply model can be described as the following function:

$$S_{t+1} = S_t + OTD_t + NIM_t + Registrars_t - OD_t - Deaths_t - Ret_t - Temp_t - Registrar\ departure_t$$

where:
- S_{t+1} represents the closing stock of GPs in each period (t)
- S_t represents the opening stock of GPs in each period (t)- obtained from the GPW, stratified by state/territory, age, gender, and MMMs.
- OTD_t represents the inflow of OTDs in each period (t)
- NIM_t represents the NIM inflow within Australia in each period (t)
- $Registrars_t$ represents the inflow of new registrars in each period (t)
- OD_t represents outflow of overseas departures in each period (t)
- $Deaths_t$ represents the outflow of total deaths of GPs in each period (t)
- Ret_t represents the outflow of total retirements from the GP workforce in each period (t)
- $Temp_t$ represents the outflow of net temporary movements from the GP workforce in each
- period (t)
- $Registrar\ departure_t$ represents the outflow of registrars who fail to complete their specialist training in each period (t).

A.2.　Detailed supply side methodology

A.2.1.　Geographical classification

GPW dataset reported GP FTE supply by MMMs and their relevant state/territory. In this study, a concordance was then used to map from MMMs to Statistical Areas 2 and the remoteness areas for each state and territory. This study defines whether

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[68] As mentioned in Section 3.3.4, retired GPs re-entered the workforce in response to the COVID-19 response. From the literature, it is unclear what the true number of retired GPs who re-entered the workforce during this time was across Australia, and as such, this was not included in the modelling. It is likely this number would be insignificant to the workforce modelling forecast.

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an area is considered a major city or a regional and remote area, based on the ASGS-RA framework.[69] The ASGS-RA disaggregates Australia in five classes of remoteness on the basis of a measure of relative access to services[70]:

- Major Cities of Australia
- Inner Regional Australia
- Outer Regional Australia
- Remote Australia
- Very Remote Australia.

ASGS-RA is commonly used in government departments, including the Department of Health (DoH) and the Department of Health and Ageing to determine incentive payments for GPs, and is also used in analyses published by the Australian Institute of Health and Welfare (AIHW). The ASGS-RA is updated along with the *Census of Population and Housing* (the census) to ensure the most accurate information is used by decision makers.[71] More recently, the DoH has pivoted to use MMM to determine geographical classification, however, other government agencies, such as the ABS are yet to adopt this system broadly across its reporting. For the purposes of the analysis, geographical classifications are reported as major cities, and regional and remote areas.

A.2.2.   Opening stock of GPs

The GPW dataset was used to determine the opening stock of GP, stratified by state/territory, age, gender and MM category. A GP FTE was defined by a 40-hour work week for 46 weeks in the GPW dataset. The GPW dataset reported FTE GPs by state/territory, age group, gender, and MM category. A ratio of national GP to FTE GPs in 2021 was applied to convert FTE GPs in each MM, state and territory, into opening GP headcount in 2021. The opening headcount in each year was defined as the closing headcount from the previous year, aged by one year assuming a uniform distribution within age, gender, state/territory, and remoteness groups.

A.2.3.   Retiring GPs

The current model used the retirement probability from the 2019 NHWDS in modelling the number of GPs who were expected to retire in each year.

As described in the previous report, it was conservatively assumed that the probability of retirement did not vary according to geographic remoteness area within states and territories. This probability was applied to the matched GP headcount in each period to estimate the number of retirements from the workforce. The transition to retirement was assumed to commence at 50 years of age.

A.2.4.   Overseas departures, net interstate migration and deaths

No GP-specific information exists on overseas departures, net interstate migration (NIM) and deaths. Instead, general population data from the ABS was used to estimate the number of overseas departures, NIM and deaths across Australia.[72]

A.2.5.   Net temporary movements

Net temporary movements from the GP workforce were assumed to be equal to temporary departures from the GP workforce, net of subsequent re-entries to the workforce. Female GPs were assumed to take time out of the workforce owing to pregnancy, childbirth, and childcare. To estimate the rate of temporary departures due to fertility, forecast fertility rates

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[69] Department of Health, 2021, *Modified Monash* Model, <https://www.health.gov.au/health-topics/rural-health-workforce/classifications/mmm>, accessed 13 April 2022.
[70] Australian Bureau of Statistics (ABS), 2021, Remoteness Structure, <https://www.abs.gov.au/websitedbs/D3310114.nsf/home/remoteness+structure>, accessed 19 April 2022.
[71] Parliament of Australia, 2013, Chapter 5 Australian Standard Geographical Classification for Remoteness Areas, <https://www.aph.gov.au/parliamentary_business/committees/senate/community_affairs/completed_inquiries/2010-13/rurhlth/report/c05>, accessed 19 April 2022.
[72] Australian Bureau of Statistics (ABS), 2018, 3222.0 Population Projections, Australia, 2017 (base) – 2066, <https://www.abs.gov.au/statistics/people/population/population-projections-australia/latest-release>, accessed 19 April 2022.

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were based on ABS Series B population assumptions.[73] It was assumed that temporary departures lasted for approximately one year, and thereafter that 70% of people taking temporary absences would return to the workforce.[74]

A.2.6.   Estimating new fellows and new registrars

The following methodology was adopted to estimate the flow of new fellows and registers:

- Number of graduates joining the Australian General Practice Training (AGPT) program was obtained from the AGPT training positions filled in each year.
- After four years of training, it was assumed that 90% of GP registrars graduated their training and relocated to match the geographic distribution of GP fellows in 2022. The remaining 10% of GP registrars were conservatively assumed to exit the workforce. While there do not appear to be any publicly available data on the overall pass rate for GP registrar training programs, the estimated 10% dropout is not inconsistent with fellowship exam fail rates reported by RACGP.[75] In ageing the registrar workforce four years, it was assumed that registrars within five-year age groups followed a uniform distribution.
- For overseas trained fellows, data were obtained from the previous NHWDS data (2019)[76] on the flow of new overseas trained specialists in each year. Inputs were stratified by state/territory and gender, and it was assumed that the age and geographic distribution within state/territory matched that of the OTD workforce (Taylor et al., 2018).
- All OTDs are required to be on one of the pathways to practise medicine in Australia. As their first job, all OTDs must work in a DPA for a minimum period of ten years, noting that there are a number of exceptions to this requirement. However, no data were identified which would enable OTDs to be allocated to a DPA. As such, locations of practice for OTD registrars and new fellows were allocated to ASGS-RA based on Census data.

A.2.7.   GP Full Time Equivalent

The number of GP headcount at the end of each period was converted to FTE GPs by inversely applying the GP to GP FTE ratio observed in 2021.

The following contains detailed inputs for the supply-side model, which is discussed in Chapter 4.

Table A.1: GP workforce opening headcount, 2021

Stratification	2021
State / territory	
NSW	12,482
VIC	9,840
QLD	8,202
SA	2,615
WA	3,684
ACT	528
TAS	754
NT	284
Region	
Major Cities	28,478

[73] Australian Bureau of Statistics (ABS), 2018, 3222.0 Population Projections, Australia, 2017 (base) – 2066, <https://www.abs.gov.au/statistics/people/population/population-projections-australia/latest-release>, accessed 19 April 2022.
[74] GP-specific data on re-entry rates was not available. The 70% assumption is consistent with Deloitte Access Economics' standard approach to workforce modelling.
[75] RACGP, 2019, Exam Report 2019.1 OSCE (2019) <https://www.racgp.org.au/getmedia/27284552-fb89-41bc-a722-0d46fda0afd3/OSCE-20191-Public-exam-report.pdf.aspx>, accessed 19 April 2022.
[76] Department of Health, 2019, National Health Workforce Dataset, <https://hwd.health.gov.au/resources/information/nhwds.html>, accessed 19 April 2022.

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Stratification	2021
Regional and remote areas	9,910
Age	
0-39	6,934
40-54	15,669
55-64	9,875
65+	5,910
Gender	
Male	22,685
Female	15,703
Australia	38,388

Source: Deloitte Access Economics analysis (2022). Note: totals may not add up due to rounding.

Table A.2: GP workforce retirements, 2021 to 2032

Stratification	2021	2025	2029	2032
State / territory				
NSW	604	487	405	366
VIC	509	401	326	289
QLD	404	326	273	249
SA	149	111	89	80
WA	187	147	123	113
ACT	34	23	17	15
TAS	36	30	26	25
NT	11	9	8	8
Region				
Major City	1,494	1,176	961	857
Regional and remote areas	441	357	306	288
Age				
0-39	0	0	0	0
40-54	116	106	103	105
55-64	804	609	508	470
65+	1,015	818	656	570
Gender				
Male	1,144	894	725	643
Female	791	638	541	502
Australia	1,935	1,532	1,267	1,145

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Table A.3: GP workforce deaths, 2021 to 2032

Stratification	2021	2025	2029	2032
State / territory				
NSW	79	64	53	47
VIC	58	45	37	32
QLD	51	41	35	32
SA	17	12	10	9
WA	23	18	15	14
ACT	3	2	2	1
TAS	5	4	3	3
NT	2	2	2	2
Region				
Major Cities	180	141	114	101
Regional and remote areas	58	49	43	26
Age				
0-39	3	4	5	5
40-54	32	29	28	28
55-64	52	38	31	29
65+	151	118	92	79
Gender				
Male	164	128	104	93
Female	74	61	52	49
Australia	**238**	**189**	**156**	**141**

Table A.4: GP workforce domestic registrar inflows, 2021 to 2032

Stratification	2021	2025	2029	2032
State / territory				
NSW	348	370	391	406
VIC	201	213	225	234
QLD	212	225	238	247
SA	83	88	93	96
WA	120	127	134	139
ACT	20	21	22	23
TAS	21	23	24	25

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Stratification	2021	2025	2029	2032
NT	25	26	28	29
Region				
Major Cities	543	577	610	633
Regional and remote areas	486	517	546	567
Age				
0-39	843	897	948	984
40-54	185	197	208	216
55-64	0	0	0	0
65+	0	0	0	0
Gender				
Male	419	445	470	489
Female	610	649	685	712
Australia	**1,029**	**1,094**	**1,156**	**1,200**

Source: Deloitte Access Economics analysis (2022). Note: totals may not add up due to rounding.

Table A.5: GP workforce OTD inflows, 2021 to 2032

Stratification	2021	2025	2029	2032
State / territory				
NSW	225	238	251	261
VIC	166	175	184	192
QLD	187	197	208	216
SA	54	58	61	63
WA	117	123	130	135
ACT	14	15	16	17
TAS	22	23	25	26
NT	17	18	19	20
Region				
Major Cities	213	225	237	246
Regional and remote areas	590	622	657	683
Age				
0-39	724	764	807	838
40-54	78	83	88	91
55-64	0	0	0	0
65+	0	0	0	0
Gender				
Male	400	421	445	462
Female	402	425	449	466

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Stratification	2021	2025	2029	2032
Australia	802	847	894	929

Source: Deloitte Access Economics analysis (2022). Note: totals may not add up due to rounding.

Appendix B   Detailed demand-side inputs.

B.1.   Key modelling parameters

The demand for general practitioners in this study is calculated using the General Practice Workforce (GPW) dataset and Australia population projections. The results were reported by age group, gender, state/territory, and remoteness areas.

For this analysis, demand for GP services was inferred from the GPW dataset, 'Number of services by GPs providing primary care services' for each state by MM classification. Data was stratified by financial year, gender, and age group of patients in receipt of service provision. Data was then re-distributed from the MM classification to the ASGS-RA classification.

The next stage of analysis involved converting historical services data to a measure of service utilisation, stratified by state/territory, gender, age, and remoteness area. To perform this conversion, services were divided by their matched population. Service utilisation rates per capita were then forecast for the 2022 to 2032 period of analysis using a variety of methods, and then multiplied out by matched population forecasts (general population and veteran population forecasts) and average minutes per service to obtain an estimate of the total number of clinical GP hours demanded in Australia.

B.2.   Detailed demand side methodology

B.2.1.   Population and demographic projection

Changes in the size and structure of the population are some of the main drivers of demand for GP services in Australia. The model relied on ABS (2018) population projections, which are based on observed trends in mortality, fertility, net overseas migration and interstate migration.[77] The Series B population projections from the ABS projections were used to model the demand for GPs in Australia. Population projections were stratified by state/territory in five-year age groups and gender. The projections were also stratified further using ASGS-RA classifications.

Demographic data from the ABS Census (2016) was used to proportion the population projections between ASGS-RA categories for each state and territory in Australia. When modelling the population projections by AGSA-RA it was assumed the share of the population for each state and territory between remoteness areas was constant. Exceptions to different states having populations classified in different ASGS-RA categories include, Victoria not having a very remote classification, Tasmania and Northern Territory not having a major city classification, the Northern territory also not having an inner regional classification and the Australian Capital Territory, which is classified primarily as a major city, with the remainder classified as inner regional.

B.2.2.   Service utilisation

To measure the utilisation rate for GP services, data for financial year 2017 to 2021 from the GPW dataset was used, reporting the number of GP services by GPs, based on the latest review of primary health care GP items on the MBS schedule utilised. The GP services data is recorded using the MM classification, and so the data was reassigned by ASGS-RA using a concordance. This data was also proportioned by age and gender based on corresponding data in the GPW dataset.

Services provided to individuals who qualify for a benefit under the DVA National Treatment Account are not included in Medicare data. As such, it was necessary to include these unreported services. To factor up demand for services provided to veterans, utilisation rates were calculated for the general population. These rates were then applied to the matched veteran population for each year between 2022 and 2032, assuming veterans access GP services at the same rate as the matched general population.

Relevant ratios for each stratification were applied to the total forecasted number of veterans to stratify the veteran population by state/territory, remoteness area, age and gender. Stratifications for state/territory, age and gender were

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[77] Australian Bureau of Statistics, Population Projections, Australia, 2017 (base) – 2066, Cat. No. 3220.0 (22 November 2018).

informed based on DVA (2019a). A constant share of population approach was used when stratifying the DVA treatment population between ASGS-RA classifications using ABS (2021) regional population data.[78]

The number of services provided to veterans was then added to the total hours of care required by GPs in Australia. Overall, factoring up services for DVA veteran use resulted in a minor increase of 2.5 million services to total services demanded in 2021. Services to DVA veterans accounted for 1.4% of total GP services in 2021.

B.2.3.   Service utilisation projection methods

Historical service utilisation rates per capita were estimated between 2017 and 2021, based on GPW services data and Australian population data. The service utilisation rates were subsequently used to project trends in the need for service between 2022 and 2032 using a number of different forecast methods. The forecast methods included[79]:

- Service utilisation growth was based on changes in real GDP per capita and income elasticity
- Growth in service utilisation was based on the arithmetic average annual growth between 2017 and 2021
- Growth in service utilisation was based on the geometric average annual growth between 2017 and 2021
- The trend from a simple linear regression of service utilisation between 2017 and 2021
- Holding service utilisation rates constant from 2022 estimates
- The trend in service utilisation from a simple level growth calculation between 2017 and 2021.

Average arithmetic annual growth

A common projection method is to assume that the future will look largely like the past. In doing so, the relevant trends and relationships are exogenous to the forecast approach. The average arithmetic annual growth was calculated as the average annualised rate of the difference in service utilisation from 2017 to 2021. At a national level, this yielded an average annual growth rate of approximately 3.6% per annum.

Average geometric annual growth

Similarly to the average arithmetic annual growth method, growing service utilisation rates per capita by a geometric average of historical growth rates assumes that the future will look largely like the past. However, a geometric average accounts for annual compounding and thus provides a more accurate or smoothed measure of the underlying change in service utilisation rates per capita from 2017 to 2021. At a national level, this yielded an estimated annual growth rate of approximately 4.5%.

Linear regression

A linear regression model was used to estimate the average change (slope) in service utilisation rates for each grouping over time. The model was a simple time series where service utilisation was the dependent variable and year was set as the only independent variable. The simple linear regression has advantages in its simplicity and ease of use when applying the results to many different subgroups. Using a linear regression to forecast service utilisation rates, an annualised growth rate was estimated at 2.6% per annum.

Constant service utilisation rate

To examine the impact of population changes as the driving force behind increased service volumes, service utilisation rates per capita were held constant. This means that growth in services comes primarily through an increase in the size of the population, and secondarily through the changing age structure of the population – with older age groups experiencing higher rates of per capita service utilisation. For the population younger than 65 years of age, an average 5.9 services per capita per annum were demanded in 2021 – this compares to an average of 14.5 services per capita in the 65 or older age group. At a national level, using this scenario yielded an average annual increase of 1.6% per annum.

Level growth service utilisation rate

The final forecasting scenario examined the incremental growth in service utilisation for each patient demographic. Service utilisation rates per capita were calculated by taking the increase in service utilisation between 2017 and 2021 and dividing by the number of years. Similar to the linear regression, the level growth rate has advantages in its simplicity. Using a level growth rate to forecast service utilisation rates, an annualised growth rate was estimated at 4.7% per annum.

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[78] Australian Bureau of Statistics, Regional population, 2020-21 (29 March 2022).
[79] In instances where the GPW data was unavailable or incomplete for 2021, growth rates were estimated between 2017 and 2020.

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Summary of methods

The forecast methods were compared in the 2019 report, considering the difference between the estimated values and the actual observations is referred to as mean square error. Based on this analysis, an average geometric annualised growth rate was determined to offer the best model fitness, accordingly this was the preferred forecast method for the updated analysis. There were two geographic instances (Victoria remote and New South Wales Very remote), that were considered outliers (>100% +/- growth rate), and so a level growth rate was applied instead.

B.2.4.   Average minutes per service

It is difficult to observe the true "demand" for GP services, and the approach used in models of this nature is to set demand and supply to be equilibrium in the first model period. As the supply of services is measured in clinical hours of services provided, and the demand for services is measured in the volume of clinical services provided, it was necessary to estimate the volume of clinical hours demanded.

The duration of each GP service can vary substantially. As part of the 2019 analysis, the BEACH study which collects data based on a sample of approximately 100,000 patient encounters was used to estimate the average time for GP encounters. Modelling estimated an average GP service time of 17.4 minutes in major cities areas and 22.2 minutes in regional and remote areas. Accordingly, these average lengths of GP service time were incorporated into the demand modelling for this analysis.

The following table contains the population projections used as inputs for the demand-side model, which is discussed in Chapter 4.

Table B.1: Population projections (millions), 2021 to 2032

	2021	2025	2029	2032
Population				
Region				
Major cities	18.9	20.1	21.2	22.0
Regional and remote areas	7.4	7.9	8.3	8.6
Age				
0-4	1.7	1.8	1.9	1.9
5-9	1.7	1.7	1.8	1.9
10-14	1.6	1.7	1.8	1.8
15-19	1.5	1.7	1.8	1.8
20-24	1.8	1.8	1.9	2.0
25-29	2.0	2.0	2.1	2.1
30-34	2.0	2.1	2.2	2.2
35-39	1.9	2.0	2.2	2.2
40-44	1.7	1.9	2.0	2.1
45-49	1.6	1.6	1.9	2.0
50-54	1.6	1.7	1.6	1.7
55-59	1.5	1.5	1.7	1.6
60-64	1.5	1.5	1.5	1.6
65-69	1.3	1.4	1.5	1.5
70-74	1.1	1.2	1.3	1.4
75-79	0.8	1.0	1.1	1.1
80-84	0.5	0.6	0.8	0.9

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	2021	2025	2029	2032
85+	0.5	0.6	0.7	0.8
Gender				
Male	13.0	13.9	14.6	15.2
Female	13.3	14.1	14.9	15.5
Australia	26.3	28.0	29.5	30.7

Source: Deloitte Access Economics analysis (2022). Note: totals may not add up due to rounding.

Limitation of our work

General use restriction

This report is prepared solely for the internal use of Cornerstone Health Pty Ltd. This report is not intended to and should not be used or relied upon by anyone else and we accept no duty of care to any other person or entity. The report has been prepared for the purpose of modelling and projecting the supply of and demand of general practitioners in Australia relative to a current position in the absence of policy change. You should not refer to or use our name or the advice for any other purpose.

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