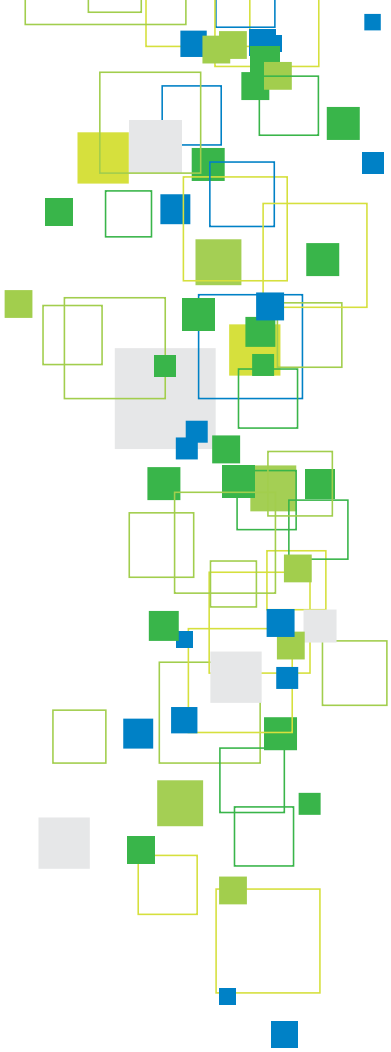

National Health Performance Authority

Healthy Communities:

Frequent GP attenders and their use of health services in 2012–13

Technical Supplement

nhpa

National Health Performance Authority

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Please check **www.myhealthycommunties.gov.au** for any amendments.

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Summary

The National Health Performance Authority (the Authority) publishes two streams of reports: Healthy Communities and Hospital Performance reports. The Authority bases its performance reports on a set of indicators agreed by the Council of Australian Governments (COAG).

This technical supplement summarises the methods used to calculate descriptive statistics presented in *Healthy Communities: Frequent GP attenders and their use of health services, 2012–13*. The supplement assumes that readers have technical expertise in the creation and use of health information.

Healthy Communities: Frequent GP attenders and their use of health services in 2012–13 reports statistics for 61 Medicare Local catchments across Australia and seven clusters of Medicare Locals called peer groups, on the prevalence of people who visited GPs at different frequencies in 2012–13. Information on the proportion of the population who are very high (20+ visits) and frequent (12–19 visits) general practitioner (GP) attenders is provided at Medicare Local catchment and Australian Bureau of Statistics (ABS) Statistical Area Level 3 (SA3) using Medicare benefits data.

In addition, comparisons are made between different GP attender cohorts regarding:

- Non-hospital Medicare Benefits Schedule (MBS) expenditure per person
- The number of different doctors seen
- Health service usage (including pathology, diagnostic imaging, specialists, emergency departments, hospital admissions)
- Experiences of cost barriers and waiting times
- Demographic and health characteristics.

This is the first report from the Authority that presents data at national and local levels for these measures. Where possible, the report compares results for each Medicare Local catchment with the results for Medicare Locals with similar geographic, demographic and socioeconomic circumstances.

This technical supplement is organised into four sections. The first presents information about the allocation of persons to the GP attendance cohorts. The second and third sections provide the methods used and the fourth explores the data limitations and issues to consider when interpreting the results for the three data sources used for the report:

- The ABS Patient Experience Survey 2012–13
- Administrative data on claims and clients for items listed on the Medicare Benefits Schedule (referred to as MBS statistics)
- ABS Estimated Resident Population (ERP) 30 June 2013.

For an explanation of technical terms used in the report please refer to the online glossary at **www.myhealthycommunities.gov.au**

Introduction

Information in the report focuses on people who visit a GP at very high and frequent rates and their experiences with primary health care and other health services. The aim of the report is to deepen the understanding of different populations' need for and use of health services across local areas and to support health professionals and primary health care organisations to target improvements in services to maintain peoples' health and keep them out of hospital.

Measures presented

The report provides insights into the following indicators for the financial year 2012–13:

- GP-type service use, including use by very high, frequent, above average, occasional, low GP attenders and those who did not attend a GP
- Specialist service utilisation including specialist attendances, diagnostic imaging and pathology services
- Measures of patient experience including barriers to care
- Access to services by type of service compared to need.

Data are presented against these indicators to enable local level comparisons where possible. National level data are provided to give context and provide further insights for this local level data. The methods used to calculate the data in the report are described in this technical supplement.

Geography

Where possible, measures are presented by Medicare Local catchment and seven clusters of Medicare Local catchments called peer groups. This enables fairer comparisons of individual Medicare Local catchments and also provides a summary of the variation across Australia's diverse metropolitan, regional and rural populations by presenting aggregate results for each peer group.

Since people in rural areas are known to have access to primary health care services funded by other sources (for example, state government funded/salaried doctors) and health professionals other than GPs, comparisons in the report are restricted to metropolitan and regional areas.

The Authority identified seven peer groups on the basis of:

- Proximity of each Medicare Local to major metropolitan areas (distance to the centre of cities with a population above 500,000)
- Proximity to major hospitals (A1 public hospitals in the AIHW Public Hospital Peer Group classification, 2010–11)
- Socioeconomic status.

More information on Medicare Local peer groups can be found in *Healthy Communities: Australians' experiences with primary health care in 2010–11, Technical Supplement* at **http://www.myhealthycommunities.gov.au**

Suppression of estimates

The Authority applies suppression protocols that are customised to each data source used in the report, to ensure confidentiality when reporting at local levels of geography. The suppression rules for measures presented in the report are described in this technical supplement.

GP attendance cohorts

This section summarises the rationale for the ranges used to group persons into GP attendance cohorts or groups.

The report segments populations into six groups based on the number of times people visited a GP in 2012–13 (also referred to as a GP attendance). The groupings are:

- Very high GP attenders: 20 or more visits per year
- Frequent GP attenders: 12 to 19 visits
- Above average GP attenders: 6 to 11 visits
- Occasional GP attenders: 4 to 5 visits
- Low GP attenders: 1 to 3 visits
- Did not attend: no visits.

The term frequent GP attender is well established within the international academic literature. However, there are no clear breakpoints within the distribution of persons by attendance frequency by which to guide the selection of cohort groupings (**Figure 1, page 3**). Instead, frequent GP attenders are often defined in the literature in terms of a percentage of all attenders (not including non-attenders in the denominator) often the most frequent 10% of attenders. In some studies the focus is on the most frequent attenders in each age and sex grouping.[1,2,3]

For this report, the number of visits or attendances per person was used to define GP attendance cohorts. The benefit of this approach is that it could be used consistently across the data sources used for the report, was suitable for making comparisons across regions and over time, and would enable local level providers to identify patients that meet the definition. The selection of breakpoints was guided by the data, literature and advice from an advisory committee which included clinicians and academics.

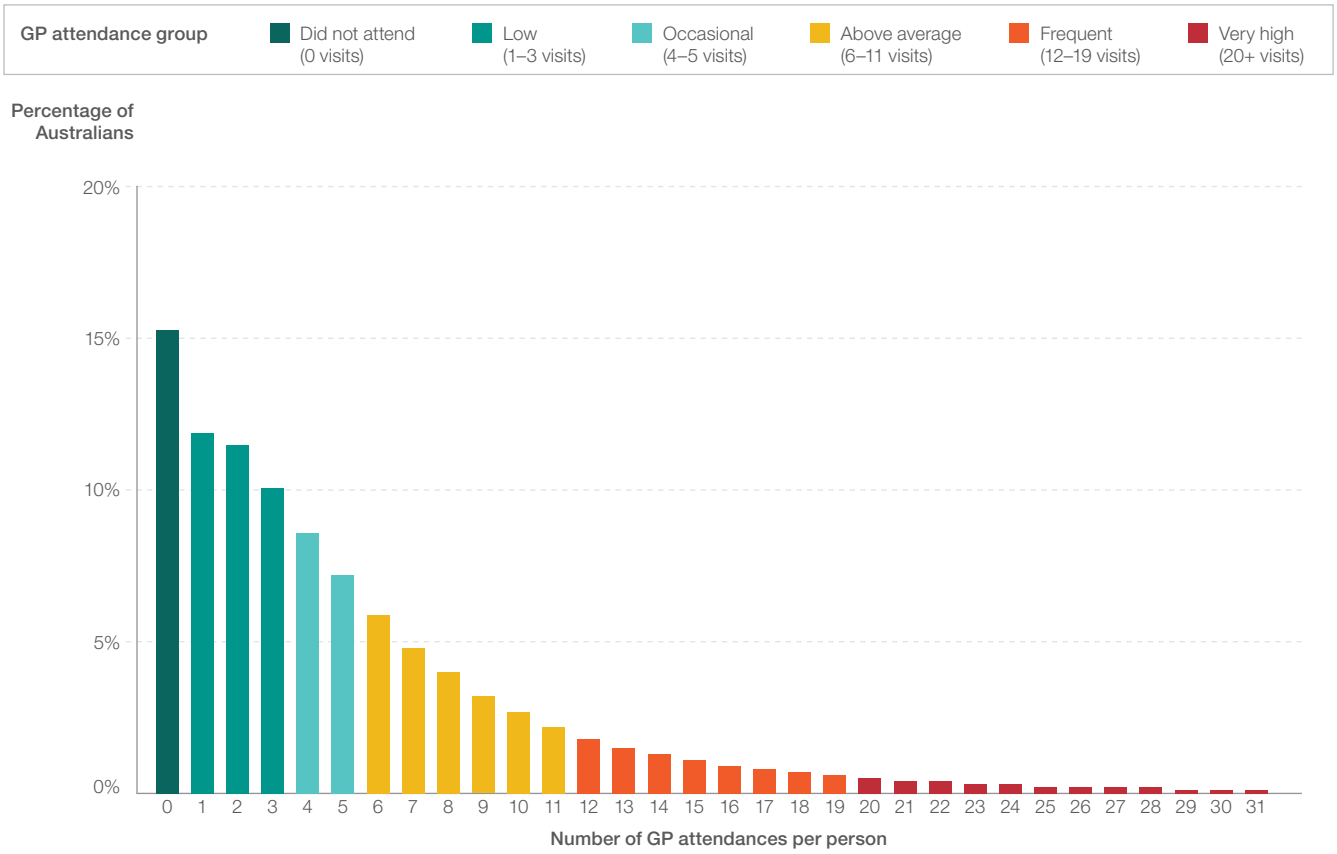
A breakpoint of 20 or more visits or around 5% of all attenders was selected for the upper grouping of very high GP attenders. This categorisation was selected to provide a group that would be of a size that was small and manageable enough for health service providers to target for interventions.

Twelve visits was used as the next breakpoint as it had previously been used by the Authority for an indicator to define high users of GPs. On average, this represents one visit per month.

The occasional attender group encompasses the median visit rates for both all Australians (median of four visits per person) and GP attenders only (median of five visits per person) in 2012–13.

Data for these groups are available from both the Australian Bureau of Statistics (ABS) Patient Experience Survey 2012–13 and MBS statistics. The methods used to calculate the statistics for each of the data sources against these cohorts are set out in the following sections, followed by a discussion of data interpretation issues and limitations.

Figure 1: Distribution of GP attendance* frequencies for all Australians, 2012–13



* GP attendances are Medicare benefits-funded patient/doctor encounters, such as visits and consultations, for which the patient has not been referred by another doctor. GP attendances exclude services provided by practice nurses and Aboriginal and Torres Strait Islander health practitioners on a GP's behalf.

Sources: National Health Performance Authority analysis of Department of Human Services, Medicare Benefits statistics 2012-13 and Australian Bureau of Statistics, Estimated Resident Population 30 June 2013, data extracted November 2014.

Medicare Benefits Schedule statistics

This section summarises methods used to compile descriptive statistics using data from the MBS claims system. These statistics were derived from administrative information on services that qualified for a Medicare benefit under the *Health Insurance Act 1973* and for which a claim was processed by the Australian Government Department of Human Services.

The MBS statistics included in this publication relate to all non-hospital MBS services. The statistics also exclude hospital substitute services that attracted Medicare benefits, services attracting benefits under the Department of Veterans' Affairs National Treatment Account and services provided under the *Dental Benefits Act 2008*.

Under Medicare, 'eligible persons' are persons who reside permanently in Australia. This includes New Zealand citizens and holders of permanent residence visas. Applicants for permanent residence may also be eligible, depending on circumstances. In addition, persons from countries with which Australia has reciprocal health care agreements might also be entitled to benefits under MBS arrangements. MBS data do not include services provided free of charge to public patients in hospitals, to Department of Veterans' Affairs beneficiaries, to some patients under compensation arrangements and through other publicly funded programs.

This report contains MBS statistics on all non-hospital GP attendances, specialist attendances, diagnostic imaging and pathology services and other non-hospital Medicare-funded services for the year of service from 1 July 2012 to 30 June 2013 for claims processed up to and including 30 June 2014, by GP attendance cohort. For areas of the MBS such as diagnostic imaging and pathology, many of the services will have been requested by specialists. It is also important to note that some Australian residents may access medical services through other arrangements, such as salaried doctor arrangements. As a result, MBS statistics may underestimate the rate of use of health services by some members of the community.

METeOR specifications for the very high GP attenders and frequent GP attenders indicators can be found at **meteor.aihw.gov.au**. Results for these indicators are published on **www.myhealthycommunities.gov.au**

Definitions of categories used in the report

GP attendances (non-hospital)

For the purposes of this report, GP attendances are MBS non-referred visits for the purposes of primary health care. They exclude services provided by practice nurses and Aboriginal and Torres Strait Islander health practitioners on behalf of medical practitioners.

The Department of Human Services and the Department of Health use 'Broad Type of Service' in publications relating to MBS statistics. GP attendances comprise all items in these Broad Type of Service groups:

- GP/VRGP non-referred attendances
- Non-referred Enhanced Primary Care
- Other non-referred attendances.

In terms of MBS structure, GP attendances comprise all items in:

- Group A1 – general practitioner attendances to which no other item applies
- Group A2 – other non-referred attendances to which no other item applies
- Group A5 – prolonged attendances to which no other item applies

- Group A6 – group therapy
- Group A7 – acupuncture
- Group A11 – urgent attendances after-hours
- Group A14 – health assessments
- Group A15, subgroup 1 – GP management plans, team care arrangements and multidisciplinary care plans
- Group A15, subgroup 2 – Items 735–758 - multidisciplinary case conference – medical practitioner (other than specialist or consultant physician)
- Group A17 – domiciliary and residential management reviews
- Group A18 – general practitioner attendance associated with PIP incentive payments
- Group A19 – other non-referred attendances associated with PIP incentive payments to which no other item applies
- Group A20 – general practitioner mental health treatment
- Group A22 – general practitioner after-hours attendances to which no other item applies
- Group A23 – other non-referred after-hours attendances to which no other item applies
- Group A27 – pregnancy support counselling
- Group A30 – medical practitioner telehealth attendances.

GP attendances exclude obstetrics attendances which are published in quarterly and annual Medicare Statistics by the Department of Human Services and the Department of Health, in the 'Obstetrics' Broad Type of Service group. These obstetric attendances are not designated by practitioner type within the MBS.

In some parts of the report statistics are published on subcomponents of 'GP attendances', i.e. 'After-hours GP attendances' and 'GP chronic disease planning and management'.

'After-hours GP attendances' comprise items in:

- Group A11 – urgent attendances after-hours
- Group A22 – general practitioner after-hours attendances to which no other item applies
- Group A23 – other non-referred after-hours attendances to which no other item applies.

'GP chronic disease planning and management' comprise items in:

- Group A15, subgroup 1 – GP management plans, team care arrangements and multidisciplinary care plans
- Group A15, subgroup 2, Items 735–758- multidisciplinary case conference – medical practitioner (other than specialist or consultant physician).

GP chronic disease planning and management was referred to in *Healthy Communities: Australians' experiences with access to health care in 2010–11* as 'GP care planning'.

Specialist attendances (non-hospital)

Specialist attendances are non-hospital Medicare benefits-funded referred patient/doctor encounters, such as visits, consultations and attendances (including video conferencing), involving medical practitioners who have been recognised as specialists or consultant physicians for Medicare benefits purposes. Specialist attendances include:

- Consultant physician attendances
- Consultant psychiatrist attendances
- Other specialist attendances

- Specialist case conferences
- Anaesthesia consultations, whether provided by general practitioners or specialists.

These services correspond with the 'specialist attendances' Broad Type of Service group used in MBS statistics published by the Department of Human Services and the Department of Health. Specialist attendances exclude obstetrics attendances, which are included in the 'Obstetrics' Broad Type of Service group in quarterly and annual MBS statistics.

In terms of the MBS structure, specialist attendances comprise all items in:

- Group A3 – specialist attendances to which no other item applies
- Group A4 – consultant physician attendances to which no other item applies
- Group A8 – consultant psychiatrist attendances to which no other item applies
- Group A9 – contact lenses attendances
- Group A12 – consultant occupational physician attendances to which no other item applies
- Group A13 – public health physician attendances to which no other item applies
- Group A15, Subgroup 2 – Items 820–880 – case conferences
- Group A21 – medical practitioner (emergency physician) attendances to which no other item applies
- Group A24 – pain and palliative medicine
- Group A26 – neurosurgery attendances to which no other item applies
- Group A28 – geriatric medicine
- Group A29 – early intervention services for children with autism, pervasive developmental disorder or disability
- Group T6, Subgroup 1 – anaesthesia consultations.

Pathology (non-hospital)

Pathology comprises all items in Category 6 of the MBS.

Pathology episode (non-hospital)

Almost all pathology episodes include a claim for a pathology patient episode initiation item (MBS Group P10). In this report counts of P10 services represent the number of non-hospital pathology episodes in the year of service in question.

Diagnostic imaging (non-hospital)

Diagnostic imaging comprises all items in Category 5 of the MBS.

'All other' non-hospital MBS

The remainder of the MBS comprises non-hospital items in:

- Category 1 – Attendances – Optometrical services
- Category 2 – Diagnostic Procedures (includes for example, ECGs, computerised perimetry, measurement of respiratory function, bone densitometry, audiograms)
- Category 3 – Therapeutic Procedures (includes for example, obstetrics, radiation oncology, operations, anaesthetics, IVF), but excluding Group T6 Subgroup 1 – anaesthesia consultations
- Category 4 – Oral and Maxillofacial Services
- Category 7 – Cleft Lip and Cleft Palate Services

- Category 8 – Miscellaneous services, including for example, management of bulk-billed services, services provided by practice nurses or Aboriginal and Torres Strait Islander health practitioners on behalf of a medical practitioner, psychological therapy services and focused psychological services such as allied mental health
- Category 9 – Chronic Disease Scheme (ceased on 1 December 2012).

Within the report an estimate was provided of the proportion of MBS expenditure within the 'All other' category that was for allied health and nursing services. To do this, the following MBS groups were counted as allied health and nursing: A10, M1 (fraction only), M3, M6–15 and N1–3. The remaining MBS groups within 'All other' are for services provided by medical practitioners which are not differentiated by the type of medical practitioner (e.g. GP, specialist).

Medicare services and benefits, person counts and doctor counts

In general, each MBS item associated with a claim, resulting in the payment of a Medicare benefit is counted as a service in summary statistics. Bulk-billing incentive services are excluded from service counts, since they are 'top-up' items. MBS statistics in this publication include benefits paid by the Department of Human Services and do not include patient 'out-of-pocket' costs.

MBS benefits associated with bulk-billing incentives, other than pathology and diagnostic imaging, are included in 'All other' non-hospital MBS in this publication, since they cannot be precisely attributed to associated items in the MBS. In 2012–13 (year of service) Medicare benefits paid for these items for very high and frequent GP attenders amounted to $280.8 million.

Counts of persons who utilised services on the MBS in 2012–13, had regard to the unique Medicare Patient Identification Numbers (PINs) in claim records and not the Medicare number (or card number). The Medicare number is not always unique since some persons are listed on more than one Medicare card.

Counts of the number of GPs or specialists seen had regard to the number of unique provider numbers for each PIN, in claim records, for the GP and specialist attendance item groups as defined above. Minor inaccuracy in provider counts will result for providers claiming under MBS arrangements who have multiple provider numbers.

Services and benefits per person had regard to the number of persons in each cohort.

The report contains a count of pathology episodes per GP cohort. Pathology episodes were based on the number of services for Pathology Group P10, Patient Episode Initiation in the reference year in question.

Allocation of persons to GP attendance cohorts

Persons who had one or more non-hospital GP attendances (as defined above) in 2012–13 (year of service) were allocated to cohorts at the Australia level, having regard to the number of non-hospital GP attendances in the reference year for the PIN in question.

Persons who did not have a non-hospital GP attendance in the reference year in question were considered to be non-attenders of GPs, even though some of these persons will have had other non-hospital MBS services.

Counts of non-GP attenders were derived by taking the count of PINs of GP attenders away from the ABS ERP (30 June 2013) for the patient region in question. Age range was also taken into account for age-standardised data.

Year of service

Statistics in this report were prepared based on year of service. Year of service has regard to when services were actually rendered or received. In comparison to statistics compiled by date of processing it avoids issues with negative adjustments (for example, due to cheque cancellations) where the adjustments are applied after the year of service. However, year of service statistics are not as timely as year of processing statistics, due to delays in lodgement of claims and can be subject to ongoing revision for this reason.

In compiling statistics for 2012–13 (year of service) for this report, all claims processed up to and including 30 June 2014 were taken into account.

Assignment of MBS data to region and to patient age groups

In this report MBS statistics are presented by Medicare Local catchments and by ABS Statistical Area Level 3 (SA3), based on the patient's enrolment address postcode as recorded by the Department of Human Services, as opposed to the service provider's location.

Since patients can change mailing address in any given year, the postcode used in compiling statistics was based on the latest processed MBS record (of any type, not just GP attendances) for each patient during 2012–13 (year of service), having regard to claims processed up to and including 30 June 2014.

For age standardisation purposes, the age of each person was derived from the date of service on the latest processed MBS record for the patient in 2012–13 (year of service) having regard to claims processed up to and including 30 June 2014.

In compiling statistics by Medicare Local catchment or SA3, for postcodes that overlapped Medicare Local or SA3 boundaries, data (patients, services and benefits paid), were factored across regions using concordance files provided by the ABS showing the proportion of the population of each postcode in each region. However, each person's cohort was as determined at the Australia level.

In the postcode to SA3 geographic correspondence file obtained from the ABS, the percentages of the population in a region for a number of postcodes either did not equal or sum to 100%. This was due to boundary misalignment between the original postcode and other maps. Where necessary, the Authority has rescaled these percentages to ensure totals sum to 100%.

In some instances, service counts have been apportioned between multiple Medicare Local catchments or SA3s, resulting in fractional counts which are then rounded separately for each region. Therefore national totals may not correspond to the sums of lower-level statistics due to rounding.

In the Medicare Local catchments and SA3 statistics that summarise service use by postcodes, a small number of postcodes which did not map to a Medicare Local catchments were categorised separately as 'Other'. Those individual numbers were very low.

In the Northern Territory, data for all SA3s and Post Office Box postcodes have been combined because the centralisation of mail delivery in Darwin and Alice Springs to surrounding remote communities makes it difficult to apportion data to local areas. Further mapping work will be undertaken to enable SA3 reporting of MBS data in the Northern Territory.

SA3s have been excluded from the results where the population is less than 2,500 to facilitate age standardisation. This also prevents the identification of individual providers and their patients. This rule has been applied across all indicators in Medicare Local catchment and SA3 level reporting to maintain comparability. More information about geographic correspondences and Medicare Local peer grouping can be found in *Healthy Communities: Australians' experiences with primary health care in 2010–11, Technical Supplement* available at **www.myhealthycommunities.gov.au**

Age standardisation

Crude and age-standardised data on the percentage of the population in the very high and frequent GP attendance cohorts are provided at Medicare Local catchment and SA3 level as indicators on **www.myhealthcommunities.gov.au** and in downloadable datasheets.

Crude rates at Medicare Local catchment level were calculated as the number of persons in each GP attendance cohort in a Medicare Local catchment divided by the total estimated resident population (ERP) as at June 2013 for the Medicare Local catchment (expressed as a percentage).

Age-standardised rates are hypothetical rates that would have been observed if the populations being studied had the same age distribution as the standard population, while all other factors remained unchanged. Age-standardised rates were derived by calculating crude rates within a Medicare Local catchment for each five year age group (0–4, 5–9, 10–14,…, 80–84, 85+). These rates were then given a weight that reflected the age composition of the standard population, in this case the ABS Estimated Resident Population as at 30 June 2001 (based on 2001 Census).

Where the age for an individual patient was clearly invalid, it was classified as a data error and excluded in performing the age-standardisation process.

Age-standardised rates were also calculated at the SA3 level for very high and frequent GP attenders.

When comparing rates adjusted for age, any remaining observed differences between the populations cannot be attributed to confounding by age.

In producing age-standardised results for a Medicare Local catchment or SA3, the following conditions were required as a minimum:

- A denominator of at least 30 per age group
- A total number of patients in the population of at least 20
- A total population count of at least 2,500 for the Medicare Local/SA3.

All Medicare Local catchments were found to satisfy these conditions. For very high attenders, the results for six SA3s were excluded and for frequent GP attenders seven SA3s were excluded as they did not satisfy these conditions.

Suppression of estimates

Data were checked for confidentiality in accordance with the rules published in *Healthy Communities: Australians' experiences with access to health care in 2011–12, Technical Supplement* available at **www.myhealthycommunities.gov.au**

Confidentiality processes that were applied to the MBS data and the fact that some postcodes were not attributed to regions has led to some MBS data by Medicare Local catchment, SA3 and higher aggregates possibly not matching statistics published elsewhere. The impact on estimates presented in this report is relatively small.

Annotation of estimates

Data that are not able to be published for reasons related to reliability, validity and/or confidentiality are marked as not available for publication (NP).

Estimates of non-GP attenders were derived by subtracting the count of GP attenders from the ABS ERP (30 June 2013). However in the Adelaide City SA3 there were more GP attenders than ERP, and therefore proportions of very high and frequent GP attenders may be over-estimated. Adelaide City SA3 has been annotated with a footnote to interpret these results with caution. Further investigation will be undertaken to find the cause of these differences in population estimates and whether other areas of Australia are affected by this issue.

ABS Patient Experience Survey

This section summarises methods used to calculate descriptive statistics using data from the Australian Bureau of Statistics (ABS) Patient Experience Survey 2012–13. For the Patient Experience Survey, conducted annually, the ABS collects information from a representative sample of the Australian population. The Patient Experience Survey is one of several topics on the Multi-Purpose Household Survey, as a supplement to the monthly Labour Force Survey. More detail on the survey methods can be found in *Patient experiences in Australia: summary of findings, 2012–13, Explanatory Notes*[4].

The data included in *Healthy Communities: Frequent GP attenders and their use of health services in 2012–13* relates to the survey cycle conducted from July 2012 to June 2013. At that time, the ABS collected information from individuals about their experiences with selected aspects of the health system in the 12 months prior to interview. Demographic information was also collected.

Scope and coverage

The Patient Experience Survey 2012–13 included persons aged 15 years and over and excluded the following:

- Permanent members of the Australian Defence Force
- Certain diplomatic personnel of overseas governments, customarily excluded from Census and estimated populations counts
- Overseas residents in Australia
- Members of non-Australian defence forces (and their dependants)
- Persons living in non-private dwellings such as hotels, university residences, boarding schools, hospitals, nursing homes, homes for people with disabilities, and prisons
- Persons resident in Indigenous Community Frame Collection Districts.

These survey scope exclusions have implications when considering how the results apply to the broader Australian population.

Data collection

Data were collected using Computer Assisted Interviewing, whereby responses were recorded directly onto an electronic questionnaire in a notebook computer, usually during a telephone interview. The survey is conducted at the conclusion of the ABS monthly Labour Force Survey and persons aged 15 years and over are randomly selected to answer a series of questions regarding their experiences as a patient in a variety of settings.

After fully completing the Labour Force Survey at a household, a usual resident aged 15 years or over was selected at random (based on a computer algorithm) and asked the additional questions in relation to their patient experience. If the randomly selected person was aged 15–17 years, permission was sought from the parent or guardian before conducting the interview. If permission was not given, the parent or guardian was asked the questions on behalf of the 15–17 year old.

Sample size

Of persons asked to participate in the survey, 78.9% fully responded to the Patient Experience Survey in 2012–13. Information was collected from 30,749 fully responding households. This includes 475 interviews for persons aged 15–17 years, where permission was not given by a parent or guardian for a personal interview. In these circumstances the parent or guardian responded to a reduced range of questions on behalf of the 15–17 year old. The sample was designed to produce representative results for states and territories. Unfortunately, the sample size for each GP attendance cohort was too small to provide quality data at the Medicare Local catchment or peer group level. Therefore, results are published in the report at the national level only.

The ABS Patient Experience Survey 2012–13 data were weighted to meet ABS estimated resident population benchmarks for the civilian population aged 15 years and over living in private dwellings in each state and territory, at 31 March 2013. Further information on the weighting regarding ABS weighting can be found within the ABS publication *Patient experiences in Australia: summary of findings, 2012–13, Explanatory Notes* (ABS cat. no. 4839.0).[4]

Data quality

The Patient Experience Survey results represent respondents' perception of their health status and views on experiences of using the health care system. Respondents' recall, perceptions and views are influenced by a number of factors which should be considered when interpreting the results.

Allocation of persons to GP attendance cohorts

Estimates by GP attendance cohort were calculated using respondents self-report of the number of times they visited a GP within the previous 12 months from the date of the survey.

Percentages (proportions)

The Patient Experience Survey 2012–13 results are expressed in terms of percentages, that is, the number of people with a characteristic of interest, divided by the defined eligible total population and expressed as a percentage (per one hundred population). The denominator varies by survey data item. For example, the denominator for many survey data items is all persons aged 15 years and over in the GP attendance cohort, whereas the denominator for survey data items about waiting times for GP appointments is all persons aged 15 years and over in the GP attendance cohort who had been to a GP for their own health in the previous 12 months. The responses 'Don't know' or other applicable categories are included in the percentage denominator, unless otherwise stated.

Reliability of proportions

Two types of error are possible in estimated percentages based on a sample survey. These are non-sampling error and sampling error.

Non-sampling error may occur in any data collection and at any stage throughout the survey process. Examples include:

- Non-response by selected persons
- Questions being misunderstood
- Responses being incorrectly recorded
- Errors in coding or processing the survey data.

The ABS attempts to minimise non-sampling error through a range of procedures including cognitive testing, extensive interviewer training, detailed interviewer instructions and follow-up approaches to selected households.

Sampling error occurs because a subset of the total population is used to produce estimates that are designed to represent the whole population. Sampling error can be reliably measured, as it is calculated based on the scientific methods used to design surveys.

One measure of the likely difference is given by the standard error (SE), which indicates the extent to which an estimate might have varied by chance because only a sample of dwellings (or households) was included. There are about two in three chances (67%) that a sample estimate will differ by less than one SE from the number that would have been obtained if all dwellings had been included, and about 19 in 20 chances (95%) that the difference will be less than two SEs.

Another measure of the likely difference is the relative standard error (RSE), which is obtained by expressing the SE as a percentage of the estimate:

$$\text{RSE\%} = \left(\frac{\text{SE}}{\text{estimate}}\right) \times 100$$

RSEs for estimates from the 2012–13 Patient Experience Survey have been calculated using the Jackknife method of variance estimation. This involves the calculation of 30 'replicate' estimates based on 30 different subsamples of the obtained sample. The variability of estimates obtained from these subsamples is used to estimate the sample variability surrounding the estimate.

Only estimates (numbers and proportions) with RSEs less than 25% are considered sufficiently reliable for most purposes. Estimates with RSEs between 25% to 50% are subject to high sample variability and should be used with caution. In addition, estimates with RSEs greater than 50% are considered too unreliable for general use.

As the percentages reported in *Healthy Communities: Frequent GP attenders and their use of health services in 2012–13* are based on information obtained from a sample survey, they are subject to sampling error. That is, they may differ from proportions that would have been produced if all persons in Australia had been included in the survey.

Suppression of estimates

The ABS confidentialises data in accordance with the *Census and Statistics Act 1905* (http://www.comlaw.gov.au/Details/C2006C00178/Html/Text#_Toc133231363). Affected cells are marked as NP (not available for publication). Cells marked with NP however are included in totals where applicable, unless otherwise indicated.

Annotation of estimates

Data that are not able to be published for reasons related to reliability, validity and/or confidentiality are marked as not available for publication (NP).

There were a number of results in the ABS supplied Patient Experience Survey 2012–13 data with Relative Standard Errors between 25 and 50 per cent. However in all cases these results were very small and had upper confidence interval values of less than one per cent. Therefore the Authority was confident that they were accurately represented in the bar graphs as very small bars and an 'interpret with caution' annotation was not necessary.

Significance testing

When comparing two point estimates or percentages of a characteristic of interest within a survey, it is useful to determine the degree of certainty of differences between them or whether the observed differences relate to other factors, such as sampling variability. One way to compare two point estimates is to test whether the difference between them is statistically significant. This test assesses whether the difference between two point estimates is statistically significant at the 95% level. If the two estimates are statistically significantly different, there is a very small chance (5% or less) that differences between them relate to sampling variability or other factors.

Accordingly, 95% confidence intervals were used to test the significance of any claims made in the report text regarding whether results for cohorts were different. Additionally a statistical significance test for any comparisons between estimates has been performed to determine whether it is likely that there is a difference between two corresponding population characteristics. The standard error is used to create the following test statistic:

$$\left(\frac{|x - y|}{SE(x - y)}\right)$$

If the value of this test statistic is greater than 1.96 then there is evidence, with a 95% confidence, of a statistically significant difference in the two populations with respect to that characteristic. Otherwise, it could not be stated with confidence that there is a real difference between the populations with respect to that characteristic.

Data interpretation and limitations

Several factors should be considered in interpreting statistics within the report including making comparisons between regions and using two different data sources to provide a broader understanding of service usage.

Location of patient address vs location of provider

For both data sources, the statistics relate to the region of the patient's address as opposed to the region in which the services were provided. Many patients receive services in a region other than the region where they live.

Interpretation and limitations of MBS statistics

Estimating non-attenders

The fact that statistics in this report were based on MBS utilisation data and ABS Estimated Resident Population (ERP) data, may mean that there is some inaccuracy in the derived count of non-users of GP attendances. This is due to a range of reasons, for example differences in data collection methods and timing and the way in which patients' locations were recorded.

Counting unique providers

Some providers have multiple provider numbers which will result in a small over count in the number of providers.

Expenditure data

Expenditure data only relate to Medicare Benefits paid for services that occurred in 2012–13 and for which claims were processed by the Department of Human Services up to and including 30 June 2014. Expenditure data does not include 'out-of-pocket' costs incurred by patients.

Expenditure data on GP and specialist attendances are an underestimate. Most obstetrics attendances in the MBS are not designated by practitioner type (e.g. for antenatal attendances, there are not separate items for GPs and specialists). As a result, expenditure on non-hospital obstetrics services in this report are included in 'All other' non-hospital MBS.

As noted previously in this technical supplement, data on expenditure on GP attendances published in the report does not include expenditure on bulk-billing incentives. This is because the items in question cannot be precisely attributed to areas of the MBS, with the exception of diagnostic imaging and pathology. In the report expenditure on bulk-billing incentives (with the exception of diagnostic imaging and pathology) are included in 'All other' non-hospital MBS.

The MBS benefit for each discrete type of service under the MBS is the same Australia-wide, with the exception of bulk-billing incentives (MBS Group M1–Management of bulk-billed services) captured within the 'All other' category. However, different types of services within a category, such as GP attendances attract different benefits. For example, a long consultation attracts a higher benefit than a short consultation as does the preparation of a GP management plan. Variation in expenditure per person for very high and frequent GP attenders is likely to reflect different mixes of services across regions either in type and/or number.

Mapping postcodes to SA3s

As noted in previous sections, special circumstances relate to Medicare enrolment in the Northern Territory, where approximately 30 per cent of GP attendances involve persons with Post Office Box or similar enrolment postcodes. Data for all SA3s and Post Office Box postcodes have been combined for the Northern Territory because the centralisation of mail delivery in Darwin and Alice Springs to surrounding remote communities makes it difficult to apportion data to local areas. Further mapping work will be undertaken to enable SA3 reporting of MBS data in the Northern Territory.

Alternatives to Medicare-funded GP services in rural areas

Since people in rural areas are known to have access to primary health care services funded by other sources (e.g. state government funded/salaried doctors) and health professionals other than GPs, comparisons in the report are restricted to metropolitan and regional areas. It cannot be known from the data whether lower rates of GP attendance in rural areas are due to poor access, the presence of alternative services or other reasons.

Interpretation and limitations of ABS Patient Experience Survey data

The previous section provides a summary of some of the issues that should be considered when interpreting the survey data including:

- Scope and coverage
- Sampling and non-sampling errors
- Reliability of estimates
- Changing denominators between data items.

Additionally, care should be taken in interpreting the relationships between two data items and whether these relationships are associations or causal. For example, a large contributor to high ED use by very high attenders is likely to be their underlying comorbidities that results in these patients being both high GP attenders and high users of EDs, rather than high rates of GP attendance leading to high ED use. Also the data provides no information on the relative timing of different services, e.g. whether the patient attended the GP or the ED first.

Number of long-term health conditions

Respondents to the Australian Bureau of Statistics (ABS) Patient Experience Survey in 2012–13 were asked whether they had any of the following conditions that had lasted, or were likely to last, six months or more: arthritis or osteoporosis, asthma, cancer, diabetes, heart or circulatory condition, mental health condition, long-term injury, or any other long-term health condition.

As a person may have more than one condition within a category, counts of the number of long-term health conditions are likely to be an underestimate.

Differences between MBS and ABS data

The following table summarises the differences between MBS statistics and the ABS Patient Experience Survey data that should be considered in interpreting the report findings **(Table 1, page 17)**.

Table 1: Summary of differences between MBS Statistics and ABS Patient Experience Survey data used in the report

	MBS statistics	ABS Patient Experience Survey
Data collection	Administrative data source with minimal error, e.g. unmade or late claims, administrative error or omissions (e.g. incorrect or missing birthdates)	Survey with the potential for sampling and non-sampling error (see pages 12 and 13 for more detail)
Data period	Statistics include all services provided between 1 July 2012 to 30 June 2013 for which the claim was processed up to and including 30 June 2014	The survey was undertaken throughout July 2012–June 2013 and survey respondents were asked about experiences with selected aspects of the health system in the 12 months prior to interview
Population	All Australians and some non-residents eligible for Medicare benefits (see page 4 for more detail)	Limited to persons aged 15 and over, with a number of exclusions (e.g. permanent members of the Defence Force, persons living in non-private dwellings, Indigenous communities) (see page 11 for more detail)
Patient location	Uses postcode of the person's mailing address and this may not be up-to-date at the time the service was provided	Uses collection district and is up-to-date at the time of survey
Calculation of non-attenders	Derived from two data sources, i.e. MBS statistics and ABS Estimated Resident Population (see page 15 for more detail)	Derived from the same data source
Services	Includes only those non-hospital services funded through the MBS	Includes any service that meets the description given to respondents (e.g. GP visit)
Contextual information	Only data on age, sex, location and use of other MBS services available	Able to provide contextual information about the person's health characteristics and use of non-MBS services, e.g. emergency department services

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About the Authority

The National Health Performance Authority has been set up as an independent agency under the *National Health Reform Act 2011*. It commenced full operations in 2012.

Under the terms of the Act, the Authority monitors and reports on the performance of Local Hospital Networks, public and private hospitals, primary health care organisations and other bodies that provide health care services.

The Authority's reports give all Australians access to timely and impartial information that allows them to compare fairly their local health care organisations against other similar organisations and against national standards.

The reports let people see, often for the first time, how their local health care organisations measure up against comparable organisations across Australia.

The Authority's activities are also guided by a document known as the Performance and Accountability Framework agreed by the Council of Australian Governments. The framework contains a set of indicators that form the basis for the Authority's performance reports.

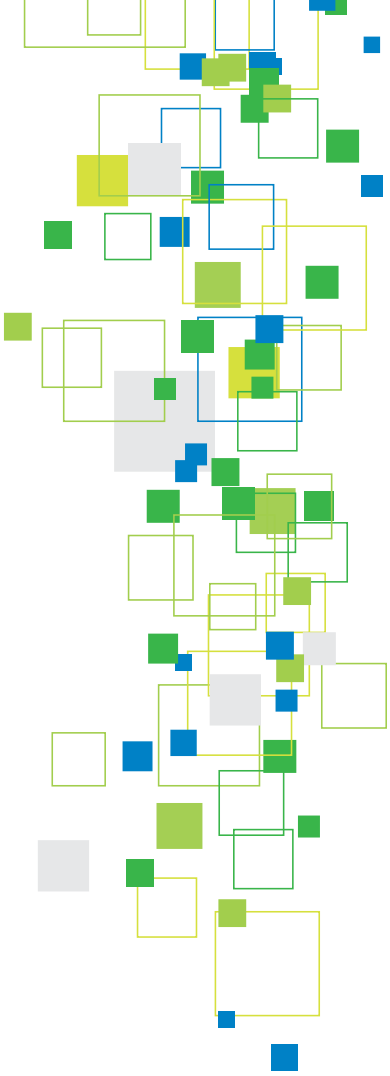
The Authority's role includes reporting on the performance of health care organisations against these indicators in order to identify both high-performing Local Hospital Networks, primary health care organisations and hospitals (so effective practices can be shared), and Local Hospital Networks and primary health care organisations that perform poorly (so that steps can be taken to address problems).

In addition to publishing regular print-style reports, the Authority releases performance information on the MyHospitals website (**www.myhospitals.gov.au**) and the MyHealthyCommunities website (**www.myhealthycommunities.gov.au**), and presents other information about its activities on **www.nhpa.gov.au**

The Authority consists of a Chairman, a Deputy Chairman and five other members, appointed for up to five years. Members of the Authority are:

- Ms Patricia Faulkner AO (Chairman)
- Mr John Walsh AM (Deputy Chairman)
- Dr David Filby PSM
- Professor Claire Jackson
- Professor Michael Reid
- Professor Bryant Stokes AM RFD (on leave)
- Professor Paul Torzillo AM.

The conclusions in this report are those of the Authority. No official endorsement from any Minister, department of health or health care organisation is intended or should be inferred.



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