



**Australian Government**  
**Department of Health**

## **Method Paper**

General Practice Full Time Equivalent (GPFTE) – Workforce

Health Workforce Division  
Department of Health

## **1 Introduction**

The new 'GP Full Time Equivalent – Workforce' is a workforce specific method which reflects the primary care workload of Australia's GP Workforce. The new method is calculated using data from MBS, the National Health Workforce Dataset (NHWDS) and Bettering the Evaluation and Care of Health (BEACH) data (2011 – 2016) to determine:

- An estimate of how long a GP spends on each Medicare item claimed
- GP and patient characteristics such as age and sex which were statistically significant in determining the duration of a consultation
- A GP's average non-billable time as reported in the SAND (sub-study of the BEACH dataset) including age and sex, as well as the age of their patient for each Medicare claim, and
- Clinical time, comprising billable and non-billable time.

The new data method provides additional information that was not contained in the definition of the GPs – Full Service Equivalent (FSE) previously published in Medicare GP statistics.

### **1.1 Previous data methods**

Previous methods relied on GP Medicare billing to estimate the availability of GPs in different areas. These calculations were not designed to consider several factors such as; fly-in, fly-out service models, time taken providing clinical services not billable to Medicare, and non-clinical duties that affect how much time a given number of GPs will have to provide clinical services. Hence, the new data method provides additional information that was not contained in the definition of the FSE previously published in Medicare GP statistics.

### **1.2 Solution**

This paper outlines the new method to calculate a GP's primary care workload based on MBS items claimed within a GP's scope of practice. The General Practitioner Full Time Equivalent (GPFTE) – Workforce provides a single means of counting the primary care workload (according to Medicare claims data) of GPs working in Australia.

### **1.3 Background**

The Department of Health engaged the University of Sydney to conduct a multivariate analysis of the BEACH data (2011 – 2016) to:

1. Determine an estimate of the duration spent by each GP on each Medicare claim (MBS) and GP characteristics which were statistically significant in determining the duration of an MBS claim, and
2. Conduct an analysis into the non-billable component of a Medicare claim. This information was provided at the GP and patient level and was therefore attributed to each GP age and sex and patient age. These variables were chosen based on the results of the statistical analysis.

The Department also derived a measure of non-clinical time spent using a combination of the NHWDS data and Medicare data. Using this information, the final GPFTE associates an FTE value to each Medicare claim.

## **2 GP Full-Time Equivalent**

### **2.1 Definition/calculation**

GPFTE estimates the total effort spent by GPs delivering primary care services. The method calculates a GP's primary care workload based on MBS items claimed within a GP's scope of practice. For each GP, the measure provides an estimate of the billable time, non-billable time, and non-clinical time spent on claims. One GPFTE equates to a 40 hour week per week for 46 weeks of the year.

### **2.2 Main area of work**

From a workforce planning perspective, main area of work is important. The NHWDS and Australia's Future Health Workforce (AFHW) reports are all based on the main area of work of a medical practitioner. As a result, workforce specific measures developed and implemented as part of the new data method(s) also consider the 'Main' Derived Major Specialty (DMS) of a practitioner.

### **2.3 Methodology used to identify the GP workforce using Main Derived Medical Specialty (MDMS)**

The DMS is determined quarterly and a Provider may have more than one DMS in a given year. Hence the DMS considers only those services provided in a single quarter. From a workforce planning perspective, all services provided over the entire year are of interest as this better reflects the size of Australia's GP workforce and the type and

volume of its primary care workload. Therefore, the “Main Derived Medical Specialty (MDMS)” was developed and implemented as part of the new data method(s).

Each Provider may have more than one registered speciality with Medicare. The DMS provides a single speciality, derived to represent the major/highest qualification and/or major activity of a Provider during the observed period according to key service groups (which are based on items that would be claimed by Specialists and GPs). In that regard, a Provider is allocated to a derived medical speciality based on their major MBS billing patterns and speciality qualifications.

Two layers of DMS granularity will be utilised including:

1. Layer 1 – classifies Providers as “Specialist”, “GP”, “Allied Health” or “Dentist”.
2. Layer 2 – classifies GPs as “VRGP”, “NONVRGP”, “GP Trainee” or “Unclassified”.

The DMS is based on date of service (DOS) and is administered by Medical Benefits Division (MBD) and used as a basis for the previously published Medicare GP statistics. To solve the problems encountered with the DMS, an additional variable “Main Derived Medical Specialty (MDMS)” was created which allows GPs to be counted individually according to a review of a GP’s services over a whole year to determine if they are predominately working as a GP.

For example, if a Provider delivered 5,000 services as a DMS specialist and 1,100 services as DMS GP then the Main DMS would classify the Provider as a Specialist for the year, and not as a GP. This would mean that the Specialist would be counted as a Specialist, and not a GP, while any specific primary care services would still count, they would be denoted as being not provided by a GP.\*

The Medicare data for the new data method(s) is currently restricted to Providers whose Main DMS are VR GP, Non-VRGP or GP Trainee.

## **2.4 Methodology used**

The mean duration of MBS items according to the BEACH data were regressed against schedule fees and the sex of the GP. This resulted in an estimate of the duration spent by each practitioner on each MBS item where BEACH data is not available (or with a frequency of less than 300). The results produced a regression with an R-squared of .7959.

As some MBS items have more billings than others, and some response values in the BEACH data are known with relatively more precision than others, a weighted least squares analysis of this data was performed with a weighted regression instead of an analysis of variance. This

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\* There is ongoing analysis around this issue and it is likely that these services will continue to be included by the new data method(s).

technique weights the data more heavily towards items with a high volume, and increases the overall accuracy of the regression.

Non-billable duration for each Medicare claim was calculated by applying the average non-billable time per encounter within the BEACH data to GP age and sex as well as to the age of their patient. The non-billable time considered only clinical time.

Non-clinical time were estimated at a GP locality level according to the data contained in the NHWDS—that is, the proportion of non-clinical time on average for each GP according to age, sex and Monash Modified Model (MMM) category.

In summary:

- Each claim in the Medicare data was considered according to item number, age and sex of the provider. If the claim was found in the BEACH data then the mean duration as per BEACH data was applied to the claim (BEACH data supplies the mean duration by GP) if the claim was not found in the BEACH data, or had a frequency of less than 300, then the regression equation was applied.
- Non-billable time was calculated by applying the average non-billable time per encounter within the BEACH data to GP age and sex as well as to the age of the patient.
- Each MBS data item is then assigned a measure of GP workload based on the above steps.

The end result is that the three components of billable time, non-billable time, and non-clinical time are combined to produce the final GPFTE figure.

### **3 Process steps**

#### **Step 1 – Set the full-time benchmark**

One GPFTE equates to a workload of 8 hours per day or 40 hours per week for 46 weeks per year. This equates to 1,840 hours per year (or 110,400 minutes).

#### **Step 2 – Build a regression model using BEACH multivariate analysis data**

The University of Sydney provided the Department with data on the average duration for each MBS item broken down by the variables which have a statistically significant influence on the duration of encounters where that MBS item was billed (for example, patient age and GP sex).

The Department uses this information to model the relationship between time and the schedule fee based on GP sex. The model includes the duration and schedule fee for the 12 MBS items in the BEACH data that had a frequency of greater than 300 encounters.

The model is weighted to rely more heavily on MBS items in the BEACH data that were used the most frequently in encounters as these are considered to be relatively more reliable and precise.

For 2017-18 the regression equation was:

$$\text{Clinical billable time} = -42.860 + 15.796 * \text{LN}(\text{schedule fee}) - 1.416 \text{ GP Sex}$$

The regression formula above presents that male GPs spend 1.416 minutes less in an average consultation than female GPs. The application of the model is adjusted for GP sex (as below):

$$\text{Male GPs: Clinical billable time} = -42.860 + 15.796 * \text{LN}(\text{schedule fee}) - 1.416$$

$$\text{Female GPs: Clinical billable time} = -42.860 + 15.796 * \text{LN}(\text{schedule fee})$$

For example, for an item with a schedule fee of \$200 claimed by a male GP the duration would be estimated to be:

$$\begin{aligned} \text{Clinical billable time} &= -42.860 + 15.796 * \text{LN}(\text{schedule fee}) - 1.416 \\ &= -42.860 + 15.796 * \text{LN}(200) - 1.416 \\ &= -42.860 + 15.796 * 5.298 - 1.416 \\ &= -42.860 + 83.692 - 1.416 \\ &= 40.832 - 1.416 \\ &= 39.686 \text{ minutes} \end{aligned}$$

#### **Step 2a – Adjustment to the regression model for low schedule fee items**

There are MBS items with relatively low schedule fees, but with relatively high volumes in MBS claim data and in the BEACH data. Using the regression model from step 2 would result in a negative contribution towards GPFTE. Therefore, for items with a schedule fee below \$33.00 for males and \$30.00 for females, the following equations are used instead of the regression model at step 2:

$$\text{Male GPs: Clinical billable time} = \text{schedule fee} / 3.02$$

$$\text{Female GPs: Clinical billable time} = \text{schedule fee} / 2.76$$

#### **Step 3 – Estimate clinical billable duration for MBS items in BEACH data**

The mean clinical billable duration is applied for the 12 MBS items in the BEACH data with a frequency greater than 300:

- For item 23, the mean clinical billable time is applied directly from the BEACH data by patient age, GP sex, GP fellowship, and state or territory
- For item 36, the mean clinical billable time is applied directly from the BEACH data by GP age, GP sex and GP fellowship
- For the remaining 10 highest volume items, the mean clinical billable time is applied by GP age and GP sex

#### **Step 4 – Estimate clinical billable duration for MBS items not in BEACH data**

Using the regression formula from step 2, clinical billable duration is estimated for the remaining MBS items (those not in the BEACH data or which had a frequency of less than 300 in the BEACH data) based on their schedule fee and the sex of the GP.

### **Step 5 – Estimate clinical non-billable duration**

The University of Sydney also conducted a multivariate analysis of clinical non-billable time using SAND data (a sub study of BEACH) and identified that GP age, GP sex, and patient age were factors that significantly impact clinical non-billable time.

Clinical non-billable time is not required for every encounter that a GP has with a patient. As such, clinical non-billable time was not associated with every encounter in the BEACH data. Therefore, as part of this analysis the University of Sydney also assessed the percent of encounters that did have clinical non-billable time associated with them.

Based on the results of this analysis, the University of Sydney provided the Department with data on the average clinical non-billable duration and the percent (probability) of encounters with clinical non-billable time broken down by the GP age, GP sex and patient age.

The Department used this data to estimate a clinical non-billable time for every Medicare claim based on the GP age, GP sex and patient age as the probability multiplied by the duration for each combination of GP age, GP sex and patient age. Note that this formula is the same for every MBS item, clinical non-billable time only differs based on GP age, GP sex and patient age. Where clinical non billable time = probability (by *GP age* and *GP sex* and *patient age*) \* clinical non-billable duration (by *GP age* and *GP sex* and *patient age*).

### **Step 6 – Calculate clinical duration (billable and non-billable) at the GP level**

For the MBS item claimed the total clinical time is the sum of clinical billable time and clinical non-billable time from steps 2-5. The MBS claim level data is then aggregated to unique GP level by location (GPs are counted once in each geography in which they provide services) so that all durations (clinical billable, clinical non-billable, total clinical) are available for individual (unique) GPs.

### **Step 7 – Estimate of non-clinical duration**

The NHWDS was used to determine the *average total hours* and *average clinical hours* for GPs by age, sex and remoteness (MMM). From this a non-clinical factor was calculated as the average clinical hours/average total hours.

### **Step 8: Calculate GPFTE**

The three components *billable time*, *non-billable*, and *non-clinical time* spent on claims are summed at the GP level to produce the total working time (duration in minutes) for each GP. The total working time for each GP is converted to GPFTE as follows:

$$\text{GPFTE} = \text{total working time} / \text{Full time benchmark of 40 hours}$$

For example, for a GP who billed items over a year equating to 132,480 minutes (total working time) the calculated GPFTE would be  $132,480 / 110,400 = 1.2$ . The GPFTE is not capped for individual GPs.

### **Step 9 – Data manipulation and transformation**

With all billable, non-billable, and non-clinical time spent on claims by the identified GP population, the data are transformed according to the requirements of the data method. For example, this includes but is not limited to defining how individual fields are to be mapped, modified, joined, filtered, and aggregated etc. to produce the final output.

For GPFTE – Workforce, the final output includes an additive measure of GP workload which can be aggregated as required by users. This mitigates the need or reliance for distinct GP headcounts, and measures the total impact of a GP’s primary care services provided in terms of the time spent on Medicare billings.

## **4 New methods provide more detailed data**

The new methods are different from other methods previously used by the Department and consider a broader range of primary care Medicare Benefits Schedule (MBS) items providing more detailed data to measure GP activity over the entire year.

The methods enable workforce planners and other users to accurately target those practitioners whose majority of services over the year were delivered within a GP’s scope of practice. It 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 a specialist.

Previous methods relied on GP Medicare billing to estimate the availability of GPs in different areas. These calculations were not designed to consider several factors such as; fly-in, fly-out service models, time taken providing clinical services not billable to Medicare, and non-clinical duties that affect how much time a given number of GPs will have to provide clinical services.

All future reporting on health workforce statistics relating to GPs will use the new methods to ensure ongoing data consistency.

Comparison	Previous method(s)	New method(s)	Reason
Unique identifier	SPR	UID	UID is more unique than SPR and is more applicable to main area of work for workforce planning purposes
Services included	By BTOS : A Non-referred attendances GP/VRP GP, B Non-referred attendances – Enhances Primary care, and M Non-referred attendances - Other	All primary care MBS items claimed by the Main DMS GP Workforce.  The primary care MBS items are as agreed by Commonwealth Medical Advisors and GPs.	Workforce planning requires a ‘main’ area of work to align with other workforce planning methods.  The new data method(s) examine all MBS items claimed by practitioners over a year to determine if they are predominately working as a GP.
Headcount	The GP Workforce was identified by the quarterly DMS which derives the most appropriate specialty in each period to identify GPs for reporting purposes. While each service provider has a single DMS over a given quarter, a provider’s DMS can alternate from one quarter to the next.  The target population are DMS GPs.	The GP Workforce are identified by a review of services over a whole year to determine their Main Derived Major Speciality (MDMS).  The target population are MDMS GPs.	To include all general practitioners whose main area of work is in general practice.  The previous method looks at DMS which applies across one quarter of the year, while the MDMS looks across the entire year.  The previous method may include specialists who are not predominately working as a general practitioner (in both its headcount and services count).
Workload	Full Service Equivalent (FSE) was used to measure workforce activity based on Medicare claims. The FSE relied on GP Medicare billings to estimate the availability of GPs in different areas.  An FSE of 1 was approximately equivalent	GP Full Time Equivalent (GPFTE) calculates workforce activity based on the primary care MBS services claimed and accounts for the influence of both rurality and demographic characteristics (e.g age and sex) on the duration of attendances: including billable time,	The previous method was not designed to consider several factors such as; fly-in, fly-out service models, time taken providing clinical services not billable to Medicare, and non-clinical duties that affect how much time a given number of GPs will have to provide clinical services.

Comparison	Previous method(s)	New method(s)	Reason
	to a workload of 7.5 hours per day, five days per week.	non-billable time, and non-clinical time.  A GPFTE of 1 represents a 40 hour week over 46 weeks of the year.	