

## **Non-State Services in the Health Category**

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## 1. Context

The Commonwealth Grants Commission (CGC) developed a new 'subtraction method' to assess the impact of non-State services on health needs in the 2010 Review, and subsequently replaced this with a 'direct method' in the 2015 Review, largely citing data issues with the subtraction method.

This paper considers the data and conceptual issues around the subtraction and direct methods. Feedback is sought from the Officers' Working Party by 23 March 2018. Western Australia will circulate a brief summary of this feedback with commentary in April 2018.

## 2. Relevance of Non-State Health Services to HFE

HFE requires the identification of factors, beyond State control, which make it easier or harder for States to provide a national average level of services. The existence of a non-State sector service reduces the burden of government service provision.

Further, the non-State health sector can impact on State health costs in both obvious and non-obvious ways.

Obviously, non-State health providers can see patients who would otherwise use State services. Less obviously, non-State sector service provision may help prevent, or identify early, conditions which would otherwise be treated at greater cost to the State by the State system.

The Commonwealth is mainly a funder of services provided by the State and private sectors.

- However, Commonwealth grants to States and local governments are generally already equalised.

Therefore, the relevant non-State sector, for purposes of assessing whether a special expenditure allowance is required under HFE, can be regarded as comprising services to people that are fully or significantly funded by a combination of private and Commonwealth funding, excluding services that fully meet particular needs (and hence require no State funding) such as services to veterans and compensable patients. The non-State sector will be defined thus for the rest of the paper.<sup>1</sup> Such services are largely provided by the private sector.

### **Policy Neutrality of Non-State Sector Activity**

The extent of State-type services provided by the non-State sector varies across States (see Chapter 3), and this in turn will impact on the level of services that States need to provide. In theory, State service levels could also affect non-State provision, although any such influence is likely to be indirect (i.e. through crowding out, or making room for, the non-State sector).

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<sup>1</sup> The only excluded special needs services in the tables are services for veterans, as data is not available for other services.

- In this regard, the consultant James Downie found that “Whilst state governments have the responsibility for licensing private hospitals in some jurisdictions, there appears to be no evidence to suggest that state government policies limit the expansion of the private sector in jurisdictions where there are lower numbers of private hospitals.”<sup>2</sup>
- Some crowding out effect is likely due to the national Medicare obligations on States. This is a national phenomenon.

This paper takes the view that the distribution of non-State sector health activity across States is, for all practical purposes, policy neutral. The CGC makes a similar judgement in respect of private school education. At any rate, it is impossible to prove otherwise; the observed distribution of non-State sector activity (see tables below) is plausibly policy neutral (taking into account States’ circumstances); States have a common long-term financial interest in having a vigorous non-State sector; and States all operate under the Medicare principles and community expectations flowing from these principles.

### **HFE and Costs Borne by the Community**

Are the costs borne by the community for the receipt of non-State sector services (beyond what is covered by Commonwealth subsidies) relevant to HFE?

- These costs would be relevant if HFE equalised burdens on communities, but that is not currently the way it is implemented (an example is school education).
- Under current national policies, public hospital services are provided to public patients free of charge<sup>3</sup>.

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<sup>2</sup> James Downie, *Conceptual Review of the Commonwealth Grants Commission Methodology for Health Assessment for the 2015 Review*, page 3. The report also stated on p 6 that there is little publicly available data on what support jurisdictions are providing to operators of after-hours GP clinics at emergency departments. Its discussion of other components of the health system did not raise the possibility of State influence over the size of the non-State sector.

<sup>3</sup> There are a few exceptions to this specified in G1 of the *National Health Reform Agreement*. Fees and charges may apply to services provided in public hospitals to private patients, compensable patients and Medicare ineligible patients, but these constitute a minority of patients in public hospitals.

### 3. Health Provision by Sector in Australia

This Chapter provides evidence of the significant scale of disparities in non-State health service provision across States. (For an illustration of the extent to which the private sector is involved in all major areas of health service provision nationally, see Attachment A.)

Table 1 below indicates the relative importance of the different sectors in funding health services. In this and the following funding tables, Commonwealth grants to the State/local sector (general purpose and health grants) have been included in State/local funding and Commonwealth funding for veterans has been excluded.<sup>4</sup>

**Table 1: Relative Size of Commonwealth, State/Local and Private Health Funding 2015-16**

	Commonwealth	State/Local	Private	Total
	\$m	\$m	\$m	\$m
Public Hospitals	1,886	44,258	4,181	50,325
Private Hospitals	3,166	819	10,282	14,267
Primary Health Care	23,778	9,414	24,598	57,790
Referred Services	13,210	-	4,497	17,707

Note: Commonwealth grants to the State/local sector, based on the Commonwealth's 2015-16 Final Budget Outcome, have been excluded from Commonwealth funding and added to State/local funding. The split between hospital and non-hospital grant programs is based on judgement. It is likely that there are differences from the estimates used by the Australian Institute of Health and Welfare (AIHW), *Health expenditure Australia 2015-16* (which are not publicly available). Also excluded are expenditure for Capital, Patient transport services, Aids and appliances, Administration, Research, Medical expenses tax rebate, and Commonwealth funding for veterans.

Source: AIHW, *Health expenditure Australia 2015-16* (Table A3) and Commonwealth's 2015-16 Final Budget Outcome.

Table 2 summarises the provision of health services by the State/local and non-State sectors (i.e. combining Commonwealth and private funding). The Table combines primary health care and referred services into "Major non-hospital services".

<sup>4</sup> We understand that we can practically treat State/local figures as State figures, as the Australian Institute of Health and Welfare does not include own source funding by local government authorities in its figures.

**Table 2: Relative Size of State/Local and Non-State Sector Spending  
2015-16**

	State/Local	Non-State	Total
	\$m	\$m	\$m
Hospitals	45,077	19,515	64,592
Major Non-Hospital Services	9,414	66,083	75,497

Note: The private sector contributed 62.6% of corresponding capital spending of \$10,137 million.

Source: Table 1 above.

The non-State sector is responsible for about 32% of hospital spending and about 88% of spending on major non-hospital services.

Per capita non-State and State/local spending by State is shown in Table 3, while Table 4 shows how this spending varies from the national rate in percentage terms.

**Table 3: State/Local and Non-State Health Sector Spending, 2015-16,  
\$ per capita**

	State/Local on Hospitals	Non-State on Hospitals	State/Local on Major Non- Hospital Services	Non-State on Major Non- Hospital Services
NSW	1,733	839	314	2,877
Vic	1,797	739	195	2,806
Qld	1,853	890	600	2,662
WA	2,163	823	464	2,566
SA	2,161	758	542	2,627
Tas	1,774	1,046	263	2,934
ACT	2,547	668	696	2,379
NT	3,067	331	1,657	2,302
<b>Australia</b>	<b>1,877</b>	<b>813</b>	<b>392</b>	<b>2,752</b>

Note: The non-State spending on hospitals is significantly affected by levels of private diagnostic related group (DRG) weighted separations and costs per private DRG weighted separation. For private health insurance patients, these costs can be estimated from data in AIHW, *Health expenditure Australia 2015-16* and AIHW, *Admitted Patient Care 2015-16*. Compared with the national average cost per private DRG weighted separation, New South Wales is 2% below average, Victoria 1% above average, Queensland 5% below average, Western Australia 18% above average and South Australia 8% below average. Estimates for smaller population jurisdictions are not available. The data exclusions are as in Table 1.

Source: AIHW, *Health expenditure Australia 2015-16* (Tables A3, B1 to B8, and C4), AIHW, *Admitted Patient Care 2015-16* (Tables 7.3 and 7.6) and Commonwealth's 2015-16 Final Budget Outcome.

**Table 4: State/Local Health and Non-State Sector Spending by State  
2015-16  
% difference from national per capita**

	State/Local on Hospitals	Non-State on Hospitals	State/Local on Major Non- Hospital Services	Non-State on Major Non- Hospital Services
NSW	-8	+3	-20	+5
Vic	-4	-9	-50	+2
Qld	-1	+10	+53	-3
WA	+15	+1	+18	-7
SA	+15	-7	+38	-5
Tas	-6	+29	-33	+7
ACT	+36	-18	+78	-14
NT	+63	-59	+323	-16

Source: Table 3 above.

Table 4 shows that the level of non-State sector health provision varies significantly across States. These variations are not significantly explained by the CGC's cost and demand disabilities. These disabilities, calculated excluding the impact of the non-State sector, are provided in Table 5. For example, New South Wales would have to provide 0.8% more per capita than the national average of *spending*, to provide the average level of *services* for Admitted Patients (if the non-State sector is not taken into account).

**Table 5: Cost and Demand Disabilities Excluding the Non-State Sector (%)**

	Admitted Patients	Emergency Departments	Non-Admitted Patients	Community Health
NSW	0.8	-2.0	-0.8	-3.8
Vic	-4.9	-8.3	-7.4	-9.0
Qld	1.4	5.8	2.7	6.8
WA	-2.5	0.9	-0.5	3.6
SA	5.4	1.4	4.8	-0.1
Tas	18.6	30.6	21.8	33.1
ACT	-20.4	-22.2	-22.6	-11.9
NT	48.0	103.2	114.0	119.8

Source: CGC's Assessment System On Line and WA Treasury calculations.

Because the data on hospital spending in Table 3 and Table 4 is significantly affected by differences in costs across States (see note under Table 3), Table 6 provides information on the quantity of private patient services across States. It shows that variations in per capita private DRG-weighted hospital separations are significant.

**Table 6: Per Capita Private DRG-Weighted Separations 2015-16**

Category	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
	Per 1,000								
Public hospitals	55	36	33	27	29	39	26	19	40
Private hospitals	139	137	159	135	151	na	na	na	141
Total	193	173	192	163	181	na	na	na	181

Source: AIHW, *Admitted Patient Care 2015-16*, Tables 7.3 and 7.6. Private separations include self-funded and private health insurance patients. Veterans services and compensable patients are excluded.

## 4. History

The CGC has taken the non-State sector into account in different ways in the health assessments of successive reviews, as outlined below.

### 2004 Review

#### *Inpatient Services Category*

No assessment was made.

#### *Non-inpatient and Community Health Category*

The CGC calculated a notional distribution of GPs across States based on their national use by different population groups (age, remoteness, Indigeneity and socio-economic status). This was divided by the actual number of GPs in each State to derive a factor for each State. A 50% discount was applied to this factor, which was then used to assess the expenditure need for emergency department and outpatient services components. The factor was also applied to the community health component, but without the 50% discount.

### 2010 Review

#### *Admitted Patients*

No assessment was made. The CGC considered that the assessment intrinsically picked up the non-policy influence of non-State health services in its assessment of population characteristics, including location.

The CGC stated that: “Our consultant’s view is that services substitutable between the public [State] and private health sectors may affect public hospital waiting lists, rather than public hospital throughput.”<sup>5</sup> The evidence for this view is unknown and it was apparently rejected in the 2015 Review, which did assess non-State sector for Admitted Patients, and did so using the subtraction method.

#### *Community and Other Health Services*

The CGC recognised that the States have a “‘fall-back’ responsibility for providing services not provided by the non-State sector or in areas where it is uneconomic for private providers to operate.”<sup>6</sup>

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<sup>5</sup> CGC, *Report on GST Revenue Sharing Relativities – 2010 Review*, Volume 2, page 203, paragraph 46.

<sup>6</sup> *Ibid.*, page 223, paragraph 223.

The CGC estimated aggregate need for health services in each State using population characteristics, and subtracted non-State provision.

### **2015 Review**

The 2015 Review estimated the following proportions of State spending to be substitutable with the non-State sector:

- 15% for admitted patients;
- 15% for emergency department services;
- 40% for non-admitted patient services; and
- 70% for community health costs.

Substitutable spending for admitted patients was allocated in proportion to an expected distribution of private patients (allowing for socio-demographic characteristics including remoteness). This allocation was then subtracted from the actual distribution of private patients.

A similar approach was adopted for the other components, but replacing distribution of private patients with other proxies:

- for emergency department services, the value of bulk billed GP services;
- for non-admitted patients, the value of bulk billed specialist, pathology and imaging benefits; and
- for community health, the value of bulk billed GP services (but the assessment was discounted by 25%).

## 5. Substitutability and HFE

This chapter considers the appropriate understanding of substitutability for HFE.

Many, but not all, health services are substitutable between the State and non-State sectors. Identifying the substitutable non-State services is a key part of the subtraction model (see next chapter). However, the CGC has noted that:

The subtraction model, conceptually, works with any level of substitutability, and importantly does not require an estimate of the level of substitutability. However, it is more accurate at high levels of substitutability. In this review, we concluded that the level of substitutability is less than was previously assumed. As such, the conceptual strengths of the subtraction model have been mitigated.<sup>7</sup>

Hence this report considers the different ways of looking at substitutability, and what is most relevant to HFE.

Firstly, we can consider elasticity of substitution:

- the extent to which the State adds/withdraws services when the non-State sector withdraws/adds services; or
- the extent to which the non-State sector adds/withdraws services when the State withdraws/adds services.

It is important to distinguish between short-run and long-run (i.e. generational) elasticities of substitution between non-State and State services. Typically, the CGC takes a long-run perspective (e.g. assessment of wages and capital). Realistically the only way to handle a non-State services assessment is from a long-run perspective.

Secondly, we can consider the quantity of substitutable activity:

- the quantity of services provided by the non-State sector that is similar to services provided by one or more States, or more broadly promotes health outcomes that are sought by States (and hence impact on State direct provision of services); or

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<sup>7</sup> CGC, *Report on GST Revenue Sharing Relativities 2015 Review* – Volume 2, page 213.

- the quantity of services provided by the State sector that is similar to services provided by the non-State sector, or more broadly promotes health outcomes that are impacted on by the non-State sector (and hence impact on services provided by the non-State sector).

For completeness, we have presented each of these approaches from a dual perspective (i.e. how the non-State sector affects the State sector, and vice versa). Under the assumption (see Chapter 2) of the policy neutrality of non-State sector activity, it is only the impact of the non-State sector on the State sector that would be relevant to HFE.

This paper takes the view (for reasons outlined below) that:

- elasticity of substitution is not relevant to HFE; and
- the quantity of substitutable activity is relevant to HFE.

### **Elasticity of Substitution Not Relevant to HFE**

Even if it could be established that, as a matter of standard policy, States respond less than fully in the long run to variations in non-State sector provision, this does not appear relevant to HFE.

- As HFE is currently construed, no sense can be made of equalisation to a 'standard policy' of States choosing unequal outcomes in the long run for otherwise equal individuals. If this were accepted, it would have much broader ramifications for HFE. For example, there might be a standard policy of providing higher quality services if revenue capacity is higher.<sup>8</sup>
- While the 'what States do' principle makes sense in many contexts (at least when interpreted in a way that is consistent with policy neutrality), it is intended to serve the interests of the present HFE principle, not redefine it.

Moreover, we are not aware of any evidence of a 'standard policy' long-run elasticity of substitution between non-State and State services that is less than 100%. Notably, State responses to variations in non-State sector activity are unlikely to precisely offset the variation in each service, but rather offset services more generally in ways producing similar outcomes.

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<sup>8</sup> This should be distinguished from individual State policy decisions reflecting different priorities across States, or constraints imposed on States by flaws in equalisation.

Finally, even if States chose not to fully offset a reduction in non-State general health services, they could well face higher costs (both in the short term and long term) with people presenting to States with serious conditions that could have been forestalled with appropriate earlier treatment and advice.

### **Quantity of Substitutable Activity is Relevant to HFE, and the Scope of Relevant Activity is Broad**

The relevance of the quantity of substitutable activity to HFE follows from two reasonable presumptions that we have made:

- non-State sector activity across States can be presumed to be policy neutral (see Chapter 2); and
- the long-run substitutability between non-State and public services can be presumed to be 100%, at least at the level of outcomes (see above).

There is, however, a question of how to draw the boundary of substitutable non-State services in cases where State provision is relatively minor (even negligible) or only occurs in one or two States.

We suggest that the guiding principle here is that HFE should equalise States' capacities to achieve health outcomes for people in like circumstances, regardless of who is providing the service. As noted above, it does not make sense to assume otherwise. Moreover, States are likely more interested in the achievement of desired health outcomes, than who provides them.

It follows that HFE should take into account non-State sector activities that States have a policy interest in seeing provided, where these activities may differentially impact on States' capacity to achieve desired health outcomes.

Hence the normal presumption would be to include medically necessary non-State services within the envelope of substitutable non-State services. Notably, differences in services provided by the public and private sectors say little about the substitutability of those services. Limited or minimal State involvement in some non-State services does not mean that these should be outside the scope of HFE. Such limited involvement could reflect a number of scenarios, all of which either require HFE or are consistent with inclusion in HFE:

- The non-State sector is providing differential levels of service across Australia, to which States are responding in a different way (e.g. through an alternative service or differential efforts on prevention).

- The non-State sector may be generally performing the task adequately across Australia, except possibly for one or two States whose governments are providing extra support to ensure equal capacity across all States.
- The non-State sector may be generally performing the task adequately across Australia, except possibly for one or two States whose governments have chosen as a matter of policy not to provide extra support. This decision by one or two States cannot be regarded as standard policy for all States, so equalisation is still appropriate. This view is strengthened if (as noted above) the different levels of this activity across States contribute in the longer term to differences in health status that impact on the provision of State services.
  - A case in point is dental services, where poor dental health is a strong contributor to serious health problems and shortened life span. Medically-necessary dental work that is funded by the Medicare Benefits Schedule (MBS) or Child Dental Benefits Schedule may therefore generate significant health benefits and lower future State health outlays, suggesting that these non-State services are relevant to HFE.
- There may be a service that no State provides (because it is adequately provided by the non-State sector), but would provide if the non-State sector discontinued it. Its substitutability would not currently be observable.

## 6. Comparing the Substitution and Direct Methods

### What is the Subtraction Method?

The subtraction method, as employed in the 2010 Review, broadly follows the following steps.

1. Determine non-State expenditure in each State that is substitutable with State spending.<sup>9</sup>
2. Determine assessed total (State and non-State) expenditure needs in each State, on the basis of socio-demographic factors<sup>10</sup> such as remoteness.
3. Subtract 1 from 2 to determine how much each State government would need to spend to provide the average level of services, given the level of non-State provision in each State.
4. Apply any disability factors (such as wage pressures) that are not reflected in steps 1 and 2.

Applying this broad approach requires that the following aspects be considered:

- the level of implementation, i.e. the choice of how many components in which to break the health category;
- identification of substitutable non-State services;
- the socio-demographic factors used in step 2;
- identifying additional disability factors (e.g. wage pressures) that had not been assessed at steps 1 and 2; and
- whether to adjust non-State spending for any systematic difference in cost of services between the State and non-State sectors.

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<sup>9</sup> Non-State data was discounted by 12.5% to address the possibility that some non-substitutable non-State services may have been picked up. CGC, *Report on GST Revenue Sharing Relativities 2010 Review – Volume 2 – Assessment of State Fiscal Capacities*, page 226, paragraph 101. The need for such adjustments is a data issue.

<sup>10</sup> In the 2010 Review, the socio-demographic factors were age, indigeneity, socio-economic status (SES) and remoteness.

A segmented approach may be appropriate where there are distinct drivers in different components of health service provision, and the different State sector components are closely substitutable with the corresponding components of the non-State sector. The 2010 Review's distinction between Admitted Patients and all other services is a reasonable segmentation.

Symbolically, the subtraction method is expressed as Formula 1 below, under the simplifying assumptions<sup>11</sup> (which do not affect the conclusions) that:

- all people have the same health needs and geographic accessibility;
- there are no other cost differences between States;
- State and non-State services have the same cost per service.

#### Formula 1

$$\frac{A_i}{P_i} = \frac{T + Q}{P} - \frac{Q_i}{P_i}$$

In this formula:

$A$  = assessed spending need on State health services

$P$  = population

$T$  = total State health services spending

$Q$  = non-State spending that is substitutable with State spending

$i$  = State indicator.

The subtraction method can equivalently be expressed as follows.

#### Formula 2

$$A_i = \frac{P_i}{P}T + Q \left( \frac{P_i}{P} - \frac{Q_i}{Q} \right)$$

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<sup>11</sup> Also used below for the direct method.

## What is the Direct Method?

The direct method broadly follows the following steps for each component of the health category.

1. Determine the proportion of total State expenditure which is substitutable with non-State spending.
2. Select an indicator of substitutable non-State services (e.g. the CGC has used number of private patients for the Admitted Patients component).
3. Allocate total substitutable State expenditure across States in proportion to the expected values of the indicator (allowing for socio-demographic characteristics including remoteness).
4. Allocate total substitutable State expenditure across States in proportion to the actual values of the indicator.
5. Subtract 4 from 3 to obtain the impact of the non-State sector on assessed State expenses.
6. Apply any remaining disability factors (such as wage pressures).

Applying this broad approach requires that the following aspects be considered:

- the level of implementation, e.g. the choice of how many components in which to break the health category;
- the choice of indicator of substitutable non-State services, noting that the direct method does not provide a conceptual case or process for this choice; and
- identifying disability factors (e.g. wage pressures) that affect substitutable State spending.

Symbolically, the direct method is expressed as Formula 3 below, under the same simplifying assumptions as the subtraction method.<sup>12</sup>

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<sup>12</sup> The assumption used in the subtraction method, that State and non-State services have the same cost per service, is not a specific requirement of the direct method, but is required for comparing the subtraction and direct methods.

**Formula 3**

$$A_i = \frac{P_i}{P} T + S \left( \frac{P_i}{P} - \frac{X_i}{X} \right)$$

In this formula:

$A$  = assessed spending need on State health services

$P$  = population

$T$  = total State health services spending

$S$  = State spending that is substitutable with non-State spending

$X$  = indicator of substitutable non-State services

$i$  = State indicator.

The direct method can be equivalently expressed as follows.

**Formula 4**

$$\frac{A_i}{P_i} = \frac{T + S}{P} - \frac{\left( \frac{X_i}{X} S \right)}{P_i}$$

**Graphical Comparison of the Subtraction and Direct Methods**

In this section, we use a very simple graphical presentation to compare the two methods.

We assume there are two States, with equal populations.

We also make the same simplifying assumptions and use the same terminology as in the formulas provided above.

We use the following illustrative values.

- Total State per capita health services spending:

$$\frac{T}{P} = 30$$

- Total non-State per capita substitutable spending:

$$\frac{Q}{P} = 20$$

- Total State per capita substitutable spending:

$$\frac{S}{P} = 10$$

- State 1 has 25% above average non-State substitutable spending (i.e.  $Q_1/P_1 = 125\% \times Q/P = \$25$ )
- State 2 has 25% below average non-State substitutable spending (i.e.  $Q_2/P_2 = 75\% \times Q/P = \$15$ ).

The following charts illustrate the subtraction and direct methods, as represented by Formulas 1 and 4 respectively. For this illustration, the direct method uses the level of non-State substitutable services as the indicator of substitutable non-State services (i.e.  $X_i = Q_i$ ).

Chart 1 illustrates the subtraction method. The total State plus non-State spending is \$50 per capita. Subtracting non-State spending of \$25 per capita for State 1 and \$15 for State 2 gives a State spending requirement of \$25 per capita for State 1 and \$35 per capita for State 2.

Chart 2 illustrates the direct method. The starting point is total State spending plus State substitutable spending, which sums to \$40 per capita.

From this, as per Formula 4, we subtract an allocation of total State substitutable spending in proportion to non-State substitutable services. This is reflected in the following formula using the above assumption of  $X_i = Q_i$ :

$$\frac{\left(\frac{X_i}{X} S\right)}{P_i} = \frac{\left(\frac{Q_i}{Q} S\right)}{P_i} = \frac{(Q_i/P_i) S}{(Q/P) P}$$

Using the above illustrative values, this equals \$12.50 per capita for State 1 and \$7.50 per capita for State 2. Subtracting these gives a State spending requirement of \$27.50 per capita for State 1 and \$32.50 per capita for State 2.

Chart 1: Subtraction Method

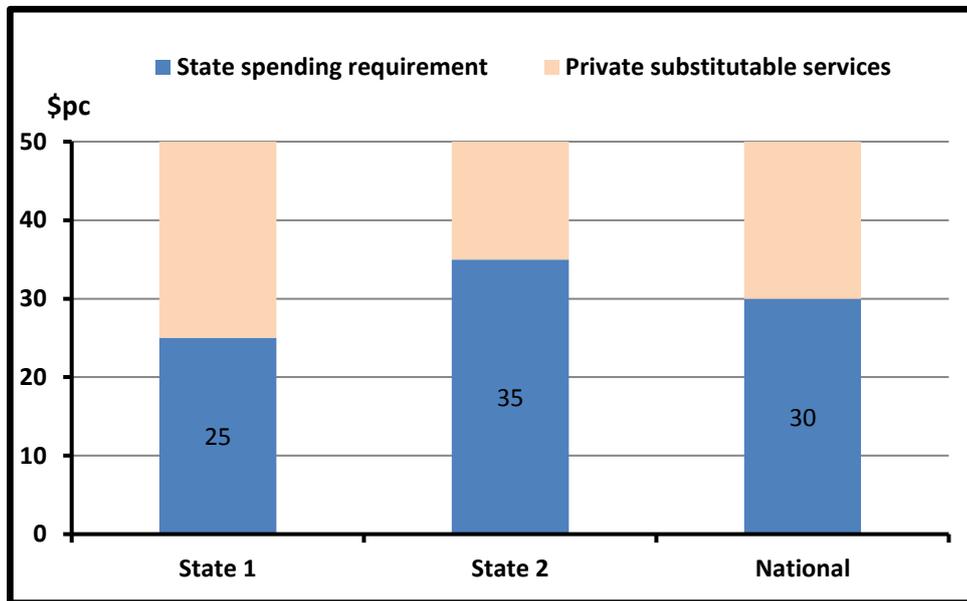
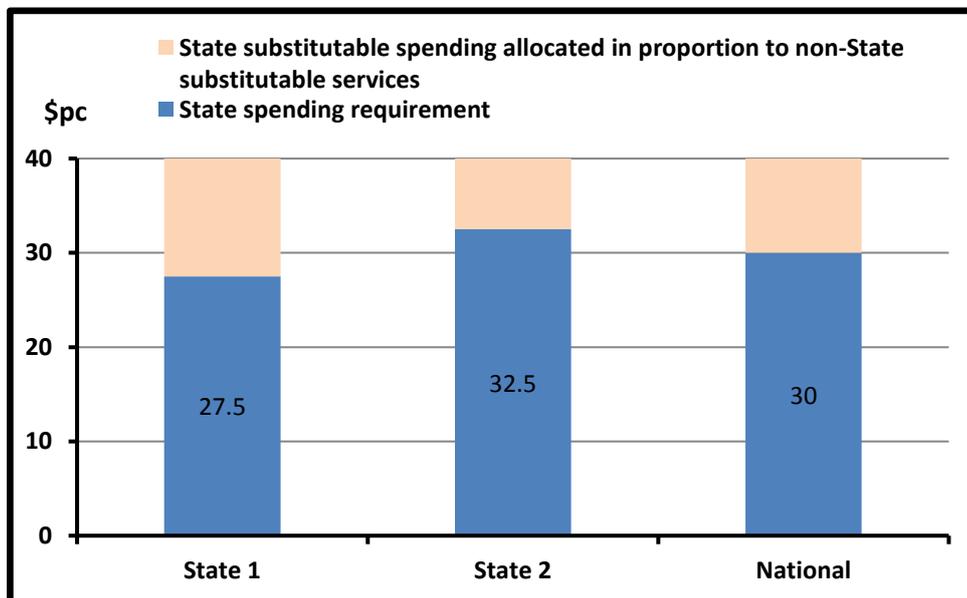


Chart 2: Direct Method



In this illustrative example, the direct method understates the impact of the non-State sector on State spending, and always will when  $S$  is less than  $Q$ .

## Conceptual Comparison of the Subtraction and Direct Methods

### Simplified Model

We start by using the simplified models of the two approaches presented above. Comparing Formulas 2 and 3 shows that they produce the same results if:

$$Q \left( \frac{P_i}{P} - \frac{Q_i}{Q} \right) = S \left( \frac{P_i}{P} - \frac{X_i}{X} \right)$$

Equivalently:

$$\frac{X_i}{X} - \frac{P_i}{P} = \frac{Q}{S} \left( \frac{Q_i}{Q} - \frac{P_i}{P} \right)$$

In other words, if the national level of State substitutable spending is not equal to the national level of non-State substitutable spending (i.e.  $S \neq Q$ ), then the variance of shares of non-State substitutable spending across States (compared to an equal per capita benchmark) must be scaled (by the factor  $Q/S$ ) in order to be used in the direct method (except in the rare case when the distribution of non-State substitutable spending matches population shares).

### Model with Differentiated State Populations and Costs

Here we expand on the above simplified model to include differentiated State populations and costs (i.e. age/indigeneity/SES/remoteness).

Under the subtraction model, Formula 2 gave a State's assessed expense need as equal to a per capita share of national State expenses plus an allowance for differences in the State's non-State expense from the national per capita average. This adjustment equals:

$$Q \left( \frac{P_i}{P} - \frac{Q_i}{Q} \right) = \frac{P_i}{P} Q - Q_i$$

Removing the simplifying assumptions, we use  $Q_i^e$  to stand for State  $i$ 's expected substitutable non-State spending based on the national per capita spending for each age/indigeneity/SES/remoteness category), and the above non-State services allowance for State  $i$  becomes:

$$Q_i^e - Q_i$$

Under the direct method, Formula 3 gave a State's assessed expense need as equal to a per capita share of national State expenses plus an allowance for differences in the State's indicator share of substitutable non-State services from the national per capita average. This adjustment equals:

$$S \left( \frac{P_i}{P} - \frac{X_i}{X} \right)$$

Removing the simplifying assumptions, we use  $X_i^e$  to stand for the expected value of the indicator of substitutable non-State services in State  $i$  based on national impacts of age/indigeneity/SES/remoteness, and the above non-State services allowance for State  $i$  becomes:

$$S \left( \frac{X_i^e}{X} - \frac{X_i}{X} \right)$$

It follows straightforwardly that the two methods produce the same results if:

$$\frac{X_i}{X} - \frac{X_i^e}{X} = \frac{Q}{S} \left( \frac{Q_i}{Q} - \frac{Q_i^e}{Q} \right)$$

Hence (similar to the simplified model) if the national level of State substitutable spending is not equal to the national level of non-State substitutable spending (i.e.  $S \neq Q$ ), then the variance of shares of non-State substitutable spending across States (compared to expected shares) must be scaled (by the factor  $Q/S$ ) in order to be used in the direct method (except in the rare case when the distribution of non-State substitutable spending matches the expected distribution).

## **The Relative Sizes of Substitutable State and Non-State Spending**

The above discussion shows that a major factor affecting the difference between the subtraction and direct methods is the relative sizes of the non-State spending that is substitutable with State spending ( $Q$ ) and the State spending that is substitutable with non-State spending ( $S$ ).

Under the 2010 Review subtraction approach, the CGC identified what it considered then to be the best estimate of substitutable non-State spending ( $Q$ ) for the *Community and Other Health* category (which encompassed everything but admitted patients and patient transport). For the 2011-12 data year in the 2014 Update (the most recent data year available), this was \$24.4 billion nationally.

The corresponding substitutable State spending (S) from the 2011-12 data year in the 2015 Review (for the emergency departments, non-admitted patient services and community health components) was \$9.9 billion nationally.

## 7. Implementation Issues for the Subtraction and Direct Methods

### Comparison of Methods

The subtraction method involves:

- judgement about where to draw the boundary between substitutable and non-substitutable non-State services;
- estimating the total amount of substitutable non-State spending (consistent with the above boundary) and State-by-State distribution of this total amount;
- an assumption about the relative cost of services provided by the State and non-State sectors; and
- estimating the disability factors to apply to total (State and substitutable non-State) spending.

The process described above is conceptually complete. That it works conceptually is acknowledged by the CGC<sup>13</sup>. It is detailed, but this detail is from the accumulation of transparent steps. Consequently, it is not complex in a way that would lend itself to conceptual errors, nor to obscuring significant unfounded assumptions.

The direct method involves:

- judgement about where to draw the boundary between substitutable and non-substitutable State services;
- estimating the total amount of substitutable State spending (consistent with the above boundary);
- establishing a conceptual ground for an indicator of substitutable non-State services to apply to substitutable State spending;
- estimating the disability factors (excluding non-State service influences) to apply to total State spending; and
- estimating the indicator of non-State substitutable services.

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<sup>13</sup> CGC, *Report on GST Revenue Sharing Relativities 2015 Review* – Volume 2, page 213, paragraph 172.

The direct method, described above, is not conceptually complete. Judgement is required to determine the appropriate indicator of substitutable non-State services – these indicators do not naturally fall out of the direct method.

The direct method will not be conceptually sound unless the indicator takes into account the scaling adjustment discussed in the previous chapter. In practice, this means that the indicator could have quite a complex form. For example, using the relationship derived in the last chapter:

$$\frac{X_i}{X} = \frac{X_i^e}{X} + \frac{Q}{S} \left( \frac{Q_i}{Q} - \frac{Q_i^e}{Q} \right)$$

Making the scaling adjustment means that, even though the direct method puts the level of State substitutable spending at centre stage, it is effectively replaced by the level of non-State substitutable spending.

It seems clear that the direct method involves significant conceptual subtleties, which if not correctly handled will lead to implementation errors.

It would be far easier to redefine the direct method to focus on non-State substitutable spending rather than State substitutable spending.

### **Judgement Required by the Direct Method – Further Detail**

The practical implementation of the direct method in the 2015 Review required four separate assessments. This involved:

- multiple judgements in determining levels of substitutable State spending;
- indicators of substitutable non-State services that reflected only a subset of such services, and were not (apart from admitted patients) specific to the health components that they were used to assess;
- omission of the factor needed to scale the indicators of substitutable non-State services to apply them to substitutable State spending; and
- splitting non-admitted patient services into three components, requiring many judgements about the disability factors, including the impact of non-State services in each component.

Examples of the CGC's judgements include arriving at:

- the proportion of State substitutable admitted patient expenses – cutting the substitutability from 28% to 15% on the basis that the original estimate of 28% (a rough indicative estimate) is an upper limit;
- the proportion of State substitutable expenses for other components – choosing from a wide range of proportions from various studies;
- the non-State indicator for admitted patient expenses – deriving actual private patient numbers from two data sources that the CGC acknowledges as “problematic”;<sup>14</sup>
- non-State indicators for other components – presuming that only bulk-billed services are substitutable;
- emergency department socio-demographic composition factors – presuming that block funded hospitals have the same usage as other hospitals of the same remoteness;
- non-admitted patient socio-demographic composition factors – using the same factors as admitted patients; and
- community health socio-demographic composition factors – using part of the measurement for emergency departments.

The extent of the judgements required by the direct method illustrates its inherent complexity. This, and the conceptual subtleties noted above, make it prone to errors.

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<sup>14</sup> CGC, *Report on GST Revenue Sharing Relativities 2015 Review* – Volume 2, page 188, paragraph 60.

## 8. Evaluation of the CGC's Rationale for Adopting the Direct Method

### Restructure Components of Assessment

#### Commission's Argument

The CGC stated in October 2013 that it intended to restructure its assessment of health, combining "all public hospitals ... within a single public hospital services assessment."<sup>15</sup>, leaving a residual Community Health Services category<sup>16</sup>.

The CGC stated regarding Community Health: "This category will comprise a much smaller range of State services than in the 2010 Review. As such, it would make it more difficult to develop an assessment using a subtraction model approach".<sup>17</sup>

#### Western Australia's Response

Restructuring a category to make a previously feasible assessment unfeasible seems an odd move unless there is good evidence that an assessment of at least equal quality can be made for the new category structure. While a restructure might be considered because of the availability of new data, this new data must be relevant to making a quality overall assessment, not just a quality bit of an assessment.

In any case, if necessary, some components of the health assessment could be combined for the purpose of determining the impact of the non-State sector, then separated for the purpose of determining socio-demographic composition, with the impact of the non-State sector pro-rated across the components.

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<sup>15</sup> CGC, *Staff Discussion Paper CGC 2013-07S*, October 2013, page 60, paragraph 10.

<sup>16</sup> *Ibid.*, page 70, paragraph 7.

<sup>17</sup> *Ibid.*, page 70f, paragraph 8.

## Data Availability

### Commission's Argument

The CGC identified the following data issues with the subtraction model.<sup>18</sup>

- Determining assessed total health expenditure for each State was hampered by lack of administrative data on health services in the State. This required use of AIHW and ABS data for a range of largely non-State health professionals, which did not fully reflect the diverse range of both State and non-State health services.
- No comprehensive data base was available on service use patterns by population groups. A number of data sources were combined, but they varied in quality and did not cover all services.
- There is improved data on the use of hospital services as a result of the National Health Reforms.
- The subtraction method relied on a wider range of data sources and used more judgement to combine them than the direct method.
- Inaccuracies in the data, particularly those used to estimate total assessed health expenditure, unduly affected the assessment outcome.
- Data used for different elements of the subtraction became available at different times, so inconsistent data would be used unless there were delays in using the newest data.

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<sup>18</sup> CGC, *Issues with the Subtraction Model*, June 2017. Note that this paper only addresses the 2010 Review's Community and Other Health Services category, which comprised all State health expenses other than for admitted patients.

## **Western Australia's Response**

The increased accuracy of data in the State sector due to the National Health Reforms does not make the 2015 Review's direct method accurate. As noted in the previous chapter, the direct method, by focussing on the level of State rather than non-State spending, created biased assessments. As well, the indicators of substitutable activity for non-admitted patient services were only partial and not specific to the three health components being assessed. Even for the socio-demographic factors, there was inadequate data for emergency departments and simply was no data to assess the other two components. In effect, the current direct method involves a large amount of judgement.

While data issues in making a sound implementation of the two-component subtraction method are acknowledged, the data issues posed by a sound implementation of the four-component direct method, and resultant need for judgement, appear significantly greater.

The question is not whether there are data challenges with the subtraction method, but how these challenges compare with the alternatives.

The CGC's direct method **as implemented** is indeed simple in mechanical terms, and the data on non-State service provision is reliably what it claims to be (though the data on substitutable spending is not). But, the choice of method and data are not transparent, and only detailed and difficult analysis (as per the previous chapters) can shed light on the appropriateness of the method and data. By contrast, the subtraction method is highly transparent – the method is easy to understand and critique, and data problems are obvious.

## **Growth in Health Provision**

### **Commission's Argument**

Services provided by both the State and non-State sector are increasing. Under these circumstances, changes in the level of non-State services may have little or no effect on the level of State provision.<sup>19</sup>

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<sup>19</sup> CGC, *Issues with the Subtraction Model*, June 2017, page 3, paragraph 11.

## **Western Australia's Response**

It is difficult to understand the nature of this argument, or why it is especially applicable to the subtraction method. If non-State services are increasing, then how the subtraction method responds will depend on the pattern of increase across States.

- If there is a uniform percentage per capita increase, then the per capita level of non-State service disparities across States will increase, resulting in an increased redistribution across States.
- If the increase in per capita non-State services across States matches relative socio-demographic needs, then there is no change in redistribution across States.
- If the increase in per capita non-State services across States is more pronounced in States with a relatively small non-State services sector, then the redistribution across States will fall.

Perhaps the CGC's concern is that when States plan their service levels, they do not take account of what the non-State sector is doing. We are not aware of evidence of this, but even if it were true it would not mean that the State sector would be unresponsive to changes in the pattern of presentations to it. This is a short-run concern. As noted in Chapter 5, it is a long-run full substitutability approach that is appropriate.

## **Waiting List Adjustment**

### **Commission's Argument**

Expansion of non-State services may alleviate the length of the waiting list for a service rather than reduce the level of State provision.<sup>20</sup>

### **Western Australia's Response**

Two States with different waiting times, but identical clinical outcomes, are not providing the same standard of service. HFE should be indifferent to whether a change in capacity is eventually expressed as a change in quantity provided or quality provided (waiting list is a measure of quality).

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<sup>20</sup> *Ibid.*, page 3, paragraph 11.

As well, waiting lists act as signals for public sector resource allocation in the long run (which we consider to be the appropriate perspective for HFE).

## **Income Constraints**

### **Commission's Argument**

Patient choice may be limited by income constraints, so States will need to provide some services regardless of the level of non-State provision.<sup>21</sup>

### **Western Australia's Response**

People who are so income constrained that the State must provide their services are already automatically excluded from the non-State sector data.

The uneven geographic distribution of this group (after taking account of remoteness and other aspects of socio-demographic composition) impacts the distribution of non-State sector provision. It is directly picked up, rather than omitted, by the subtraction method.

## **Non-State Sector the Major Provider**

### **Commission's Argument**

For some services the non-State sector is the major provider and changes in the level of non-State provision appear to have little effect on the level of State provision.<sup>22</sup>

### **Western Australia's Response**

This issue is not specific to the subtraction method.

It is partly an issue about short term versus long term, and partly about how States set limits on their responsibilities. As already noted, we believe a long term perspective is appropriate, and Chapter 5 has fully covered the issue from this perspective. Our conclusion was that HFE should take into account non-State sector activities that States have a policy interest in seeing provided, where these activities may differentially impact on States' capacity to achieve desired health outcomes. This includes services where States are a minority provider.

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<sup>21</sup> *Ibid.*, page 3, paragraph 11.

<sup>22</sup> *Ibid.*, page 3, paragraph 11.

We also noted that how any individual State chooses to respond to a change in its capacity to reach health policy goals does not determine the service's substitutability for HFE purposes.

Tests may be available to determine if a service should be regarded as substitutable non-State sector spending.

Examples of these tests are whether:

- the service is covered by the MBS, which would determine if it was considered medically necessary by the medical community (including States' Health Departments);<sup>23</sup>
- failure to treat the condition would impact State policy objectives, by exacerbating patients' existing medical conditions or leading to the development of new conditions that could have otherwise been prevented;
- the pattern of non-State provision corresponded roughly inversely to a pattern of State provision, which would imply that substitution was happening;<sup>24</sup> and
- States have other means of responding to variations in non-State sector provision than simply providing the same service.

## **Level of Substitutability**

### **Commission's Argument**

The subtraction model is more accurate when there are high levels of substitutability.

### **Western Australia's Response**

We have discussed this issue in Chapter 5, and concluded that, from a long-term perspective, a high level of substitutability can be assumed for most non-State services.

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<sup>23</sup> There is uniformity regarding MBS coverage, as it is the Commonwealth Minister for Health who decides if a service should be listed on it, on advice from the Commonwealth's Medical Services Advisory Committee.

<sup>24</sup> This test is weaker than the previous two, because it would be influenced by policy differences. Note that applying this test broadly the existence of overall substitutability is clearly demonstrated. Even with the obscuring effects of potential policy differences and other disabilities, Table 4 shows that in 14 out of 16 possible instances there is a pattern in which the State/local and corresponding private sector cells have opposite signs (positive versus negative).

We also note that this issue, to the extent that it is an issue, is not exclusive to the subtraction method. The direct method requires consideration of the appropriate scope of indicators of non-State sector substitutable activity.

## 9. Conclusions

The non-State health sector impacts on the expenditure requirement of the State health sectors, by providing corresponding services and through a (difficult to quantify) preventive role.

A survey of non-State health provision in Australia illustrates that it makes a substantial contribution to meeting health needs which overlap those provided by the State sector. There are substantial variations across States in non-State provision. The relative strength of the non-State sector across States plausibly reflects the different (non-State policy) circumstances across States and can be taken to be policy neutral for practical purposes.

The CGC has shown some concern about elasticity of substitution between the sectors with regards to provision of State-like services. While this issue is in principle relevant to the design of all assessment methods, in practice, from a long-term perspective, it is not considered a concern. The CGC generally uses a long-term approach in its assessments (e.g. wages and capital). Full substitutability can be assumed in the long term for all non-State services that impact on outcomes where States have a policy interest.

Over the course of three reviews, the CGC has tried both subtraction and direct methods to assess the impact of the non-State sector.

The subtraction model is highly transparent, because it is simple in conceptual structure and its weaknesses are easy to identify, including data issues.

The practical implementation of the direct method is simple, but there is no transparency as to whether this implementation achieves HFE as claimed. The analysis in this paper suggests firmly that it does not.

The conceptual specification of the direct method is problematic as the focus is on State spending that is substitutable with non-State spending, rather than non-State spending that is substitutable with State spending. This means that the direct method cannot provide meaningful results unless the indicators of substitutable non-State activity incorporate a scaling adjustment, equal to the ratio of non-State substitutable spending to State substitutable spending (which effectively removes the impact of State substitutable spending).

The CGC's data, excluding Admitted Patients services, suggests that the scaling factor would be in excess of 200% (as shown in Chapter 6).

Incorporating this scaling factor in the indicators of substitutable non-State activity is complicated (it is not just a matter of scaling the indicators). In practice it would be far simpler to reconceptualise the direct method to focus from the start on non-State spending that is substitutable with State spending.

With this reconceptualization, the only difference between the direct and subtraction methods would be the scope of data on non-State services and the level of disaggregation into separate components.

We suggest that the CGC have no more than two components (Admitted Patients and Other), as further splitting requires data that is unavailable.

If the direct method uses the same data and disaggregation as the subtraction method, it will be the subtraction method.

Consequently, the direct method requires all the data judgements of the subtraction method, plus many more if a higher component disaggregation is used.

## Attachment A: Comparison of State and Non-State Sectors 2013-14



Share of recurrent expenditure	Responsibility for services	Source of funding
<span style="color: #004d00;">■</span> Hospitals	<span style="color: #e67e22;">■</span> Combined public and private sector	<span style="color: #27ae60;">■</span> Australian Government
<span style="color: #27ae60;">■</span> Primary health care	<span style="color: #f39c12;">■</span> State and territory governments	<span style="color: #a6a6a6;">■</span> State and territory governments
<span style="color: #27ae60;">■</span> Other services	<span style="color: #2980b9;">■</span> Private providers	<span style="color: #34495e;">■</span> Private

Source: Australian Institute of Health and Welfare 2016, *Australia's Health 2016*, Figure 2.1.2, page 28.

## Attachment B: Health Data Sources: Databases and Classifications

### National Hospital Morbidity Database

The National Hospital Morbidity Database (NHMD) is held by the Australian Institute of Health and Welfare (AIHW). It lists all procedures performed for admitted patients in public and private hospitals, but excludes non-admitted patients (for example, those treated in emergency departments but not admitted).

Australian Refined Diagnosis Related Groups (AR-DRGs) contain data for surgical procedures. The AIHW has advised that the AR-DRG data cannot be mapped to MBS codes or items. The NHMD uses AR-DRG classifications.

### National Efficient Price Determination and National Efficient Cost Determination

These publications are produced by the Independent Hospital Pricing Authority (IHPA).

Calculation of the efficient *price* utilised a number of adjustments, of which the following include population characteristics recognised by the CGC:

- paediatric adjustment;
- specialist psychiatric age adjustment;
- patient remoteness area adjustment (based on residential address);
- Indigenous adjustment;
- private patient service adjustment;
- private patient accommodation adjustment; and
- emergency care age adjustment.

The National Efficient Price determination also classifies treatments by AR-DRGs. Its price weights are available for admitted acute patients, admitted subacute and non-acute patients, non-admitted patients and emergency service patients. However, as it is restricted to hospitals it does not provide cost data for community health services. Calculation of the efficient *cost* relates to block funded hospitals. As well as scale, the National Efficient Cost Determination considers remoteness, and to some extent, the types of services provided.

### **Medicare Benefit Schedule Data**

Medicare Benefit Schedule (MBS) claims data are produced in the course of processing claims for services that qualify for a benefit under the *Health Insurance Act 1973*. They do not cover a range of services, including:

- to public patients in hospitals;
- in public accident and emergency departments;
- in public outpatient departments;
- covered under Department of Veterans Affairs arrangements;
- cosmetic surgery that is not considered medically necessary.

MBS data by item is available to the level of Statistical Area 3 on the website of the Commonwealth Department of Health. The relevant characteristic of this data, is that because it covers treatments which are medically necessary, all services it covers are substitutable with the State sector.

### **Other Sources**

Relevant ABS publications include 4343.0 *Survey of Health Care, Australia*, and 4390.0 *Private Hospitals Australia*.

The Productivity Commission's *Report on Government Services* volume on Health does not only cover hospitals but primary and community health services.