

# INPATIENT SERVICES — ASSESSMENT RESULTS

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- 1 This working paper describes the expenses assessment for Inpatient Services<sup>1</sup> and the results. The development of the assessment method in the 2004 Review is discussed in Volume 4 of the 2004 Review Working Papers.

## DESCRIPTION OF THE CATEGORY

- 2 The Inpatient Services category comprises expenses on acute and non-acute medical care and treatment for people admitted to a public hospital. Public acute care hospitals are defined as establishments that provide at least minimal medical, surgical or obstetric services for inpatient treatment and/or care, and which provide continuous comprehensive qualified nursing services as well as other necessary professional services.<sup>2</sup>
- 3 The category also includes expenses on psychiatric medical care and treatment. Psychiatric hospitals are defined as establishments devoted primarily to the treatment and care of inpatients with psychiatric, mental, or behavioural disorders.
- 4 More specifically, the category includes expenses on:
- all admitted patient services including nursing home type patients in acute care institutions;
  - emergency transport to hospital;
  - inter-hospital transport;
  - non-emergency transport to and from treatment centres;
  - travel and accommodation assistance; and
  - medical instrumentation undertaken in acute care institutions.

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<sup>1</sup> For access to the inpatient and hospital establishment data used in this assessment, the Commonwealth Grants Commission would like to thank the New South Wales Department of Health, the Victorian Department of Human Services, Queensland Health, Western Australia Department of Health, the South Australian Department of Human Services, the Department of Health and Human Services, Tasmania, ACT Health, and the Northern Territory Department of Health and Community Services. The data are provided to the Commission via the National Hospital Morbidity Dataset and the National Public Hospital Establishment Dataset which are collated and produced by the Australian Institute of Health and Welfare.

<sup>2</sup> Australian Institute of Health and Welfare, *National Health Data Dictionary, Version 12, Vol 1, 2003*, p216, Canberra, ACT.

- 5 Expenses relating to the Health Care Grants (unquarantined component), Blood Transfusion Services - recurrent, Organ transplantation services – recurrent, strengthening cancer care – Royal Childrens’ Hospital, Melbourne and Supporting Western Sydney – positron emission tomography scanner (PET) Westmead are included in the category. Other health related SPPs are excluded because of the requirements of previous terms of reference, or because the Commission considered they related to an Australian Government responsibility, or judged that their allocation reflected needs. These included Health Care Grants (quarantined component), Blood Transfusion Services - capital, Organ transplantation services – capital, Fringe Benefits Tax Transitional grants for public and not-for-profit hospitals, Health Program grants, payments for Highly Specialised Drugs, the National Health Development Fund, Repatriation General Hospital Grants, assistance to Bali victims, assistance to Tsunami victims and Royal Darwin Hospital – equipped, prepared and ready.
- 6 Table 1 shows the gross average expenses for the last six financial years. In 2006-07, the Australian average expense for this category was \$988.16 per capita, which represented 15.36 per cent of the total State expenses. In 2006-07 user charges accounted for about 5.41 per cent of gross expenses associated with this category.

**Table 1 Inpatient services, average expenses and user charges, 2001-02 to 2006-07**

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Average expenses (\$pc)	690.87	723.82	779.30	842.06	901.68	988.16
% of total State average expenses	13.38	13.55	14.32	14.81	15.04	15.36
Average user charges (\$pc)	38.46	40.98	40.56	44.82	51.35	53.45
% of average category expenses	5.57	5.66	5.20	5.32	5.70	5.41

Source: Assessment System, U2008 GST/Expenses/Health and Community Services/4110 Inpatient Services/Tables and Chart/4110 E Average Expenses and User Charges

## **ASSESSMENT METHOD**

### **Description of the assessment**

- 7 The Inpatient Services assessment for the 2008 Update included five components: fixed costs, acute inpatient services, non-acute inpatient services, cost of patient transport and isolation.
- 8 The expenses assessment method for the 2008 Update was the same as for the 2004 Review:
- fixed costs, input costs and isolation were assessed using the general methods;
  - needs relating to acute and non-acute inpatient services were assessed by applying national average socio-demographic profiles (including income and English speaking language status) of inpatient use to State populations. Weights were also applied to recognise differing costs due to patient illness, under-counting, along with higher costs, of Indigenous patients, differing lengths of stay in hospital, cost of interpreters and lower costs for private patients;

- needs relating to dispersion, service delivery scale, teaching and research and extraordinary case complexity were assessed using hospital cost information by region; and
- needs relating to the cost of patient transport were assessed using the general dispersion method.

9 A summary of Inpatient Services use rates is contained in Attachment A.

**Assessment structure**

10 Table 2 summarises the assessment structure for the 2008 Update.

11 The proportions of expenses affected by fixed costs and isolation were estimated using the general methods.

12 Component weights for the acute inpatient services and non-acute inpatient services components were derived from information on States' inpatient funding methods and expense data from the Australian Institute of Health and Welfare, *Australian Hospital Statistics, 2001-02*. The component weight for the cost of patient transport component was also derived from this report.

**Table 2 Inpatient Services, assessment structure for the 2008 Update, 2006-07**

Expense component	Component weight	Factors	Basis of calculation
	%		
Fixed costs	0.35	Administrative scale	General method.
		Input costs	General method with weights of 80% for wages, 2% accommodation and 0.5% electricity.
Acute inpatient services	85.15	Socio-demographic composition	Cost weighted utilisation rates, by age, sex, Indigeneity, socio-economic status, region and low English fluency, derived from National Hospital Morbidity Data (NHMD) and 2006 Census of Population data.
		Hospital costs	Based on the average cost of treatment by region to account for dispersion, service delivery scale, teaching & research and extraordinary case complexity.
		Input costs	General method with weights of 62.5% for wages, 2% accommodation and 0.5% electricity.
Non-acute inpatient services (including all mental health inpatients)	13.33	Socio-demographic composition	Bed day rates, by age, sex, Indigeneity, socio-economic status, region and low English fluency, derived from National Hospital Morbidity Data (NHMD) and 2006 Census of Population data.
		Hospital costs	Based on the average cost of treatment by region to account for dispersion, service delivery scale, teaching & research and extraordinary case complexity.
		Input costs	General method with weights of 62.5% for wages, 2 % accommodation and 0.5% electricity.
Cost of patient transport	0.99	Cost of patient transport	Based on the general dispersion method for air travel, inter-regional travel and local travel.
Isolation	0.18	Isolation	General method

**Calculating the category factor**

13 Table 3 summarises the components, component weights and factors assessed for this category for the 2008 Update. It shows the calculation of the category factor for 2006-07.

**Table 3 Inpatient Services, derivation of category factor, 2008 Update, 2006-07**

Factors	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
<b>Fixed costs (component weight = 0.35 %)</b>								
Administrative scale	0.37674	0.49983	0.62455	1.24055	1.63822	5.25353	7.67138	13.05708
Input costs	1.02528	0.99212	0.98387	0.99199	0.97579	0.95664	1.01939	1.01769
Component factor	0.38627	0.49589	0.61447	1.23061	1.59855	5.02575	7.82014	13.28802
<b>A Wgted comp factor</b>	<b>0.00137</b>	<b>0.00176</b>	<b>0.00218</b>	<b>0.00437</b>	<b>0.00568</b>	<b>0.01786</b>	<b>0.02780</b>	<b>0.04723</b>
<b>Acute inpatients (component weight = 85.15 %)</b>								
Hospital costs	0.99726	0.99866	1.00080	1.00446	1.00387	0.97859	1.01206	1.06311
Socio-demographic composition	1.00551	0.96316	1.00686	1.00050	1.03360	1.16824	0.70804	1.40333
Input costs	1.01995	0.99297	0.98866	0.99446	0.97962	0.96387	1.01508	1.01324
Component factor	1.02278	0.95505	0.99623	0.99940	1.01632	1.10540	0.73096	1.48586
<b>B Wgted comp factor</b>	<b>0.87097</b>	<b>0.81330</b>	<b>0.84836</b>	<b>0.85106</b>	<b>0.86547</b>	<b>0.94133</b>	<b>0.62247</b>	<b>1.26532</b>
<b>Non-acute inpatients (component weight = 13.33 %)</b>								
Hospital costs	0.99726	0.99866	1.00080	1.00446	1.00387	0.97859	1.01206	1.06311
Socio-demographic composition	1.01570	0.99590	0.97116	0.94352	1.13983	1.05445	0.76905	0.91039
Input costs	1.01995	0.99297	0.98866	0.99446	0.97962	0.96387	1.01508	1.01324
Component factor	1.03317	0.98757	0.96094	0.94274	1.12039	0.99572	0.79289	0.98639
<b>C Wgted comp factor</b>	<b>0.13773</b>	<b>0.13165</b>	<b>0.12810</b>	<b>0.12567</b>	<b>0.14935</b>	<b>0.13274</b>	<b>0.10570</b>	<b>0.13149</b>
<b>Cost of patient transport (component weight = 0.99 %)</b>								
Cost of patient transport	0.94712	0.63855	1.48973	1.08874	0.93587	0.80545	0.20616	3.27586
Component factor	0.94712	0.63855	1.48973	1.08874	0.93587	0.80545	0.20616	3.27586
<b>D Wgted comp factor</b>	<b>0.00942</b>	<b>0.00635</b>	<b>0.01482</b>	<b>0.01083</b>	<b>0.00931</b>	<b>0.00801</b>	<b>0.00205</b>	<b>0.03259</b>
<b>Isolation (component weight = 0.18 %)</b>								
Isolation	0.04081	0.06917	0.11309	1.80761	1.09363	2.75060	1.22840	58.74083
Component factor	0.04081	0.06917	0.11309	1.80761	1.09363	2.75060	1.22840	58.74083
<b>E Wgted comp factor</b>	<b>0.00007</b>	<b>0.00012</b>	<b>0.00020</b>	<b>0.00317</b>	<b>0.00192</b>	<b>0.00483</b>	<b>0.00216</b>	<b>0.10305</b>
<b>Category factor</b>	<b>1.01957</b>	<b>0.95318</b>	<b>0.99366</b>	<b>0.99511</b>	<b>1.03174</b>	<b>1.10477</b>	<b>0.76017</b>	<b>1.57968</b>

Source: Assessment System, U2008 GST/Expenses/Health and Community Services/4110 Inpatient Services/Assessed Expenses/QA 4110 E Inpatient Services Assessed Expenditure

(a) Component factor was rebased so that the average is 1.00000.

(b) Category factor = (A + B + C + D + E).

14 The category factor was calculated as follows.

$$\text{Category factor} = \text{fixed costs} + \text{acute inpatients} + \text{non-acute inpatients} + \text{cost of patient transport} + \text{isolation}$$

Where:

$$\text{Fixed costs} = 0.0035 * [\text{administrative scale} * \text{input costs}]$$

$$\text{Acute inpatients} = 0.8515 * [(\text{hospital costs factor} + \text{acute inpatient socio-demographic composition factor} - 1) * \text{input costs}]$$

$$\text{Non-acute inpatients} = 0.1333 * [(\text{hospital costs factor} + \text{acute inpatient socio-demographic composition factor} - 1) * \text{input costs}]$$

$$\text{Cost of patient transport} = 0.0099 * [\text{cost of patient transport factor}]$$

$$\text{Isolation} = 0.0018 * [\text{isolation factor}]$$

15 In each case, the contributions to the category factor were calculated as the expense component weight multiplied by the factors (the bracketed terms in the formulas). Each contribution to the category factor was then re-scaled to ensure that, for each of them, the sum of assessed expenses equalled the sum of actual expenses.

## RESULTS FOR 2006-07

16 Table 15 at the end of this working paper summarises the results of the assessment. It shows the average, actual and assessed expenses for each State for all years of the 2008 Update.

17 Table 4 shows the actual, average and assessed expenses per capita and the cost of service provision ratio for the assessment in 2006-07. The assessed cost of service provision ratio is equivalent to the category factor shown in Table 3.

**Table 4 Inpatient Services, assessment results, 2006-07**

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Avg
	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc
Actual expenses	934.25	1032.17	928.78	915.97	1211.37	1289.35	821.33	1431.31	988.16
Assessed expenses	1007.50	941.90	981.90	983.33	1019.53	1091.69	751.17	1560.98	988.16
	%	%	%	%	%	%	%	%	%
Assessed cost of providing services ratio (a)	101.96	95.32	99.37	99.51	103.17	110.48	76.02	157.97	100.00

Source: Assessment System, U2008 GST/Expenses/Health and Community Services/4110 Inpatient Services/Tables and Chart/4110 E Assessment Results

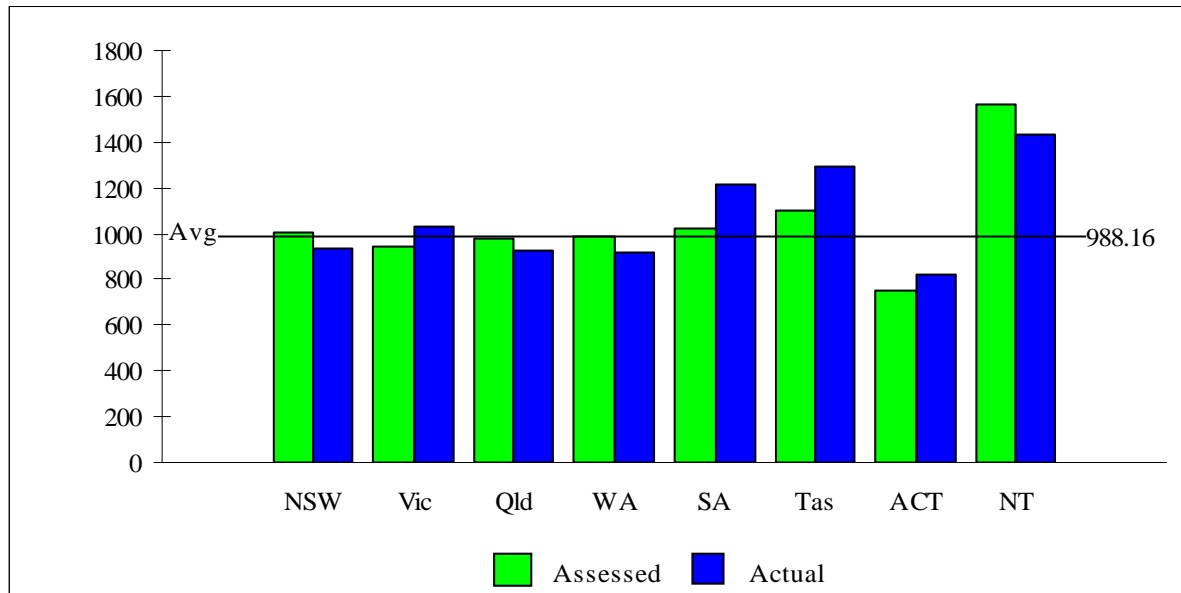
(a) The assessed cost of providing services ratio is the ratio of the State assessed expenses to average category expenses per capita.

Note: ACT actual expenses may include municipal expenses.

18 Figure 1 illustrates the per capita assessed, actual and average expenses for Inpatient Services for 2006-07. It shows that New South Wales, South Australia, Tasmania and the Northern Territory are assessed to have above average costs, Queensland and Western Australia are

assessed to have close to average costs and Victoria and the ACT are assessed to have below average costs.

**Figure 1 Inpatient Services, gross expenses per capita — assessed, actual and average expense, 2006-07**



Source: Assessment System, U2008 GST/Expenses/Health and Community Services/4110 Inpatient Services/Tables and Chart/4110 E Expenses Per Capita - Assessed, Actual and Average

**Cost of service provision**

- 19 A State’s cost of service provision ratio is the ratio of assessed expenses per capita to average gross category expenses per capita.
- 20 For 2006-07, New South Wales, South Australia, Tasmania and the Northern Territory were assessed to have above average cost of service provision ratios, while Victoria, Queensland, Western Australia and the ACT were assessed to have below average ratios. The main driver of these ratios was the socio-demographic composition of the State populations.
- 21 For most States, the above or below average ratios were due to the proportions of their populations in high/low use and cost groups. An explanation of the groups of people who use inpatient services more and those who cost more is provided in the following sections.
- 22 New South Wales had an above average need to pay higher wages. It also had to provide inpatient services to people who use these services more than average.
- 23 South Australia had to provide inpatient services to people who used these services more than average and cost more than average to treat. Tasmania also had to provide inpatient services to people who used these services more than average. Both States also faced diseconomies of scale in providing head office services.
- 24 The Northern Territory had to provide inpatient services to people who used these services more than average and cost more than average to treat. For example, about 32 per cent of its population are Indigenous people who are intensive and high cost users of hospital services.

Other drivers were its high per capita costs in providing head office services and its isolation from major eastern seaboard supply routes.

- 25 Victoria had low proportions of people who used inpatient services more than average and cost more than average to treat and also had relatively low wage costs.
- 26 Queensland had low proportions of people who use non-acute inpatients services more than average and also had relatively low wage costs.
- 27 Western Australia had relatively low wage costs combined with a lower proportion of people who used non-acute inpatient services more than average.
- 28 The ACT also had low proportions of people who use inpatient services more than average along with diseconomies of scale in providing head office services.

*People who use inpatient services more than average and who cost more than average to treat*

- 29 The socio-demographic composition factors captured these relative cost disabilities. They were calculated using actual inpatient data and Census population estimates. The inpatient data were obtained from the National Hospital Morbidity Dataset collated (from States' inpatient data) by the Australian Institute of Health and Welfare and Census data from the Australian Bureau of Statistics (and adjusted by the Commission).
- 30 The inpatient data were disaggregated by age, sex, region of residence, Indigeneity and socio-economic status (including income and English speaking language status) and were weighted by the national Diagnostic Related Group cost weights to reflect case complexity. Adjustments were made for differing lengths of stay, under-counting along with the higher cost of Indigenous people and the lower cost of private patients treated in public hospitals. Cost weights were also used to recognise the cost of interpreters. The data allowed the Commission to calculate 'real world' average use and cost weights for different groups of people in public hospitals.
- 31 States with above average numbers in groups in their populations that were frequent users of public hospitals, or that cost more to treat, were assessed as having above average needs in providing inpatient services.
- 32 The highly disaggregated inpatient data meant that a large number of population groups had very low counts. Due to data confidentiality, it is not possible to provide the case-mixed adjusted use weights for all population groups. An indication of who was more likely to be an inpatient in a public hospital is provided below.

*Acute inpatient use*

- 33 The following cost weighted use patterns (use weights) were observed for acute inpatients.
  - In general, people aged either less than one year or over 60 years tended to use acute inpatients services more than the Australian average.
  - For non-Indigenous people, the trend continued that those on low incomes used services more than those with high incomes. However, the National Health Survey undertaken in 2004-05 found that the gap in use rates between low and high income

people has narrowed in recent years. For Indigenous people, use weights were similar for both income groups. Both were higher than the Australian average use weight.

- Use weights for Indigenous people were generally higher in the moderately accessible, remote and very remote areas. For non-Indigenous people, use weights were highest outside highly accessible (major city) areas. Use rates in more remote areas increased with advanced age.

*Non-acute inpatient use*

34 Overall, non-acute inpatient use was higher than that observed for acute inpatients. The following use patterns<sup>3</sup> were observed for non-acute inpatients.

- For non-Indigenous people, those aged 65 years and over tended to use non-acute inpatient services more than the Australian average. For Indigenous people, the trend to greater use started in the 20 to 39 year age group, fell off in the 40 to 64 age group and then increased.
- For non-Indigenous people, those with low incomes had higher use rates than the Australian average and used services more than those with high incomes. For Indigenous people, both income groups had higher use rates than the Australian average with low income groups using services slightly more than the high income groups.
- Use rates for Indigenous people were generally higher in all age groups than those for non-Indigenous. There was no discernable pattern of use based on region and age. For non-Indigenous people, the use rates continued to be highest for those aged 70 years and above and were highest for those living in remote and very remote areas.

*Hospital costs factor*

35 This factor captured the differences in costs of providing inpatient services in different State regions. In general, the relative costs of providing inpatient services were highest at hospitals in the remote and very remote regions, followed by hospitals in the highly accessible regions (major cities). In 2008, the cost of providing inpatient services in highly accessible regions decreased but was still higher than that in moderately accessible regions. Therefore, States that had an above average proportion of inpatients living in remote and very remote regions (after adjusting for national average cross-regional flows), were assessed as having higher needs due to their higher costs of providing inpatient services.

36 Table 5 summarises the relative cost indices for the five data sets used in the assessment.

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<sup>3</sup> Use weights were based on number of days stayed in hospital per separation.

**Table 5 Inpatient services, hospital costs factors, relative cost indices, 2008 Update**

SARIA regional classification	Relative		Cost	Index	
	2001-02	2002-03	2003-04	2004-05	2005-06
Highly accessible	1.18	1.18	1.12	1.16	1.07
Accessible	1.00	1.00	1.00	1.00	1.00
Moderately accessible	1.14	1.12	1.09	1.11	1.04
Remote	1.24	1.24	1.14	1.23	1.23
Very Remote	1.29	1.30	1.37	1.43	1.25

Source: 2001-02, 2002-03, 2003-04, 2004-05 and 2005-06 National Hospital Morbidity Data and National Public Hospital Establishments Data, Australian Institute of Health and Welfare.

- 37 In the 2008 Update, New South Wales and Tasmania were assessed as having lower needs arising from treating patients in different State regions. In part, this was because these States could treat a higher proportion of their inpatient populations, on a national average basis, in hospitals which are relatively less expensive. According to the 2005-06 National Hospital Morbidity data, Tasmania could treat 58 per cent of its inpatient population in hospitals in the accessible and moderately accessible regions of Australia, while the Australian average was 33 per cent. New South Wales was also impacted by the reduction in the relative cost of providing inpatient services in highly accessible regions. The proportion of inpatients that could be treated in highly accessible regions in New South Wales has increased from 59 per cent in 2001-02 to 63 per cent in 2005-06. In all other States the proportions had fallen.
- 38 South Australia and the Northern Territory were assessed as having higher needs because these States needed to treat a higher proportion of their inpatient populations in regions where they were relatively more expensive to treat. According to the 2005-06 National Hospital Morbidity data, South Australia needed to treat 72 per cent of their inpatient populations in highly accessible areas while the average was 63 per cent. The proportion of inpatient populations needing treatment in remote and very remote areas in the Northern Territory was significantly above the Australian average.

### CONTRIBUTION TO GST REVENUE DISTRIBUTION

- 39 Table 6 shows the category's contribution to the distribution of GST revenue and health care grants (hereafter described as GST revenue) implied by the 2008 Update. It also shows the contribution of each factor and component to the total GST revenue distribution.

**Table 6 Inpatient Services, contribution of assessment to GST revenue distribution, 2008 Update**

Factor	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total redist'd
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>Fixed costs</b>									
Administrative scale	-16.5	-9.9	-5.8	2.0	3.8	7.9	8.6	10.0	32.2
Input costs	0.8	-0.1	-0.4	-0.1	-0.2	-0.1	0.0	0.0	0.9
Component factor	-16.1	-9.9	-6.0	1.9	3.5	7.5	8.8	10.3	32.1
<b>Acute inpatient services</b>									
Socio-demographic composition	-23.0	-165.3	71.2	-9.6	87.8	52.9	-81.0	67.1	279.0
Hospital costs	-30.9	5.3	3.6	5.5	12.6	-13.6	6.8	10.8	44.5
Input costs	139.0	-14.8	-70.9	-20.9	-26.8	-13.7	4.8	3.2	147.1
Component factor	85.6	-172.8	3.3	-24.4	71.9	24.4	-70.6	82.6	267.8
<b>Non-acute inpatient services</b>									
Socio-demographic composition	2.0	-6.2	-4.2	-15.5	35.4	2.2	-11.0	-2.6	39.6
Hospital costs	-4.8	0.8	0.6	0.9	2.0	-2.1	1.1	1.7	7.0
Input costs	21.8	-2.3	-11.1	-3.3	-4.2	-2.1	0.8	0.5	23.0
Component factor	19.1	-7.5	-14.5	-17.7	32.5	-2.1	-9.3	-0.5	51.6
<b>Cost of patient transport</b>									
Cost of patient transport	-3.6	-18.2	19.8	1.8	-1.0	-0.9	-2.6	4.7	26.3
Component factor	-3.6	-18.2	19.8	1.8	-1.0	-0.9	-2.6	4.7	26.3
<b>Isolation</b>									
Isolation	-12.8	-9.4	-7.2	3.4	0.3	1.6	0.1	23.9	29.4
Component factor	-12.8	-9.4	-7.2	3.4	0.3	1.6	0.1	23.9	29.4
<b>Redistribution from EPC resulting from the 2008 Update assessment</b>									
	72.2	-217.9	-4.6	-35.0	107.2	30.5	-73.5	121.1	331.0

Source: Assessment System, U2008 GST/Expenses/Health and Community Services/4110 Inpatient Services/Tables and Chart/4110 E Contribution of Assessment to GST Revenue

Note: The redistribution due to the component factors includes the effect of interactions between factors. Therefore, the component factor figure may not equal the sum on its factors' redistribution.

#### Differences from an equal per capita assessment

40 Table 6 shows that compared with an equal per capita (EPC) assessment, the 2008 Update redistributed \$331.0 million away from Victoria, Queensland, Western Australia and the ACT to New South Wales, South Australia, Tasmania and the Northern Territory.

41 The table shows that the disabilities which had the biggest impact on the assessment were:

- differences in the socio-demographic composition of State populations — States with above average proportions of people likely to be high users of inpatient services, or

people who were likely to cost more to treat, were assessed to have above average needs. States with below average proportions of people likely to be high users of inpatient services, or people who were likely to cost more to service, were assessed to have below average needs;

- differences in wage levels — States which needed to pay above/below average wages to staff were assessed to have above/below average needs; and
- differences in hospital costs in particular locations — differences in costs of providing inpatient services in different State regions have an impact on State needs. States with larger proportions of inpatient users in remote, very remote or highly accessible regions incurred higher costs in delivering services. States with a larger proportion of their inpatient users in other locations were assessed as incurring lower costs in service delivery.

42 The following disabilities were also important for some States:

- administrative scale — recognising the unavoidable costs each State incurred to have the policy and administrative infrastructure necessary to provide the service, regardless of the size of the task;
- cost of patient transport — recognising the impact of a dispersed population on the cost of transporting them to medical care; and
- isolation — recognising higher costs resulting from distance from south-eastern Australia.

43 The socio-demographic composition of the population is the major disability in this assessment. It redistributed GST revenue to Queensland, South Australia, Tasmania and the Northern Territory. These States had large proportions of their populations in groups that were high or costly users of acute and non-acute inpatient services. Queensland and the Northern Territory had higher than national average proportions of their population that are Indigenous as well as higher than average proportions of their populations that resided in remote and very remote regions. South Australia and Tasmania had older populations along with higher than average low income earners.

44 New South Wales, Victoria, Western Australia and the ACT had below average numbers of people who were likely to use inpatient services more, or cost more to treat. Their need for GST revenue was therefore less than an equal per capita amount. New South Wales and Victoria had lower than average Indigenous population proportions and had less than average low income earners (although this has changed for New South Wales in the 2006 Census). Western Australia and the ACT had younger populations with a lower proportion of low income earners, offset in Western Australia's case by a higher than average Indigenous population.

**CHANGES SINCE THE 2007 UPDATE****Effect of assessment on the distribution of GST revenue**

45 Table 7 shows the distribution of GST revenue resulting from the assessments in the 2007 Update and the 2008 Update. It also shows the sources of the changes and shows that the 2008 Update assessment resulted in a \$79.1 million change in the distribution of GST revenues amongst the States. It shows that the assessment now redistributes slightly more than in the 2007 Update, redistributing \$331.0 million instead \$326.5 million. State costs of providing Inpatient services have diverged slightly.

**Table 7 Inpatient Services, effect of assessment on GST revenue distribution, 2007 Update to 2008 Update**

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total redist'd
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>Redistribution from EPC resulting from the 2007 Update assessment (a)</b>	16.3	-212.3	30.4	-45.0	141.4	17.8	-69.2	120.6	326.5
<b>Effect of revising category averages and factors for 2001-02 to 2005-06</b>									
Category average	0.1	-1.2	0.2	-0.3	0.8	0.1	-0.4	0.7	1.9
Category factors	34.2	2.9	-26.1	2.6	-17.1	5.2	-0.9	-0.9	44.9
Interactions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total	34.3	1.7	-25.9	2.4	-16.3	5.4	-1.3	-0.2	43.7
<b>Effect of replacing 2001-02 category averages and factors with those for 2006-07</b>									
Category average	0.4	-2.7	0.2	-0.6	1.7	0.2	-0.8	1.5	4.1
Category factors	20.0	-4.4	-8.8	7.8	-18.5	6.7	-2.0	-0.8	34.5
Interactions	1.2	-0.3	-0.5	0.5	-1.1	0.4	-0.1	-0.1	2.1
Total	21.6	-7.3	-9.1	7.7	-17.9	7.3	-3.0	0.7	37.3
<b>Redistribution from EPC resulting from the 2008 Update assessment (a)</b>	72.2	-217.9	-4.6	-35.0	107.2	30.5	-73.5	121.1	331.0
<b>Total effect of revisions and updating (b)</b>	55.9	-5.6	-35.0	10.0	-34.2	12.7	-4.3	0.4	79.1

Source: Assessment System, U2008 GST/Expenses/Health and Community Services/4110 Inpatient Services/Tables and Chart/4110 E Effect of Assessment, Previous Inquiry to Current Inquiry

(a) Assuming same pool and a constant population

(b) This figure shows the change in the amount redistributed among the States between the 2007 Update and the 2008 Update. It does not necessarily equal the difference in the total redistribution from EPC between the two inquiries.

46 Changes in the distribution of GST revenue between the 2007 Update and the 2008 Update were brought about because the Commission:

- used revised financial data in the average expenses and other revised data in factor calculations for the years 2001-02 to 2005-06; and
  - replaced 2001-02 average expenses and factors with those of 2006-07 to move forward the five-year period on which GST revenue distribution was based. Moving the five-year period forward in this way ensures the assessments reflect recent trends in State priorities on the services provided and recent trends in State demographic, and economic circumstances on the relative costs of inpatient services.
- 47 With the availability of 2006 Census data, these have now been included in the socio-demographic composition factor calculations for the last two assessment years. 2001 Census data have continued to be used for earlier years.
- 48 Also for the 2008 Update hospital use and cost data for 2004-05 and 2005-06 were available along with the 2004-05 National Health Survey data which provided the income distribution of people using inpatients services.
- 49 Table 8 is a summary of the data sets used to for calculate use rates for each assessment year of the 2008 Update. The table shows that 2002-03 was the only assessment year that did not have a change in either the user population or the Census population.

**Table 8 Inpatient Services - summary of data for calculating use rates, 2007 and 2008 Update**

U2007	NHMD	CENSUS	NHS-Income	U2008	NHMD	CENSUS	NHS-Income
2001-02	2001-02	2001	2001				
2002-03	2001-02	2001	2001	2002-03	2001-02	2001	2001
2003-04	2001-02	2001	2001	2003-04	2002-03	2001	2001
2004-05	2002-03	2001	2001	2004-05	2003-04	2001	2001
2005-06	2003-04	2001	2001	2005-06	2004-05	2006	2004-05
				2006-07	2005-06	2006	2004-05

Source: CGC.

- 50 Compared with an equal per capita assessment, the 2008 Update redistributed \$331.0 million away from Victoria, Queensland, Western Australia and the ACT to the other States. The total effect of revisions and updating was to increase the amount redistributed and to redistribute \$79.1 million across States. The change arose largely from the effect of revising and replacing category factors which led to larger GST shares for New South Wales, Western Australia, Tasmania and the Northern Territory and reductions for Victoria, Queensland, South Australia and the ACT.
- 51 Table 9 shows the changes in GST revenue attributable to changes in each factor arising from both revisions over the period 2001-02 to 2005-06 and replacing 2001-02 data with 2006-07 data.
- 52 The main reasons for the changes in GST revenue distribution are as follows.

**Table 9 Inpatient Services, effect of assessment on GST revenue distribution by factor, 2007 Update to 2008 Update**

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total redist'd
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>Fixed costs</b>									
Administrative scale	1.0	0.3	0.0	-0.1	-0.1	-0.4	-0.3	-0.4	1.4
Input costs	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
<b>Acute inpatient services</b>									
Socio-demographic composition	42.4	4.3	-33.8	5.0	-28.0	11.0	-2.6	1.5	64.3
Hospital costs	8.4	-5.7	-3.0	1.7	-3.6	1.2	-1.0	2.0	13.3
Input costs	-10.3	-5.0	11.3	3.1	2.2	-0.8	-0.1	-0.4	16.6
<b>Non-acute inpatient services</b>									
Socio-demographic composition	14.2	0.8	-10.8	-0.7	-3.5	0.9	-1.0	0.0	16.0
Hospital costs	1.3	-0.9	-0.5	0.3	-0.6	0.2	-0.2	0.3	2.1
Input costs	-1.5	-0.9	1.8	0.4	0.3	-0.1	0.0	0.0	2.6
<b>Cost of patient transport</b>									
Cost of patient transport	-0.1	-0.4	0.5	0.0	0.0	0.0	-0.1	0.1	0.7
<b>Isolation</b>									
Isolation	0.9	0.5	0.3	-0.4	-0.1	-0.2	0.0	-0.9	1.6

Source: Assessment System, U2008 GST/Expenses/Health and Community Services/4110 Inpatient Services/Tables and Charts/4110 E Effect of Assessment by Factor, Previous Inquiry to Current Inquiry

### Changes due to revising category average expenses and factors for years 2001-02 to 2005-06

#### *Revising average expenses*

- 53 Revising average expenses for the category for 2001-02 to 2005-06 redistributed \$1.9 million. Overall, revisions to category averages were upward, so that the GST of those States with a higher cost of service provision (New South Wales, Queensland, South Australia and the Northern Territory) increased. States with a lower cost of providing services had their GST shares decrease. The revisions to average expenses generally reflected reclassification of expenses by States between the health categories.
- 54 Table 10 shows the average expenses and user charges for the six financial years of this update and those of the previous update.

**Table 10 Average expenses used in the 2007 and 2008 Updates**

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc
2008 Update		690.87	723.82	779.30	842.06	901.68	988.16
2007 Update	618.30	690.80	717.92	772.30	832.23	902.00	
Difference	-	0.1	5.9	7.0	9.8	-0.3	-

Source: Assessment System, U2008 GST/Expenses/Health and Community Services/4110 Inpatient Services/Tables and Chart/4110 E Average Expenses and User Charges

#### Revising category factors

- 55 Revising category factors for 2001-02 to 2005-06 had a greater effect than revising the average category expenses, redistributing \$44.9 million. This was the largest effect on the redistribution. The redistribution effects were largely due to the availability of hospital use and cost data for 2004-05, the 2004-05 National Health Survey which gave the income distribution of people using inpatient services, and changes to State population characteristics reflected in the 2006 Census data.
- 56 Although people on low income still use more health services than those people on higher incomes, the gap between the proportions of people on low income, compared with those on higher incomes, who used inpatient services narrowed from 2001-02 to 2004-05, as shown in Table 11<sup>4</sup>. This change reduced the GST shares of States with an above average proportion of low income population, for example South Australia, and increased those for the other States.

**Table 11 Comparison of income (b) use rate between 2001 NHS and 2004 NHS (a)**

	2004 NHS		2001 NHS	
	Higher Income	Low Income	Higher Income	Low Income
Acute inpatient use ratio	0.62	2.00	0.48	2.18
Non-acute inpatient use ratio	0.54	2.20	0.39	2.39

(a) 2006 Census has been applied to 2004 NHS data to calculate use rate and 2001 Census has been applied to 2001 NHS data.

(b) Income in this table refers to equivalised income. They have been adjusted for different household types and compositions by the application of the New OECD scale.

Source: (1) ABS National health survey 2001 and 2004 adjusted by CGC.

(2) 2006 Census and 2001 Census adjusted by CGC.

- 57 As shown in Table 12, Queensland, Western Australia and Tasmania experienced the largest reduction in low income population from the 2001 Census to the 2006 Census. The proportion of low income population in Tasmania became closer to the Australian average, while the proportion in Queensland and Western Australia became lower than the Australian average. In contrast, New South Wales and Victoria had the least reduction of low income

4 The ABS improved the data quality between the two health surveys and different equivalised income scales were applied as the 2004-05 NHS survey did not provide the level of employment data contained in the 2001 NHS survey. Income was defined within specific bands.

population. The proportion of low income population in Victoria became closer to the Australian average, while the proportion in New South Wales became higher than the Australian average. This change increased the GST shares of States whose low income population increased when compared to the Australian average, for example New South Wales, and decreased those for the other States.

**Table 12 Comparison of low income<sup>(a)</sup> population between 2001 Census and 2006 Census**

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
	%	%	%	%	%	%	%	%	%
2006 Census	28.9	28.2	27.6	25.9	31.2	33.6	16.6	27.4	28.2
2001 Census	30.5	30.1	33.8	31.6	35.1	39.4	20.1	30.6	31.5
Difference	-1.6	-1.9	-6.2	-5.7	-3.9	-5.8	-3.5	-3.2	-3.3

(a) Income in this table refers to gross income.

Source: 2006 Census and 2001 Census adjusted by CGC.

58 Table 13 contains data on the proportion of State populations living in highly accessible areas (major cities), accessible areas and remote areas. It shows that the proportion of the population residing in highly accessible increased while that in accessible areas declined. These movements resulted in a decrease in use rates in highly accessible areas and an increase in use rates in accessible areas. Victoria, South Australia and the ACT have above average proportions of their populations in major cities. Western Australia and Tasmania have above average proportions of their populations in accessible areas. This change increased the GST shares of those States with higher than Australian average proportions of their populations in accessible areas, for example Western Australia and Tasmania, and reduced the GST shares of those States with higher than Australian average proportions of their populations in highly accessible areas (major cities), for example Victoria, South Australia and the ACT.

**Table 13 Where people live<sup>(a)</sup>, 2001 Census and 2006 Census**

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
		%	%	%	%	%	%	%	%	%
2006 Census	Highly accessible	60.2	71.2	52.5	50.0	70.9	19.1	99.8	47.1	60.7
	Accessible	22.0	22.9	24.2	34.0	12.8	67.4	0.2	7.2	23.7
	Remote areas	17.7	6.0	23.3	16.0	16.4	13.4	0.0	45.7	15.6
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2001 Census	Highly accessible	51.5	69.7	53.2	50.8	71.0	19.3	99.8	46.4	57.7
	Accessible	30.5	24.1	22.7	32.1	12.0	66.9	0.2	7.1	26.3
	Remote areas	18.0	6.3	24.1	17.1	17.0	13.8	0.0	46.6	16.0
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(a) Where people live is defined in accordance with the State-based Accessibility and Remoteness Index of Australia where the SARIA regions are defined on the basis of statistical local areas. This allocation differs from others where SARIA regions are defined on the basis of Census collection districts.

Source: 2006 Census and 2001 Census adjusted by Commonwealth Grants Commission.

59 The combined effect of new Census data and updated use rates for population groups classified by income and location reduced the pool shares of Queensland, South Australia, Tasmania, ACT and the Northern Territory and increased those of New South Wales, Victoria and Western Australia.

**Changes in State circumstances — replacing 2001-2002 with 2006-07 data**

60 Table 14 shows the actual expenses and assessed costs of service provision for 2001-02, the year that drops out of the assessment period, and 2006-07, the year that comes in, for the 2008 Update assessment.

**Table 14 Inpatient Services, actual expenses and cost of service provisions ratio, 2001-2002 and 2006-07**

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Avg
	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc
Actual expenses									
2001-02	705.22	715.57	563.85	677.85	786.50	896.41	593.57	1024.90	690.87
2006-07	934.25	1032.17	928.78	915.97	1211.37	1289.35	821.33	1431.31	988.16
	%	%	%	%	%	%	%	%	%
Change between 2000-01 and 2005-06	32.48	44.25	64.72	35.13	54.02	43.83	38.37	39.65	43.03
	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc
Assessed expenses									
2001-02	693.99	661.39	693.77	674.29	754.13	714.92	546.35	1104.76	690.87
2006-07	1007.50	941.90	981.90	983.33	1019.53	1091.69	751.17	1560.98	988.16
	%	%	%	%	%	%	%	%	%
Assessed cost of providing services ratio									
2001-02	100.45	95.73	100.42	97.60	109.16	103.48	79.08	159.91	100.00
2006-07	101.96	95.32	99.37	99.51	103.17	110.48	76.02	157.97	100.00

Source: Assessment System, U2008 GST/Expenses/Health and Community Services/4110 Inpatient Services/Tables and Chart/4110 E Assessment Data, Year 0 and Year 5

Note: ACT actual expenses may include municipal expenses.

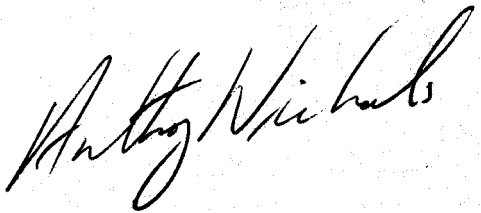
*Replacing average expenses*

61 Since 2001-02, State spending on Inpatient Services has increased by 52.7 per cent, exceeding the increase in the GST pool (43.9 per cent). So, replacing the 2001-02 average expenses with 2006-07 average expenses has led to an increase in the size of the category's GST redistribution (\$4.1 million). It has increased the GST shares of the States assessed to have above average cost of providing services ratios (New South Wales, Queensland, South Australia, Tasmania and the Northern Territory). It has decreased the shares of the other States.

*Replacing category factors*

- 62 The cost of providing services ratio increased from 2001-02 to 2006-07 for New South Wales, Western Australia and Tasmania (Table 14). As a result, replacing 2001-02 factors with 2006-07 factors increased the GST shares of those States (\$34.5 million). The shares of the other States were reduced.
- 63 The effects for most States were similar to those described previously for revising category factors.
- 64 For Victoria, the increased need for health services due its lower income population was more than offset by the reduction in the relative cost of providing inpatient services in highly accessible regions and the decline in its differences in wage levels following strong wage growth in Queensland and Western Australia.
- 65 For the ACT, the reduced relative cost of providing inpatient services in highly accessible areas decreased its cost of providing services.
- 66 The Northern Territory's cost of providing services reduced slightly due to the declining influence of higher costs resulting from distance from south-eastern Australia.

This working paper was prepared by the Expense — Health and Welfare section of the Commonwealth Grants Commission. If you have any questions about its content please contact Anthony Nichols on (02) 6229 8858 or [anthony.nichols@cgc.gov.au](mailto:anthony.nichols@cgc.gov.au).



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**Table 15 Assessment of expenses, Inpatient services, 2008 Update**

	2002-03		2003-04		2004-05		2005-06		2006-07	
	Amount	Per Capita	Amount	Per Capita	Amount	Per Capita	Amount	Per Capita	Amount	Per Capita
	\$m	\$	\$m	\$	\$m	\$	\$m	\$	\$m	\$
<b>Average Expenses</b>		723.82		779.30		842.06		901.68		988.16
New South Wales										
Assessed difference	14.735	2.21	19.257	2.88	18.693	2.78	138.771	20.44	132.562	19.34
Expenses - Assessed	4 830.278	726.04	5 234.735	782.17	5 688.023	844.84	6 260.234	922.12	6 907.230	1 007.50
Actual	4 842.118	727.82	5 309.258	793.31	5 718.896	849.42	5 830.621	858.84	6 405.054	934.25
Victoria										
Assessed difference	- 149.883	- 30.62	- 166.420	- 33.58	- 177.086	- 35.28	- 193.220	- 37.95	- 239.058	- 46.26
Expenses - Assessed	3 393.500	693.21	3 695.847	745.72	4 049.557	806.78	4 397.200	863.72	4 867.297	941.90
Actual	3 791.960	774.60	4 123.108	831.93	4 545.323	905.55	4 858.408	954.32	5 333.767	1 032.17
Queensland										
Assessed difference	16.270	4.32	19.887	5.15	19.763	5.00	- 62.048	- 15.32	- 25.893	- 6.26
Expenses - Assessed	2 743.232	728.14	3 030.077	784.45	3 351.290	847.06	3 588.707	886.35	4 060.778	981.90
Actual	2 185.395	580.07	2 350.530	608.52	2 618.316	661.79	3 206.675	792.00	3 841.062	928.78
Western Australia										
Assessed difference	- 33.247	- 17.15	- 34.565	- 17.56	- 37.770	- 18.88	- 25.771	- 12.64	- 10.058	- 4.83
Expenses - Assessed	1 369.887	706.67	1 499.260	761.74	1 646.339	823.18	1 812.391	889.03	2 047.341	983.33
Actual	1 397.155	720.74	1 511.137	767.77	1 596.398	798.20	1 726.597	846.95	1 907.086	915.97
South Australia										
Assessed difference	104.557	68.50	113.409	73.82	121.682	78.68	57.531	36.87	49.445	31.36
Expenses - Assessed	1 209.355	792.32	1 310.630	853.12	1 424.043	920.74	1 464.578	938.54	1 607.428	1 019.53
Actual	1 249.145	818.39	1 397.294	909.53	1 565.275	1 012.05	1 759.524	1 127.55	1 909.898	1 211.37
Tasmania										
Assessed difference	11.707	24.64	13.083	27.22	20.322	41.92	39.707	81.29	50.898	103.53
Expenses - Assessed	355.556	748.47	387.680	806.51	428.560	883.98	480.146	982.96	536.727	1 091.69
Actual	438.164	922.36	467.103	971.74	518.771	1 070.05	609.450	1 247.68	633.906	1 289.35
Australian Capital Territory										
Assessed difference	- 49.584	- 152.97	- 54.870	- 168.21	- 64.382	- 195.97	- 66.118	- 199.01	- 79.794	- 236.99
Expenses - Assessed	185.042	570.86	199.344	611.09	212.266	646.09	233.453	702.67	252.912	751.17
Actual	185.369	571.86	202.140	619.66	239.977	730.44	253.667	763.51	276.535	821.33
Northern Territory										
Assessed difference	85.445	428.43	90.218	449.05	98.777	483.56	111.149	532.52	121.897	572.82
Expenses - Assessed	229.803	1 152.25	246.784	1 228.35	270.787	1 325.62	299.348	1 434.20	332.180	1 560.98
Actual	227.350	1 139.95	243.786	1 213.43	267.908	1 311.52	291.115	1 394.76	304.585	1 431.31

Source: Assessment System, U2008 GST/Expenses/Health and Community Services/4110 Inpatient Services/Tables and Chart/4110 E Assessment of Expenses

Note: Assessed difference is Assessed expenses less Average Expenses

ACT expenses may include municipal expenses. Refer to Attachment A of the 2008 Update, *Relative Fiscal Capacity of States* for how these figures are compiled.