

TRANSPORT OF RURAL SCHOOL CHILDREN

- 1 This working paper describes how the Commission estimates what each State would need to spend to provide the average level of transport services for rural school children to its residents. The development of the assessment method is discussed in Volume 4 of the 2004 Review working papers.

TRANSPORT OF RURAL SCHOOL CHILDREN

- 2 States provide services to transport rural school children to and from school.
- 3 The Transport of Rural School Children category comprised expenses on the provision, administration, inspection and support of transportation services to students in areas not serviced by urban public transport. It included expenses on contract bus services and conveyance allowances to parents, but excluded expenses on:
 - transport of students with disabilities; and
 - reimbursement of public transport authorities for concessional fares offered to school children and subsidies to private bus operators for conveyance of school children in urban areas.
- 4 State governments spent \$0.8 billion (\$37.41 per capita) on the transport of rural school children in 2006-07. No Specific Purpose Payments (SPPs) were associated with this category.

WHY EXPENSES ON TRANSPORT OF RURAL SCHOOL CHILDREN DIFFER

- 5 The per capita amount spent by each State on the transport of rural school children varies considerably. The Commission seeks to understand why these figures vary. If the sole source of variation is different government policies, then the differences do not impact on State GST shares. If the variation is due to circumstances beyond a States' control, the differences will be reflected in State GST shares. Table 1 shows the Transport of Rural School Children category expenses per capita for each State and the average overall.

Table 1 Transport of Rural School Children, expenses per capita, 2008 Update

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc
2001-02	34.21	30.92	31.86	29.26	15.41	50.71	0.00	5.04	30.55
2002-03	37.97	30.14	33.44	30.44	16.27	52.81	0.00	5.01	32.16
2003-04	40.52	40.51	31.07	31.50	17.09	53.13	0.00	4.98	35.30
2004-05	39.11	34.27	31.85	33.50	14.27	62.70	0.00	9.79	33.68
2005-06	37.41	34.96	34.82	41.70	20.51	58.46	3.01	9.58	35.10
2006-07	41.28	37.74	36.69	39.86	20.45	67.12	0.00	10.80	37.41

Source: Derived from Government Finance Statistics (GFS) data collated by the ABS using CGC coding rules (and adjustments).

Box 1: The Commission’s concept of average

The Australian average expense per capita is not a simple average of the experience of the eight States. It is calculated as the total expenses incurred by all States divided by total State population. This is a population weighted average. Population weighting gives equal weight to each Australian’s experience. Since more Australians experience the New South Wales level of service, it carries more weight in the calculation of the average. 33 per cent of Australians reside in New South Wales and 1 per cent reside in the Northern Territory. Population weighting gives the experience of New South Wales (\$41.28 per capita in 2006-07) 33 times the weight of the experience of the Northern Territory (\$10.80 per capita). This approach means the average expense per capita is generally much closer to the New South Wales expense per capita than the Northern Territory expense per capita.

The concept of using this average also applies to the assessment of factors. If the Commission were trying to estimate the cost of providing services to Indigenous people living in remote areas, it would give most weight to the Northern Territory’s experience (38 per cent of remote Indigenous people live in the Territory) and least to Tasmania (less than 0.2 per cent), Victoria (less than 0.1 per cent) and the ACT (0 per cent).

- 6 Differences in State expenses per capita are likely to reflect differences in:
 - the cost of resources provided to each student;
 - the number of resources provided to each student; and
 - the number of school children who live rural areas surrounding urban centres.
- 7 Most states provide assistance for transporting rural students to and from school. These services vary across the States.
- 8 States’ expenses per capita are affected by:
 - efficiency of service delivery;
 - the number of students;
 - the distance they have to travel; and
 - the type of roads over which they are transported.
- 9 The Commission seeks measures of need that are not influenced by State policies.

Efficiency of service delivery

- 10 A State may provide transport of rural school children services more or less efficiently than the average for all States. This is a policy decision that affects the cost of providing government services.

Number of students

- 11 The number of children who require access to transport services in rural areas is due to the settlement patterns of the population. This is an example of a circumstance that is beyond the control of an individual State government.

Distance travelled

- 12 The distance rural school children have to travel to school is due to the settlement patterns of the population. This is an example of a circumstance that is beyond the control of an individual State government.

Type of road

- 13 The condition of roads over which rural school children are transported is in part determined by terrain. This is an example of a circumstance that is beyond the control of an individual State government.

ASSESSING STATES' COSTS OF PROVIDING TRANSPORT OF RURAL SCHOOL CHILDREN

The equalisation task

- 14 The Commission aims to identify why it costs some States more to provide transport to and from school for rural school children and then using this information to estimate what it would cost each State to provide the service using the average policy and practice of all States. This estimate is called a State's *assessed expense*.
- 15 The process the Commission follows is twofold. First, it starts with the average expense that captures the average policies, efficiency and circumstances of all States. Second, it attempts to quantify how a State varies from the average in some underlying characteristic (for example, the proportion of its student population attending government schools) and what effect such a variation could have on its total expenses. Bringing them together shows how much a State could be expected to vary from the average, solely because of its innate characteristics. The resultant estimate is its assessed expense. This section discusses how the Commission identifies these characteristics, the following sections discuss how it measures them.

- 16 The Commission identifies the major influences that cause States to have different expenses per capita and estimates their financial impact on either:
- assessed service use; or
 - assessed unit costs.

Assessed service use

- 17 For the Transport of Rural School Children category, the influence that affects assessed service use is the number of school children in each State who live in rural areas and who require transport to school.

Assessed unit costs

- 18 For this category, the influences which affect assessed unit costs are:
- the average distance each student travels to and from school;
 - the characteristics of the roads over which they are transported.
- 19 While some of these influences, such as the design and type of road construction, may be partially affected by government policies, the Commission attempts to take account of only that part of the influence that is beyond the control of individual State governments.

OVERVIEW OF THE METHOD FOR DETERMINING ASSESSED EXPENSES

- 20 The box below provides a brief step by step overview of the framework the Commission uses to determine each States' assessed expenses for the transport of rural school children.

Box 2: Assessment framework

Step 1: Derive the average expense per capita

This is done by dividing the total expenses incurred by all States by total State population. This figure captures the average financial impact of the policies, practices and particular State circumstances that impact on the cost of delivering the service across the nation.

Step 2: Identify different types of expenses

The Commission examines the service to determine whether parts of the total expense are affected by different influences. If the differences are material, the expense is divided into component parts to ensure that the various influences are accurately matched with the expenses they affect. The different expense types identified are referred to as components. To identify components, the Commission analyses information and data on the nature of the service (that is, what States do and how they do it), States' policies concerning the service and submissions. The proportion of total expense attributable to a particular component is referred to as the component weight. The Commission uses GFS data, State public accounts, annual reports and other data to estimate these proportions.

Step 3: Identify the influences for each component

The Commission identifies the influences that affect each component and the extent to which they are beyond the control of individual State governments. To identify influences, the Commission analyses information and data on the nature of the service (that is, what States do and how they do it), States' policies concerning the service, submissions and other publications.

Step 4: Measure the size of each influence

The Commission estimates the relative financial impact of each influence on each State's cost of providing the service, but only to the extent it is beyond the control of individual State governments. The relative impact is measured by relating the State's experience to the average experience. The relative impacts are presented as factors. A factor measures the percentage increase (or decrease) that the influence has on a State's cost of providing the service. There is at least one factor assessment for each component. In most cases there is more than one.

Step 6. Derive category factors

The component factors are weighted to reflect the importance of the component in the category. This is done by multiplying each component factor by its component weight. The category factor is calculated by adding the weighted component factors together. The category factor represents the Commission's estimate of the combined financial impact of all the influences on a State's cost of providing the service.

Step 7: Derive assessed expense per capita

Each State's assessed expense per capita is calculated by applying its category factor to the average expense per capita. A State's assessed expense per capita is the Commission's estimate of how much it would cost the State (per capita) to provide the average level of service. The difference between a State's assessed expense per capita and the average expense per capita is a measure of the financial impact of circumstances beyond its control. The difference between its assessed expense per capita and its actual expense per capita is a measure of the financial impact of circumstances within its control.

DERIVING COMPONENTS AND COMPONENT WEIGHTS

- 21 The Commission examines the service to decide whether parts of the total expense are affected by different influences. If the differences are material, the expense is divided into component parts to ensure that the various influences are accurately matched with the expenses they affect. The different expense types identified are referred to as *components*. The proportion of total expense attributable to a particular component is referred to as the *component weight*. The Transport of Rural School Children category has a single component with a component weight of 100 per cent and is presented in Table 2.

Table 2 Component and component weight, 2006-07

	\$m	%
Transport Services	780.319	100.00
Total	780.319	100.00

- 22 The Commission identifies the influences affecting each component. They are, in the Commission's assessment, the reasons why States spend more (or less) than the average expense per capita to provide the average level of service. The Commission presents these influences as factors.

Box 3: Commission factors

A factor is the Commission’s estimate of the relative financial impact a particular influence has on a State’s cost of providing a service. Factors are only calculated for the part of the influence that is beyond the control of individual State governments.

A factor value of 1 means the Commission considers the State could provide the average level of service by spending the average expense per capita. A factor value of more than 1 means the Commission considers the State will have to spend more than the average expense per capita to provide the average level of service. A factor value of less than 1 means the Commission considers the State can provide the average level of service by spending less than the average expense per capita.

- 23 Table 3 lists the component and associated factors for the Transport of Rural School Children category and contains an explanation of the reasoning behind each factor assessment and the method of assessment.

Table 3 Components and factors, 2008 Update

Component and component weight	Factors	Influence measured by factor
Transport services (100.00%)	Socio-demographic composition	Based on the target population of primary and secondary school students in rural areas adjusted for students deemed to be receiving distance education under standard policies.
	Dispersion	Based on average distances travelled by rural school children, adjusted to take account of the proportion of kilometres travelled on sealed and unsealed roads and the sinuosity of the road.

DERIVING TRANSPORT SERVICES COMPONENT FACTOR

- 24 The Commission considers each States’ level of costs for the transport of rural school children to be influenced by the number of children accessing rural transport services and differences in the price of providing transport in rural areas.

Socio-demographic composition factor

- 25 A socio-demographic composition factor is assessed to take account of State differences in the use of services.
- 26 This is measured by the number of rural students (excluding distance education students), who are provided with transport to school because they live too far from an urban centre to use urban transport services.

Box 4: Socio-demographic composition factor

Step 1: Calculate the number of primary aged children and secondary aged children in the population

The number of children aged 5 to 11 and aged 12 to 17 were obtained from the 2001 Census.

Step 2: Calculate the number of children requiring transport

The Commission estimated:

- the number of rural children aged 5 to 11 who were located 60 kms from a primary school; and
- the number of rural school children aged 12 to 17 who were located 80 kms from a secondary school.

Step 3: Calculate the proportion of rural school students requiring transport

The proportion of primary school children requiring transport was obtained by dividing the number of requiring transport (from Step 2) by the number of children in the population (from Step 1). This was done separately for the two age groups (5 to 11 and 12 to 17).

Step 4: Calculate the number of rural school children requiring transport

The number of rural school children requiring transport was calculated by:

- applying the 5 to 11 proportion (step 3) to notional primary enrolments;
- applying the 12 to 17 proportion (step3) to notional secondary enrolments; and
- adding.

Step 5: Calculate the State ratio

The ratio for each State and Australia is calculated by dividing a State's assessed rural school students requiring transport by its population.

Step 6: Calculate the factor

27 The factor was calculated for each State by dividing its ratio by the Australian ratio.

- 28 The 2004 Review Schools Special Data Collection was used to estimate the number of government and non-government school students living far from an urban centre. These data were considered a good estimate of the number of rural school children requiring transport services. The calculation was undertaken separately for primary and secondary students, because a different distance requirements were used for primary and secondary.
- 29 The proportion of rural students requiring transport was derived by relating these estimates to the number of people aged 5 to 11 (primary students) and 12 to 17 (secondary students) within each State. The number of rural students requiring transport services was obtained by applying these proportions to the number of primary and secondary enrolments respectively.
- 30 Table 4 sets out this calculation for 2006-07.

Table 4 Derivation of the socio-demographic composition factor, 2006-07

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Primary rural school children who require transport									
A. Number aged 5-11 ^(a)	626 921	452 455	366 403	187 583	137 738	46 692	31 440	23 720	1 872 952
B. Number in rural areas ^(b)	67 873	49 873	55 071	17 846	17 803	11 751	253	2 448	222 918
C. Proportion in rural areas (B / A)	0.10826	0.11023	0.15030	0.09514	0.12925	0.25167	0.00805	0.10320	0.11902
D. Total primary enrolments	654 382	491 236	383 332	188 273	142 108	50 051	32 900	23 547	1 965 828
E. Number of rural students (C * D)	70 846	54 148	57 616	17 912	18 368	12 596	265	2 430	234 180
Secondary rural school children who require transport									
E. Number aged 12-17 ^(a)	529 251	385 352	308 362	165 306	120 938	40 983	27 769	17 529	1 595 490
F. Number in rural areas ^(b)	80 780	59 457	60 139	18 369	20 491	13 442	203	2 730	255 611
G. Proportion in rural areas (F / E)	0.15263	0.15429	0.19503	0.11112	0.16943	0.32799	0.00731	0.15574	0.16021
H. Total secondary enrolments	460 990	334 746	304 863	160 499	106 450	32 331	25 593	14 032	1 439 504
I. Number of rural students (G * H)	70 361	51 649	59 457	17 835	18 036	10 604	187	2 185	230 315
J. Total number of of rural school children (E + I)									
Number	141 207	105 797	117 072	35 746	36 404	23 200	452	4 616	464 494
K. Population									
Population (m)	6.856	5.168	4.136	2.082	1.577	0.492	0.337	0.213	20.859
L Number of students per capita									
Ratio (J / K)	0.02060	0.02047	0.02831	0.01717	0.02309	0.04719	0.00134	0.02169	0.02227
Factor									
Factor (L / L _{Aust})	0.92493	0.91939	1.27122	0.77100	1.03687	2.11909	0.06026	0.97400	1.00000

(a) Data sourced from ABS 2001 Census.

(b) Data sourced from 2004 Schools Special Data Collection.

31 The socio-demographic composition factors are revised annually to allow for changes in enrolments and State populations. Table 5 shows the assessed factors for the 2008 Update.

Table 5 Transport of Rural School Children, socio-demographic composition factor, 2008 Update

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
2001-02	0.91425	0.92677	1.28902	0.78392	1.03213	2.12138	0.06163	0.97829	1.00000
2002-03	0.91705	0.92544	1.28320	0.78154	1.03238	2.11807	0.06117	0.98553	1.00000
2003-04	0.91953	0.92349	1.27801	0.77807	1.03213	2.12285	0.06112	0.98960	1.00000
2004-05	0.92215	0.92232	1.27398	0.77429	1.03298	2.11822	0.06086	0.98463	1.00000
2005-06	0.92381	0.92077	1.27130	0.77326	1.03490	2.11899	0.06054	0.97811	1.00000
2006-07	0.92493	0.91939	1.27122	0.77100	1.03687	2.11909	0.06026	0.97400	1.00000

Dispersion factor

- 32 The dispersion factor is assessed to recognise differences in the per student cost of service provision associated with the geographic dispersion of the population.
- 33 The dispersion factor reflects the geographic distribution of students and the nature of the roads the students traverse to travel to school. The factor is not assessed by the general method adopted for most dispersion assessments. It is based on the:
- average distances travelled by rural school children;
 - the cost of travel on unsealed roads; and
 - differences in the sinuosity of States roads.

Box 5: Dispersion

Step 1: Derive average distance travelled by rural school children

The distances travelled by rural school students, separately for primary and secondary students, was obtained using the straight line distance between where they lived and the nearest school. The total distance travelled by all students was obtained by combining the number of students and the distance they travelled.

The average distance travelled was calculated by dividing the total distance by the number of students.

Step 2: Adjust for the additional cost of travel on unsealed roads

State roads were apportioned between sealed and unsealed. School buses travelled on only one third of unsealed roads, the other two thirds were treated as out of scope. Travel on unsealed roads was more costly than travel on sealed roads. So, a cost weight was applied to the length of unsealed roads.

An adjustment was calculated by combining the length of sealed and weighted in-scope unsealed roads and dividing by the total length of State roads.

Step 3: Calculate the sinuosity of State roads (Sinuosity Index)

The sinuosity of State roads was estimated by comparing (for the roads travelled by rural students) actual road distances to straight line distances.

Step 4: Derive the adjusted average distance

Derive the adjusted average distance by multiplying the values for average distance, adjusted for unsealed roads and the Sinuosity Index.

Step 5: Derive the dispersion factor

The factor was calculated by dividing each State's adjusted average distance by the Australian adjusted average distance.

34 **Average distance travelled.** Table 6 sets out the derivation of the average distance travelled by rural school children for 2006-07.

Table 6 Derivation of the average distance travelled by rural school children, 2006-07

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Primary Students									
A. Number	67 873	49 873	55 071	17 846	17 803	11 751	253	2 448	222 918
B. Distance travelled	775 629	465 728	603 806	262 098	194 263	100 271	1 559	57 129	2 460 483
Secondary Students									
C. Number	80 780	59 457	60 139	18 369	20 491	13 442	203	2 730	255 611
D. Distance travelled	1 126 719	820 270	913 958	360 278	347 199	180 600	1 312	81 707	3 832 042
Total Students									
E. Number (A + C)	148 653	109 330	115 210	36 215	38 294	25 193	456	5 178	478 529
F. Distance travelled (B + D)	1 902 348	1 285 998	1 517 764	622 376	541 461	280 871	2 871	138 836	6 292 525
Average distance student travelled									
Distance (F / E)	12.80	11.76	13.17	17.19	14.14	11.15	6.30	26.81	13.15

35 **Cost of travel on unsealed roads.** The condition of the roads travelled by rural school children varied across States. The Commission made an adjustment to take this difference into account. It calculated the proportion of travel on unsealed roads and applied a cost weight for the additional costs due to the poorer condition of those roads.

36 The lengths of sealed and unsealed roads were calculated using data from a variety of sources.

- The length of highways was split between National and State highways using AustRoads information on the proportion of national highways within each State. National highways were assumed to be sealed roads (Table 7).
- State highways were combined with State arterial and other main roads. These roads were split between sealed and unsealed using data derived from a report by the Commission's roads data consultant (Table 8).
- The total length of sealed roads was obtained by combining:
 - National highways;
 - the sealed proportion of State highways, arterials and other main roads; and
 - other sealed roads (Table 9).
- The total length of unsealed roads was obtained by combining:

- the unsealed proportion of State highways, arterials and other main roads; and
- other unsealed roads (Table 9).

37 Table 7 shows the derivation of the length of sealed and unsealed roads.

Table 7 Deriving the length of national highways in each State

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Highways (km)									
A. Total length highways ^(a)	9 558	6 871	8 876	3 019	3 387	1 877	80	1 615	35 285
B. Proportion national highways ^(b)	0.2574	0.1210	0.3286	0.5232	0.5652	0.1594	0.1711	0.4272	0.3404
C. Length national highways (A * B)	2 460	831	2 917	1 580	1 914	299	14	690	10 705
D. Length State highways (A - C)	7 098	6 040	5 959	1 440	1 473	1 578	66	925	24 580

(a) Data obtained from MapBasic program.

(b) Information obtained from by AustRoads.

Table 8 Apportioning State roads between sealed and unsealed roads

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
A. Length State highways	7 098	6 040	5 959	1 440	1 473	1 578	66	925	24 580
B. Total length main roads ^(a)	22 019	11 601	8 706	12 191	6 783	1 606	210	1 002	64 117
C. Total length (A+B)	29 117	17 641	14 665	13 631	8 256	3 185	276	1 927	88 696
D. Proportion sealed ^(b)	0.7148	0.9780	0.8504	0.7822	0.9543	0.9679	0.5618	0.5289	0.8202
E. Length sealed (C * D)	20 812	17 254	12 470	10 662	7 878	3 082	155	1 019	73 332
Length unsealed (C - E)	8 305	387	2 194	2 969	378	102	121	908	15 364

(a) Data obtained from MapBasic program.

(b) Data derived from a report by the Commission's road data consultant.

Table 9 Total sealed and unsealed roads

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Total sealed roads (km)									
National highways	2 460	831	2 917	1 580	1 914	299	14	690	10 705
State highways and main roads	20 812	17 254	12 470	10 662	7 878	3 082	155	1 019	73 332
Other roads	29 152	43 355	25 738	14 330	6 160	24 978	223	3 333	147 268
Total sealed roads	52 424	61 440	41 125	26 571	15 952	28 359	392	5 042	231 305
Total unsealed roads (km)									
State highways and main roads	8 305	387	2 194	2 969	378	102	121	908	15 364
Other roads	99 125	68 825	55 588	78 036	52 915	21	489	5 734	360 734
Total unsealed roads	107 431	69 212	57 782	81 005	53 293	123	610	6 642	376 098

Table 10 Calculation of adjustment for higher cost of unsealed roads

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Sealed roads (km)									
A. Total length	52 424	61 440	41 125	26 571	15 952	28 359	392	5 042	231 305
Unsealed roads (km)									
B. Total length	107 431	69 212	57 782	81 005	53 293	123	610	6 642	376 098
C. Proportion used by buses	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
D. Length used by buses (B * C)	35 810	23 071	19 261	27 002	17 764	41	203	2 214	125 366
E. Cost weight	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
F. Weighted road length (D * E)	42 972	27 685	23 113	32 402	21 317	49	244	2 657	150 439
Adjustment for higher cost of unsealed roads									
G. Total weighted roads used by buses (A + F)	95 396	89 125	64 238	58 973	37 269	28 409	636	7 699	381 745
H. Total roads used by buses (A + D)	88 234	84 511	60 386	53 573	33 716	28 401	595	7 256	356 671
Ratio (G / H)	1.08117	1.05460	1.06379	1.10080	1.10537	1.00029	1.06832	1.06102	1.07030

38 The Commission accepted that school buses did not travel on all of the unsealed roads, it assumed they travelled on one third of unsealed roads. However, it also recognised that travel on unsealed roads was more costly than travel on sealed roads, it decided those costs were 20 per cent higher. Table 10 shows the calculation used only those roads on which school buses were assumed to travel. The adjustment was based on the ratio of weighted to unweighted road lengths.

- 39 **Sinuosity of State roads.** The average distance travelled calculation used straight line distances, but roads do not travel in straight lines. An adjustment was made for the sinuosity of State roads. The adjustment was derived using a mapping package to compare road distances to the straight line calculations. A calculation could not be made for the Northern Territory because urban centres in the Territory were more than 60 kilometres apart. The Territory’s sinuosity index was set equal to that of Western Australia (1.14).
- 40 Table 11 shows the sinuosity index assessed for each State.

Table 11 Derivation of the adjustment for differences in the sinuosity of State roads

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Sinuosity index^(a)									
Ratio	1.23	1.20	1.29	1.14	1.21	1.37	1.00	1.14	1.23
Raw factor	1.23000	1.20000	1.29000	1.14000	1.21000	1.37000	1.00000	1.14000	1.23000

- 41 The average distance travelled, the adjustment for the cost of travel on unsealed roads and the adjustment for the sinuosity of State roads are not updated annually. They were based on 2001 Census population data.
- 42 The dispersion factor was obtained by the applying the adjustment for the cost of travel on unsealed roads and the adjustment for the sinuosity of State roads are not updated annually to the average distance travelled (Table 12). The resulting adjusted average distance travelled reflects the additional costs to States arising from the distance they have to transport their rural students and the condition of the roads over which they transport them. Table 12 sets out the derivation of the dispersion factor for 2006-07.

Box 6: Scaling factors

Some factor assessments cause total assessed expenses to move away from average expenses. To prevent gaps opening up in the assessments, the Commission scales these factors to ensure total assessed expenses equals average expenses. It also scales component factors.

The scaling procedure is to:

- apply the factor to mean resident population;
- calculate the total weighted population by aggregating across States;
- divide total mean resident population by the total weighted population; and
- scale each State’s factor using this ratio.

Table 12 Derivation of the dispersion factor, 2006-07

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
A. Average distance travelled by students (km)									
Distance	12.80	11.76	13.17	17.19	14.14	11.15	6.30	26.81	13.15
Differences in use and unit costs (%)									
B. Cost of use of unsealed roads									
	8.12	5.46	6.38	10.08	10.54	0.03	6.83	6.10	7.03
C. Use of winding roads									
	23.00	20.00	29.00	14.00	21.00	37.00	0.00	14.00	23.00
D. Adjusted average (A * B * C) (km)									
Distance	17.02	14.89	18.08	21.57	18.91	15.28	6.73	32.43	17.31
Factor									
Factor (D / D _{Aust})	0.98308	0.85989	1.04432	1.24581	1.09246	0.88257	0.38856	1.87344	1.00000
Scaled factor	0.98672	0.86307	1.04818	1.25042	1.09650	0.88583	0.39000	1.88037	1.00000

(a) Factors are scaled so that the sum of assessed expenses equals average expenses.

43 Table 13 shows the assessed dispersion factor for the 2008 Update.

Table 13 Transport of Rural School Children, dispersion factor, 2008 Update

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
2002-03	0.98776	0.86398	1.04929	1.25174	1.09766	0.88676	0.39041	1.88235	1.00000
2003-04	0.98757	0.86382	1.04909	1.25150	1.09745	0.88659	0.39033	1.88200	1.00000
2004-05	0.98730	0.86358	1.04880	1.25116	1.09715	0.88635	0.39023	1.88148	1.00000
2005-06	0.98699	0.86331	1.04848	1.25077	1.09681	0.88608	0.39011	1.88090	1.00000
2006-07	0.98672	0.86307	1.04818	1.25042	1.09650	0.88583	0.39000	1.88037	1.00000

Transport services component factor

44 The transport services component factor represents the combined impact of assessed service use and assessed unit costs of transport services expenses. The Commission recognises that the costs of providing school services will vary between States because:

- the differences in the number of rural school children in each State; and
- the average distance each student travels to and from school; and
- the characteristics of the roads over which they are transported.

45 The Commission combines these influences by:

- using the number of rural school children from Table 4 as an indicator of assessed service use;
- adjusting the assessed service use differences in the cost of providing services to dispersed populations;
- dividing each State's cost weighted notional enrolments by its population; and

- calculating the component factor by dividing each States' per capita figure by the average per capita figure.

46 Table 14 shows the derivation of the transport services component factor for 2006-07.

$$\text{Transport services component factor} = [\text{socio-demographic composition} * \text{dispersion}]$$

47 The two factors influence expenses that interact. Consequently these factors are multiplied.

Table 14 Derivation of transport services component factor, 2006-07

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
A. Assessed service use									
Number of rural school children	141 207	105 797	117 072	35 746	36 404	23 200	452	4 616	464 494
B. Differences in prices and unit costs									
Dispersion (%)	-1.69	-14.01	4.43	24.58	9.25	-11.74	-61.14	87.34	0.00
C. Impact of differences in prices (A * B)									
Number	-2 389	-14 823	5 189	8 787	3 366	-2 725	- 276	4 031	0
D. Relevant Population (A + C)									
Relevant population	138 818	90 973	122 261	44 533	39 770	20 476	176	8 647	464 494
E. Population									
Number (m)	6.856	5.168	4.136	2.082	1.577	0.492	0.337	0.213	20.859
F. Relevant population per capita (D / E)									
Ratio	0.02025	0.01760	0.02956	0.02139	0.02522	0.04165	0.00052	0.04063	0.02227
G. Factor (F / F_{Aust})									
Factor	0.90928	0.79057	1.32756	0.96052	1.13274	1.87024	0.02342	1.82473	1.00250
Scaled factor	0.90701	0.78860	1.32426	0.95812	1.12992	1.86558	0.02336	1.82018	1.00000

CALCULATING CATEGORY FACTORS

- 48 Category factors measure the combined impact on a State of those circumstances that are beyond its control and that impact on its cost of providing transport of rural school children. The Transport of Rural School Children category has a single component.
- 49 Table 15 summarises the factors, for this category for the last year of the 2008 Update.

Table 15 Transport of Rural School Children, derivation of category factor, 2008 Update, 2006-07

Factors	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Transport services (component weight = 100 %)								
Socio-demographic composition	0.92493	0.91939	1.27122	0.77100	1.03687	2.11909	0.06026	0.97400
Dispersion	0.98672	0.86307	1.04818	1.25042	1.09650	0.88583	0.39000	1.88037
Component factor	0.91264	0.79350	1.33248	0.96407	1.13693	1.87716	0.02350	1.83148
A Wgted comp factor	0.90701	0.78860	1.32426	0.95812	1.12992	1.86558	0.02336	1.82018
Category factor	0.90701	0.78860	1.32426	0.95812	1.12992	1.86558	0.02336	1.82018

- (a) For each component, the component factor is calculated using the formula in the following paragraph. The weighted component factor is the component factor multiplied by the component weight. This is then population weighted to ensure that the sum of the assessed expenses equals average expenses.
- (b) Category factor is the same as the sole component factor A.

50 The category factor was calculated as follows:

$$\begin{aligned} \text{Category factor} &= \text{transport services} \\ \text{Transport services} &= [\text{socio-demographic composition} * \text{dispersion}] \end{aligned}$$

RESULTS FOR 2006-07

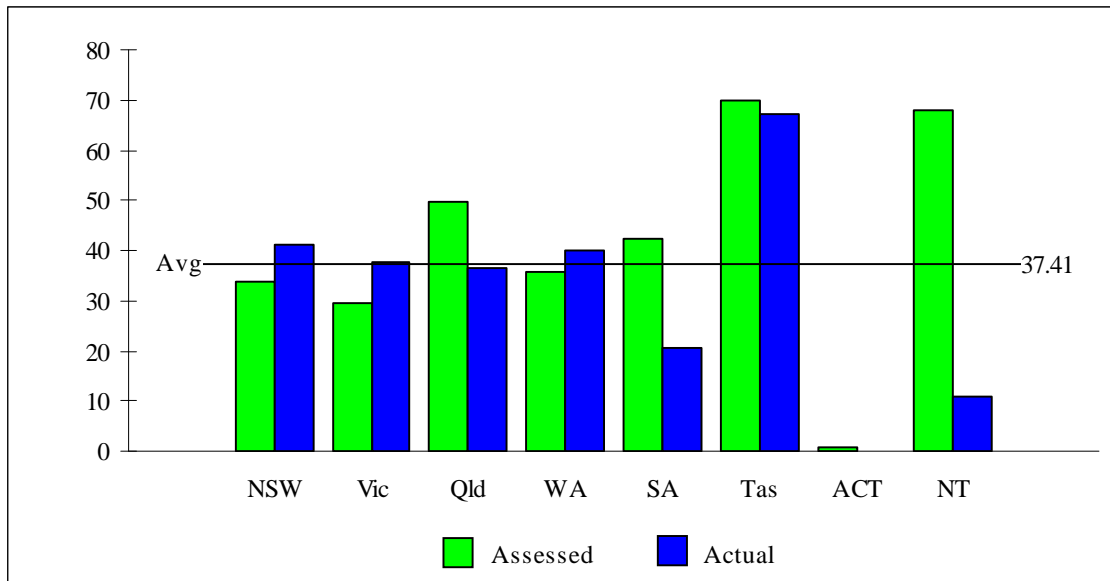
51 Assessed expenses per capita are calculated by multiplying each States' category factor by the average expense per capita. Table 16 shows, for 2006-07, the actual, average and assessed expenses per capita and the assessed cost of providing services ratios. The assessed cost of providing services ratios are equivalent to the category factors shown in Table 15.

Table 16 Transport of Rural School Children, assessment results, 2006-07

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Avg
	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc
Actual expenses	41.28	37.74	36.69	39.86	20.45	67.12	0.00	10.80	37.41
Assessed expenses	33.93	29.50	49.54	35.84	42.27	69.79	0.87	68.09	37.41
Assessed cost of providing services ratio ^(a)	%	%	%	%	%	%	%	%	%
	90.70	78.86	132.43	95.81	112.99	186.56	2.34	182.02	100.00

- (a) The cost service provision ratio is the ratio of assessed expenses per capita to average expenses per capita.
- 52 Table 23 at the end of this section shows the actual, average and assessed expenses for each State for all years of the 2008 Update.
- 53 Figure 2 illustrates the actual, average and assessed expenses for the Transport of Rural School Children category for 2006-07.

Figure 2 Transport of Rural School Children, expenses per capita — assessed, actual and average, 2006-07



CONTRIBUTION TO GST REVENUE DISTRIBUTION

54 The assessed difference from average in millions of dollars provides an indication of the impact of this assessment on GST shares. This can be calculated by:

- subtracting the average expense per capita from each State’s assessed expenses per capita; and
- multiplying by each State’s population.

55 Table 17 shows this calculation for 2006-07.

Table 17 Assessed difference from average, 2006-07

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Assessed expenses per person	\$pc	33.93	29.50	49.54	35.84	42.27	69.79	0.87	68.09	37.41
Assessed difference from average per person	\$pc	-3.48	-7.91	12.13	-1.57	4.86	32.38	-36.54	30.68	0.00
Population	m	6.856	5.168	4.136	2.082	1.577	0.492	0.337	0.213	20.859
Assessed difference from average	\$m	-23.8	-40.9	50.2	-3.3	7.7	15.9	-12.3	6.5	0.0

56 Table 18 shows the assessed difference from average in millions of dollars. The average over these amounts over the five year assessment period provides an indication of the impact of the assessment on GST shares. The actual impact depends on the growth in the size of the pool between the assessment years and the application year.

Table 18 Assessed difference from average, 2008 Update

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust ^(a)
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
2002-03	-21.4	-32.4	40.9	-1.8	6.2	13.2	-10.2	5.4	65.7
2003-04	-23.1	-36.3	45.3	-2.3	6.8	14.8	-11.2	6.0	72.9
2004-05	-21.6	-35.2	43.7	-2.5	6.6	14.1	-10.8	5.8	70.2
2005-06	-22.4	-37.5	46.1	-2.8	7.0	14.8	-11.4	6.1	74.1
2006-07	-23.8	-40.9	50.2	-3.3	7.7	15.9	-12.3	6.5	80.3
Average	-22.5	-36.5	45.2	-2.5	6.8	14.6	-11.2	6.0	72.6

(a) Total redistribution. It is the sum of the positive (or the negative) items in the row.

57 The impact of the Transport of Rural School Children category on the distribution of GST revenue and health care grants (hereafter GST revenue) is equal to the average from the table above scaled by the growth in the pool. This impact can be sub-divided to show the effect of each factor.

58 Table 19 shows the category's contribution to the distribution of GST revenue. It also shows the contribution of each factor and component.

Table 19 Transport of Rural School Children, 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
Transport services									
Socio-demographic composition	-21.8	-16.3	45.9	-18.9	2.1	22.0	-12.7	-0.2	69.9
Dispersion	-3.7	-28.5	8.0	21.0	6.1	-2.2	-8.2	7.5	42.7
Component factor	-26.8	-43.6	54.8	-3.1	7.9	17.0	-13.2	7.1	86.8
Redistribution from EPC resulting from the 2008 Update assessment									
	-26.8	-43.6	54.8	-3.1	7.9	17.0	-13.2	7.1	86.8

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 of its factors' redistribution.

DIFFERENCES FROM AN EQUAL PER CAPITA ASSESSMENT

59 The table indicates that the disabilities which had the biggest impact on the assessment were:

- socio-demographic composition factor — which recognised differences in the proportion of students who live in rural areas and attend school; and
- dispersion — which recognised the distances rural students had to travel to school, the additional costs for transporting them on unsealed roads and the additional costs of road sinuosity.

- 60 The category factor reflected the following on a State by State basis:
- *New South Wales* – New South Wales had a negative GST revenue redistribution. It had a below average proportion of rural students in its population, they lived closer to the schools they attended, but they were more likely to travel on unsealed roads.
 - *Victoria* — Victoria had the largest negative GST revenue redistribution. It had a below average proportion of rural students, they lived closer to the schools they attended, they were more likely to travel on sealed roads and travel on roads that were less circuitous.
 - *Queensland* — Queensland had the largest positive GST revenue redistribution. It had an above average proportion of rural students, they lived further from the schools they attended and were more likely to travel on roads that were more circuitous. However, they were more likely to travel on sealed roads.
 - *Western Australia* — Western Australia had a negative redistribution. It had a below average proportion of rural students. In part, this was due to a greater number of its rural students being assessed to access distance education. This negative influence was partly offset by its rural students living further from the schools they attended and being more likely to travel on unsealed roads.
 - *South Australia* — South Australia had a positive GST revenue redistribution. It had an above average proportion of rural students, the lived further from the schools they attended and they were more likely to travel on unsealed roads.
 - *Tasmania* — Tasmania had a positive GST revenue redistribution. It had an above average proportion of rural students and they were more likely to travel on roads that were circuitous. These negative influences were partly offset by the students living closer to the schools the attended and being more likely to travel on sealed roads.
 - *The ACT* — The ACT had a negative GST revenue redistribution. It had a below average proportion of rural students, they lived closer to the schools they attended, were more likely to travel on sealed roads and on roads that were less circuitous.
 - *The Northern Territory* — It had a positive GST revenue redistribution. Of all States, its rural students lived furthest from the schools they attended, but they were more likely to travel on sealed roads and on roads that were less circuitous. It also had a below average proportion of rural students.

CHANGES IN GST REVENUE DISTRIBUTION: 2008 UPDATE COMPARED TO 2007 UPDATE

Effect of assessment on distribution of the GST revenue

- 61 Table 20 shows the redistribution of GST revenue resulting from the assessments in the 2007 Update and the 2008 Update. It also shows the sources of change.

62 Changes in the distribution of GST revenue between the 2006 Update and the 2007 Update were brought about because the Commission:

- used revised average expenses data and other revised data in updating factor calculations for the years 2001-2002 to 2005-06; and
- replaced 2001-2002 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 which affect the relative costs of the services.

Table 20 Transport of Rural School Children, effect of the 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
Redistribution from EPC resulting from the 2007 Update assessment (a)	-28.8	-43.9	56.5	-3.0	8.0	17.2	-13.4	7.3	89.0
Effect of revising category averages and factors for 2001-02 to 2005-06									
Category average	-0.2	-0.3	0.4	0.0	0.1	0.1	-0.1	0.1	0.7
Category factors	0.9	-0.2	-0.5	0.0	-0.1	0.0	0.0	-0.1	0.9
Interactions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.7	-0.5	-0.1	0.0	-0.1	0.1	-0.1	-0.1	0.8
Effect of replacing 2001-02 category averages and factors with those for 2006-07									
Category average	0.6	0.9	-1.1	0.0	-0.2	-0.3	0.3	-0.1	1.7
Category factors	0.8	-0.1	-0.6	-0.2	0.1	0.0	0.0	0.0	0.9
Interactions	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Total	1.3	0.7	-1.6	-0.2	0.0	-0.3	0.3	-0.1	2.3
Redistribution from EPC resulting from the 2008 Update assessment (a)	-26.8	-43.6	54.8	-3.1	7.9	17.0	-13.2	7.1	86.8
Total effect of revisions and updating (b)	2.0	0.2	-1.7	-0.2	-0.1	-0.2	0.2	-0.2	2.4

- (a) Using the same pool and populations that were used to calculate the 2008 Update redistribution.
 (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.

63 Compared with an equal per capita assessment, the 2008 Update redistributed \$86.8 million from New South Wales, Victoria, Western Australia and the ACT to the other States.

64 Table 21 shows the changes in GST revenue attributable to changes in each factor arising from both revising data for 2001-02 to 2005-06 and replacing 2001-02 data with 2006-07.

Table 21 Transport of Rural School Children, effect of the change in the 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
Transport services									
Socio-demographic composition	2.1	-0.3	-1.1	-0.1	-0.1	-0.4	0.0	-0.1	2.1
Dispersion	0.0	0.3	-0.1	-0.2	-0.1	0.1	0.0	0.0	0.4

Note: The total change may not equal the total effect of revisions and updating on the previous table due to the effect of interactions between factors.

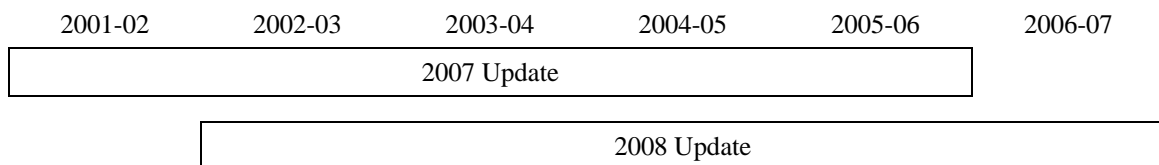
WHAT HAS CHANGED?

65 The main changes the Commission examines are:

- revisions to the financial and assessment data that were used in the 2007 Update; and
- advancing the assessment period one year — a new year enters the assessment period and the oldest year drops out.

66 Figure 3 shows the assessment periods for the two inquiries.

Figure 3 Advancing the assessment period, 2008 Update



67 The effect of revisions is estimated by replacing 2007 Update data with 2008 Update data for the years 2001-02 to 2005-06. The effect of advancing the assessment period one year is estimated by comparing the data of the new year entering the assessment period (2006-07) with the financial and assessment data of the year dropping out (2001-02). In both cases, the Commission considers the impact of replacing financial data (actual expenses) separately from the effect of replacing assessment data (category factors).

Changes due to revising average expenses and factors for years 2000-01 to 2004-05

68 **Revising average expenses.** Upward revisions were made to average expenses for 2001-02, 2004-05 and 2005-06. This increased the category’s redistribution of GST revenue (\$0.7 million) and increased the GST revenue shares of the States assessed to have above average costs of providing services ratios (Queensland, South Australia, Tasmania and the Northern Territory). The revisions were the result of State UPF data overstating State spending on this service in 2005-06 and reclassifications by States of education spending in earlier years.

- 69 **Revising category factors.** Revisions to States' assessed cost of providing service ratio led to a small redistribution of GST revenue (\$0.9 million) towards New South Wales. This change was the result of ABS revisions to mean resident population for the years 2001-02 to 2005-06.

Changes in State circumstance —replacing 2000-01 with 2005-06 data

- 70 **Replacing average expenses.** Since 2001-02, State spending on this function has increased (30.7 per cent), but it has not kept pace with the growth in the GST pool (43.9 per cent). Consequently, replacing the 2000-01 average expenses with 2005-06 average expenses has led to a reduction in the size of the category's GST redistribution (\$1.7 million). It has reduced the GST distribution to States assessed to have above average cost of providing services ratios (Queensland, South Australia, Tasmania and the Northern Territory) and has increased the distribution to the other States.
- 71 **Replacing category factors.** The assessed cost of providing services ratio increased between 2001-02 and 2006-07 for New South Wales and South Australia (Table 22). Consequently, replacing the 2001-02 category factors with 2006-07 factors increased the GST distribution to those States (\$0.9 million). The shares of the other States were reduced. Rural students were a smaller proportion of total population in 2006-07 than in 2001-02 for all States, but the fall was slower than average in New South Wales and South Australia.
- 72 Table 22 shows the actual expenses and implied costs of providing services for 2001-02, the year that drops out of the assessment period and 2006-07, the year that comes into the assessment period.

Table 22 Transport of Rural School Children, actual expenses and cost of service provision, 2001-02 to 2006-07

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Avg
	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc
Actual expenses									
2001-02	34.21	30.92	31.86	29.26	15.41	50.71	0.00	5.04	30.55
2006-07	41.28	37.74	36.69	39.86	20.45	67.12	0.00	10.80	37.41
	%	%	%	%	%	%	%	%	%
Change between 2000-01 and 2005-06	20.67	22.04	15.17	36.24	32.66	32.36	0.00	114.33	22.45
	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc
Assessed expenses									
2001-02	27.41	24.31	41.06	29.79	34.39	57.10	0.73	55.90	30.55
2006-07	33.93	29.50	49.54	35.84	42.27	69.79	0.87	68.09	37.41
	%	%	%	%	%	%	%	%	%
Assessed cost of providing services ratio									
2001-02	89.73	79.56	134.39	97.50	112.56	186.91	2.39	182.97	100.00
2006-07	90.70	78.86	132.43	95.81	112.99	186.56	2.34	182.02	100.00

This chapter was prepared by the Expense — Education section of the Commonwealth Grants Commission. If you have any questions about its content please contact Nick Reddan on (02) 6229 8869 or nick.reddan@cgc.gov.au.



Date: 29/2/08

Table 23 Assessment of expenses, Transport of Rural School Children

	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	\$
Average Expenses		32.16		35.30		33.68		35.10		37.41
New South Wales										
Assessed differences	- 21.414	- 3.22	- 23.090	- 3.45	- 21.604	- 3.21	- 22.368	- 3.29	- 23.849	- 3.48
Expenses - Assessed	192.532	28.94	213.134	31.85	205.147	30.47	215.923	31.80	232.624	33.93
Actual	252.581	37.97	271.189	40.52	263.299	39.11	254.000	37.41	283.000	41.28
Victoria										
Assessed differences	- 32.376	- 6.61	- 36.283	- 7.32	- 35.248	- 7.02	- 37.530	- 7.37	- 40.866	- 7.91
Expenses - Assessed	125.050	25.54	138.650	27.98	133.801	26.66	141.162	27.73	152.448	29.50
Actual	147.556	30.14	200.778	40.51	172.000	34.27	178.000	34.96	195.030	37.74
Queensland										
Assessed differences	40.908	10.86	45.281	11.72	43.674	11.04	46.138	11.40	50.166	12.13
Expenses - Assessed	162.063	43.02	181.621	47.02	176.922	44.72	188.251	46.49	204.878	49.54
Actual	126.000	33.44	120.000	31.07	126.000	31.85	141.000	34.82	151.749	36.69
Western Australia										
Assessed differences	- 1.752	- 0.90	- 2.259	- 1.15	- 2.514	- 1.26	- 2.779	- 1.36	- 3.262	- 1.57
Expenses - Assessed	60.587	31.25	67.212	34.15	64.844	32.42	68.775	33.74	74.627	35.84
Actual	59.000	30.44	62.000	31.50	67.000	33.50	85.000	41.70	83.000	39.86
South Australia										
Assessed differences	6.175	4.05	6.801	4.43	6.574	4.25	7.013	4.49	7.663	4.86
Expenses - Assessed	55.259	36.20	61.027	39.72	58.664	37.93	61.785	39.59	66.644	42.27
Actual	24.840	16.27	26.262	17.09	22.069	14.27	32.000	20.51	32.242	20.45
Tasmania										
Assessed differences	13.229	27.85	14.761	30.71	14.135	29.16	14.846	30.39	15.920	32.38
Expenses - Assessed	28.506	60.01	31.727	66.00	30.463	62.84	31.991	65.49	34.312	69.79
Actual	25.088	52.81	25.537	53.13	30.398	62.70	28.555	58.46	33.000	67.12
Australian Capital Territory										
Assessed differences	- 10.177	- 31.40	- 11.241	- 34.46	- 10.804	- 32.88	- 11.388	- 34.28	- 12.301	- 36.54
Expenses - Assessed	0.247	0.76	0.273	0.84	0.261	0.79	0.274	0.82	0.294	0.87
Actual	0.000	0.00	0.000	0.00	0.000	0.00	1.000	3.01	0.000	0.00
Northern Territory										
Assessed differences	5.407	27.11	6.031	30.02	5.785	28.32	6.068	29.07	6.529	30.68
Expenses - Assessed	11.820	59.27	13.122	65.31	12.665	62.00	13.394	64.17	14.490	68.09
Actual	1.000	5.01	1.000	4.98	2.000	9.79	2.000	9.58	2.297	10.80

Note: Refer to Attachment A of the 2008 Update, *Relative Fiscal Capacity of States* for how these figures are compiled

