

## Section 5

# Indicators of learning and development

### **In this section ...**

- Introduction
- The value of indicators
- Quality and availability of indicators
- List of indicators
- How to use the maps and charts in this section
- Indicators – in detail

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## Introduction

Information is presented in this section to describe, at a geographic level, key educational and developmental outcomes for children, young people and adults in South Australia. In particular, the aim is to identify inequalities that exist in these outcomes between different population groups, within the State, and between regions.

The information, presented as a series of indicators, highlights these inequalities and draws attention to the influence of social, economic and environmental factors on educational participation and outcomes, and the influence of these factors on wellbeing, learning and development. The ensuing picture is one of significant differences across the population.

While most of the data are presented for children and young people, some indicators are also provided for the whole population, to provide additional contextual information.

Summary information is also presented for selected indicators for South Australia and the other States and the Territories, as well as the Australian average (Table 1, page 63).

In addition to the information presented in this section as maps, charts and tables (and listed on page 65), information for a larger number of indicators is available on the PHIDU website at [www.publichealth.gov.au](http://www.publichealth.gov.au). It is important to be aware of the absolute numbers in an area (as shown in the spreadsheets, online), and to not just use the percentages and rates shown in the maps.

## The value of indicators

One way to gauge the impact of social, economic and environmental factors on educational outcomes and on the wellbeing of the population is through the use of indicators, both at a point in time, and by tracking their movement over time.

Indicators are summary measures of chosen events (for example, the proportion of the population completing Year 12) derived from data collections that record all cases, or a representative sample, of the events in a population.

Describing the geographic variation in indicators of inequality provides information which can be used to support progress towards reducing inequalities.

The indicators are therefore important for:

- informing people about social issues, including access to and outcomes in education;
- monitoring these issues to identify change, both between groups in the population, and over time; and
- assessing progress toward goals or achievement of policy objectives.

## Terminology

Information is presented in maps, charts and tables to describe inequalities in key educational outcomes.

The charts use the terminology highest and lowest socioeconomic status areas, which refers to the way areas have been grouped, using the Australian Bureau of Statistics' Index of Relative Socio-economic Disadvantage (IRSD).

The term 'socioeconomic' refers to the social and economic aspects of the population, where 'social' includes information about the population and their education, welfare, housing, transport etc.

It is not used in the context of 'social' as in 'social skills', 'social capital', 'social ability' or 'social behaviour' of community members. Therefore, an area described as having 'a high level of socioeconomic disadvantage' does not imply that the area has low cohesion or lacks strength as a community; rather it identifies a relative lack of resources or opportunities that are available to a greater extent in more advantaged communities.

These purposes suggest that indicators need to:

- reflect the values and goals of those who will use and apply them;
- be accessible and reliably measured in all of the populations of interest;
- be easily understood, particularly by those who are expected to act in response to the information;
- be measures over which we have some control, individually or collectively, and are able to change; and
- move government and communities to action.

## Quality and availability of indicators

The indicators presented in this report and on the World Wide Web were selected because they describe the extent of inequality in educational access, participation and outcomes, in the context of the demographic and socioeconomic composition in South Australia.

They are also those for which reliable data are available, in particular data which can be mapped to show variations by area, across Adelaide and country South Australia.

The smaller numbers presented in this section of the atlas were chosen as they highlight the considerable inequalities that exist within the State.

In some cases, data are not available to show variations between population groups for some aspects of the social, economic and environmental

factors that we wish to show. In others, the data are not what we would choose to present, but are the best available.

For example, the report includes estimates of the number of children and young people in preschool, primary and secondary education, and the percentage of their age group attending school. Ideally, these data would be based on enrolment data from the three school systems (enrolments in government schools, through the Department of Education and Children's Services (DECS); and in non-government schools, both in the Catholic schools sector and in other non-government (independent) schools). However, such data are not available in a form suitable for showing variations between population groups, for which we need geographic data (by Statistical Local Area (SLA)) – see the notes in the Appendix. As this is important information, data from the 2006 Population Census have been used as a proxy for enrolments: the limitations of this approach are described in the notes in the Appendix.

Despite these limitations, the student data that are available provide a useful and reliable guide to variations between groups in the population. This is the case for many data items that have limitations when used as measures for individuals, but prove to be reliable indicators when aggregated for groups in the population.

In one instance, data have been included that relate only to students in government schools, and not to all schools. That is the information describing the results of the 2008 National Assessment Program – Literacy and Numeracy (NAPLAN). Under this program, students in Years 3, 5, 7 and 9 are assessed using national tests in the aspects (referred to in this report as areas) of reading, writing, language conventions (spelling, grammar and punctuation) and numeracy. These data were available for government schools by the usual address, at the SLA level, of the school and of the student. In this atlas, the data by student residence have been used.

Although data for students in the other (non-government) systems location were not available, a decision was taken to map the data for government schools.

There are other topics for which we would have liked data, but which were not available at the small area level. Examples include homelessness, refugees, different forms of disability, children in the care and protection system, and young carers. In the education sector, in addition to enrolment data mentioned above, data for NAPLAN scores (see below) and students with a disability that included the non-government sectors would have increased the value of the analysis.

## How to use the maps and charts in this section

For each indicator listed on page 65, there is an introductory statement as to the relevance of the indicators presented in describing educational opportunities and outcomes. This is followed by a discussion under the following headings, as the data allow:

- Key points
- Geographic variations
- Regional totals
- Socioeconomic status
- Remoteness
- Correlations

The introductory statement for each indicator is necessarily brief, because of the space limitations; however, the notes appended to each indicator in the online mapping software are sometimes more extensive, as is the information presented in the earlier sections of the report.

The following notes give an overview as to how the atlas may be used. Additional detail as to the indicators, including definitions and data sources, are on the pages describing each indicator, and in the Appendix: these have not been included with the indicator descriptions because of the limited space available.

It is important to use not only the maps and graphs in the atlas, but to access the online maps and datasheets which show, as well as the percentages and rates in the maps, the number of events, or people represented by the rates.

## Geographic variation

Two maps are shown for most variables in the atlas. The first is a map at the Statistical Local Area (SLA) level for metropolitan Adelaide, represented by the metropolitan State Regions: in brief, SLAs represent whole or parts of Local Government Areas (LGAs), as well as covering areas of the State not incorporated into LGAs.

The second map is of the whole State, by SLA, but with metropolitan Adelaide mapped as one area. This enables comparisons to be made of the percentages, ratios etc. in Adelaide with those in the non-metropolitan areas, referred to as country South Australia. Urban centres (towns) with a population of 1,500 or more which are separate SLAs, and for which a range of data is available, are shown as circles on the map.

Readers should note that the maps reflect the distribution of the population for whom the particular event is recorded (e.g., number of

students; children and young people admitted to hospital) showing location (at the SLA level) of their usual residence, as coded from the address information in the various statistical data collections. That is, the maps are not of the location of the school, or of the hospital.

In many cases, the ranges mapped in the metropolitan and country maps will vary, as they do between maps. This should be taken into account when using the maps. In addition, readers should refer to the spreadsheets available on the PHIDU website, as some areas with relatively high percentages or rates may have a relatively small number of cases.

## Cautions

The comparisons made in the report are between SLAs. Readers should note that there are also variations, and sometimes substantial variations, within SLAs, both in metropolitan Adelaide and country South Australia. As such, the figures for an SLA represent the average of the different groups within the SLA.

## How best to read the data and maps

### How can I best find out about the population in the area where I live/ work?

Some readers will want to identify a particular area, where they live or work, to see how it compares with other areas across the indicators. The key map at the end of the report folds out to allow one to find a geographic area of interest. Although the maps are small, the areas are large enough to follow from page to page, noting the location and size of the variations.

### What are the predominant patterns in the data across Adelaide or in country South Australia?

Other readers will want to get an overview of the distribution of the population across all indicators, or across a particular range of indicators.

The distribution of the population in Adelaide is such that this is relatively easy to follow, with many of the maps showing a distinctive pattern (**Map 1** and **Map 2**). For country areas, it may be helpful to identify the names of the towns mapped as circles to assist in understanding the overall patterns (**Map 3** and **Map 4**): these towns are the only urban centres which are SLAs, and for which data are available at the SLA level. Again, the key map at the end of the report will be useful.

The geographic distribution at the SLA level in metropolitan Adelaide of the populations described in **Map 1** and **Map 2** are clearly similar. **Map 1** shows the distribution of jobless families (that is, families where no parent is employed) and **Map 2** shows the percentage of children living in each SLA who were in Year 3 in a government school in

2008, who had scores in the NAPLAN test for reading which were below the national minimum standard.

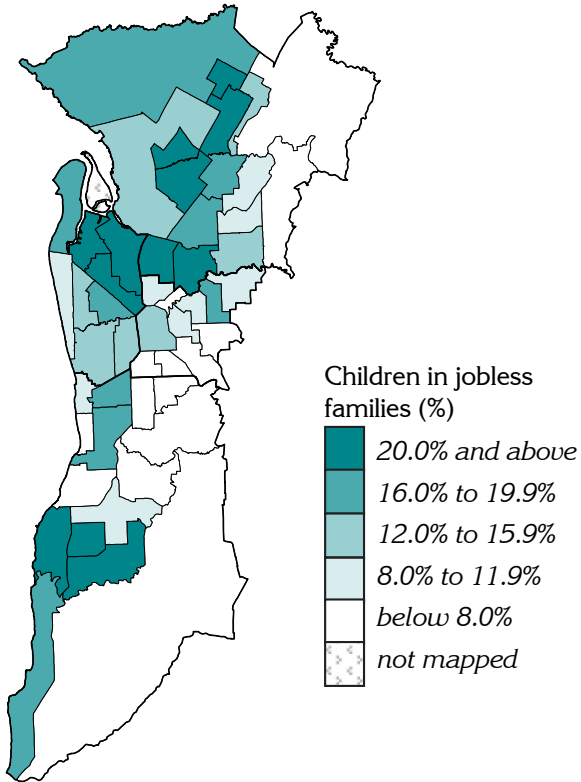
The pattern is one replicated in many of the maps, and highlights, in the darker shades, areas with socioeconomically disadvantaged populations.

Mapping data for country South Australia poses a number of challenges, mainly arising from the relatively small population and large numbers of large and sparsely settled SLAs. For example, areas in country South Australia are often mapped in a grey shade, referred to in the legend as 'not mapped'. In the majority of cases, this refers to there being fewer than five events (students, hospital admissions) of children or young people living in the area; these areas have not been mapped as the data are likely to be unreliable. A small number of areas are not mapped because they have a population below 100 children and young people: Maralinga Tjarutja and Torrens Island are examples.

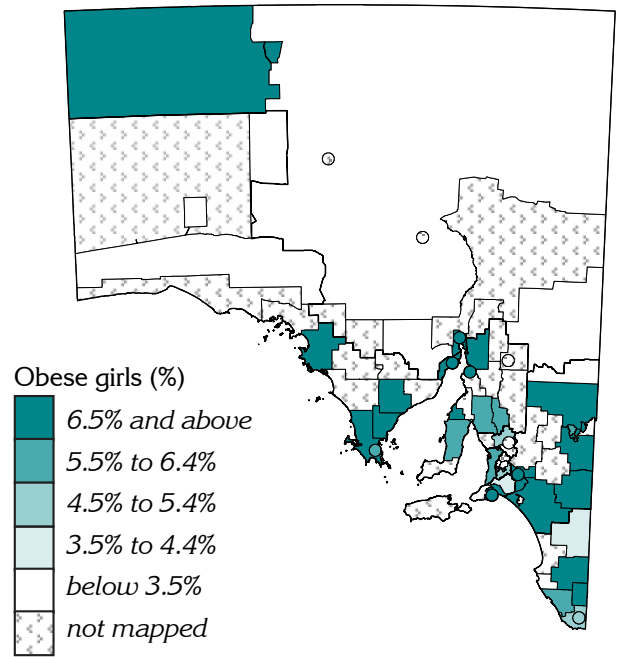
In addition, the large size of some SLAs in the far north of the State can distort the message the map is presenting. This is particularly so where an area is mapped in the darkest shade, thereby dominating the map – even though the number of events might be relatively small.

Some of these issues can be seen in **Map 3** (four year old girls assessed as being obese) and, to a lesser extent, in **Map 4** (reading scores under NAPLAN, as described above for **Map 2**).

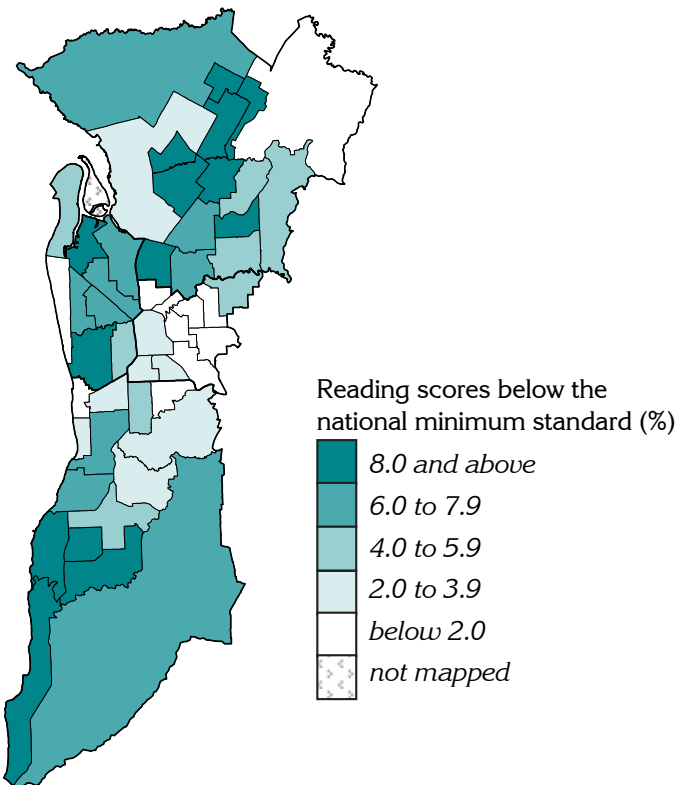
**Map 1: Children living in jobless families, Adelaide, 2006**



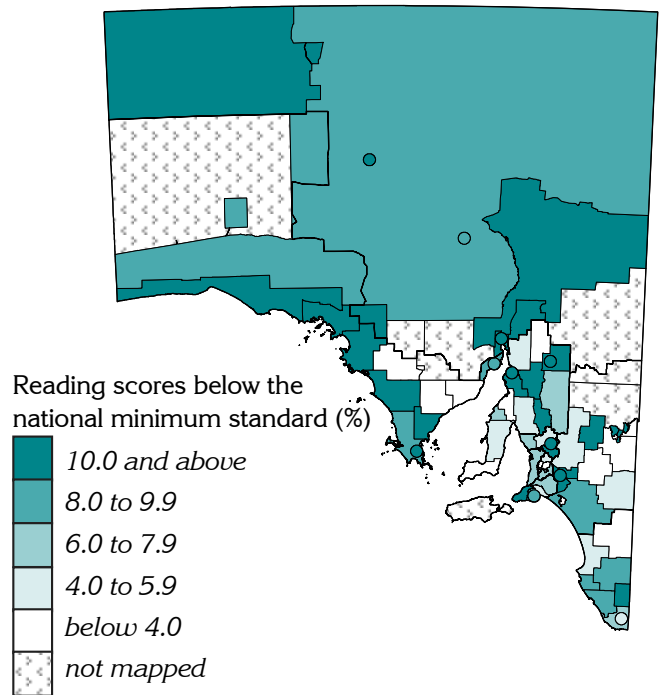
**Map 3: Obese four year old girls, South Australia, 2004 to 2007**



**Map 2: Children in Year 3 at government schools with below-average reading scores, Adelaide, 2008**



**Map 4: Children in Year 3 at government schools with below-average reading scores, South Australia, 2008**



**Regional totals**

For each indicator, the data are shown in a table by State Region, with sub-totals for metropolitan Adelaide and country South Australia.

## Socioeconomic status

The data for each indicator have also been presented to show the extent of variation within metropolitan Adelaide (and, separately, within country South Australia) by socioeconomic status. This is achieved by grouping SLAs into five groups based on socioeconomic status, using the Index of Relative Socio-economic Disadvantage (IRSD) score for the population in each SLA, as calculated by the Australian Bureau of Statistics (ABS) from data collected at the 2006 Population Census. Group 1 comprises the SLAs with the highest IRSD scores (highest socioeconomic status, or most advantaged areas) and group 5 comprises the SLAs with the lowest IRSD scores (lowest socioeconomic status, or most disadvantaged areas). Each group comprises approximately 20% of the total population in the area under analysis (e.g., metropolitan Adelaide or country South Australia). Rates are then calculated for each indicator for each of the groups.

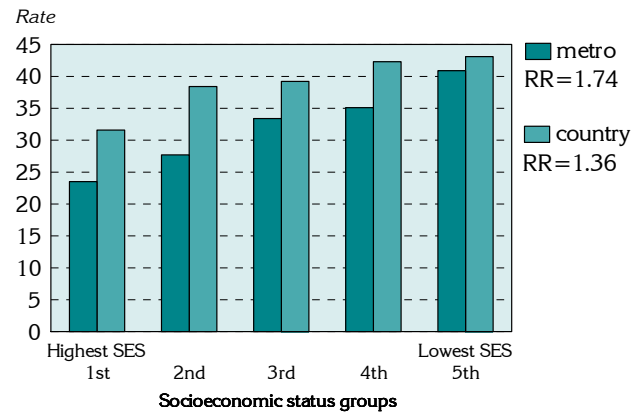
The graphs also include a 'rate ratio' (RR), which shows the difference between the average percentage or standardised rate for that indicator (e.g., early school leavers) in the most disadvantaged areas (group 5) and the most advantaged areas (group 1). It is a measure of the extent of inequality between the highest and lowest SES groups.

In the example below (**Figure 2**), the percentage of the population whose highest completed level of schooling was Year 10 was 74% higher for the population in the most disadvantaged areas in metropolitan Adelaide, compared with the highest socioeconomic status (SES) areas – this is an RR of 1.74. In country South Australia, although the differential between the lowest and highest SES areas is smaller (36%), the rates are higher in each SES group, and range from 31.6% to 43.1%. Those who did not attend school are counted in this group.

The increment in rates across the SES groups, where each successive group has a higher rate, is referred to as 'the socioeconomic gradient'.

The 'rate' referred to is the age standardised rate per 100,000 population, which allows comparisons between the populations in the SLAs mapped, or the SES groups, regardless of differences in the age structure of the populations of the areas. Had the data not been age standardised, comparisons could be affected to the extent that areas have, for example, older populations, who may have had fewer opportunities to remain at school beyond Year 10, or to go to school, in comparison with later generations.

**Figure 2: Highest level of schooling completed: Year 10 or below, by socioeconomic status, South Australia, 2006**

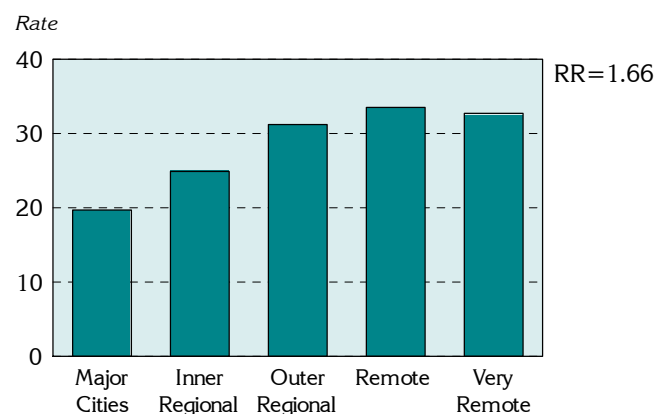


For all of the domains of the AEDI there were a relatively large number of SLAs in country South Australia with no children assessed as being developmentally vulnerable: it is unclear whether the results reflect the true situation, or whether there are no children, or too few teachers or completed checklists, to meet the AEDI criteria for release. As such these data should be used with caution: the addition of data from the second round of collection in 2010 may assist in clarifying this situation.

## Remoteness

For each variable in the atlas, details were calculated of the average percentage or rate, for each of the five ASGC Remoteness classes. For example, for participation in vocational education and training, the average percentage of the population in SLAs in remoteness class 1 (Major Cities) was calculated and shown in a graph with the average percentage in each of the other four classes (**Figure 3**). The rate ratio (RR) shows the overall differential between the Very Remote and Major Cities areas to be 66%, a rate ratio (RR) of 1.66. The remoteness classification thereby provides a summary measure of the characteristics of the population, for each variable, categorised by accessibility to the largest populated centres.

**Figure 3: Participation in vocational education and training, by remoteness, South Australia, 2008**



As noted, above, for the socioeconomic status groups, there are a relatively large number of SLAs in country South Australia with no children assessed as being developmentally vulnerable: it is unclear whether the results reflect the true situation, or whether there are no children, or too few teachers or completed checklists to meet the AEDI criteria for release. As such the data for the Outer Regional, Remote and Very Remote areas should be used with caution.

## Correlations

Correlation coefficients have been produced to indicate interdependence between the indicators in the atlas and a number of other variables included in the online edition. The correlation analysis was undertaken for metropolitan SLAs and non-metropolitan SLAs.

Correlation is the degree to which one variable is statistically associated with another. The correlation coefficient is a measure of the strength of this association. When high values for one variable are matched by high values for the other (or when low values are matched by low values), then they are positively correlated. Where the interdependence is inverse (i.e., high values for one are matched by low values for another), the two variables are negatively correlated.

The Pearson product-moment correlation coefficient ( $r$ ) has been used in the analysis to indicate the degree of correlation between pairs of variables. Pearson correlation coefficients range from +1 (complete positive correlation) through 0 (complete lack of correlation) to -1 (complete negative correlation). As a general rule, correlations of plus or minus 0.30 to 0.49 are considered to be moderate; plus or minus 0.50 to 0.79 are strong; and plus or minus 0.71 or above are very strong.

A comment is made for a majority of the indicators as to the correlation between that indicator and other indicators. Due to the limited space, the statement is limited to the correlations in metropolitan Adelaide. Correlation coefficients for country South Australia for the indicators in this report and for both metropolitan Adelaide and country South Australia for a much larger number of indicators are available in spreadsheets on the PHIDU website.

## Comparisons between jurisdictions

The following table (**Table 1**) provides information for a selection of indicators in the report to allow comparisons between South Australia and the other States and Territories, as well as with the Australian average.



**Table 1: Comparative statistics for selected education and population indicators**

Indicator	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Aust
<b><u>AEDI: percentage of five year old children developmentally 'on track', by domain of the AEDI, 2009</u></b>									
Physical health and wellbeing: Between the 25 <sup>th</sup> and 50 <sup>th</sup> percentile	21.3	20.8	24.0	<b>20.1</b>	21.2	22.5	20.4	22.8	<b>21.7</b>
Physical health and wellbeing: Above the 50 <sup>th</sup> percentile	57.2	59.9	50.8	<b>55.2</b>	56.5	54.0	45.8	53.6	<b>56.0</b>
Social competence: Between the 25 <sup>th</sup> and 50 <sup>th</sup> percentile	23.0	22.2	22.6	<b>22.9</b>	23.5	23.2	20.5	24.2	<b>22.8</b>
Social competence: Above the 50 <sup>th</sup> percentile	54.2	55.4	48.2	<b>50.7</b>	52.8	51.9	43.9	50.7	<b>52.6</b>
Emotional maturity: Between the 25 <sup>th</sup> and 50 <sup>th</sup> percentile	24.7	24.5	26.8	<b>24.7</b>	28.0	24.7	21.9	25.7	<b>25.4</b>
Emotional maturity: Above the 50 <sup>th</sup> percentile	53.5	52.8	44.7	<b>49.6</b>	45.9	51.2	43.9	49.8	<b>50.2</b>
Language and cognitive skills: Between the 25 <sup>th</sup> and 50 <sup>th</sup> percentile	19.4	18.5	35.9	<b>20.6</b>	38.9	18.9	27.7	19.5	<b>24.9</b>
Language and cognitive skills: Above the 50 <sup>th</sup> percentile	65.2	65.5	25.1	<b>62.5</b>	28.3	61.7	32.4	64.3	<b>52.3</b>
Communication skills and general knowledge: Between the 25 <sup>th</sup> and 50 <sup>th</sup> percentile	19.2	17.5	23.5	<b>19.4</b>	23.7	18.6	20.0	21.2	<b>20.2</b>
Communication skills and general knowledge: Above the 50 <sup>th</sup> percentile	55.9	59.2	49.2	<b>56.0</b>	53.2	57.4	45.0	54.0	<b>54.8</b>
<b><u>AEDI: percentage of five year old children 'developmentally vulnerable', by domain of the AEDI, 2009</u></b>									
Physical health and wellbeing	8.7	7.7	11.0	<b>10.0</b>	10.1	10.0	18.8	9.4	<b>9.3</b>
Social competence	8.8	8.4	12.1	<b>10.0</b>	7.7	8.6	18.1	8.9	<b>9.5</b>
Emotional maturity	7.4	8.3	11.0	<b>10.3</b>	8.8	8.5	15.4	9.0	<b>8.9</b>
Language and cognitive skills	5.9	6.1	15.5	<b>6.1</b>	12.0	7.7	22.4	5.7	<b>8.9</b>
Communication skills and general knowledge	9.1	8.3	10.4	<b>8.0</b>	8.9	7.0	17.5	8.9	<b>9.2</b>
Vulnerable on one or more domain of the AEDI	21.3	20.2	29.5	<b>22.7</b>	24.6	21.8	38.5	22.1	<b>23.4</b>
<b><u>NAPLAN: percentage of students below the national minimum standard, 2008</u></b>									
<b>Year 3</b>									
Grammar & punctuation	3.9	2.0	11.7	<b>6.1</b>	11.2	7.4	38.2	4.2	<b>6.5</b>
Spelling	3.0	1.9	10.7	<b>5.8</b>	9.6	6.7	37.0	4.1	<b>5.8</b>
Reading	4.0	2.1	11.0	<b>5.4</b>	9.6	6.2	35.6	3.6	<b>6.1</b>
Writing	1.5	1.1	5.7	<b>1.9</b>	3.9	1.9	24.6	1.6	<b>2.9</b>
Numeracy	2.2	0.8	6.2	<b>3.1</b>	4.6	2.3	21.4	1.5	<b>3.3</b>
<b>Year 5</b>									
Grammar & punctuation	5.3	2.8	9.5	<b>6.2</b>	9.9	7.7	37.0	3.0	<b>6.5</b>
Spelling	4.6	3.4	10.1	<b>7.3</b>	9.6	9.3	36.4	5.7	<b>6.7</b>
Reading	5.7	3.9	11.5	<b>7.4</b>	10.1	9.4	36.1	3.8	<b>7.5</b>
Writing	4.0	3.6	8.9	<b>5.7</b>	8.2	6.4	32.3	3.6	<b>5.9</b>
Numeracy	4.8	3.0	8.1	<b>6.9</b>	8.1	7.0	29.4	3.6	<b>5.9</b>
<b>Year 7</b>									
Grammar & punctuation	6.1	4.7	8.3	<b>6.8</b>	10.8	8.0	38.5	5.0	<b>7.2</b>
Spelling	5.2	4.2	8.1	<b>5.6</b>	8.3	7.9	35.1	4.2	<b>6.3</b>
Reading	4.0	2.6	5.5	<b>4.6</b>	6.3	5.3	31.6	2.8	<b>4.6</b>

Comparative statistics for selected education and population indicators ...cont

Indicator	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Aust
<b>Year 7 ...cont (%)</b>									
Writing	5.9	4.9	8.5	5.6	8.9	9.3	35.1	5.6	6.9
Numeracy	3.4	1.8	3.6	3.5	4.3	4.1	22.8	1.9	3.4
<b>Year 9</b>									
Grammar & punctuation	8.0	6.5	10.5	9.0	12.0	11.7	34.9	5.1	9.0
Spelling	7.3	7.3	11.1	9.6	11.7	12.1	33.5	5.6	9.1
Reading	5.1	3.6	8.2	6.1	7.6	6.4	28.2	3.1	5.9
Writing	10.6	8.1	14.9	10.5	13.9	15.3	34.7	10.8	11.6
Numeracy	4.8	3.1	6.4	5.8	7.1	7.1	24.0	3.1	5.2
<b>Secondary education (%)</b>									
Full-time participation in secondary school education at age 16, 2006	73.7	79.9	73.6	78.3	69.0	67.6	52.1	81.8	74.8
Apparent retention rates, 2008									
- Year 7/8 to 10	97.3	98.8	101.5	101.6	102.2	100.4	86.3	98.9	99.3
- Year 7/8 to 11	81.1	93.1	91.4	97.0	94.3	74.5	77.9	97.6	88.8
- Year 7/8 to 12	69.6	79.4	78.0	74.4	73.6	64.8	60.1	85.2	74.5
<b>Post-secondary education (%)</b>									
Participation in vocational education and training, 15 to 24 years, 2008	8.3	8.6	6.9	8.0	6.5	8.8	9.8	5.6	7.9
<b>Learning or earning (%)</b>									
Young people at ages 15 to 19 earning or learning, 2006	79.1	82.6	77.0	78.4	77.8	77.8	58.6	84.4	79.1
<b>Child health and wellbeing indicators (% , other than Infant mortality (rate per 1,000 live births))</b>									
Birthweight: low birthweight babies, early to mid-2000's	6.3	7.1	n.y.a.	7.0	7.1	6.7	9.9	6.8	n.a.
Smoking: Young mothers smoking in pregnancy, early to mid-2000's	14.2	n.a.	n.y.a.	19.7	17.2	26.4	29.9	14.5	n.a.
Infant mortality: deaths before one year of age, 2002-06	4.7	4.8	5.2	4.0	4.4	4.8	9.7	5.4	4.8
Immunisation: children fully immunised at 12 months, 2008	91.4	91.7	90.8	91.8	89.9	92.0	90.3	93.7	91.3
Child abuse or neglect (0 to 18 years): notifications, 2007/08	8.2	5.1	7.1	5.2	2.7	7.9	11.4	7.1	6.3
Disability: profound or severe core activity restrictions (0 to 24 years) living in the community, 2006	1.4	1.5	1.6	1.8	1.4	1.6	1.0	1.4	1.5
<b>Population indicators (% , other than IRSD – score with base of 1000)</b>									
Summary measure of disadvantage: IRSD score, 2006	1000	1010	1000	979	1007	961	878	1066	1000
Children in welfare-dependent and other low income families, 2006	22.5	20.7	21.6	23.3	20.4	25.6	26.6	13.1	21.7
Welfare-dependent population: Females receiving the Parenting Payment, 2009	5.5	5.0	5.9	5.9	5.2	7.0	6.4	3.1	5.4
Welfare-dependent population: people receiving an unemployment benefit, including CDEP, 2009	4.4	3.9	4.6	4.7	3.8	5.6	11.7	1.9	4.3
Welfare-dependent population: people 15 to 24 years receiving an unemployment benefit, 2009	5.5	4.6	6.0	6.2	4.3	7.9	8.6	2.5	5.4
Educational attainment, whole of population: proportion left school before Year 11, 2006	41.4	32.6	40.6	34.0	36.0	51.0	39.3	25.4	37.9

Note: See Appendix for definitions and data sources