

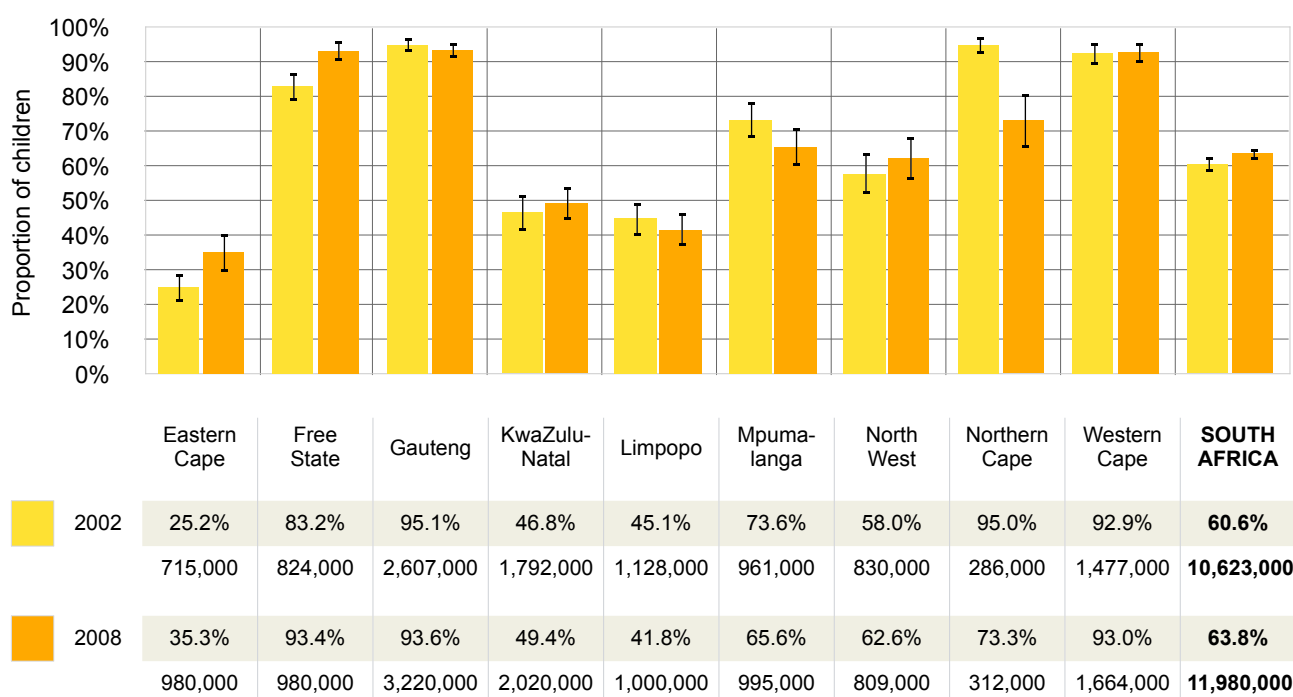
## Housing and Services - Access to adequate water

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### Definition

This indicator shows the number and proportion of children who have access to a safe and reliable supply of drinking water at their homes – either inside the dwelling or on site. This is used as a proxy for access to adequate water. All other water sources, including public taps, water tankers, dams and rivers, are considered inadequate because of their distance from the dwelling or the possibility that water is of poor quality.



**Source**

- Statistics South Africa (2003 - 2009) General Household Survey 2002 - 2008. Pretoria, Cape Town: Statistics South Africa.
- Analysis by Katharine Hall & Double-Hugh Marera, Children's Institute, University of Cape Town.

**Notes**

1. Children are defined as persons aged 0 – 17 years.
2. Population numbers have been rounded off to the nearest thousand.
3. Sample surveys are always subject to error, and the proportions simply reflect the mid-point of a possible range. The confidence intervals (CIs) indicate the reliability of the estimate at the 95% level. This means that, if independent samples were repeatedly taken from the same population, we would expect the proportion to lie between upper and lower bounds of the CI 95% of the time. The wider the CI, the more uncertain the proportion. Where CIs overlap for different sub-populations or time periods we cannot be sure that there is a real difference in the proportion, even if the mid-point proportions differ. CIs are represented in the bar graphs by lines at the top of each bar.

## What do the numbers tell us?

Clean water is essential for human survival. The World Health Organisation has defined the minimum quantity of water needed for survival as 20 litres per person per day.<sup>1</sup> This includes water for drinking, cooking and personal hygiene. This water needs to be supplied close to the home, as households that travel long distances to collect water often struggle to meet their basic daily quota. This can compromise children's health and hygiene.

Young children are particularly vulnerable to diseases associated with poor water quality. Gastro-intestinal infections with associated diarrhoea and dehydration are a significant contributor to the high child mortality rate in South Africa, and recent outbreaks of cholera in some provinces pose a serious threat to children in those areas. Lack of access to adequate water is closely related to poor sanitation and hygiene. In addition, children may be responsible for fetching and carrying water to their homes from communal taps, or rivers and streams.

It is of concern, then, that as many as seven million children live in households without access to clean drinking water on site. In 2008 around three-quarters (73%) of adults lived in households with drinking water on site – a significantly higher proportion than children (64%). A year-on-year comparison from 2002 to 2008 suggests that there has been little improvement in children's access to water over the seven-year period. A slight change in question formulation in the General Household Survey reduces the comparability of data before and after 2005 (see Technical Notes below). The effect of this change would, if anything, result in an exaggerated increase in reported access to water after 2005. This is not evident in the data.

Provincial differences are striking. Over 90% of children in the Free State, Gauteng and the Western Cape provinces have an adequate supply of drinking water. However, access to water remains poor in KwaZulu-Natal (49%), Limpopo (42%) and the Eastern Cape (35%). The Eastern Cape appears to have experienced the greatest improvement in water provisioning since 2002 (when only 25% of children had water on site).

Children living in formal areas are more likely than those living in informal or traditional dwellings to have services on site. While the majority of children in formal dwellings (75%) and informal dwellings (67%) had water in their home or on the property in 2008, only 17% of children living in 'traditional' housing had clean water available on the property.

The vast majority of children living in 'traditional' dwellings are African, and so we see pronounced racial inequality in access to water. Just 58% of African children had clean water on site in 2008, while over 95% of all other population groups had clean drinking water at home.

## Technical notes

The General Household Survey asks questions about the household's main source of water. From 2002 to 2004 there was a single question that asked about the household's main water source (for all purposes). Since 2005, the question was split into two parts so that respondents report the main water source for drinking water and for water that is used for other purposes. Since then, *Children Count – Abantwana Babalulekile* presents the main source of drinking water because of the importance of having clean water for children and babies. The slight change in question formulation means that 2002 and 2007 data are not directly comparable.

This indicator only tells us how many children have access to the infrastructure to deliver clean drinking water to children's homes. It does not give any indication of how many households have broken facilities, are unable to pay for water, have experienced interruptions in their water, or have been cut off for non-payment.

Policy guidelines on basic water supply indicate that water may be off-site, but must be within 200 metres of the house.<sup>2</sup> This child-centred indicator has therefore used a slightly narrower definition and defines 'adequate' as being on site. Collecting water from a public source is physically burdensome and can be dangerous, especially for children.

For purposes of measuring and monitoring persistent racial inequality, population groups are defined as 'African', 'Coloured', 'Indian', and 'White'.

## Strengths and limitations of the data

The data are derived from the General Household Survey <sup>3</sup>, a multi-purpose annual survey conducted by the national statistical agency, Statistics South Africa, to collect information on a range of topics from households in the country's nine provinces. The survey uses a sample of 30,000 households. These are drawn from Census enumeration areas using multi-stage stratified sampling and probability proportional to size principles. The resulting estimates should be representative of all households in South Africa.

The GHS sample consists of households and does not cover other collective institutionalised living-quarters such as boarding schools, orphanages, students' hostels, old age homes, hospitals, prisons, military barracks and workers' hostels. These exclusions should not have a noticeable impact on the findings in respect of children.

### Changes in sample frame and stratification

The current master sample was used for the first time in 2004, meaning that, for longitudinal analysis, 2002 and 2003 may not be easily comparable with later years as they are based on a different sampling frame. From 2006, the sample was stratified first by province and then by district council. Prior to 2006, the sample was stratified by province and then by urban and rural area. The change in stratification could affect the interpretation of results generated by these surveys when they are compared over time.

### Provincial boundary changes

Provincial boundary changes occurred between 2002 and 2007, and slightly affect the provincial populations. Comparisons on provincial level should therefore be treated with some caution. The sample and reporting are based on the old provincial boundaries as defined in 2001 and do not represent the new boundaries as defined in December 2005.

### Weights

Person and household weights are provided by Statistics South Africa and are applied in Children Count – Abantwana Babalulekile analyses to give estimates at the provincial and national levels. Survey data are prone to sampling and reporting error. Some of the errors are difficult to estimate, while others can be identified. One way of checking for errors is by comparing the survey results with trusted estimates from elsewhere. Such a comparison can give an estimate of the robustness of the survey estimates. For this project, GHS data were compared with estimates from the Statistics South Africa's mid-year estimates, as well as the Actuarial Society of South Africa's ASSA2003 AIDS and Demographic model.

Analyses of the seven surveys from 2002 to 2008 suggest that over- and under-estimation may have occurred in the weighting process:

- When comparing the weighted 2002 data with the ASSA2003 AIDS and Demographic model estimates, it seems that the number of children aged 0 – 9 years was under-estimated in the GHS, while the number of children aged 10 – 19 was over-estimated. The pattern is consistent for both sexes. The number of very young males aged 0 – 4 years appears to be under-estimated by 15%. Girls in this age group have been under-estimated by 15.8%. Males in the 10 – 14-year age group appear to be over-estimated by 5.7%.
- Similarly in 2003, there was considerable under-estimation of the youngest age group (0 – 9 years) and over-estimation of the older age group (10 – 19 years). The pattern is consistent for both sexes. The results also show that the over-estimation of males (9%) in the 10 – 19-year age group is more than double the over-estimation for females in this age range (3.8%).
- In the 2004 results, it seems that the number of children aged 7 – 12 years was over-estimated by 6%, as well as the number of persons aged 13 – 22 years. The number of very young children appeared to have been under-estimated. The patterns of over- and under-estimation appear to differ across population groups. For example, the number of White children appears to be over-estimated by 14%, while the number of Coloured persons within the 13 – 22-year age group appears to be 9% too low.

- In 2005, the GHS weights seem to have produced an over-estimate of the number of males within each five-year age group. The extent of the overestimation is particularly severe for the 10 – 14-year age group. In contrast, the weights produce an under-estimate of the number of girls – the error seems greatest in respect of the younger age groups. These patterns result in male-to-female ratios of 1.06, 1.13, 1.10 and 1.09 respectively for the four age groups covering children (ie 0 – 4, 5 – 9, 10 – 14 and 15 – 19 years).
- The 2006 weighting process yielded the same results as in 2005. The one exception is that the under-estimation of females is greatest in the 5 – 9 and 15 – 19-year age groups. This results in male-to-female ratios of 1.03, 1.10, 1.11 and 1.12 respectively for the four age groups covering children.
- The 2007 weighting process produced an over-estimation for boys and an under-estimation for girls. The under-estimation of females is in the range of 3 – 5% while the over-estimation is in the range of 1 – 7%. This results in male-to-female ratios of 1.07, 1.06, 1.08 and 1.08 respectively for the four age groups covering children.
- Overall, assuming the ASSA2003 Aids and Demographic model to be the ‘gold standard’, it appears that the GHS2008 over-estimates both male and female populations under the age of 19 years, except for 0 – 4-year-old females. The extent of over-estimation for boys is in the range 0 – 7%. It is particularly severe for boys aged 10 – 14 years. Over-estimation is in the range of 2 – 5% for girls aged five years and above. For girls aged 0 – 4 years, the ASSA2003 model suggests that these may have been under-estimated by about 1%. The GHS2008 suggests a sex ratio of 1.03 for children aged 0 – 4 years, which is higher than that of the ASSA model and Statistics South Africa's mid-year estimates.

The apparent discrepancies in the seven years of data may slightly affect the accuracy of the Children Count – Abantwana Babalulekile estimates. Since 2005 the male and female patterns vary in respect of a particular characteristic, which means that the total estimate for this characteristic will be somewhat slanted toward the male pattern. A similar slanting will occur where the pattern for 10 – 14-year-olds, for example, differs from that of other age groups. Furthermore, there are likely to be different patterns across population groups.

### Disaggregation

Statistics South Africa suggests caution when attempting to interpret data generated at low level disaggregation. The population estimates are benchmarked at the national level in terms of age, sex and population group while at provincial level, benchmarking is by population group only. This could mean that estimates derived from any further disaggregation of the provincial data below the population group may not be robust enough.

### Reporting error

Error may be present due to the methodology used, ie the questionnaire is administered to only one respondent in the household who is expected to provide information about all other members of the household. Not all respondents will have accurate information about all children in the household. In instances where the respondent did not or could not provide an answer, this was recorded as “unspecified” (no response) or “don’t know” (the respondent stated that they didn’t know the answer).

## References

- <sup>1</sup> Ki-moon B (2007) Children and the Millennium Development Goals: Progress towards a World Fit for Children. UNICEF: New York
- <sup>2</sup> Department of Water Affairs and Forestry (1994) White Paper on Water Supply and Sanitation. Pretoria: DWAF
- <sup>3</sup> Statistics South Africa (2003-2008). General Household Survey 2002-2008 Metadata. Cape Town, Pretoria: Statistics South Africa



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