Trends in universal primary education, child and maternal mortality in the context of the millennium development goals in South Africa with particular reference to North West and Gauteng Provinces of South Africa

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ABSTRACT

In this paper we examine progress on the education and demographic goals of the MDGs in North West and Gauteng provinces of South Africa. In response to major development concerns raised in a series of global conferences, development ministers of different countries have over the years formulated development strategies and set quantitative goals and targets. There are 8 Millennium Development Goals (MDGs) and 18 targets measured by 48 indicators. Sources of data utilised in computing the MDG indicators in this paper included the 1996 and 2001 censuses and the 2007 community survey. The indicators were computed using direct and indirect methods. The results indicate mixed progress in the North West and Gauteng provinces with regard to the MDGs. The results provide an assessment of progress towards achieving the MDGs dealing with universal education and child and maternal mortality in North West and Gauteng provinces of South Africa.

Key words: Millennium Development Goals, universal primary education, child mortality, maternal mortality, North West province, Gauteng province, South Africa

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INTRODUCTION

Indicators provide objective quantitative and qualitative criteria for evaluating and monitoring progress on implementation of policies and interventions relating to socioeconomic development. A number of initiatives have been undertaken in this regard internationally and locally. Williams and Smith (2000) cited in Udjo et al (2000a, 2000b), provide a comprehensive review of such initiatives, which include, among others, the Minimum National Social Data Set (MNSDS) of the United Nations (UN); the Basic Social Services for All (BSSA) of the UN and Development Assistant Committee (DAC)/World Bank/UN's working core set of indicators of Development Progress (IDP). In a series of UN global conferences there was concern about major development issues including education (Jomtien, Thailand 1992), children (New York 1990), the environment and development (Rio de Janeiro, 1992), population and development (Cairo 1994), social development (Copenhagen 1995) and women (Beijing 1995).

In response to these issues, in 1996, development ministers of OECD countries formulated a strategy for development based on seven international goals. To assess progress with regard to the goals indicated above, a core set of 21 indicators (Indicators of Development Progress, (IDP)) was defined by OECD DAC, the World Bank and the UN. In addition to monitoring progress in various fields of development, the core indicators provide a yardstick for assessing the effectiveness of strategies in those fields (OECD 1998). However, aggregate measures such as the IDP and other international indicators do not adequately reflect the diversity of a country's population including that of South Africa (Udjo 2000a, 2000b).

The emphasis in recent times on the Millennium Development Goals (MDGs) to some extent is a re- enactment of previous development goals ratified in previous international initiatives and conventions. The Millennium Development Goals (MDGs), adopted by member States of the United Nations in 2000, provide a framework for development cooperation to meet the needs of the world's poorest countries. The MDGs have been integrated into an increasing number of national development plans and strategies. The MDGs offer a solid platform for advancing the development agenda of the different

countries. According to the 2005 South Africa Millennium Development Goals country Report, South Africa has demonstrated its commitment towards meeting the targets of the MDGs within the context of the country's national plan of action, Vision 2014 (The Presidency, Government of South Africa, 2005).

Since 1994, programmes have been implemented to dismantle apartheid, promote equality, non-racialism and non-sexism in South Africa. It is against this background that we examine progress on the demographic goals of the MDGs in two somewhat contrasting provinces of South Africa. The results of our paper provide a yard-stick to the progress achieved in Gauteng and North West provinces of South Africa in meeting the targets of MDGs dealing with universal education and child and maternal mortality.

Specifically the paper provides estimates and analysis of trends for Gauteng and the North-West Province on MDG Goal 2 (Achieve universal primary education), MDG Goal 4 (Reduce child mortality) and MDG Goal 5 (Improve maternal Health). The internationally agreed quantitative targets with regard to the three MDG goals are: MDG Goal 2 (Achieve universal primary education by 2015), MDG Goal 4 (reduce by two thirds, between 1990 and 2015 the under-five mortality rate) and MDG Goal 5 (Reduce by three-quarters, between 1990 and 2015 the maternal mortality rate).

DATA AND METHODS

The framework for the desk research on which this paper was based comprised the following. Pertinent literature on development indicators including the MDGs indicators was reviewed. Thereafter operational definitions and computational formulae for the relevant MDG indicators were compiled, and sources of data for computing the indicators were identified and processed to enable tabulations of the relevant variables required for the computation of the indicators. The values of the indicators were subsequently computed, analysed and interpreted. Several sources of data were utilized in computing the MDG indicators which included the 1996 and 2001 censuses as well as the 2007 Community survey. The censuses following that of 1970 and prior to the 1996 census were fragmentary in the sense that they did not canvass the entire country. The 1996 census was the first post-apartheid nation-wide census in South Africa. The 1996 census had an estimated undercount

of about 11%. The 1996 census questionnaire included pertinent variables for the computation of the MDG indicators relevant to this paper. The estimated population of South Africa in 1996 based on the census was 40.6 million (see Statistics South Africa, 1999). There were controversies surrounding the final results of the census including the estimated population size itself. However, since the focus in this paper is indicators which are essentially ratios or rates, the officially adjusted figures for the relevant variables were used in the computation of the MDG indicators using data from the 1996 census.

The 2001 South African Population Census was the second post-apartheid census in South Africa. The 2001 census had an estimated undercount of about 17.6%. A number of deficiencies as in the 1996 census were highlighted with regard to the 2001 Census. Of particular note regarding the demographic aspects are: the under-estimation of the 0-4 year-old age group, very low sex ratios as well as deficiencies in the fertility and mortality reports at national and sub-national levels. The estimated population size of 44.8 million by Stats SA from the 2001 Census is also controversial to the extent that different organisations and individuals, including the BMR (BMR) and the Actuarial Society of South Africa, provide different estimates for the same period.

Despite the controversies the results of the 2001 Census, it remains a comprehensive population data source for providing demographic as well as socioeconomic information at the smallest geographical unit in the country. Since the focus in this paper is indicators the officially adjusted figures of the 2001 census as in the 1996 census were used in the computation of the MDG indicators for the period 2001. The Community Survey (Stats SA 2007) was undertaken by Statistics South Africa (Stats SA) in 2007. In all, 17 098 of the total 79 466 enumeration areas in the country (excluding institutions) were sampled. The final sample comprised 947 331 individuals from 250 348 households. The community survey collected data on the demographic and socioeconomic profiles of the population and households. In broad terms, the 2007 Community Survey questionnaire included the variables in the 1996 and 2001 Census household questionnaires. Apart from a few exceptions, the questions from these three data sources are broadly comparable and hence could be indicative of trends in the values of a number of the indicators. However, the following needs to be noted regarding quality:

The data utilised in this paper have certain strengths and weaknesses. The reports on births from the 2007 Community Survey were of a better quality than those from the 1996 and 2001 Censuses. Mortality data are usually problematic in surveys and censuses. The higher female than male childhood mortality derived from the 2007 Community Survey is unusual. The national and provincial population estimates reported in the 2007 Community Survey are inconsistent with those of Stats SA's own previous reports. Despite these limitations, the 2007 Community Survey is a useful source for examining the current levels of several indicators.

Computations of Indicators

Gross and Net Enrolment Ratios

Male gross enrolment ratio is the ratio of the number of males irrespective of age enrolled in primary and secondary education to the number of persons of school going age. The numerator is the number of males irrespective of age enrolled in primary and secondary education while the denominator is the number of persons of school going age defined as population aged 6-18 years.

Net enrolment ratio in primary education is the percentage of children of primary school age who are enrolled in primary education in a given year. The numerator is the number of children of primary school age enrolled in primary schools in a given year while the denominator is the number of children of primary school age in a given year. Primary school age was defined as age 6-13 years. Net enrolment ratio in secondary education was similarly computed.

Child mortality

Infant mortality rate is more correctly defined as the probability of dying between birth and exact age 1 while under five mortality rate is defined as the probability of dying between birth and exact age 5 (expressed per thousand live births). The infant and under-five mortality rates were computed indirectly using life table techniques and based on Brass

indirect estimation methods. HIV/AIDS was incorporated into the estimates using the INDEPTH life table as a standard.

Maternal mortality

There are two conventional measures of maternal mortality: the maternal mortality ratio (maternal deaths per 100,000 live births) and the maternal mortality rate (maternal deaths per 10,000 women in the reproductive age group). See Graham (1991).

The indicator of maternal mortality presented in this study is maternal mortality ratio. Combinations of direct and indirect demographic techniques were utilized in the computation of the indicator. The numerator of the measure (the number of maternal deaths reported in households for a particular period) was directly obtained from the data sets. The denominator of the measure (the number of live births for the period) was indirectly estimated. First, the age distribution of women of reproductive age for the reference period was obtained from the data. Second, the relational Gompertz model was fitted to births in the last 12 months and children ever born reported by women of reproductive age (for the reference period) to detect and correct for reference period error in the report on current births. Third, adjusted age specific fertility rates were computed based on the parameters of the estimated Gompertz parameters. Fourth, the number of live births for the reference period was derived from the adjusted age specific fertility rates and the estimated number of women in each five year age group, 15-49. From the above results, the maternal mortality ratio was computed.

RESULTS

Universal Education
Gross Enrolment Ratios

South Africa

Figure 1 shows the trends in gross enrolment ratios by sex in South Africa as a whole during the period 1996 -2007. The trend suggests that among males, gross enrolment ratio decreased from about 110.8%% in 1996 to 98.7% in 2007. The implied female/male gross enrolment ratio of 102% in 1996 and 98.9% in 2007 appear to suggest that South Africa already achieved the international goal of (100% by 2005) in eliminating gender disparity in primary and secondary education (i.e. equal opportunity for boys and girls to participate in primary and secondary education. The gross enrolment ratio however needs to be interpreted with caution.

(Figure 1 goes here)

A gross enrolment ratio greater than 100% implies that some persons younger than the school going age (6-18 years) as well as some persons older than the school going age were enrolled in primary or secondary schools at the time of the survey/census. Thus, the female/male gross enrolment ratio of 102% in 1996 more likely implies that proportionately more girls than boys older than the school age were enrolled in schools in 1996. As seen in Figure 1, gross enrolment ratios were lower among males than females in 1996 but in 2001 and 2007, gross enrolment ratios were higher among males than females. This suggests that in 2001 and 2007, the average age of males at any given school grade was higher among males than females. The trend in gross enrolment ratio has declined substantially over time suggesting that increasingly, males and females are being enrolled at a younger age at school. The substantially higher gross enrolment ratios among males and female during the period 1996 may be a reflection of persons taking advantage of the new opportunities regarding education brought about by the new political dispensation following the demise of apartheid. Older persons than the expected school age who previously did not have access to education enrolled at school during the period 1994-1996.

North-West and Gauteng

Figures 2-3 show the trend in gross enrolment ratios in the North-West and Gauteng provinces. The figures in the graphs indicate that female/male enrolment ratio declined from 104% in 1996 to 98.7 in 2007 in the North-West province (Figure 2) while in Gauteng, it has been more or less constant at about 99% except for a slight decrease to 96.8% in 2001. Comparatively therefore, the values of the female/male enrolment ratios suggest that there is more equality in the average age of boys and girls at any given school age in Gauteng compared with the average of age of boys and girls for a given school age in the North-West Province. The female/male enrolment ratio of 99.2% in Gauteng in 2007 further suggests that the average age of boys and girls for a given school age is more or less the same.

(Figure 2 goes here)

(Figure 3 goes here)

Net Enrolment Ratios

South Africa

Figure 4 shows the national trends in net enrolment ratios and suggests a rising trend in net enrolment in primary schools. In contrast to primary school enrolment, secondary school net enrolment has been declining. Primary and secondary schools net enrolments were less than 100% for each of the periods which imply that some children who should be at primary or secondary school were not enrolled. As of 2007, for example, about 15% of children who should be in primary were not enrolled. Also as of 2007, about 18% of children who should be in secondary school were not enrolled. Thus, as of 2007, South Africa was about 15% less than the 2015 target of achieving complete primary school enrolment among children. If the trend in 1996-2007 continues, South Africa would not achieve complete primary school enrolment by 2015 as a linear regression extrapolation of the trend in 1996-2007 suggests that about 87% school enrolment would be achieved by 2015.

(Figure 4 goes here)

North-West and Gauteng

Figures 5-6 show the trends in net enrolment ratios in the North-West and Gauteng Provinces. The data suggest that in the North-West, net primary school enrolment increased from about 81% in 1996 to 92% in 2001 and decreased to 85% in 2007. In Gauteng on the other hand, net primary school enrolment declined in the last in 2001 and 2007 compared to the level in 1996. As of 2007, the level of net enrolment in primary schools in the North-West and Gauteng suggests that about 15% of children in each of the two provinces who should be in primary school were not enrolled. If the trends in primary school enrolment in 1996, 2001 and 2007 continue, by 2015 the levels of primary school enrolments in the North West and Gauteng would be about 90% and 83% respectively. Thus, it would appear that neither province would achieve complete primary school enrolment by 2015. Regarding secondary education, Net enrolment in secondary school as of 2007 was lower in Gauteng (78.1%) than in the North-West (81.1%) and imply that a greater percentage of children in Gauteng (22%) who should be in secondary school were not enrolled compared with the North-West Province (19%).

(Figure 5 goes here)

(Figure 6 goes here)

Literacy Levels

Literacy levels can be measured subjectively by asking people in a survey or census whether or not they can read and then computing the percentage literate among persons aged 15-24 from the responses to the question. In this paper, an objective approach was adopted by defining and computing literacy level of 15-24 year-olds as the percentage of persons aged 15-24 who have completed at least grade 3 level of education.

Figure 7 indicates that literacy levels among persons aged 15-24 are high in South Africa and as of 2007 about 98% of persons aged 15-24 were literate. If the trend in 1996-2007 continues, by 2015 all persons aged 15-24 in South Africa would be literate. Figures 8-9 also indicate that literacy levels among persons aged 15-24 are also high in the North-West and Gauteng provinces with Gauteng having slightly higher levels than in the North-West. If

the trends in the literacy levels in 1996-2007 in the North-West and Gauteng continue, by 2015 all persons aged 15-24 in the two provinces would be literate.

(Figure 7 goes here)

(Figure 8 goes here)

(Figure 9 goes here)

CHILD MORTALITY

Target 5 of the MDG regarding child mortality states: "Reduce by two thirds, between 1990 and 2015 the under five mortality rate" and the indicators for monitoring progress in this goal includes infant mortality and under five mortality rates. At any given age, the force of mortality is usually higher among males than females. Mortality estimates are therefore usually disaggregated by sex. Thus, in examining progress in the MDG regarding child mortality, it is adequate to examine the mortality of either sex. In this paper, we focus only on female child mortality.

South Africa

The values of female infant and under-five mortality in 1996 and 2006 for South Africa are given by Udjo (2005, 2008). According to the estimates, under-five mortality rate increased from approximately 84 per thousand female live births in 1996 to approximately 86 per thousand live births in 2006 while infant mortality rate increased from approximately 51 per thousand female births in 1996 to approximately 53 per thousand female births in 2006. It is clear from these figures that there has not been a reduction in child mortality in South Africa probably since the turn of the century.

Immunisation is associated with child survival. The report of the South Africa Demographic and Health Survey 2003 suggests that there has been a marked drop in immunization rate as only 62% of children aged 12-23 months were immunized against measles in 2003 compared to 82 percent in 1998 (see Department of Health, Medical Research Council, Orc Macro: 2007).

North-West and Gauteng

Values of infant and under-five mortality rates among females in the North-West Province and Gauteng in 1996 and 2008 are presented in Tables 1. As seen in the table, there was a substantial increase in under-five mortality rate in 2008 compared to the rate in 1996 in the North-West and Gauteng.

(Table 1 goes here)

Two reports from the Department of Health suggests that immunization coverage for measles among children aged 12-23 months dropped from about 87% in 1998 (Department of Health, Medical Research Council, Measure DHS+: 2000) to about 67% in 2003 (Department of Health, Medical Research Council, Orc Macro: 2007) in the North-West and in Gauteng, the reports suggest that it dropped even more markedly from about 84% in 1998 to about 48% in 2003. These figures would appear to suggest that South Africa has retarded in immunization coverage. There are however reservations about the quality of certain aspects of the South Africa Demographic and Health Survey 2003 and should therefore treat the trends implied with the immunization coverage with caution.

MATERNAL MORTALITY

Target 6 of the MDG states: "Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio". Information on maternal mortality ratio on South Africa is sparse with usually cited estimate coming from the South Africa Demographic and Health Surveys. The maternal mortality ratio based on the 1998 South Africa Demographic and Health Surveys was 150 per 100,000 live births for the approximate period of 1992-1998 (Department of Health, Medical Research Council, Measure DHS+: 2000). Estimates of maternal mortality were not produced at provincial levels from the 1998 South Africa Demographic and Health Surveys. Furthermore, although maternal mortality questions were included in the 2003 South Africa Demographic and Health Survey, maternal mortality estimates were not provided in the full report of the survey. Thus, the bench mark estimate of maternal mortality ratio in South Africa in this paper is that based on the 1998 South Africa Demographic and Health Survey.

(Table 2 goes here)

From the questions on deaths in the household as well as those that were pregnancy related in the 2001 South Africa census and the 2007 community survey, this paper computed maternal mortality ratio using the methods described. The results are shown in Table 2.

For South Africa as a whole, the results suggest that maternal mortality ratio increased from 150 per 100,000 live births in 1992-98 to 369 per 100,000 live births in 2001 to 625 per thousand 100,000 live births in 2007. The results also suggest that maternal mortality ratio has also increased in recent years in the North-West and Gauteng provinces with the North-West province experiencing higher maternal mortality than Gauteng. On the basis of these results, South Africa is far from achieving the MDG target of reducing maternal mortality ratio.

DISCUSSION AND CONCLUSION

The results presented in this paper regarding the MDGs: achieve universal primary education, reduce child mortality, and improve maternal health indicate mixed progress in achieving the MDGs targets in South Africa in general and in the North-West and Gauteng provinces in particular. Although the trends in literacy rates appear to indicate that by 2015, all persons aged 15-24 in the North-West and Gauteng would as be literate, neither province would achieve complete primary school enrolment by 2015.

According to the South African Schools Act of 1996, school attendance is compulsory for all children from ages 7-15 years (Grades 1-9) yet we have seen from the results of this paper that a substantial proportion of children in the North-West (19%) and Gauteng (22%) who should be at school were not enrolled at school as of 2007. In order to better inform policy there is need for more effective measurement for the extent of repeaters and dropouts in South Africa.

The results on trends in child mortality suggest that there were substantial increases in under-five mortality rates in 2008 compared to the rates in 1996 in the North-West and Gauteng. In the past, some have alluded to HIV/AIDS being the factor for increasing child

mortality in South Africa without providing convincing evidence. While HIV/AIDS may be a contributory factor, research needs to move outside the basket of HIV/AIDS in identifying other factors that may be responsible for the increasing trend in childhood mortality in South Africa so as to better inform policy. The results from this paper further indicate that maternal mortality has increased substantially in recent years in South Africa in general and in the North-West and Gauteng in particular. It is clear from the trends that neither South Africa nor the North-West and Gauteng would achieve the MDG of reducing by three quarters, between 1990 and 2015 the maternal mortality ratio. This also calls for further research to identify the specific direct causes of maternal mortality responsible for the rising trend in maternal mortality in South Africa.

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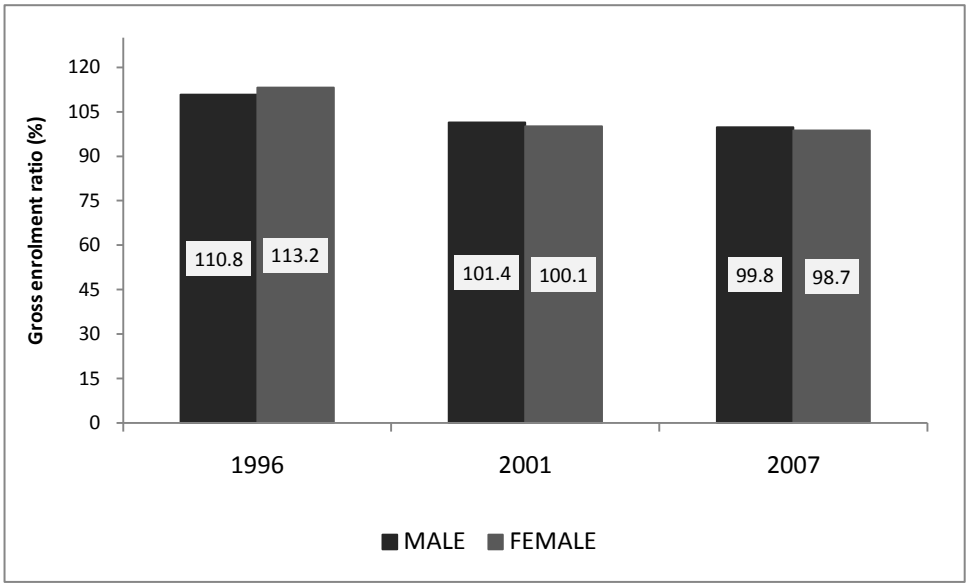
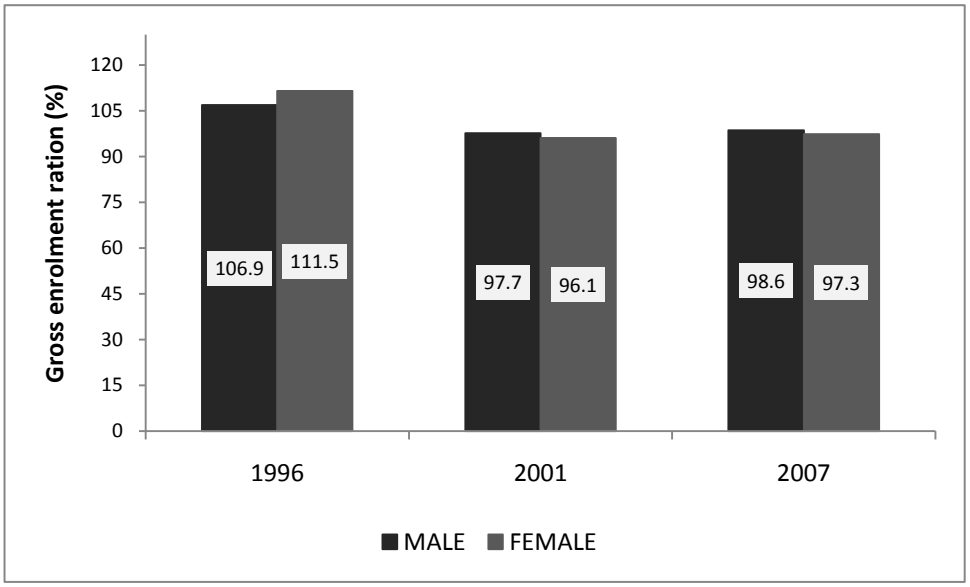
Figure 1: Gross Enrolment Ratios: South Africa, 1996 – 2007.



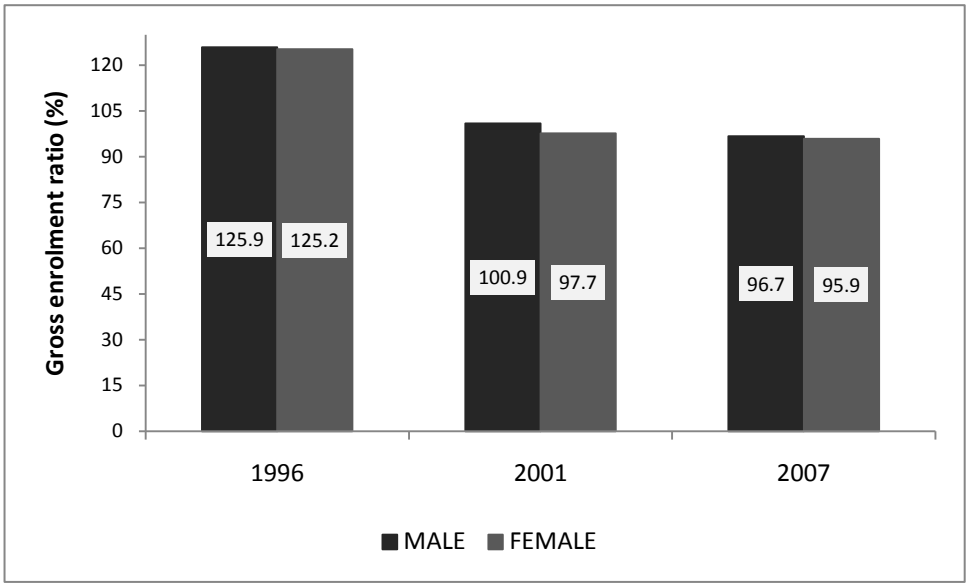
Sources: Computed from 1996, 2001 census & 2007 Community Survey

Figure 2: Gross Enrolment Ratios: North-West, 1996 – 2007.



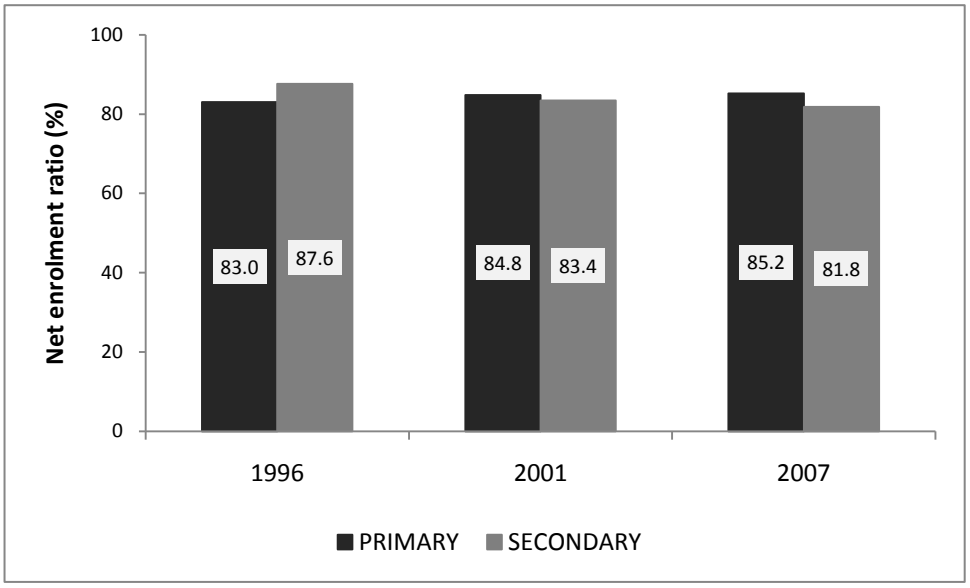
Sources: Computed from 1996, 2001 census & 2007 Community Survey

Figure 3: Gross Enrolment Ratios: Gauteng, 1996 – 2007.



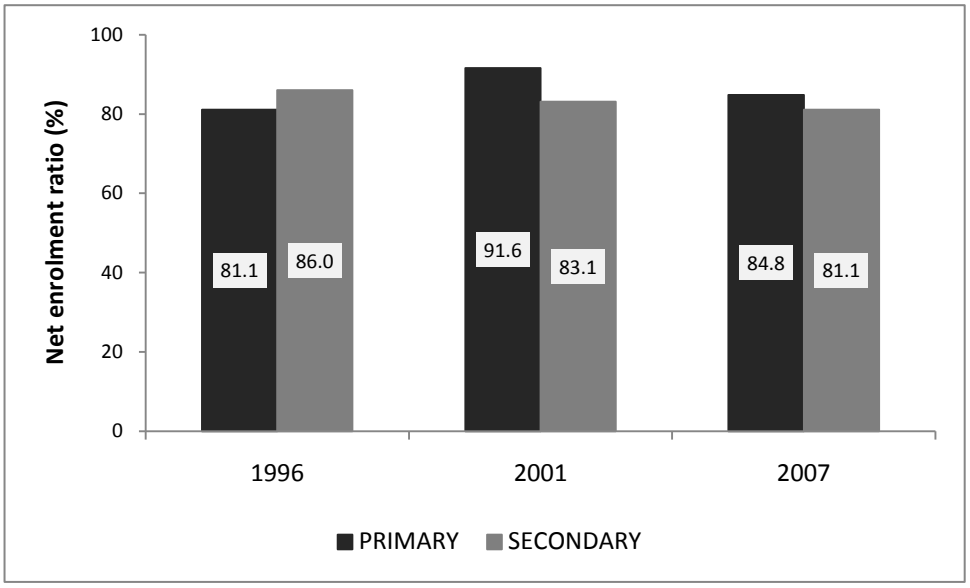
Sources: Computed from 1996, 2001 census & 2007 Community Survey

Figure 4: Net Enrolment Ratios: South Africa, 1996 – 2007.



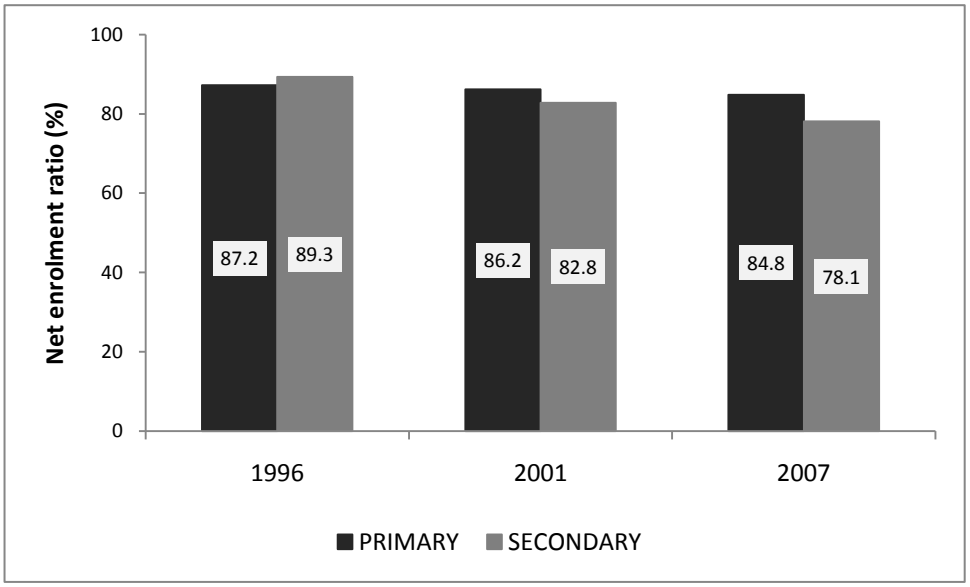
Sources: Computed from 1996, 2001 census & 2007 Community Survey

Figure 5: Net Enrolment Ratios: North-West, 1996 – 2007.



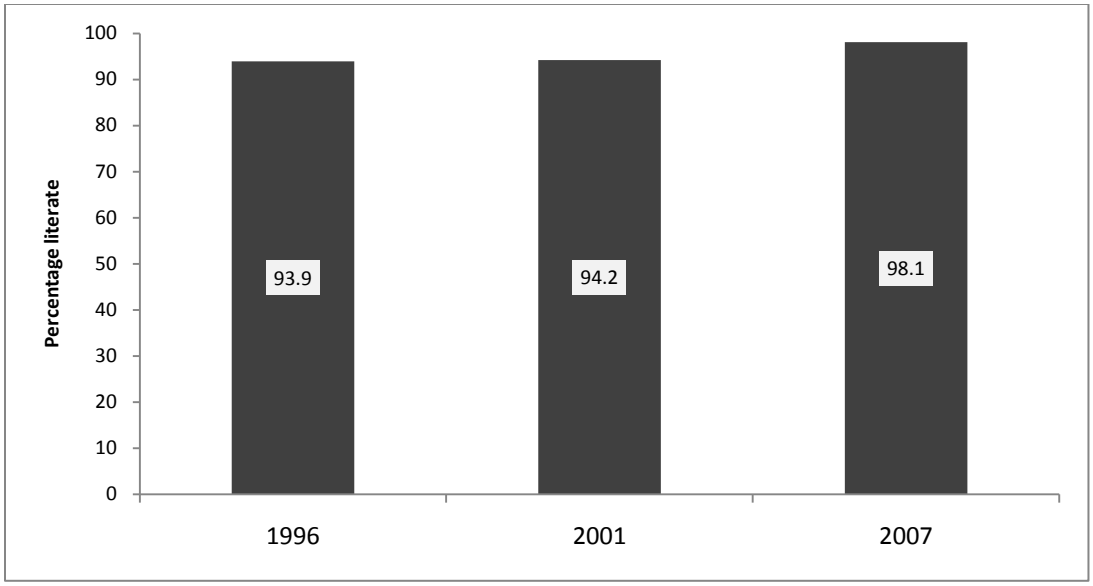
Sources: Computed from 1996, 2001 census & 2007 Community Survey

Figure 6: Net Enrolment Ratios: Gauteng, 1996 – 2007.



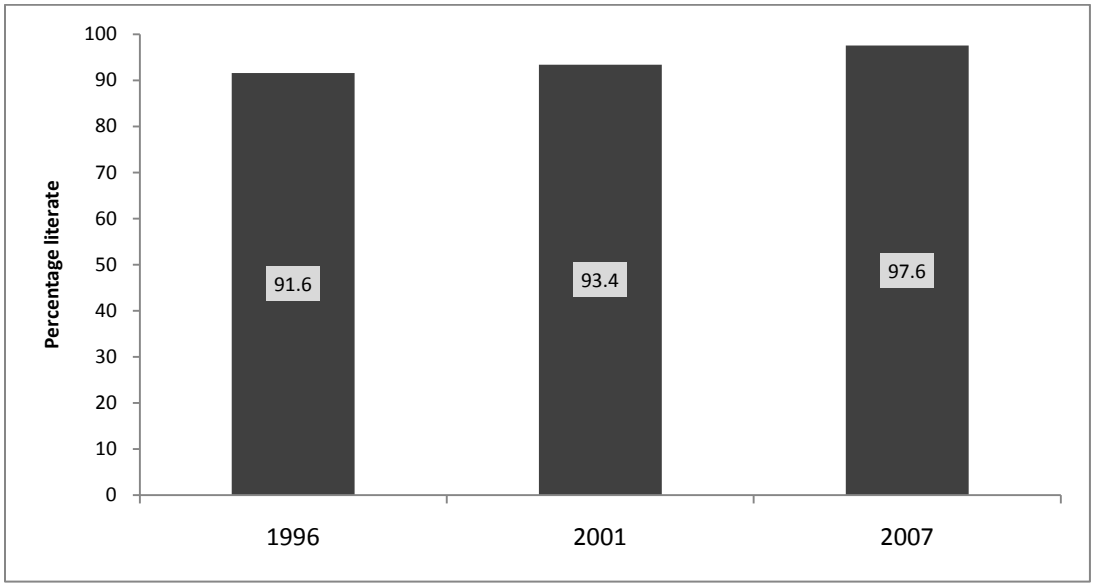
Sources: Computed from 1996, 2001 census & 2007 Community Survey

Figure 7: Percentage of Persons aged 15-24 Literate: South Africa, 1996 – 2007.



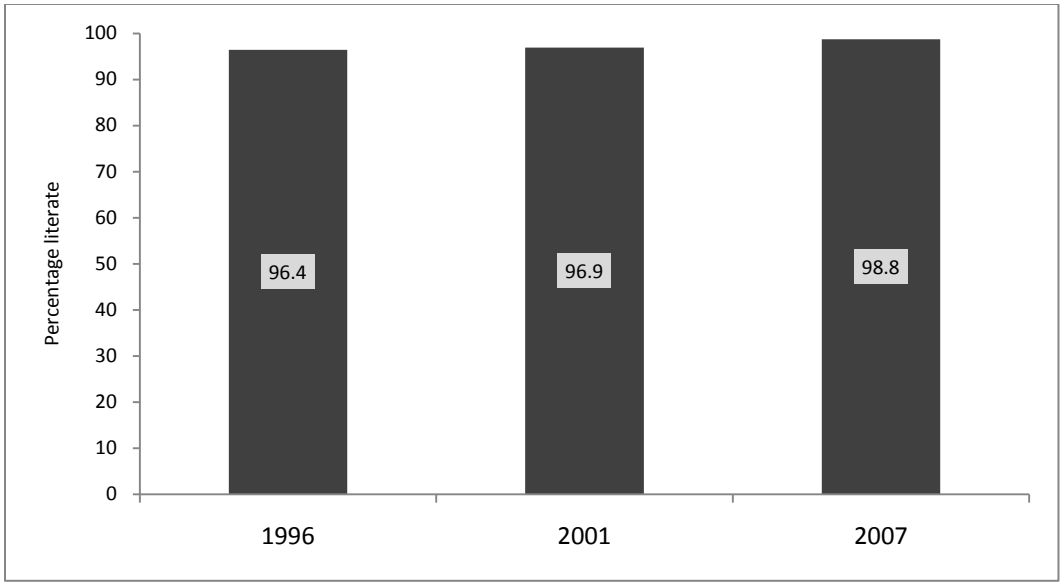
Sources: Computed from 1996, 2001 census & 2007 Community Survey

Figure 8: Percentage of Persons aged 15-24 Literate: North-West, 1996 – 2007.



Sources: Computed from 1996, 2001 census & 2007 Community Survey

Figure 9: Percentage of Persons aged 15-24 Literate: Gauteng, 1996 – 2007.



Sources: Computed from 1996, 2001 census & 2007 Community Survey

Table 1: Female Infant and Under-five Mortality Rates: North-West, 1996 and 2008.

North-West		
	1996	**2008**
Infant mortality rate per thousand female live births	58	59
Under five mortality rate per thousand female live births	94	112
Gauteng		
Infant mortality rate per thousand female live births	32	47
Under five mortality rate per thousand female live births	55	92

Sources: Computed from 1996 & 2007 Community Survey

Table 2: Maternal Mortality Ratio: South Africa, North-West and Gauteng, 2001 and 2007.

	Maternal deaths per 100,000 live births	
	2001	**2007**
South Africa	369	625
North-West	422	472
Gauteng	291	389

Sources: Computed from 2001 Census & 2007 Community Survey