

School participation from 'Birth-to-Twenty': Patterns of schooling in an urban child cohort study in South Africa

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## School Participation from Birth-to-Twenty: Pattern of schooling in an urban child cohort study in South Africa

### **Introduction**

The right to a basic education and progressive availability of further education has been enshrined in the Constitution of the Republic of South African [s 29(1)] since 1996. The South African Schools Act (1996) [s 3(1)] made it compulsory for all children to attend school from the first school day of the year in which they reach the age of seven years until the last school day of the year in which they reach the age of fifteen or the end of the Grade 9. This framework legislation embodies the South African government's commitment to principles in the 'Education for All' Dakar 2000 Declaration and the Millennium Development Goals.

As with most education policies, the implementation of compulsory basic education and progressive availability to further education is influenced by various external factors and subject to distortions and obstacles. This research paper reports on the first of three interrelated questions which form the framework for a larger school participation research programme. This initial research addresses the patterns and prevalence of initial school enrolment, late entry, attainment promotion, and repetition in urban South Africa. The paper also pays special attention to the particular gender nature of the patterns of school participation.

Unlike previous research on school participation (DoE, 2002 & 2003, Perry & Arends, 2004, Shindler & Fleisch, 2007) which relied on annual school surveys, snap surveys, and census datasets (see Shindler, 2005 for an analysis of the weaknesses of these sources), this study analyses data generated in the genuine representative cohort study, Birth-to-Twenty (Bt20). This is particularly significant as it is well documented that school and census datasets can be unreliable particularly when it comes to repetition rates. The Bt20 dataset overcomes the common errors that bias flow-rates such as over-reporting enrolment/repeaters, incorrect distinction between new entrants and repeaters, and transfers of pupils between grades and schools (UNESCO, 2007).

### **Literature Review**

But how effective is the implementation of the policy of schooling for all in South Africa? According to the Department of Education (2002), South Africa's schooling system has near universal enrolment, with a national gross enrolment ratio in 2000 of 94%; 99% in primary grades and 87% in secondary grades. The Cost of Education Report (Department of Education, 2003) puts the net enrolment rate at 97% for the compulsory education phase. Quantitative analyses undertaken by leading independent researchers confirm the findings of near universal access (Simkins, 2002). Perry and Arends (2004), based on 1997 enrolment data and projected 1996 population data, found that the NER at primary level was 92% and at secondary level, 57%. In addition they found that 3% of children aged 7 to 13 years and 23% of children aged 14 to 18 years were out of school (Perry and Arends 2004, p.310). These estimates would place South Africa at or even above what Colclough and

Lewin (1993) have suggested is the maximum feasible targets for middle income countries.

While the DoE argues that most out-of-school children and youth are out of school as a result of a disability, some non-governmental organisations and academics have argued that various economic and social barriers are keeping children out of school or making it difficult for them to keep pace with basic schooling. Evidence for this has come from studies (Anderson et al, 2001; Barbarin & Richter, 2001; Case & Deaton, 1999 and Townsend et al, 2002) which have tried to establish the causes of non-participation in education. While based on a limited opportunistic sample, the Vuk'uyithathe Research Consortium study of out-of-school children (children who had dropped out of, or never attended schools) and out-of-age, primary-school learners (Porteus et al 2000; Porteus, 2003) found that 19% of the sample comprised children that had never been in school, and 81% who had been to school but had dropped out. Important insights have also been gained from a Human Rights Watch research project. It collected data from farm schools in Mpumalanga, Free State and Limpopo in 2003 and documented cases where accessibility and availability of the right to education were being seriously hampered (Human Rights Watch 2004, p.4). Like the Vuk'uyithathe study, the Human Rights Watch (2004) identified poverty, lack of scholar transport and long distances to school, insecure labour and land tenure of parents, school fees, inadequate infrastructure and service provision, and limited secondary school options as factors affecting school children's access to and participation in education.

Recently there has been a national concern about the perceived high drop-out rates from secondary schools in South Africa. During the past year, the Minister of Education responded to newspaper reports and parliamentary statements that only 22% of the 1994 Grade 1 class wrote the matriculation examination in 2006, implying that South Africa has a drop-out rate of 78% (SAGI, 2006). While Crouch (2005) has suggested why these figures are problematic, little robust empirical research has been published on the patterns and prevalence of school participation.

While there is a growing consensus regarding the high rates of initial access to schooling in South Africa (Crouch, 2005; Shindler & Fleisch, 2007), given the limitation with the methods employed to collect and analyze initial entry, repetition, school transfer and drop-out rates, little can be said with certainty about local and regional variations, changing patterns of participation over time, determinants in the transition between phases, causes of early exit, and consequences or outcomes of school participation. Given the growing recognition that continued participation in school has positive consequences, particularly for vulnerable children (this literature has been summarized by Richter, 2006), it is critical, as a starting point, that we develop a rigorous understanding of the prevalence and patterns of school participation. A research programme that combines longitudinal cohort of children data, up-to-date large-scale survey data, and a repeat longitudinal panel data is likely to yield substantial and significant insights into the patterns, causes and consequences of school participation in South Africa.

## **Research Design**

The paper reports on a secondary analysis data generated from the Birth-to-Twenty (Bt20) cohort study. The population in this study comprises children born in public hospitals in the Greater Johannesburg region between 23 April and 8 June in 1990. For the purpose of this particular study, data from the various waves of data collection from years 4-5 to 16 years are used in addition to the data from a survey conduct participants at year 12. The focus is on an analysis of patterns of initial enrolment in Grade 1, annual promotion, and repetition.

The pilot studies, research goals, and enrolment methods of Bt20 have been documented in detail in several publications (Yach, Cameron, Padayachee et al., 1991; Richter, Yach, Cameron, Griesel & de Wet, 1995; Richter, Norris & de Wet, 2004; Richter, Norris, Pettifor, Yach & Cameron, 2007). The Bt20 cohort was defined by the timing of a singleton birth within a defined period (from 23<sup>rd</sup> April to 8<sup>th</sup> June 1990), as well as continued residence for at least six months after the birth of the child within Soweto-Johannesburg. This area covered approximately 200km<sup>2</sup> at that time, and included close to 3.5 million people, with about 400 000 informal houses or shacks. Data collection waves began in the third trimester of pregnancy, and continued through delivery, 6 months, and child years 1, 2, 3-4, 5, 7-8, 9-10, 11-12, 13, 14, 15, and, currently 17 years of age. From 13 years onwards, data was collected every 6 months (twice a year), once at a Bt20 data collection office in Soweto or Johannesburg and once at the family's home.

Data has been collected from parents and children on a wide range of indicators of socioeconomic status; community, household and family circumstances; parental health; child growth, health, wellbeing and education; and biomarkers of growth, nutrition, substance use and, more recently, sexual and reproductive health (Richter et al., 2007). The original cohort consisted of 3 273 children and their families, of whom more than 71 percent<sup>2</sup> have been followed up to age 17 years. Attrition was greatest during infancy because rural women tended to come in to urban areas to deliver their babies and to be with their migrant laboring husbands. Many of these women later returned to their rural homesteads (Norris, Richter & Fleetwood, 2007).

Tables 1, 2, 3 and 4 provide insight into the race, gender, birth place and accommodation type. The tables show that the under-representation of Indians and Whites in the study, and gender numerical parity. Because of the under representation on Indians and Whites in the study, the racial analysis in this report looks at the situation for African and Coloured pupils only and excludes Indians and Whites. The latter two tables are rough proxies for socio-economic status of the study population.

Table 1 Race Profile of Bt20 cohort, 2005

<b>Race</b>	<b>Number</b>	<b>% of total</b>
White	135	6.5
Black	1682	80.4
Coloured	241	11.5
Asian	35	1.7
Total	2093	100

<sup>2</sup> For the purposes of this particular study, the proportion of the regional cohort is closer to 63%.

Table 2 Gender Profile of Bt20 cohort, 2005

<b>Gender</b>	<b>Number</b>	<b>% of total</b>
Male	1008	48.2
Female	1085	51.8
Total	2093	100

Table 3 Profile of place of birth of Bt20 cohort, 2005

<b>Place of birth</b>	<b>Number</b>	<b>% of total</b>
Soweto	1659	79.3
Former Indian/Coloured area	244	11.7
Inner city	30	1.4
Suburban Johannesburg	150	7.2
Missing data	10	0.5
Total	2093	100.1

Table 4 Accommodation type in the Bt20 cohort, 2005

<b>Accommodation type</b>	<b>Number</b>	<b>% of total</b>
Shack	121	5.8
Flat	70	3.3
House	1360	65.0
Hostel	22	1.1
Shared house	139	6.6
Room	85	4.1
Garage	10	0.5
Cottage	1	0.0
Not applicable	90	4.3
Missing data	195	9.3
Total	2093	100.0

## **Key Findings**

In the finding section, we explore a number of features of school participation. In most cases, we have used the international standard indicators of enrolment, promotion and repetition adding in age of first entry and our own flow through indicator.

### ***Enrolment***

By 2005 over 99% of the 2 093 children in the Bt20 cohort, were still in school with a very small percentage for whom information was either not applicable or were not in school. Nearly 93% of these 15 year olds were in grades 8 to 10. Confirming earlier

studies, the Bt20 study population is enrolled and attending formal school. At the age of fifteen years, the study population in the main has successfully transitioned from the primaries to secondary schools (see table 15).

Table 5 Enrolment by grade at aged 15 of all children

<b>Grade</b>	<b>Number</b>	<b>%</b>
6>	25	1.0
7	104	5.0
8	426	20.4
9	905	43.2
10	608	29.0
11	9	0.4
Not applicable	5	0.2
Special	9	0.4
Other	2	0.1
<b>Total</b>	<b>2093</b>	<b>100</b>

### *Age of First Entry*

The South African Schools Act (1996) [s 3(1)] made it compulsory for all children to attend school from the first school day of the year in which they reach the age of seven years.<sup>3</sup> In 1997, when the children participating in the Bt20 project turned 7, 87% of the Bt20 cohort were in compliance with this age rule. A surprisingly small number of children entered school at the age of four turning five (24 children). A sizable portion entered school at the age of five turning six in the school year (42%), with the largest proportion entering at the age of six turning seven (44%). A small number, 208 children entered late. In subsequent analyses we will investigate the profile of the late starters and the schooling and other consequences of enrolling age eight or later.

Table 6 Number and percentage of pupils by gender and year starting school

<b>Year Start</b>	<b>Total</b>	<b>Percentage</b>
1995	24	1.1
1996	879	42.0
1997	923	44.1
1998	160	7.6
1999	29	1.4
2000	7	0.3
2001	1	0.0
2003	1	0.0
<b>Total</b>	<b>2093</b>	<b>100.0</b>

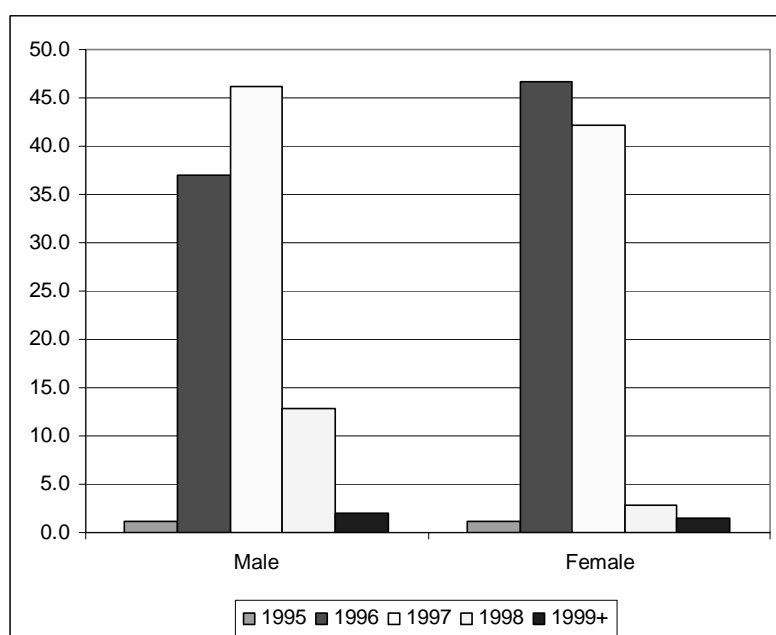
We do know one important aspect of the profile of late starters. There is a very significant difference in the gender profile of children by the year they start. Male children in the Bt20 study tended to be disproportionately late starters (over 15%) compared to females where the proportion was less than 10%. Within the official age policy, a far higher proportion of girls started school at five turning 6 than boys.

<sup>3</sup> This Act was passed when these children were 6 and by then 43.1% had already enrolled in school. By the next year when they were all 7 years old 87% of the cohort were in school

Table 7 Percentage of pupils by gender and year starting school

	Male	Female
1995	1.2	1.0
1996	36.6	46.6
1997	46.1	41.8
1998	13.0	8.2
1999+	2.2	1.4

Figure 1 Proportion of children born in 1990 according to the year in which they started school by gender



In terms of the racial profile of late starting, we can, as we stated earlier, only comment on African and Coloured children. A higher proportion of Coloured than African children started at age five turning six, but the relative proportion of late starters appears to be very similar for African and Coloured children.

Table 8 Percentage of pupils by race and year starting school

	African	Coloured	Indian	White
1995	1.2	0.8	0.0	0.0
1996	42.0	54.4	68.6	9.6
1997	42.4	33.6	28.6	85.2
1998	11.2	11.2	2.9	3.0
1999 +	2.2	0.0	0.0	0.0

### *Attainment Levels*

Once in school, how well are the Bt20 cohort progressing through the system? One way of assessing this is to summarize the grade attained by the fifteen year olds in the study.



Figure 2 Grade in 2005 at age 15

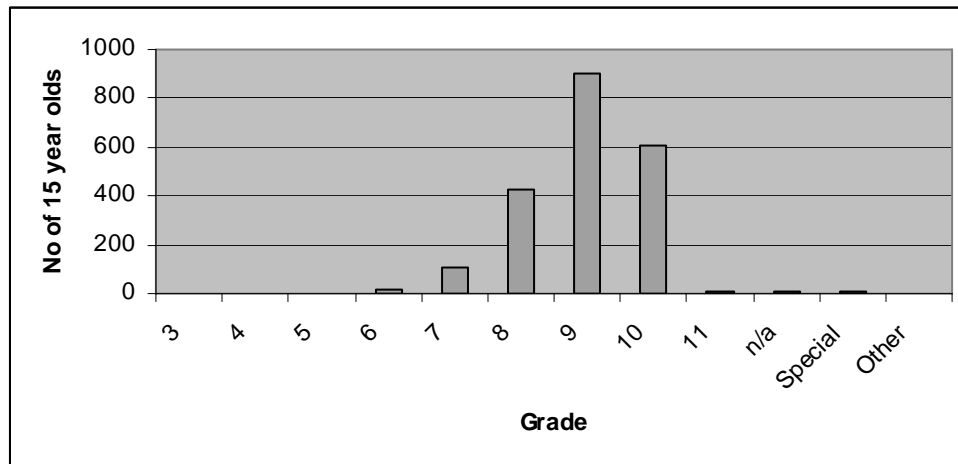


Figure 2 shows that the overwhelming majority of children are clustered in Grades 8-10, with a much smaller number in other grades. Given the assumption that between 5-10% (xx, xx) of children have moderate to severe disabilities, it is interesting to note the very small proportion of children that are enrolled in special schools or special classes.<sup>4</sup>

Table 9 Grade in 2005 at age 15

<b>New Gr 2005</b>	<b>No of Males</b>	<b>% Males</b>	<b>No of Females</b>	<b>% Females</b>
Gr 3	0	0.0	1	0.1
Gr 4	1	0.1	0	0.0
Gr 5	2	0.2	1	0.1
Gr 6	16	1.6	4	0.4
Gr 7	72	7.1	32	2.9
Gr 8	264	26.2	162	14.9
Gr 9	422	41.9	483	44.5
Gr 10	221	21.9	387	35.7
Gr 11	3	0.3	6	0.6
Other	4	0.4	1	0.1
Special Cl/Sc	2	0.2	7	0.6
Not available	1	0.1	1	0.1
<b>Total</b>	<b>1008</b>	<b>100</b>	<b>1085</b>	<b>100</b>

The gender pattern that emerged in the analysis of age of entry and late starters is evident in the patterns of attainment at age 15. At this age a significantly higher proportion of girls had reach Grade 10, 36% compared to 22% for boys. Boys are lagging considerably behind, with a higher proportion of boys in Grade 7 or below (9% compared to 3.5% for girls).

<sup>4</sup> On closer inspection, it appears that children are enrolled in specialized class and special schools, but record their grade in conventional ways, obscuring disability.

Table 10 Grade at age 15 by race

<b>Grade at 15</b>	<b>African %</b>	<b>Coloured %</b>
<Gr 6	1.5	0.8
Gr 7	5.5	4.1
Gr 8	21.7	20.3
Gr 9	40.8	40.7
Gr 10	29.3	33.6
Gr 11	0.5	0.0
Other	0.5	0.4
Special	0.1	0.0
Not available	0.1	0.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

Comparatively, African and Coloured children have a very similar attainment profile (see table 10).

#### *Promotion Rates*

Using the UNESCO standard definition of promotion rate, i.e. the total enrolment minus repeaters in Grade n expressed as a percentage of the total enrolment in the Grade n-1 the year before, we analyzed the promotion rates to grades 4 and 7.

Table 11 Percentage of Grade 1 cohort to reach grade 4 four years later and grade 7 seven years later

	<b>Grade 4</b>	<b>Grade 7</b>
1995 cohort	62.5	45.8
1996 cohort	79.1	73.3
1997 cohort	85.8	75.9
1998 cohort	84.5	73.6
1999 cohort	86.2	75.9

For the purposes of this analysis, the 1996 and 1997 cohorts are critical as the vast majority of the children in this study were part of these two cohorts. In the case of the 1996 cohort, the children enrolled in grade 1 for the first time in 1996, when they were five turning six. The 1997 cohort were children that enrolled in grade 1 for the first time at age six turning seven. While the younger cohort, i.e. children entering in the year they turned 6, had a lower promotion rate than compared to their older counterparts, but by grade 7 the promotion rate was quite similar.

Table 12 Percentage of 1996 and 1997 grade 1 cohorts to reach grade 4 four years later and grade 7 seven years later by gender

		<b>Grade 4</b>	<b>Grade 7</b>
1996 cohort	Male	73.7	65.7
1996 cohort	Female	83.0	78.9
1997 cohort	Male	82.4	68.5
1997 cohort	Female	89.3	83.6

But when the promotion rates are disaggregated by gender, the promotion gaps are large. For both the 1996 and 1997 cohorts in both Grade 4 and Grade 7, girls were promoted at a much higher rate than boys, with 15 percentage point difference by Grade 7 for the 1997 cohort. To understand how this occurs, we will analyze the grade specific repetition rates below.

Table 13 Percentage of 1996 and 1997 grade 1 cohorts to reach grade 4 four years later and grade 7 seven years later by race

		<b>Grade 4</b>	<b>Grade 7</b>
1996 cohort	African	79.5	73.4
1996 cohort	Coloured	74.8	69.5
1997 cohort	African	84.2	72.9
1997 cohort	Coloured	87.7	77.8

Comparing African and Coloured learners, there is no consistent pattern. Among the 1996 cohort, African children were promoted more frequently than their Coloured counterparts. This trend was reversed for African and Coloured children in the 1997 cohort.

## *Repetition Rates*

In this section, we look at another of the standard UNESCO indicators, i.e. the repetition rate by grade. The repetition rate per grade is the proportion of pupils enrolled in a given grade at a given school-year who study in the same grade in the following school-year. In ideal circumstances, the repetition rate should be close to zero, with a high rate suggesting internal efficiency problems. Compared across grades, the pattern can indicate specific grades in which children may be particularly likely to fail. Unlike typical analyses of repetition rates which depend on unreliable or biased flow-rates, the Bt20 cohort data is likely to be extremely reliable as the data is verified against annual school report cards.

Table 14 Repetition rates

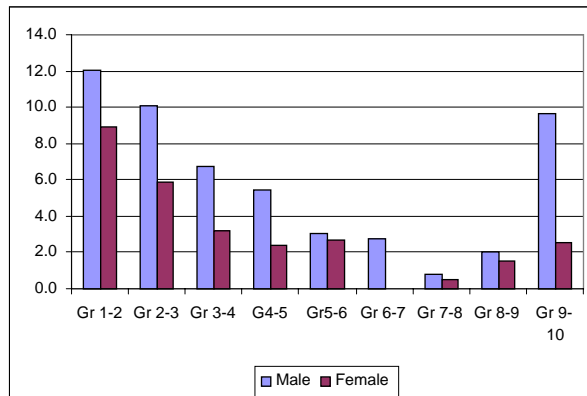
	Gr 1-2	Gr 2-3	Gr 3-4	G4-5	Gr5-6	Gr 6-7	Gr 7-8	Gr 8-9	Gr 9-10	Gr 10-11
1995 cohort	25.0	16.7	0.0	20.0	8.3	0.0	9.1	0.0	0.0	10.0
1996 cohort	10.2	7.6	4.7	3.6	2.8	1.1	0.6	1.7	5.2	
1997 cohort	5.3	5.3	4.3	5.4	4.0	2.5	1.1	3.3		
1998 cohort	3.6	6.6	6.1	8.1	2.9	2.4	2.5			
1999 cohort	3.4	10.7	0.0	0.0	4.0	8.3				

The grade pattern of repetition is quite distinct in the two large cohorts, i.e. 1996 and 1997. In the cohort of children that entered school at age five turning 6, a large proportion failed Grade 1 (10%) and Grade 2 (7.6%), with the repetition rate tailing off until a low point in repetition is reached in Grade 7. Thereafter, the repetition rate begins to increase rapidly in the secondary school. In contrast, the repetition rate is relatively constant in the 1997 cohort at around 5% in the first five grades, dropping in Grade 6 and 7, with an upward trend in Grade 8. One possible explanation for this trend in the younger grouping is that the younger and presumably smaller children are less likely to cope or be perceived as coping in the grade 1 and 2 years.

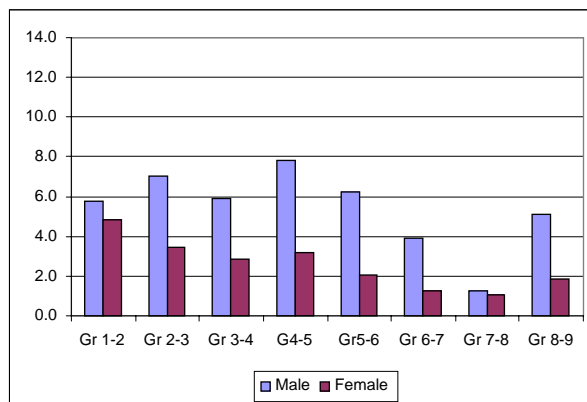
When we disaggregate the repeater rate by gender, a very distinct pattern emerges. For every grade in both the 1996 and the 1997 cohort, boys repeat far more than girls. This pattern is most extremely as teenagers enter secondary school. In some grades, more than twice as many boys repeat than girls, and for the 1996 cohort in secondary school (from grade 8 onwards) there are more than three boys repeating for every one girl.

Figure 3 Repeater rates by gender

1996 cohort



1997 cohort

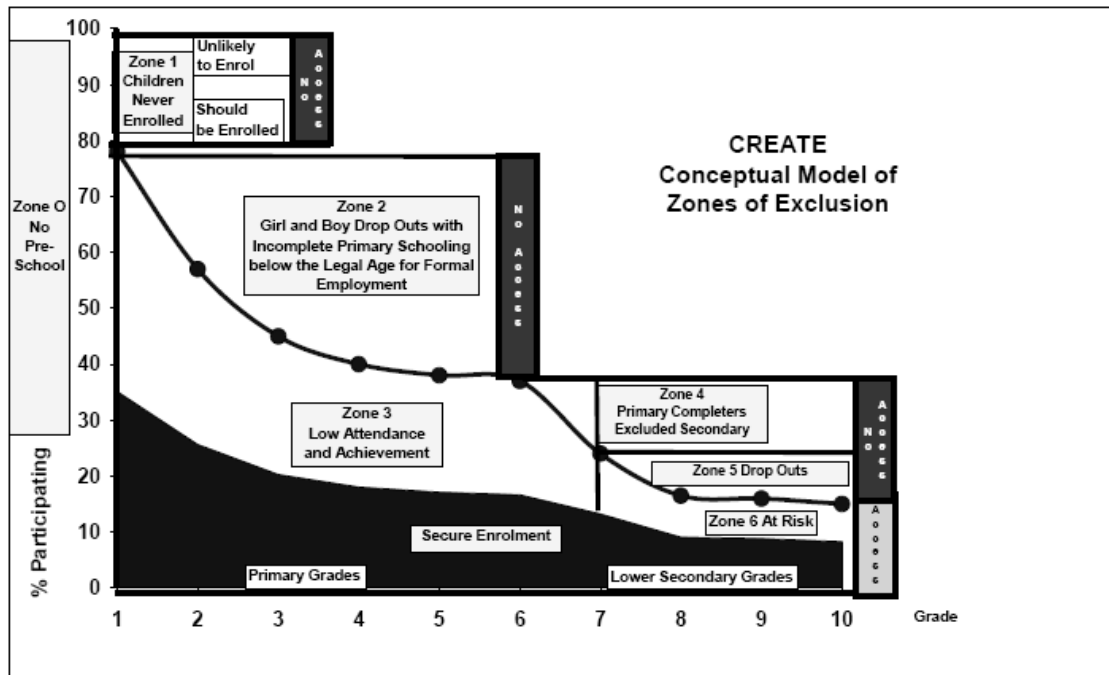


## Conclusion

If we take Lewin's (2007) reconceptualisation of access and zones of exclusion model, we have a useful way of analyzing the patterns of school participation of urban African and Coloured South Africans. In terms of this model (shown in figure 4), the child population to age 15 years tend to have almost complete access to zones 1, 2 and 4. Given the limited data available, we are not in a position to make claims about low attendance and achievement. On the achievement question however, if national statistics are correct, this population is likely to fail in zone 3 as the vast majority of South African children fail to meet basic achievement standards (Fleisch, 2007).

Within the next five years, we will be able to determine the extent to which the Bt20 study population are excluded in zones 5 and 6, that is drop out or may be at risk of academic failure.

Figure 4 Access and zones of exclusion from primary and secondary school



Source: Lewin, 2007

Given that the study population is representative for urban African and Coloured South African children, we can conclude that the vast majority of urban South African children are in school, and most (around 70%) are progressing through the primary school phase without repeating a single year. This suggests high levels of access, high levels of attainment, and relatively high levels of internal efficiency. From this study population, however, we can say little about the academic achievement or the quality of education.

In subsequent studies in this research programme, a range of additional issues are to be explored. First, what are the individual, family, community and school determinants of early and late starting, slow promotion and high repetition rates. Second, and this will only be addressed on the completion of the cohort study in 2010, what are the educational, employment, health and welfare consequences of patterns of school participation.

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