

## SOUTH AFRICAN POPULATION PROSPECTS

JAN L. SADIE

Professor extraordinary in Demography,  
University of Pretoria

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Determining the long-term population prospects for South Africa represents an increasingly important policy issue. This article examines one likely demographic outcome for the period 1991 to 2011. Findings demonstrate that, given economic stagnation and the demographically induced labour supply, some 57 % of the additions to the population during 1991 to 2011 are doomed to poverty.

### Preface

Population prospects are a function of population size at any point of time, its expected natural increase, i.e. the difference between fertility and mortality, and the expected dimensions of migration. A sensible formulation of such prospects requires that (i) South Africa be considered as a whole i.e. inclusive of the erstwhile TBVC countries, and (ii) there be differentiated between the four population groups traditionally designated as whites, Asians (or Indians) coloureds and blacks, on the grounds of known dissimilarities in demographic attributes as well as differences in degree of accuracy and comprehensiveness of census and other vital data. The four groups are dealt with in sequence of diminishing order of demographic modernity, which is defined by the adoption of (or the approach to) the small family system, which, for the most part, also defines their respective positions in the demographic cycle. This analysis spans a period of twenty years, 1991-2011. While it is customary to present population projections in the form of scenarios encompassing a minimum, medium and maximum variant, only one picture is presented here as a most likely outcome.

### Progression in the demographic cycle

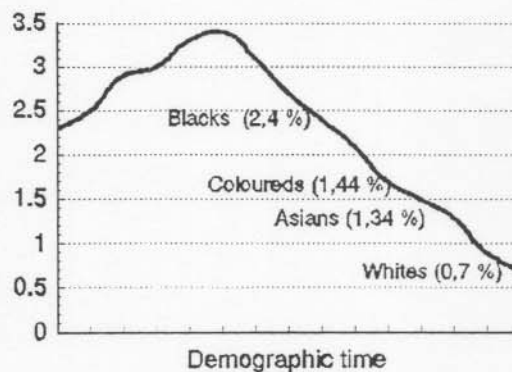
Figure 1 illustrates the progression of the four groups in the demographic cycle, which is not only a stylised one but is based on the actual historic growth of the coloured population. It shows all the groups as having progressed past the stage of maximum growth and being on the downward phase. Viewed in the aggregate, the South African population moved along the first phase of almost uncontrolled fertility and mortality, at the rate of a natural increase of approximately 2 % per annum, up to the end of the Second World War. The second, explosive, phase with mortality declining while fertility remained unchanged or even increased, lasted until the sixties, the transitional phase of maximum growth registering a 2,86 % per annum rate. The population is now (1991-1996) moving along the fourth phase of declining natural increase, averaging a growth rate of some 2,1 % per annum. The prospects are that this downward trend will continue.

However, when the aggregate is broken up into the four population groups we find that the historic timing as well as the absolute levels of natural increase exhibit marked differences. The white group, whose actual (total) growth rate has been fluctuating as a result of the waxing and waning of immigration, experienced its transition to lower levels of natural increase during the first quarter of this century. Despite a temporary revival after the 1929-33 depression this group is now in the fifth phase of below replacement level fertility, with natural increase at a rate of 0,7 % per

annum. The Asians reached their transition, with a maximum of 3,69 % per annum natural increase, during the period 1946-1951, the subsequent downward course leading to a 1,59 % per annum rate during 1985-1991. The coloured population had their transition during the period 1960-1970 and the rate of natural increase peaked at 3,21 %. By 1985-91 it was 1,69 % per annum. In the case of the black population the transition to lower growth is of recent origin, the zenith of 3,0 % per annum having been attained during the period 1980-1985. In terms of demographic characteristics, this group is now moving into the fourth phase of the demographic cycle.

To determine the probable future dimensions of the South African population one needs to project the course of fertility, mortality and migration.<sup>1</sup>

Figure 1: Position of four population groups  
in the demographic cycle



## Fertility

The fertility measure referred to in this article is the Total Fertility Rate (TFR) which is the average number of children a woman would give birth to during her reproductive years (usually 15 to 49), and is the sum of the age specific fertility rates (ASFRs), multiplied by five if quinquennial age groups are involved in the calculations. While our projection of the TFRs is essentially an extension of its historic course on the downward phase of the demographic cycle, the latter cannot tell us what the rate of decline will be, particularly when the decline is of recent origin and precipitate, and when a TFR close to, or below, a replacement level of approximately 2,1 has been reached. The latter situation confronts us in the case of the whites whose TFR in the period 1985-1991 amounted to 1,81 from a secondary peak of 3,50 in the period 1955-1960. The resurgence of their fertility after the 1929-33 depression-induced decline serve as a warning that a simple monotonic extension of a trend could constitute too facile an approach. Looking for international analogies among First World countries it was found that some which experienced a below replacement TFR level in the middle of the seventies, had laterally moving rates, while others, with TFRs above 2,1 in the seventies, experienced continuing downward rates to 1,7 and 1,5 (United Nations, 1992). It appears feasible to assume that the unweighted annual average decline in the TFRs of 12 European countries, whose rates were below

replacement level during 1973-1977, applies to the South African white community. This resulted in an expected TFR of 1,5 by the period 2006-2011, which represents a 17 % reduction in fertility over a twenty year period.

In extrapolating the fertility levels of the other three groups, the relative position of each in the demographic cycle was taken into account as well as their respective economic circumstances and the influence of the Population Development Programme (PDP). In addition, the more recent fertility experience acted as basis in the case of Asians and coloureds since a simple extension of the decrease during the past twenty years would have reduced their TFRs to unrealistically low levels. With regard to the black population, particular influence has been attributed to the PDP, actively promulgated since 1984, and which seems to have accelerated the diminution in fertility compared to the preceding periods, the level of the TFR having dropped from a maximum of 6,75 during the fifties to 6,1 by 1970 and to 4,34 during 1985-1991. This acceleration is reflected in the projected rates.

The results of the exercise are given in Table 1 which clearly reflects fertility. The range is, however, due for a reduction if the expected changes materialise. If we set the white TFR equal to 100 and express the others as multiples, the result will be as displayed in Table 2.

Table 1 Actual and projected total fertility rates

	1985-1991	1991-1996	1996-2001	2001-2006	2006-2011
whites	1,81	1,73	1,66	1,58	1,50
Asians	2,45	2,29	2,13	1,97	1,81
coloureds	2,80	2,37	2,21	2,04	1,87
blacks	4,34	3,96	3,53	3,10	2,66

Table 2 Black, coloured and Asian TFR's expressed as multiples of a white TFR of 100

	1965-1970	1985-1991	2006-2011
whites	100	100	100
Asians	132	135	121
coloureds	207	155	125
blacks	207	240	177

Between the periods 1965-1970 and 1985-1991 only the blacks had registered some widening of the gap; the Asians more or less maintained their position *vis-a-vis* whites, while the TFR of the coloured people declined faster than those of the others.

By the period 2006-2011 the differences between coloured, Asian and white aggregate fertility rates (though not between the age distributions of the ASFRs) should be minimal, while the black/non-black differential will have shrunk by some 17 %. A continuation of the projected trend will result in the attainment of a replacement rate of 2,1 for blacks by 2020.

In the meantime, however, the high level of black fertility compared to those of the other groups, coupled with the large base to which it applies and the momentum arising from the high pre-1980 fertility levels, will ensure their

overwhelming numerical predominance on the South African demographic scene.

### Mortality

In the projection of mortality, as quantified in survival ratios (Px) which can be converted into life expectancy at birth (or any other age), the following was taken into account : the historic movements of (i) each quinquennial age group's Px value, (ii) the intra-cohort values of Px; (iii) successive-age link relatives; (iv) the course of fertility, which has special significance for death rates at age 0 (and 0 to 4); (v) experience in other countries which may serve as analogies; and (vi) model life tables. In those instances where the age-specific probability of survival was already approaching 1,00 (or 100 %), the extrapolated values of Px were required to describe asymptotes. (What with the ravages of violence, TB, infections, parasitic and other preventable diseases, no specific provision was made for AIDS, which has been the subject of sensational prognoses.)

Table 3 Expectation of life at birth (in years)

		1985- 1991	1991- 1996	1996- 2001	2001- 2006	2006- 2011	Increase
whites	M	69,3	69,7	70,2	70,5	71,2	1,9
	F	76,5	76,8	77,1	77,4	77,8	1,3
Asians	M	64,5	64,7	65,2	65,5	65,9	1,4
	F	71,2	71,8	72,3	72,9	73,4	2,2
coloureds	M	57,6	58,5	59,3	60,2	61,0	3,4
	F	65,7	66,7	67,7	68,6	69,6	3,9
blacks	M	57,8	59,8	60,9	62,2	63,6	5,8
	F	64,8	66,8	67,9	69,2	70,4	5,6

The projected survival ratios as converted into expectation of life at birth, are presented in Table 3. From the figures in this table, an inverse relationship between the expected improvement in life expectancy and the level in the eighties can be seen. Accordingly, the differentials, which have already been narrowing for some time, will continue to do so. The weighted male and female average life expectancies (in years) are given in Table 4.

Table 4 Weighted average life expectancies

	1985-1991	2006-2011	Improvement
whites	72,8	74,4	1,6
Asians	67,8	69,6	1,8
coloureds	61,6	65,3	3,7
blacks	61,3	67,0	5,7

It would seem that we can expect the gender differential to widen among Asians and coloureds, to remain more or less constant in the case of blacks, while whites may find the superiority of the average female life expectancy to diminish, after having increased over many decades.

## Migration

Migration of such dimensions that it needs to be taken into consideration has been occurring only in the case of the whites and blacks. The annual average additions to the former since their heyday were as follows:

1963 - 1976	30 280
1977 - 1984	16 720
1985 - 1987	1 350
1988 - 1992	6 060

This type of unstable statistics does not provide a historic base for extrapolation. It can be demonstrated that dramatic adverse political events in South Africa, inclusive of civil unrest, incite emigration which at times exceeds immigration. When memories of these events have faded and while the economy manifest sufficient buoyancy, emigration declines and immigration surges to produce an inflow of new and returning inhabitants. During the past few years neither the political nor the economic climate has been conducive to the attraction of immigrants. Even so, an immigration volume of 30 000 has been registered during the 5-year period 1988-1992. While it is possible that the political and economic climate in South Africa may become more hospitable in time, it was thought advisable to assume a future average inflow of 30 000 per five-year period. Children born to immigrants in this country will also add to the South African population.

The quantum of black immigration is measured by the number of foreign-born persons registered during census enumerations, which showed diminishing numbers from 1951 to 1985 and an increase at the time of the 1991-census (see Table 5).

Table 5 Number of foreign-born blacks registered during census enumerations

	Male	Female	Total
1951	482 600	120 600	603 200
1985	273 300	44 800	318 100
1991	314 200	108 000	422 200

It is difficult to put a figure on the degree(s) of underenumeration which undoubtedly varies from one census to the next. If the increase between 1985 and 1991, particularly among women, is considered in conjunction with the decline in the number of foreign (oscillating) migrants working in South African mines, it shows a substantial influx of persons from war-torn and poverty-stricken neighbouring countries. For purposes of projection it was assumed that (i) the number of recruited temporary workers in South Africa will range around a constant average of 212 500 per annum (the 1991 number); (ii) women, present in South Africa in 1991, will exit from certain age groups as they grow older, and will be replenished according to the 1985-1991 experience; and (iii) the male counterpart of this female population will accord with the *de jure* aggregate South African population's male/female ratios by age. The resulting foreign-born black population, augmented by births of their children in this country, would raise this component from 422 200 in 1991 to 627 700 by 2011, to contribute just less than 1,5 % to the *de jure* total.

## Total population

Application of the above magnitudes to the 1991 population produced the totals summarised in Table 6.

As the projected decline in fertility is not compensated for by a similar reduction in mortality, the aggregate population growth is expected to diminish from 2,28 % during 1985-1991, and 2,06 % at present, to 1,45 % per annum by the end of our projection period. The greatest deceleration is due to occur among whites (-74 % during the twenty year period), followed by Asians (-49 %), coloureds (-45 %) and blacks (-29 %). During this period the aggregate number is expected to be swollen by 16 117 000 of whom 14 602 000, or 90,6 %, will be blacks, signalling an utter predominance of the demographic scene. Non-blacks will contribute only 9,4 % to the increment to constitute 20 % of the 2011 aggregate, after having been 25 % in 1991 and 29 % in 1971. No amount of adjustment for errors in assumptions, within the limits of probability, can seriously challenge this predominance outcome, which had already been prevised many decades ago when the timid beginnings of a family-planning programme elicited the notorious genocide accusation response.

Table 6 Projected population of South Africa

	1991	1996	2001	2006	2011
whites	5 068 300	5 242 200	5 383 400	5 480 200	5 528 800
% growth pa		0,68	0,50	0,36	0,18
Asians	986 600	1 054 400	1 119 200	1 173 200	1 213 800
% growth pa		1,34	1,20	0,95	0,68
coloureds	3 285 600	3 529 200	3 756 700	3 954 400	4 122 700
% growth pa		1,44	1,26	1,03	0,79
blacks	28 396 700	31 964 700	35 750 000	39 497 300	42 988 900
% growth pa		2,40	2,26	2,01	1,71
Aggregate	37 737 200	41 790 400	46 009 300	50 105 100	53 854 200
% growth pa		2,06	1,94	1,72	1,45

When the above growth (and fertility) differentials are related to economic data they show the customary inverse relation between the ability to produce life and the capability to sustain it. The crucial demographic fact, embodying the quintessence of South Africa's economic problems and overriding all others, is that we have, and will have, a proliferation of human quantities unaccompanied by comparable economic qualities.

## Age Structures

The age structures in Table 7 exclude the influence of migration (which has a slight effect in the case of the black and white groups) to reveal the impact of fertility in particular, although mortality differentials and decline have some role to play as well. It will be seen that, of the four groups, whites are demographically the oldest and blacks the youngest population, the respective dependency ratios (children under 15 and persons 65 years and older per 100 persons in the conventionally labelled economically active ages 15 to 64) in 1991 amounting to 46 and 80. Asians and coloureds

decline of 262 000 non-black children and an increase of 2 387 000 black children. When the change relates to children of school-going age (6 to 19 to make allowance for some age retardation) it encompasses a 9 % decline (-221 000) and a 32 % (+307 2000) increase respectively. The latter, at 41 pupils per teacher, requires an addition of 74 900 teachers who could otherwise have been employed to reduce the pupil load per teacher to 29, and thus to improve the quality of education, if the fertility levels of the black population had assimilated to those of the other population groups. Economic resources absorbed by the accommodation of quantity are not available for the enhancement of quality. If the GDP were to grow at four times that of the period of stagnation (1981-1992), which was 0,64 % per annum, and expenditure on education were to increase at a similar rate, the accommodation of quantities will require 55 % of this increase. If the present miserable performance of the economy were to be replicated in future, the increment in school children will mean a reduction in the absolute amount of resources available for other purposes, such as health, housing and social welfare. Such reduction already took place during 1980-1991, when the black children of school-going age (not all of whom are necessarily attending school) increased by 2,73 % per annum, while the non-black groups exhibited almost zero growth, adding a mere 17 000 to their 1980 number of 2 423 000.

As it is, the average black child of school-going age, as a function of demographic forces alone, will have at his/her disposal from parental resources only 99 % of those the non-black child can potentially command (using the ratio of children 6-19 to males aged 20-64 as a measure). Or, to level the resource availability for the black children, 69 % of mothers (compared to zero for the other groups) will have to find paid jobs.

In addition, the average black child will start life at a disadvantage by virtue of teenage motherhood, the incidence of which is 1,9 times that of the other groups (or 2,5 times that of the whites). And the probability of being born to a single parent is more than twice that of other children.

Since the demographic scene of the future is to be dominated by the group among which the prejudicial demographic attributes obtain, and given the relevance of the proverb that the child is father to the man, the chances are that the economic quality of the aggregate population will be reduced, unless counteracted by non-demographic measures which, in their turn, may have adverse effects as well.

### Manpower aspects

The population in the economically active ages 15-64 is indicative of the size of the labour force, the other determinant of which is the labour force participation rates (LFPRs). Ignoring the latter and specifying 15 to 64 as the manpower age group, we can demonstrate its dynamics over time by analysing its expansion into three components, *viz.* the number of entries, or accessions to manpower (those survivors who reach the age of entry which is here considered to be 15), the departures through retirement (by virtue of their having passed the upper age limit of 64), and exits through death. The analysis is confined to males because of the intermittent character of female LFP, so that in their case our analytical tools will not be quite appropriate. Only the population changes by natural increase are dealt with (*i.e.* migration is excluded). (To determine their rates of change the averages of the initial and end-of-period value of manpower size were used as denominators.)

Table 8 South African male manpower dynamics - annual rates of change

	N15-64 % of male population	Entry	Exit through			net accretion	Coeffi- cient of replac- ment	Absolute growth pa
			death	retire- ment	Total			
whites								
1991-1996	69,5	2,1	0,6	0,9	1,5	0,6	142	11 400
2006-2011	70,5	1,9	0,7	1,8	2,0	-0,05	98	- 4 400
Asians								
1991-1996	65,8	2,9	0,7	0,5	1,2	1,7	234	5 600
2006-2011	69,4	2,5	0,9	0,8	1,7	0,8	145	3 100
coloureds								
1991-1996	63,0	3,2	0,9	0,4	1,3	1,9	239	19 900
2006-2011	68,6	2,8	0,1	0,5	1,6	1,2	176	15 700
blacks								
1991-1996	55,3	4,3	0,7	0,5	1,2	3,1	364	254 700
2006-2011	61,0	3,5	0,7	0,5	1,2	2,3	303	289 200

Table 8 shows the expected inverse correlation between the relative size of the manpower component and its growth. The lower the latter the larger the former, and the smaller are (and will become) the rates of entry and of net accretion. Among the non-black groups the average age of the manpower groups will be rising to the extent of raising both the death and the retirement rates to push up the rates of exit from the manpower age group. In the case of blacks the death as well as retirement rate will continue unchanged but, because of the declining rate of entry, net accretion will abate.

The coefficient of replacement bears perhaps the most eloquent testimony to the dynamics of manpower, signifying as it does the number of entries per 100



total (all ages) population is only 13,4 %. Between 1991 and 2011, however, the number of elderly blacks will increase faster, as indicated by the rise in their share in the total population 65 years and older from 61,2 % to 64,7 %, to contribute 831 700 out of a total increment of 1 201 200 (or 69 %). It is well-known that this majority are least able to provide for their years in retirement, and at 3,1 % per annum they are due to grow more rapidly in number than their manpower age group (2,8 % per annum) which already induces an intragroup exacerbation of the economic burden. Among whites, the increment in the number of 65+ years and older persons will actually outstrip the increment in manpower numbers by 100 %. The need for an increasing percentage of geriatricians among medical practitioners is obvious.

Table 9 Persons 65 years and older

	1991		2011	
	Number	%	Number	%
whites	475 400	29,7	720 900	25,7
Asians	33 900	2,1	81 600	2,9
coloureds	111 200	7,0	187 500	6,7
blacks	980 600	61,2	1 812 300	64,7
All groups	1 601 100	100,0	2 802 300	100,0

## Spatial distribution

Judging by the 1991-census results, adjusted for underenumeration, the coloured population (83 %), the whites (91 per cent), and the Asians (96 %) can be considered to be more or less fully urbanised, and natural increase and immigration will probably add to the urban numbers only. According to the Central Statistical Service's definition of 'urban', the percentage for the black population would have been slightly above 42 %. Judging by the push factor inherent in the inability of the rural areas to sustain living standards or, worse still, life only, one would expect almost the totality of the 1991-2011 increment of 14 600 000 in the black population to be born in and/or settle in the urban areas, regardless of whether the latter can in actual fact provide a living to the new inhabitants. As it is, the formal economy of the urban areas cannot even provide jobs for all the existing inhabitants. The immigrants therefore exchange the 'genteel' poverty of the agrarian society for the squalid poverty, unemployment and underemployment of the towns and cities.

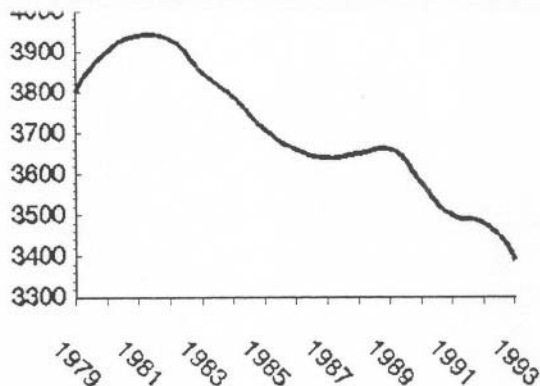
Family formation (the nuclear type) among this population is registering, on average, annual additions of 223 000 of whom 194 000 (87 %) cannot afford some kind of house (as distinct from a shack) without major fiscal subsidisation. In the non-black groups the comparable numbers are 44 000 and 21 600 (49 %) respectively. Sprawling squatter camps or, at best, 'informal settlements' are inevitable.

## Population growth versus economic growth

In the absence of rather special hospitable conditions, population numbers, as the denominator in the ratio which measures income or GDP per capita, act as a depressant only. The effect is exacerbated when, as has been happening in South Africa, political power-seekers - members of the community in greatest need of an increase in the numerator (the GDP) - are actively championing and seeking a reduction of this magnitude. Figure 2, which traces a three-year moving average of the GDP per capita, illustrates the disastrous decline in the average level of living in this country. The average has diminished from R3 960 in 1981 (or R4 040 if we do not resort to moving averages) to R3 380 by 1992, a reduction of some 15 %. The marginal income per capita over this period has been R1 000 (on aggregate), the last three years of which (as also in 1982, 1983 and 1985) registered absolute reductions in GDP, implying annual per capita marginal products of -R750, -R940 and -R3130 respectively. By reason of the black population not growing at the lower rate of the non-blacks, the per capita average GDP was lower by R405 and the marginal product by R888.

Apart from such macro testimony, it can be demonstrated on a micro-economic basis that the net economic value of a life at the margin is negative, and has been so even before 1990.

For the economy to restore the per capita GDP to its 1981 level by, say, the year 2005, it will have to grow at an average rate of 3,4 % per annum which, at this stage and against the background of the economic performance of the past eleven years, appears to be very sizeable and decidedly not within easy reach, or even just within reach. Were the black population to have increased at the same tempo as non-blacks, the required GDP growth would have been 2,3 % only (which is still four times that of 1981-1992). According to present-day social morality which originated in highly developed, high-income First World countries, the trends identified above spell the imposition of increasing economic burdens by improvident parenthood on those practising responsible



## NOTE

1. The projections are based on the author's monograph commissioned and published by the Bureau of Market Research, Unisa, in Research Report No. 196, A projection of the South African Population 1991 - 2011.

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