

ITEM : PROJECTION OF THE POPULATION OF THE CAPE METROPOLITAN AREA 1996-2031

(R Gentle)
(Tel: 487 2342)

1. EXECUTIVE SUMMARY

The population projection of the Cape Metropolitan Area (CMA) commissioned by the CMC has been completed.

It is **recommended** that:

- (i) Professor Dorrington's adjusted population figures be accepted in preference to the 1996 Census as the verified base population of the CMA as of the date of the census done in 1996; and
- (ii) Professor Dorrington's Medium case projection be accepted as the most likely demographic trajectory of the CMA's population for all business or functional purposes of the CMC's Directorates and Departments in order to enhance co-ordination and integration of policy.

2. BUSINESS PLAN REFERENCE

<u>Directorate:</u>	Corporate Services
<u>Department:</u>	Information Services
<u>Business Plan Heading:</u>	3. Census

3. BACKGROUND

In March 1999 Professor Rob Dorrington was commissioned to produce a report that would determine the population of the CMA in the Census year of 1996. Professor Dorrington's figures would be an adjustment of the official 1996 Census and serve as:

- (i) the baseline demographic data for the population of the CMA; and
- (ii) the base for projecting the population to the year 2031.

The need for an acceptable estimate of the current and future size and composition of the population of the CMA, over and above the analysis of data derived from the Census, had been identified by a number of Directorates in the CMC. To this end, an Inter-Directorate Steering Committee had been established to guide the study¹. This was necessary since the information derived from the study would inform a

¹ The Inter-Directorate Steering Committee consisted of officials from the following Directorates: Corporate Services; Economic and Social Development; Planning, Environment & Housing; Protection, Health and Trading Services; Transportation and Traffic; and Water and Waste Services.

wide range of initiatives presently being undertaken, or under discussion, in the CMA.

The estimate of future population and its characteristics are crucial in determining:

- The development of a successful Integrated Development Plan (IDP)
- The need and effective demand for housing and infrastructure development.
- The need for health facilities.
- The rate and growth of the supply of labour.
- An assessment of need and resources.

4. COMMENT

4.1 Study Objective

The study is an effort to estimate the current population in the CMA and to project the population forward to the year 2031. It also sets out to model the spatial distribution of future population growth by Metropolitan Local Council (MLC)², based on alternative scenarios regarding land availability, directions of urban growth, spatial allocation of future land use activities, etc., in order to devise policies and strategies for the effective growth management of the CMA.

4.2 Phases of the Project

There are two distinct, although interrelated, phases to the study. These are:

- (i) The initial determination of the 1996 base population for the CMA and the projection of that population by ethnic group, five year age cohorts and gender up to the year 2031 at five yearly intervals based on natural increase and likely migration patterns.
- (ii) Refinement of the spatial division of the population growth with respect to the constituent MLCs by analysing the above estimates in the light of various spatial development scenarios. Current policies, future plans and development proposals would constitute “reality checks” in terms of physical capacity parameters and constraints for the various MLCs.

It is important to note that this report is concerned only with Phase I of the study.

² When the study was commissioned, the MLCs were legal and functional entities. Notwithstanding any proposals around the Unicity, it was agreed by the Steering Committee that the MLCs as spatial entities still had relevance.

5 FINDINGS

5.1 Verification of the base population

Professor Rob Dorrington's study which was a verification of the actual population of the CMA has added **125 000** lives to the total population as of the date of the census done in 1996.

Table 1 illustrates the differences between the unadjusted 1996 Census figures based on the 10% sample and Professor Dorrington's estimates of the actual population at the date of the Census, that is, the new base from which the population is projected. The rounded off figures in the table below represent thousands. The undercount largely consists of adjustments to the White and Black population groups. In the case of the White population, Professor Dorrington estimated that some 67 000 lives needed to be added on the basis that there was significant net in-migration on the part of Whites into the CMA. In the case of the Black population, the differences between the Census' figures and Professor Dorrington's are more evenly spread between undercount and net in-migration.

TABLE 1: CMA POPULATION – CENSUS vs NEW BASE

POPULATION GROUP	MALE		FEMALE		TOTAL	
	Census	Base	Census	Base	Census	Base
Indian	18	18	18	19	36	37
Black	326	366	332	334	659	702
Coloured	622	633	676	681	1 298	1 313
White	271	305	293	326	564	631
TOTAL	1 237	1 322	1 320	1 361	2 558	2 683

The methodology employed by Professor Dorrington to verify the base population in the CMA is contained in **APPENDIX 1**.

5.2 Input variables of the study

It is based on assumptions involving the fundamental variables of births, deaths, migration and the incidence of HIV.

5.2.1 Natural Increase

The excess of births over deaths is the natural increase of the population. Natural increase together with an exogenous injection of population which is achieved when in-migration is greater than out-migration constitutes the demographic reason that cities grow.

Table 2 below shows a Medium scenario of the natural increase rates for the population groups within the CMA over the study period.

TABLE 2 : CMA NATURAL INCREASE RATES: 1996 - 2031

POP GROUP	1996-2001	2001-2006	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031
Indian	1.3	1.3	1.0	0.6	0.3	0.3	0.2
Black	1.7	0.8	-0.4	-0.8	-0.9	-0.8	-0.8
Coloured	1.3	1.0	0.5	0.0	-0.3	-0.4	-0.5
White	-0.1	-0.2	-0.2	-0.3	-0.3	-0.5	-0.6

In terms of natural increase, from a Medium term perspective, the White population would have fallen below replacement level while the Coloured population is expected to drop below the replacement rate round about 2016. Blacks are expected to drop below replacement levels even sooner because of AIDS. It is estimated that that would occur round about 2007. In other words, the rate of natural increase for the Black population would have halved ten years after the 1996 Census. This implies that for the Coloured and Black populations, the prevalence rate of AIDS would be directly proportional to mortality rates and inversely proportional to fertility levels.

5.2.2 Migration

Migration was undoubtedly the most uncertain variable to project. It was thus decided to carry out projections on three migration assumptions.

- **HIGH:** migration experienced over the 1991 – 96 period would continue into the future in absolute terms (i.e. numbers) for Indians, Coloureds and Whites and in percentage terms in the case of the Black population.
- **LOW:** migration falls from the 1991 – 96 levels to zero over the 35 year period for the Indian, Coloured and Black population. In the case of the White population, it was assumed that the migration fell to zero at the end of the first five years (i.e. 1996 – 2001)
- **MEDIUM:** migration would be halfway between the High and Low numbers.

Table 3 below contains the migration numbers for all population groups implied by the 1991 and 1996 population estimates.

TABLE 3: ESTIMATED CMA MIGRATION NUMBERS: 1991 - 1996

POPULATION GROUP	NET MIGRATION
Indian	7 338
Black	221 012
Coloured	59 988
White	64 267

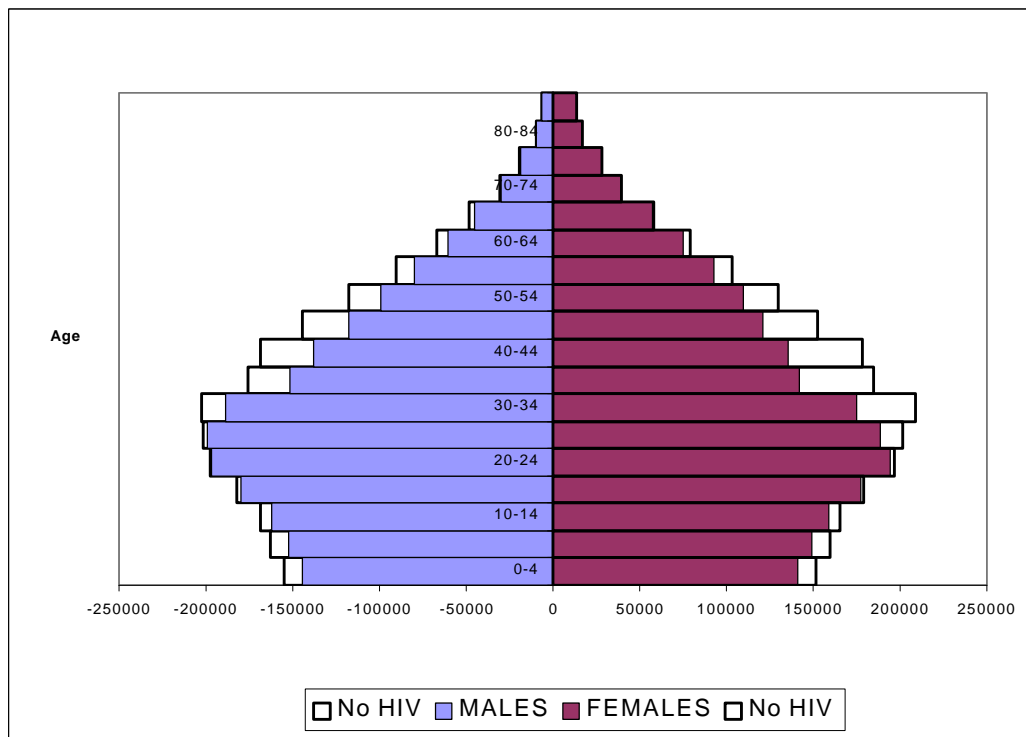
The migration rates for the Black population are the highest for all the groups in the CMA. From a peak of 6.1% in 1996, Black migration is expected to drop to 1.3% in 2030 while the White migration rate declines from a high of 1.4 in 1996 to 0.7 in the same period.

5.2.2 HIV/AIDS factor

The impact of HIV/AIDS was allowed for in the Black and Coloured populations by using the ASSA600 AIDS and Demographic model (Actuarial Society of South Africa, 1999) calibrated to fit the antenatal survey results for the Western Cape. For this purpose, the epidemic in the Western Cape was assumed to start in 1991 for the Black population and in 1994 for the Coloured population. Effectively this assumes that in the Black population in the CMA the epidemic lags the national population by some 6 years, while in the Coloured population in the CMA the lag is an extra 3 years and that the prevalence level is expected to plateau at about half the level of the national population.

Graphically, **FIGURE 1** below shows the impact of HIV on the population as a whole in the year 2016. The differences between the two population pyramids illustrates the extent of the impact. The inference that can be drawn from **FIGURE 1** is that the impact is mainly in the working and very young age groups with perhaps a greater (and younger) impact among females.

FIGURE 1: POPULATION PYRAMIDS WITH AND WITHOUT HIV



The Report suggests that deaths due to AIDS in the CMA will exceed the number of deaths from all other causes by 2009 and that within the next 10

years the life expectancy at birth of the Coloured population will have dropped from 65 years to around 55 while that of the Black population from 55 years to around 40 years.

The following figure shows how the graph depicting deaths from AIDS “overtakes” the graph depicting deaths from other causes in approximately 2009.

FIGURE 2: AIDS DEATHS vs DEATHS FROM OTHER CAUSES

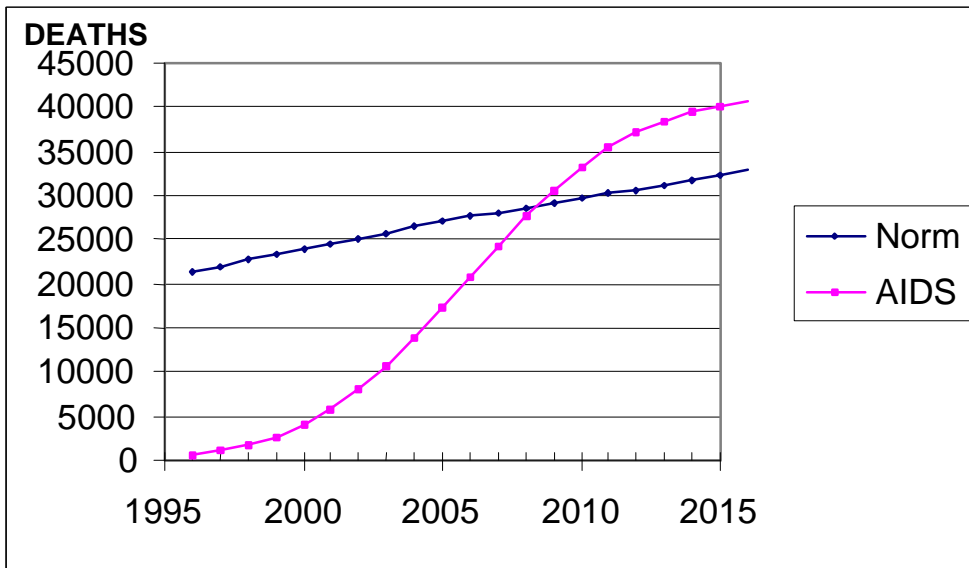
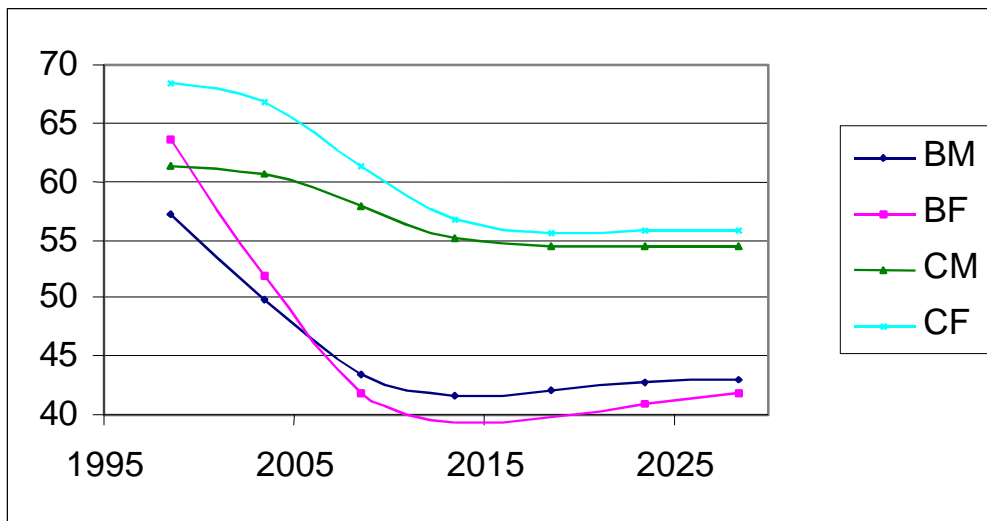


FIGURE 3 below complements **FIGURE 2** in that it shows graphically, as a consequence of the HIV/AIDS factor, how life expectancy at birth drops for Black males and females as well as the decline for Coloured males and females.

FIGURE 3: LIFE EXPECTANCY AT BIRTH



6. PROJECTIONS OF THE CMA POPULATION

Table 4 below is a comparison of projections of the CMA population predicated on High, Medium and Low assumptions of the input variables of fertility, mortality, migration and the prevalence patterns as well as the future spread of HIV/AIDS. It is interesting to note that the total population of the CMA is expected to grow by almost 60% over the 35 year projection period. By the end of the period, the Black population is expected to just exceed the Coloured population. Each group will constitute approximately 40% of the total CMA population.

TABLE 4: HIGH/MEDIUM/LOW PROJECTIONS: CMA POPULATION

	2001	2006	2011	2016	2021	2026	2031
HIGH	3 186 938	3 646 156	4 008 402	4 292 446	4 538 385	4 769 669	4 976 987
MEDIUM	3 154 238	3 547 055	3 820 847	3 997 718	4 119 504	4 208 444	4 255 857
LOW	3 121 532	3 447 946	3 633 286	3 702 990	3 700 595	3 647 071	3 534 371

The table below reflects estimated growth of the different population groups within the CMA in terms of Medium case assumptions.

TABLE 5: MEDIUM PROJECTIONS: CMA POPULATION GROUPS

POP GROUP	2001	2006	2011	2016	2021	2026	2031
Indian	47 252	57 742	67 388	75 546	82 334	88 383	93 541
Black	984 452	1 225 695	1 387 606	1 496 267	1 581 397	1 653 399	1 703 802
Coloured	1 454 346	1 572 766	1 655 042	1 697 148	1 711 661	1 712 078	1 698 536
White	668 188	690 851	710 811	728 756	744 113	754 584	759 977
TOTAL	3 154 238	3 547 055	3 820 847	3 997 718	4 119 504	4 208 444	4 255 857

7. HOUSING IMPLICATIONS

Professor Dorrington projects his housing scenarios on the premise that the average household size in the future is very much dependent on the number of houses that are built.

It is interesting to note that when looking at the need for houses (supply side), Professor Dorrington employs two scenarios. According to the first, if the number of households is to double over the 35 year period, the average household size would fall by between 15% and 25%. Under the second scenario, if the average household size remains largely unchanged the number of households could increase by some 57% over the study period.

8. FURTHER CONSIDERATIONS

The three appendices contain further detail around the Study. It has been indicated earlier that **APPENDIX 1** is an elaboration of the overall methodology employed in the Study. **APPENDIX 2** shows the undercount distributed in percentage terms amongst the population groups within the CMA as well as the percentage distribution of the total population amongst the six MLCs. And, **APPENDIX 3** deals with the distribution of the new base population for the CMA by the respective MLCs in absolute terms, that is, the actual numbers by which the populations of the six MLCs were adjusted as well as the projections of their new base populations up till 2031

9. CONCLUSION

One final cautionary note should remain uppermost when reading the Report, Professor Dorrington is at pains to stress in his introduction that “Demographers are careful to warn users of demographic projections the projections are not predictions but rather vehicles for better understanding the way population may change in future”.

10 RECOMMENDATIONS

It is recommended that:

- (i) Professor Dorrington’s adjusted population figures be accepted in preference to the 1996 Census as the verified base population of the CMA as of the date of the census done in 1996; and
- (ii) Professor Dorrington’s Medium case projection be accepted as the most likely demographic trajectory of the CMA’s population for all business or functional purposes of the CMC’s Directorates and Departments in order to enhance co-ordination and integration of policy.