

EXECUTIVE SUMMARY

Population Projection for Cape Town 2001 – 2021

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Citation: City of Cape Town (2006), Information and Knowledge Management Department, Population Projections for Cape Town 2001-2021, Phillip Romanovsky, 13 Pages.

1 Introduction

The need for an acceptable estimate of the current and future size and composition of Cape Town's population, over and above the analysis of data derived from the Census 2001, has been identified. This information is necessary to inform a wide range of planning initiatives presently being undertaken, or under discussion, in Cape Town.

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

- 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.
- Transport needs.
- Following from this is the need to model the spatial distribution of future population growth, in order to examine 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 Cape Town.

Professor Dorrington from the Department of Actuarial Science (University of Cape Town) was commissioned to undertake the population projection study. Professor Dorrington has specialist knowledge in fertility/mortality and HIV/AIDS modelling as well as an intimate knowledge of the 1996 and 2001 population census. He was a member of the Science Council and a member of the Census Review task team.

2 Brief

The brief given to Professor Dorrington was:

- To undertake a projection of the population groups (White, Coloured, Indian and Black African) in Cape Town by age and gender at 5-year intervals. Such a projection will need to take into account the possible impact of the HIV/AIDS epidemic. The projection period is from 2001 to the year 2021.
- To translate the increase in population over the projection period into household formation by the various population groups at 5-year intervals.
- To spatially relate the future population growth by the City's eight health districts.

3 Assumptions

In order to project the population, assumptions were made regarding the three components of population growth: fertility, mortality and migration.

3.1 Fertility

In all cases the total fertility rates were kept the same as those used in the previous projection for the City of Cape Town (Dorrington, 2000). The total fertility rate, which is the number of children born to women between the productive ages of 14 and 44, was calculated to be 2.5 in 1985, falling to 1.9 in 2006 and 1.5 at the end of the projection period 2021.

Age specific fertility rates were derived by scaling the provincial Actuarial Society Fertility Rates to sum to the total fertility rate for each population group in the City of Cape Town. The fertility rates are summarised in Appendix 2 of the main report.

3.2 Mortality

Provincial mortality rates were used for each of the population groups in the absence of estimates of mortality specific to Cape Town. The death rate per 1 000 people was calculated to be 8.5 in 1985, increasing to 11.0 in 2006, 13.4 in 2015 and 14.0 at the end of the projection period in 2021.

HIV/AIDS

The impact of HIV/AIDS was calculated by using the Actuarial Society of South Africa 2003 AIDS and Demographic model (Actuarial Society of South Africa, 2005) calibrated to fit the antenatal survey results for the Western Cape. The model allows for the roll out of anti-retroviral treatment and other intervention initiatives on the epidemic.

Projected deaths due to HIV/AIDS are expected to be about half the number of deaths from all other causes. Figure 1 below illustrates the impact of the epidemic on the expected number of deaths in the future.

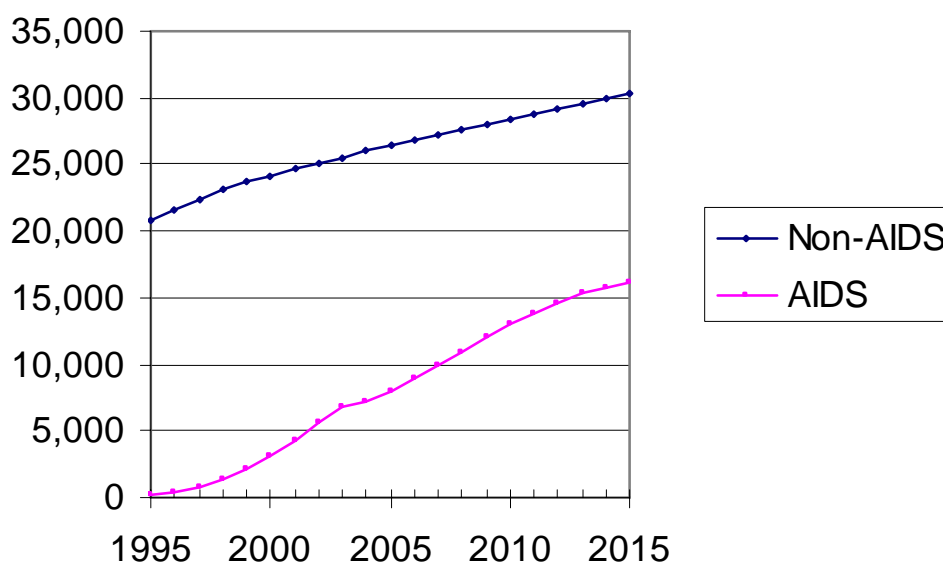


Figure 1: The number of deaths due to AIDS compared to those due to other causes

Life Expectancy

Figure 2 below illustrates the impact of the epidemic on life expectancies at birth on two groups, which are generally expected to suffer the biggest impact. Over the next 10 years the life expectancy at birth of the Coloured population is expected to remain fairly constant, with that for females falling slightly while that of males could increase slightly. However, the life expectancy at birth of the Black African population group is expected to fall from 58 years in 2001 to 52 years by 2015.

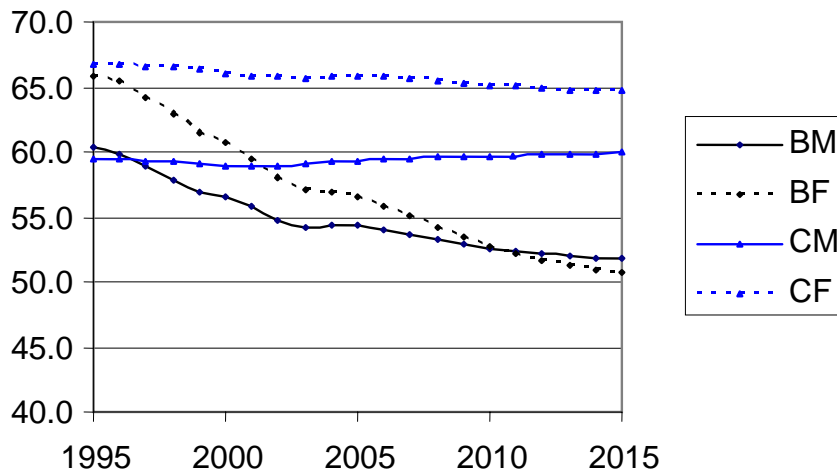


Figure 2: Life expectancy at birth for Black African and Coloured, males and females

3.3 Migration

Migration is the most difficult component of city growth to predict and hence it was decided to base the projection on three migration scenarios. Based on the 2001 Census the level of net migration appears to be very low for all but for the Black African population group which is around 3.5% per annum.

High Migration Assumption: The migration experience over the 1996 to 2001 period for the Black African, Coloured and Indian populations, is assumed to continue in the future in absolute terms (i.e. numbers), while the White net emigration is assumed to cease from 2001.

Low Migration Assumption: Migration falls from the 1996 to 2001 levels to zero over a 15-year projection period for the Black African, Coloured and Indian populations, and to rise over 30-years for the White population.

Middle Migration Assumption: Migration falls from the 1996 to 2001 levels to zero over a 30-year projection period. This is the assumption used for the detailed projections.

These scenarios produce lower migration than was the case in the previous projection, which may well call their reasonableness into question. However, it was decided to stick with these scenarios for the following reasons:

There is a diminishing pool of potential migrants. Most of the in-migration to Cape Town comes from the Eastern Cape, which has experienced very high out-migration over the last two decades resulting in a distorted population pyramid where a significant number of adults in the productive age groups 25yrs+ have already migrated out of the region. In addition other areas in the Western Cape, particularly places along the coast like George, Mossel Bay, Knysna and Plettenberg Bay have attracted migrants from the Eastern Cape.

4 Projection Results

The results of these projections appear in Appendices 4 and 6 of the main report.

The population in Cape Town is expected to grow by nearly 17% over the 20-year projection period. In 2006 the population is growing at 1.61% per annum due to a natural increase rate (excess of births over death) of 0.86% pa and a migration rate of 0.75% pa. At the end of the projection period (2021) the population growth rate will have fallen to 0.62% pa as determined by a natural increase rate of 0.09% pa and a migration rate of 0.53% pa. The graph below shows the population growth rate for the City of Cape Town.

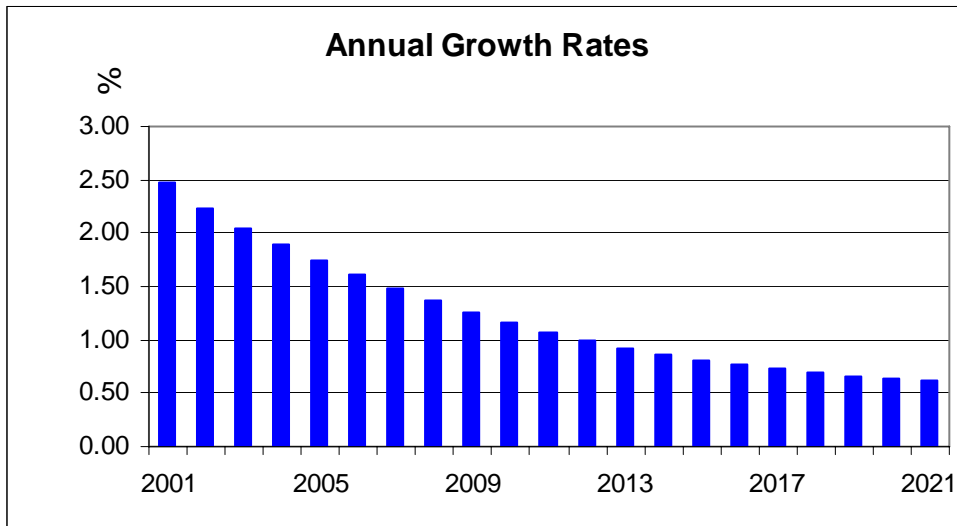


Figure 3: Annual growth rate of the population of the City of Cape Town

By the end of the period the Black African population is expected to be 75% of the Coloured population, which will be approximately 47% of the total population.

Figure 4 below compares the total population estimates based on the high and low migration assumptions with those based on the middle migration assumptions. From this comparison the population in the City in 2021 could range, based on these assumptions, between a low of 3.4 million and a high of 4.2 million.

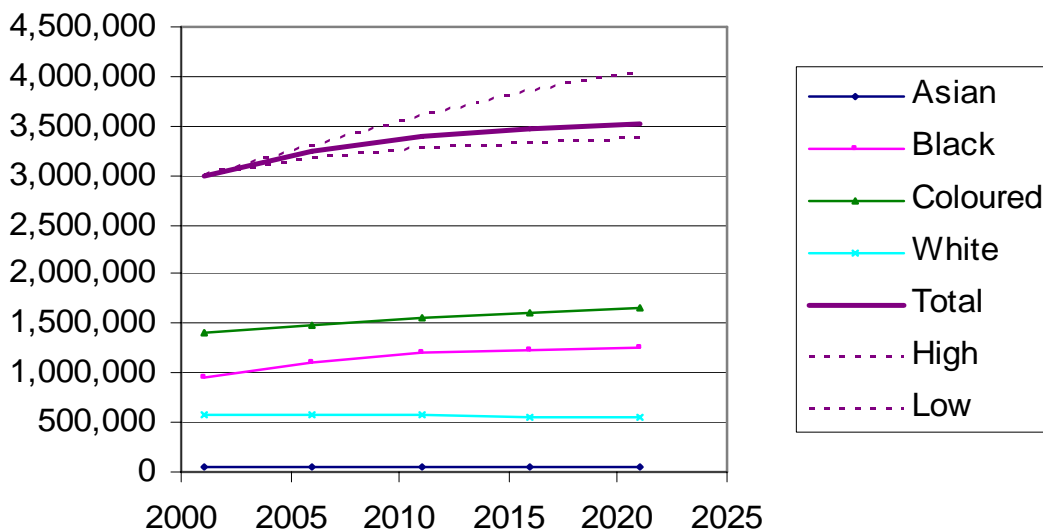


Figure 4: Total Population Projection for the City of Cape Town

5 Health District Projection

The population projection of the Health Districts was based on the assumption that the likely growth rates for the districts were roughly comparable with those of the previously demarked administrative areas into which the health districts fell. Northern Panorama will continue to remain by far the largest health district, followed by Tygerberg. The smallest health district by 2021 is expected to be the Central district with a population of about half the size of that of Northern Panorama.

It is important to note that this projection is relatively crude as it extrapolates the trends between 1996 and 2001 and as such does not take into account various City of Cape Town development initiatives to restructure the City e.g. developing the inner city core, densification, etc. The table below shows the projected population by health districts.

Health District	2006	2011	2016	2021
Central	343 797	351 163	351 298	346 906
Eastern	410 735	431 473	442 670	448 054
Khayalitsha	338 952	352 189	357 789	358 670
Klipfontein	381 540	390 128	390 650	386 124
Mitchell's Plain	428 764	444 794	451 213	451 687
Northern Panorama	530 153	589 763	637 092	674 832
Southern	348 331	359 530	363 064	362 209
Tygerberg	457 496	473 976	480 249	480 552
Total	3 239 768	3 393 016	3 474 025	3 509 034

Table 1: Projected Population by Health District for the City of Cape Town

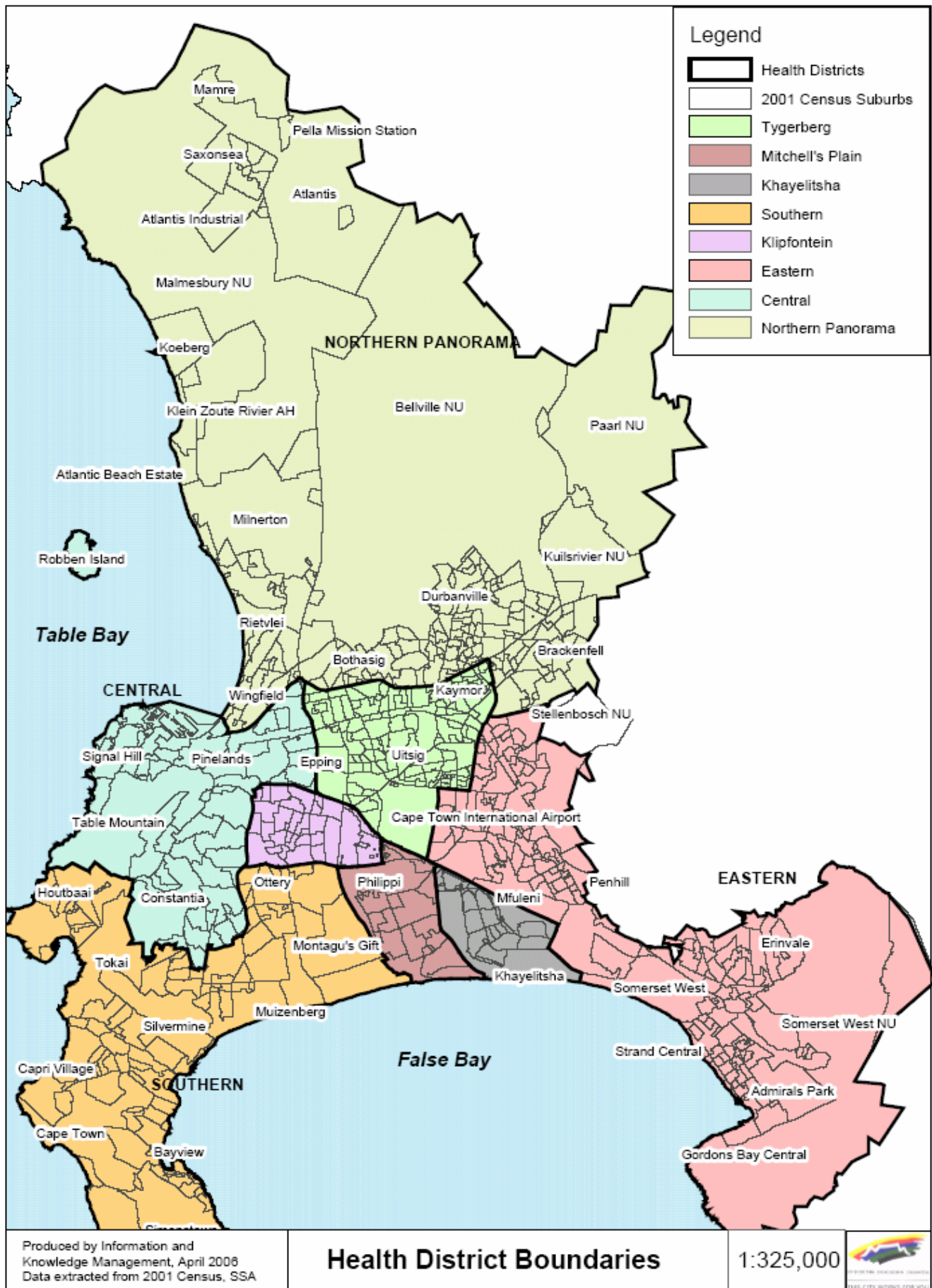


Figure 5: Health District Boundaries for the City of Cape Town

6 Projected Households

The following two possible scenarios were developed:

Table 2 summarises two possible scenarios:

- (a) Assuming that the **proportion of the population** by age and sex who are heads of households remains the same over the years, and
- (b) Assuming that the **average household size per head of household** by age and sex remains the same over the years.

Under the scenario (a) there would be a doubling of the number of households over the 35-year period while the average household size would fall by between 15% and 25%. Under scenario (b) the average household size remains largely unchanged but the number of households increases by 57% over the 35-year period.

The projected number of households under each scenario by health district as at 2021 is show in Table 2.

Health District	2001	2021		% Increase	
		Scenario a	Scenario b	Scenario a	Scenario b
Central	89 000	114 000	95 000	28%	7%
Eastern	104 000	130 000	106 000	25%	2%
Khayalitsha	98 000	122 000	95 000	24%	-3%
Klipfontein	88 000	114 000	91 000	30%	3%
Mitchell's Plain	69 000	123 000	98 000	78%	42%
Northern Panorama	129 000	218 000	184 000	69%	43%
Southern	80 000	102 000	84 000	28%	5%
Tygerberg	103 000	134 000	111 000	30%	8%
Total	760 000	1 057 000	864 000	39%	14%

Table 2: Projected Households by Health District for the City of Cape Town

7 Consequence of the Projections

7.1 Population Growth

The mid range projection estimates that 3.2 million people reside in the City of Cape Town in 2006. This figure presents an increase of 700 000 people between the 1996 recorded census figure and 2006. During this period the City has grown fairly rapidly with an average growth rate of 3.07% in 1996 decreasing to an average growth rate of 1.61% in 2006.

The projection indicates that over the next 15 years the growth of the City of Cape Town will slow dramatically. The projection suggests that from 2006 to 2021, the population will grow by about 300 000 people.

The Black African population group constitutes the most rapidly growing segment of the cities population and is projected to grow by 132 706 people from 2006 to 2021, at an average annual growth rate of 0.7%. This group that presently constitutes 35% of the City population is projected to make-up 36% of the City's population in 2021.

The Coloured group, which presently makes up 46% of the City's population, is projected to grow at a slower average annual rate of 0.6% over the next 15 years adding 168 742 people to the City, and will constitute 47% of the population in 2021.

The White group is expected to experience a negative average annual growth rate over the 15 year projection period of -0.6% with its share of the population decreasing from 18% in 2006 to 15% in 2021.

7.2 Dependency Ratio

The sex/age distribution of the population is a major determinant of the range of needs of the various age groups as well as the supply of labour, although it cannot predict the actual performance of the population in terms of employment and the City's potential for growth.

The dependency ratio provides a rough but serviceable measure of the number of people in the more so-called "active" ages (15 to 64), as compared to those in the "dependant" age group. The ratio calculated for the City of Cape Town for the years 2006, 2011, 2021 is 45.4, 46.5, and 46.0 respectively. These measures indicate that over the projection period the City will have more than two people in the working ages for every one person outside of it. The city of Berlin has more than 3 people in the working ages to 1 person in the dependant age group.

The table below shows comparative data for cities in both the developed and under developed areas.

	Sydney*	Sao Paulo*	Berlin*	Lagos*	Cape Town	South Africa
Dependency Ratio	43.6	49.6	39.3	69.8	45.4	46.0
Index of Aging	39.6	23.4	102.9	3.8	20.8	21.0

Table 3: Comparative Dependency Ratio and Index of Aging

* From Table of Data Summary of City Statistics 2005 compiled by the Taiwan Government

7.3 Index of Aging

The index of aging expresses the relationship of the young to the old in a given population as the actual physical and social requirements of these two groups are quite different. As such this index has a much greater range than the dependency ratio, as indicated by the case of Cape Town and Sydney as shown in the above table. Their dependency ratios do not differ greatly (45.4 and 43.6) but the index of aging is very low for Cape Town (20.8) and high for Sydney (39.6). This implies that Cape Town has a young population profile with 26 people over the age of 65 to every 100 people in the 0-14 age group. This index increases over the 15-year period from 20.8 in 2006 to 33 in 2021.

The bar chart below shows the index of aging increasing over the projection period.

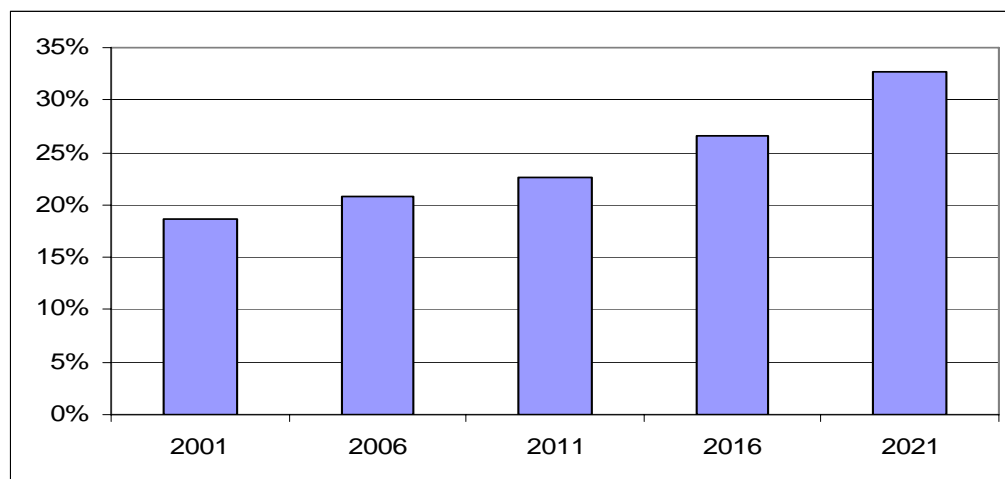


Figure 6: Changes in the Index of Aging for the City of Cape Town

As the number of those over the age of 65 increases over the projection period the needs of this group will need to be addressed. There will be a wide range of needs from curative health measures, greater safety and security to a wide range of social services that cater specially to the needs of the elderly.

7.4 Median Ages

The median age is defined as the age of that person at the midpoint of the age distribution. The median age of the population of Cape Town and at a National level over the projection period is shown in the table below which is indicative of a population with a young demographic profile.

	2006	2011	2016	2021
City of Cape Town	26.4	27.8	29.1	29.9
South Africa	27.2	28.6	30.0	30.9

Table 4: Projected Median Age

Given that over the projection period 50% of the population will be younger than 31 years there will be a need to implement youth development strategies. These must include all role players in the youth sector that relate to the social, economic and physical needs of the young.

The bar chart shows the median ages of the various population groups over the projection period.

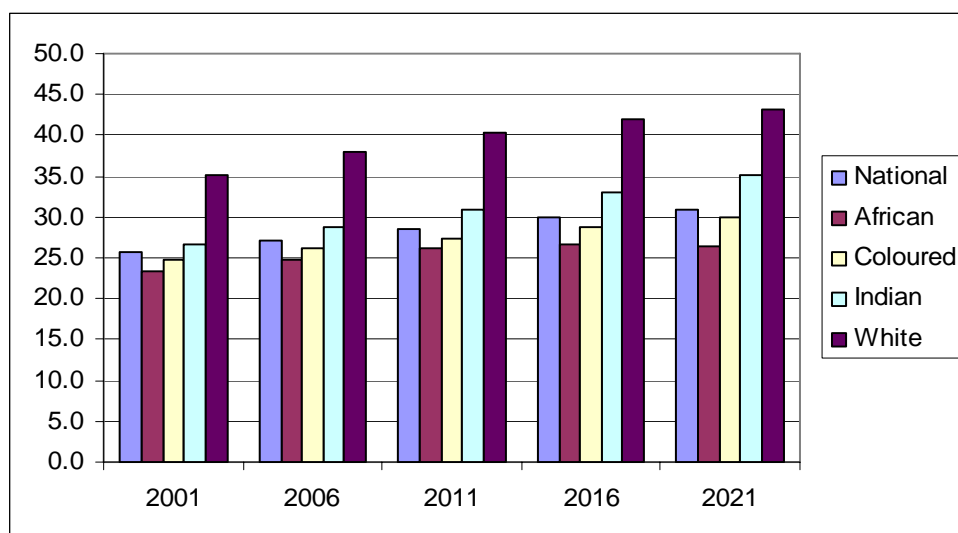


Figure 7: Median Ages for the City of Cape Town

The index of aging and the median age indicate the considerable variations in the age-sex structure of the cities population with a large youth component and a section of the population growing significantly older. The projection indicates that the population will grow slightly older over the projection period with 5% of people over the age of 63 years in 2001 increasing to 8% in 2021. Whereas the youth, those people under the age of 14 years, will decrease from 27% of the population in 2001 to 24% in 2021. However, given that in 2021 half the population will be under the age of 30 years, the population will be relatively young and will begin to enter a new demographic transitional period which will see the population start to age over time.

7.5 Supply of Labour

Given the fact that a large proportion of the population is young this will have a major effect on the age structure of the potential labour force as the youth component moves through the age cohorts into the more productive age groups. The projection estimates that in 2011 and 2021 31.5% and 32.9% of the potential labour force will be in the 20 to 34 age group.

The bar chart below shows the growth rate of the potential labour force over the 20 year projection period which is presently growing at over 8% per annum falling to about 1% 2021.

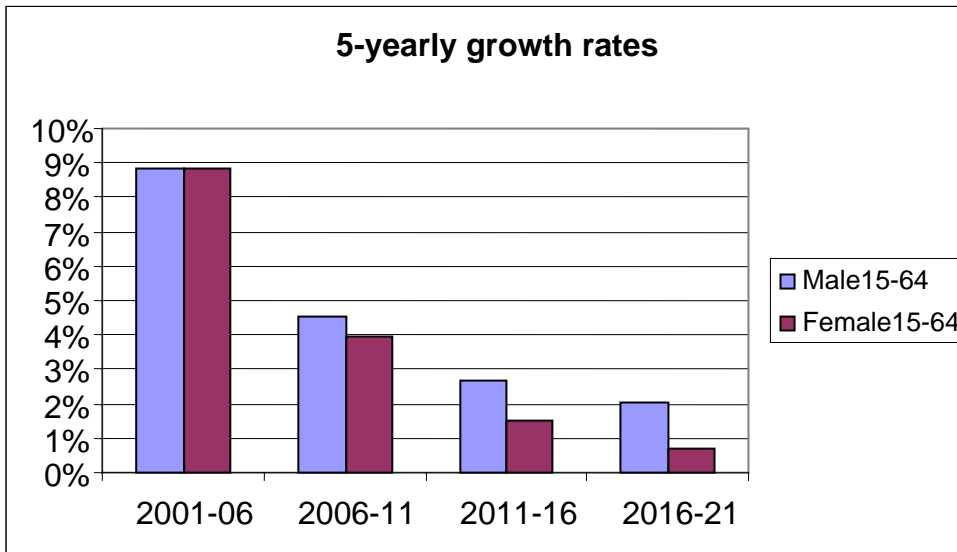


Figure 8: Five-yearly growth rates for population aged 15-64 for the City of Cape Town

The rapid rates of population growth in the past have created a young age structure that provides a built in momentum for future growth in the near future, especially of the potential labour force. However the increase in work seekers could lead to higher levels of unemployment, which will depend to a large extent on the levels of skills needed in every sector of the economy. Where rates of job creation are inadequate the lower income groups will have less access to services such as education and health and, being generally less skilled, will suffer most from low wages and high levels of poverty. The major needs of potential work seekers will focus on new forms of job training, skill development and an efficient and effective public transport system in order to impact positively on commuting patterns to and from centres of employment.

The bar chart below shows the percentage distribution of the three age groups over the projection period. The potential labour force, those aged between 15 and 64, is seen to remain fairly constant at about 68% of the population.

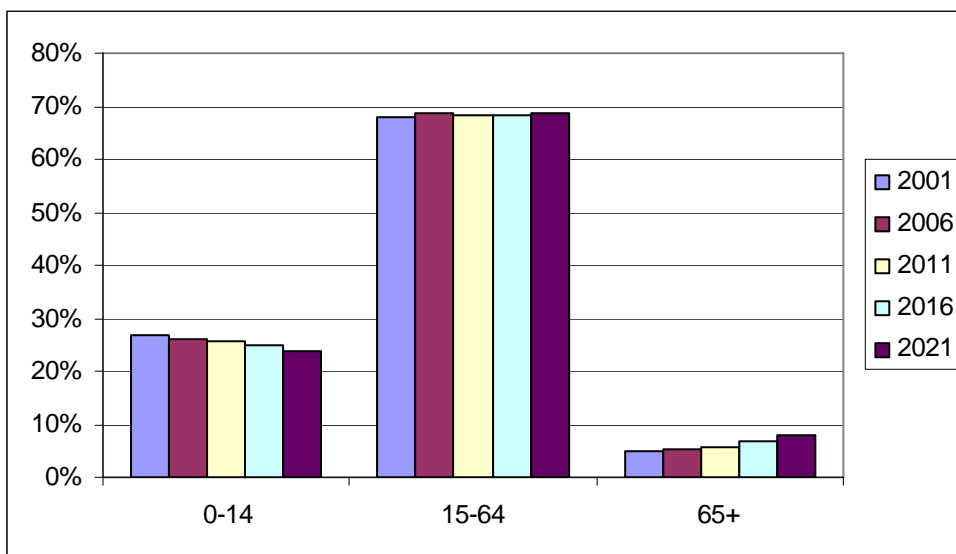


Figure 9: Potential Work Force for the City of Cape Town

7.6 Household Formation

The high projection scenario estimates that households will increase from 760 000 households in 2001, to 1 057 000 in 2021 – an increase of just under 300 000 households at an average annual growth rate of 1.6%.

This can be accepted as a minimum estimate as certain social change factors, such as young people leaving home earlier, more couples separating or divorcing and older people living longer, were not fully taken into account. It can be accepted that given the 2001 census information on population demographic profiles and migration found that a significant proportion of additional growth was concentrated in the lower income groups and these households will therefore require support with respect to the acquisition of land, provision of housing, infra-structure, services and the provision of facilities and amenities.

8 Conclusion

The City's changing demographic profile will present a wide range of challenges and opportunities in respect of pressure on land and resources, particularly the need to create productive employment in order for people to share equitably in income growth.

The projection suggests that population growth will begin to decline. However given that the present young age structure provides an inbuilt momentum to keep growth of the potential labour force high for the foreseeable future, investment in the youth is vital for this sector of the population to fully participate in the development of the City.

In the period 2006 to 2021 the projection study is based on the assumption that the natural increase and migration rate will begin to decline, resulting in an aging population with different needs than those of the youth component.