Profiling the elderly: Understanding recent trends in acceleration of African population ageing*

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ABSTRACT

Recently, the world's population has experienced a remarkable transition from a stage of high birth and death rates to one characterized by low death rates. The core of this transition has been the growth in the number and proportion of older persons. As the tempo of ageing in less developed countries (LDCs) is more rapid than in more developed countries (MDCs), LDCs will have less time to cope with the effects of population ageing than MDCs. Considering the rapid pace of ageing in Africa over the last few years, we take advantage of the African census data to assess the recent paths of population ageing, report on future levels of indicators of ageing and the speed at which they change. We supplement the conventional measures of ageing with ones that incorporate longevity change to provide a more understanding of how these dimensions are expected to evolve. In addition to changes in its level, the speed of ageing is very critical since problems associated with adjusting to demographic change increases with the speed of aging. Preliminary results show that despite the slow pace, generally all the measures indicate that ageing will continue in the next four decades. The proportion of the African population 60+ years increases from 5% in 1990 to 11% in 2050. The two rapidly increasing indicators (proportion aged 60+ years and median age) suggest the need for institutional adjustment to cope with the expected increases. It's not the magnitude of the increases that matter (whether big or small) but how African governments will respond to the needs of an ageing population. We hope that this study will contribute to the knowledge of past and future acceleration of African population ageing and call attention of policy makers to address issues that affect the elderly.

INTRODUCTION

Recently, the world's population has experienced a remarkable transition from a stage of high birth and death rates to one characterised by low death rates (Shrestha 2000). The core of this transition has been the growth in the number and proportion of older persons (Bloom et al. 2008; Olshansky and Carnes 2007; Smith and Mensah 2003). In the history of civilization, the unprecedented growth in the elderly population has been remarkable and calls for urgent attention to the needs of the elderly. As the tempo of ageing in less developed countries (LDCs) is more rapid than in more developed countries (MDCs), LDCs will have less time to cope with the effects of population ageing than MDCs (Makoni 2008; Tucker Buranapin 2001). Since ageing involves social, behavioural and biological processes, studies that range from genetic contributions to chronic disease susceptibility (e.g., Olshansky et al. 2005) to the effects of economic growth on elder's living arrangements (e.g., McGarry and Schoeni 2000) are inevitable. Ageing involves many multifaceted processes that have implications at the micro level for the analysis of individual lives and at the macro level for the analysis of population and historical changes (Schafer and Ferraro 2009).

The unprecedented international demographic change has resulted in some striking imbalances. For example, the United Nations (2009a) reports that one out of five Europeans compared with one out of twenty Africans is 60 years or older. Considering the rapid pace of ageing in Africa over the last few years, we take advantage of the African census archival data to assess the recent paths of population ageing, report on future levels of indicators of ageing and the speed at which they change. We will show how these depend on whether changes in longevity are taken into account.

There are many merits of adopting a comparative approach to studying population ageing in Africa. Briefly, this approach entails a more specific examination of whether processes or structures differ between nations. For example, structural or policy characteristics of one country may influence its inhabitants' ageing experiences in ways that differ from another country. Africa per se, has gone through (and continues to experience) very different socio-economic environments that have implications on the elderly. For example, the United Nations Economic Commission for Africa (UNECA 2009) reports that between 2006 and 2008, the gains in the continent's per capita income have been modest and recent estimates also show that the poverty rate in sub Saharan African countries in 2005 was the same as the rate of 50% in 1981. Ravallion and Chen (2008) report that the number of poor people during the same period has actually doubled. Globally, oil-importing and oil-exporting countries experienced significant increases in inflation rates in 2008. High inflation rates compromise growth and

macroeconomic stability leading to, *inter alia,* low savings and investments rates in many African countries.

Nevertheless, by 2008, economic performance varied across sub regions. For example, growth in Gross Domestic Product (GDP) decelerated in three of the five sub regions of Africa. West and Central Africa grew at 5.4% and 4.9% in 2008 compared with 5.2% and 3.9% in 2007, respectively. In 2008, GDP growth rates decreased in North Africa based on 2006 values (5.8 to 5.4%), East Africa (6.2 to 5.7%) and Southern Africa (6.1 to 4.2%; see UNECA (2009) for details). Although we do not attempt to discuss details of cross-country variations or long-term historical trends in economic performance in this paper, it is important to note that during the same period (i.e., 2006-2008), other countries led GDP growth on the continent whereas others experienced plummeting growth. For example, Ethiopia led East Africa with an 8.0% real GDP growth, Egypt in North Africa at 6.2%, Liberia in West Africa at 8.0%, Equatorial Guinea in Central Africa at 9.0%, and Angola in Southern Africa at 12.9% (UNECA 2009). In some countries, slow growth in GDP was associated with largely post-elections violence (e.g., Kenya at 3.5%), poor rainfall (e.g., Eritrea at 1.0%), food and oil costs and weaker European Union demand for exports (e.g., Tunisia at 4.8%), political upheavals (e.g., Guinea at 2.0%), and high interest rate and weaker global economic activity (e.g., South Africa at 3.1%).

The brief synopsis of recent economic performance suggests that, overall, human and social development remains low in Africa and achievements are diverse, select groups such as the aged and the youth are still more affected than others (Kimokoti and Hamer 2008; Tucker and Buranapin 2001). This calls for evidence based information on past and projected trends in longevity to ensure mainstreaming of the special needs of these groups into policymaking and implementation frameworks. This study is an attempt to contribute to the existing literature on dynamics of the growing elderly population. To sum, the study aims at (1) assessing recent paths of population ageing, (2) reports on future levels of indicators of ageing and the speed at which they change, and (3) document how these depend on whether changes in longevity are taken into account.

METHODOLOGY

Data

The full analysis is expected to employ census data from selected African countries in North, South, East, West, and Central Africa[1] from the 1990s to the most recent round of censuses to document past and estimate future trends in the pace and acceleration of

[1] The number of countries selected will depend on the availability of archival data. To a large extent, countries with at least two census data points will be selected. Availability of most recent censuses will be a key criterion for inclusion to enable projection of future trends.

population ageing. The data will come from the archives of the African Census Analysis Project (ACAP) at the University of Pennsylvania (www.acap.upenn.edu), the Integrated Public Use Microdata Series (IPUMS) International based at the University of Minnesota (https://international.ipums.org/international/), and the United Nations 2008 Revision of World Population Projections.[2]

Methods

After identifying and addressing data quality issues such as those related to age reporting, the study uses conventional measures of ageing that are based on chronological age. These measures assume that a 70-year-old person in 2000 was just as old as a 70-year-old person in 2010 because each had lived the same number of years. The issue is whether it is reasonable to say that the two had aged at the same rate. After all, the 70-year-old in 2010 would, on average, have many more remaining years of life. This underscores the fact that population ageing is not only about the presence of more old people but also about people living long lives.

To assess the recent trends and estimate the future trends in the course of ageing, we will employ indicators that explicitly take changes in the remaining life expectancy into account. Compared to the traditional age that matters for institutional arrangements such as pension systems, the measures to be employed will provide more information on the changing human condition in which more people can plan for a longer and healthier life with consequences for their behaviour (Lutz et al. 2008).

The conventional measures to be considered will be the proportion of the population aged 60+ (Prop. 60+), the median age (MA) of the population and its average age (Aver age). The alternative indicators to measure the proportion of the elderly people do not depend on a fixed age boundary but on a fixed remaining life expectancy. The Prop. RLE 15- is the proportion of the population in age groups that have a remaining life expectancy of 15 years or less. If longevity increases, the minimum age included in Prop. RLE 15- increases. The adjusted version of the MA is called standardized or prospective median age (PMA). It is the age of a person in the year under consideration (e.g., an individual in Ghana in 2000) who had the same remaining life expectancy as a person at the MA in the year under consideration (e.g., 2009). The change in the PMA over a defined period is roughly the change in the MA minus the change in life expectancy at the MA (Lutz et al. 2008).

[2] Available from the United Nations, Department of Economic and Social Affairs (http://esa.un.org/unpp/index.asp?panel=2).

The adjusted version of the average age is the population average remaining years of life (PARYL). It is the weighted average of age-specific remaining life expectancies, where the weights are the proportions of the population at each age. PARLY provides the average remaining years of life of population members. Unlike the other measures, PARYL goes down as a population ages.[3]

Projections were made for periods beyond the available recent censuses. In all census years, country specific life tables associated with the census were used. In few cases, indirect methods (e.g., Brass 1971) were used to generate life tables. Where necessary, the WHO series of life tables for Africa, the UN Life tables and the INDEPTH Model Life Tables (MLTs) were also used in the analyses.[4] We assessed the future levels of ageing up to 2050, a period beyond the deadline for meeting the Millennium Development Goals (2015).

In general, the two types of MLTs which are usually used in population projections, that is, Coale-Demeny Regional and the UN MLTs for developing countries were not used for projections beyond 1995 for two key reasons. First, these MLTs did not take into account the African experience except for the UN MLTs which used data from Tunisia. And second, they were developed before the onset of the HIV epidemic. Specifically, the Coale-Demeny tables were based in European mortality experience between 1871–1953 whereas the UN tables used mortality data (1920–1976) form Middle Africa, Temperate and Tropical South America, East Asia, South Asia, Western South Asia, and Tunisia (Coale and Demeny 1983; United Nations 1982). As others (e.g., Udjo 2008a; 2008b) have argued, the mortality schedules illustrated by these MLTs do not depict the characteristic 'hump' in the mortality curve for the young adult ages, a result of an increased AIDS-related deaths in these age groups. Considering that the first HIV cases in Africa were diagnosed around the early 1980s and the 9–10 year incubation period, it is reasonable to use MLTs that incorporates HIV/AIDS under the assumption that the impact of HIV/AIDS probably became substantial after 1995 in populations with generalised epidemic (see Udjo 2008a for details). To our advantage, the UN World Population Projections (2008 Revision) provide life tables estimates, which incorporate the impact of HIV/AIDS.

[3] Results of this measure will be reported in the revised version when appropriate data become available.
[4] The use and applicability of life tables varied depending on the available data and demographic trends in the selected country. The absence of reliable life tables for some African countries poses a challenge in the analysis of future demographic scenarios. These and other related issues were taken into consideration in order to come up with reasonable results.

Limitations

The results reported here have a number of limitations. First, projections into the distant future are uncertain and the results may be slightly different when evaluated ex post. Second, African census data are marred by age misreporting. Although the analysis excluded individuals with missing or non-stated ages, the proportion of people misstating their ages may affect the results. That is, due to digit preference, a common phenomenon in African census data. And third, life tables used to calculate the longevity measures are often based on incomplete and defective data. Despite these limitations, the preliminary results provide an understanding of how ageing is expected to evolve. The results should be interpreted with caution, in line with the limitations highlighted here.

RESULTS

The demographic and socio-economic profiles of the selected eight countries are presented in Table 1. As of 2009, South Africa had the highest population estimated at 49.3 million followed by Tanzania at 43.7 million, Kenya 39.8 million, and Uganda at 32.7 million. The population of Rwanda, Guinea, Senegal, and Mali ranged between 10 and 13 million. The country with the lowest annual population growth rate was South Africa (1.1%), with the highest recorded in Uganda at 3.3%. In terms of GDP per capita, the highest was South Africa and Senegal at $5,786 and $1,023, respectively. The lowest GDP per capita was recorded in Guinea at $407. As of 2009, all but South Africa and Mali experienced increases in annual GDP growth, the highest being Uganda at 7.1% per annum. Life expectancy at birth (both sexes) was low at 48 years in Mali compared with a high of 58 in Guinea. The highest HIV prevalence among adults aged 15-49 years was recorded in South Africa at 18.1% and a low of 1.0% in Senegal.

Table 1: Brief demographic and socio-economic profile of selected countries as of 2009

Country	Population in millions	Population growth (annual %)	GDP per capita ($)	Annual GDP growth (%)	Life expectancy at birth	HIV prevalence % (15-49 years)
Guinea	10.1	2.4	407	-0.3	58	1.6
Kenya	39.8	2.6	738	2.6	54	6.3
Mali	13.0	2.4	691	4.3	48	1.5
Rwanda	10.0	2.8	506	5.3	50	2.8
Senegal	12.5	2.6	1,023	2.2	56	1.0
South Africa	49.3	1.1	5,786	-1.8	52	18.1
Uganda	32.7	3.3	490	7.1	53	5.4
Tanzania	43.7	2.9	509	5.5	56	6.2

Source: Quick facts from The World Bank (www.worldbank.org/countries) based on the World Development Indicators database of 2010; Last accessed March 14, 2011.

Table 2 presents the basic description of selected African census data from IPUMS International. Most of the data considered here were either 5% or 10% sample of all the main data sets, a standard public release agreement between IPUMS and most of the African governments. The results in this paper are based on data from the 1990s since most of the associated data (e.g., life tables or distribution of deaths by age group) from the 1980s or much earlier are not readily available as inputs into the projections. The earliest census year reported in Table 2 is 1983 for Guinea with 2007 as the latest (South Africa large community survey involving about 286,000 households). Guinea 1983 census had the lowest proportion of missing or non-stated ages at 0.01%, with the highest (1.52%)being observed in the Mali 1987 census. An important observation for majority of the countries is the decline in the proportion of people with missing or non-stated ages between censuses, an indicator of improved reporting or methods of collecting data on age. For example, Kenya 1989 census had 0.12% of individuals with non-stated ages and none in 1999. Mali's population with non-stated ages declined from 1.52% in 1987 to 0.45% in 1998. Uganda had 0.06% of non-stated ages in 1991 and none in 2002.

Table 2: Basic description of selected African census data

Country	Year	Sample size	Missing/Non-stated ages Percent (n)	Source
Guinea	1983	457,837	0.01 (59)	IPUMS
Guinea	1996	729,071	0.25 (1,825)	IPUMS
Kenya	1989	1,074,098	0.12 (1,321)	IPUMS
Kenya	1999	1,407,547	0.00 (0)	IPUMS
Mali	1987	785,384	1.52 (11,977)	IPUMS
Mali	1998	991,330	0.45 (4,508)	IPUMS
Rwanda	1991	742,918	0.00 (0)	IPUMS
Rwanda	2002	843,392	0.00 (0)	IPUMS
Senegal	1988	700,199	0.03 (218)	IPUMS
Senegal	2002	994,562	0.00 (0)	IPUMS
South Africa	1996	3,621,164	1.19 (43,145)	IPUMS
South Africa	2001	3,725,655	0.00 (0)	IPUMS
South Africa	2007	1,047,657	0.00 (0)	IPUMS
Uganda	1991	1,548,460	0.06 (856)	IPUMS
Uganda	2002	2,497,449	0.00 (0)	IPUMS
Tanzania	1988	2,310,424	0.00 (0)	IPUMS
Tanzania	2002	3,732,735	0.00 (0)	IPUMS
Total		**27,209,882**		

Note: Because censuses in many African countries are not conducted exactly 10 years apart as per the United Nations recommendation, the census years are classified as 1990s, 2000s, and 2010s to denote census years close to these periods. Results for Kenya are not reported in the subsequent sections due to non-availability of some input data.

Table 3: Indicators of aging for selected African countries for both sexes

Country (Censuses)	**Indicator**	**1990s**	**2000s**	**2010s**	**2020**	**2030**	**2040**	**2050**
Guinea (1983, 1996)	Aver. Age	22.3	23.0	23.7	24.4	25.1	25.9	26.6
	Prop. 60+	0.07	0.05	0.05	0.06	0.06	0.08	0.10
	MA	17.0	17.8	18.5	19.6	21.7	24.4	27.4
	Prop. RLE 15-	0.04	0.03	0.03	0.04	0.04	0.03	0.04
	PMA	17.0	16.5	9.0	7.5	7.4	8.6	11.3
Mali (1987, 1998)	Aver. Age	21.6	22.1	22.5	23.0	23.5	24.0	24.5
	Prop. 60+	0.06	0.04	0.04	0.04	0.04	0.06	0.07
	MA	16.0	17.0	17.6	18.5	20.4	22.9	25.5
	Prop. RLE 15-	0.05	0.04	0.04	0.04	0.03	0.02	0.02
	PMA	16.0	17.1	15.3	13.7	13.1	13.3	14.8
Rwanda (1991, 2002)	Aver. Age	20.8	21.0	21.2	21.4	21.6	21.8	22.0
	Prop. 60+	0.05	0.04	0.04	0.05	0.05	0.06	0.10
	MA	16.0	17.0	18.7	19.0	21.4	24.3	27.0
	Prop. RLE 15-	0.03	0.02	0.02	0.01	0.02	0.02	0.03
	PMA	16.0	19.7	16.3	13.9	14.0	15.0	16.8
Senegal (1988, 2002)	Aver. Age	21.6	22.1	22.5	23.0	23.5	24.0	24.5
	Prop. 60+	0.04	0.05	0.04	0.04	0.05	0.07	0.09
	MA	16.5	18.0	18.0	19.6	22.4	25.4	28.4
	Prop. RLE 15-	0.02	0.02	0.02	0.02	0.01	0.02	0.03
	PMA	16.5	19.1	17.6	17.2	17.7	18.5	20.8
South Africa (1996, 2001)*	Aver. Age	26.1	26.8	27.3	27.9	28.4	29.0	29.6
	Prop. 60+	0.07	0.08	0.07	0.10	0.11	0.12	0.14
	MA	22.0	23.0	24.9	26.5	28.1	29.8	31.9
	Prop. RLE 15-	0.02	0.02	0.03	0.04	0.05	0.06	0.04
	PMA	22.0	32.8	37.6	36.8	36.1	34.4	35.5
Uganda (1991, 2002)	Aver. Age	20.5	20.2	20.4	20.6	20.8	21.0	21.2
	Prop. 60+	0.05	0.05	0.04	0.04	0.04	0.05	0.07
	MA	16.0	15.0	15.6	16.6	18.5	21.2	24.2
	Prop. RLE 15-	0.03	0.03	0.03	0.02	0.02	0.03	0.04
	PMA	16.0	16.2	9.9	7.6	7.1	8.0	10.4
Tanzania (1988, 2002)	Aver. Age	22.0	22.1	22.2	22.3	22.4	22.5	22.5
	Prop. 60+	0.04	0.06	0.05	0.05	0.05	0.06	0.08
	MA	17.2	17.0	17.5	18.0	19.7	22.2	24.8
	Prop. RLE 15-	0.03	0.03	0.03	0.03	0.04	0.04	0.05
	PMA	17.2	19.0	14.4	13.2	13.2	13.8	15.4
Africa region	Aver. Age	--	--	--	--	--	--	--
	Prop. 60+	0.05	0.05	0.05	0.06	0.07	0.08	0.11
	MA	17.5	18.5	19.7	21.2	23.4	25.9	28.5
	Prop. RLE 15-	0.03	0.03	0.02	0.04	0.05	0.05	0.04
	PMA	17.5	17.6	16.7	16.2	16.5	17.1	18.8

Notes: Some of the time periods for the indicators are based on the census year for a specific country. For example, the "1990s" period for Guinea refer to Guinea 1996 census; The figures are based on non-smoothed age data; Non-stated or missing cases have been excluded (see Table 1 for magnitude); Highlighted values were calculated based on a number of assumptions due to lack of census data – see the appendix on 'country notes for measures'; *South Africa 2007 large Community Survey results were: Aver. Age = 28.4, Prop. 60+ = 0.09, MA = 24.0; Reference year for PMA is 2000; "--" not available at the time of the study.

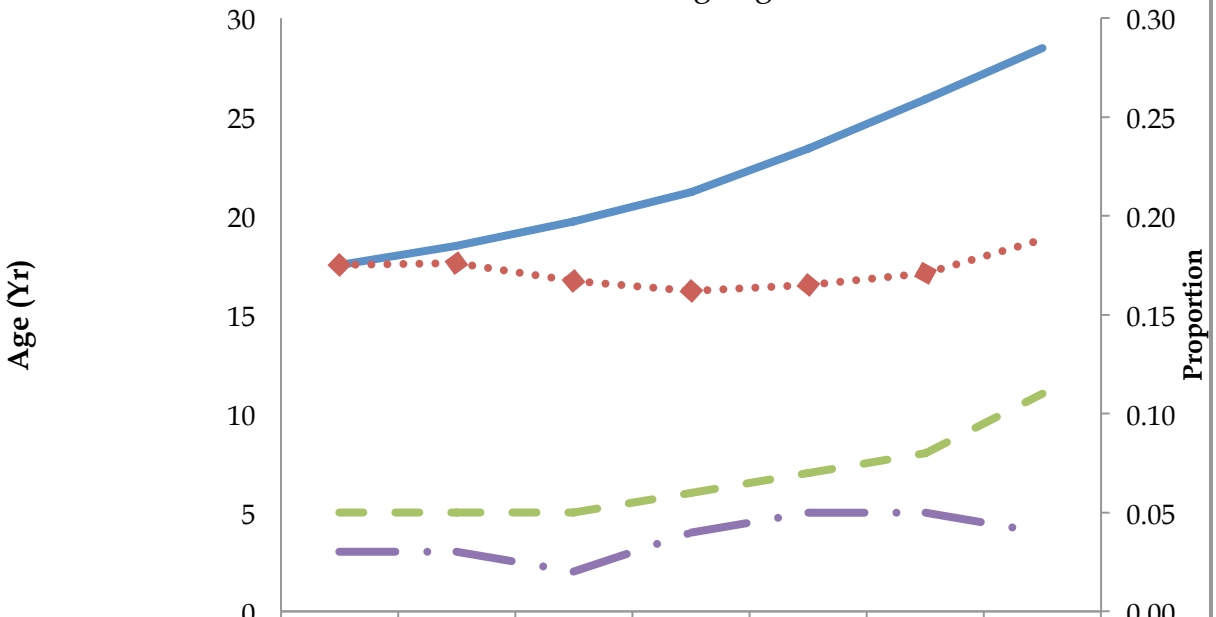
All the five measures of ageing are listed in Table 3 for selected countries and dates. Despite minor fluctuations, all of them indicate that ageing will continue until 2050. In Guinea, the average age is expected to increase from 22.3 years in the 1990s to 26.6 years in 2050, with the proportion aged 60+ years steadily increasing from 0.05% in 2000 to 10% in 2050. The median age for Guinea leaps from 17.0 years in the 1990s to 19.6 years in 2020 before rising to 27.4 years in 2050. The Prop. RLE 15- is relatively stable at roughly 0.04% across the years under consideration. The reference period for the PMA is 2000. As a result the value of the MA in 1990s is the same as that of the PMA in the same year since the latter is the reference year. In Guinea, results show that the PMA declined from 16.5 years in 2000s to 9.0 years in 2010s, 7.5 years in 2020 and increasing to 11.3 in 2050. This implies that, for example, in 2010s the age of a Guinean in the year 2000 who had the same remaining life expectancy as a person at the median age in 2010 was 9.0 years. In simple terms, the individual in 2000 had the same remaining life expectancy at a very young age than the individual in 2010. To illustrate this further, let's assume that the life expectancy at age 9.0 years in 2000 was 20 years. This means that the expected age at death (everything constant) at that age was 29 years (i.e., 20 + 9). With improved survival in 2010, the expected age at death was 38.5 years (i.e., 20 + 18.5). The interpretation of the measures for the other countries is similar to the one provided for Guinea.

Generally, all countries considered in Table 1 with the exception of South Africa show increased gains in life expectancy between the 1990s and 2050. In other words, South Africa has lost the gains in life expectancy gained earlier. This is evidenced by the values of PMA, which are greater than those of MA for all the dates considered. All the indicators show increased proportions of the elderly population over the decades up to 2050.

For Africa as a whole, the proportion of the elderly increased from 5% in the 1990s to 11% in 2050. The MA is expected to increase by 11 years from 17.5 years in the 1990s to 2050. While Prop. RLE 15- is expected to fluctuate between 3% in the 1990s to a low of 2% in 2010 before rising to 5% in 2040, it will end up at 4% in 2050. However, the adjusted version of the MA shows that Africa will benefit from gains in life expectancy.

Figure 1 shows four of these measures (based on Table 1) of ageing as they evolve over time for the African population. Similar illustrations for the other countries have been provided in Appendix 2. All the indicators, as the case with individual countries, show that ageing will continue throughout to 2050.

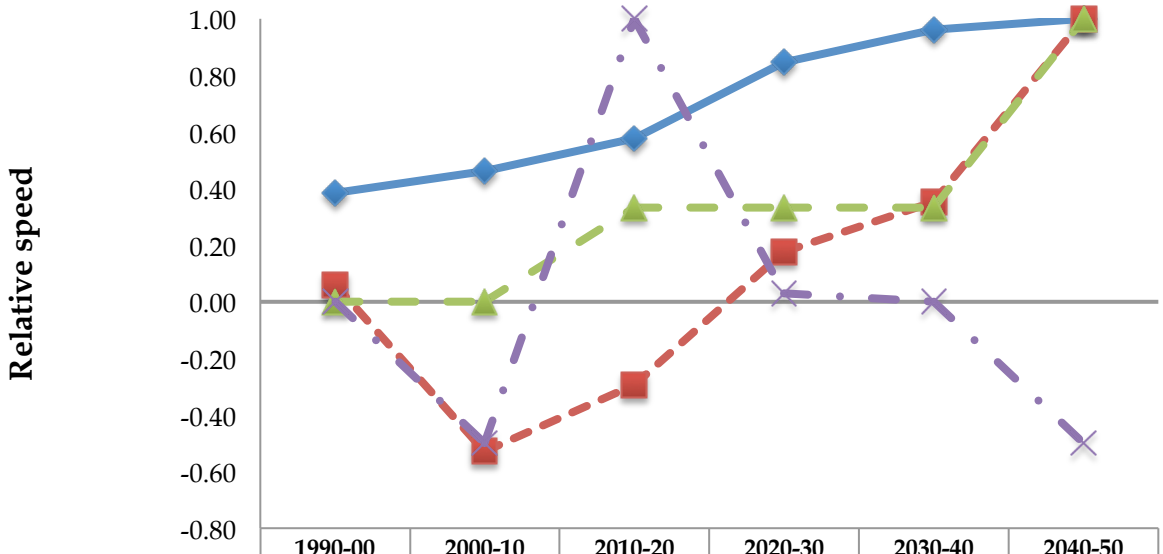
Figure 1: Projected changes in the levels of ageing for **Africa** for 4 indicators of ageing



	1990	2000	2010	2020	2030	2040	2050
MA	17.5	18.5	19.7	21.2	23.4	25.9	28.5
PMA	17.5	17.6	16.7	16.2	16.5	17.1	18.8
Prop. 60+	0.05	0.05	0.05	0.06	0.07	0.08	0.11
Prop. RLE 15-	0.03	0.03	0.02	0.04	0.05	0.05	0.04

Figure 2 displays the changing speed of increase in selected indicators of ageing for Africa. This is calculated as the increases per decade in the level of the indicator divided by the maximum increase projected over the period under consideration. Results show that the PMA and Prop. RLE 15- decelerates between 1990 and 2010 and then accelerates thereafter. The Prop. RLE 15- decelerates again from the 2010-20 period to the end of the projection period, albeit a bit stabilisation between 2020-30 and 2030-40 period. Generally from the 2000-10 period to the end of the projection period, three indicators (MA, PMA, and Prop. 60+) have an accelerating speed, reaching the highest rate of increase during the 2040-50 period. These results show that, even under widely varying demographic and socioeconomic conditions, Africa is expected to experience a significant acceleration in the speed of population ageing over the coming years.

Figure 2: The changing decadal speed of increase in Africa's selected indicators of ageing



	1990-00	2000-10	2010-20	2020-30	2030-40	2040-50
MA	0.38	0.46	0.58	0.85	0.96	1.00
PMA	0.06	-0.53	-0.29	0.18	0.35	1.00
Prop. 60+	0.00	0.00	0.33	0.33	0.33	1.00
Prop. RLE 15-	0.00	-0.50	1.00	0.03	0.00	-0.50

DISCUSSION AND CONCLUSION

Global population ageing is a by-product of the demographic transition in which both mortality and fertility decline from higher to lower levels. The total fertility rate in MDCs is below replacement level. In LDCs, the fertility decline started late and has proceeded faster than in the MDCs. Yet, in all regions people are increasingly likely to increase their longevity (United Nations 2009b). Our results on the assessment of the recent paths of population ageing and the speed at which they change show that in Guinea, Mali, Senegal, Rwanda, South Africa, Uganda and Tanzania, as well as Africa as a whole, generally all the measures indicate that ageing will continue in the next four decades, albeit the slow pace. The two rapidly increasing indicators (the proportion of individuals aged 60 years and over and median age) are based on the traditional definition of age hence suggesting the need for institutional adjustment to cope with the expected increases. The proportion of the African population 60+ years old is increased from 5% in 1990 to 11% in 2050. This increase is tremendous in a region characterised by poverty as well as life threatening diseases such as HIV/AIDS.

Except for South Africa where the PMA has been consistently exceeded the MA, the two measures adjusted for longevity change show a slower pace of change. This implies that in South Africa, the gains in life reduced from 2000 to 2010 compared with early 1990s probably due to HIV/AIDS. The lost years will be regained from 2050 (and hopefully beyond) when the gap between PMA and MA starts to narrow. That HIV/AIDS has impacted life expectancy in South Africa has been documented elsewhere (e.g., Groenewald et al. 2005; Hosegood et al. 2004). The prop. RLE 15- does not vary a lot for Africa and the selected countries, from 2% in 1990 to 5% in 2050. In addition, the results have shown that South Africa is the oldest country among the selected cases, and is likely to keep this position until 2050 with its median age likely to increase to above 32 years followed by Senegal (28.4 years) and Rwanda (27.0 years).

The chance of Prop. 60+ for Africa being more than a third of the population is close to zero, even by the end of the century (Lutz et al. 2008). However, population ageing (irrespective of the magnitude) has critical implications on individuals and societies. In addition to changes in its level, the speed of aging in Africa is a policy concern due to the difficulties of adaptation to demographic change. Africa as a whole, and the selected countries in particular face the challenge of an accelerating speed of ageing over the coming decades. It's not the magnitude of the increase that matter (whether big or small) but how African governments are bracing themselves up to take care of an ageing population.

African governments should respond appropriately to the growing elderly population by ensuring that policies need to be developed to enable individuals to adjust their behaviour in the face of population ageing. One of the common policies is to alter retirement incentives so that people can have the opportunity to opt for longer working years in expectation of greater longevity. Old age pension systems need to be flexible to allow individuals reap their retirement package and at the same time working in their old age. Governments should also institute laws against age discrimination by employees. It is apparent that the changing economy in many countries is generating demands for skills that may not be possessed by the old. Opportunities should be made available for the old to acquire skills that would make them competitive as the young.

Although it is a policy option to see many elderly people working, only those who are health will do so. This calls for investments in the health infrastructure to cater for the health needs of those aged 60 year and above. These efforts should cover the entire population since those who are likely to lead health lives in their young ages are more likely to survive to older ages. More important, African governments should start recognising the challenges of the increased elderly population and start calling for

meetings to discuss appropriate responses to the needs of the elderly based on the socioeconomic environment of each country.

Appendix 1: Some notes on country measure of ageing.

Country	Year	Measure(s)	Comment
Kenya	2000-2050	MA; Prop. 60+	World Population Projections (WPP) 2008 medium variant
Guinea	1970 and 1980	Prop. RLE 15-	Used figure for 1983 as 1980; and from the UN for 1970
	1983	Prop. RLE 15-	
	1996	Prop. RLE 15-	Used WWP 2008 for 1995-2000 population and life tables for the same period. For population from 1996, used WPP, i.e., 2000s=2000, 2010s=2010
	2000-2050	Prop. 60+; MA	WPP Population database; medium variant; accessed 15 Mar 2011.
	1970s (=1970)	Prop. 60+; MA	WPP Population database for 1970; medium variant; accessed 15 Mar 2011.
	2000-2050	Aver age	Increase of 1.03% per year; Aver age in 1970 was reduced by 1.03%.
Mali	2000-2050	Prop. 60+; MA	WPP Population database; medium variant; accessed 15 Mar 2011.
	2000-2050	Aver age	Increase of 1.02% per year; Aver age in 1970 was reduced by 1.02%.
	1970s (=1970)	Prop. 60+; MA	WPP Population database for 1970; medium variant; accessed 15 Mar 2011.
Rwanda	2010-2050	Prop. 60+;	WPP Population database; medium variant; accessed 15 Mar 2011.
	2010-2050	Aver age	Increase of 1.01% per year; Aver age in 1970s and 1980s was reduced by 1.01%
	1970s-1980s	Prop. 60+; MA	WPP Population database for 1970 and 1980; medium variant; accessed 15 Mar 2011.
	2010-2020	MA	Rwanda population projections based on 2002 census.
	2020-2050	MA	WPP Population database; medium variant; accessed 15 Mar 2011.
Senegal	1970s (=1970)	Prop. 60+; MA	WPP Population database for 1970; medium variant; accessed 15 Mar 2011.
	2010-2050	Aver age	Increase of 1.02% per year; Aver age in 1970 was reduced by 1.02%.
	2010-2050	Prop. 60+; MA	WPP Population database; medium variant; accessed 15 Mar 2011.
	1990s (=1995)	Prop. 60+; MA	WPP Population database for 1995; medium variant; accessed 15 Mar 2011.
S Africa	2010-2050	Prop. 60+; MA	WPP Population database; medium variant; accessed 15 Mar 2011.
	2010-2050	Aver age	Increase of 1.03% per year; Aver age in 1970 and 1980 was reduced by 1.03%.
Uganda	2010-2050	Prop. 60+; MA	WPP Population database; medium variant; accessed 15 Mar 2011.
	1970s; 1980s; 2010-2050	Aver age	Decline by 1.01% for 1970s and 1980s; for 2010-2050 it will increase by 1.01%.

	1980s (=1980)	Prop. 60+; MA	WPP Population database for 1980; medium variant; accessed 15 Mar 2011.
	1970s (=1970)	Prop. 60+; MA	WPP Population database for 1970; medium variant; accessed 15 Mar 2011.
Tanzania	1990s (=1995)	Prop. 60+; MA	WPP Population database for 1995; medium variant; accessed 15 Mar 2011.
	1970s	Aver age	Increase by 1.004% for 1970s and for 2010s and beyond increases by the same rate.
	1970s (=1970)	Prop. 60+; MA	WPP Population database for 1970; medium variant; accessed 15 Mar 2011.
	2010-2050	Prop. 60+; MA	WPP Population database; medium variant; accessed 15 Mar 2011.

Other notes:

- Data prior to 1990 not reported to incompleteness. The period 1990 onwards had reliable data.
- Guinea, no country level projections from official figures at time of study (from 1996 onwards).
- Life tables for 2010s: used WHO Life tables for 2008 if country-specific not available;
- PMA should be computed based on year 2000 as reference since by then most countries had censuses available or 1990s;
- Conservative Prop. RLE 15- estimates for 1970s and 1980s until prior projections are available.

Appendix 2: Selected measures of ageing for selected countries (based on Table 1).

Fig A1: Projected changes in the levels of ageing for Guinea for 4 indicators of ageing

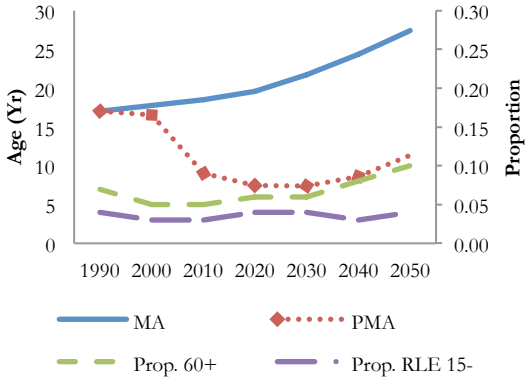


Fig A2: Projected changes in the levels of ageing for Mali for 4 indicators of ageing

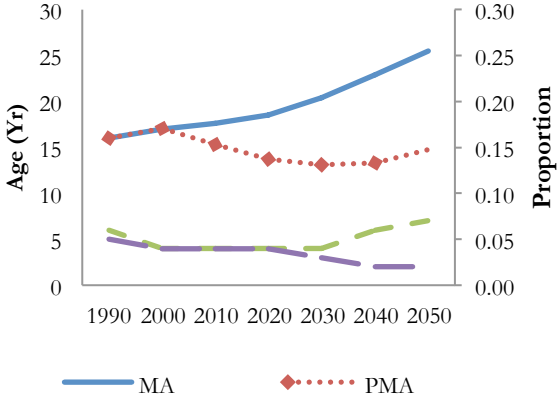


Fig A3: Projected changes in the levels of ageing for Rwanda for 4 indicators of ageing

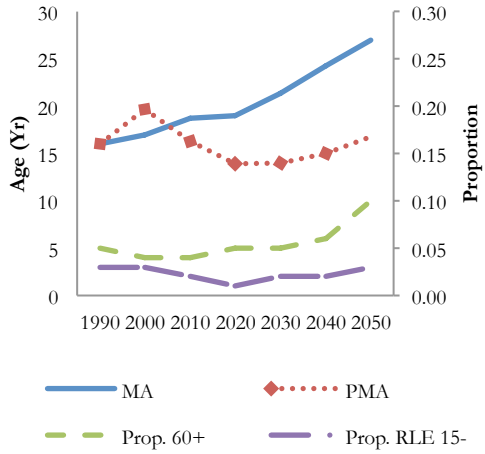


Fig A4: Projected changes in the levels of ageing for Senegal for 4 indicators of ageing

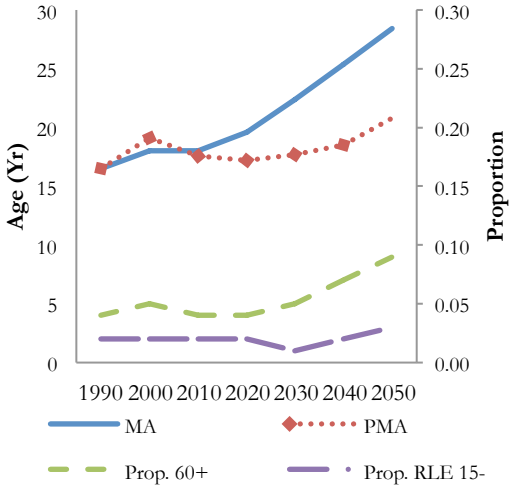


Fig 5: Projected changes in the levels of ageing for S Africa for 4 indicators of ageing

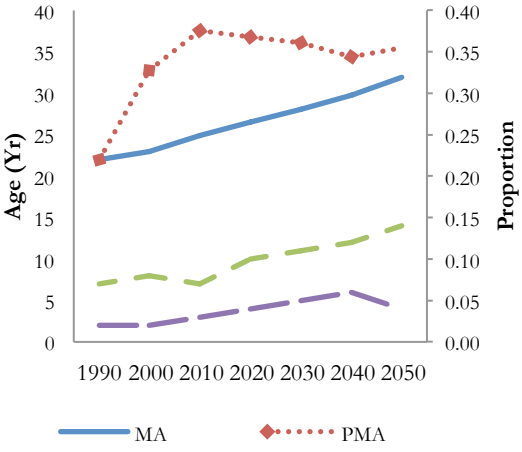
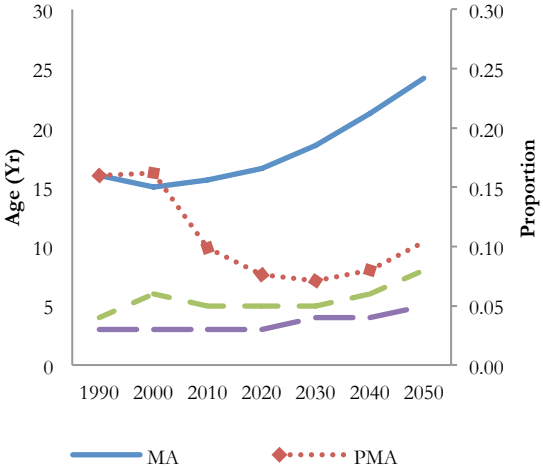
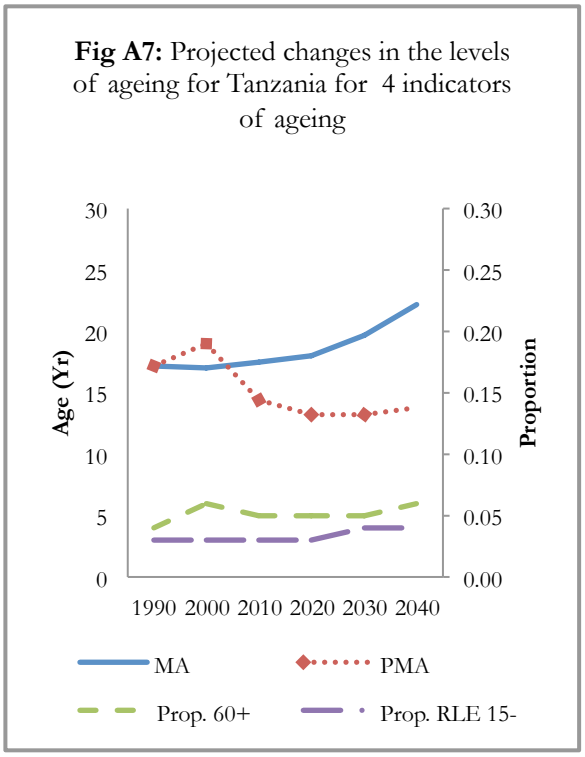


Fig A6: Projected changes in the levels of ageing for Uganda for 4 indicators of ageing





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