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Since 1981, when the first cases of the acquired immunodeficiency syndrome (AIDS) were diagnosed, the world has been facing the deadliest epidemic in contemporary history. By the end of 2002, more than 65 million persons had been infected by HIV and about 42 million were still alive, 38.6 million adults and 3.2 million children. According to the Joint United Nations Programme on HIV/AIDS (UNAIDS), AIDS has become the fourth most important cause of death in the world and it is already the leading cause of death in sub-Saharan Africa (UNAIDS/WHO, 2001). The rapid spread of the disease has meant that in the most affected regions there is an escalating demand for care by those infected and a need to deal with the social and economic consequences of the high levels of morbidity and mortality associated with the disease.

The detrimental impact of the HIV/AIDS epidemic is more strongly felt in developing countries, where 93 per cent of those infected with HIV lived at the end of 2002. Sub-Saharan Africa, with more than 29 million persons living with HIV at that date, remains the region where the highest prevalence levels predominate. However, both the number of infected persons and that of highly affected countries are rising in Asia and Latin America and the Caribbean. It is estimated that by the end of 2002 Asia had more than 7 million persons infected with HIV and that an additional 1.9 million HIV-positive persons lived in Latin America and the Caribbean (UNAIDS/WHO, 2002).

Because many of the people infected with HIV re

Africa (located in Eastern, Middle and Western Africa), eight countries in the Americas (including the United States of America) and one in Asia (Thailand). Between 1981 and 1985, widespread transmission started in another 12 countries of Africa and in Brazil. The late 1980s saw the beginning of widespread transmission in countries of Southern Africa, and in Cambodia, India and Myanmar. Widespread transmission of the epidemic in the Russian Federation began in 1990 and in China in 1996. That is, with the exception of the countries in Southern Africa, most of the highly affected countries of Africa began to experience widespread transmission of HIV before 1986, as did most of those in the Americas. The epidemics in Southern Africa, the Russian Federation and most of the affected countries of Asia started in the late 1980s or even in the 1990s.

According to current estimates, the average time elapsed between the year of widespread transmission and the year of peak incidence is 13.8 years, but there is wide variation among countries. For example, in Uganda and Lesotho it is estimated that incidence reached its peak just 6 years after the start of widespread transmission. However, Uganda's incidence peaked at 3.8 per cent per year while Lesotho's rocketed to a level of 8.3 per cent per year (table 3), meaning that the uninfected adult population aged 15 to 49 of Lesotho had one chance in twelve of getting infected during the year of peak incidence. At the opposite end of the spectrum, in seven countries—Sierra Leone, Equatorial Guinea, Dominican Republic, Trinidad and Tobago, Honduras, India, and the United States—the time span between the start of the epidemic and peak incidence is expected to be 20 years or longer. In the United States, for instance, peak incidence is projected to occur in 2011, 31 years after the start of widespread transmission, but it must be noted that HIV incidence declined in the United States during the early 1990s before resuming an upward trend in the late 1990s.

In estimating the path of HIV incidence over time, the dynamics of the HIV/AIDS epidemic are assumed to remain constant until 2010 in terms of the four parameters that determine the model fitted to the time series of prevalence levels estimated by UNAIDS. Constancy of those parameters can be interpreted to mean constancy of

To conclude this review of estimates and projections of HIV prevalence, figure 1 presents the evolution of annual prevalence levels in the population aged 15-49 for selected HIV-affected countries. Great variation among countries is evident in both the past and future course of the epidemic, and crossovers of prevalence between countries have occurred in the past and are projected to occur in the future. Kenya, for instance, had higher HIV prevalence than Botswana and South Africa until the mid-1990s but, despite the later start of the epidemic in Southern Africa, its rapid spread has driven prevalence in those countries far above that in Kenya. Uganda, which experienced an early and rapid start to the epidemic, has seen a dramatic decline in prevalence due to a concerted national campaign to combat the spread of the disease. The early and swift decline of Uganda's prevalence can be contrasted with the slower and protracted reduction projected for other African countries. Because of the many uncertainties that surround the future course of the epidemic, the projected levels of incidence and the resulting levels of prevalence can at best be taken as indicative of plausible outcomes provided that steps taken to control the epidemic prove successful in the long run.

B. D

During the next twenty-five years, the relative impact of AIDS on the population growth rate is expected to increase as fertility continues to drop in all countries. Thus, instead of growing at a rate of 0.62 per cent per year, the 53 affected countries will likely grow at a rate of 0.47 per cent annually, a reduction of nearly 25 per cent. At the regional level, the largest relative reductions in the growth rate are projected to occur in the affected countries of Africa and Asia. In the affected countries of Africa as a whole, average annual growth is expected to be cut by 20 per cent and 15 per cent, respectively, during 2000-2025 and 2025-2050. In the five countries of Asia, the reduction of the growth rate is expected to be about 9 per cent in 2000-2025 when the No-AIDS population would have been growing at a rate of 0.9 per cent per year, but it will likely rise to a 34 per cent reduction in 2025-2050 when the No-AIDS population would have been growing at a low 0.26 per cent per year. That is, even though HIV prevalence is projected to decline significantly during 2010-2050, the relative impact of the disease on population growth will become more accentuated over time as continued fertility reductions lead to lower rates of natural increase in the affected countries.

The comparisons made above at the regional level become more marked when countries are grouped according the their level of HIV prevalence in 2001 (see table 5). In the seven most affected countries, whose adult HIV prevalence in 2001 was above 20 per cent, AIDS is projected to bring population growth almost to a halt. Thus, the population of those seven countries is projected to increase by just 4 million people between 2000 and 2050 or less than 1 per cent. In the absence of AIDS, their overall population would have nearly doubled. While the average annual growth rate in this group of countries remains above zero during 2000-2050, in fact their overall population declines over the 2020-2030 decade (data not shown).

Significant relative reductions in the average annual rate of growth are also noticeable among the group of countries whose HIV prevalence in 2001 ranged from 10 to 20 per cent. The overall population of those countries, which would have more than doubled between 2000 and 2050 to attain 195 million, is expected to be instead 133 million or 62 million less than without AIDS. In addition, their population growth rate is projected to be about 40 per cent lower with AIDS than without.

The population reductions projected for other groups of countries are less striking, especially in relative terms. However, it bears noting that whereas the groups of countries with an adult HIV prevalence of 10 per cent or higher account for 28 per cent of the overall population reduction associated with HIV/AIDS, those with prevalence levels of less than one per cent account for 30 per cent of the overall reduction and those with levels ranging from 5 to 10 per cent account for another 29 per cent. Furthermore, among the very populous affected countries that still have very low HIV prevalence, the impact of AIDS in reducing the population growth rate is striking after 2025: during 2025-2050 the population of that group of countries is projected to grow 30 per cent less rapidly than it would in the absence of AIDS.

To conclude, it bears emphasizing that the impact of AIDS in reducing population size is due both to excess deaths and to a deficit of births. In fact, 62 per cent of the 479 million reduction of the population in 2050 is due to “excess deaths” (which could be explained in very general terms as deaths projected to occur earlier than they would if there were no AIDS). The other 38 per cent is accounted for by “missing births,” that is, births that will not occur because HIV-infected women are projected to die before the end of their reproductive life. The share of the population deficit attributable to missing births grows steadily over the course of the projection period (figure 2).

2. Population structure

The excess and premature mortality caused by AIDS has a major impact not only on population size but also on the age structure of an affected population. The most striking impact of the disease can byoted populatwith

shown in figure 3 illustrates, the differences between the estimates reflecting the impact of AIDS and the No-AIDS scenario is already noticeable, particularly among children under 10 and adults between the ages of 25 and 54. And the differences by age are expected to become more accentuated in the future. By 2025, as figure 4 shows, the impact of the disease is dramatic at all ages, with age groups 35-65 being particularly hollowed out by the premature deaths caused by AIDS. Similar effects, but less striking, are noticeable among other groups of countries with lower prevalence levels of the disease.

In the 5 populous countries where HIV prevalence is currently below 1 per cent, the impact on the age and sex structure of the population will be quite small despite the large number of AIDS deaths that these countries will experience. Figure 5 shows the projected age structure in 2025 of those five countries combined. The effect of mortality on the age structure is noticeable among adults, but the impact on the number of births and child mortality will be small.

3. General mortality

Since there is as yet no cure for AIDS and virtually everyone who is infected by HIV eventually dies of the disease, the most immediate effect of the epidemic is to increase mortality. Even in developed countries, where various means of treatment can prolong the lives of those infected by HIV, AIDS is still contributing to raise mortality rates above the levels they would have had in the absence of the disease. In most developing countries, particularly those in sub-Saharan Africa, the drug therapy that can delay the onset of the life-threatening symptoms of AIDS is still largely inaccessible. Consequently, as table 6 indicates, in 2000-2005 the 38 affected countries in sub-Saharan Africa are expected to experience 14.8 million more deaths than they would have in the absence of AIDS. Among all 53 affected countries, the total number of excess deaths during that period is expected to amount to 19.8 million, implying that the countries of sub-Saharan Africa will account for 75 per cent of the excess deaths brought about by the epidemic in all the affected countries during 2000-2005. A further 3.5 million excess deaths will occur in Asia, with India accounting for most of them. In Latin American and the Caribbean, the number of excess deaths is lower, amounting to 0.7 million, and in the two more developed countries, excess deaths are expected to total 0.8 million.

Because HIV-infected adults have a median survival time of about 10 years after contracting the infection, the maximum number of excess deaths will occur after the maximum prevalence is reached. In all regions except Asia, the excess number of deaths will continue rising until 2015-2020 (not shown). In Asia, the peak is expected to occur five years later, in 2020-2025. In the affected countries of sub-Saharan Africa, excess deaths are projected to account for over 40 per cent of all deaths occurring between 2010 and 2025. Even by 2045-2050, sub-Saharan Africa will still experience 13 per cent more deaths than it would have in the absence of AIDS. In all other regions, the proportion of excess deaths expected in 2045-2050 is very low (below 3 per cent), partly because in the No-AIDS scenario the number of deaths increases to higher levels than in the projection incorporating the effect of AIDS. That is, in the absence of AIDS, there would be more people and more of them would survive longer. Therefore, if the No-AIDS scenario were extended long enough, at some point the number of deaths it produces would surpass those in the AIDS scenario, even if prevalence levels remained significant.

Comparisons can also be made in terms of the crude death rate (CDR), a general indicator of mortality. However, because the CDR is influenced by the age structure of the population, it is not strictly comparable between countries. In conditions of improving mortality the CDR will decline, but when improving mortality is accompanied by declining fertility, the age structure of the population shifts to older ages and eventually the CDR will rise as the elderly, who have the highest death rates, make up a rising proportion of the population. Consequently, examination of the effect of AIDS on the CDR will be confounded by the differing age structures of populations in different regions. For all 53 affected countries, the CDR would be expected to decline until 2015-2020 and then gradually rise even in the absence of AIDS. Owing to the impact of AIDS, the increase in the CDR is projected to occur earlier, in

relative terms females are expected to experience 10.2 per cent more deaths than in the No-AIDS scenario, whereas for males the equivalent percentage is 9.9 per cent. In the two affected countries of the developed world (the Russian Federation and the United States) the number of excess deaths among males is expected to be more than twice as high as that for females. The differing impact by region is due to different assumptions about the sex ratio of transmission over the course of the epidemic which reflects current patterns in the relative susceptibility to infection by sex.

Because AIDS affects mostly persons in the reproductive ages, it has a very noticeable impact on the age distribution of deaths, raising those among adults aged 25-49 and reducing the number of deaths at advanced ages (in general, 65 and over) because less people survive that long. A comparison of the deaths expected during 2000-2020 in the projections that incorporate the effect of AIDS and those in the No-AIDS scenario by age shows clearly the pattern described (table 9). In the 53 affected countries taken together, the projections with AIDS produce 43 million excess deaths among those aged 25-34 and another 45 million among those aged 35-49. There is also some excess mortality among younger age groups (16 million deaths under age 15 and nearly 5 million among those aged 15-24) and among those aged 50-64 (7 million), but the bulk of AIDS impact is concentrated among those aged 25-49. Indeed, deaths to those aged 25-49 account for 20 per cent of all deaths in the projections with AIDS instead of the 11 per cent expected according to the No-AIDS scenario. Among those aged 65 or over, in contrast, the number of deaths in the projection that incorporates AIDS is lower than in the No-AIDS scenario because fewer people survive to age 65 or over when AIDS is present.

Figures 6 and 7 illustrate the shift caused by AIDS in the age distribution of deaths. The share of deaths to those under age 5 and those aged 50 or older—that is, the two age groups that jointly account for the largest proportion of deaths in populations not affected by AIDS—decline dramatically when AIDS becomes a major cause of death and the share of deaths to persons aged 25-49 increases. The impact of AIDS is particularly striking among the countries where HIV prevalence was higher than 20 per cent in 2001. In those countries, a full 54 per cent of the deaths expected in 2000-2020 willct -0.0004 Tc 0/MCID 4 e2.(t

The effect of AIDS on under-five mortality is more marked than on infant mortality but, just as in the case of infant mortality, AIDS is not projected to reverse the declining trend in under-five mortality at the regional level. For the group of all 53 affected countries, under-five mortality is projected to be 7.8 per cent higher in 2000-2005 than it would be without AIDS, compared to an excess of 2.2 per cent for infant mortality, and although the relative impact of AIDS is expected to increase to 13.3 per cent in 2045-2050, by that time under-five mortality is projected to be nearly two-thirds lower than in 2000-2005 (33 deaths per 1,000 births vs. 92 deaths per 1,000 births). As expected, the effect of AIDS on under-five mortality is particularly high in the affected countries of Africa where 19 additional child deaths per 1,000 births are expected in 2000-2005 than there would have been without AIDS. But even for the affected countries of Africa, under-five mortality is expected to decline from 161 deaths per 1,000 births to 53 deaths per 1,000 births between 2000-2005 and 2045-2050. For the affected countries in all other regions, the absolute effect of AIDS on under-five mortality is considerably smaller with the result that significant reductions of mortality in childhood are projected even in the presence of AIDS.

The increases of mortality in childhood associated with AIDS are more striking when we consider countries grouped according to prevalence level, as in table 11. For the group of countries with HIV prevalence above 20 per cent in 2001, both infant mortality and under-five are estimated or projected to increase during 1990-2005. For all other prevalence groups, AIDS has not reversed the downward trend in infant and child mortality rates but it has already slowed down that decline and is projected to continue doing so over the foreseeable future.

The AIDS epidemic is also having an impact on mortality rates between ages 5 and 15. According to the survivorship estimates for children infected by HIV used in projecting the impact of the disease, about 40 per cent of infected children survive to their fifth birthday and more than 10 per cent will survive to their tenth birthday. Because non-AIDS mortality at these ages is extremely low, the relative impact of AIDS mortality on the age-specific death rates at ages 5-9 and 10-14 is quite large.

C. COUNTRY PROFILES

This section focuses on the cases of three countries: Zimbabwe in Eastern Africa, and Botswana and South Africa in Southern Africa. In all of them HIV prevalence levels are very high. Botswana and Zimbabwe had the two highest proportions of HIV-positive persons among their adult populations in 2001. But, whereas the epidemic in Zimbabwe had started in the early 1980s, the start of the epidemic in Botswana was more recent. Also recent was the epidemic raging in South Africa, where the epidemic has expanded very rapidly. In all three countries, the demographic impact of HIV/AIDS has already been significant and is expected to become severe over the medium-term future. It is of interest, therefore, to present these cases in some detail.

In Botswana, the country with the highest HIV prevalence in 2001, over one out of every three adults is HIV-positive. According to current projections of the future incidence of HIV infection, in Botswana, out of every 100 persons aged 15 in 2000, 69 will contract HIV before their fiftieth birthday. Life expectancy in Botswana has already dropped from 65 years in 1990-1995 to 56.3 years in 1995-2000 and is projected to fall dramatically to 39.7 years in 2000-2005 (table 12), a figure about 28 years lower than the life expectancy projected in the absence of AIDS. The decline in life expectancy is projected to bottom out in 2010-2015 at a level of 31.6 years and, even with a projected decline in HIV prevalence, life expectancy is still projected to be a low 43.6 years in 2045-2050. Before the AIDS epidemic hit, Botswana had one of the lowest child mortality rates in sub-Saharan Africa. Today, its under-five mortality is estimated at 104 deaths per 1,000 births, up from 63 deaths per 1,000 in 1990-1995. Although mortality under age five is projected to decline gradually after 2005, it will take 30 years to reach again

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TABLE 1. COUNTRIES FOR WHICH THE DEMOGRAPHIC IMPACT OF HIV/AIDS IS EXPLICITLY INCLUDED IN THE *2002 REVISION* OF THE OFFICIAL UNITED NATIONS ESTIMATES AND PROJECTIONS

	Country	*Estimated number of HIV positive persons aged 15-49 in 2001*	*HIV prevalence among persons aged 15-49 (percentage)*
Africa			
1	Angola	320 000	5.5
2	Benin	110 000	3.6
3	Botswana	300 000	38.8
4	Burkina Faso	380 000	6.5
5	Burundi	330 000	8.3
6	Cameroon	860 000	11.8
7	Central African Republic	220 000	12.9
8	Chad	130 000	3.6
9	Congo	99 000	7.2
10	Côte d'Ivoire	690 000	9.7
11	Democratic Republic of the Congo	1 100 000	4.9
12	Djibouti [1]	30 000	7.1
13	Equatorial Guinea	5 500	3.4
14	Eritrea	49 000	2.8
15	Ethiopia	1 900 000	6.4
16	Gabon [1]	27 000	3.6
17	Gambia	7 900	1.6
18	Ghana	330 000	3.0
19	Guinea [1]	78 000	1.8
20	Guinea-Bissau	16 000	2.8
21	Kenya	2 300 000	15.0
22	Lesotho	330 000	31.0
23	Liberia [1]	114 000	6.5
24	Malawi	780 000	15.0
25	Mali	100 000	1.7
26	Mozambique	1 000 000	13.0
27	Namibia	200 000	22.5
28	Nigeria	3 200 000	5.8
29	Rwanda	430 000	8.9
30	Sierra Leone	150 000	7.0
31	South Africa	4 700 000	20.1
32	Sudan	410 000	2.6
33	Swaziland	150 000	33.4
34	Togo	130 000	6.0
35	Uganda	510 000	5.0
36	United Republic of Tanzania	1 300 000	7.8
37	Zambia	1 000 000	21.5
38	Zimbabwe	2 000 000	33.7

	Country	Estimated number of HIV positive persons aged 15-49 in 2001	HIV prevalence among persons aged 15-49 (percentage)
Asia			
1	Cambodia	160 000	2.7
2	China	850 000	0.1
3	India	3 800 000	0.8
4	Thailand	650 000	1.8
5	Myanmar [1]	594 000	2.0
Latin America and the Caribbean			
1	Bahamas	6 100	3.5
2	Belize	2 200	2.0
3	Brazil	600 000	0.7
4	Dominican Republic	120 000	2.5
5	Guyana	17 000	2.7
6	Haiti	240 000	6.1
7	Honduras	54 000	1.6
8	Trinidad and Tobago	17 000	2.5
More developed countries			
1	Russian Federation	700 000	0.9
2	United States of America	890 000	0.6

Source: Report on the Global HIV/AIDS Epidemic 2002, Joint United Nations Programme on HIV/AIDS and World Health Organization (Geneva), July 2002.

[1] Data for Djibouti, Gabon, Guinea, Liberia, and Myanmar were not reported in the source publication. The figures given here are estimates by the United Nations Population Division.

TABLE 2 (*continued*)

	Country	*Adult HIV prevalence (2001)*	*Year when widespread transmission began*	*Year when HIV incidence peaks*	*Years elapsed between start of widespread transmission and peak incidence*
7	Equatorial Guinea	3.4	1981	2003	22
8	Ghana	2			

TABLE 3. HIV INCIDENCE AND PREVALENCE AMONG THE POPULATION AGED 15-49 IN 2001 AND 2050,

	Country	Incidence in 2001 (percentage)	Prevalence in 2001 (percentage)	Year in which incidence peaks	Peak incidence (percentage)	Year in which prevalence peaks	Peak prevalence (percentage)	Incidence in 2050 (percentage)	Prevalence in 2050 (percentage)
30	Sierra Leone	1.17	6.7	2001	1.17	2008	8.1	0.21	2.0
31	South Africa	2.51	21.4	1997	3.88	2002	21.7	0.81	8.6
32	Sudan	0.49	2.6	1999	0.57	2004	2.9	0.15	1.4
33	Swaziland	3.27	33.7	1995	6.99	2000	33.8	1.96	19.5
34	Togo	0.69	6.0	1993	1.16	1999	6.0	0.44	3.9
35	U1								

TABLE 4. ESTIMATED AND PROJECTED POPULATION SIZE AND ANNUAL GROWTH RATE ACCORDING TO THE MEDIUM VARIANT ("WITH AIDS") AND TO THE NO-AIDS SCENARIO ("WITHOUT AIDS") BY REGIONAL GROUP OF AFFECTED COUNTRIES, 2000-2050

	Population size (millions)			*Annual growth rate (percentage)*	
Groups of affected countries	*2000*	*2025*	*2050*	*2000-2025*	*2025-2050*
All 53 affected countries					
With AIDS	3 644	4 687	5 264	1.01	0.47
Without AIDS	3 667	4 921	5 744	1.18	0.62
Difference	-23	-235	-479	-	

TABLE 5. ESTIMATED AND PROJECTED POPULATION SIZE AND ANNUAL GROWTH RATE ACCORDING TO THE MEDIUM VARIANT ("WITH AIDS") AND TO THE NO-AIDS SCENARIO ("WITHOUT AIDS") BY PREVALENCE GROUP OF AFFECTED COUNTRIES, 2000-2020

	Population size (millions)			*Annual growth rate (percentage)*	
Groups of affected countries	*2000*	*2025*	*2050*	*2000-2025*	*2025-2050*
Countries with adult HIV prevalence above 20 per cent					
With AIDS	74	77	78	0.18	0.05
Without AIDS	77	118	151	1.73	0.96
Difference	-3	-42	-73	-1.56	-0.91
Percentage difference	-4.2	-35.1	-48.4	-89.8	-94.9
Countries with adult HIV prevalence between 10 and 20 per cent					
With AIDS	79	110	133	1.33	0.77
Without AIDS	81	139	195	2.17	1.34
Difference	-2	-30	-62	-0.84	-0.58
Percentage difference	-3.1	-21.5	-32.0	-38.8	-42.8
Countries with adult HIV prevalence between 5 and 10 per cent					
With AIDS	293	498	703	2.12	1.38
Without AIDS	300	560	839	2.50	1.62
Difference	-7	-62	-137	-0.38	-0.24
Percentage difference	-2.2	-11.1	-16.3	-15.4	-14.7
Countries with adult HIV prevalence between 1 and 5 per cent					
With AIDS	304	489	681	1.90	1.32
Without AIDS	310	521	745	2.08	1.43
Difference	-5	-31	-64	-0.18	-0.11
Percentage difference	-1.7	-6.0	-8.6	-8.6	-7.6
Countries with adult HIV prevalence below 1 per cent					
With AIDS	2 895	3 513	3 670	0.77	0.17
Without AIDS	2 900	3 583	3 814	0.85	0.25
Difference	-5	-69	-144	-0.07	-0.08
Percentage difference	-0.2	-1.9	-3.8		

TABLE 6. NUMBER OF DEATHS, CRUDE DEATH RATE AND LIFE EXPECTANCY AT BIRTH FO

TABLE 6 (*continued*)

	1990-1995	*2000-2005*	*2010-2015*	*2020-2025*	*2045-2050*
Crude death rate					
With AIDS	8.5	7.7	8.1	9.0	11.8
Without AIDS	8.4	7.4	7.3	7.7	11.0
Absolute difference	0.1	0.3	0.9	1.3	0.8
Percentage difference	1.5	4.0	11.7	17.0	7.1
Life expectancy at birth					
With AIDS	63.9	67.2	68.9	70.2	75.1
Without AIDS	64.2	67.9	71.0	73.4	77.4
Absolute difference	-0.3	-0.7	-2.1	-3.2	-2.3
Percentage difference	-0.5	-1.1	-2.9	-4.4	-3.0
8 countries in Latin America and the Caribbean					
Number of deaths (thousands)					
With AIDS	6 635	7 539	8 499	9 731	14 063
Without AIDS	6 430				

TABLE 6 (*continued*)

Life expectancy at birth					
With AIDS	71.9	73.2	74.4	76.1	79.7
Without AIDS	72.5	74.1	76.6	78.4	81.1
Absolute difference	-0.6	-1.0	-2.2	-2.2	-1.4
Percentage difference	-0.8	-1.3	-2.9	-2.9	-1.7

TABLE 7. NUMBER OF DEATHS, CRUDE DEATH RATE AND LIFE EXPECTANCY AT BIRTH FOR THE MEDIUM VARIANT ("WITH AIDS") AND THE NO-AIDS SCENARIO ("WITHOUT AIDS"), BY PREVALENCE GROUP OF AFFECTED COUNTRIES, SELECTED PERIODS 1990-2050

	1990-1995	*2000-2005*	*2010-2015*	*2020-2025*	*2045-2050*
Countries with adult HIV prevalence above 20 per cent					

Life expectancy at birth					
With AIDS	65.4	68.3	70.0	71.3	76.0
Without AIDS	65.7	69.0	72.0	74.3	78.1
Absolute difference	-0.3	-0.7	-2.0	-3.0	-2.0
Percentage difference	-0.5	-1.0	-2.8	-4.0	-2.6

TABLE 9. AGE DISTRIBUTION OF PROJECTED DEATHS FOR 2000-2020 ACCORDING TO THE MEDIUM VARIANT ("WITH AIDS") AND THE NO-AIDS SCENARIO ("WITHOUT AIDS") AND DIFFERENCE BETWEEN THE TWO BY AGE GROUP, BY REGIONAL GROUP OF AFFECTED COUNTRIES

Groups of affected countries	*Age group*							*Total deaths (thousands)*
	0-4	*5-14*	*15-24*	*25-34*	*35-49*	*50-64*	*65+*	
All 53 affected countries								
With AIDS (percentage of total deaths)	16.8	3.6	3.1	8.2	11.9	15.0	41.4	802 268
Without AIDS (percentage of total deaths)	18.4	3.0	2.9	3.4	7.4	16.5	48.4	687 076
Difference in number of deaths (thousands)	8 286	8 032	4 649	42 980	45 137	6 947	-839	115 192
38 countries in Africa								
With AIDS (percentage of total deaths)	31.7	8.0	5.7	15.9	16.7	8.6	13.4	243 422
Without AIDS (percentage of total deaths)	41.4	7.5	6.5	6.3	8.5	10.4	19.3	172 401
Difference in number of deaths (thousands)	5 675	6 548	2 732	27 813	25 856	2 990		

TABLE 10. INFANT MORTALITY AND UNDER-FIVE MORTALITY ACCORDING TO THE MEDIUM VARIANT ("WITH AIDS") AND TO THE NO-AIDS SCENARIO ("WITHOUT AIDS"), BY REGIONAL GROUP OF AFFECTED COUNTRIES, SELECTED PERIODS 1990-2050

Groups of affected countries	*1990-1995*	*2000-2005*	*2010-2015*	*2020-2025*	*2045-2050*
		Infant mortality (per thousand)			
All 53 affected countries					
With AIDS	70	62	51	42	24
Without AIDS	69	61	50	41	24
Absolute difference	1	1	1	1	1
Percentage difference	0.9	2.2	2.9	3.2	3.4
38 countries in sub-Saharan Africa					
With AIDS	104	94	80	65	35
Without AIDS	101	90	75	61	32
Absolute difference	2	5	5	4	3
Percentage difference	2.4	5.3	6.3	6.9	8.6
5 countries in Asia					
With AIDS	64	53	41	33	20
Without AIDS	64	52	40	32	20
Absolute difference	0	0	1	1	0
Percentage difference	0.1	0.5	1.6	2.3	1.9

TABLE 10 (*continued*)

Groups of affected countries	*1990-1995*	*2000-2005*	*2010-2015*	*2020-2025*	*2045-2050*
5 countries in Asia					
With AIDS	87	67 Asia	51		

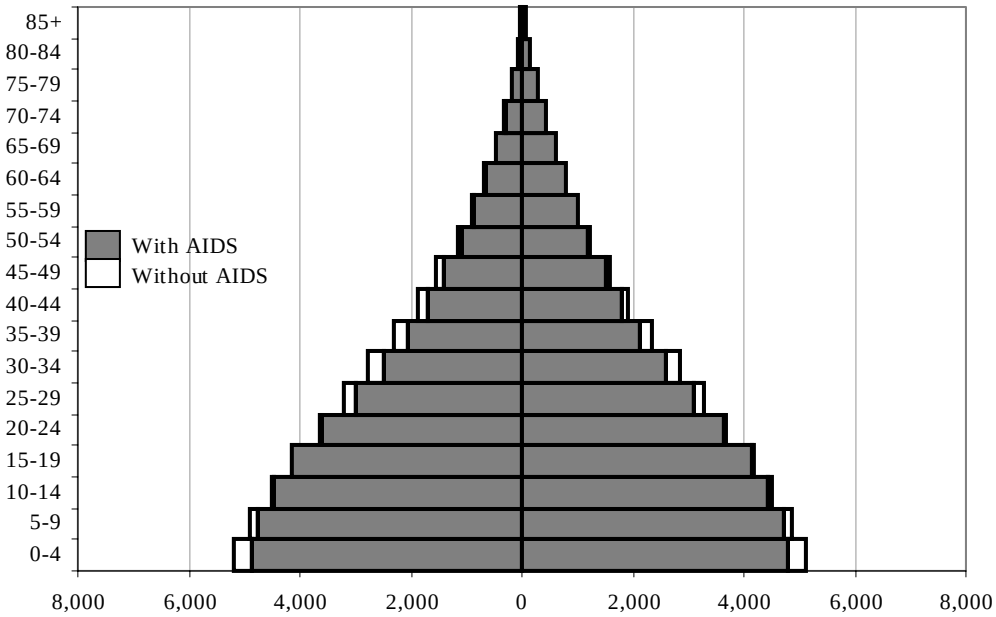
TABLE 11. INFANT MORTALITY AND UNDER-FIVE MORTALITY ACCORDING TO THE MEDIUM VARIANT ("WITH AIDS") AND TO THE NO-AIDS SCENARIO ("WITHOUT AIDS"), BY PREVALENCE GROUP OF AFFECTED COUNTRIES, SELECTED PERIODS 1990-2020

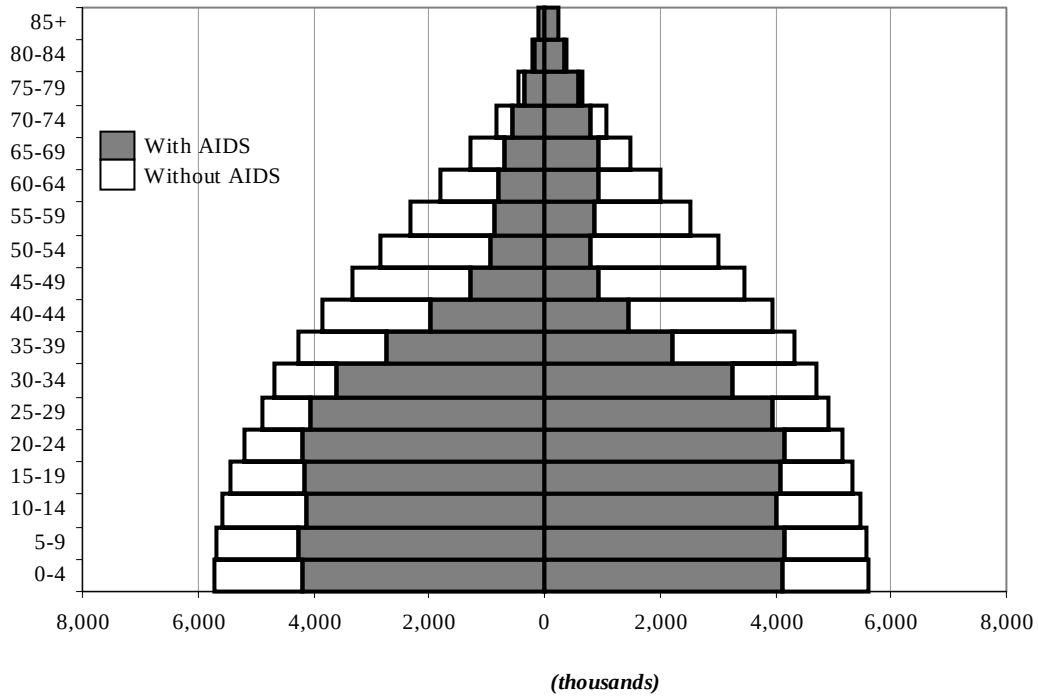
Group of affected countries	*1990-1995*	*2000-2005*	*2010-2015*	*2020-2025*	*2045-2050*

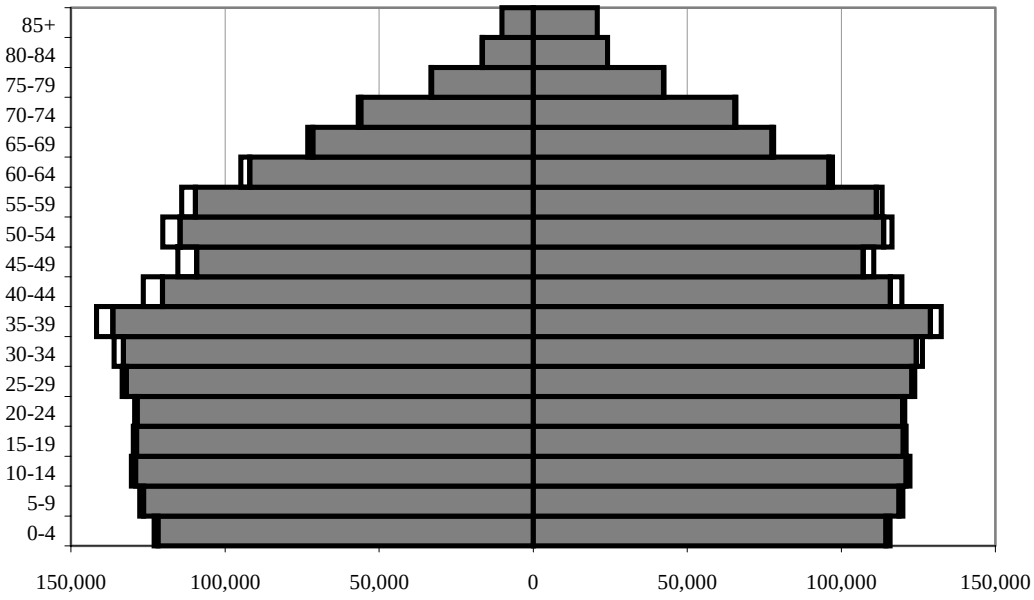
Infant mnZ23.A.0.002 Tw 6.984 0 0 6.984 355.356 173.ETEMC/P /MCID 18 BDC451.548 0 53c1MCr

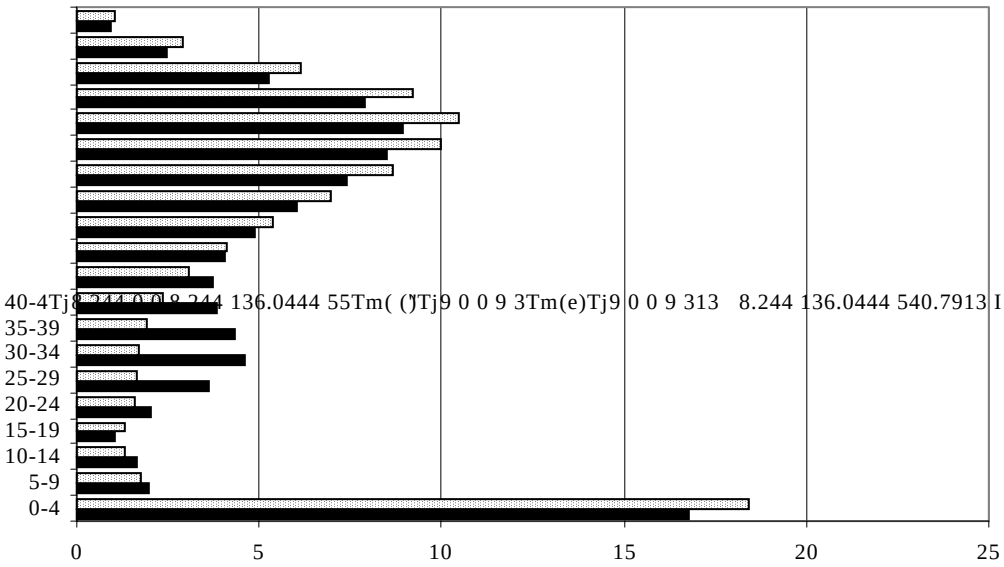
Group of affected countries *1990-1995*

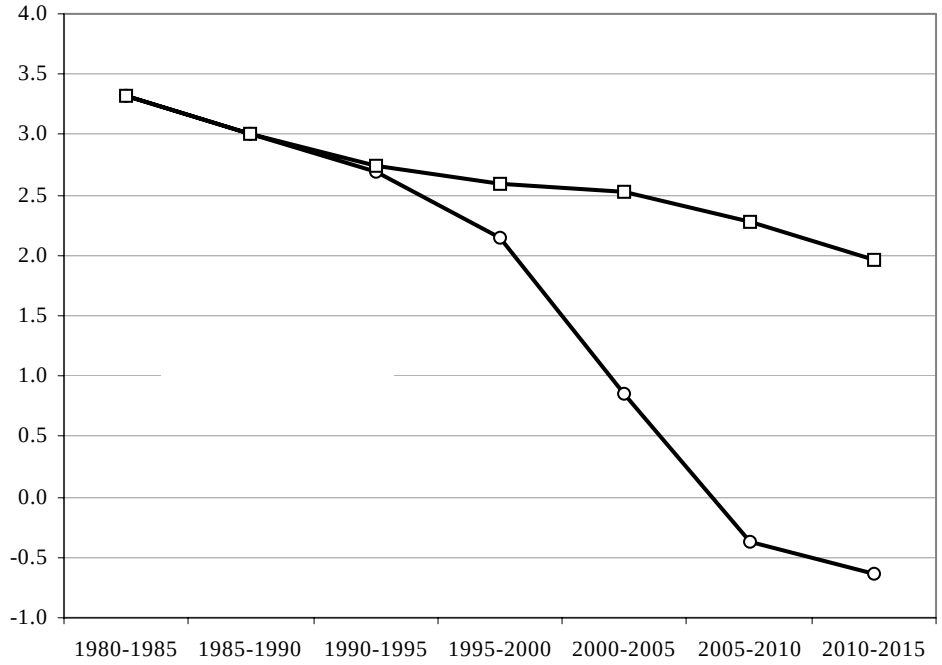
TABLE 12. EXPECTATION OF LIFE AT BIRTH AND UNDER-FIVE MORTALITY IN THE MEDIUM VARIANT ("WITH AIDS") AND THE NO-AIDS SCENARIO ("WITHOUT AIDS") FOR SELECTED AFFECTED COUNTRIES, 2000-2005, 2010-2015, AND 2045-2050

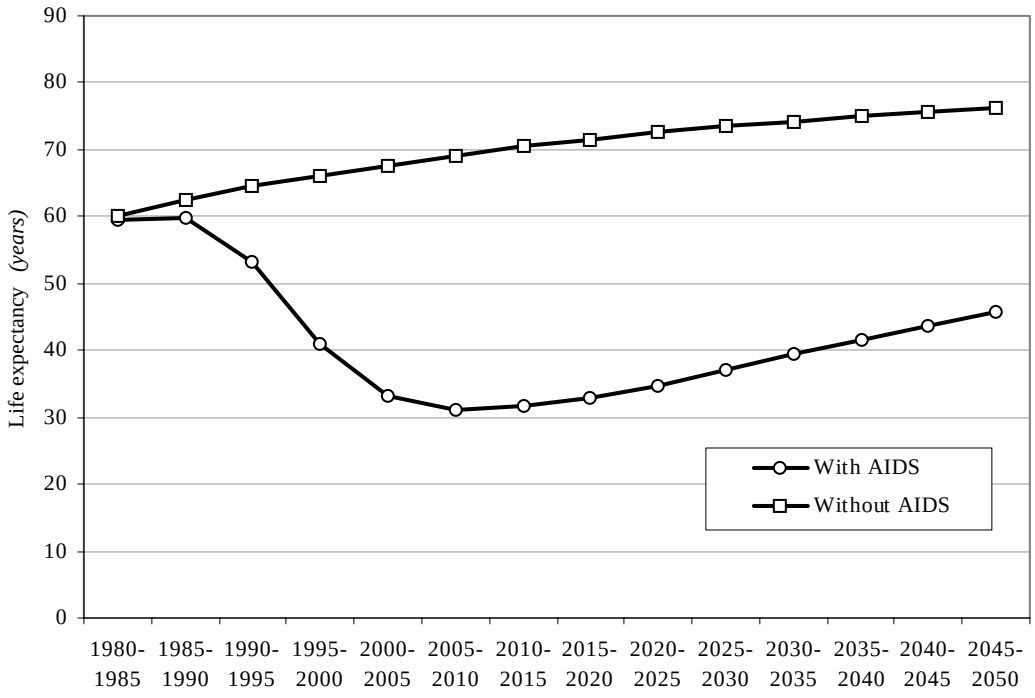

85+
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
With AIDS
Without AIDS
8,000
6,000
4,000
2,000
0
2,000
4,000
6,000
8,000
(thousands)

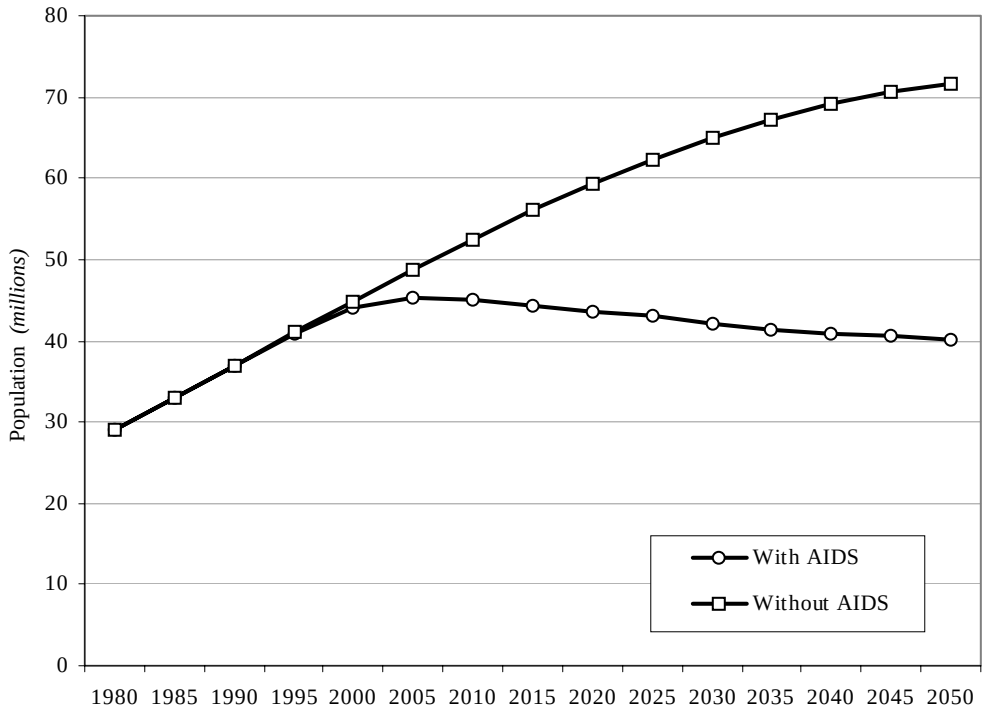

85+
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
With AIDS
Without AIDS
8,000
6,000
4,000
2,000
0
2,000
4,000
6,000
8,000
(thousands)


85+
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
150,000
100,000
50,000
0
50,000
100,000
150,000


40-4Tj8.244 0 0 8.244 136.0444 55Tm((JTj9 0 0 9 3Tm(e)Tj9 0 0 9 313 8.244 136.0444 540.7913 I
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
0
5
10
15
20
25

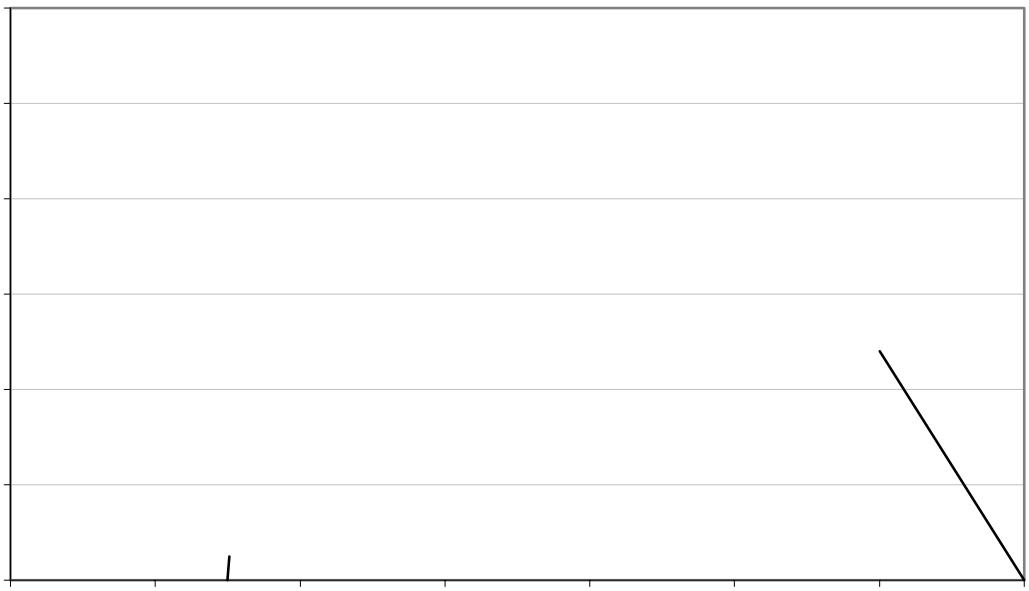

4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
1980-1985
1985-1990
1990-1995
1995-2000
2000-2005
2005-2010
2010-2015


Life expectancy (years)
90
80
70
60
50
40
30
20
10
0
With AIDS
Without AIDS
1980-1985
1985-1990
1990-1995
1995-2000
2000-2005
2005-2010
2010-2015
2015-2020
2020-2025
2025-2030
2030-2035
2035-2040
2040-2045
2045-2050


80
70
60
50
40
30
20
10
0
Population (millions)
1980 1985 1990 1995 2000 2005 2010 2015 2020 2025 2030 2035 2040 2045 2050
With AIDS
Without AIDS

during the 7 to 9 years following the start of the epidemic. On the basis of this observation and following the practice of UNAIDS, the proportion of males among the newly infected is assumed to decline from 80 per cent or so at the start of the epidemic to 45 per cent after a few years and to remain constant at that level until 2000. Under that assumption, the annual number of newly infected individuals per year is distributed by sex.

Step 2: *Derivation of the number of newly infected men and women by age*. Once estimates of the newly infected by sex are available, they are distributed by single-year of age according to model age distributions derived from empirical data fitted using a Weibull distribution. Five different age distributions of the newly infected were derived for each sex but the set used for the purposes of this paper, named "standard", has a mean age at infection of 31.2 years for males and 28 years for females. Figure A1 shows the density functions by age for males and females.



Step 5: *Calculation of the number of AIDS deaths among children*. In children the length of infection is the same as their age. Projection of the number of surviving HIV-positive children is made by modelling the probability that infected children have of surviving HIV infection up to age x, $s(x)$, as a double Weibull function: