

Population and Health in Developing Countries. Volume 1, Population, Health, and Survival at INDEPTH Sites. INDEPTH Network. Ottawa: International Development Research Centre, 2002

Table 6A.19. Life table for the Rufiji DSS site, Tanzania, 1999.

Age (years)	nD_x	nPY_x	nM_x	SE_{M_x}	nq_x	SE_{nq_x}	l_x	SE_{l_x}	$n d_x$	nL_x	T_x	e_x (years)	SE_{e_x} (years)
Male													
<1	130	794	0.163 728	0.013 258	0.147 543	0.011 948	100 000	0.000 0	14 754	90 115	5 339 664	53.40	1.242 4
1-4	49	5 090	0.009 627	0.001 349	0.037 543	0.005 262	85 246	14.274 7	3 200	332 445	5 249 550	61.58	0.995 2
5-9	16	5 376	0.002 976	0.000 739	0.014 771	0.003 665	82 045	15.234 7	1 212	407 197	4 917 105	59.93	0.954 8
10-14	6	4 861	0.001 234	0.000 502	0.006 153	0.002 504	80 833	15.692 4	497	402 924	4 509 908	55.79	0.928 5
15-19	7	3 615	0.001 936	0.000 728	0.009 635	0.003 624	80 336	15.909 6	774	399 746	4 106 984	51.12	0.922 2
20-24	2	2 339	0.000 855	0.000 603	0.004 266	0.003 010	79 562	16.452 2	339	396 962	3 707 238	46.60	0.921 2
25-29	6	2 000	0.003 000	0.001 216	0.014 888	0.006 033	79 223	16.885 7	1 179	381 015	2 917 112	37.38	0.895 0
30-34	15	1 553	0.009 659	0.002 434	0.047 155	0.011 885	78 043	18.670 8	3 680	381 015	2 536 096	34.10	0.828 1
35-39	17	1 415	0.012 014	0.002 828	0.058 319	0.013 726	74 363	25.554 6	4 337	360 973	2 175 123	31.06	0.754 0
40-44	10	912	0.010 965	0.003 374	0.053 362	0.016 418	70 026	33.079 0	3 737	340 789	1 834 334	27.67	0.669 4
45-49	15	862	0.017 401	0.004 302	0.083 380	0.020 611	66 290	42.860 9	5 527	317 630	1 516 704	24.96	0.554 4
50-54	13	826	0.015 738	0.004 197	0.075 713	0.020 189	60 762	54.679 9	4 601	292 310	1 224 394	21.80	0.467 4
55-59	18	836	0.021 531	0.004 809	0.102 157	0.022 816	56 162	61.761 3	5 737	266 466	957 928	19.00	0.377 6
60-64	25	884	0.028 281	0.005 269	0.132 066	0.024 607	50 424	66.206 0	6 659	235 474	722 454	16.51	0.294 9
65-69	17	729	0.023 320	0.005 335	0.110 175	0.025 206	43 765	65.269 7	4 822	206 771	515 683	13.24	0.238 4
70-74	25	706	0.035 411	0.006 481	0.162 655	0.029 768	38 943	63.849 5	6 334	178 881	336 802	10.33	0.186 3
75-79	35	522	0.067 050	0.009 569	0.287 121	0.040 977	32 609	58.206 8	9 363	139 638	197 163	8.48	0.114 8
80-84	28	328	0.085 366	0.012 989	0.351 759	0.053 522	23 246	47.435 2	8 177	95 789	101 375	6.73	NA
≥85	66	444	0.148 649	NA	1.000 000	NA	15 069	35.433 3	15 069	101 375	101 375	6.73	NA
Female													
<1	156	787	0.198 221	0.014 410	0.175 597	0.012 765	100 000	0.000 0	17 560	88 586	5 217 766	52.18	1.250 2
1-4	41	4 847	0.008 459	0.001 299	0.033 097	0.005 083	82 440	16.294 7	2 728	322 561	5 129 179	62.22	0.958 6
5-9	11	5 164	0.002 130	0.000 639	0.010 594	0.003 177	79 712	16.989 7	844	396 448	4 806 619	60.30	0.921 6
10-14	12	4 348	0.002 760	0.000 791	0.013 705	0.003 929	78 867	17.273 0	1 081	391 635	4 410 171	55.92	0.909 7
15-19	7	3 448	0.002 030	0.000 763	0.010 100	0.003 798	77 786	17.763 1	786	386 968	4 018 536	51.66	0.894 1
20-24	8	2 804	0.006 419	0.001 489	0.031 590	0.007 327	77 001	18.278 9	2 432	378 923	3 631 567	47.16	0.881 9
25-29	26	2 676	0.009 716	0.001 860	0.047 428	0.009 078	74 568	20.325 5	3 537	364 001	2 888 644	40.67	0.842 7
30-34	21	1 862	0.011 278	0.002 393	0.054 845	0.011 635	71 032	23.025 8	3 896	345 420	2 543 224	37.88	0.716 5
35-39	22	1 595	0.013 793	0.002 841	0.066 667	0.013 731	67 136	27.399 9	4 476	324 491	2 218 733	35.41	0.625 4
40-44	12	1 117	0.010 743	0.003 019	0.052 310	0.014 700	62 660	32.366 9	3 278	305 107	1 913 625	32.23	0.537 5
45-49	10	1 226	0.008 157	0.002 527	0.039 968	0.012 384	59 383	37.554 1	2 373	277 737	1 622 646	28.46	0.486 9
50-54	13	1 235	0.010 526	0.002 844	0.051 282	0.013 854	57 009	40.020 1	2 924	277 737	1 344 909	24.87	0.436 2
55-59	14	933	0.015 005	0.003 863	0.072 314	0.018 615	54 086	42.258 3	3 911	260 650	1 084 259	21.61	0.362 5
60-64	13	1 078	0.012 059	0.003 245	0.058 532	0.015 752	50 174	46.503 9	2 937	243 530	840 729	17.80	0.325 0
65-69	28	1 030	0.027 184	0.004 799	0.127 273	0.022 470	47 238	47.465 5	6 012	221 158	619 571	15.03	0.266 6
70-74	24	772	0.031 088	0.005 870	0.144 231	0.027 235	41 226	47.418 1	5 946	191 263	428 308	12.14	0.209 8
75-79	24	527	0.045 541	0.008 292	0.204 429	0.037 220	35 280	47.332 8	7 212	158 367	269 940	9.62	0.136 8
80-84	31	414	0.074 879	0.011 128	0.315 361	0.046 866	28 067	47.201 0	8 851	118 209	151 732	7.90	NA
≥85	77	608	0.126 645	NA	1.000 000	NA	19 216	39.427 5	19 216	151 732	151 732	7.90	NA

Note: nD_x , observed deaths between ages x and $x+n$; $n d_x$, number dying between ages x and $x+n$; e_x , expectation of life at age x for the life-table population; l_x , number of survivors at age x in the life-table population; nL_x , person-years lived by the life-table population between ages x and $x+n$; nM_x , observed mortality rate for ages x to $x+n$; NA, not applicable; nPY_x , observed person-years between ages x and $x+n$; nq_x , probability of dying between ages x and $x+n$; SE_{M_x} , standard error in M_x ; SE_{nq_x} , standard error in nq_x ; SE_{e_x} , standard error in e_x ; T_x , person-years lived by the life-table population at ages older than x .

INDEPTH MORTALITY PATTERNS FOR AFRICA

Chapter 7

Abstract

Mortality data from Africa compiled by the INDEPTH Network and including over 6.4 million person-years of exposure are used to identify new mortality patterns. Seven age patterns of mortality emerge from these data, two of which clearly show excess mortality due to HIV-AIDS. The emergent patterns are compared with the existing model mortality patterns produced by Coale and Demeny (CD) and the United Nations (UN) and are demonstrated to be substantially different. The principal-components technique is used to calculate 15 principal components that account for all of the variation in the data. It is demonstrated that the components are sufficiently general to accurately reproduce the existing CD and UN model mortality patterns. The resulting component model of mortality is demonstrated through the construction of a hypothetical set of life tables combining the HIV-AIDS pattern of mortality with an underlying pattern of mortality that is not affected by HIV-AIDS. This general technique yields mortality patterns that might prevail if the population described by the underlying mortality pattern were infected with HIV-AIDS.

Mortality models and Africa

An individual's probability of dying depends primarily on sex, age, health, genetic endowment, and the environment, all of which determine the risk of falling victim to illness or accident. The primary determinants of mortality interact in complex ways and depend in turn on a large and variable set of complex social determinants. As a result, it has not been possible to formulate a general, theory-driven model of individual risk of death. In lieu of a good general model, two widely used sets of model life tables are the CD model, created by Coale and Demeny (1966), and the later UN model (United Nations 1982). In both cases, a large set of empirical mortality rates are summarized to yield a small number of characteristic age patterns of mortality. Coale and Demeny identified four patterns, which they called North, South, East, and West, to reflect the fact that each pattern is representative of the mortality pattern in