	All ages incidence and deaths (2013)						Annualised rate of change (%)			
	Male population		Female population		Total		1990-2000		2000-13	
	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths
Cambodia	81 263 (68 959 to 93 966)	616 (320 to 1034)	59 358 (50 948 to 67 993)	426 (232 to 731)	140 621 (119 933 to 161 846)	1043 (644 to 1568)	−1·39 (−1·41 to −1·37)	−1·44 (−4·84 to 1·64)	−7·65 (−7·83 to −7·42)	−8·39 (−10·95 to −5·47)
Indonesia	1 076 361 (191 105 to 3 596 748)	1802 (1320 to 2434)	927 470 (158 478 to 3 289 462)	1341 (1002 to 1749)	2 003 831 (354 339 to 6 883 029)	3143 (2418 to 4019)	−3·60 (−5·19 to −1·74)	−3·37 (−5·99 to −0·89)	−5·34 (−7·67 to −2·76)	−5·19 (−7·51 to −2·46)
Laos	19 132 (17 423 to 20 734)	50 (16 to 104)	19 817 (18 099 to 21 419)	55 (17 to 148)	38 949 (35 519 to 42 170)	105 (47 to 227)	−3·07 (−3·54 to −2·62)	−5·53 (−10·64 to −1·69)	−1·71 (−1·99 to −1·45)	−3·57 (−8·86 to 0·19)
Malaysia	63 361 (53 065 to 73 334)	11 (8 to 19)	65 962 (55 033 to 76 567)	3 (3 to 5)	129 323 (108 082 to 149 901)	15 (10 to 23)	−016 (−0·36 to −0·01)	−7·42 (−10·01 to −4·96)	−0·01 (−0·11 to 0·07)	−9·15 (−12·65 to −4·74)
Myanmar	2 459 973 (906 379 to 5 902 743)	4834 (2817 to 7915)	2 156 398 (835 746 to 4 950 837)	4322 (2610 to 7099)	4 616 371 (1 764 904 to 10 796 693)	9155 (5590 to 14 544)	−355 (−5 33 to −1·76)	−3·76 (−6·69 to −0·96)	−6·36 (−9·39 to −3·22)	−6·61 (−9·46 to −3·31)
Philippines	283 519 (241 103 to 323 938)	155 (105 to 233)	273 023 (229 455 to 315 173)	75 (50 to 105)	556 542 (470 324 to 639 165)	230 (166 to 326)	−247 (−3 22 to −1·83)	−12·12 (−13·41 to −10·84)	−0·29 (−0·49 to −0·12)	−6·69 (−9·40 to −3·80)
Sri Lanka	1475 (1246 to 1710)	11 (7 to 21)	1259 (1070 to 1453)	9 (6 to 16)	2734 (2316 to 3165)	21 (14 to 34)	−10·46 (−10·49 to −10·42)	−10·62 (−14·16 to −7·17)	−14·14 (−14·34 to −13·90)	−14·99 (−18·77 to −10·59)
Thailand	83 572 (72 401 to 94 358)	78 (45 to 136)	82 312 (69 822 to 94 242)	41 (29 to 58)	165 884 (142 197 to 188 453)	118 (78 to 184)	−8·27 (−9·64 to −6·94)	−17·72 (−19·18 to −16·20)	−1·64 (−2·15 to −1·21)	−11·32 (−14·38 to −7·50)
Timor-Leste	9968 (8560 to 11 314)	7 (0 to 70)	10 356 (9075 to 11 576)	13 (0 to 69)	20 324 (17 664 to 22 892)	21 (3 to 108)	−4·39 (−5·00 to −3·78)	−7·90 (−13·71 to −2·64)	−4·15 (−5·12 to −3·30)	−15·40 (−32·58 to −3·97)
Vietnam	47 663 (44 070 to 51 177)	187 (119 to 275)	45 016 (41 641 to 48 218)	159 (106 to 237)	92 679 (85 719 to 99 315)	345 (248 to 460)	−4·58 (−4·87 to −4·25)	−5·75 (−8·86 to −2·80)	−5·99 (−6·74 to −5·23)	−10·07 (−12·95 to −6·79)
Caribbean	50 098 (46 165 to 53 745)	165 (18 to 371)	59 643 (55 171 to 64 155)	239 (67 to 548)	109 741 (101 549 to 117 526)	404 (227 to 643)	−3·35 (−3·63 to −3·05)	−4·52 (−6·90 to −1·78)	−4·08 (−4·64 to −3·53)	−7·48 (−11·51 to −3·38)
Belize	18 (18 to 19)	1 (1 to 2)	19 (18 to 19)	0 (0 to 1)	37 (37 to 37)	1 (1 to 2)	−9·26 (−9·66 to −8·83)	3·53 (0·26 to 6·57)	−30·58 (−31·09 to −30·08)	−9·26 (−13·68 to −4·65)
Dominican Republic	5029 (4326 to 5699)	4 (2 to 7)	5075 (4382 to 5736)	4 (3 to 8)	10 104 (8707 to 11 435)	8 (5 to 13)	−1·48 (−1·64 to −1·35)	−4·33 (−7·40 to −1·63)	−1·01 (−1·10 to −0·93)	−3·42 (−7·70 to 0·73)

| | All ages incidence and deaths (2013) | | | | | | Annualised rate of change (%) | | | |
| | Male population | | Female population | | Total | | 1990-2000 | | 2000-13 | |
	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths
Guyana	2825 (2453 to 3184)	3 (1 to 5)	2559 (2166 to 2934)	1 (1 to 2)	5383 (4619 to 6113)	4 (2 to 7)	−0·09 (−0·11 to −0·07)	−0·28 (−3·14 to 2·67)	−2·56 (−3·25 to −1·98)	−13·19 (−18·97 to −8·69)
Haiti	36 035 (33 327 to 38 617)	135 (6 to 317)	44 517 (40 927 to 48 139)	203 (52 to 480)	80 552 (74 426 to 86 878)	338 (183 to 551)	−3·92 (−4·15 to −3·66)	−4·91 (−7·20 to −2·41)	−4·78 (−5·24 to −4·30)	−7·39 (−11·97 to −3·59)
Suriname	348 (312 to 383)	2 (1 to 3)	183 (168 to 197)	1 (0 to 1)	530 (486 to 575)	2 (2 to 4)	−078 (−0·92 to −0·66)	−0·24 (−2·89 to 2·65)	−7·55 (−8·08 to −7·00)	−10·29 (−13·99 to −5·90)
Western Europe	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	3 (3 to 3)	0 (0 to 0)	0·00 (0·00 to 0·00)	0·00 (0·00 to 0·00)	0·00 (0·00 to 0·00)	0·00 (0·00 to 0·00)
Greece	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	3 (3 to 3)	0 (0 to 0)	0·00 (0·00 to 0·00)	0·00 (0·00 to 0·00)	0·00 (0·00 to 0·00)	0·00 (0·00 to 0·00)
Andean Latin America	14 203 (12 281 to 16 046)	13 (10 to 16)	13 873 (11 903 to 15 753)	10 (8 to 14)	28 075 (24 173 to 31 791)	23 (18 to 29)	−253 (−3·04 to −2·04)	−5·70 (−7·28 to −4·09)	−2·79 (−3·64 to −2·05)	−13·80 (−15·92 to −11·45)
Bolivia	756 (665 to 841)	1 (1 to 2)	749 (657 to 835)	1 (1 to 2)	1505 (1323 to 1676)	2 (2 to 3)	−323 (−3·91 to −258)	−7·80 (−11·61 to −4·50)	−1·48 (−1·97 to −1·06)	−7·30 (−9·75 to −4·81)
Ecuador	7617 (6556 to 8628)	6 (4 to 9)	7625 (6565 to 8633)	6 (4 to 10)	15 242 (13 121 to 17 261)	12 (9 to 17)	−2·97 (−3·42 to −2·52)	−5·63 (−7·68 to −3·48)	−3·94 (−4·91 to −3·10)	−16·00 (−18·85 to −13·03)
Peru	5829 (5052 to 6580)	5 (4 to 8)	5499 (4672 to 6288)	3 (2 to 4)	11 328 (9724 to 12 860)	8 (6 to 12)	−1·90 (−2·47 to −1·35)	−5·98 (−8·41 to −3·66)	−1·35 (−2·03 to −0·77)	−11·42 (−14·39 to −8·24)
Central Latin America	56 110 (49 168 to 62 758)	69 (50 to 98)	55 170 (47 750 to 62 283)	49 (38 to 68)	111 280 (96 932 to 125 061)	118 (93 to 160)	−2·29 (−275 to −1·85)	−5·58 (−7·13 to −4·18)	−2·10 (−2·76 to −1·51)	−10·06 (−12·13 to −7·34)
Colombia	32 242 (28 091 to 36 221)	35 (21 to 60)	31 681 (27 161 to 35 989)	23 (14 to 37)	63 924 (55 318 to 72 202)	58 (38 to 91)	272 (2·19 to 333)	10·32 (8·38 to 12·23)	−1·85 (−2·44 to −1·34)	−10·46 (−14·05 to −6·31)
Costa Rica	5 (4 to 5)	0 (0 to 0)	4 (4 to 4)	0 (0 to 0)	9 (8 to 9)	0 (0 to 0)	−1475 (−15·01 to −14·44)	−15·71 (−16·55 to −14·88)	−10·54 (−11·69 to −9·35)	−16·41 (−17·25 to −15·51)
El Salvador	45 (39 to 51)	0 (0 to 0)	48 (41 to 55)	0 (0 to 0)	92 (79 to 105)	0 (0 to 0)	−10·30 (−11·52 to −9·06)	−17·04 (−17·93 to −16·11)	−3·27 (−4·11 to −2·55)	−15·13 (−16·27 to −13·97)

| | All ages incidence and deaths (2013) | | | | | | Annualised rate of change (%) | | | |
| | Male population | | Female population | | Total | | 1990-2000 | | 2000-13 | |
	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths
Guatemala	9936 (8732 to 11 057)	14 (10 to 21)	10 220 (8956 to 11 422)	13 (9 to 19)	20 156 (17 688 to 22 495)	27 (20 to 37)	−9·66 (−10·61 to −8·66)	−14·29 (−16·36 to −12·07)	−3·62 (−4·43 to −2·88)	−10·87 (−13·59 to −7·87)
Honduras	2998 (2669 to 3298)	6 (3 to 11)	3135 (2813 to 3423)	7 (4 to 12)	6133 (5476 to 6718)	12 (7 to 20)	−1·96 (−2·26 to −1·64)	−3·63 (−7·31 to −0·43)	−3·19 (−3·86 to −2·55)	−8·14 (−12·04 to −3·03)
Mexico	82 (71 to 94)	1 (0 to 2)	65 (57 to 74)	0 (0 to 2)	148 (128 to 167)	1 (0 to 4)	−16·51 (−16·58 to −16·43)	−16·86 (−17·61 to −16·06)	−13·47 (−13·84 to −13·04)	−15·00 (−15·78 to −14·18)
Nicaragua	2410 (2032 to 2776)	1 (1 to 1)	2463 (2076 to 2836)	1 (1 to 1)	4873 (4108 to 5612)	2 (1 to 2)	−6·78 (−7·71 to −5·87)	−12·23 (−15·27 to −9·58)	−3·91 (−4·87 to −3·10)	−21·04 (−24·04 to −17·96)
Panama	409 (396 to 421)	0 (0 to 1)	427 (415 to 440)	0 (0 to 0)	836 (836 to 836)	1 (0 to 1)	7·72 (7·08 to 8·30)	−6·42 (−9·63 to −3·40)	−3·16 (−3·90 to −2·59)	−5·84 (−9·33 to −1·91)
Venezuela	7983 (7025 to 8864)	12 (7 to 17)	7127 (6100 to 8102)	5 (3 to 7)	15 109 (13 168 to 16 970)	17 (12 to 23)	−0·99 (−1·32 to −0·69)	−3·84 (−6·20 to −1·59)	−1·12 (−1·56 to −0·75)	−7·30 (−10·34 to −4·47)
Southern Latin America	301 (260 to 341)	0 (0 to 1)	308 (264 to 350)	0 (0 to 1)	609 (524 to 691)	0 (0 to 2)	−9·52 (−10·71 to −8·32)	−16·26 (−17·13 to −15·40)	−3·21 (−4·06 to −2·48)	−16·29 (−17·17 to −15·43)
Argentina	301 (260 to 341)	0 (0 to 1)	308 (264 to 350)	0 (0 to 1)	609 (524 to 691)	0 (0 to 2)	−9·26 (−10·45 to −8·06)	−16·11 (−16·96 to −15·24)	−3·14 (−3·97 to −2·43)	−16·03 (−16·90 to −15·16)
Tropical Latin America	66 015 (56 554 to 75 020)	46 (30 to 68)	65 424 (55 196 to 75 263)	24 (17 to 35)	131 439 (111 720 to 150 238)	71 (50 to 99)	−6·49 (−7·87 to −5·20)	−17·58 (−19·80 to −15·41)	−0·11 (−0·50 to 0·21)	−9·20 (−12·22 to −5·86)
Brazil	65 965 (56 511 to 74 963)	46 (30 to 68)	65 376 (55 156 to 75 209)	24 (17 to 35)	131 341 (111 637 to 150 126)	71 (50 to 99)	−647 (−7·85 to −5·18)	−17·56 (−19·78 to −15·39)	−0·08 (−0·47 to 0·24)	−9·17 (−12·18 to −5·80)
Paraguay	50 (43 to 57)	0 (0 to 0)	48 (41 to 55)	0 (0 to 0)	98 (83 to 112)	0 (0 to 0)	−8·20 (−9·31 to −7·08)	−14·75 (−15·77 to −13·77)	−2·98 (−3·76 to −2·31)	−14·55 (−15·76 to −13·32)
North Africa and Middle East	1 257 700 (382 396 to 3 243 600)	5900 (2915 to 11 443)	857 057 (252 567 to 2 356 446)	4703 (2009 to 9594)	2 114 756 (638 796 to 5 569 750)	10 604 (5415 to 19 759)	2·14 (1·31 to 348)	3·88 (0·73 to 7·01)	−5·74 (−9·08 to −2·40)	−7·07 (−10·62 to −3·04)
Algeria	0 (0 to 0)	6 (3 to 9)	0 (0 to 0)	4 (3 to 7)	0 (0 to 0)	10 (7 to 14)	0·00 (0·00 to 0·00)	−2·69 (−5·57 to 0·50)	0·00 (0·00 to 0·00)	−7·46 (−11·11 to −3·07)

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	All ages incidence and deaths (2013)						Annualised rate of change (%)			
	Male population		Female population		Total		1990-2000		2000-13	
	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths
Iran	385 (372 to 396)	5 (3 to 7)	402 (391 to 415)	6 (3 to 9)	787 (787 to 787)	10 (8 to 14)	−18·17 (−19·47 to −16·77)	0·52 (−2·67 to 3·62)	−22·32 (−23·57 to −21·08)	−7·92 (−10·80 to −4·64)
Iraq	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	−9·60 (−10·60 to −8·55)	−14·67 (−16·70 to −12·66)	0·00 (0·00 to 0·00)	0·00 (0·00 to 0·00)
Morocco	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	−0·27 (−0·29 to −0·25)	−0·33 (−2·73 to 2·08)	0·00 (0·00 to 0·00)	0·00 (0·00 to 0·00)
Oman	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	−2·61 (−2·83 to −2·38)	−3·48 (−7·28 to 0·13)	0·00 (0·00 to 0·00)	0·00 (0·00 to 0·00)
Saudi Arabia	40 (39 to 41)	11 (7 to 15)	42 (41 to 43)	2 (1 to 3)	82 (82 to 82)	13 (9 to 18)	−13·85 (−14·36 to −13·25)	−3·99 (−9·06 to 1·16)	−33·50 (−34·40 to −32·55)	−9·01 (−12·48 to −5·52)
Sudan	689 118 (190 185 to 1 833 451)	3160 (1326 to 6839)	366 931 (78 799 to 1 177 901)	2203 (605 to 5384)	1 056 050 (275 911 to 2 940 472)	5363 (2274 to 11 118)	0·34 (−0·31 to 1·15)	1·19 (−2·43 to 4·91)	−7·83 (−11·74 to −3·79)	−8·71 (−12·78 to −4·35)
Syria	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	−6·57 (−6·65 to −6·48)	−6·84 (−11·33 to −2·88)	0·00 (0·00 to 0·00)	0·00 (0·00 to 0·00)
Turkey	534 (456 to 607)	0 (0 to 1)	540 (457 to 618)	0 (0 to 1)	1073 (913 to 1225)	1 (0 to 2)	−10·63 (−11·84 to −9·40)	−17·20 (−18·35 to −16·09)	−3·59 (−4·51 to −2·80)	−17·30 (−18·54 to −16·04)
Yemen	566 320 (192 251 to 1 374 706)	2713 (1242 to 5640)	488 281 (161 967 to 1 225 111)	2483 (941 to 5133)	1 054 601 (355 535 to 2 646 959)	5196 (2471 to 10 098)	0·14 (−0·78 to 1·12)	1·55 (−2·57 to 5·80)	−3·51 (−5·44 to −1·70)	−4·11 (−7·91 to −0·48)
Oceania	593 916 (232 012 to 1 391 577)	1104 (485 to 1910)	492 920 (207 650 to 1 088 266)	915 (493 to 1565)	1 086 836 (441 330 to 2 484 740)	2019 (1221 to 3218)	−0·02 (−0·25 to 0·19)	−0·30 (−3·70 to 2·75)	−2·14 (−3·14 to −1·05)	−2·61 (−5·49 to 0·65)
Papua New Guinea	523 910 (197 634 to 1 243 454)	964 (419 to 1682)	434 724 (177 464 to 965 172)	804 (432 to 1383)	958 634 (376 486 to 2 206 672)	1768 (1075 to 2810)	−0·25 (−0·48 to −0·04)	−0·50 (−3·96 to 2·65)	−2·14 (−3·44 to −1·31)	−2·72 (−5·65 to 0·47)
Solomon Islands	9577 (8537 to 10 514)	19 (4 to 42)	8847 (7818 to 9787)	14 (5 to 33)	18 424 (16 358 to 20 296)	33 (11 to 66)	−1·17 (−1·39 to −0·96)	−2·90 (−6·90 to 0·69)	−1·83 (−2·26 to −1·45)	−6·15 (−9·61 to −1·88)
Vanuatu	3289 (2994 to 3565)	9 (2 to 21)	2990 (2687 to 3262)	7 (2 to 19)	6279 (5684 to 6820)	15 (5 to 33)	−0·73 (−0·86 to −0·61)	−1·70 (−5·70 to 2·06)	−2·20 (−2·67 to −1·78)	−6·06 (−10·15 to −1·72)

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| | All ages incidence and deaths (2013) | | | | | | Annualised rate of change (%) | | | |
| | Male population | | Female population | | Total | | 1990-2000 | | 2000-13 | |
	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths
Central sub-Saharan Africa	3 940 130 (1 939 904 to 7 688 653)	28 851 (16 111 to 49 729)	4 301 690 (2 303 019 to 7 982 794)	31 817 (15 802 to 64 045)	8 241 820 (4 297 149 to 15 640 374)	60 667 (35 115 to 99 000)	−2·74 (−4·45 to −1·39)	−1·59 (−4·08 to 1·08)	−5·13 (−7·81 to −2·43)	−5·73 (−9·03 to −2·28)
Angola	778 653 (352 510 to 1 612 440)	5421 (2082 to 12 081)	638 443 (292 224 to 1 338 115)	5240 (1083 to 12 889)	1 417 096 (646 248 to 2 901 702)	10 661 (4178 to 21 870)	−0·62 (−2·10 to 0·86)	1·22 (−3·40 to 5·85)	−5·02 (−7·47 to −2·37)	−5·31 (−9·46 to −0·84)
Central African Republic	240 694 (129 143 to 433 562)	1611 (876 to 2611)	297 972 (167 115 to 517 369)	1964 (919 to 3569)	538 666 (298 738 to 947 709)	3575 (2032 to 5659)	−1·49 (−276 to −0·56)	−0·24 (−4·56 to 372)	−2·80 (−4·33 to −1·36)	−3·33 (−7·33 to 0·58)
Congo	167 366 (72 013 to 344 886)	977 (550 to 1804)	159 795 (72 976 to 323 383)	991 (298 to 2116)	327 162 (147 092 to 665 882)	1968 (1004 to 3472)	−0·01 (−0·62 to 0·96)	0·73 (−2·21 to 3·90)	−4·81 (−7·57 to −2·47)	−5·96 (−10·89 to −2·09)
DR Congo	2 641 315 (1 317 961 to 5 137 603)	20 087 (9338 to 38 586)	3 087 537 (1 663 453 to 5 670 932)	22 827 (9178 to 50 451)	5 728 853 (3 000 717 to 10 790 512)	42 914 (21 336 to 79 936)	−3·50 (−5·45 to −1·84)	−2·41 (−5·40 to 0·76)	−5·42 (−8·43 to −2·51)	−6·12 (−10·11 to −1·77)
Equatorial Guinea	37 847 (22 135 to 65 711)	298 (75 to 572)	45 073 (26 889 to 76 106)	333 (106 to 625)	82 920 (49 005 to 142 294)	631 (252 to 1064)	0·51 (−0·35 to 2·06)	1·47 (−2·65 to 5·61)	−3·66 (−5·51 to −1·71)	−3·98 (−7·08 to −0·92)
Gabon	74 255 (35 105 to 144 155)	457 (225 to 817)	72 869 (35 969 to 139 716)	462 (200 to 864)	147 125 (71 124 to 281 843)	919 (531 to 1515)	−1·67 (−2·75 to −0·76)	−1·65 (−4·39 to 1·27)	−5·94 (−8·51 to −2·95)	−6·00 (−9·47 to −2·26)
Eastern sub-Saharan Africa	12 520 054 (6 544 247 to 24 090 664)	85 566 (65 168 to 109 586)	13 377 215 (7 291 825 to 24 578 200)	89 820 (66 224 to 130 417)	25 897 270 (13 782 158 to 48 529 276)	175 387 (140 361 to 221 113)	0·41 (−0·29 to 1·52)	0·77 (−0·82 to 2·33)	−6·68 (−8·94 to −3·58)	−6·76 (−8·47 to −4·40)
Burundi	603 449 (369 625 to 975 531)	5362 (2862 to 8974)	710 930 (446 217 to 1 124 371)	5920 (3022 to 9518)	1 314 379 (807 412 to 2 096 773)	11 282 (6353 to 17 300)	0·99 (−0·10 to 2·83)	1·93 (−1·04 to 4·83)	−7·95 (−11·90 to −3·84)	−8·05 (−11·72 to −4·60)
Comoros	28 650 (26 480 to 30 862)	117 (56 to 222)	26 067 (24 109 to 27 935)	97 (16 to 246)	54 718 (50 588 to 58 781)	215 (98 to 414)	0·05 (0·04 to 0·05)	0·26 (−4·13 to 4·99)	−2·90 (−3·27 to −2·52)	−5·16 (−10·58 to −1·32)
Djibouti	21 649 (17 792 to 25 716)	184 (68 to 369)	19 021 (15 634 to 22 592)	161 (49 to 297)	40 671 (33 427 to 48 308)	345 (147 to 599)	2·61 (2·61 to 2·61)	2·82 (−1·60 to 7·69)	−4·90 (−4·91 to −4·90)	−4·96 (−9·86 to −0·39)
Eritrea	106 098 (89 697 to 122 962)	815 (252 to 1836)	106 810 (90 294 to 123 790)	821 (264 to 1770)	212 908 (179 991 to 246 752)	1636 (615 to 3199)	1·01 (0·99 to 1·03)	1·29 (−5·39 to 727)	−5·79 (−5·95 to −5·59)	−6·71 (−12·59 to −1·24)
Ethiopia	1 638 589 (498 186 to 4 270 533)	9877 (5029 to 17 293)	1 182 333 (373 552 to 3 267 067)	8510 (3506 to 16 787)	2 820 922 (876 846 to 7 716 426)	18 387 (9037 to 32 209)	−2·03 (−2·86 to −1·05)	−1·98 (−9·18 to 5·43)	−9·03 (−13·49 to −4·40)	−8·99 (−14·92 to −2·87)

	All ages incidence and deaths (2013)						Annualised rate of change (%)			
	Male population		Female population		Total		1990-2000		2000-13	
	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths
Kenya	782 119 (236 917 to 2 033 030)	4464 (2618 to 7478)	627 587 (175 809 to 1 772 853)	3896 (1826 to 8102)	1 409 706 (412 893 to 3 805 649)	8360 (4891 to 14 436)	0·11 (−0·62 to 0·92)	1·07 (−2·51 to 4·74)	−10·47 (−15·44 to −5·08)	−10·98 (−15·32 to −6·72)
Madagascar	459 299 (131 674 to 1 198 750)	2123 (986 to 4137)	612 453 (212 737 to 1 430 807)	2783 (1420 to 4868)	1 071 751 (352 252 to 2 626 270)	4906 (2985 to 7867)	−2·01 (−3·47 to −0·96)	−1·42 (−4·41 to 1·43)	−5·02 (−7·63 to −2·26)	−4·54 (−8·19 to −0·46)
Malawi	347 806 (116 374 to 858 925)	2147 (1094 to 3889)	402 696 (148 948 to 930 569)	2456 (1061 to 4910)	750 502 (268 060 to 1 769 176)	4603 (2546 to 8195)	−5·03 (−9·46 to −1·71)	−6·52 (−10·60 to −272)	−6·86 (−10·48 to −3·26)	−7·02 (−11·10 to −2·31)
Mozambique	2 773 504 (1 582 152 to 4 911 657)	19 196 (13 650 to 25 948)	3 244 189 (1 684 669 to 6 325 806)	20 473 (14 753 to 26 654)	6 017 693 (3 266 015 to 11 078 884)	39 669 (31 008 to 49 712)	1·81 (0·66 to 3·21)	2·46 (−0·06 to 5·23)	−4·51 (−6·24 to −2·39)	−4·21 (−6·46 to −1·59)
Rwanda	237 157 (89 675 to 564 253)	1806 (811 to 3293)	232 335 (89 900 to 553 411)	1764 (700 to 3613)	469 491 (179 942 to 1 118 489)	3569 (1754 to 6572)	1·80 (0·38 to 4·16)	3·12 (−0·56 to 6·87)	−13·32 (−19·57 to −6·60)	−13·13 (−18·69 to −7·48)
Somalia	474 870 (233 983 to 899 300)	3314 (1561 to 6276)	356 615 (172 956 to 709 509)	2806 (1284 to 5202)	831 485 (409 498 to 1 610 977)	6120 (3066 to 10 592)	1·08 (0·14 to 2·50)	2·13 (−2·36 to 6·49)	−3·90 (−6·14 to −1·78)	−4·22 (−8·54 to 0·35)
South Sudan	301 308 (112 436 to 702 216)	1703 (841 to 3414)	201 184 (72 449 to 507 884)	1399 (430 to 3252)	502 492 (186 803 to 1 157 572)	3102 (1547 to 5794)	0·48 (−0·36 to 1·49)	1·58 (−2·83 to 6·29)	−8·28 (−12·73 to −3·81)	−8·89 (−13·00 to −3·96)
Tanzania	1 873 958 (934 095 to 3 672 184)	13 495 (7362 to 22 215)	2 307 766 (1 239 301 to 4 260 696)	16 242 (7989 to 32 819)	4 181 724 (2 178 550 to 7 920 536)	29 737 (17 572 to 48 950)	043 (−049 to 1·73)	0·35 (−263 to 347)	−7·77 (−11·64 to −371)	−7·90 (−11·48 to −373)
Uganda	1 918 386 (1 036 770 to 3 491 911)	14 247 (7967 to 22 532)	2 262 354 (1 245 502 to 4 007 412)	15 298 (8111 to 25 181)	4 180 741 (2 285 851 to 7 474 431)	29 545 (18 946 to 45 298)	1·18 (0·28 to 249)	2·41 (−076 to 553)	−593 (−8·61 to −2·92)	−6·12 (−9·34 to −2·49)
Zambia	945 622 (525 219 to 1 635 147)	6667 (4445 to 9435)	1 077 049 (585 683 to 1 925 781)	7145 (4894 to 10 132)	2 022 671 (1 112 338 to 3 551 130)	13 812 (10 076 to 18 903)	1·58 (0·47 to 2·82)	233 (−1·34 to 552)	−7·24 (−10·69 to −345)	−7·00 (−9·68 to −3·94)
Southern sub-Saharan Africa	344 868 (147 187 to 780 285)	1896 (1376 to 2580)	275 985 (104 772 to 678 471)	1374 (907 to 2251)	620 853 (252 060 to 1 471 492)	3270 (2462 to 4543)	2·84 (1·28 to 4·19)	2·85 (−0·40 to 545)	−563 (−8·37 to −2·64)	−7·30 (−9·74 to −4·10)
Botswana	18 238 (16 153 to 20 347)	112 (53 to 223)	9133 (8445 to 9797)	35 (10 to 91)	27 371 (24 696 to 30 025)	147 (79 to 264)	2·81 (2·54 to 3·04)	353 (−349 to 977)	−5·03 (−5·44 to −4·60)	−6·75 (−12·19 to 042)
Namibia	33 857 (31 052 to 36 663)	158 (97 to 267)	25 990 (23 915 to 27 914)	83 (24 to 211)	59 847 (55 363 to 64 383)	241 (142 to 420)	1·76 (1·54 to 1·97)	2·62 (−1·56 to 6·85)	−3·86 (−4·31 to −3·41)	−6·36 (−9·85 to −2·46)
South Africa	2755 (2663 to 2834)	245 (105 to 537)	2874 (2795 to 2966)	128 (86 to 249)	5629 (5629 to 5629)	374 (213 to 699)	0·25 (−049 to 1·00)	253 (−0·30 to 5 59)	0·08 (−0·96 to 0·85)	−13·25 (−17·68 to −7·37)

| | All ages incidence and deaths (2013) | | | | | | Annualised rate of change (%) | | | |
| | Male population | | Female population | | Total | | 1990-2000 | | 2000-13 | |
	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths
Swaziland	12 878 (10 579 to 15 305)	110 (29 to 241)	6411 (5268 to 7617)	54 (13 to 127)	19 290 (15 847 to 22 922)	164 (68 to 335)	376 (375 to 376)	344 (−265 to 8·27)	−6·68 (−6·68 to −6·68)	−6·59 (−12·07 to −1·34)
Zimbabwe	277 139 (78 586 to 717 290)	1272 (858 to 1885)	231 578 (60 882 to 634 297)	1073 (595 to 1857)	508 717 (140 095 to 1 364 465)	2345 (1609 to 3439)	3·02 (1·17 to 4·87)	2·96 (−1·94 to 6·75)	−5·96 (−9·71 to −2·38)	−3·40 (−9·25 to −1·72)
Western sub-Saharan Africa	28 989 748 (18 569 128 to 44 034 576)	246 973 (179 298 to 334 725)	27 966 300 (17 623 922 to 43 268 248)	218 875 (160 016 to 281 613)	56 956 048 (36 282 648 to 86 449 152)	465 848 (356 750 to 590 771)	0·90 (0·26 to 1·72)	145 (−0·24 to 348)	−3·79 (−5·33 to −2·00)	−3·40 (−5·15 to −1·56)
Benin	496 703 (272 131 to 893 268)	3604 (1769 to 6020)	589 179 (338 344 to 1 013 545)	4085 (2429 to 5968)	1 085 882 (607 392 to 1 908 784)	7689 (4649 to 11 064)	070 (−044 to 1·81)	140 (−1·86 to 4·67)	−5·23 (−7·29 to −273)	−5·17 (−8·32 to −1·64)
Burkina Faso	1 772 734 (1 091 493 to 2 837 545)	12 942 (8142 to 19 266)	2 068 269 (1 260 720 to 3 396 651)	14 319 (9910 to 19 631)	3 841 003 (2 364 116 to 6 158 591)	27 261 (19 599 to 36 230)	1·68 (072 to 2·97)	2·68 (0·22 to 5·22)	−3·54 (−5·11 to −1·90)	−3·85 (−6·24 to −1·62)
Cameroon	1 141 115 (640 140 to 2 003 619)	8634 (4332 to 14 541)	1 528 984 (911 130 to 2 529 638)	10 703 (6168 to 17 005)	2 670 100 (1 556 196 to 4 539 860)	19 336 (11 574 to 29 258)	2·64 (1·22 to 4·14)	342 (049 to 6·56)	−6·47 (−9·47 to −3·19)	−6·40 (−9·50 to −2·56)
Cape Verde	38 (32 to 44)	0 (0 to 1)	28 (24 to 32)	0 (0 to 0)	66 (56 to 77)	1 (0 to 1)	−3·60 (−362 to −3 57)	−339 (−8·78 to 0·84)	−9·01 (−9·15 to −8·85)	−9·55 (−13·74 to −5·02)
Chad	638 516 (327 314 to 1 182 104)	4372 (2095 to 8178)	745 182 (425 863 to 1 287 409)	5463 (2674 to 9708)	1 383 698 (754 840 to 2 472 300)	9835 (5004 to 16 673)	243 (1·10 to 4·1)	370 (−041 to 7·68)	−3·75 (−5·46 to −1·87)	−3·93 (−7·62 to −0·18)
Côte d'Ivoire	1 116 108 (616 173 to 1 965 682)	7931 (3796 to 14 026)	1 270 614 (746 533 to 2 117 101)	8849 (4705 to 13 599)	2 386 722 (1 373 505 to 4 113 535)	16 780 (9577 to 25 660)	171 (073 to 279)	2·29 (−0·63 to 5·30)	−6·23 (−9·23 to −3·05)	−6·04 (−9·41 to −2·47)
Ghana	1 131 416 (597 366 to 2 063 095)	7843 (4899 to 11 682)	1 274 480 (700 996 to 2 287 354)	8572 (5486 to 12 246)	2 405 896 (1 293 177 to 4 322 408)	16 415 (11 390 to 22 881)	0·84 (048 to 1·91)	142 (−1·55 to 385)	−3·36 (−4·97 to −1·62)	−3·64 (−6·35 to −0·93)
Guinea	850 008 (528 198 to 1 364 161)	6594 (3882 to 9881)	1 070 541 (666 679 to 1 678 739)	8003 (4779 to 11 599)	1 920 549 (1 202 796 to 3 033 236)	14 597 (9576 to 20 495)	1·25 (042 to 238)	1·68 (−2·23 to 568)	−4·18 (−6·17 to −2·06)	−4·40 (−7·17 to −1·23)
Guinea-Bissau	188 651 (118 426 to 302 109)	1747 (1155 to 2514)	202 199 (125 656 to 321 006)	1796 (1158 to 2502)	390 850 (244 350 to 622 761)	3543 (2481 to 4805)	0·68 (0·07 to 1·55)	1·26 (−1·71 to 449)	−2·73 (−3·94 to −1·50)	−2·10 (−4·72 to 0·53)
Liberia	215 778 (119 173 to 385 255)	1467 (765 to 2519)	254 770 (147 560 to 431 784)	1686 (875 to 2731)	470 548 (269 710 to 826 308)	3154 (1799 to 4992)	1·24 (014 to 272)	2·28 (−2·18 to 6·27)	−4·86 (−7·07 to −2·53)	−5·09 (−8·35 to −1·67)

| | All ages incidence and deaths (2013) | | | | | | Annualised rate of change (%) | | | |
| | Male population | | Female population | | Total | | 1990-2000 | | 2000-13 | |
	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths	Incidence	Deaths
Mali	1 812 025 (1 148 899 to 2 815 056)	16 526 (9857 to 24 875)	2 412 241 (1 441 912 to 3 931 845)	19 164 (11 403 to 27 092)	4 224 267 (2 612 582 to 6 660 447)	35 690 (23 410 to 50 450)	1·92 (0·85 to 323)	2·76 (−0·57 to 6·17)	−2·92 (−4·12 to −1·64)	−2·36 (−5·26 to 0·56)
Mauritania	164 717 (77 085 to 322 374)	974 (444 to 1838)	105 272 (49 402 to 215 015)	820 (290 to 1460)	269 989 (130 899 to 534 343)	1795 (844 to 3103)	4·56 (2·16 to 7·12)	5·77 (1·59 to 9·62)	−2·34 (−3·70 to −1·16)	−2·84 (−5·92 to 0·18)
Niger	1 348 843 (837 303 to 2 127 755)	11 564 (4559 to 20 485)	1 608 928 (1 030 476 to 2 443 363)	13 869 (6688 to 21 584)	2 957 771 (1 877 757 to 4 481 069)	25 433 (13 395 to 40 453)	1·60 (044 to 322)	3·06 (−1·34 to 727)	−3·31 (−4·83 to −1·71)	−2·67 (−6·93 to 1·33)
Nigeria	16 635 774 (10 707 174 to 25 163 660)	151 794 (95 928 to 223 806)	13 033 882 (8 224 059 to 19 909 316)	108 611 (61 160 to 158 184)	29 669 656 (19 004 200 to 45 297 792)	260 405 (171 907 to 361 607)	0·23 (−049 to 0·67)	0·63 (−2·57 to 3·99)	−2·93 (−4·21 to −1·58)	−2·36 (−5·34 to 0·72)
Sao Tome and Prĺncipe	5915 (5258 to 6577)	35 (16 to 65)	6027 (5360 to 6701)	36 (17 to 61)	11 942 (10 619 to 13 278)	71 (37 to 119)	−0·48 (−0·50 to −044)	−0·49 (−4·15 to 2·96)	−3·41 (−3·69 to −3·11)	−4·75 (−7·98 to −1·83)
Senegal	429 236 (185 098 to 920 585)	2970 (1400 to 5280)	500 762 (241 439 to 992 049)	3600 (1687 to 5828)	929 998 (430 550 to 1 917 898)	6570 (3511 to 10 420)	−043 (−1·31 to 0·31)	0·65 (−1·92 to 3·11)	−9·11 (−13·59 to −4·35)	−9·07 (−13·06 to −5·09)
Sierra Leone	519 098 (329 919 to 801 942)	4106 (2244 to 6714)	678 273 (416 276 to 1 092 241)	4775 (2912 to 6784)	1 197 371 (749 248 to 1 872 567)	8882 (5691 to 12 669)	0·58 (0·04 to 1·27)	1·10 (−1·78 to 3·98)	−5·95 (−8·84 to −2·89)	−5·91 (−8·77 to −2·86)
The Gambia	153 051 (92 298 to 251 289)	1056 (648 to 1604)	148 981 (90 176 to 243 097)	1034 (644 to 1510)	302 032 (182 698 to 494 937)	2090 (1405 to 3029)	−1·07 (−1·53 to −0·59)	−0·89 (−3·74 to 1·98)	−3·64 (−5·28 to −1·84)	−3·78 (−6·35 to −0·95)
Togo	369 830 (214 148 to 641 934)	2811 (1429 to 5062)	467 452 (283 814 to 760 578)	3488 (1900 to 5575)	837 282 (499 488 to 1 395 545)	6299 (3690 to 9808)	−0·48 (−1·12 to −0·01)	0·07 (−2·97 to 3·01)	−3·55 (−5·34 to −1·72)	−2·72 (−6·05 to 0·32)

Data in parentheses are 95% uncertainty intervals.

Table 8

Comparison between Global Burden of Disease 2013 verses UNAIDS 2013 HIV estimates

GBD 2013		UNAIDS 2013[60,160]
Incidence, prevalence, and mortality		
Key data sources and inputs	• Vital registration (VR) data • UNAIDS' 1000 Estimation and Projection Package (EPP) incidence and prevalence curves • GBD 2013 HIV-free life tables • UNPOP World Population Prospects (WPP) 2012 population and fertility estimates • Antiretroviral therapy (ART), prevention of mother-to-child transmission (PMTCT), and other intervention coverage data reported to UNAIDS • HIV mortality rates on-ART from systematic literature review (102 studies) • HIV mortality rates off-ART from systematic literature review (13 cohort studies) • UNAIDS assumptions for other spectrum HIV inputs	• Population surveys of HIV prevalence • Antenatal care (ANC) surveillance • Surveillance data for high-risk groups • UNPOP World Population Prospects 2010 population, fertility and HIV-free mortality estimates • ART, PMTCT, and other intervention coverage data reported to UNAIDS by countries; UNAIDS states these are validated by UNAIDS, WHO, and UNICEF but no method for validation is provided • Assumptions on the percent of the population in high-risk groups for each country with a concentrated epidemic; UNAIDS states that estimates are derived empirically, based on regional values or expert consensus but provides no detail by country on the empirical basis for the assumptions • UNAIDS assumptions for other Spectrum HIV inputs based on a range of published studies and unpublished analyses
Key adjustments to data	• VR data adjusted for completeness • VR data adjusted for garbage coding and misclassification HIV deaths	• None
Modelling strategy	All countries: • Age-sex-CD4-specific estimates of HIV mortality on-ART and off-ART based on meta-regression of studies from literature reviews • Spectrum recoded in open-source language Python to facilitate uncertainty analysis Generalised epidemics and populations with national surveys: • 46 countries • EPP outputs (15-49 years, both sexes) for generalised epidemics used as an input to modified Spectrum • EPP fit to national prevalence data for India, Senegal, and Niger • Spectrum (Python version) run with modified death rates on and off ART, GBD HIV-free mortality, and WPP 2012 population estimates; intervention estimates for ART, PMTCT as reported by UNAIDS • Sampling uncertainty distributions for all input parameters generate 10 000 year-age-sex specific estimates of HIV mortality, incidence, and prevalence	Generalised epidemics and countries with sufficient HIV prevalence data: • 41 countries • EPP (one of three variants) used to generate incidence and prevalence curves for urban and rural or regional breakdowns with survey and ANC surveillance data; aggregation to generate national curves for ages 15-49 years in both sexes combined. Fitting parameters including start year of the epidemic modified to eliminate unrealistic fits from the statistical model. Incidence adjusted downward by 92% for the fraction of people on ART. • EPP outputs with Spectrum inputs and WPP 2010 demographic data to generate year-age-sex specific estimates of HIV mortality, incidence, and prevalence • Selective modification of input parameters including ART survival based on country consultation process Concentrated epidemics in populations greater than 250 000: • 114 countries

GBD 2013	UNAIDS 2013[60,160]
• Selection of the 1000 epidemic curves that minimize the gap between GBD 2013 all-cause mortality estimates and Spectrum mortality outputs	• EPP used to generate incidence and prevalence curves for high-risk groups using surveillance data for these populations
Concentrated epidemics with VR:	• Aggregation to generate national curves (15-49 years, both sexes) based on assumptions about the fraction of the population in each high-risk group
• 125 countries	
• Space-time Gaussian Process Regression (ST-GPR) on adjusted VR data to produce complete time series of age-sex-specific mortality	• EPP outputs with Spectrum progression parameters, reported ART and PMTCT coverage, and WPP 2010 demographic data to generate year-age-sex specific estimates of HIV mortality, incidence, and prevalence
• EPP outputs (15-49 years, both sexes) with Spectrum inputs, GBD 2013 demographic data, and updated on-ART and off-ART mortality analysis to run Spectrum and generate 1000 year-age-sex specific estimates of HIV mortality, incidence, and prevalence	
• Adjusted incidence from Spectrum using the ratio of ST-GPR modelled mortality to Spectrum modelled mortality with six different assumptions of the lag from year of infection to year of death (10-15 years). This produced 6000 time series of incidence (15-49 years, both sexes)	• For some countries with insufficient data on prevalence in high-risk groups, reported HIV diagnoses over time and assumptions about the fraction diagnosed used
• Adjusted incidence with GBD HIV-free life tables, WPP 2012 demographic data, and updated on-ART and off-ART mortality analysis to run Spectrum and generate 6000 year-age-sex specific estimates of HIV mortality, incidence, and prevalence	• Selective modification of assumptions on the percentage of the population in each high-risk group and other Spectrum input assumptions through country consultation process
• Select 1000 with the smallest root mean squared error between model predictions of mortality and the vital registration data	**Countries with populations less than 250 000:**
Concentrated without VR:	• No estimates constructed
• 17 countries	
• Extrapolation of incidence and prevalence for countries where UNAIDS does not generate estimates by randomly selecting draws from countries in the region with estimates	
• Regional average of all other Spectrum inputs for countries where UNAIDS does not generate estimates	
• EPP outputs (15-49 years, both sexes) with Spectrum inputs, GBD 2013 demographic data, and updated on-ART and off-ART mortality analysis to run Spectrum and generate 1000 age-sex specific estimates of HIV mortality, incidence, and prevalence	
• Random selection of 1000 ratios used in the incidence adjustment process from countries with relatively high prevalence	
• Use selected ratios to adjust incidence in the absence of ST-GPR results, producing 1000 adjusted incidence curves (15-49 years, both sexes).	
• Adjusted incidence with Spectrum inputs, GBD 2013 demographic data, and updated on-ART and off-ART mortality analysis to run Spectrum and generate 1000 year-age-sex specific estimates of HIV mortality, incidence, and prevalence	

	GBD 2013	UNAIDS 2013[60],[160]
Uncertainty	• Use the 1000 EPP incidence curves consistent with the available prevalence data • Generated 1000 sets of CD4 progression and CD4 specific mortality on and off ART sampled from the meta-regression of published studies • Sample a uniform distribution of -10% to +10% of the mean value for all other Spectrum parameters including numbers on ART and PMTCT • The sex ratio of incidence was sampled from a uniform distribution of -20% to +20% of mean value • Major limitation is that uncertainty intervals for many parameters are sampled from an arbitrary uncertainty interval	• EPP likelihood estimation of incidence reflects uncertainty in prevalence data • Uncertainty in the percent of the population in high-risk groups or urban and rural breakdown not incorporated • All uncertainty adjustments to non-EPP inputs are arbitrary and small compared with GBD • Uncertainty propagated after point estimates generated—coefficients of variation for parameters arbitrarily selected and only for selected variables (eg, for adults ratio of fertility of HIV-positive to HIV-negative women, ratio of male to female incidence, average number of years in each CD4 category, HIV mortality without ART, HIV mortality with ART) • No uncertainty incorporated for CD4 progression overtime or distribution of CD4 counts at seroconversion
GBD 2013 differences	• Recoded Spectrum in the Python programing language to enable the model to run more efficiently and allow for full uncertainty analysis • Expanded uncertainty in Spectrum estimates of mortality, incidence, and prevalence by sampling distributions around most Spectrum inputs • Empirically estimated uncertainty for HIV mortality on-ART and off-ART • Used VR data when available to inform estimates of mortality for concentrated epidemics • Identify epidemic curves and all-cause mortality estimates in countries with large epidemics that are most consistent with each other • Sum of cause-specific mortality estimates for a country-year-age-sex group must equal all-cause mortality estimate at the draw level (CoDCorrect algorithm)	N/A

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Table 9

Comparison between Global Burden of Disease 2013 verses WHO 2013 tuberculosis estimates

	GBD 2013	WHO 2013[82]
Mortality		
Key data sources or inputs	• Vital registration (VR) data (2731 country-years) • Verbal autopsy (VA) data (166 site-years) • Covariates	• VR data (2087 country-years) • WHO 2013 tuberculosis incidence estimates • WHO 2012 tuberculosis case fatality rate (CFR) estimates • Covariates
Key adjustments to data	• VR adjusted for estimated completeness in each country-year • VR and VA data adjusted based on detailed analysis of garbage coding • VR and VA data adjusted for misclassification of tuberculosis-HIV	• Excluded VR data for South Africa and Zimbabwe due to misclassification of tuberculosis-HIV • VR data adjusted for senile and ill-defined cause of death • VR data interpolated for missing data and trailing or leading missing values with exponential smoothing • VR data adjusted for estimated completeness in each country year
Modelling strategy	All countries: • Use the Cause of Death Ensemble Modeling strategy (CODEm) to generate mortality estimates from the VR and VA data for all countries; covariates informed the model; CODEm tests a wide range of models and constructs an ensemble model on the basis of performance of different models judged with data held-out from model -building • Model fraction tuberculosis-HIV with the fraction of tuberculosis-HIV in HIV mortality from the VR data - HIV-mortality estimates used to generate TB-HIV deaths	Countries with VR: • Tuberculosis mortality directly from VR data: 123 countries (45% estimated global deaths) Countries without VR with ten covariates available: • Negative binomial model estimated based on the 123 countries in the first group; predictions from the model used for 27 countries Countries without VR without complete covariates: • Mortality estimated by multiplying estimated incidence multiplied by an estimate of the case-fatality rate for all-ages combined (67 countries) • Regional case-fatality rates (CFR; high-income, middle-income, and low-income countries) generated from case notifications by type (notified and non-notified) and VR data (Bayesian linear modelling done separately by region) All countries: • HIV plus tuberculosis incidence from UNAIDS' Spectrum model and estimated CFR of tuberculosis mortality in HIV-positive people (six CFRs corresponding to six CD4 cell-count groups and one CFR for cases on ART)
Uncertainty	All countries: • CODEm generates uncertainty intervals for predicted death rates by sampling the posterior distribution of each of the component models in proportion to the	Countries with VR: • Uncertainty was computed based on sampling uncertainty Countries without VR with ten covariates available:

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GBD 2013		WHO 2013[82]
	weight of each model in the ensemble; mixed effects component model uncertainty includes uncertainty in the betas and the hierarchical random effects; spatiotemporal Gaussian Process Regression component models include uncertainty from the mean prior and the data variance	• Uncertainty estimated from the uncertainty in the regression coefficients Countries without VR without complete covariates: • Mortality estimate uncertainty computed with posterior distributions of CFR (assumed time independent within respective case categories [notified or not, HIV positive or negative]) and country-year distributions of estimated incidence
	• Uncertainty interval coverage evaluated objectively with out-of-sample predictive validity	
	• Each country-year-age-sex draw adjusted so it is consistent with the sum of all GBD 2013 causes and the all-cause mortality estimate for that country-year-age-sex group	All countries: • Assumed uncertainty distribution correlation across countries unknown
	• Uncertainty distributions across countries were assumed to be independent	
GBD 2013 differences	• Tuberculosis mortality in all countries based on models constructed from VR and VA data	• N/A
	• VR and VA data corrected for garbage coding and misclassification of HIV deaths as tuberculosis deaths	
	• Fraction tuberculosis-HIV in HIV empirically estimated with VR data	
	• Out-of-sample predictive validity testing used to select the ensemble model for estimating mortality in all countries	
	• The same approach was used for all countries	
	• Sum of cause-specific mortality estimates for a country-year-age-sex group must equal all-cause mortality estimate at the draw level (CoDCorrect algorithm)	
Incidence and prevalence		
Key data sources and inputs	• WHO tuberculosis case notifications (age-sex-country-year specific)	• WHO tuberculosis case notifications (country-year specific)
	• Tuberculosis prevalence surveys (27 national survey-years and 24 subnational survey-years in 24 countries)	• Prevalence surveys (about 19 national years), adjusted for extra-pulmonary tuberculosis and childhood tuberculosis
	• Expert opinion and consultation on the case-detection rate as reported by WHO	• Expert opinion and consultation of case detection rate (CDR)
	• GBD 2013 tuberculosis mortality estimates	• Tuberculosis subnational surveillance data, programmatic data, and inventory studies
	• Pre-1994, case notifications for selected countries (Australia, Canada, Germany, UK, and Japan)	• Measure of access to health care and performance of health system derived from Demographic and Health Surveys
	• GBD 2013 HIV prevalence estimates (CD4 and antiretroviral therapy [ART]-status specific)	• RRs of tuberculosis-HIV compared with tuberculosis-only (three studies)
	• Relative risks (RRs) of tuberculosis-HIV compared with tuberculosis-only from literature review (eight studies)	• Population surveys of prevalence of HIV in patients with tuberculosis, sentinel HIV data, routine HIV testing of reported tuberculosis cases

	GBD 2013	WHO 2013[82]
		• UNAIDS estimates of HIV prevalence in children and in adults
Key adjustments to data	• Correction of case notifications for missing age groups, smear-unknown and relapsed cases, and missing diagnostic categories • Case notifications adjusted upwards for underreporting with CDR • Prevalence surveys adjusted for likely proportion extra-pulmonary tuberculosis missing in a survey with case notification data	• Triangulation of expert opinion on under-reporting CDR, subnational administration data, programmatic data, inventory studies, and DHS data • Case notification data reviewed and cleaned for underreporting, misclassification and over-reporting • Prevalence measurements reviewed and adjusted for childhood tuberculosis and extra-pulmonary tuberculosis
Modelling strategy	All countries: • Derivation of remission and excess mortality from incidence to prevalence ratio and CFR models with the adjusted and historic case notifications, prevalence data, and VR data • Bayesian internally consistent estimation of incidence, prevalence, excess mortality, remission and mortality estimates in DisMod-MR 2.0 • Estimation of the proportion of total tuberculosis incidence and prevalence that occurs in HIV-positive individuals with GBD 2013 CD4-specific HIV prevalence and CD4-specific RRs from a meta-analysis in a population attributable fraction calculation	Countries with regional workshops: • Extrapolation of CDR estimates for 1997, 2003, and 2008-12 using a beta distribution of plausible CDRs on three data points per country • Estimation of incidence from CDR and case notifications for 96 countries. Trends based on tuberculin surveys (three countries) and mortality estimates (40 countries) Countries with national prevalence surveys: • Incidence from empirical measurements of disease prevalence and duration estimates for two countries High-income countries: • Incidence from case notifications and expert opinion or capture-recapture modelling All countries: • Proportion of tuberculosis incidence that is due to tuberculosis-HIV in UNAIDS' Spectrum model based on population surveys of HIV prevalence among tubeculosis cases, sentinel HIV data, and routine HIV testing of reported tuberculosis cases • Prevalence directly estimated from national surveys adjusted for extra-pulmonary and childhood tuberculosis or indirectly from estimates of tuberculosis incidence and duration
Uncertainty	• Uncertainty in case notifications based on expert reported upper and lower bounds of the case-detection rate adjusted so that the minimum interval is plus or minus 20 percentage points • Uncertainty in corrected incidence, remission rates, and excess mortality rates estimated by use of draws from the regression variance-covariance matrix of the betas and draws from the random effects distributions • Prevalence survey uncertainty computed from the sample size and sample design • DisMod-MR generates posterior distributions for incidence, prevalence,	• Uncertainty in incidence based on primarily on uncertainty in expert opinion on the case-detection rate • Prevalence uncertainty based on either sampling uncertainty in surveys and assumptions about extra-pulmonary and childhood tuberculosis (derived from case notification data) or incidence uncertainty and an assumed duration • Assumed uncertainty distribution are uncorrelated • Estimates and their uncertainty are not based on analysis of age-specific rates

	GBD 2013	WHO 2013[82]
	remission, and excess mortality that is a function of data variance and model parameter uncertainty	
	• Uncertainty distributions across countries assumed to be uncorrelated	
GBD 2013 differences	• DisMod-MR 2.0 simultaneously synthesizes all available data for incidence, remission, excess mortality and prevalence ensuring internal consistency	• N/A
	• Estimation of incidence, prevalence, remission, and excess mortality is age-sex specific	
	• All countries modelled with the same approach	

Table 10
Comparison between Global Burden of Disease 2013 verses WHO 2013 malaria estimates

	GBD 2013	WHO[110,162]
Mortality		
Country groupings	1 High malaria transmission countries in Africa 2 Countries outside of Africa and low malaria transmission African countries 3 Countries with mostly or only Plasmodium vivax malaria	1 High transmission countries in Africa 2 Countries outside Africa and low malaria transmission African countries
Key data sources	• Verbal autopsy (VA) studies and vital registration (VR) data	• For countries outside Africa and low transmission African countries: NMCP reports for case estimates, as described below, as well as clinic records and reported malaria case fatality data • For high malaria transmission countries in Africa: verbal autopsy studies, vital registration data, and clinical malaria mortality data
Key adjustments to data	• VR adjusted for completeness • Adjustments for child deaths in VA and VR for garbage coding	• None
Modelling strategy	• Separate CODEM models for high malaria transmission countries in Africa and countries outside of Africa and low malaria transmission African countries; separate models for under 5 and ≥5 years • CODEm covariates: Plasmodium falciparum parasite rate (PfPr) from the Malaria Atlas Project (2010), Lysenko endemicity, WHO population-at-risk, prevalence-weighted first-line drug resistance, health-system access, indoor residual spraying (IRS) and insecticide-treated nets (ITN) coverage, rainfall, education, and lagged gross domestic product (GDP). • Deaths for countries with mostly or only P vivax malaria estimated with a negative binomial model	For countries outside Africa and low transmission African countries: • Deaths estimated by multiplying malaria case estimates by fixed case fatality ratios (045% in Africa; 0.3% outside of Africa), based on clinical malaria mortality and reported malaria case fatality data For high-transmission countries in Africa: • Child deaths estimated using a verbal autopsy multi-cause model (VAMCM) developed by the WHO Child Health Epidemiology Reference Group (CHERG),145 adjusted post-hoc for the effect of bednets and use of Haemophilus influenzae type b (Hib) vaccine • Deaths in children aged 5 years or older: "inferred from a relationship between levels of malaria mortality in different age groups and the intensity of malaria transmission"[110]
Uncertainty analysis	For P *falciparum* countries: • Uncertainty generated by CODEm • CODEm generates uncertainty intervals for predicted death rates by sampling the posterior distribution of each of the component models in proportion to the weight of each model in the ensemble; mixed effects component model uncertainty includes uncertainty in the betas and the hierarchical random effects; spatiotemporal Gaussian Process Regression component models include uncertainty from the mean prior and the data variance	For countries outside Africa and low transmission African countries: • Uncertainty in the case fatality rates assumed arbitrarily to be a uniform distribution between 0.225% and 0.675% for African countries and between 0.15% and 0.45% for outside of Africa • Incidence rates: see section on morbidity below For high-transmission countries in Africa: • For child deaths estimated by CHERG with the VAMCM, "the bootstrap method was employed to estimate uncertainty intervals by re-sampling from the study-level data to

	GBD 2013		WHO[110,162]
	• Uncertainty interval coverage assessed objectively using out-of-sample predictive validity		estimate the distribution of the predicted percent of deaths due to each cause"[110]
	For *P vivax* countries:		• For deaths in children aged 5 years or older: unknown
	• 1000 draws generated from the variance-covariance matrix of coefficients from negative binomial model		
	• Each country-year-age-sex draw adjusted so it is consistent with the sum of all GBD 2013 causes and the all-cause mortality estimate for that country-year-age-sex group		
	• Uncertainty distributions across countries were assumed to be independent		
Main GBD 2013 differences	• Malaria mortality in all countries based on models constructed from VR and VA data		• N/A
	• VR and VA data corrected for garbage coding in children		
	• Models include drug resistance and ITN and IRS coverage		
	• Out-of-sample predictive validity testing used to select the ensemble model for estimating mortality in all countries (except those with mostly or all P vivax malaria)		
	• Sum of cause-specific mortality estimates for a country-year-age-sex group must equal all-cause mortality estimate at the draw level (CoDCorrect algorithm)		
Morbidity			
Country groupings	As defined by Hay and colleagues[163]	1	High-transmission countries in Africa
	1 Countries with reliable surveillance systems (eight countries)	2	Countries outside Africa and low-malaria-transmission African countries
	2 Countries with incomplete surveillance systems (55 countries)		
	3 Countries with unreliable surveillance systems (45 countries)		
Key data sources	• For countries with reliable surveillance systems and incomplete surveillance systems: national malaria control programme (NMCP) reports on the number of cases, supplemented with reported malaria case data at the subnational levels for China and Mexico		• For countries outside Africa and for African countries for which the quality of data were considered adequate: NMCP reports on malaria cases and nationally representative household surveys on source of care
	• For countries with unreliable surveillance systems: published epidemiological studies of malaria incidence		• For countries with unreliable surveillance systems: published epidemiological studies of malaria incidence
Modelling strategy, including adjustments to data	• For countries with reliable surveillance systems: cases directly from NMCP report data		• For countries outside Africa and for African countries for which the quality of data were considered adequate: cases from NMCP report data adjusted for proportion of cases receiving a diagnostic test, completeness of reporting, and health-care seeking with the fraction of fever cases accessing facilities based on Demographic and Health Surveillance Surveys (DHS) and Multiple Indicator Cluster Survey
	• For countries with incomplete surveillance systems: cases from NMCP data, adjusting for completeness of reporting with health system access proxy covariate using a regression model		

GBD 2013	WHO[110,162]
• For countries with unreliable surveillance systems: cases estimated using the relation between studies of malaria incidence and malaria mortality rates estimated from CODEm with covariates for age group, active versus passive case detection, inside or outside Africa, and the ratio of site-specific to national PfPR from MAP2010	(MICS), or other nationally representative household surveys • For high-transmission countries in Africa: populations were classified as living at either high, low, or no risk of malaria and then high, low, or zero case-incidence rates were applied to the populations living in each endemicity class (procedure defined by Snow and colleagues164). Estimates were adjusted post-hoc for urban and rural differences and bednet and IRS effects • For countries with unreliable surveillance systems: high, low, and zero case-incidence rates were applied to populations classified as living at either high, low, or no risk of malaria defined according to climactic suitability (as per the Mapping Malaria Risk in Africa [MARA] project). Estimates were adjusted for urban and rural differences, and the effect of bednets and IRS
Uncertainty analysis For countries with unreliable surveillance systems (45 countries) and countries with incomplete surveillance systems (55 countries): • 1000 draws generated from the variance-covariance matrix of coefficients from the incidence regression • Age pattern predicted with regression and applied to non-age-specific WHO case report data for countries with reliable surveillance systems (eight countries)	For countries outside Africa and low-transmission African countries: • uncertainty in the completeness of reporting assumed to be uniform for reported values between 50% and 80% (low and mid value at 80% and high values at 100%) and triangular distributions for values below 50% (low 0%, mid and high 50%) and above 80% (low and mid 80%, high 100%) • Proportion of slide-positive cases assumed to have a normal distribution with SD from a least square regression of SDs on means across countries • Uncertainty in the proportion of population with fever using health facilities that are covered by the health-facility reporting system of cases and proportion not seeking treatment: based on survey SDs • Final uncertainty based on bootstrap methods assuming no correlation between sources of uncertainty within a country • Uncertainty distribution correlation across countries unknown For high-transmission countries in Africa: • incidence rates by age and category of transmission risk • triangular distributions (with low, mid, and high values based on median and interquartile values as reported by Snow and colleagues164) "truncated so that their lower limit did not fall below 1" • Adjustments for rural or urban differences and for coverage of malaria preventive activities (ITNs and IRS): not included in the description of uncertainty methods • Uncertainty distribution correlation across countries unknown
GBD 2013 differences • Malaria cases were predicted with a mortality-incidence model for countries with unreliable surveillance systems	• N/A

GBD 2013	WHO[110,162]
• Predictions are adjusted for detection methods (active vs passive case detection)	

The description of WHO estimation methods was based on the World Malaria Report 2008 and World Malaria Report 2011.

Research Article

DSM-5 AND ICD-11 DEFINITIONS OF POSTTRAUMATIC STRESS DISORDER: INVESTIGATING "NARROW" AND "BROAD" APPROACHES

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