Global, regional, and national levels and causes of maternal mortality during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013

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Summary

Background The fifth Millennium Development Goal (MDG 5) established the goal of a 75% reduction in the maternal mortality ratio (MMR; number of maternal deaths per 100 000 livebirths) between 1990 and 2015. We aimed to measure levels and track trends in maternal mortality, the key causes contributing to maternal death, and timing of maternal death with respect to delivery.

Methods We used robust statistical methods including the Cause of Death Ensemble model (CODEm) to analyse a database of data for 7065 site-years and estimate the number of maternal deaths from all causes in 188 countries between 1990 and 2013. We estimated the number of pregnancy-related deaths caused by HIV on the basis of a systematic review of the relative risk of dying during pregnancy for HIV-positive women compared with HIV-negative

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women. We also estimated the fraction of these deaths aggravated by pregnancy on the basis of a systematic review. To estimate the numbers of maternal deaths due to nine different causes, we identified 61 sources from a systematic review and 943 site-years of vital registration data. We also did a systematic review of reports about the timing of maternal death, identifying 142 sources to use in our analysis. We developed estimates for each country for 1990–2013 using Bayesian meta-regression. We estimated 95% uncertainty intervals (UIs) for all values.

Findings **292 982 (95% UI 261 017–327 792) maternal deaths occurred in 2013, compared with 376 034 (343 483–407 574) in 1990. The global annual rate of change in the MMR was –0·3% (–1·1 to 0·6) from 1990 to 2003, and –2·7% (–3·9 to –1·5) from 2003 to 2013, with evidence of continued acceleration. MMRs reduced consistently in south, east, and southeast Asia between 1990 and 2013, but maternal deaths increased in much of sub-Saharan Africa during the 1990s. 2070 (1290–2866) maternal deaths were related to HIV in 2013, 0·4% (0·2–0·6) of the global total. MMR was highest in the oldest age groups in both 1990 and 2013. In 2013, most deaths occurred intrapartum or postpartum. Causes varied by region and between 1990 and 2013. We recorded substantial variation in the MMR by country in 2013, from 956·8 (685·1–1262·8) in South Sudan to 2·4 (1·6–3·6) in Iceland.**

Interpretation **Global rates of change suggest that only 16 countries will achieve the MDG 5 target by 2015. Accelerated reductions since the Millennium Declaration in 2000 coincide with increased development assistance for maternal, newborn, and child health. Setting of targets and associated interventions for after 2015 will need careful consideration of regions that are making slow progress, such as west and central Africa.**

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Introduction

Since the 1980s, the global health community has focused on reducing maternal mortality through a sequence of initiatives, beginning with the Safe Motherhood movement in 1987, to the creation of the Partnership for Maternal, Newborn and Child Health in 2005.[1,2] The priority accorded to reductions in maternal mortality is shown by its choice as one of the eight Millennium Development Goals (MDGs). Despite these efforts and visibility, there was broad concern that little or no progress was being made, which prompted intensified efforts by the UN Secretary General through the launch of Every Woman Every Child in 2010, and the subsequent creation of the Commission on Information and Accountability for Women's and Children's Health.[2,3] In 2010, a comprehensive assessment of global trends in maternal mortality suggested that the maternal mortality ratio (MMR; number of maternal deaths per 100 000 livebirths) had decreased by 1·3% per year since 1990.[4] Subsequent revisions of the historical estimates have shown even larger worldwide rates of change, from –1·9% to –3·1% per year.[5,6] This evidence collectively suggests that, although concerns about the rate of change of maternal mortality might have been too pessimistic, there is substantial uncertainty about how rapid the decrease has been and about the actual numbers of deaths in several large populations. If policy debates about acceleration of maternal mortality reductions are to be usefully informed, goals established, and targets set for reproductive health, up-to-date monitoring of the levels and trends in maternal mortality is essential.[7]

Compared with child mortality, maternal mortality has been more difficult to track over time at the national level.[8] Several major challenges have to be addressed in any measurement effort: misclassification of maternal deaths to other causes in countries with complete vital registration and medical certification of causes of death; substantial sampling error in measurements that depend on survey recall because few maternal deaths are reported; large non-sampling error in survey and census measurements as demonstrated in settings with repeated overlapping measurements; variation in the demographic assessment of reproductive-age mortality from all causes, particularly in the 1990s; and the need for models to synthesise data from several studies or generate estimates when data are sparse.[9–11] The substantial differences between global modelling efforts, which are at times substantial, emphasise the influence of each of the analytical steps used to estimate maternal mortality.[12] Political attention to how countries are progressing towards MDG 5 targets is intensifying.[1,13] Donors, global health partners, and national programme managers are understandably frustrated by the wide uncertainty intervals and the variability of estimates from different analysts.[8]

Here, we use the systematic approach of the Global Burden of Diseases, Injuries, and Risk Factors Study 2013 (GBD 2013) to measure levels and track trends in maternal mortality, the key causes contributing to maternal death, and the timing of maternal deaths. In GBD 2013, with application of rigorous statistical methods to critically appraise and synthesise data from different sources to estimate levels and causes of death in each age and sex group, a consistent and holistic approach to the challenges of maternal mortality measurement is used that enables comparisons across time, country, and other important causes of death in women of reproductive age. Algorithms for cause of death reclassification are applied consistently across all causes and modelling strategies use methods with clearly

quantified out-of-sample predictive validity.[14] On the basis of recent trends in MMR, we also project an MMR scenario for 2030 to inform policy debates by identifying which countries are in greatest need of intensified focus.

Methods

Maternal mortality 1990–2013

Data

We used the GBD 2013 cause of death database, which extends from 1980 to 2013, to estimate maternal mortality. Although we report estimates for the MDG period 1990–2013, data for 1980–90 are included in the analysis to improve the robustness of the time trend estimation. Naghavi and colleagues[15] provide substantial detail about the inclusion criteria and data processing of studies across all causes. Briefly, building on previous analyses, we identified data from 180 of 188 GBD countries, including 4877 site-years of vital registration data, 1213 site-years of sibling histories from Demographic and Health Surveys (DHS) and Reproductive Health Surveys (RHS) providing information about the pregnancy-related fraction of reproductive-age deaths, 73 site-years of censuses, 626 site-years of maternal mortality surveillance, and 267 site-years of verbal autopsy analyses covering women of reproductive age.[4,5,16] We identified the above data sources through a systematic review (appendix), from analyses by Lozano and colleagues[5] and GBD 2010 analyses,[16] searches of Ministry of Health websites, and a search of the Global Health Data Exchange.

There has been much debate about which deaths of women of reproductive age should be included as maternal deaths. To be classified as maternal, pregnancy needs to be a causal factor in death. It can either have a direct effect (complications of the pregnancy or childbirth, or postpartum complications) or indirect effect (exacerbation of a pre-existing condition). Therefore, accidental or incidental deaths in which pregnancy had no causal role are not classified as maternal deaths. Definitions for national use based on the International Classification of Diseases (ICD) have differed from other recommendations for international comparisons of the MMR. All definitions include direct and indirect causes during pregnancy and within 6 weeks of the termination of pregnancy (figure 1). ICD-10 definitions also include late maternal deaths between 6 weeks and 1 year after termination.[6,17] For some causes, such as suicide, there is national variation in whether they are coded as incidental or indirect.[18,19] MDG guidance for cross-country comparisons of MMR recommends that all HIV-related deaths during pregnancy or within 6 weeks should be included in the MMR,[20] but the UN group estimating maternal mortality uses only 50% of these deaths in their estimation.[6,20] Conceptually, only the fraction of deaths aggravated by pregnancy should be included, because that is the definition of an indirect cause of maternal mortality.

We included direct and indirect deaths during pregnancy and within 6 weeks of delivery, plus late maternal deaths up to 1 year after delivery and the fraction of HIV-related deaths aggravated by pregnancy. Late maternal deaths were not coded in ICD-9 so data are only available for ICD-10 (ie, from 1994). Additionally, because maternal deaths in the age group 10–14 years have been consistently reported in our data sources, we have estimated the number of maternal deaths in this age group but have not included them in the computation of the MMR because no standard estimates of birth rates are available for this group.

In vital registration and verbal autopsy data, maternal deaths are often misclassified as deaths attributable to

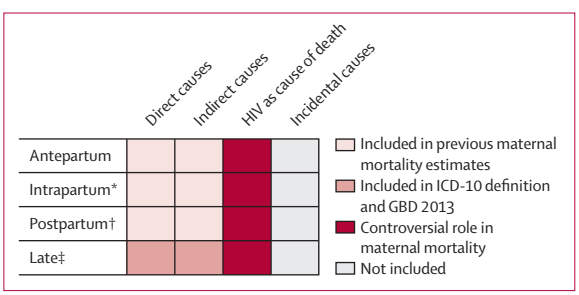

Figure 1: **Definitions of maternal death**
ICD-10=International Classification of Diseases, version 10. *During labour and up to 24 h after delivery. †Between 24 h and 6 weeks after delivery. ‡Between 6 weeks and 1 year after delivery.

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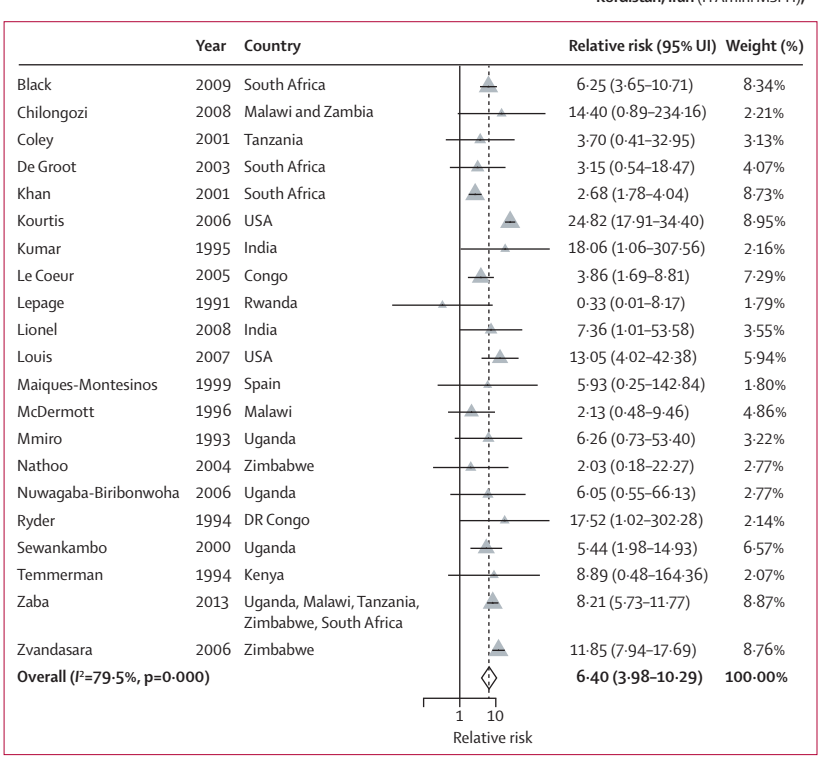

Figure 2: **Forest plot of the relative risk of death during pregnancy for women with HIV infection compared with women without HIV infection**
Weights are from random effects analysis. Size of the triangles is proportional to the weighting of each study in the meta-analysis. UI=uncertainty interval.

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other underlying causes. We reassigned deaths assigned to causes that are unlikely to be underlying causes of death with standardised algorithms.[14] The causes of death that are partly reassigned to maternal causes are shown in the appendix.[15] We reanalysed DHS and RHS microdata for sibling deaths that were related to pregnancy by year using Gakidou-King weights to deal with potential survivor bias.[21] We used a Bayesian noise reduction algorithm to preprocess data to avoid the issue of large stochastic fluctuations and zero counts leading to distorted time trends (appendix). When different DHS surveys provided data for reproductive-age deaths and the number that were related to pregnancy for the same year, we pooled results for that year to reduce stochastic measurement error. Additionally, for some vital registration data, no maternal deaths are reported in specific age group or for a specific period. Noise reduction algorithms again help to reduce upward bias because all zero counts would otherwise be dropped from natural logarithm death rate and logit cause fraction models. Data were unavailable for only eight countries, for which we relied entirely on model predictions for maternal mortality estimates.

HIV-related mortality

Because of the rapid increase in reproductive-age mortality due to the HIV epidemic in eastern and southern Africa, disentangling the fraction of HIV deaths during pregnancy that are incidental (ie, not related to pregnancy) from those aggravated by pregnancy (ie, maternal deaths) is important. Assessment of HIV-related mortality during pregnancy has two steps: estimation of the fraction of deaths during pregnancy or within 6 weeks of delivery that are related to HIV, and estimation of the fraction of these HIV-related deaths that are aggravated by pregnancy. For the first step, we updated Calvert and Ronsmans' systematic review[22] (appendix). We identified one new study, giving a total of 21 for which we could examine mortality risk during pregnancy for HIV-positive versus HIV-negative women.[23–43] We excluded data from non-representative populations, from sources that did not include postpartum deaths, and any deaths more than 1 year after delivery. Most studies did not specify antiretroviral therapy (ART) status. We undertook a DerSimonian-Laird meta-analysis of the relative risk (RR) of death. Studies were heterogeneous and the pooled RR was 6·40 (figure 2). We identified no clear geographical pattern to explain why some studies are significantly above or below the pooled estimate, nor any clear relation with other study attributes, meaning that we had an insufficient basis for further weighting of input studies.

We used the RR and estimated HIV prevalence in pregnant women (based on the UNAIDS Spectrum model) to estimate the population attributable fraction of pregnancy-related deaths that are related to HIV. To estimate the fraction of HIV-related deaths aggravated by pregnancy, we did another systematic review (appendix). We could identify only two studies to inform this fraction, with a pooled RR of 1·13 (95% UI 0·73–1·77),[44,45] corresponding to a frequency of all HIV-related deaths during pregnancy that should be counted as maternal deaths of 11·5% (0–43·5). Several additional studies did not show increased risk of HIV-related mortality during pregnancy, but were excluded because stratification of the study population on the basis of stage of HIV or ART status was not completed.

Modelling

Following Lozano and colleagues' methods,[5] we used the Cause of Death Ensemble model (CODEm) to model maternal mortality by age (appendix). With CODEm, many models are developed and their performance is assessed objectively.[46] We selected nine covariates for CODEm to test on the basis of previously reported associations that also have a plausible causal association with maternal mortality: age-specific fertility rate, total fertility rate, age-standardised HIV death rate for female individuals aged 15–49 years, neonatal death rate, lag-distributed gross domestic product (GDP) per person (GDP per person computed with a triangle lag that weights more recent years more heavily), proportion of deliveries occurring in facilities, proportion of deliveries overseen by skilled birth attendants, coverage of four visits of antenatal care, and malnutrition in children younger than 5 years (<2 SD below mean weight for age; used as a proxy for adult nutritional status; appendix).

We divided covariates into three groups to enable computation. Level 1 covariates had the strongest likely relation with maternal mortality; covariates in levels 2 and 3 had weaker likely relations. CODEm tests all combinations of level 1 covariates and nearly every combination of level 2 and level 3 covariates using four families of models: mixed effects linear regression of the logit-transformed cause-specific mortality fraction, spatial-temporal Gaussian Process Regression (ST-GPR) of the logit-transformed cause-specific mortality rate, mixed effects linear regression of the natural log of the maternal death rate, and ST-GPR of the natural log of the maternal death rate.[46] 30% of the data were not included in the models. Models were retained when the beta for each covariate was significant and in the direction allowed by previous evidence. The performance of each retained model was then assessed with half the held-out data in terms of the root-mean squared error of the prediction of the model compared with the data held out, and the root-mean squared error of the trend in the model compared with the trend in the data. Ensemble models were developed on the basis of the rankings of individual models and the performance of different ensembles assessed in the second half of the data held out of the regression (appendix). The best performing ensemble was selected and refitted to all data.

One of the strengths of the GBD is that all causes are simultaneously estimated. Estimates of every

cause-specific death rate are necessary to sum to all-cause mortality using the CoDCorrect algorithm.[16] To ensure they do sum to all-cause mortality, at the level of each draw from the posterior distribution of each cause of death for a specific country, year, and age group, the sum of all causes was rescaled to equal a draw taken from the uncertainty distribution of all-cause mortality for that country, year, and age group.

Causes of maternal death

We disaggregated maternal deaths into nine causes: maternal haemorrhage, maternal sepsis and other pregnancy-related infections, hypertensive disorders of pregnancy, obstructed labour, abortion, other direct maternal disorders, indirect maternal disorders, HIV, and late maternal deaths. To estimate the different causes of maternal death, we completed a systematic review (appendix) to identify data to inform which proportion of total maternal deaths is due to each cause. Additionally, we incorporated all vital registration and sample registration data that provided ICD-coded detail for maternal causes (appendix). We identified 61 studies and, after processing, included 943 site-years of vital registration, sample registration, and maternal mortality surveillance data.

We modelled the proportion of maternal deaths for all causes except HIV using DisMod-MR (version 2.0), which is a Bayesian meta-regression tool developed for the GBD (appendix). This version of DisMod-MR allows for two types of fixed effects (study attributes and country covariates) and includes nested random effects for super-region, region, and country. A key advantage of DisMod-MR is that it can handle data reported for any age interval. Predictions from DisMod-MR for each group divided by country, year, and age are based on the country covariates, reference values of the study level covariates, and hierarchical random effects. Point estimates with uncertainty were produced for six discrete points: 1990, 1995, 2000, 2005, 2010, and 2013. Each cause was modelled independently. Predicted cause fractions for each group were rescaled to equal 100% of the deaths not related to HIV. The rescaled cause fractions were then multiplied by the number of maternal deaths in each group (divided by country, year, and age) to obtain the number of deaths for each maternal cause, a sum to which the HIV deaths were added. The final result includes cause fraction and number of maternal deaths due to each cause, country, age group, and year.

Timing of maternal deaths

An important issue for planning of interventions is an understanding of the timing of maternal deaths with respect to labour and delivery.[47] We completed a systematic review to identify studies of the timing of maternal deaths (appendix). We identified 142 studies and used vital registration, sample registration, and surveillance data for late maternal death. Many studies combined the first 24 h postpartum (immediate or early postpartum) with the intrapartum period, because events of the immediate postpartum period are clinically related to events occurring during labour and delivery. Therefore, we also combined intrapartum and immediate postpartum periods. We followed this format to construct a dataset that included four different time windows: deaths occurring antepartum (before onset of labour), deaths occurring intrapartum or during the immediate postpartum period (up to 24 h after delivery), deaths occurring during the subacute and delayed postpartum periods (24 h to 42 days after delivery),[47] and late maternal deaths (43 days to 1 year after delivery). We modelled the proportion of maternal deaths in each of the four periods with DisMod-MR (version 2.0). The predicted proportions were scaled to 100% for each group.

2030 scenario and rate-of-change calculations

We developed a straightforward forecast scenario for the MMR for every country in 2030 by using the estimated

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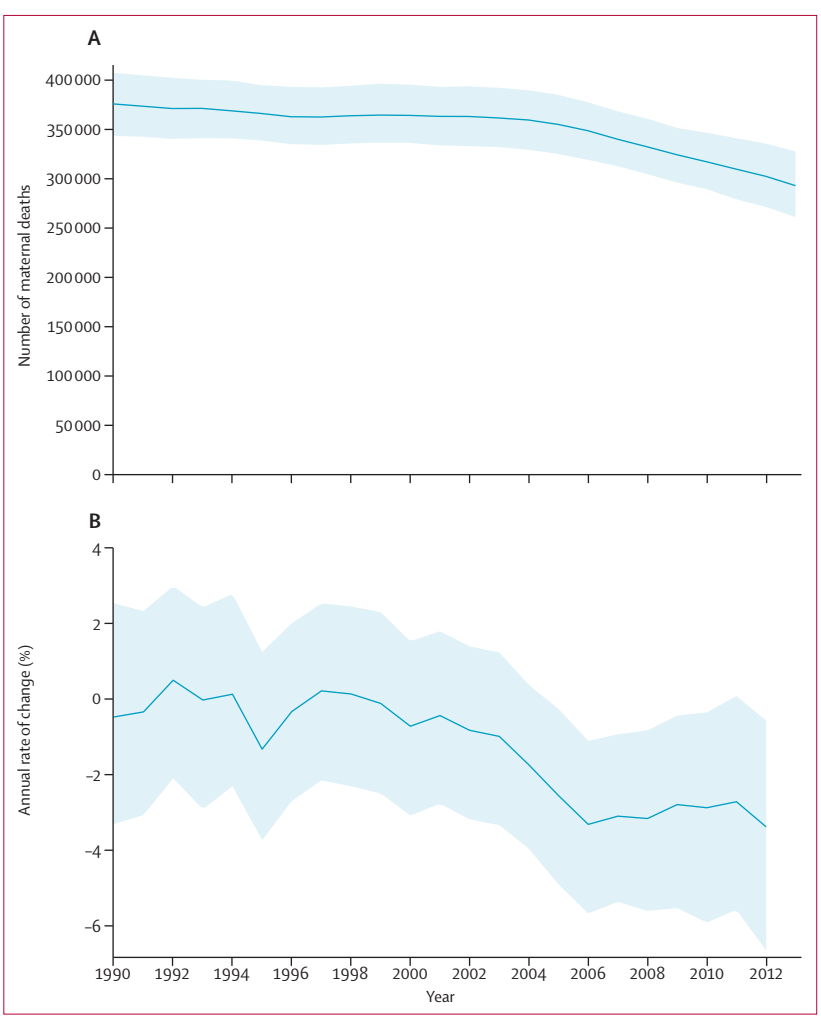

Figure 3: **Global maternal deaths (A) and annualised rate of change in maternal mortality ratio (B), 1990–2013**
Shaded areas show 95% uncertainty intervals.

	Maternal mortality ratio (per 100 000 livebirths)			Number of maternal deaths			Annualised rate of change in maternal mortality ratio (%)		
	1990	2003	2013	1990	2003	2013	1990–2003	2003–13	1990–2013
Worldwide	283·2 (258·6 to 306·9)	273·4 (251·1 to 296·6)	209·1 (186·3 to 233·9)	376 034 (343 483 to 407 574)	361 706 (332 230 to 392 393)	292 982 (261 017 to 327 792)	−0·3% (−1·1 to 0·6)	−2·7% (−3·9 to −1·5)	−1·3% (−1·9 to −0·8)
Developed countries	24·5 (23·0 to 26·1)	16·0 (14·9 to 17·0)	12·1 (10·4 to 13·7)	3827 (3596 to 4076)	2341 (2178 to 2490)	1811 (1560 to 2053)	−3·3% (−3·8 to −2·8)	−2·9% (−4·2 to −1·5)	−3·1% (−3·7 to −2·5)
Developing countries	317·6 (289·9 to 344·5)	305·4 (280·3 to 331·5)	232·8 (207·3 to 260·6)	372 207 (339 780 to 403 753)	359 365 (329 892 to 390 100)	291 171 (259 299 to 325 923)	−0·3% (−1·2 to 0·6)	−2·7% (−4·0 to −1·5)	−1·4% (−1·9 to −0·8)
High-income Asia Pacific	16·4 (14·4 to 18·4)	10·3 (8·9 to 12·1)	7·9 (6·3 to 9·9)	325 (285 to 363)	173 (150 to 204)	128 (103 to 162)	−3·6% (−4·9 to −2·1)	−2·7% (−4·6 to −0·6)	−3·2% (−4·2 to −2·0)
Brunei	27·2 (18·9 to 39·0)	18·6 (13·8 to 24·6)	14·6 (9·8 to 21·1)	2 (1 to 3)	1 (1 to 2)	1 (1 to 1)	−2·9% (−6·3 to 0·4)	−2·5% (−6·7 to 1·9)	−2·7% (−5·0 to −0·4)
Japan	14·2 (12·2 to 16·2)	8·2 (6·8 to 9·8)	6·1 (4·7 to 7·9)	171 (148 to 195)	94 (78 to 113)	66 (51 to 86)	−4·3% (−5·7 to −2·6)	−2·9% (−5·7 to −0·2)	−3·7% (−4·9 to −2·3)
Singapore	10·4 (8·5 to 12·8)	8·8 (7·2 to 10·8)	4·5 (3·4 to 5·8)	6 (5 to 7)	4 (3 to 5)	2 (2 to 3)	−1·2% (−3·3 to 0·7)	−6·8% (−9·4 to −3·9)	−3·6% (−5·3 to −2·2)
South Korea	20·7 (17·5 to 23·9)	15·4 (12·8 to 19·0)	12·0 (8·7 to 16·7)	145 (123 to 168)	74 (61 to 91)	58 (42 to 81)	−2·3% (−4·3 to −0·1)	−2·6% (−5·7 to 0·4)	−2·4% (−3·9 to −0·7)
Central Asia	61·7 (58·0 to 65·6)	45·1 (41·6 to 49·0)	31·5 (27·0 to 37·0)	1188 (1119 to 1265)	724 (668 to 786)	569 (487 to 668)	−2·4% (−3·2 to −1·7)	−3·6% (−5·4 to −1·9)	−2·9% (−3·6 to −2·2)
Armenia	43·3 (36·0 to 51·3)	35·2 (29·1 to 42·5)	18·3 (13·9 to 23·4)	32 (26 to 38)	15 (13 to 19)	8 (6 to 10)	−1·6% (−3·5 to 0·4)	−6·6% (−9·7 to −3·6)	−3·8% (−5·1 to −2·4)
Azerbaijan	42·4 (36·6 to 49·0)	37·3 (31·4 to 44·2)	23·9 (17·1 to 33·9)	84 (72 to 97)	57 (48 to 67)	40 (29 to 57)	−1·0% (−2·8 to 0·8)	−4·6% (−8·2 to −0·4)	−2·5% (−4·0 to −1·0)
Georgia	42·0 (35·4 to 49·8)	31·7 (26·3 to 38·0)	31·1 (24·7 to 38·8)	37 (32 to 44)	19 (16 to 23)	18 (14 to 23)	−2·2% (−4·1 to −0·2)	−0·2% (−3·0 to 2·6)	−1·3% (−2·4 to −0·1)
Kazakhstan	70·9 (62·1 to 80·0)	36·0 (31·0 to 41·7)	27·0 (19·5 to 35·4)	247 (216 to 278)	105 (91 to 122)	90 (65 to 118)	−5·2% (−6·6 to −3·6)	−2·9% (−6·5 to 0·4)	−4·2% (−5·6 to −2·9)
Kyrgyzstan	62·5 (54·3 to 71·4)	58·3 (50·6 to 66·8)	46·8 (35·9 to 59·2)	84 (73 to 95)	66 (58 to 76)	69 (53 to 88)	−0·5% (−2·1 to 1·0)	−2·3% (−5·2 to 0·5)	−1·3% (−2·5 to −0·1)
Mongolia	180·2 (137·4 to 233·0)	96·3 (74·6 to 122·7)	51·3 (34·2 to 72·3)	108 (82 to 139)	50 (39 to 63)	33 (22 to 46)	−4·8% (−7·5 to −2·1)	−6·4% (−10·7 to −2·1)	−5·5% (−7·5 to −3·6)
Tajikistan	74·6 (65·3 to 86·4)	49·4 (42·2 to 57·8)	30·4 (22·2 to 39·3)	154 (135 to 178)	98 (84 to 115)	82 (60 to 106)	−3·2% (−4·9 to −1·6)	−4·9% (−8·2 to −1·9)	−3·9% (−5·4 to −2·7)
Turkmenistan	72·9 (63·2 to 83·1)	61·2 (41·1 to 83·7)	38·2 (22·9 to 55·5)	91 (79 to 103)	64 (43 to 88)	42 (25 to 61)	−1·4% (−4·6 to 1·3)	−4·8% (−9·7 to −0·1)	−2·9% (−5·0 to −1·1)
Uzbekistan	50·7 (45·4 to 56·8)	42·4 (36·6 to 48·9)	30·5 (21·0 to 42·6)	353 (315 to 395)	249 (215 to 287)	187 (129 to 262)	−1·4% (−2·8 to −0·1)	−3·4% (−6·8 to 0·4)	−2·3% (−3·9 to −0·7)
East Asia	139·5 (113·1 to 167·1)	63·9 (58·1 to 69·7)	18·2 (15·0 to 21·3)	31 690 (25 695 to 37 974)	11 084 (10 075 to 12 080)	3534 (2925 to 4135)	−6·0% (−7·6 to −4·3)	−12·6% (−14·5 to −10·7)	−8·9% (−10·1 to −7·6)
China	141·7 (114·4 to 170·8)	64·1 (58·2 to 70·1)	17·2 (14·0 to 20·3)	31 042 (25 074 to 37 428)	10 652 (9667 to 11 643)	3233 (2633 to 3815)	−6·1% (−7·8 to −4·3)	−13·2% (−15·2 to −11·1)	−9·2% (−10·4 to −7·8)
North Korea	136·3 (70·2 to 226·7)	100·5 (67·8 to 144·1)	77·4 (48·3 to 111·9)	546 (281 to 908)	386 (260 to 554)	275 (172 to 398)	−2·2% (−6·5 to 2·5)	−2·6% (−7·4 to 2·5)	−2·4% (−5·6 to 1·1)
Taiwan (Province of China)	24·9 (17·3 to 33·8)	13·5 (10·1 to 17·8)	7·9 (6·1 to 10·2)	102 (71 to 138)	46 (34 to 60)	26 (20 to 33)	−4·7% (−7·7 to −1·8)	−5·3% (−9·0 to −1·7)	−5·0% (−6·6 to −3·2)
South Asia	480·4 (407·4 to 558·3)	399·7 (345·8 to 467·6)	310·6 (252·4 to 383·4)	174 416 (147 914 to 202 689)	142 624 (123 413 to 166 876)	107 827 (87 629 to 133 087)	−1·4% (−3·0 to 0·3)	−2·6% (−5·1 to 0·0)	−1·9% (−3·0 to −0·8)
Afghanistan	501·0 (324·4 to 739·0)	716·3 (441·3 to 1123·4)	885·0 (508·7 to 1445·1)	3261 (2112 to 4811)	7726 (4760 to 12 117)	8794 (5055 to 14 360)	2·7% (−0·6 to 5·8)	2·1% (−1·8 to 5·4)	2·4% (0·1 to 4·7)
Bangladesh	551·9 (436·4 to 659·5)	333·1 (250·9 to 427·6)	242·7 (171·2 to 326·9)	20 669 (16 345 to 24 701)	11 327 (8532 to 14 541)	7737 (5459 to 10 422)	−3·9% (−6·4 to −1·3)	−3·2% (−7·0 to 0·8)	−3·6% (−5·1 to −1·9)
Bhutan	551·7 (275·0 to 846·5)	411·2 (204·9 to 651·7)	277·4 (136·7 to 469·2)	106 (53 to 162)	59 (30 to 94)	40 (20 to 68)	−2·3% (−6·4 to 1·5)	−4·0% (−8·1 to 0·9)	−3·0% (−5·8 to 0·2)
India	480·8 (384·9 to 583·6)	382·0 (315·3 to 472·8)	281·8 (207·0 to 371·2)	128 695 (103 026 to 156 193)	100 014 (82 553 to 123 801)	71 792 (52 723 to 94 564)	−1·8% (−4·0 to 0·6)	−3·1% (−6·6 to 0·3)	−2·3% (−3·9 to −0·8)
Nepal	417·4 (295·9 to 540·8)	365·0 (262·6 to 464·3)	272·3 (190·9 to 363·5)	3012 (2136 to 3903)	2623 (1886 to 3336)	1588 (1113 to 2119)	−1·0% (−3·6 to 1·5)	−3·0% (−6·0 to −0·1)	−1·9% (−3·7 to 0·1)

(Table 1 continues on next page)

	Maternal mortality ratio (per 100 000 livebirths)			Number of maternal deaths			Annualised rate of change in maternal mortality ratio (%)		
	1990	2003	2013	1990	2003	2013	1990–2003	2003–13	1990–2013
(Continued from previous page)									
Pakistan	423·9 (317·2 to 521·6)	486·5 (360·7 to 595·6)	400·6 (233·0 to 560·8)	18 673 (13 973 to 22 976)	20 875 (15 477 to 25 557)	17 876 (10 397 to 25 026)	1·1% (–1·6 to 3·7)	–2·1% (–7·7 to 2·4)	–0·3% (–2·9 to 1·8)
Southeast Asia	295·0 (247·5 to 353·4)	217·4 (180·8 to 266·3)	154·9 (124·2 to 192·9)	35 339 (29 644 to 42 340)	25 637 (21 327 to 31 404)	18 028 (14 456 to 22 444)	–2·3% (–3·6 to –1·1)	–3·4% (–5·4 to –1·6)	–2·8% (–4·0 to –1·8)
Cambodia	355·9 (290·5 to 415·7)	399·0 (277·9 to 486·8)	220·9 (155·6 to 286·5)	1290 (1053 to 1507)	1355 (944 to 1654)	862 (607 to 1118)	0·8% (–1·8 to 2·8)	–5·9% (–9·3 to –2·9)	–2·1% (–3·6 to –0·6)
Indonesia	368·3 (311·6 to 432·9)	262·0 (224·3 to 308·2)	199·3 (149·4 to 257·4)	16 519 (13 975 to 19 416)	12 734 (10 902 to 14 982)	9352 7010 to 12 079)	–2·6% (–4·2 to –1·0)	–2·8% (–6·1 to 0·0)	–2·7% (–4·3 to –1·4)
Laos	514·4 (276·7 to 767·0)	490·7 (251·3 to 779·6)	303·8 (154·7 to 521·5)	942 (506 to 1404)	814 (417 to 1293)	543 (277 to 932)	–0·4% (–4·1 to 2·7)	–4·8% (–8·3 to –1·1)	–2·3% (–4·7 to 0·3)
Malaysia	101·6 (84·3 to 120·3)	78·4 (70·7 to 87·5)	55·7 (43·1 to 70·6)	522 (433 to 617)	364 (328 to 406)	291 (226 to 369)	–2·0% (–3·5 to –0·4)	–3·5% (–6·0 to –0·8)	–2·6% (–3·9 to –1·3)
Maldives	292·3 (240·8 to 355·1)	95·4 (78·7 to 111·6)	51·8 (38·6 to 67·0)	23 (19 to 28)	6 (5 to 7)	4 (3 to 5)	–8·6% (–10·3 to –6·7)	–6·2% (–9·5 to –3·0)	–7·5% (–9·1 to –6·0)
Myanmar	897·3 (513·3 to 1460·4)	645·6 (332·2 to 1145·2)	390·9 (196·3 to 731·7)	9465 (5414 to 15 405)	6108 (3144 to 10 835)	3531 (1773 to 6609)	–2·6% (–6·1 to 0·6)	–5·1% (–8·8 to –1·0)	–3·7% (–6·0 to –0·9)
Philippines	116·3 (103·4 to 130·2)	81·5 (72·0 to 91·5)	80·9 (54·9 to 115·0)	2374 (2112 to 2658)	1876 (1657 to 2105)	1959 (1328 to 2784)	–2·7% (–3·9 to –1·5)	–0·2% (–4·3 to 3·5)	–1·6% (–3·3 to –0·1)
Sri Lanka	73·6 (61·8 to 89·0)	47·9 (38·9 to 56·7)	30·9 (20·7 to 43·4)	257 (216 to 311)	178 (144 to 211)	116 (77 to 162)	–3·3% (–5·3 to –1·7)	–4·5% (–8·6 to –0·6)	–3·8% (–5·9 to –2·1)
Thailand	42·6 (36·1 to 50·3)	89·6 (75·9 to 104·4)	69·5 (47·3 to 98·7)	456 (386 to 538)	766 (648 to 892)	481 (328 to 684)	5·7% (3·8 to 7·5)	–2·7% (–6·6 to 1·4)	2·1% (0·3 to 3·9)
Timor-Leste	632·8 (490·8 to 781·3)	430·2 (361·6 to 498·6)	223·4 (175·5 to 275·9)	215 (167 to 266)	156 (131 to 181)	89 (70 to 110)	–2·9% (–4·9 to –0·9)	–6·6% (–9·0 to –4·2)	–4·5% (–6·0 to –3·1)
Vietnam	174·5 (124·5 to 239·1)	88·5 (59·4 to 122·0)	56·6 (34·1 to 89·5)	3275 (2337 to 4487)	1281 (860 to 1766)	800 (482 to 1265)	–5·2% (–8·3 to –2·2)	–4·6% (–9·1 to 0·0)	–5·0% (–7·5 to –2·3)
Australasia	8·1 (7·1 to 9·2)	5·9 (5·2 to 6·7)	5·5 (4·5 to 6·6)	26 (22 to 29)	19 (17 to 22)	21 (17 to 25)	–2·4% (–3·7 to –1·0)	–0·7% (–2·7 to 1·3)	–1·7% (–2·6 to –0·6)
Australia	7·0 (6·0 to 8·2)	5·1 (4·4 to 6·0)	4·8 (3·7 to 5·9)	18 (16 to 21)	14 (12 to 16)	15 (12 to 18)	–2·5% (–4·1 to –0·8)	–0·7% (–3·2 to 2·0)	–1·7% (–3·0 to –0·5)
New Zealand	12·6 (10·3 to 15·2)	9·4 (7·9 to 11·3)	9·3 (7·2 to 12·1)	7 (6 to 9)	6 (5 to 7)	6 (4 to 7)	–2·2% (–4·2 to –0·3)	–0·1% (–3·0 to 2·7)	–1·3% (–2·8 to 0·1)
Caribbean	208·3 (165·9 to 248·8)	213·1 (161·4 to 272·2)	150·0 (110·1 to 206·7)	1664 (1325 to 1987)	1602 (1214 to 2047)	1075 (788 to 1480)	0·1% (–1·5 to 1·7)	–3·5% (–6·1 to –1·0)	–1·5% (–2·6 to –0·1)
Antigua and Barbuda	54·4 (40·1 to 69·4)	50·8 (40·1 to 64·2)	42·0 (27·9 to 62·3)	1 (1 to 1)	1 (1 to 1)	1 (0 to 1)	–0·5% (–3·2 to 2·1)	–2·0% (–6·4 to 2·7)	–1·2% (–3·1 to 1·1)
Barbados	69·4 (54·8 to 87·4)	62·3 (50·4 to 75·0)	49·9 (34·3 to 70·7)	3 (2 to 4)	2 (2 to 3)	2 (1 to 3)	–0·8% (–3·0 to 1·4)	–2·3% (–6·2 to 1·7)	–1·5% (–3·2 to 0·4)
Belize	32·1 (26·2 to 39·5)	42·5 (34·9 to 51·6)	55·5 (37·6 to 78·9)	2 (2 to 3)	3 (2 to 4)	4 (3 to 6)	2·2% (0·1 to 4·2)	2·5% (–1·4 to 6·3)	2·3% (0·3 to 4·1)
Cuba	71·1 (59·6 to 87·0)	60·6 (52·4 to 70·2)	39·8 (31·5 to 49·5)	123 (103 to 150)	82 (71 to 95)	44 (35 to 54)	–1·2% (–3·0 to 0·4)	–4·3% (–6·9 to –1·6)	–2·5% (–3·8 to –1·2)
Dominica	50·2 (39·2 to 65·9)	41·4 (32·4 to 52·2)	36·1 (23·2 to 52·7)	1 (1 to 1)	1 (0 to 1)	0 (0 to 1)	–1·5% (–4·2 to 1·0)	–1·5% (–5·9 to 2·6)	–1·5% (–3·6 to 0·6)
Dominican Republic	73·8 (62·8 to 85·8)	60·5 (52·2 to 69·8)	40·8 (28·9 to 55·8)	164 (139 to 191)	138 (119 to 159)	90 (64 to 124)	–1·5% (–2·9 to 0·0)	–4·1% (–7·6 to –0·8)	–2·6% (–4·2 to –1·1)
Grenada	47·7 (37·6 to 62·4)	62·5 (50·6 to 76·6)	56·7 (41·0 to 76·9)	1 (1 to 2)	1 (1 to 1)	1 (1 to 2)	2·1% (–0·2 to 4·5)	–1·1% (–4·7 to 2·4)	0·7% (–1·0 to 2·4)
Guyana	118·8 (98·5 to 142·0)	138·9 (111·4 to 169·2)	118·1 (75·8 to 179·4)	21 (17 to 25)	25 (20 to 30)	20 (13 to 30)	1·2% (–1·0 to 3·3)	–1·8% (–6·1 to 2·4)	–0·1% (–2·1 to 2·0)
Haiti	492·4 (363·4 to 619·7)	495·7 (351·1 to 662·0)	333·0 (219·1 to 480·1)	1290 (952 to 1624)	1289 (913 to 1722)	868 (571 to 1251)	0·0% (–2·0 to 2·1)	–4·0% (–7·2 to –1·0)	–1·7% (–3·2 to –0·1)
Jamaica	44·0 (32·4 to 58·1)	59·4 (48·6 to 71·2)	44·7 (29·7 to 66·0)	27 (20 to 36)	33 (27 to 40)	23 (15 to 34)	2·3% (–0·2 to 5·0)	–3·0% (–7·0 to 1·2)	0·0% (–2·0 to 2·1)
Saint Lucia	52·0 (40·8 to 68·7)	44·4 (35·5 to 54·3)	41·0 (28·0 to 58·8)	2 (2 to 3)	1 (1 to 2)	1 (1 to 2)	–1·2% (–3·9 to 1·3)	–0·9% (–4·6 to 3·2)	–1·1% (–3·1 to 0·7)

(Table 1 continues on next page)

	Maternal mortality ratio (per 100 000 livebirths)			Number of maternal deaths			Annualised rate of change in maternal mortality ratio (%)		
	1990	2003	2013	1990	2003	2013	1990–2003	2003–13	1990–2013
(Continued from previous page)									
Saint Vincent and the Grenadines	45·2 (33·3 to 60·8)	65·7 (54·0 to 81·7)	60·1 (43·7 to 80·8)	1 (1 to 2)	1 (1 to 2)	1 (1 to 1)	2·9% (0·2 to 5·7)	−1·0% (−4·6 to 2·3)	1·2% (−0·7 to 3·2)
Suriname	76·8 (62·3 to 93·2)	88·2 (71·3 to 106·5)	65·2 (44·2 to 91·3)	7 (6 to 9)	9 (7 to 11)	6 (4 to 9)	1·1% (−1·1 to 3·2)	−3·1% (−7·6 to 1·0)	−0·8% (−2·6 to 1·1)
The Bahamas	63·1 (48·0 to 84·0)	71·8 (57·5 to 90·2)	60·3 (38·8 to 91·2)	4 (3 to 5)	4 (3 to 5)	4 (2 to 5)	1·0% (−1·7 to 3·5)	−1·9% (−6·5 to 2·4)	−0·3% (−2·4 to 2·1)
Trinidad and Tobago	72·3 (61·5 to 84·3)	64·4 (54·1 to 75·8)	49·7 (36·4 to 65·6)	17 (14 to 20)	13 (11 to 15)	10 (7 to 13)	−0·9% (−2·6 to 0·9)	−2·7% (−5·8 to 0·5)	−1·7% (−3·1 to −0·2)
Central Europe	48·9 (45·4 to 53·0)	15·4 (14·1 to 16·5)	8·8 (7·5 to 10·1)	790 (734 to 856)	189 (173 to 203)	112 (95 to 128)	−8·9% (−9·7 to −8·2)	−5·6% (−7·1 to −4·1)	−7·4% (−8·2 to −6·8)
Albania	35·3 (29·5 to 41·6)	13·2 (10·8 to 16·1)	7·3 (4·9 to 10·2)	30 (25 to 35)	6 (5 to 8)	3 (2 to 4)	−7·6% (−9·7 to −5·5)	−6·1% (−10·4 to −2·2)	−6·9% (−8·7 to −5·2)
Bosnia and Herzegovina	38·8 (31·2 to 47·0)	20·4 (14·8 to 27·6)	11·0 (7·7 to 15·3)	23 (19 to 28)	7 (5 to 9)	4 (3 to 5)	−5·0% (−7·8 to −2·3)	−6·3% (−10·1 to −2·5)	−5·5% (−7·2 to −3·8)
Bulgaria	44·3 (38·8 to 50·7)	29·2 (24·9 to 33·7)	14·8 (12·0 to 18·2)	43 (37 to 49)	22 (18 to 25)	11 (9 to 13)	−3·2% (−4·8 to −1·7)	−6·8% (−9·0 to −4·5)	−4·8% (−5·7 to −3·8)
Croatia	16·9 (14·1 to 20·1)	12·7 (10·5 to 14·9)	9·9 (7·9 to 12·3)	9 (7 to 11)	5 (4 to 6)	4 (3 to 5)	−2·2% (−4·0 to −0·5)	−2·5% (−4·9 to 0·0)	−2·3% (−3·6 to −1·1)
Czech Republic	18·1 (15·2 to 21·4)	7·0 (5·8 to 8·4)	5·3 (4·1 to 6·7)	22 (18 to 26)	7 (6 to 9)	6 (5 to 8)	−7·3% (−9·2 to −5·4)	−2·8% (−5·6 to −0·2)	−5·3% (−6·6 to −4·1)
Hungary	19·0 (16·0 to 22·5)	9·2 (7·6 to 11·0)	8·5 (6·3 to 10·7)	24 (20 to 28)	9 (7 to 11)	9 (6 to 11)	−5·6% (−7·5 to −3·7)	−0·8% (−3·7 to 1·9)	−3·5% (−4·9 to −2·3)
Macedonia	25·1 (20·1 to 31·3)	17·7 (14·7 to 21·0)	10·5 (8·2 to 13·3)	9 (7 to 11)	4 (4 to 5)	2 (2 to 3)	−2·7% (−4·8 to −0·6)	−5·2% (−7·6 to −2·4)	−3·8% (−5·3 to −2·3)
Montenegro	15·9 (10·4 to 23·0)	18·6 (14·0 to 24·0)	12·3 (8·6 to 17·3)	1 (1 to 2)	1 (1 to 2)	1 (1 to 1)	1·3% (−2·2 to 4·7)	−4·2% (−7·8 to −0·2)	−1·1% (−3·3 to 1·1)
Poland	34·0 (30·3 to 38·2)	8·6 (7·4 to 9·9)	4·8 (3·8 to 6·1)	179 (159 to 201)	33 (28 to 37)	20 (16 to 26)	−10·6% (−12·0 to −9·3)	−5·8% (−8·5 to −3·4)	−8·5% (−9·6 to −7·4)
Romania	152·1 (137·4 to 169·5)	31·6 (27·9 to 35·5)	15·9 (12·2 to 19·9)	414 (374 to 462)	73 (65 to 82)	37 (28 to 46)	−12·1% (−13·3 to −10·9)	−6·9% (−9·6 to −4·3)	−9·8% (−11·1 to −8·7)
Serbia	15·8 (11·0 to 22·9)	12·1 (10·1 to 14·2)	10·6 (8·5 to 13·0)	22 (15 to 32)	13 (11 to 16)	10 (8 to 12)	−2·0% (−5·1 to 1·0)	−1·3% (−3·8 to 1·2)	−1·7% (−3·6 to 0·1)
Slovakia	15·9 (12·7 to 19·5)	9·5 (8·0 to 11·1)	6·2 (4·8 to 7·9)	12 (10 to 15)	5 (4 to 6)	4 (3 to 5)	−4·0% (−6·1 to −2·0)	−4·3% (−7·1 to −1·6)	−4·1% (−5·5 to −2·8)
Slovenia	12·9 (10·6 to 15·7)	11·0 (8·8 to 13·3)	7·4 (5·5 to 9·8)	3 (2 to 3)	2 (2 to 3)	2 (1 to 2)	−1·2% (−3·2 to 0·8)	−4·1% (−7·3 to −0·8)	−2·5% (−3·9 to −1·0)
Eastern Europe	60·1 (54·3 to 65·7)	36·3 (32·8 to 40·4)	17·6 (14·4 to 20·6)	1566 (1415 to 1714)	812 (733 to 904)	433 (354 to 507)	−3·9% (−4·9 to −2·8)	−7·3% (−9·4 to −5·4)	−5·3% (−6·1 to −4·6)
Belarus	40·5 (35·1 to 46·3)	25·0 (20·8 to 30·0)	10·6 (7·7 to 13·9)	53 (46 to 60)	25 (20 to 30)	11 (8 to 15)	−3·7% (−5·4 to −1·9)	−8·7% (−11·9 to −5·5)	−5·9% (−7·2 to −4·5)
Estonia	45·1 (37·4 to 54·1)	17·7 (14·7 to 21·5)	7·1 (4·9 to 9·5)	8 (7 to 10)	3 (2 to 3)	1 (1 to 1)	−7·2% (−9·2 to −5·3)	−9·2% (−12·7 to −5·8)	−8·1% (−9·9 to −6·6)
Latvia	49·7 (42·2 to 58·1)	20·8 (17·1 to 24·5)	8·5 (6·2 to 11·1)	16 (13 to 18)	5 (4 to 6)	2 (1 to 3)	−6·7% (−8·5 to −5·0)	−9·0% (−12·3 to −6·3)	−7·7% (−9·2 to −6·4)
Lithuania	29·6 (24·9 to 34·9)	13·7 (11·5 to 16·3)	6·1 (4·6 to 7·8)	15 (13 to 18)	5 (4 to 5)	2 (2 to 3)	−5·9% (−7·7 to −4·0)	−8·2% (−11·1 to −5·2)	−6·9% (−8·3 to −5·6)
Moldova	68·9 (59·7 to 79·6)	34·7 (28·5 to 41·3)	21·8 (16·0 to 28·2)	50 (43 to 57)	16 (13 to 19)	9 (7 to 12)	−5·3% (−7·2 to −3·4)	−4·7% (−7·7 to −1·8)	−5·0% (−6·6 to −3·7)
Russia	64·9 (57·7 to 72·6)	36·9 (32·5 to 42·0)	16·8 (13·5 to 20·2)	1099 (976 to 1229)	575 (507 to 655)	291 (234 to 351)	−4·4% (−5·7 to −2·9)	−7·9% (−10·5 to −5·6)	−5·9% (−6·8 to −5·0)
Ukraine	53·3 (46·3 to 60·8)	39·6 (34·5 to 45·4)	23·1 (17·5 to 29·2)	326 (283 to 372)	184 (161 to 211)	116 (88 to 147)	−2·3% (−3·7 to −0·8)	−5·4% (−8·4 to −2·7)	−3·7% (−4·9 to −2·5)
Western Europe	12·7 (11·7 to 13·8)	8·1 (7·3 to 8·6)	6·3 (5·3 to 7·1)	565 (522 to 615)	365 (330 to 390)	288 (243 to 326)	−3·5% (−4·2 to −2·9)	−2·5% (−3·8 to −1·4)	−3·1% (−3·8 to −2·5)

(Table 1 continues on next page)

	Maternal mortality ratio (per 100 000 livebirths)			Number of maternal deaths			Annualised rate of change in maternal mortality ratio (%)		
	1990	2003	2013	1990	2003	2013	1990–2003	2003–13	1990–2013
(Continued from previous page)									
Andorra	5·5 (3·1 to 9·0)	3·1 (1·9 to 4·9)	3·0 (1·6 to 4·8)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	−4·4% (−9·2 to 0·1)	−0·6% (−6·3 to 5·6)	−2·7% (−5·9 to 0·2)
Austria	10·3 (8·5 to 12·2)	5·0 (4·0 to 6·0)	3·2 (2·3 to 4·0)	9 (8 to 11)	4 (3 to 5)	3 (2 to 3)	−5·6% (−7·5 to −3·6)	−4·5% (−7·4 to −1·8)	−5·1% (−6·5 to −3·8)
Belgium	11·3 (9·4 to 13·3)	8·4 (6·9 to 10·1)	6·7 (5·0 to 8·6)	14 (12 to 16)	10 (8 to 12)	9 (7 to 11)	−2·2% (−4·0 to −0·5)	−2·3% (−5·2 to 0·5)	−2·3% (−3·6 to −1·0)
Cyprus	13·3 (9·6 to 17·7)	8·7 (6·7 to 11·0)	6·1 (4·4 to 8·1)	2 (1 to 3)	1 (1 to 1)	1 (1 to 1)	−3·2% (−6·0 to −0·4)	−3·6% (−7·4 to 0·1)	−3·4% (−5·2 to −1·6)
Denmark	7·4 (6·2 to 9·1)	5·8 (4·7 to 7·1)	4·8 (3·4 to 6·2)	5 (4 to 6)	4 (3 to 5)	3 (2 to 4)	−1·9% (−4·4 to 0·1)	−2·1% (−5·0 to 0·7)	−2·0% (−3·7 to −0·5)
Finland	7·2 (5·9 to 8·8)	6·4 (5·3 to 7·6)	3·9 (3·0 to 5·0)	5 (4 to 6)	4 (3 to 4)	2 (2 to 3)	−0·9% (−2·8 to 1·0)	−5·0% (−7·6 to −2·3)	−2·7% (−4·1 to −1·4)
France	15·6 (13·5 to 17·7)	11·0 (9·3 to 12·6)	8·8 (6·9 to 11·0)	116 (100 to 132)	87 (74 to 100)	70 (55 to 88)	−2·7% (−4·1 to −1·2)	−2·2% (−4·5 to 0·2)	−2·5% (−3·7 to −1·3)
Germany	18·0 (15·9 to 20·4)	8·3 (7·1 to 9·6)	6·5 (5·0 to 7·9)	146 (129 to 165)	62 (52 to 71)	46 (36 to 56)	−5·9% (−7·4 to −4·7)	−2·5% (−4·6 to −0·5)	−4·4% (−5·6 to −3·4)
Greece	9·5 (8·0 to 11·1)	7·9 (6·6 to 9·3)	9·1 (7·2 to 11·3)	10 (8 to 11)	9 (7 to 11)	10 (8 to 12)	−1·4% (−3·2 to 0·2)	1·4% (−1·0 to 4·0)	−0·2% (−1·3 to 1·0)
Iceland	7·1 (5·5 to 9·0)	4·2 (3·0 to 5·6)	2·4 (1·6 to 3·6)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	−4·1% (−7·1 to −1·1)	−5·4% (−9·9 to −1·0)	−4·7% (−6·9 to −2·6)
Ireland	6·3 (5·2 to 7·6)	3·9 (3·1 to 4·7)	3·3 (2·3 to 4·4)	3 (3 to 4)	2 (2 to 3)	2 (2 to 3)	−3·7% (−5·6 to −1·9)	−1·7% (−5·0 to 1·7)	−2·8% (−4·4 to −1·3)
Israel	10·4 (8·8 to 12·5)	7·1 (5·9 to 8·5)	4·4 (3·2 to 5·5)	10 (9 to 12)	10 (8 to 12)	7 (5 to 9)	−2·9% (−4·8 to −1·1)	−4·9% (−8·2 to −2·2)	−3·8% (−5·4 to −2·4)
Italy	9·9 (8·6 to 11·4)	5·7 (4·7 to 6·7)	4·3 (3·2 to 5·5)	54 (47 to 63)	32 (27 to 38)	24 (18 to 32)	−4·3% (−5·8 to −2·7)	−2·8% (−5·7 to −0·2)	−3·7% (−5·0 to −2·4)
Luxembourg	5·0 (4·1 to 6·1)	7·0 (5·4 to 8·6)	6·1 (4·5 to 8·0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 1)	2·6% (0·3 to 4·6)	−1·5% (−4·7 to 2·0)	0·8% (−0·8 to 2·4)
Malta	6·9 (5·5 to 8·4)	5·4 (4·2 to 6·9)	2·9 (2·0 to 3·9)	0 (0 to 1)	0 (0 to 0)	0 (0 to 0)	−1·8% (−4·3 to 0·5)	−6·5% (−10·4 to −2·8)	−3·8% (−5·6 to −2·1)
Netherlands	11·7 (9·8 to 13·9)	10·8 (8·9 to 12·7)	6·7 (5·1 to 8·3)	23 (19 to 27)	22 (18 to 25)	12 (9 to 15)	−0·6% (−2·3 to 1·0)	−4·8% (−7·4 to −2·1)	−2·5% (−3·7 to −1·3)
Norway	5·9 (4·9 to 7·1)	6·3 (5·1 to 7·7)	4·5 (3·5 to 5·6)	4 (3 to 4)	4 (3 to 5)	3 (2 to 4)	0·5% (−1·4 to 2·5)	−3·4% (−6·0 to −0·7)	−1·2% (−2·4 to 0·1)
Portugal	20·6 (17·7 to 24·1)	13·6 (11·5 to 16·0)	9·8 (7·7 to 12·2)	23 (20 to 27)	15 (13 to 17)	9 (7 to 11)	−3·2% (−4·9 to −1·5)	−3·3% (−6·0 to −0·8)	−3·3% (−4·4 to −2·1)
Spain	12·3 (10·7 to 14·3)	7·0 (6·0 to 8·2)	6·2 (4·8 to 7·6)	47 (41 to 54)	32 (28 to 37)	31 (24 to 38)	−4·3% (−5·8 to −2·8)	−1·4% (−3·8 to 1·2)	−3·0% (−4·2 to −1·9)
Sweden	7·0 (5·7 to 8·6)	4·9 (3·9 to 5·9)	3·7 (2·7 to 4·8)	8 (7 to 10)	5 (4 to 6)	4 (3 to 6)	−2·7% (−4·9 to −0·7)	−2·8% (−6·1 to 0·1)	−2·7% (−4·5 to −1·3)
Switzerland	6·7 (5·5 to 8·3)	5·8 (4·6 to 7·2)	3·9 (2·9 to 5·1)	5 (4 to 7)	4 (3 to 5)	3 (2 to 4)	−1·1% (−3·4 to 1·1)	−4·0% (−7·0 to −1·0)	−2·3% (−4·1 to −0·9)
UK	10·4 (9·4 to 11·1)	7·7 (7·0 to 8·3)	6·1 (5·2 to 6·9)	80 (73 to 86)	57 (52 to 62)	47 (40 to 54)	−2·3% (−2·9 to −1·7)	−2·4% (−3·8 to −1·0)	−2·3% (−3·0 to −1·7)
Andean Latin America	187·9 (169·5 to 208·7)	112·5 (99·7 to 125·1)	96·0 (75·3 to 117·2)	2249 (2028 to 2497)	1366 (1211 to 1520)	1164 (912 to 1421)	−4·0% (−5·2 to −2·8)	−1·6% (−4·0 to 0·6)	−2·9% (−4·1 to −2·0)
Bolivia	382·4 (312·1 to 458·1)	229·9 (178·7 to 281·9)	179·6 (110·4 to 257·2)	977 (798 to 1171)	616 (479 to 755)	499 (307 to 715)	−3·9% (−6·3 to −1·7)	−2·6% (−6·9 to 1·3)	−3·4% (−5·6 to −1·5)
Ecuador	142·7 (128·4 to 159·9)	86·0 (72·8 to 100·3)	84·6 (57·7 to 122·0)	430 (386 to 481)	282 (239 to 329)	282 (192 to 406)	−3·9% (−5·4 to −2·4)	−0·3% (−4·6 to 3·7)	−2·3% (−4·1 to −0·7)
Peru	131·5 (114·1 to 152·6)	75·7 (64·6 to 88·4)	63·7 (45·6 to 85·4)	842 (731 to 977)	468 (400 to 547)	383 (274 to 513)	−4·3% (−5·9 to −2·6)	−1·8% (−5·2 to 1·6)	−3·2% (−4·8 to −1·7)
Central Latin America	78·8 (74·9 to 82·3)	67·9 (63·7 to 72·6)	59·9 (53·8 to 66·7)	3884 (3690 to 4056)	3446 (3231 to 3683)	2950 (2649 to 3283)	−1·1% (−1·6 to −0·7)	−1·3% (−2·2 to −0·2)	−1·2% (−1·6 to −0·7)
Colombia	68·2 (60·7 to 76·7)	77·1 (67·2 to 87·7)	62·9 (44·1 to 85·2)	633 (563 to 712)	725 (632 to 824)	577 (405 to 782)	0·9% (−0·3 to 2·2)	−2·2% (−5·6 to 1·2)	−0·4% (−1·9 to 1·0)

(Table 1 continues on next page)

	Maternal mortality ratio (per 100 000 livebirths)			Number of maternal deaths			Annualised rate of change in maternal mortality ratio (%)		
	1990	2003	2013	1990	2003	2013	1990–2003	2003–13	1990–2013
(Continued from previous page)									
Costa Rica	31·1 (26·9 to 36·0)	36·3 (31·7 to 41·5)	24·9 (20·1 to 30·3)	25 (22 to 29)	28 (24 to 31)	19 (15 to 23)	1·2% (–0·3 to 2·7)	–3·8% (–6·0 to –1·5)	–1·0% (–2·0 to 0·1)
El Salvador	105·5 (90·2 to 120·4)	57·5 (49·2 to 66·5)	65·8 (44·3 to 91·6)	181 (155 to 206)	77 (66 to 89)	86 (58 to 119)	–4·7% (–6·3 to –3·1)	1·2% (–2·6 to 4·9)	–2·1% (–3·8 to –0·4)
Guatemala	112·8 (101·0 to 126·2)	91·8 (81·2 to 104·2)	86·7 (65·8 to 110·8)	409 (367 to 458)	400 (353 to 454)	423 (321 to 541)	–1·6% (–2·8 to –0·4)	–0·6% (–3·5 to 2·0)	–1·2% (–2·4 to 0·0)
Honduras	153·1 (90·5 to 190·4)	119·5 (48·5 to 191·2)	72·0 (35·5 to 123·0)	295 (175 to 367)	238 (97 to 381)	153 (75 to 260)	–2·1% (–6·4 to 1·5)	–5·1% (–10·5 to 0·2)	–3·4% (–5·8 to –1·1)
Mexico	73·8 (70·4 to 77·1)	57·9 (55·0 to 60·5)	54·0 (50·3 to 58·2)	1774 (1691 to 1851)	1429 (1357 to 1493)	1224 (1139 to 1320)	–1·9% (–2·3 to –1·5)	–0·7% (–1·5 to 0·1)	–1·4% (–1·7 to –1·0)
Nicaragua	94·5 (81·2 to 109·4)	87·8 (76·7 to 101·0)	63·5 (49·0 to 80·0)	148 (127 to 171)	126 (110 to 145)	90 (69 to 113)	–0·6% (–2·1 to 1·0)	–3·3% (–6·2 to –0·7)	–1·8% (–3·0 to –0·5)
Panama	62·3 (53·0 to 72·7)	66·2 (57·2 to 76·3)	55·2 (40·6 to 73·2)	42 (35 to 49)	50 (44 to 58)	42 (31 to 56)	0·5% (–1·1 to 2·2)	–1·9% (–5·1 to 1·3)	–0·6% (–1·9 to 0·8)
Venezuela	66·6 (59·6 to 73·5)	62·0 (56·3 to 68·7)	54·7 (42·8 to 68·6)	377 (337 to 415)	373 (339 to 413)	336 (263 to 421)	–0·5% (–1·6 to 0·5)	–1·3% (–3·8 to 1·2)	–0·9% (–2·0 to 0·2)
Southern Latin America	55·5 (51·1 to 60·2)	51·2 (46·3 to 55·8)	44·2 (37·3 to 51·3)	603 (555 to 653)	513 (465 to 560)	445 (376 to 518)	–0·6% (–1·6 to 0·2)	–1·5% (–3·3 to 0·3)	–1·0% (–1·8 to –0·2)
Argentina	60·2 (54·9 to 66·0)	63·3 (57·0 to 69·7)	54·7 (45·3 to 64·6)	434 (396 to 476)	440 (396 to 484)	387 (320 to 456)	0·4% (–0·7 to 1·4)	–1·5% (–3·5 to 0·5)	–0·4% (–1·3 to 0·4)
Chile	47·8 (42·3 to 54·3)	22·0 (19·3 to 25·0)	18·7 (14·7 to 23·2)	146 (130 to 166)	56 (49 to 64)	47 (37 to 58)	–6·0% (–7·4 to –4·6)	–1·7% (–4·2 to 0·9)	–4·1% (–5·2 to –3·0)
Uruguay	38·7 (32·8 to 45·3)	32·5 (27·4 to 38·1)	22·9 (17·3 to 29·4)	23 (19 to 27)	17 (15 to 20)	12 (9 to 15)	–1·4% (–3·0 to 0·3)	–3·6% (–6·5 to –0·7)	–2·3% (–3·6 to –1·0)
Tropical Latin America	75·9 (68·0 to 84·6)	68·3 (60·9 to 75·6)	60·6 (47·5 to 75·6)	2818 (2522 to 3139)	2445 (2182 to 2708)	1969 (1542 to 2457)	–0·8% (–1·9 to 0·2)	–1·2% (–3·9 to 1·3)	–1·0% (–2·2 to 0·1)
Brazil	73·1 (65·0 to 82·0)	66·0 (58·4 to 73·7)	58·7 (45·8 to 73·5)	2609 (2320 to 2925)	2265 (2003 to 2530)	1813 (1414 to 2267)	–0·8% (–1·9 to 0·3)	–1·2% (–4·0 to 1·4)	–1·0% (–2·2 to 0·2)
Paraguay	145·6 (130·2 to 162·4)	119·8 (107·3 to 134·0)	95·2 (71·6 to 126·9)	209 (187 to 233)	181 (162 to 202)	156 (117 to 208)	–1·5% (–2·7 to –0·3)	–2·4% (–5·3 to 1·0)	–1·9% (–3·2 to –0·5)
North Africa and Middle East	131·0 (115·4 to 147·8)	101·8 (85·1 to 121·3)	78·1 (63·1 to 97·6)	13 106 (11 543 to 14 783)	10 370 (8672 to 12 351)	8907 (7204 to 11 135)	–2·0% (–3·2 to –0·9)	–2·7% (–4·3 to –1·0)	–2·3% (–3·2 to –1·3)
Algeria	126·1 (87·0 to 170·4)	81·0 (59·8 to 107·0)	51·5 (37·2 to 70·1)	949 (655 to 1283)	575 (424 to 759)	470 (340 to 641)	–3·4% (–6·5 to 0·1)	–4·5% (–8·6 to –0·5)	–3·9% (–5·8 to –2·0)
Bahrain	55·4 (40·7 to 73·4)	32·7 (24·9 to 41·9)	21·4 (15·5 to 29·0)	7 (5 to 10)	5 (4 to 6)	4 (3 to 6)	–4·0% (–6·9 to –1·1)	–4·3% (–8·0 to 0·1)	–4·2% (–6·1 to –2·2)
Egypt	83·7 (69·9 to 100·1)	44·8 (39·1 to 51·9)	32·6 (24·5 to 42·3)	1385 (1157 to 1656)	765 (668 to 888)	619 (465 to 803)	–4·8% (–6·5 to –3·0)	–3·2% (–6·2 to –0·3)	–4·1% (–5·5 to –2·8)
Iran	40·1 (27·0 to 57·2)	26·6 (21·9 to 31·6)	13·5 (9·4 to 18·3)	651 (439 to 929)	333 (275 to 396)	197 (137 to 266)	–3·1% (–6·2 to 0·2)	–6·9% (–10·9 to –3·1)	–4·7% (–7·0 to –2·6)
Iraq	110·6 (68·7 to 157·0)	88·0 (62·0 to 126·8)	65·8 (40·4 to 110·7)	736 (457 to 1045)	816 (574 to 1175)	695 (427 to 1170)	–1·7% (–5·6 to 2·5)	–3·1% (–8·1 to 2·3)	–2·3% (–4·8 to 0·7)
Jordan	102·2 (79·1 to 128·7)	60·2 (46·2 to 78·8)	29·8 (20·3 to 41·4)	112 (87 to 141)	92 (71 to 120)	57 (39 to 79)	–4·1% (–6·9 to –1·3)	–7·1% (–11·8 to –2·2)	–5·4% (–7·2 to –3·5)
Kuwait	17·8 (14·4 to 21·6)	11·4 (9·6 to 13·6)	9·5 (7·5 to 12·0)	6 (5 to 7)	5 (5 to 7)	7 (5 to 8)	–3·4% (–5·4 to –1·4)	–1·8% (–4·4 to 0·8)	–2·7% (–4·0 to –1·4)
Lebanon	101·4 (74·8 to 135·1)	42·4 (30·8 to 56·8)	18·1 (11·9 to 26·0)	65 (48 to 87)	23 (16 to 30)	12 (8 to 17)	–6·7% (–9·5 to –3·9)	–8·6% (–12·7 to –4·9)	–7·5% (–9·7 to –5·5)
Libya	41·8 (25·7 to 64·6)	30·7 (22·8 to 40·5)	27·0 (18·0 to 40·5)	46 (28 to 71)	37 (27 to 49)	33 (22 to 50)	–2·3% (–6·0 to 1·6)	–1·4% (–6·5 to 3·7)	–1·9% (–4·5 to 0·8)
Morocco	279·5 (236·0 to 338·9)	98·3 (75·2 to 120·8)	63·9 (45·1 to 85·8)	1971 (1664 to 2390)	603 (462 to 741)	472 (334 to 635)	–8·1% (–10·2 to –6·0)	–4·4% (–7·5 to –1·3)	–6·5% (–8·1 to –5·0)
Oman	47·0 (26·7 to 76·6)	20·4 (14·2 to 29·4)	12·8 (8·4 to 20·6)	30 (17 to 49)	11 (7 to 15)	9 (6 to 15)	–6·3% (–10·8 to –1·7)	–4·8% (–10·8 to 1·2)	–5·6% (–8·5 to –2·8)
Palestine	21·1 (12·3 to 34·3)	11·3 (8·7 to 14·4)	9·0 (5·5 to 13·2)	22 (13 to 35)	13 (10 to 17)	12 (7 to 17)	–4·6% (–9·0 to –0·4)	–2·5% (–7·5 to 2·3)	–3·7% (–6·8 to –0·7)

(Table 1 continues on next page)