

Maternal Mortality Morocco 2000-2020

Internationally comparable MMR estimates by the Maternal Mortality Inter-Agency Group (MMEIG): WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division

Table 1: Estimates

Year	MMR ^{a*†}	PM ^{b*†}	HIV-related indirect deaths [†]	Live births ^c (Thousands)	Maternal deaths [†]
2000	244 [200, 298]	0.09 [0.08, 0.11]	2	650	1587
2005	194 [161, 234]	0.08 [0.07, 0.1]	2	652	1266
2010	134 [112, 158]	0.07 [0.06, 0.08]	3	696	932
2015	97 [74, 122]	0.06 [0.05, 0.08]	2	705	681
2020	72 [51, 96]	0.05 [0.04, 0.07]	1	657	472

^a Maternal mortality ratio (MMR) defined as maternal deaths per 100,000 live births for women of reproductive age (15-49 years).

^b Proportion maternal (PM) defined as the proportion of all-cause deaths for women of reproductive age (15-49 years) that are due to maternal causes.

^c UN Population Division, Department of Economic and Social Affairs. World Population Prospects. New York; 2022.

* The uncertainty intervals (UI) for all estimates refer to the 80% uncertainty intervals (10th and 90th percentiles of the posterior distributions). This was chosen as opposed to the more standard 95% intervals because of the substantial uncertainty inherent in maternal mortality outcomes.

† Figures presented in the table are estimates based on national data, such as surveys or administrative records, or other sources, produced by the international agency when country data for some year(s) is not available, when multiple sources exist, or when there are data quality issues.

Table 2: Estimates

Period	Annual rate reduction*	Percent change in MMR*
2000, 2020	6.01 [4.57, 8.03]	69.91 [59.88, 79.93]
2010, 2020	6.19 [3.82, 9.1]	46.16 [31.78, 59.75]

* Figures presented in the table are estimates based on national data, such as surveys or administrative records, or other sources, produced by the international agency when country data for some year(s) is not available, when multiple sources exist, or when there are data quality issues.

Data from civil registration vital statistics system (CRVS)

No data available

Excluded data from CRVS

Table 3: Excluded data from CRVS

Study period [*]	Completeness ^a	Usability ^b	Reason for exclusion
[2000, 2001)	14.69652	12.13947	Usability < 60%
[2001, 2002)	16.47121	11.57126	Usability < 60%
[2002, 2003)	15.20527	12.37524	Usability < 60%
[2003, 2004)	13.48179	13.03093	Usability < 60%
[2004, 2005)	21.18536	13.40983	Usability < 60%
[2007, 2008)	22.62843	17.47090	Usability < 60%
[2008, 2009)	21.87826	18.00333	Usability < 60%
[2009, 2010)	24.16392	18.22382	CRVS overlaps with specialized study
[2010, 2011)	22.49705	17.63393	CRVS overlaps with specialized study
[2011, 2012)	23.28386	17.58316	Usability < 60%
[2012, 2013)	21.45628	18.17167	Usability < 60%
[2013, 2014)	21.98098	18.95251	Usability < 60%
[2014, 2015)	24.85161	19.40615	Usability < 60%
[2015, 2016)	24.57711	19.65096	Usability < 60%
[2016, 2017)	23.50183	20.17280	Usability < 60%

^a Completeness = percentage of registered deaths of females of reproductive age.

^b Usability = percentage of deaths that is estimated to be recorded with a well-defined code; completeness proportion*(1-proportion ill-defined)*100.

* Kindly note the interpretation of notation: for a period [a,b) the observation starts on date a and ends before date b; thus a period covering 1st January 2000 through 31st December 2000 is denoted [2000,2001).

Data from other sources

Table 4: Data from other sources

Study period*	Source	Source type	Maternal deaths ^a	Preganancy-related deaths ^b	Female deaths, 15-49	Maternal PM ^c	Preganancy-related PM ^{d‡}	MMR per 100,000 lb ^e	Adjusted MMR per 100,000 lb	F+ ^{f†}	F- ^{g†}	U+ ^{h†}
[1985, 1992)	DHS 1992	Survey	NA	NA	NA	NA	0.3013349	802.3107	752.92242	NA	NA	NA
[1992, 1997)	ENSME 1997	Miscellaneous	NA	NA	NA	NA	0.0863118	228.0000	213.70756	NA	NA	NA
[1993.97, 2003.97)	DHS 2003 - 2004	Survey	NA	NA	NA	NA	0.1763736	466.6661	437.54434	NA	NA	NA
[2009, 2010)	Confidential Inquiry 2009	Specialized study	303	NA	3367	0.0899911	NA	182.5234	182.52341	NA	NA	NA
[2009, 2010)	National Demographic Survey 2009 - 2010	Miscellaneous	NA	NA	NA	NA	0.0490000	99.3837	92.50492	NA	NA	NA
[2010, 2011)	Confidential inquiry 2010	Specialized study	261	NA	4011	0.0650711	NA	126.6268	126.62678	NA	NA	NA

^a Maternal deaths defined according to the ICD-10.

^b Pregnancy-related deaths defined according to ICD-10.

^c Maternal PM is calculated when deaths are defined as maternal.

^d Pregnancy-related PM is calculated when reported deaths are defined as pregnancy related deaths.

^e The MMR in this column is calculated from the PM.

^f False positive: true non-maternal death which may be incorrectly labeled as a maternal death.

^g False negative: maternal death which may be incorrectly classified as a non-maternal death.

^h Maternal deaths not registered in the CRVS.

* Kindly note the interpretation of notation: for a period [a,b) the observation starts on date a and ends before date b; thus a period covering 1st January 2000 through 31st December 2000 is denoted [2000,2001).

† Calculated from studies which undertake specialized analyses of routine reporting of maternal deaths.

‡ Survey data has been adjusted by 1.1 for underreporting and standardized by age when obtained using the direct sisterhood method.

Data from studies excluded in regression

No data excluded

Predictor variables used in the model

Table 5: Predictor variables used in the model

Year	GDP ^{a*} (Per capita, PPP)	GFR ^b (Per 1000 women ages 15-49)	SBA ^c (%)
2000	4483	80	61
2005	5307	80	71
2010	6302	80	79
2015	7057	80	88
2020	7348	70	93

^a WHO, MMEIG. Gross domestic product (GDP) per capita measured in purchasing power parity (PPP) equivalent dollars using 2017 as the baseline year were taken from World Bank's World Development Indicators (WDI) database, and in instances supplemented by unofficial estimates derived by MMEIG using growth rates in United Nations GDP data and/or previous MMEIG GDP estimates. Geneva; 2021.

^b General fertility rate (GFR) from UN Population Division, Department of Economic and Social Affairs. World Population Prospects. New York; 2022.

^c Skilled Birth Attendant (SBA) from WHO, UNICEF joint SBA database. Geneva; 2022. In some instances, supplemented with unofficial estimates derived by MMEIG. Annual series were estimated by fitting a multilevel time series (AR1) model with region- and country-specific intercepts and slopes.

* A 5-year moving average was calculated.

Estimates

(Input data) The following adjustments were applied to maternal deaths depending on the source type:

1. An age-standardization was applied to population based surveys that obtained data from the direct sisterhood method.
2. An upward adjustment of 10% was applied to all input data that were not obtained from CRVS or specialized studies, to account for underreporting.

(Model adjusted data) The following model adjustments were applied to maternal deaths depending on the source type and the definition of reported deaths

1. A model adjustment derived from BMIs was applied to maternal deaths obtained from CRVS.
2. A model adjustment was applied to observations of pregnancy-related deaths to remove accidental/incidental (non-maternal) deaths from the count.

