Maternal Mortality China 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	58 [52, 66]	0.02 [0.02, 0.03]	0	17395	10100
2005	46 [41, 51]	0.02 [0.02, 0.02]	0	16663	7597
2010	33 [30, 37]	0.02 [0.01, 0.02]	0	17942	5961
2015	26 [23, 29]	0.01 [0.01, 0.02]	0	17447	4533
2020	23 [19, 27]	0.01 [0.01, 0.01]	0	12243	2822

[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	4.59 [3.84, 5.82]	60.05 [53.64, 68.75]
2010, 2020	3.55 [2.32, 5.5]	29.87 [20.7, 42.29]

[*] 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

No data excluded

Data from other sources

Table 3: Data from other sources

Study period[*]	Source	Source type	Maternal deaths[a]	Preganancy-related deaths[b]	Female deaths, 15-49	Maternal PM[c]	Pregnancy-related PM[d‡]	MMR per 100,000 lb[e]	Adjusted MMR per 100,000 lb	F+[f†]	F-[g†]	U+[h†]
[1990, 1991)	Chinese Health Statistical Digest 2008	Miscellaneous	NA	NA	NA	0.0519245	NA	88.90000	97.79000	NA	NA	NA
[1995, 1996)	Chinese Health Statistical Digest 2008	Miscellaneous	NA	NA	NA	0.0254761	NA	61.90000	68.09000	NA	NA	NA
[1997, 1998)	Chinese Health Statistical Digest 2004	Miscellaneous	NA	NA	NA	0.0243879	NA	63.60000	69.96000	NA	NA	NA
[1999, 2000)	Chinese Health Statistical Digest 2004	Miscellaneous	NA	NA	NA	0.0217292	NA	58.70000	64.57000	NA	NA	NA
[2000, 2001)	Chinese Health Statistical Digest 2008	Miscellaneous	NA	NA	NA	0.0210859	NA	53.00000	58.30000	NA	NA	NA
[2001, 2002)	Chinese Health Statistical Digest 2008	Miscellaneous	NA	NA	NA	0.0204571	NA	50.20000	55.22000	NA	NA	NA
[2002, 2003)	Chinese Health Statistical Digest 2008	Miscellaneous	NA	NA	NA	0.0176473	NA	43.20000	47.52000	NA	NA	NA
[2003, 2004)	Chinese Health Statistical Digest 2008	Miscellaneous	NA	NA	NA	0.0210940	NA	51.30000	56.43000	NA	NA	NA
[2004, 2005)	Chinese Health Statistical Digest 2008	Miscellaneous	NA	NA	NA	0.0204470	NA	48.30000	53.13000	NA	NA	NA
[2004, 2006)	Third Survey on Mortality 2004 - 2005	Miscellaneous	747	NA	NA	0.0200000	NA	46.60152	51.26167	NA	NA	NA
[2005, 2006)	Chinese Health Statistical Digest 2008	Miscellaneous	NA	NA	NA	0.0207545	NA	47.70000	52.47000	NA	NA	NA
[2006, 2007)	Chinese Health Statistical Digest 2008	Miscellaneous	NA	NA	NA	0.0184100	NA	41.10000	45.21000	NA	NA	NA
[2007, 2008)	Chinese Health Statistical Digest 2008	Miscellaneous	NA	NA	NA	0.0170167	NA	36.60000	40.26000	NA	NA	NA
[2008, 2009)	Chinese Health Statistical Digest 2013	Miscellaneous	NA	NA	NA	0.0156941	NA	34.20000	37.62000	NA	NA	NA

Table 3: Data from other sources *(continued)*

Study period[*]	Source	Source type	Maternal deaths[a]	Preganancy-related deaths[b]	Female deaths, 15-49	Maternal PM[c]	Pregnancy-related PM[d‡]	MMR per 100,000 lb[e]	Adjusted MMR per 100,000 lb	F+[f†]	F-[g†]	U+[h†]
[2009, 2010)	Chinese Health Statistical Digest 2013	Miscellaneous	NA	NA	NA	0.0158037	NA	31.90000	35.09000	NA	NA	NA
[2010, 2011)	Chinese Health Statistical Digest 2013	Miscellaneous	NA	NA	NA	0.0147041	NA	30.00000	33.00000	NA	NA	NA
[2011, 2012)	Chinese Health Statistical Digest 2013	Miscellaneous	NA	NA	NA	0.0127612	NA	26.10000	28.71000	NA	NA	NA
[2012, 2013)	Chinese Health Statistical Digest 2013	Miscellaneous	NA	NA	NA	0.0131424	NA	24.50000	26.95000	NA	NA	NA
[2013, 2014)	China Statistics Yearbook, 2019	Miscellaneous	NA	NA	NA	0.0121621	NA	23.20000	25.52000	NA	NA	NA
[2014, 2015)	China Statistics Yearbook, 2019	Miscellaneous	NA	NA	NA	0.0121437	NA	21.70000	23.87000	NA	NA	NA
[2015, 2016)	China Statistics Yearbook, 2019	Miscellaneous	NA	NA	NA	0.0109059	NA	20.10000	22.11000	NA	NA	NA
[2016, 2017)	China Statistics Yearbook, 2019	Miscellaneous	NA	NA	NA	0.0117823	NA	19.90000	21.89000	NA	NA	NA
[2017, 2018)	China Statistics Yearbook, 2019	Miscellaneous	NA	NA	NA	0.0121470	NA	19.60000	21.56000	NA	NA	NA
[2018, 2019)	China Statistics Yearbook, 2019	Miscellaneous	NA	NA	NA	0.0100156	NA	18.30000	20.13000	NA	NA	NA
[2019, 2020)	Lu et al., 2021	Miscellaneous	NA	NA	NA	0.0095699	NA	17.80000	19.58000	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 4: Predictor variables used in the model

Year	GDP[a][*] (Per capita, PPP)	GFR[b] (Per 1000 women ages 15-49)	SBA[c] (%)
2000	3480	50	96
2005	5466	50	98
2010	8884	50	100
2015	12642	50	100
2020	16253	40	100

[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.

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