Maternal Mortality Mexico 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	57 [52, 62]	0.05 [0.04, 0.05]	9	2369	1339
2005	53 [50, 59]	0.04 [0.04, 0.04]	8	2313	1234
2010	51 [47, 56]	0.03 [0.03, 0.04]	7	2268	1162
2015	52 [46, 57]	0.03 [0.03, 0.03]	4	2159	1123
2020	59 [46, 74]	0.03 [0.02, 0.04]	4	1961	1159

[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	-0.3 [-1.32, 1.14]	-6.15 [-30.26, 20.46]
2010, 2020	-1.45 [-3.54, 0.83]	-15.6 [-42.41, 8]

* 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)

Table 3: Data from civil registration vital statistics system (CRVS)

Study period*	Maternal deaths[a]	Female deaths[b]	CRVS adjustment factor[c †]	Sensitivity[d †]	Specificity[e †]	Completeness[f †]	Usability[g]	Maternal deaths not included[h]
[1985, 1986)	1692	27898	1.505455	0.661238	0.999758	87.46551	0.8269521	NA
[1986, 1987)	1666	26678	1.505343	0.661238	0.999758	85.08101	0.8299510	NA
[1987, 1988)	1536	26375	1.505234	0.661238	0.999758	85.20983	0.8332897	NA
[1988, 1989)	1511	26347	1.504620	0.661238	0.999758	85.95244	0.8421260	NA
[1989, 1990)	1505	26620	1.504494	0.661238	0.999758	87.52260	0.8506538	NA
[2017, 2018)	753	35998	1.492886	0.661238	0.999758	90.36096	0.9074295	NA
[2018, 2019)	707	36688	1.493023	0.661238	0.999758	89.11993	0.9158780	NA
[2019, 2020)	689	37935	1.493174	0.661238	0.999758	92.43872	0.9157024	NA
[2020, 2021)	1007	53547	1.493967	0.661238	0.999758	95.01561	0.9206917	NA

[a] Maternal deaths from CRVS defined as ICD10 codes O00-O95; O98-O99 Pregnancy, childbirth and the puerperium and A34 Obstetrical tetanus. Late maternal deaths (O96) and those deaths due to sequalae of obstetric complications (O97) are excluded for the purposes of international comparison. WHO. International statistical classification of diseases and related health problems. Geneva; 2010.

[b] Female deaths 15-49 from the Civil Registration and Vital Statistics System (CRVS).

[c] CRVS adjustment factor = adjustment factor to account for the difference between CRVS-reported PM and true PM.

[d] Sensitivty = proportion of correctly classified maternal deaths out of all true maternal deaths.

[e] Specificity = proportion of correctly classified non-maternal deaths out of all true non-maternal deaths.

[f] Completeness = percentage of registered deaths of females of reproductive age.

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

[h] Did not meet inclusion criteria due to: 1) low completeness and usability, or 2) other specialized studies are used. Please see next section of the profile for details.

[*] 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).

[†] Peterson E, Chou D, Moller A-B, Gemmill A, Say L, Alkema L. Estimating maternal mortality using data from national civil registration vital statistics systems: A Bayesian hierarchical bivariate random walk model to estimate sensitivity and specificity of reporting. arXiv:190908578 [stat] [Internet]. 2019 Sep 18 [cited 2021 Aug 11]; Available from: http://arxiv.org/abs/1909.08578.

Excluded data from CRVS

No data excluded

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]	Pregnancy-related PM[d‡]	MMR per 100,000 lb[e]	Adjusted MMR per 100,000 lb	F+[f†]	F-[g†]	U+[h†]
[1990, 1991)	WHO maternal mortality database	Specialized study	1467	NA	26717	0.0549089	NA	69.08583	69.08583	NA	NA	NA
[1991, 1992)	WHO maternal mortality database	Specialized study	1403	NA	26115	0.0537239	NA	66.82926	66.82926	NA	NA	NA
[1992, 1993)	WHO maternal mortality database	Specialized study	1388	NA	26200	0.0529771	NA	65.16357	65.16357	NA	NA	NA
[1993, 1994)	WHO maternal mortality database	Specialized study	1259	NA	26614	0.0473059	NA	57.72330	57.72330	NA	NA	NA
[1994, 1995)	WHO maternal mortality database	Specialized study	1399	NA	26693	0.0524107	NA	63.93637	63.93637	NA	NA	NA
[1995, 1996)	WHO maternal mortality database	Specialized study	1444	NA	27070	0.0533432	NA	65.29144	65.29144	NA	NA	NA
[1996, 1997)	WHO maternal mortality database	Specialized study	1283	NA	26738	0.0479841	NA	58.99896	58.99896	NA	NA	NA
[1997, 1998)	WHO maternal mortality database	Specialized study	1256	NA	27089	0.0463657	NA	57.53551	57.53551	NA	NA	NA
[1998, 1999)	WHO maternal mortality database	Specialized study	1407	NA	27895	0.0504391	NA	62.98071	62.98071	NA	NA	NA
[1999, 2000)	WHO maternal mortality database	Specialized study	1379	NA	27299	0.0505147	NA	62.87971	62.87971	NA	NA	NA
[2000, 2001)	WHO maternal mortality database	Specialized study	1287	NA	26889	0.0478634	NA	59.88284	59.88284	NA	NA	NA
[2001, 2002)	WHO maternal mortality database	Specialized study	1238	NA	27092	0.0456961	NA	57.56824	57.56824	NA	NA	NA
[2002, 2003)	WHO maternal mortality database	Specialized study	1309	NA	27814	0.0470626	NA	59.90026	59.90026	NA	NA	NA
[2003, 2004)	WHO maternal mortality database	Specialized study	1313	NA	28051	0.0468076	NA	60.56972	60.56972	NA	NA	NA
[2004, 2005)	WHO maternal mortality database	Specialized study	1239	NA	27905	0.0444006	NA	58.84135	58.84135	NA	NA	NA
[2005, 2006)	WHO maternal mortality database	Specialized study	1242	NA	28857	0.0430398	NA	59.00344	59.00344	NA	NA	NA
[2006, 2007)	WHO maternal mortality database	Specialized study	1166	NA	28854	0.0404103	NA	57.60717	57.60717	NA	NA	NA
[2007, 2008)	WHO maternal mortality database	Specialized study	1097	NA	29057	0.0377534	NA	55.97112	55.97112	NA	NA	NA
[2008, 2009)	WHO maternal mortality database	Specialized study	1119	NA	30335	0.0368881	NA	56.53313	56.53313	NA	NA	NA
[2009, 2010)	WHO maternal mortality database	Specialized study	1207	NA	33272	0.0362767	NA	56.88731	56.88731	NA	NA	NA

Table 4: 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 †]
[2010, 2011)	WHO maternal mortality database	Specialized study	992	NA	31842	0.0311538	NA	49.25134	49.25134	NA	NA	NA
[2011, 2012)	WHO maternal mortality database	Specialized study	971	NA	31510	0.0308156	NA	48.32658	48.32658	NA	NA	NA
[2012, 2013)	WHO maternal mortality database	Specialized study	960	NA	32118	0.0298898	NA	46.34428	46.34428	NA	NA	NA
[2013, 2014)	WHO maternal mortality database	Specialized study	861	NA	31799	0.0270763	NA	41.76177	41.76177	NA	NA	NA
[2014, 2015)	WHO maternal mortality database	Specialized study	872	NA	33242	0.0262319	NA	41.49899	41.49899	NA	NA	NA
[2015, 2016)	WHO maternal mortality database	Specialized study	778	NA	33257	0.0233936	NA	39.16012	39.16012	NA	NA	NA
[2016, 2017)	WHO maternal mortality database	Specialized study	812	NA	35032	0.0231788	NA	41.50715	41.50715	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	17302	90	89
2005	17882	80	93
2010	18027	70	97
2015	19203	70	97
2020	19007	60	98

[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.

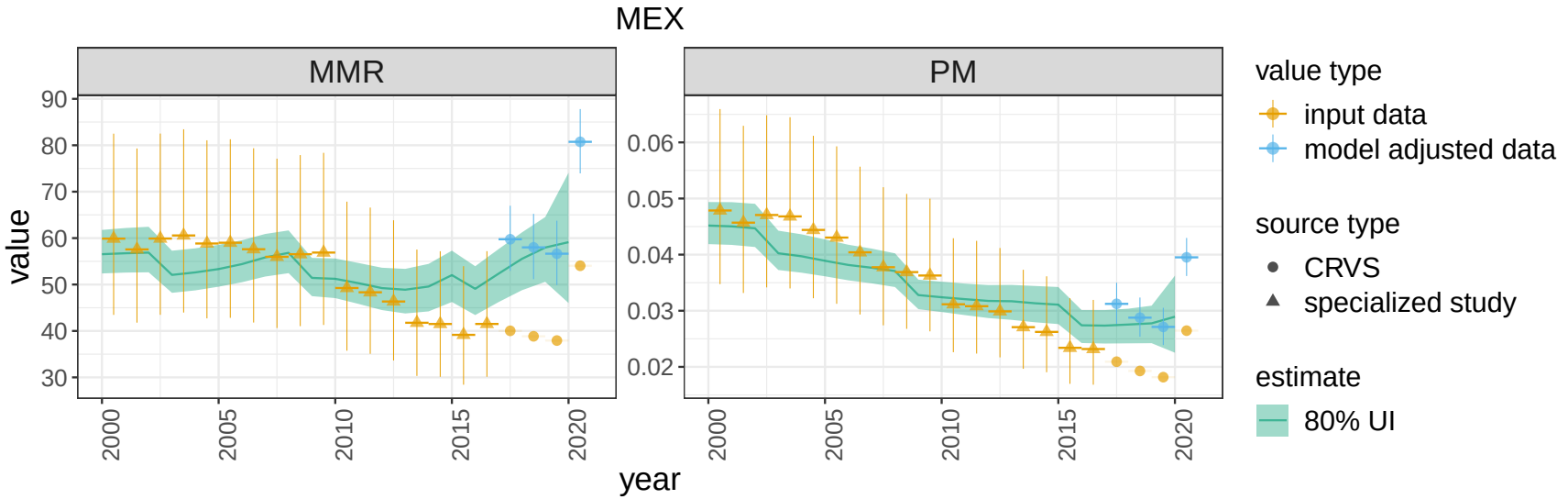
Estimates

(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.



Crisis years

The criteria for crisis-years are described below.

1) a year in which (a) there are at least 10 deaths attributable to mortality shocks among women of reproductive age (i.e. 15–49 years) and (b) these deaths constitute at least 10% of the total number of deaths to women aged 15–49 in that respective country-year (12) and in addition (c) in the five-year period surrounding the year, there are at most two additional crisis years; and
2) a year identified by the United Nations Inter-Agency Group for Child Mortality Estimation (UN IGME) as a crisis year for the estimation of child mortality (this includes crises in potentially longer periods, i.e. for recent ongoing crises).

Table 6: Crisis years

Year	Crisis deaths[a] women ages 15-49
2020	16289

[a] UN Population Division, Department of Economic and Social Affairs. World Population Prospects. New York; 2022.