Maternal mortality in 2000-2017

Internationally comparable MMR estimates by the Maternal Mortality Estimation Inter-Agency Group (MMEIG)

WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division

THAILAND

Year	Maternal mortality ratio (MMR)[a,*]	Maternal deaths[*]	HIV-related indirect maternal deaths[*]	Live births[b]	Proportion of maternal deaths among deaths of female reproductive age (PM, %)[a,*]
	Per 100 000 live births (lb)	Numbers	Numbers	Thousands	
2000	43 [37-49][c]	390	54	912	<0.1
2005	43 [39-48]	360	47	842	<0.1
2010	42 [39-45]	330	24	790	<0.1
2015	38 [34-42]	280	19	744	<0.1
2017	37 [32-44]	270	17	727	<0.1

[a] MMR and PM are calculated for women 15-49 years.

[b] Live birth data are from United Nations, Population Division. World Population Prospects 2019. New York: UN Population Division, Department of Economic and Social Affairs, 2019.

[c] 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.

Annual rate of reduction based on estimated MMR (%)	
2000-2017	0.8 [-0.5, 2.1]
2010-2017	1.6 [-0.8, 4.0]

Available data sources

Data from civil registration vital statistics system (CRVS):

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Maternal deaths[c]	–	–	–	–	–	236	186	137	–	104	95
Female deaths[e]	–	–	–	–	–	19758	20102	20701	–	23315	24529
Adjustment factor[f]	–	–	–	–	–	1.55	1.54	1.53	–	1.52	1.51
Sensitivity[g]	–	–	–	–	–	0.615	0.615	0.615	–	0.615	0.615
Specificity[h]	–	–	–	–	–	0.9995	0.9995	0.9995	–	0.9995	0.9995
Completeness[i]	–	–	–	–	–	78.5	78.5	79.1	–	81.7	80.1
Usability[j]	–	–	–	–	–	64.6	64.9	65.2	–	72.1	71
Maternal deaths not included[k]	–	–	–	–	–	–	–	–	–	–	–

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Maternal deaths[c]	120	87	63	93	101	–	114	100	106	99	92
Female deaths[e]	26007	28667	30857	32034	34343	–	35183	34010	34197	30192	27221
Adjustment factor[f]	1.50	1.49	1.48	1.47	1.47	–	1.46	1.46	1.47	1.48	1.49
Sensitivity[g]	0.615	0.615	0.615	0.615	0.615	–	0.615	0.615	0.615	0.615	0.615
Specificity[h]	0.9995	0.9995	0.9995	0.9995	0.9995	–	0.9995	0.9995	0.9995	0.9995	0.9995
Completeness[i]	78.3	79.8	80.9	80.2	83.2	–	82.7	80.3	80.6	79.7	79.7
Usability[j]	67.5	70.6	72.5	64	67.5	–	68.7	68.5	66.8	67	66.9
Maternal deaths not included[k]	–	–	–	–	–	–	–	–	–	–	–

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Maternal deaths[c]	–	–	–	–	–	–	–	–	165	175	–
Female deaths[e]	–	–	–	–	–	–	–	–	21910	21701	–
Adjustment factor[f]	–	–	–	–	–	–	–	–	1.50	1.50	–
Sensitivity[g]	–	–	–	–	–	–	–	–	0.615	0.615	–
Specificity[h]	–	–	–	–	–	–	–	–	0.9995	0.9995	–
Completeness[i]	–	–	–	–	–	–	–	–	85.8	86.6	–
Usability[j]	–	–	–	–	–	–	–	–	77	78.3	–
Maternal deaths not included[k]	97	89	83	78	69	140	166	166	–	–	–

[d] ICD10 codes O00-O95; O98-O99 Pregnancy, childbirth and the puerperium and A34 Obstetrical tetanus; ICD9 codes 630-676 Complications of pregnancy, childbirth and the puerperium. Late maternal deaths (O96) and those deaths due to sequalae of obstetric complications (O97) are excluded for the purposes of international comparison.

[e] Female deaths data are from Life tables for WHO Member States. World Health Organization, Geneva; 2018.

[f] Refer to the the technical document for details on the adjustment factor.

[g] Proportion of correctly classified maternal deaths out of all true maternal deaths.

[h] Proportion of correctly classified non-maternal deaths out of all true non-maternal deaths.

[i] Completeness = percentage of registered deaths of females of reproductive age (see Section 3.1.1 in attached technical notes).

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

[k] 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.

Available data sources (continued)

Excluded data from CRVS:

Study period	Completeness[l]	Usability[m]	Reasons for exclusion
1985-1986	76.1	53.1	Completeness < 60%
1986-1987	76.1	54.1	Completeness < 60%
1987-1988	76.1	58.5	Completeness < 60%
2007-2008	80.4	67.7	CRVS overlaps with spec. study
2008-2009	81.4	68.8	CRVS overlaps with spec. study
2009-2010	81.7	68.4	CRVS overlaps with spec. study
2010-2011	82.0	68.9	CRVS overlaps with spec. study
2011-2012	82.5	69.9	CRVS overlaps with spec. study
2012-2013	83.9	72.5	CRVS overlaps with spec. study
2013-2014	84.7	75.2	CRVS overlaps with spec. study
2014-2015	85.5	76.0	CRVS overlaps with spec. study

[l] Completeness = percentage of registered deaths of females of reproductive age (see Section 3.1.1 in attached technical notes).
[m] Usability = percentage of deaths that is estimated to be recorded with a well-defined code; completeness proportion*(1-proportion ill-defined)*100

Available data sources (continued)

Data from other sources:

Study period	Source	Maternal deaths[n]	Pregnancy-related deaths[o]	Female deaths, 15-49	Maternal PM[p]	Reported PM	Pregnancy-related PM[q]	Reported MMR per 100,000 lb	Adjusted MMR per 100,000 lb	F+[r,u]	F-[s,u]	U+[t,u]
1995-1997	Maternal Mortality in Thailand 1995-1996				1.3				46			
1997-1998	Maternal Mortality in Thailand 1997-1998				1.1				47			
1998-1999	Maternal Mortality in Thailand 1997-1998				1.1				49			
2004-2005	MMR 2004				1.1				61			
2005-2006	MMR 2005				1.0				51			
2006-2007	MMR 2006				1.2				53			
2007-2008	Improving the measurement of maternal mortality in Thailand using multiple data sources, 2007-2014	268		32641	0.8				33			
2008-2009	Improving the measurement of maternal mortality in Thailand using multiple data sources, 2007-2014	333		31922	1.0				41			
2009-2010	Improving the measurement of maternal mortality in Thailand using multiple data sources, 2007-2014	305		31035	1.0				38			
2010-2011	Improving the measurement of maternal mortality in Thailand using multiple data sources, 2007-2014	298		29946	1.0				38			

Study period	Source	Maternal deaths[n]	Pregnancy-related deaths[o]	Female deaths, 15-49	Maternal PM[p]	Reported PM	Pregnancy-related PM[q]	Reported MMR per 100,000 lb	Adjusted MMR per 100,000 lb	F+[r,u]	F-[s,u]	U+[t,u]
2011-2012	Improving the measurement of maternal mortality in Thailand using multiple data sources, 2007-2014	248		28528	0.9				32			
2012-2013	Improving the measurement of maternal mortality in Thailand using multiple data sources, 2007-2014	246		27627	0.9				32			
2013-2014	Improving the measurement of maternal mortality in Thailand using multiple data sources, 2007-2014	260		27104	1.0				34			
2014-2015	Improving the measurement of maternal mortality in Thailand using multiple data sources, 2007-2014	226		26338	0.9				30			

[n] Maternal deaths defined according to the ICD-10.
[o] Pregnancy-related deaths defined according to ICD-10.
[p] Maternal PM is calculated when deaths are defined as "maternal".
[q] Pregnancy-related PM is calculated when reported deaths are defined as pregnancy related deaths.
[r] False positive: true non-maternal death which may be incorrectly labeled as a maternal death.
[s] False negative: maternal death which may be incorrectly classified as a non-maternal death.
[t] Maternal deaths not registered in the CRVS.
[u] Calculated/derived from studies which undertake specialized analyses of routine reporting of maternal deaths.

Available data sources (continued)

Data from studies **excluded** in regression:

** No exclusions **

Covariates used in the model

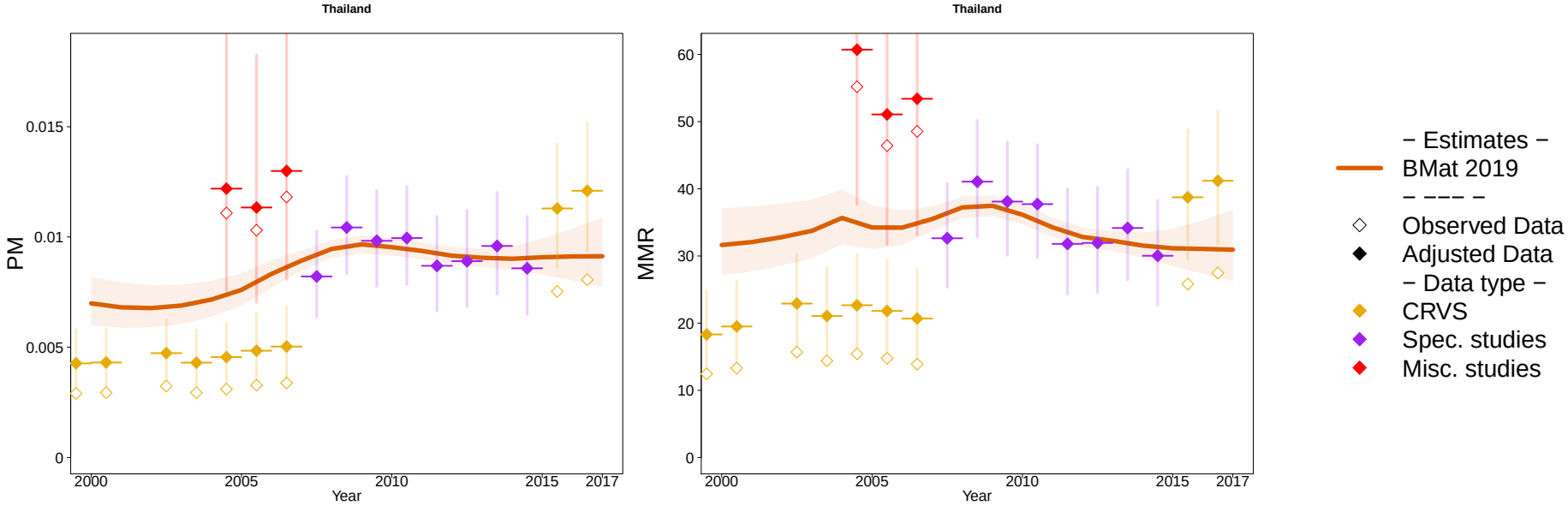
Year	GDP per capita, PPP (constant 2011 Int $)[v]	General Fertility Rate per 1000 women 15-49	Skilled attendance at birth (% of births)
2000	9202	50	99.0
2005	11568	44	99.0
2010	13367	42	99.0
2015	15373	41	99.0
2017	15745	41	100.0

[v] A 5-year moving average was calculated.

GDP per capita measured in purchasing power parity (PPP) equivalent dollars, using 2011 as the baseline year were taken from World Bank's World Development Indicators (WDI) Database downloaded on July 31 2018, and in instances with missing country-years in the WDI database supplemented by unofficial estimates derived by MMEIG using growth rates in United Nations GDP data and/or previous MMEIG GDP estimates. Geneva: WHO; 2018.

General fertility rate
Source: United Nations, Department of Economic and Social Affairs, Population Division: World Population Prospects. New York: UNDP; 2019. Forthcoming.

Percentage of births attended by skilled health personnel (doctors, nurses or midwives).
Source: WHO, UNICEF. WHO and UNICEF Joint Skilled Birth Attendant (SBA) database. Geneva: WHO; 2018.


Thailand
PM
0.015
0.01
0.005
0
2000
2005
2010
2015
2017
Year
Thailand
MMR
60
50
40
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20
10
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2000
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− Estimates −
BMat 2019
− ––– −
Observed Data
Adjusted Data
− Data type −
CRVS
Spec. studies
Misc. studies