Levels & Trends in

Child Mortality

Report 2019

Estimates developed by the UN Inter-agency Group for Child Mortality Estimation

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CHILD SURVIVAL: KEY FACTS AND FIGURES

- Tremendous progress in child survival has been made over the past two decades. The total number of deaths among children and young adolescents under 15 years of age dropped by 56 per cent from 14.2 (14.0, 14.5)[1] million in 1990 to 6.2 (6.0, 6.7) million in 2018. Still, one child or young adolescent died every five seconds in 2018.

- Globally, 85 per cent of deaths among children and young adolescents in 2018 occurred in the first five years of life, accounting for 5.3 million deaths, of which 2.5 million (47 per cent) occurred in the first month of life, 1.5 million (29 per cent) at age 1–11 months, and 1.3 million (25 per cent) at age 1–4 years. An additional 0.9 million deaths occurred among children aged 5–14 years.

- Among children and young adolescents under 15 years of age, the risk of dying was highest in the first month of life, at an average rate of 18 (17, 19) deaths per 1,000 live births globally in 2018. In comparison, the probability of dying after the first month and before reaching age 1 was 11 (11, 12) per 1,000, the probability of dying after reaching age 1 and before reaching age 5 was 10 (9, 11) per 1,000, and the probability of dying after reaching age 5 and before reaching age 15 was 7 (7, 8) per 1,000.

- The global under-five mortality rate fell to 39 (37, 42) deaths per 1,000 live births in 2018 from 93 (92, 95) in 1990 and 76 (75, 78) in 2000 – a 59 (55, 60) per cent and 49 (46, 52) per cent decline, respectively. The neonatal mortality rate fell to 18 (17, 19) deaths per 1,000 live births in 2018 from 37 (36, 38) in 1990 and 31 (30, 31) in 2000 – a 52 (47, 53) per cent and 42 (37, 45) per cent decline, respectively.

- The total number of under-five deaths dropped to 5.3 (5.1, 5.7) million in 2018 from 12.5 (12.4, 12.7) million in 1990. On average, 15,000 children died before age 5 every day in 2018 compared to 34,000 in 1990 and 27,000 in 2000. Among the 5.3 million under-five deaths in 2018, 2.9 (2.8, 3.1) million were boys and 2.4 (2.3, 2.6) million were girls.

- The global number of neonatal deaths declined from 5.0 (4.9, 5.2) million in 1990 to 2.5 (2.4, 2.7) million 2018 – 7,000 deaths every day in 2018 compared with 14,000 in 1990. Neonatal deaths accounted for 47 (45, 49) per cent of all under-five deaths in 2018, increasing from 40 (39, 41) per cent in 1990 due to a faster global decline in mortality among children aged 1–59 months than for children in their first month of life.

- For older children and young adolescents aged 5–14 years, the probability of dying continues to decline, dropping from 15 (15, 16) deaths per 1,000 children aged 5 in 1990 to 7 (7, 8) in 2018. The total number of deaths in this age group dropped from 1.7 (1.7, 1.8) million in 1990 to 1.4 (1.4, 1.5) million in 2000 and to 0.9 (0.9, 1.0) million in 2018.

- Children continue to face widespread regional disparities in their chances of survival. Sub-Saharan Africa remains the region with the highest under-five mortality rate in the world. In 2018, the region had an average under-five mortality rate of 78 deaths per 1,000 live births. This translates to 1 in 13 children dying before

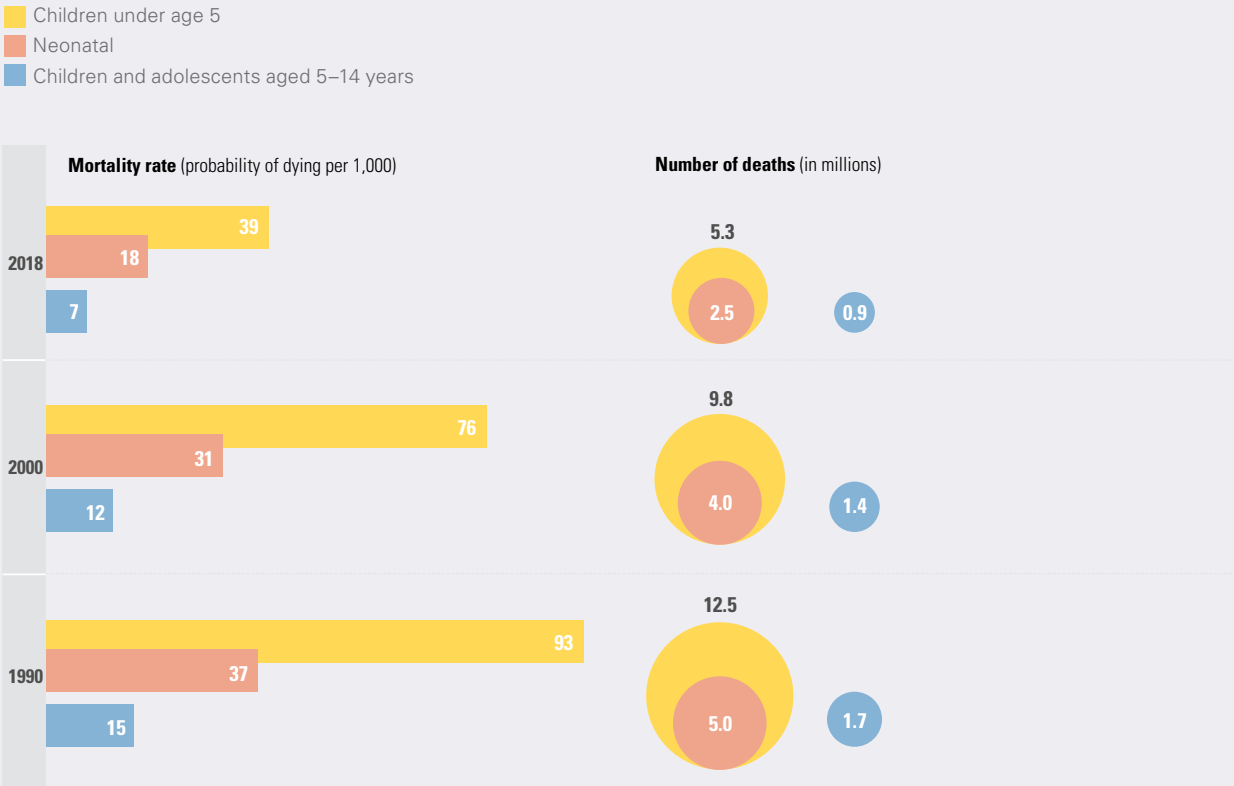
his or her fifth birthday – 16 times higher than the average ratio of 1 in 199 in high-income countries.

- It is urgent to further accelerate progress in preventing child deaths. Current trends predict that close to 10 million 5- to 14-year-olds and 52 million children under 5 years of age will die between 2019 and 2030. Almost half of these under-five deaths will be newborns whose deaths can be prevented by reaching high coverage of quality antenatal care, skilled care at birth, postnatal care for mother and baby, and care of small and sick newborns.

- In 2018, 121 countries had already achieved an under-five mortality rate below the Sustainable Development Goal (SDG) target of 25 or fewer deaths per 1,000 live births; those countries should aim to maintain progress and further reduce disparities among their populations. Of the remaining 74 countries, progress will need to be accelerated in 53 to reach the SDG target by 2030.

- If all countries reach the SDG child survival targets by 2030, 11 million lives under age 5 will be saved – more than half of them in sub-Saharan Africa.

Global mortality rates and deaths by age



Introduction

Thirty years ago, the world made a commitment to protect and fulfil children's rights as enshrined in the Convention on the Rights of the Child. Among the most fundamental of these rights is the right of every child to survive.[2] While substantial progress in child survival has been made since then, the failure to fully meet that commitment reverberates today for millions of children: In 2018 alone, 5.3 million children died before reaching their fifth birthday and almost 1 million children aged 5–14 years died.

It is especially unacceptable that these children and young adolescents died largely of preventable or treatable causes like infectious diseases and injuries when we have the means to prevent these deaths. The continued burden of child deaths is a call to redouble efforts to realize the Convention's promise and other international human rights commitments that protect every child's right to survive.

Although the global number of child deaths remains high, the world has made tremendous strides in reducing child and young adolescent mortality over the past few decades. The global under-five mortality rate declined by 59 per cent from 93 deaths per 1,000 live births in 1990 to 39 in 2018, while mortality among children aged 5–14 years fell by 53 per cent from 15 to 7 deaths per 1,000 children aged 5. Still, the burden of child deaths remains immense – the number of children aged 0–14 years that died in 2018, 6.2 million, is equivalent to the current population of Nicaragua.

The global community recognizes the urgent need to end preventable child deaths, making it an essential part of global child survival goals and initiatives including the United Nations Global Strategy for Women's, Children's and Adolescents' Health (2016–2030)[3] and the Sustainable Development Goals (SDGs).[4] The third SDG calls for an end to preventable deaths of newborns and children under age 5, with all countries aiming to reduce neonatal mortality to at least as low as 12 deaths per 1,000 live births and under-five mortality to at least as low as 25 deaths per 1,000 live births by 2030.

Sound policies, concerted efforts and appropriate resources are needed to accelerate progress and achieve the child survival goals. If current trends continue, 53 countries will not meet the SDG target on under-five mortality by 2030. This would result in 11 million excess child deaths between 2019 and 2030 in addition to the 41 million children who will die before age 5 between 2019 and 2030, even if all countries meet the SDG target by 2030.

Protecting every child's right to survive will require addressing persistent inequities and disparities in maternal and child health while also ensuring universal access to safe, effective, high-quality and affordable care for women, children and adolescents. It also demands great understanding of levels and trends in child mortality, as well as the underlying causes of child and young adolescent deaths to help guide policymaking and planning.

Given the absence of reliable vital registration data in many countries – an important resource for monitoring births and deaths – evidence-based estimation of child mortality remains a cornerstone for tracking progress towards child survival goals. These estimates enable governments, international organizations and other stakeholders to set priorities and

plan national and global health strategies and interventions.

The United Nations Inter-agency Group for Child Mortality Estimation (UN IGME) produces estimates of child and young adolescent mortality annually, reconciling the differences across data sources and taking into account the systematic biases associated with the various types of data on child and adolescent mortality. This report presents the UN IGME's latest estimates – through 2018 – of neonatal, infant and under-five mortality as well as mortality among children aged 5–14 years.[5] It assesses progress in the reduction of child and young adolescent mortality at the country, regional and global levels, and provides an overview of the methods used to estimate the mortality indicators mentioned above.

Levels and Trends in Child Mortality

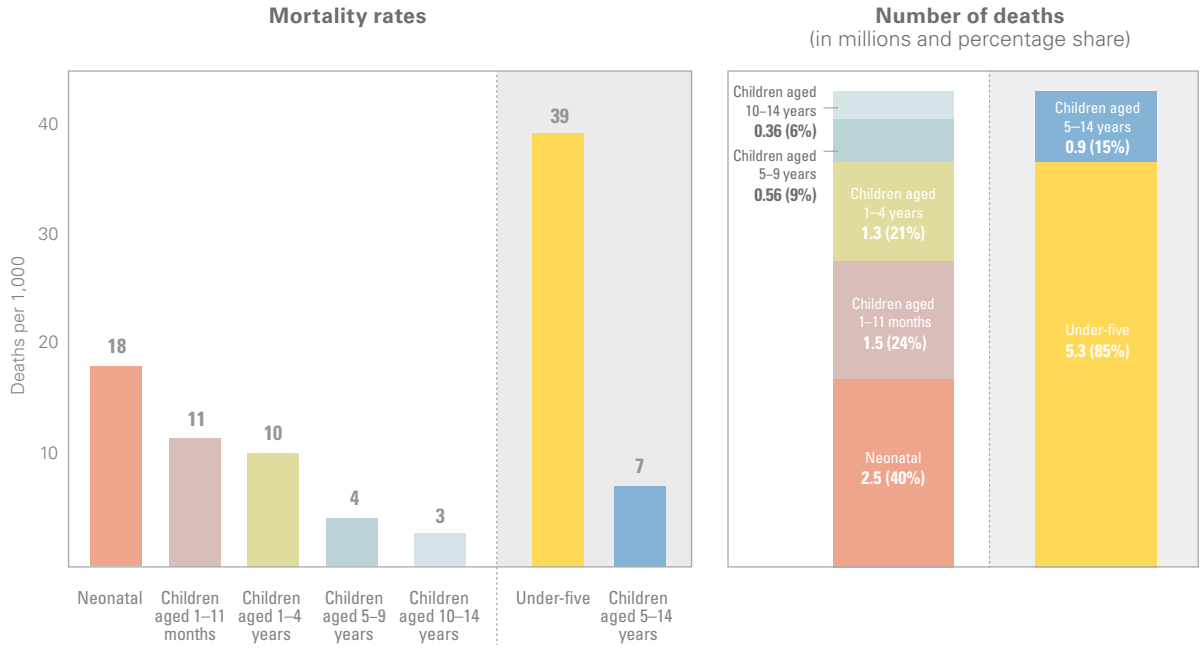
Despite progress over the past two decades, in 2018 alone, an estimated 6.2 million children and young adolescents under age 15 died, mostly from preventable causes. Newborns account for 2.5 million of these deaths, children aged 1–11 months for 1.5 million, children aged 1–4 years for 1.3 million, children aged 5–9 years for 560,000 and young adolescents aged 10–14 years for 360,000 (Figure 1, Figure 2).

The youngest children face the greatest risk of dying among children under age 15. The age distribution of the mortality of children and young adolescents shows that the highest risk of death is during the neonatal period (the first 28 days of life). In 2018, the neonatal mortality rate was estimated at 18 deaths per 1,000 live births globally. The probability of dying after the first month and before reaching age 1 was at 11 per 1,000, and the probability of dying after reaching age 1 and before reaching age 5 was at 10 per 1,000. For children aged 5–14 years, the probability of dying was estimated at 7 per 1,000 children aged 5 years, with the probability of dying after reaching age 5 and before reaching age 10 at 4 deaths per 1,000 and 3 per 1,000 for young adolescents aged 10–14 years (Figure 1).

The vast majority of child and young adolescent deaths occur at the youngest ages. Of the 6.2 million deaths in 2018, 85 per cent (5.3 million) occurred in the first five years of life (Figure 1). About half (47 per cent) of the under-five deaths occurred in the neonatal period (2.5 million).

FIGURE 1 **In the first month, the mortality risk is the highest**

Global mortality rates and number of deaths by age, 2018



Note: All figures are based on unrounded numbers.

The burden is uneven across regions. In 2018, more than half (3.3 million) of all children under age 15 died in sub-Saharan Africa followed by Central and Southern Asia with 28 per cent (1.8 million). The regions of Australia and New Zealand, Eastern and South-Eastern Asia, Northern Africa and Western Asia, Europe and Northern America, Latin America and the Caribbean and Oceania (excluding Australia and New Zealand) account for the remaining 19 per cent or 1.2 million deaths of children under 15 years of age.

Declines in mortality among children under age 5 have accelerated since 2000, but the pace of decline remained at similar levels for children aged 5–14 years. Globally, the annual rate of reduction (ARR)[6] in under-five mortality nearly doubled from 2.0 (1.8, 2.1) per cent in 1990–2000 to 3.8 (3.4, 4.0) per cent in 2000–2018, while the ARR for neonatal mortality increased from 1.8 (1.5, 2.1) per cent in 1990–2000 to 3.0 (2.6, 3.3) per cent in 2000–2018. For children aged 5–14 years, the ARR remained constant over the two periods at 2.7 (2.4, 3.1) per cent for 1990–2000 and 2.7 (2.1, 3.0) per cent for 2000–2018. Regionally, sub-Saharan Africa, Oceania (excluding Australia and New Zealand), Central and Southern Asia, and Eastern and South-Eastern Asia saw acceleration in under-five mortality decline since 2000. Notably, Eastern and South-Eastern Asia had the largest ARR for both under-five and neonatal mortality among all regions and periods. In the region, the ARR for under-five mortality increased from 3.6 (3.0, 4.2) to 5.5 (5.0, 5.9) per cent and for neonatal mortality from 3.1 (2.2, 4.1) to 5.6 (4.9, 6.1) per cent over the two periods. For older children aged 5–14 years, Central and Southern Asia had the largest ARR at 4.5 (3.6, 5.3) per cent for 2000–2018, up from 3.8 (3.3, 4.3) per cent during the 1990s (Figure 3).

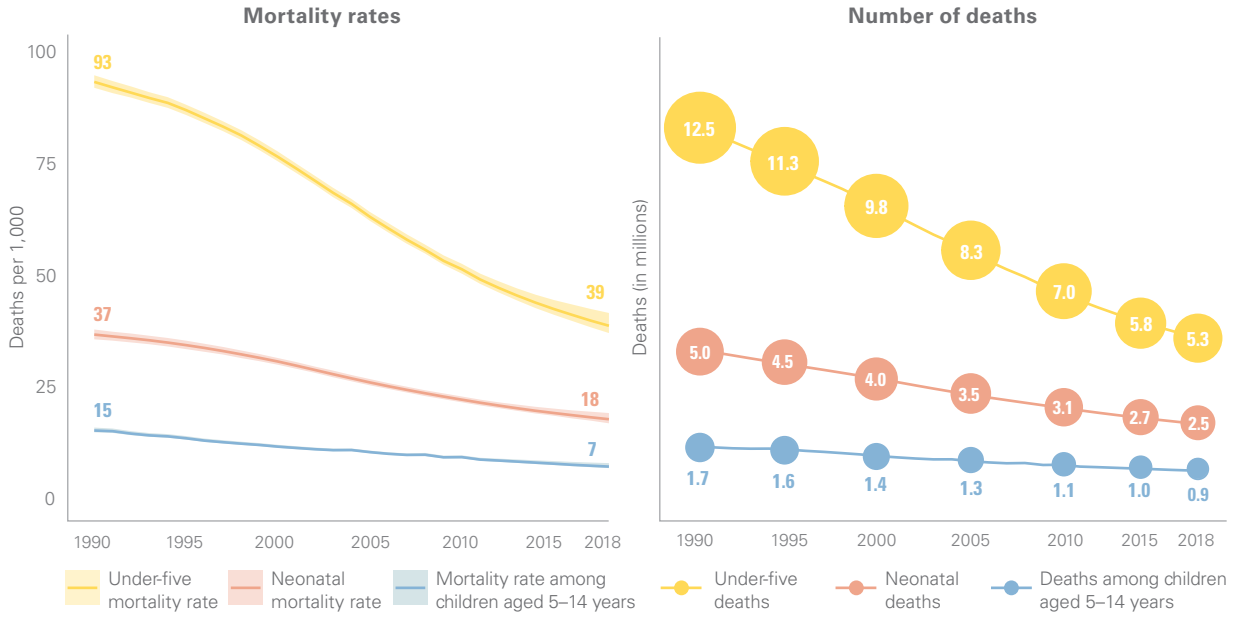
Child mortality under age 5

Under-five mortality

Millions of children have better survival chances today than in 1990. The under-five mortality rate was reduced by 59 (55, 60) per cent from 93 (92, 95) in 1990 to 39 (37, 42) deaths per 1,000

FIGURE 2 **Globally, child mortality declined by more than half for children under age 5 and children aged 5–14 years since 1990**

Global mortality rates and number of deaths by age, 1990–2018

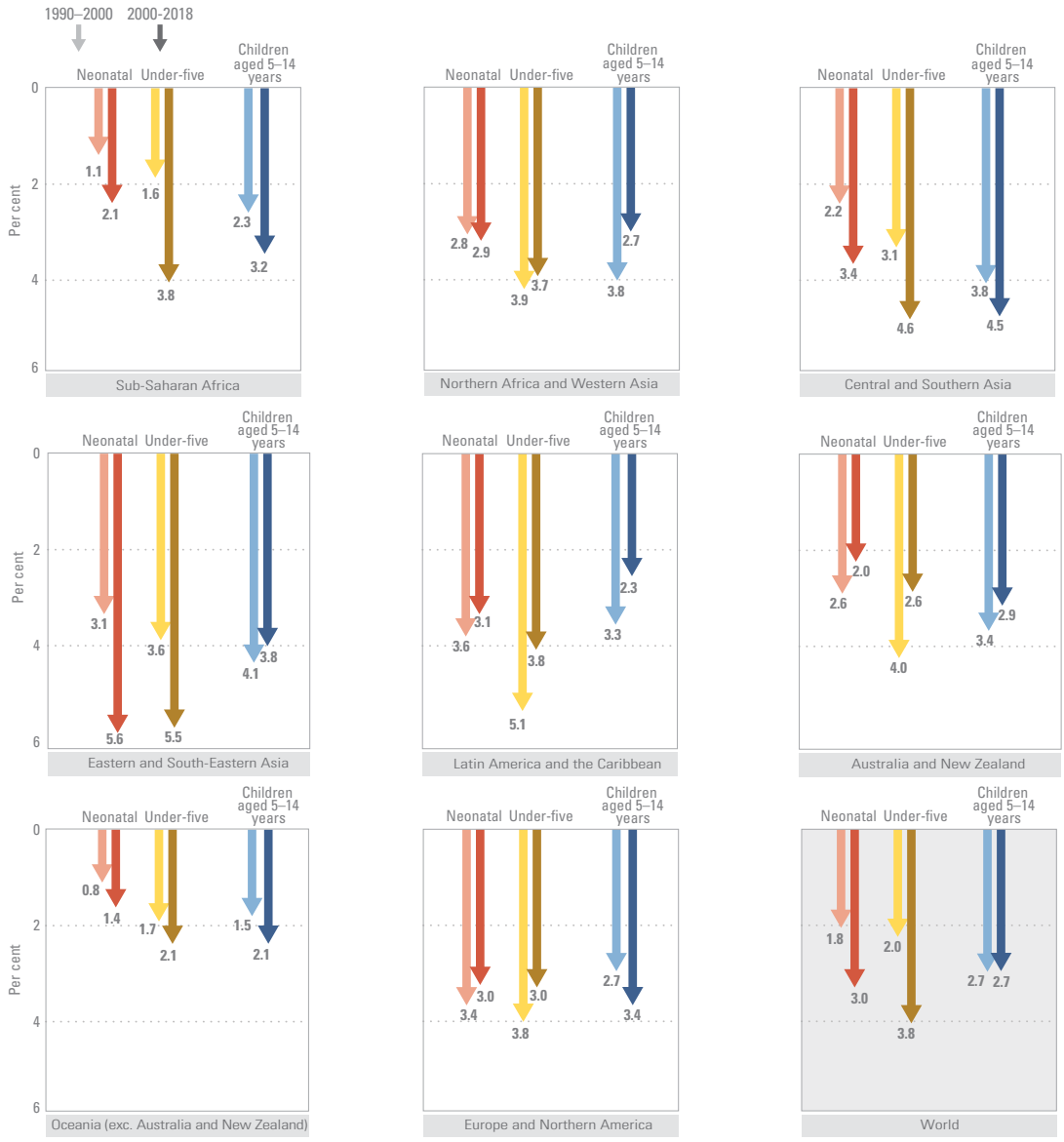


Note: All figures are based on unrounded numbers. The solid line in the left panel represents the median estimate and the shaded area represents the 90 per cent uncertainty bound around the median value.

FIGURE 3

Globally, declines in mortality among children under age 5 have accelerated since 2000, but the pace of decline remained at similar levels for children aged 5–14 years

Annual rate of reduction (per cent) in mortality rate by age group and Sustainable Development Goal region in 1990–2000 and 2000–2018



Note: All calculations are based on unrounded numbers.

live births in 2018 (Table 1 and Figure 4). This is equivalent to 1 in 11 children dying before reaching age 5 in 1990, compared to 1 in 26 in 2018. In most of the SDG regions,[7] the under-five mortality rate was reduced by at least half since 1990. More than 80 countries, including 31 low- and lower middle-income countries, reduced their under-five mortality by more than two thirds over the same period. The total number of under-five deaths dropped to 5.3 (5.1, 5.7) million in 2018 from 12.5 (12.4, 12.7) million in 1990 and 9.8 (9.7, 10.0) in 2000 (Table 2). On average, 15,000 children died every day in 2018, compared to 34,000 in 1990 and 27,000 in 2000. In 2018, only six countries had an under-five mortality rate above 100 deaths per 1,000 live births, compared to more than 50 countries in 1990.

Still, children face widespread regional disparities in their chances of survival. Sub-Saharan Africa continues to be the region with the highest under-five mortality rate in the

TABLE 1

Levels and trends in the under-five mortality rate by Sustainable Development Goal region, 1990–2018

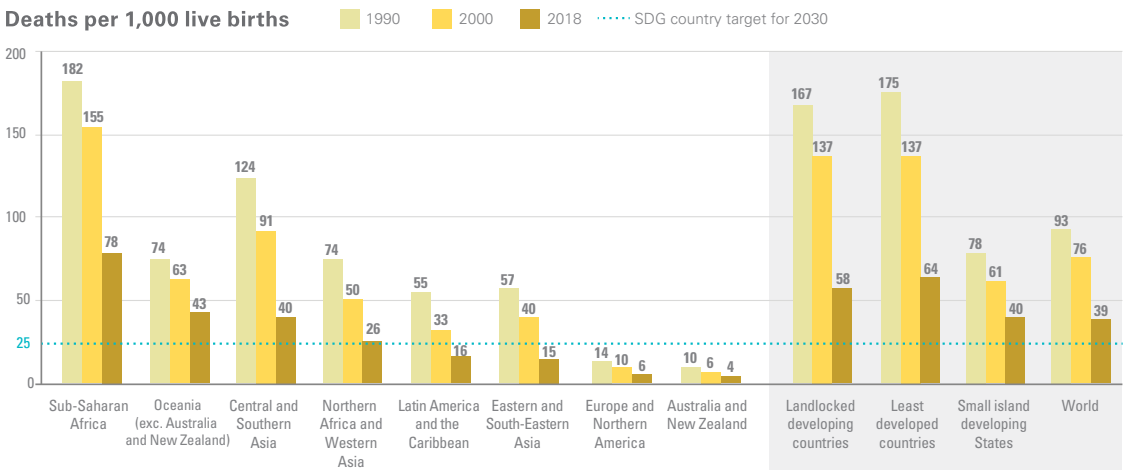
Region	Under-five mortality rate (deaths per 1,000 live births)							Decline (per cent)	Annual rate of reduction (per cent)		
	1990	1995	2000	2005	2010	2015	2018	1990–2018	1990–2018	1990–2000	2000–2018
Sub-Saharan Africa	182	174	155	127	102	85	78	57	3.0	1.6	3.8
Northern Africa and Western Asia	74	62	50	40	32	28	26	65	3.8	3.9	3.7
Northern Africa	84	71	59	48	39	33	30	64	3.6	3.5	3.7
Western Asia	65	53	42	32	26	23	21	67	4.0	4.4	3.8
Central and Southern Asia	124	108	91	75	60	46	40	68	4.0	3.1	4.6
Central Asia	72	73	63	47	35	26	23	68	4.1	1.4	5.6
Southern Asia	126	110	92	76	61	47	41	68	4.0	3.1	4.5
Eastern and South-Eastern Asia	57	49	40	29	22	17	15	74	4.8	3.6	5.5
Eastern Asia	51	45	35	23	15	10	8	83	6.4	3.8	7.9
South-Eastern Asia	72	58	48	40	33	28	25	65	3.7	4.0	3.6
Latin America and the Caribbean	55	43	33	25	24	18	16	70	4.3	5.1	3.8
Oceania	36	33	32	29	25	22	21	42	1.9	1.1	2.4
Australia and New Zealand	10	7	6	6	5	4	4	58	3.1	4.0	2.6
Oceania (exc. Australia and New Zealand)	74	68	63	57	52	46	43	42	2.0	1.7	2.1
Europe and Northern America	14	12	10	8	7	6	6	60	3.3	3.8	3.0
Europe	15	13	10	8	7	6	5	67	4.0	3.9	4.0
Northern America	11	9	8	8	7	7	6	42	1.9	2.8	1.4
Landlocked developing countries	167	157	137	109	83	65	58	66	3.8	2.0	4.8
Least developed countries	175	159	137	110	89	71	64	63	3.6	2.5	4.2
Small island developing States	78	69	61	54	79	43	40	50	2.4	2.6	2.4
World	**93**	**87**	**76**	**63**	**51**	**42**	**39**	**59**	**3.1**	**2.0**	**3.8**

Note: All calculations are based on unrounded numbers.

FIGURE 4

Across all regions, under-five mortality declined between 1990 and 2018

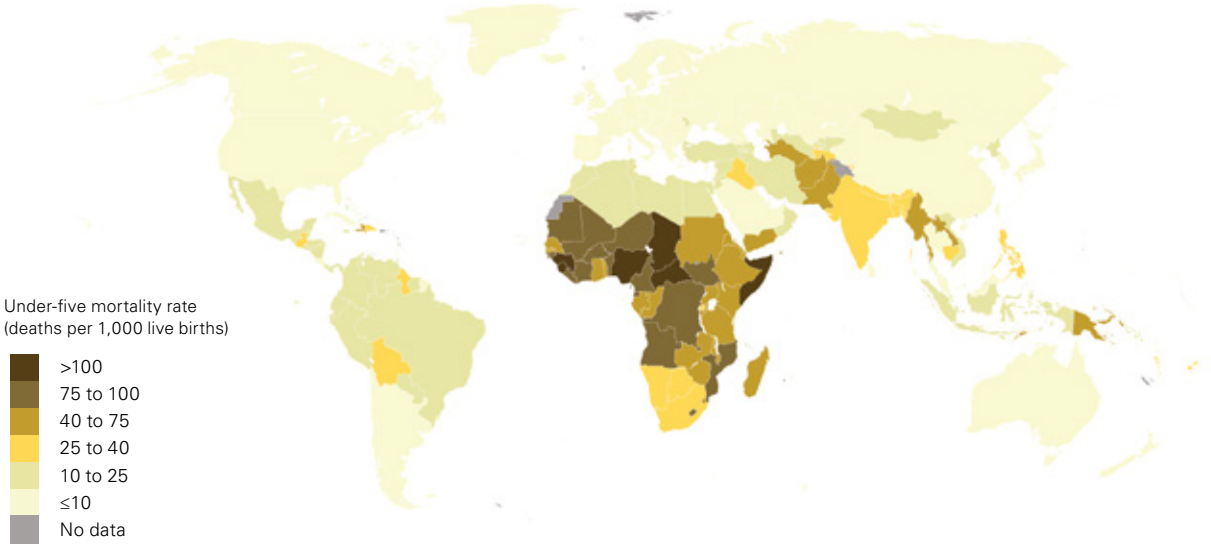
Under-five mortality rate (deaths per 1,000 live births) by Sustainable Development Goal region, 1990, 2000 and 2018



Note: All figures are based on unrounded numbers.

MAP 1 **Children in Sub-Saharan Africa and Southern Asia face higher risks of dying before their fifth birthday**

Under-five mortality rate (deaths per 1,000 live births) by country, 2018



Note: The classification is based on unrounded numbers. This map does not reflect a position by UN IGME agencies on the legal status of any country or territory or the delimitation of any frontiers.

world – 78 deaths per 1,000 live births in 2018 (Table 1 and Figure 4). This translates to 1 child in 13 dying before his or her fifth birthday – 16 times higher than the average ratio of 1 in 199 in high-income countries and roughly 20 years behind the world average, which achieved a 1 in 13 ratio by 1999. At the country level, the under-five mortality rates in 2018 ranged from 2 deaths per 1,000 live births to 122 (Map 1) – the risk of dying before the fifth birthday for a child born in the highest-mortality country was about 72 times higher than in the lowest-mortality country. All six countries with mortality rates above 100 deaths per 1,000 live births are in sub-Saharan Africa.

Two regions bear most of the global burden of under-five deaths. In sub-Saharan Africa alone, 2.8 (2.6, 3.1) million children under age 5 died – 52 per cent of all under-five deaths – and 1.5 (1.4, 1.7) million (29 per cent) died in Central and Southern Asia (Table 2). Together, the two regions account for more than 80 per cent of the 5.3 million under-five deaths in 2018, – while they only account for 52 per cent of the global under-five population.[8] Half of all under-five deaths in 2018 occurred in five countries: India, Nigeria, Pakistan, the Democratic Republic of the Congo and Ethiopia. India and Nigeria alone account for about a third.

Fewer countries showed gender disparities in child mortality. On average, boys are expected to have a higher probability of dying before reaching age 5 than girls. The estimated under-five mortality rate in 2018 was 41 (39, 44) deaths per 1,000 live births for boys and 36 (35, 39) for girls. In 2018, an estimated 2.9 (2.8, 3.1) million boys and 2.4 (2.3, 2.6) million girls under 5 years of age died (Figure 5). In some countries, the risk of dying before age 5 for girls is significantly higher than what would be expected based on global patterns. These countries are primarily located in Southern Asia and Western Asia. The number of countries showing higher than expected mortality for girls fell by two thirds from 21 to 7 since 1990.

Progress was remarkable but differed across countries and regions, and relative disparities remain. All eight SDG regions made progress in reducing under-five mortality, with the average annual rate of reduction ranging between 2.0 and 4.8 per cent from 1990 to 2018. The absolute decreases in the regions ranged from 6 deaths

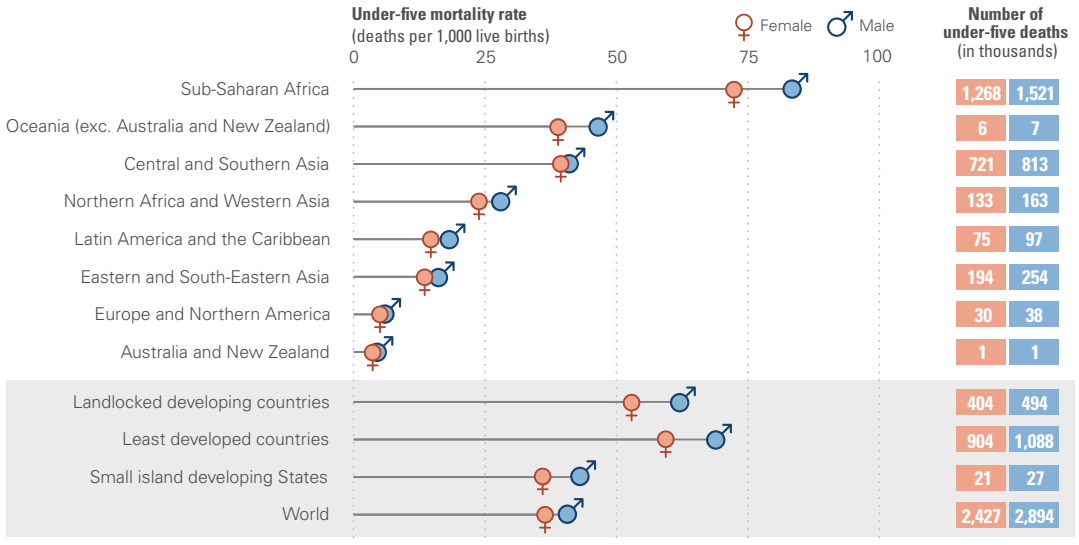
TABLE 2 **Levels and trends in the number of deaths of children under age 5 by Sustainable Development Goal region, 1990–2018**

Region	Number of under-five deaths (thousands)							Decline (per cent)	Share of global under-five deaths (per cent)		
	1990	1995	2000	2005	2010	2015	2018	1990–2018	1990	2000	2018
Sub-Saharan Africa	3,751	3,975	3,936	3,596	3,213	2,922	2,789	26	29.9	40.0	52.4
Northern Africa and Western Asia	681	567	460	383	341	318	296	57	5.4	4.7	5.6
Northern Africa	381	314	256	221	205	193	179	53	3.0	2.6	3.4
Western Asia	300	253	204	162	136	125	117	61	2.4	2.1	2.2
Central and Southern Asia	4,958	4,358	3,687	3,024	2,357	1,783	1,534	69	39.6	37.5	28.8
Central Asia	112	104	76	59	52	43	38	66	0.9	0.8	0.7
Southern Asia	4,846	4,254	3,611	2,965	2,305	1,740	1,497	69	38.7	36.7	28.1
Eastern and South-Eastern Asia	2,284	1,688	1,242	893	680	527	448	80	18.2	12.6	8.4
Eastern Asia	1,422	1,007	691	430	292	201	157	89	11.4	7.0	3.0
South-Eastern Asia	862	681	551	462	389	326	291	66	6.9	5.6	5.5
Latin America and the Caribbean	641	501	377	282	262	190	172	73	5.1	3.8	3.2
Oceania	19	18	18	17	16	15	14	25	0.1	0.2	0.3
Australia and New Zealand	3	2	2	2	2	2	2	49	0.0	0.0	0.0
Oceania (exc. Australia and New Zealand)	16	16	16	15	14	13	13	20	0.1	0.2	0.2
Europe and Northern America	191	143	112	96	85	74	67	65	1.5	1.1	1.3
Europe	144	103	76	62	53	46	40	72	1.1	0.8	0.7
Northern America	47	40	35	35	32	29	27	42	0.4	0.4	0.5
Landlocked developing countries	1,757	1,765	1,645	1,406	1,178	980	897	49	14.0	16.7	16.9
Least developed countries	3,605	3,558	3,330	2,895	2,508	2,136	1,992	45	28.8	33.9	37.4
Small island developing States	93	83	73	65	96	52	48	48	0.7	0.7	0.9
World	**12,524**	**11,250**	**9,831**	**8,292**	**6,955**	**5,828**	**5,322**	**58**	**100.0**	**100.0**	**100.0**

Note: All calculations are based on unrounded numbers.

FIGURE 5 **On average, boys have a higher probability of dying before reaching age 5 than girls**

Under-five mortality rate and number of under-five deaths by sex and Sustainable Development Goal region, 2018



Note: This figure shows unrounded under-five mortality rates.

to 104 deaths per 1,000 live births over the same period. Higher mortality regions recorded the highest absolute declines and the differences between the regions narrowed. However, relative disparities remained at similar levels for children under 5 in sub-Saharan Africa compared to children in low mortality regions. Children under 5 in sub-Saharan Africa face a risk of death that is 20 times higher than in the region of Australia and New Zealand and 14 times higher than in Europe and Northern America.

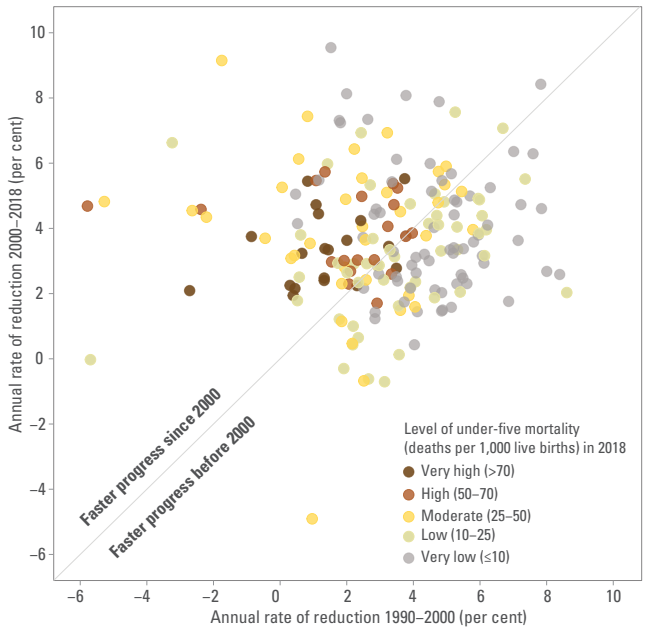
Countries with high to very high mortality levels tended to make faster progress in mortality decline since 2000 than during the 1990s. In almost half of all countries (95 of 195 countries), mortality declined more quickly in the 2000–2018 period compared to the 1990s, while for countries with high or very high under-five mortality rates (exceeding 50 deaths per 1,000 live births) in 2018, that number was 84 per cent (32 of 38 countries). Overall, 36 countries saw mortality decline at least three times faster in 2000–2018 than in 1990–2000 – 13 of those countries had high or very high mortality rates in 2018, and four of those countries reversed a negative trend over the two periods (Figure 6).

Fragile contexts pose an elevated risk of death for children and a challenge to achieving the SGD targets. On average, the under-five mortality rate in the 58 countries classified as 'fragile' based on the OECD definition[9] was three times higher than in all other countries in 2018. The under-five mortality rate for fragile countries was estimated at 66 (62, 73) deaths per 1,000 live births in 2018, almost 70 per cent higher than the global average of 39 deaths per 1,000 live births, and more than two thirds of the global under-five deaths in 2018 occurred in fragile countries. Of the countries with fragile context, children in 'extremely fragile' context had an even higher under-five mortality rate of 70 (62, 82) deaths per 1,000 live births. The high mortality and relatively slow rate of progress in these contexts means that 40 of the 58 countries classified as fragile are at risk of missing the SDG target for under-five mortality by 2030.

Further efforts are needed to understand uneven levels and trends in reducing under-five mortality within and across countries. Past analysis of under-five mortality in low- and middle-income countries showed reductions for absolute disparities between children in the poorest and richest households within countries since 1990 but with persisting relative disparities.[10] Another study in Africa revealed that while the under-five mortality rate has been falling across areas within countries, the rate of reduction and most recent levels varied considerably.[11] It also pointed out that differences within countries in Africa were larger in areas with higher levels of under-five mortality and modest reductions.

FIGURE 6 **Countries with high to very high mortality levels tended to make faster progress in reducing mortality since 2000 than during the 1990s**

Annual rate of reduction in the under-five mortality rate, 1990–2000 and 2000–2018



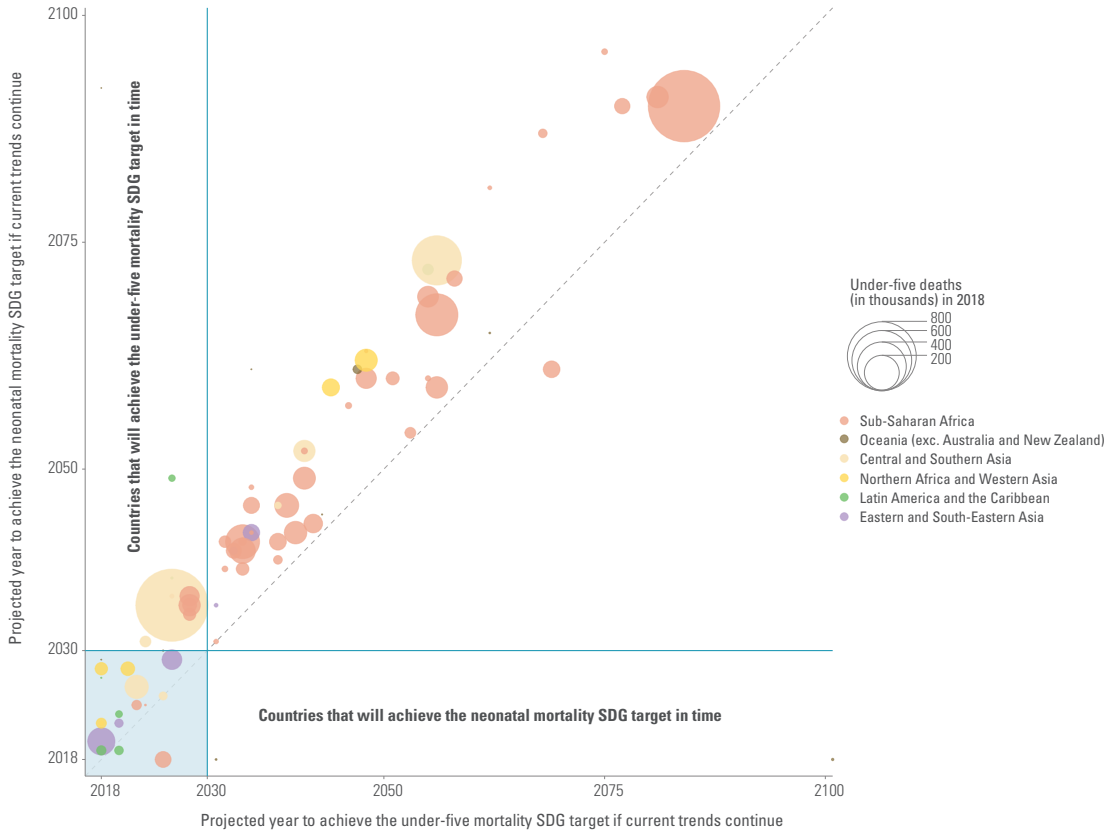
Note: All calculations are based on unrounded numbers.

More than 50 countries need to accelerate reductions in under-five mortality to reach the SDG target. Of 195 countries analysed in this report, 121 already met the SDG target on under-five mortality, and 21 countries are expected to do so by 2030, if current trends continue.[12] Efforts to accelerate progress need to be scaled up in the remaining 53 countries, two thirds of which are in sub-Saharan Africa, to reach the 2030 target (Figure 7). Of these 53 countries, 28 will need to more than double

FIGURE 7

More countries are at risk of missing the neonatal mortality SDG target than the under-five mortality target

Projected year to achieve the SDG target in neonatal mortality and under-five mortality if current trends continue in the 82 countries that have not achieved the under-five or neonatal mortality SDG target in 2018



Note: All calculations are based on unrounded numbers. Each bubble presents a country that in 2018 had an under-five or neonatal mortality rate above the SDG target. The size of the bubble represents the number of under-five deaths in 2018. Countries above the diagonal line are projected to achieve the under-five mortality target before they achieve the neonatal mortality target if current trends continue. Countries in the blue shaded area will meet the under-five and neonatal mortality targets by 2030.

their current rate of reduction to achieve the SDG on time. In countries that already achieved the SDG target, efforts to reduce inequity in mortality within country should be intensified to achieve further reductions in preventable child deaths.

Accelerating progress to achieve the SDG target by 2030 in countries that are falling behind would mean averting almost 11 million under-five deaths compared with the current scenario. On current trends,[12] about 52 (49, 58) million children under 5 years of age will die between 2019 and 2030, half of them newborns. More than half of these 52 million deaths will occur in sub-Saharan Africa (29 (27, 35) million) and 26 per cent in Southern Asia (14 (12, 15) million). Meeting the SDG target in the 53 countries in which acceleration is required would reduce the number of under-five deaths by almost 11 (9, 15) million between 2019 and 2030. Concerted and urgent action is needed in the countries that are falling behind. Even more lives could be saved, almost 29 million from 2019 to 2030, if all countries would achieve the average under-five mortality level in high-income countries (5 deaths per 1,000 live births in 2018) by 2030.

Ending deaths of children under age 5 from preventable diseases is critical. Despite advances in fighting childhood illnesses, infectious diseases remain a leading cause of death for children under the age of 5, particularly in sub-Saharan Africa and Southern Asia. Pneumonia (15 per

cent), diarrhoea (8 per cent) and malaria (5 per cent) remain among the leading causes of death globally among children under age 5 – accounting for almost a third of global under-five deaths (Figure 8). Malnourished children, particularly those with severe acute malnutrition, have a higher risk of death from these common childhood illnesses. Nutrition-related factors contribute to about 45 per cent of deaths in children under 5 years of age.

Neonatal mortality

The first 28 days of life – the neonatal period – are the most vulnerable time for a child's survival. Children face the highest risk of dying in their first month of life, at a global rate of 18 (17, 19) deaths per 1,000 live births. Globally, an estimated 2.5 (2.4, 2.7) million newborns died in the first month of life in 2018 – approximately 7,000 every day. Based on a recent systematic review, about a third of all neonatal deaths tend to occur on the day of birth and close to three quarters die in the first week of life.[13, 14] These findings suggest that focusing on the critical periods before and immediately following birth is essential to saving more newborn lives.

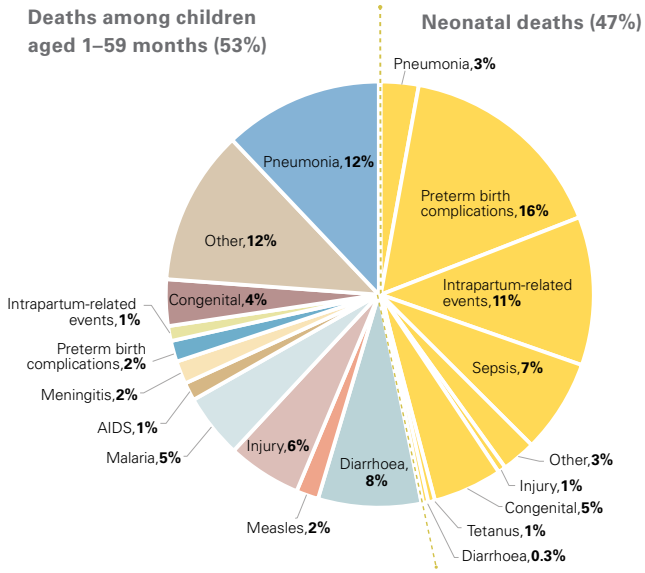
Progress in reducing neonatal mortality is slower than mortality in older ages and the share of neonatal deaths relative to all under-five deaths has increased. Neonatal mortality declined more slowly than mortality among children aged 1–59 months. Globally, the average annual rate of reduction in the neonatal mortality rate was 2.6 (2.3, 2.8) per cent from 1990 to 2018 (Table 3), a smaller reduction than among children aged 1–59 months with 3.6 (3.3, 3.9) per cent. As a result, the share of neonatal deaths among all under-five deaths increased from 40 (39, 41) per cent in 1990 to 47 (45, 49) per cent in 2018. Across all regions, the annual rate of reduction from 1990 to 2018 was larger for children aged 1–59 months than for newborns.

Newborn deaths often account for a larger share of under-five deaths at lower under-five mortality levels. The share of neonatal deaths among under-five deaths is still relatively low in sub-Saharan Africa (36 per cent), which remains the region with the highest under-five mortality rate. In Europe and Northern America, which has one of the lowest under-five mortality rates among SDG regions, 54 per cent of all under-five deaths occur during the neonatal period. An exception is Southern Asia, where the proportion of neonatal deaths is among the highest (62 per cent) despite a relatively high under-five mortality rate (Table 4).

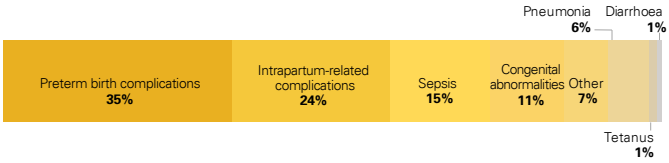
Some countries have relatively high neonatal mortality given their level of under-five mortality. Based on the global relationship of neonatal mortality to under-five mortality observed for all countries, a few countries continue to show high, outlying levels of neonatal mortality given their level of under-five mortality. Most of these countries are in Southern Asia.

FIGURE 8 Infectious diseases remain a leading cause of death among children under age 5

A. Global distribution of deaths among children under age 5, by cause, 2018



B. Global distribution of newborn deaths by cause, 2018



Note: Estimates are rounded and therefore may not total 100 per cent.

Source: WHO and Maternal and Child Epidemiology Estimation Group (MCEE) interim estimates produced in September 2019, applying cause fractions for the year 2017 to UN IGME estimates for the year 2018.

Despite declining neonatal mortality levels, marked disparities in neonatal mortality exist across regions and countries. Among the SDG regions, sub-Saharan Africa had the highest neonatal mortality rate in 2018 at 28 deaths per 1,000 live births, followed by Central and Southern Asia with 25 deaths per 1,000 live births (Table 3). A child born in sub-Saharan Africa is 10 times more likely to die in the first month than a child born in a high-income country. Across countries, neonatal mortality rates ranged from 1 death per 1,000 live births to 42 deaths (Map 2). The risk of dying for a newborn in the first month of life is about 49 times higher in the highest-mortality country than in the lowest-mortality country.

The number of newborn deaths has stagnated in sub-Saharan Africa. Despite a modest 1.8 (1.3, 2.1) per cent annual rate of reduction in the average neonatal mortality rate from 1990 to 2018 in sub-Saharan Africa (Table 4), the number of neonatal deaths stagnated at around 1 million deaths per year due to an increasing number of births. The number of births in the region grew at an annual rate of 1.8 per cent from 1990 to 2018; close to half a billion births are projected to take place in the region from 2019–2030 (about 29 per cent of global births projected over that period).[8] In 40 per cent (19) of sub-Saharan African countries, the number of neonatal deaths did not decline from 1990 to 2018 even though the rates of neonatal mortality fell over the same period. Liberia and Rwanda were the two notable countries with large reductions in the neonatal mortality rate, with an average annual rate of reduction of more than 3 per cent from 1990 to 2018.

TABLE 3 **Levels and trends in the neonatal mortality rate by Sustainable Development Goal region, 1990–2018**

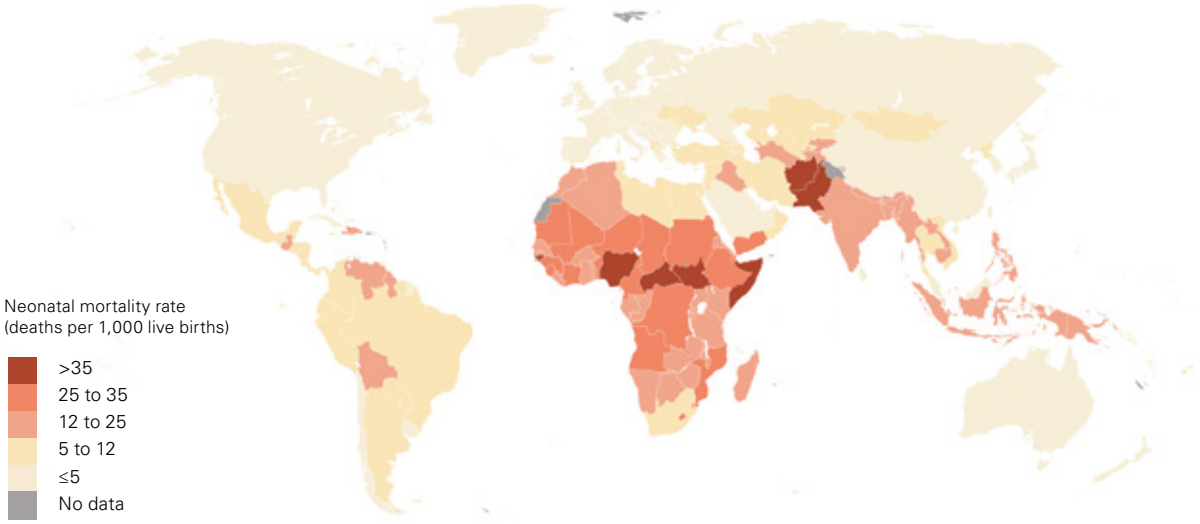
	Neonatal mortality rate (deaths per 1,000 live births)							Decline (per cent)	Annual rate of reduction (per cent)		
Region	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2018**	**1990–2018**	**1990–2018**	**1990–2000**	**2000–2018**
Sub-Saharan Africa	46	44	41	36	32	29	28	39	1.8	1.1	2.1
Northern Africa and Western Asia	31	27	23	20	17	15	14	55	2.9	2.8	2.9
Northern Africa	33	30	26	23	20	17	16	52	2.6	2.3	2.8
Western Asia	28	24	20	16	14	12	11	60	3.3	3.3	3.3
Central and Southern Asia	56	51	45	39	33	27	25	56	3.0	2.2	3.4
Central Asia	28	29	27	22	18	13	12	58	3.1	0.6	4.5
Southern Asia	57	52	46	39	33	28	25	56	2.9	2.2	3.3
Eastern and South-Eastern Asia	28	25	20	15	11	9	7	73	4.7	3.1	5.6
Eastern Asia	28	25	20	13	8	5	4	85	6.7	3.3	8.6
South-Eastern Asia	28	24	21	18	16	14	13	54	2.8	2.8	2.8
Latin America and the Caribbean	23	19	16	13	11	10	9	60	3.3	3.6	3.1
Oceania	14	13	13	13	11	10	10	28	1.2	0.4	1.6
Australia and New Zealand	5	4	4	3	3	3	2	46	2.2	2.6	2.0
Oceania (exc. Australia and New Zealand)	27	26	25	24	22	21	20	28	1.2	0.8	1.4
Europe and Northern America	7	6	5	4	4	3	3	58	3.1	3.4	3.0
Europe	8	7	6	4	3	3	3	66	3.8	3.7	3.9
Northern America	6	5	5	4	4	4	3	38	1.7	2.1	1.5
Landlocked developing countries	47	45	41	36	31	27	25	48	2.3	1.4	2.9
Least developed countries	52	47	42	36	32	28	26	50	2.5	2.2	2.7
Small island developing States	27	24	23	22	22	20	19	30	1.3	1.4	1.2
World	**37**	**34**	**31**	**26**	**22**	**19**	**18**	**52**	**2.6**	**1.8**	**3.0**

Note: All calculations are based on unrounded numbers.

MAP 2

Huge variation in the level of neonatal mortality persists across countries and regions

Neonatal mortality rate (deaths per 1,000 live births) by country, 2018



Note: The classification is based on unrounded numbers. This map does not reflect a position by UN IGME agencies on the legal status of any country or territory or the delimitation of any frontiers.

TABLE 4

Levels and trends in the number of neonatal deaths by Sustainable Development Goal region, 1990–2018

Region	Number of neonatal deaths (thousands)							Decline (per cent)	Neonatal deaths as a share of under-five deaths (per cent)		
	1990	1995	2000	2005	2010	2015	2018	1990–2018	1990	2000	2018
Sub-Saharan Africa	985	1,050	1,085	1,069	1,052	1,029	1,016	-3	26	28	36
Northern Africa and Western Asia	284	246	215	193	181	168	157	45	42	47	53
Northern Africa	153	132	116	109	107	102	95	38	40	45	53
Western Asia	131	114	99	84	74	67	62	53	44	48	53
Central and Southern Asia	2,285	2,094	1,849	1,572	1,302	1,056	942	59	46	50	61
Central Asia	44	40	32	29	27	22	19	56	40	42	51
Southern Asia	2,241	2,054	1,817	1,543	1,274	1,034	922	59	46	50	62
Eastern and South-Eastern Asia	1,095	822	634	462	347	264	224	80	48	51	50
Eastern Asia	760	537	393	247	156	102	78	90	53	57	50
South-Eastern Asia	335	285	241	216	192	162	146	57	39	44	50
Latin America and the Caribbean	267	226	182	140	118	104	95	64	42	48	55
Oceania	7	7	7	8	7	7	7	8	39	42	48
Australia and New Zealand	1	1	1	1	1	1	1	35	49	55	62
Oceania (exc. Australia and New Zealand)	6	6	6	6	6	6	6	2	38	41	47
Europe and Northern America	98	75	60	53	46	41	36	63	51	54	54
Europe	74	54	41	33	28	24	21	71	51	53	54
Northern America	24	21	20	20	18	16	15	38	52	55	55
Landlocked developing countries	521	527	516	486	456	413	392	25	30	31	44
Least developed countries	1,113	1,095	1,061	993	920	852	821	26	31	32	41
Small island developing States	32	30	28	27	27	24	23	29	35	39	48
World	**5,022**	**4,521**	**4,032**	**3,496**	**3,053**	**2,669**	**2,476**	**51**	**40**	**41**	**47**

Note: All calculations are based on unrounded numbers.

More countries are at risk of missing the SDG target on neonatal mortality than on under-five mortality. On current trends, more than 60 countries will miss the target for neonatal mortality (12 deaths or fewer per 1,000 live births) by 2030, while 53 countries will miss the target for under-five mortality (25 or fewer deaths per 1,000 live births) (Figure 7). Accelerating progress in these 60-some countries to achieve the SDG target on neonatal mortality would save the lives of 5 (4, 7) million newborns from 2019 to 2030. Based on current trends, 26 (24, 29) million newborns would die between 2019 and 2030, and 80 per cent of these deaths would occur in Southern Asia and sub-Saharan Africa.

With modest trends in reducing neonatal mortality in sub-Saharan Africa and high levels of neonatal mortality, many countries in the region are at risk of missing the SDG target on neonatal mortality. On current trends, 42 of 48 countries in the region are projected to miss the SDG neonatal mortality target by 2030. About half are projected to meet the SDG target sometime after 2050 if progress is not accelerated.

It is critical to address the main causes of neonatal mortality, which often differ from the causes of death for older children. Preterm birth, intrapartum-related complications (birth asphyxia or lack of breathing at birth), infections and birth defects caused most neonatal deaths in 2018 (Figure 8). The vast majority of newborn deaths take place in low- and lower-middle-income countries. As neonatal mortality rates decline in higher-income countries, causes other than intrapartum-related causes and sepsis become important to reducing neonatal mortality further. Congenital anomalies and prematurity are the leading causes of neonatal death in higher-income countries. It is possible to improve survival and health of newborns and end preventable stillbirths by reaching high coverage of quality antenatal care, skilled care at birth, postnatal care for mother and baby, and care of small and sick newborns. The high percentage of institutional deliveries (almost 80 per cent globally) offers an important opportunity for providing essential newborn care and identifying and managing high-risk newborns.

Mortality among children aged 5–14 years

The risk of dying between age 5 and before reaching the fifteenth birthday is much lower than for children under 5 years of age. The probability of dying among children aged 5–14 years was 7.1 (6.8, 7.9) deaths per 1,000 children aged 5 years in 2018 – roughly 18 per cent of the under-five mortality rate in 2018, even though the exposure to the risk of dying is twice as long in the 5–14 age group (Figure 2). Still, an estimated 0.9 (0.9, 1.0) million children aged 5–14 years died in 2018 – about 2,500 deaths of children in this age group every day.

The world has halved the mortality rate among children aged 5–14 years since 1990. From 1990 to 2018, the mortality rate in older children declined by 53 per cent, and the number of deaths dropped by 46 per cent from 1.7 (1.7, 1.8) million to 0.9 (0.9, 1.0) million. Most of the regions reduced the probability of dying among children aged 5–14 years by at least half from 1990 to 2018 (Table 5 and Figure 9). At the global level, the average annual rate of reduction was 2.7 (2.3, 2.9) per cent from 1990 to 2018, with a higher rate of reduction for children aged 5–9 years (3.2 per cent) than for children aged 10–14 years (1.8 per cent).

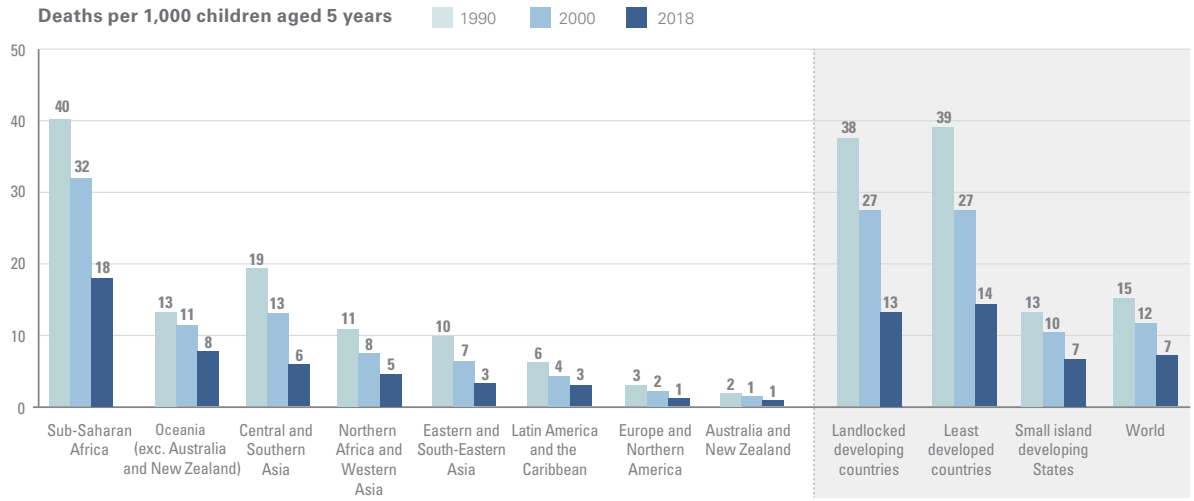
On current trends, 9.8 (9.2, 11.3) million children aged 5–14 years will die between 2019 and 2030. Some 5.8 (5.4, 6.2) million of those deaths (59 per cent) will occur among children aged 5–9 years, and close to 80 per cent of the global deaths at age 5–14 years from 2019 to 2030 will occur in just two regions: sub-Saharan Africa (5.8 (5.3, 7.0) million) and Southern Asia (2 (1.6, 2.5) million).

Globally, mortality rates for children aged 5–9 years are higher than for children aged 10–14 years and deaths among children aged 5–9

FIGURE 9

Mortality among children aged 5–14 years declined in all regions between 1990 and 2018

Probability of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years) by Sustainable Development Goal region, 1990, 2000 and 2018



Note: All figures are based on unrounded numbers.

TABLE 5

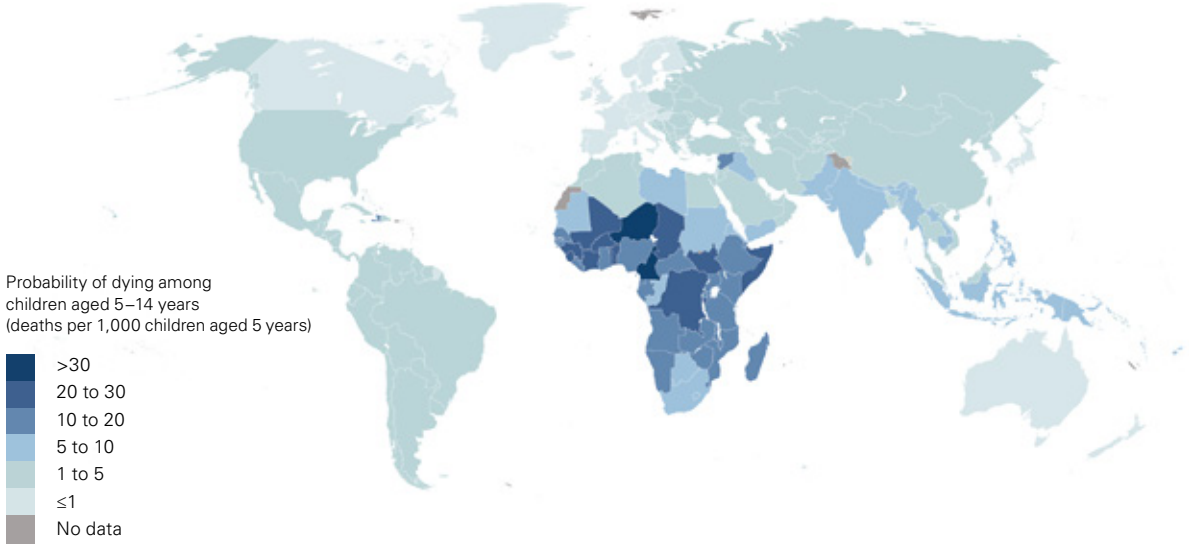
Levels and trends in the probability of dying and the number of deaths among children aged 5–14 years by Sustainable Development Goal region, 1990–2018

	Probabilty of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years)					Decline (per cent)	Annual rate of reduction (per cent)	Number of deaths among children aged 5–14 years (thousands)				
Region	**1990**	**2000**	**2010**	**2015**	**2018**	**1990–2018**	**1990–2018**	**1990**	**2000**	**2010**	**2015**	**2018**
Sub-Saharan Africa	40	32	23	20	18	55	2.9	575	575	528	517	510
Northern Africa and Western Asia	11	8	5	6	5	58	3.1	83	64	48	53	46
Northern Africa	13	8	6	5	5	63	3.6	48	35	26	24	23
Western Asia	9	7	5	6	4	51	2.6	35	30	22	28	23
Central and Southern Asia	19	13	9	7	6	70	4.3	605	469	330	255	219
Central Asia	7	5	4	4	3	50	2.4	8	7	4	4	5
Southern Asia	20	13	9	7	6	70	4.3	597	462	326	251	214
Eastern and South-Eastern Asia	10	7	4	4	3	66	3.9	337	234	133	109	100
Eastern Asia	7	5	3	3	2	68	4.1	169	115	57	47	43
South-Eastern Asia	15	11	7	6	5	67	4.0	169	119	76	62	57
Latin America and the Caribbean	6	4	7	3	3	52	2.7	63	48	76	33	30
Oceania	6	5	5	4	4	40	1.8	3	3	3	2	2
Australia and New Zealand	2	1	1	1	1	58	3.1	1	0	0	0	0
Oceania (exc. Australia and New Zealand)	13	11	10	9	8	42	1.9	2	2	2	2	2
Europe and Northern America	3	2	1	1	1	59	3.2	42	32	18	16	16
Europe	3	3	2	1	1	63	3.5	33	23	12	10	10
Northern America	2	2	1	1	1	45	2.2	9	8	6	6	6
Landlocked developing countries	38	27	18	15	13	64	3.7	277	254	200	181	173
Least developed countries	39	27	20	16	14	63	3.6	571	499	457	387	371
Small island developing States	13	10	41	7	7	49	2.4	13	11	47	8	8
World	15	12	9	8	7	53	2.7	1,708	1,426	1,134	985	923

Note: All calculations are based on unrounded numbers.

MAP 3 **Countries with the highest mortality among children aged 5–14 years are concentrated in Sub-Saharan Africa**

Probability of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years) by country, 2018



Note: The classification is based on unrounded numbers. This map does not reflect a position by UN IGME agencies on the legal status of any country or territory or the delimitation of any frontiers.

years accounted for 61 per cent of all deaths of children aged 5–14 years. In low-income countries, with an average mortality rate among children aged 5–14 years of 16.6 (15.3, 19.3) deaths per 1,000 children aged 5 years, about two thirds of deaths happened in the 5–9 age group, while in high-income countries, with an average rate of 1.1 (1.1, 1.2) deaths, less than half of the deaths among 5- to 14-year-olds occurred at ages 5–9.

Survival chances for children and young adolescents are uneven across the world. In sub-Saharan Africa, the probability of dying among children aged 5–14 years in 2018 was 17.9 deaths per 1,000 children aged 5 years, followed by Oceania (excluding Australia and New Zealand) with 7.8 deaths and Central and Southern Asia with 5.8. More than half (55 per cent) of deaths among children aged 5–14 years occurred in sub-Saharan Africa, followed by Southern Asia with about 24 per cent. The average risk of dying between the fifth and fifteenth birthday was 14 times higher in sub-Saharan Africa than in Northern America and Europe. At the country level, mortality ranged from 0.4 to 37.3 deaths per 1,000 children aged 5 years. The higher mortality countries are concentrated in sub-Saharan Africa (Map 3) and all 14 countries with a mortality rate for children aged 5–14 years above 20 deaths per 1,000 children aged 5 years in 2018 are in sub-Saharan Africa.

Injuries are a leading cause of death among older children and adolescents. Infectious diseases of childhood such as pneumonia, diarrhoea and measles have declined since 2000 for older children and young adolescents, but injuries have not. In fact, injuries (including road traffic injuries, drowning, burns, and falls) rank among the top causes of death and lifelong disability among children aged 5–14 years. The patterns of death in older children and young adolescents reflect the underlying risk profiles of the age groups, with a shift away from infectious diseases of childhood and towards accidents and injuries, notably drowning and road traffic injuries for older children and young adolescents.

Conclusion

Every child's death is a tragedy: As the numbers show, the world is suffering this tragedy at enormous scale. Every single day of 2018, the world saw, on average, 15,000 deaths of children under age 5 – including 7,000 newborn deaths – and 2,500 deaths of children and young adolescents between age 5 and 14. Most of these deaths were due to preventable and treatable causes.

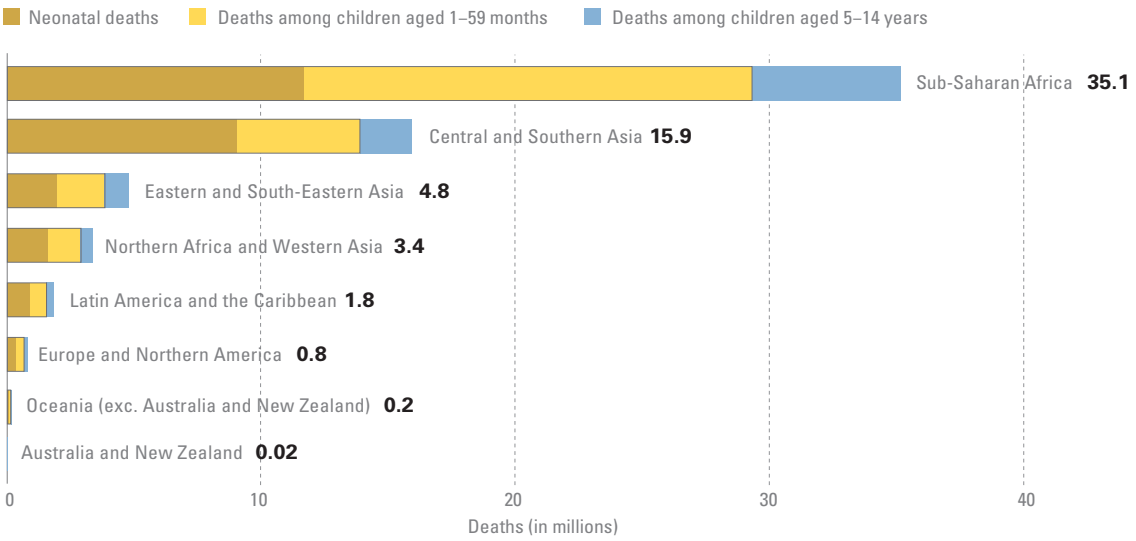
The good news is that concerted actions have led to dramatic reductions in child mortality over the past few decades – global rates of child mortality and the global burden of child deaths are at historic lows. This progress has been achieved in a world beset by natural disasters, wracked by violence and conflict, and confronted with the scourge of epidemics.[15] Success in the face of such challenges reflects the dedicated work of women, families, health workers, communities, governments and others across the globe to save children's lives.

Despite the progress, the unfinished business of ending preventable child deaths looms large. If current trends continue without acceleration, some 52 (49, 58) million children under 5 years of age will die from 2019 to 2030. About half of them will be newborns. Another 10 million children aged 5–14 years will die. The total number of 62 million deaths of children under age 15 is roughly equivalent to the current population of Italy (Figure 10).

While the global burden of child deaths remains high, children's chances of survival vary dramatically across regions and countries. For many children, where they are born and live determines their access to quality, affordable health care. Too many newborns and children continue to die from easily preventable and treatable causes, because the world has failed to ensure their basic right to survival and health.

FIGURE 10 **If current trends continue, four out of five child deaths under age 15 will occur in Sub-Saharan Africa and Central and Southern Asia in 2019–2030**

Cumulative number of projected deaths (in millions) among children under age 15 from 2019–2030 by age group and Sustainable Development Goal region



Note: All calculations are based on unrounded numbers.

Special attention is needed for sub-Saharan Africa, where child mortality rates are the highest in the world while population growth continues at a rapid pace. In that region, 1 in 13 children die before their fifth birthday, a substantially higher risk of death than in Europe, where just 1 in 196 children die under age 5. The region is also expected to experience increasing population, with 483 million births projected in 2019–2030, an increase of 76 million births over the preceding period of the same length. The under-five population is predicted to swell to roughly 199 million by 2030, from 166 million in 2018. The number of women of reproductive age will also increase to 349 million from 248 million during the same period.[8]

The rapid growth in births and population requires additional efforts and investments to scale up high-impact maternal, newborn and child survival interventions, to strengthen the health systems that deliver them and to meet other needs that contribute to child survival. Without accelerated progress to prevent child deaths, 29 million children under age 5 and 6 million children aged 5–14 years will die from 2019 to 2030 in sub-Saharan Africa (Figure 10).

Despite this unnecessary loss of life, major progress is being made in many of the places that need it most, even in some low-income countries with limited resources. Among low-income countries, Eritrea, Ethiopia, Liberia, Malawi, Mozambique, Nepal, Niger, Rwanda, Uganda and Tanzania saw at least a two thirds reduction in the under-five mortality rate in 1990–2018. In Nepal and Rwanda, the neonatal mortality rate declined by 60 per cent over the same period. These statistics provide a clear message: With the right commitments, concerted efforts and political will, bold and ambitious goals are within reach.

Accelerating the reduction in child mortality is possible by expanding high-impact preventative and curative interventions that target the main causes of child deaths and the most vulnerable population. Pneumonia-related deaths have fallen, thanks to the rapid roll-out of vaccines, better nutrition and improved care-seeking behaviour and treatment for symptoms of pneumonia, among other measures.[15] Diarrhoea-related deaths have declined in large part due to improvements in drinking water, sanitation and hygiene, the roll-out of a rotavirus vaccine and widespread access to and use of treatment with oral rehydration salts solutions and zinc.

Prevention, treatment and elimination efforts have averted millions of under-five deaths from malaria. However, globally, pneumonia, diarrhoea and malaria remain the leading causes of death for children under age 5. Injuries play a more prominent role in the deaths of older children and young adolescents. Expanding inexpensive and cost-effective prevention and quality treatment for these causes will improve child survival.

Greater attention to saving newborn lives can accelerate reductions in the under-five deaths burden. As an increasing share of under-five deaths occurs during the neonatal period, a focus on a healthy start to life becomes even more critical. In Southern Asia, where the ratio of neonatal mortality to under-five mortality is high given the level of under-five mortality, interventions to save newborn lives should yield substantial gains. To accelerate progress, greater investment is needed in building stronger health systems and services and improving coverage, quality and equity of care in the antenatal period; care at birth and in the first week of life; and care for small and sick newborns, which gives a triple return on investment by saving maternal and newborn lives and preventing stillbirths and disability.[16] Securing national-level priority for newborn health and survival and implementation of the Every Newborn Action Plan,[16] the UNICEF-WHO-led evidence-based action plan to prevent newborn deaths and stillbirths, are critical to accomplishing the unfinished global agenda for newborns.

To attain the SDG targets and give every child a fair chance to survive, we must urgently address persistent disparities in maternal and child health and ensure universal access to basic services. Efforts and investment must be intensified to reach the most vulnerable countries, communities and children. The numbers presented in this report serve as stark reminder of the progress that has been made – and the work that remains – in safeguarding every child's right to survive.

Country consultation

In accordance with the decision by the Statistical Commission and the United Nations Economic and Social Council resolution 2006/6, UN IGME child mortality estimates, which are used for the compilation of global indicators for SDG monitoring, are produced in consultation with countries. UNICEF and WHO undertook joint country consultations in 2019. The country consultation process gave each country's ministry of health, national statistics office or relevant agency the opportunity to review all data inputs, the estimation methodology and the draft estimates for mortality in children under age 5 and mortality among children aged 5–14 years for its country. The objective was to identify relevant data that were not included in the UN IGME database and to allow countries to review and provide feedback on estimates. In 2019, 115 of 195 countries sent comments or additional data. After the consultations, the UN IGME draft estimates for mortality in children under age 5 were revised for 92 countries using new data, and the estimates for mortality in children under age 5–14 were revised for 82 countries due to new data. All countries were informed about changes in their estimates.

Estimating Child Mortality

This chapter summarizes the methods UN IGME uses to generate child mortality estimates for children under age 5 and children aged 5–14 years.

UN IGME updates its estimates of neonatal, infant, under-five mortality and mortality among children aged 5–14 years annually after reviewing newly available data and assessing their quality. These estimates are widely used in UNICEF's flagship publications, the United Nations Secretary-General's annual SDG report, and publications by other United Nations agencies, governments and donors.

UN IGME is led by UNICEF and includes members from WHO, the World Bank Group and United Nations Population Division of the Department of Economic and Social Affairs. It was established in 2004 to advance the work on monitoring progress towards the achievement of child survival goals. Its Technical Advisory Group (TAG), comprising leading academic scholars and independent experts in demography and biostatistics, provides guidance on estimation methods, technical issues and strategies for data analysis and data quality assessment.

Overview

UN IGME follows the following broad strategy to arrive at annual estimates of child mortality:

1. Compile and assess the quality of all available nationally representative data relevant to the

estimation of child mortality, including data from vital registration systems, population censuses, household surveys and sample registration systems

2. Assess data quality, recalculate data inputs and make adjustments as needed by applying standard methods

3. Fit a statistical model to these data to generate a smooth trend curve that averages possibly disparate estimates from the different data sources for a country

4. Extrapolate the model to a target year (in this case, 2018)

To increase the transparency of the estimation process, UN IGME has developed a Child Mortality Estimation (CME) web portal, available at <www.childmortality.org>. It includes all available data and shows estimates for each country, as well as which data are currently officially used by UN IGME. Once new estimates are finalized, the CME web portal is updated accordingly.

UN IGME applies a common methodology across countries and uses original empirical data from each country but does not report figures produced by individual countries using other methods, which would not be comparable to other country estimates. Applying a consistent methodology allows for comparisons between countries, despite the varied number and types of data sources.

UN IGME estimates are based on nationally available data from censuses, surveys or vital registration systems. UN IGME does not use covariates to derive its estimates, but rather applies a curve fitting method to empirical data after data quality assessment. Countries often use a single source for their official estimates or apply methods different to those used by UN IGME. The differences between UN IGME and national official estimates are usually not large if the empirical data are of good quality. UN IGME aims to minimize errors for each estimate, harmonize trends over time, and produce up-to-date and properly assessed estimates of child mortality. Because errors are inevitable in data, there will always be uncertainty around data and estimates, both nationally and internationally. To allow for added comparability, UN IGME generates all child mortality estimates with uncertainty bounds.

Data sources

Nationally representative estimates of under-five mortality can be derived from several different sources, including civil registration and sample surveys. Demographic surveillance sites and hospital data are excluded as they are rarely representative. The preferred source of data is a civil registration system that records births and deaths on a continuous basis. If registration is complete and this system functions efficiently, the resulting estimates will be accurate and timely. However, many low- and middle-income countries do not have well-functioning vital registration systems, and household surveys, such as the UNICEF-supported Multiple Indicator Cluster Surveys, the USAID-supported Demographic and Health Surveys, and periodic population censuses have become the primary sources of data on mortality among children under age 5 and aged 5–14 years. These surveys ask women about the survival of their children, and it is these reports (or microdata upon availability) that provide the basis of child mortality estimates for a majority of low- and middle-income countries.

The first step in the process of arriving at estimates of levels and recent trends of child mortality is to compile all newly available data and add the data to the UN IGME database. Newly available data will include recently released vital statistics from a civil registration system, results from recent censuses and household surveys and, occasionally, results from older censuses or surveys not previously available.

The full set of empirical data used in this analysis is publicly available from the UN IGME web portal, at <www.childmortality.org>. In this round of estimation, a substantial amount of newly available data has been added to the underlying database for under-five, infant and neonatal mortality. Data from 40 new surveys or censuses were added for 36 countries and data from vital registration systems or sample vital registration systems were updated for 133 countries. In total, more than 1,500 country-year data points from about 300 series were added or updated. The database, as of August 2019, contains over 20,000 country-year data points from more than 1,600 series across 195 countries from 1990 (or earlier, back to 1940) to 2018. For mortality among children aged 5–14 years, data were calculated from censuses and surveys or vital registration records of population and deaths in the age group. The database for mortality among children aged 5–14 years contains more than 6,600 data points.

The increased empirical data have substantially changed the UN IGME estimates for some countries from previous editions partly because the fitted trend line is based on the entire time series of data available for each country. The estimates presented in this report may differ from and are not necessarily comparable with previous sets of UN IGME estimates or the most recent underlying country data.

Whatever the method used to derive the estimates, data quality is critical. UN IGME assesses data quality and does not include data sources with substantial non-sampling errors or omissions as underlying empirical data in its statistical model.

Civil registration data

Data from civil registration systems are the preferred data source for child mortality estimation. The calculation of under-five mortality rates (U5MR, the probability of dying between birth and exactly 5 years of age, expressed per 1,000 live births), infant mortality rates (IMR, the probability of dying between birth and exactly one year of age, expressed per 1,000 live births) and mortality rates among children aged 5–14 years (the probability a five-year-old would die before reaching age 15, expressed per 1,000 children aged 5 years) are derived from a standard period abridged life table using the age-specific deaths and midyear population counts from civil registration data. The neonatal mortality rate (NMR, the probability of dying in the first 28 days of life, expressed per 1,000 live births) is calculated with the number of deaths of infants under one month of age and the number of live births in a given year.

For civil registration data (with available data on the number of deaths and midyear populations), annual observations were initially constructed for all observation years in a country. For country-years in which the coefficient of variation exceeded 10 per cent for children under 5 years or 20 per cent for children aged 5–14 years, deaths and midyear populations were pooled over longer periods, starting from more recent years and combining those with adjacent previous years, to reduce spurious fluctuations in countries where small numbers of births and deaths were observed. The coefficient of variation is defined to be the stochastic standard error of the ${}_5q_0$ (${}_5q_0$=U5MR/1,000) or ${}_1q_0$ (${}_1q_0$=IMR/1,000) observation divided by the value of the ${}_5q_0$ or 1q0 observation. The stochastic standard error of the observation is calculated using a Poisson approximation using live birth numbers, given by sqrt(${}_5q_0$/lb) (or similarly sqrt(${}_1q_0$/lb), where lb is the number of live births in the year of the observation.[18] After this recalculation of the civil registration data, the standard errors are set to a minimum of 2.5 per cent for input into the model. A similar approach was used for neonatal mortality and mortality among children aged 5–14 years.

In previous revisions, UN IGME adjusted vital registration data for incompleteness in the reporting of early infant deaths in several European countries. For more details on the past adjustment, see Notes.[19]

Survey data

The majority of survey data on child mortality comes in one of two forms: the full birth history (FBH), whereby women are asked for the date of birth of each of their children, whether the child is still alive, and if not, the age at death; and the summary birth history (SBH), whereby women are asked only about the number of their children ever born and the number that have died (or equivalently the number still alive).

FBH data, collected by all Demographic and Health Surveys and increasingly by Multiple Indicator Cluster Surveys and other nationally representative surveys, allow for the calculation of child mortality indicators for specific time periods in the past. This allows these survey programmes to publish under-five child mortality estimates for three 5-year periods before the survey, that is, 0 to 4, 5 to 9, 10 to 14, etc.[20, 21, 22] UN IGME has recalculated estimates for calendar year periods, using single calendar years for periods shortly before the survey, and then gradually increasing the number of years for periods further in the past, whenever microdata from the survey is available. The cut-off points for a given survey for shifting from estimates for single calendar years to two years, or two years to three, etc., are based on the coefficients of variation of the estimates.[23]

Mortality estimates of children aged 5–14 years can also be derived from the FBH module, but the probability of dying among children in this age group ($_{10}q_5$) is estimated for the period 0–12 years before the survey and divided into periods according to the coefficient of variation of the estimates (< 20 per cent).

In general, SBH data, collected by censuses and many household surveys, use the age of the woman as an indicator of the age of her children and their exposure time to the risk of dying, and employ models to estimate mortality indicators for periods in the past for women ages 25 to 29 through ages 45 to 49. This method is well known but has several shortcomings. Starting with the 2014 round of estimation, the UN IGME changed the method of estimation for SBHs to one based on classification of women by the time that has passed since their first birth. This method has several benefits over the previous one. First, it generally has lower sampling errors. Second, it avoids the problematic assumption that the mortality estimates derived for each age group of women adequately represent the mortality of the whole population. As a result, it has less susceptibility to the selection effect of young women who give birth early, since all women who give birth necessarily must have a first birth and therefore are not selected for. Third, the method tends to show less fluctuation across time, particularly in countries with relatively low fertility and mortality. The UN IGME considers the improvements in the estimates based on time since first birth worthwhile when compared to the estimates derived from the classification by age of mother, hence in cases where the microdata are available, the UN IGME has reanalysed the data using the new method. Due to known biases in the estimation for 0–4 year period by time since first birth and for the 15–19 and 20–24 age groups of women, these data points are excluded in the estimation model.

Moreover, following advice from UN IGME's TAG, child mortality estimates from SBH were not included if estimates from FBH in the same survey were available.[24] SBH data are not used to derive neonatal mortality or mortality among children aged 5–14 years.

Adjustment for missing mothers in high-HIV settings

In populations severely affected by HIV/AIDS, HIV-positive children will be more likely to die than other children and will also be less likely to be reported since their mothers will also have been more likely to die. Child mortality estimates will thus be biased downwards. The magnitude of the bias will depend on the extent to which the elevated under-five mortality of HIV-positive children is not reported because of the deaths of their mothers. The TAG developed a method to adjust HIV/AIDS-related mortality for each survey data observation from FBH during HIV/AIDS epidemics (1980–present) by adopting a set of simplified but reasonable assumptions about the distribution of births to HIV-positive women, primarily relating to the duration of their infection, vertical transmission rates, and survival times of both mothers and children from the time of the birth.[25] This method was applied to all direct estimates from FBHs. No adjustment was included for HIV-related biases in the 5–14 age group, since no method currently exists to estimate the magnitude of this bias in the probability $_{10}q_5$.

Systematic and random measurement error

Data from these different sources require different calculation methods and may suffer from different errors, such as random errors in sample surveys or systematic errors due to misreporting. Thus, different surveys often yield widely different estimates of U5MR for a given time period, as illustrated in Figure 11. In order to reconcile these differences and

take better account of the systematic biases associated with the various types of data inputs, the TAG developed an estimation method to fit a smoothed trend curve to a set of observations and to extrapolate that trend to a defined time point, in this case, 2018. This method is described in the following section.

Estimation of under-five mortality rates

Estimation and projection of under-five mortality rates was undertaken using the Bayesian B-splines bias-adjusted model, referred to as the B3 model. This model was developed, validated and used to produce the previous rounds of the UN IGME child mortality estimates, including the previously published round in September 2018.[26, 27]

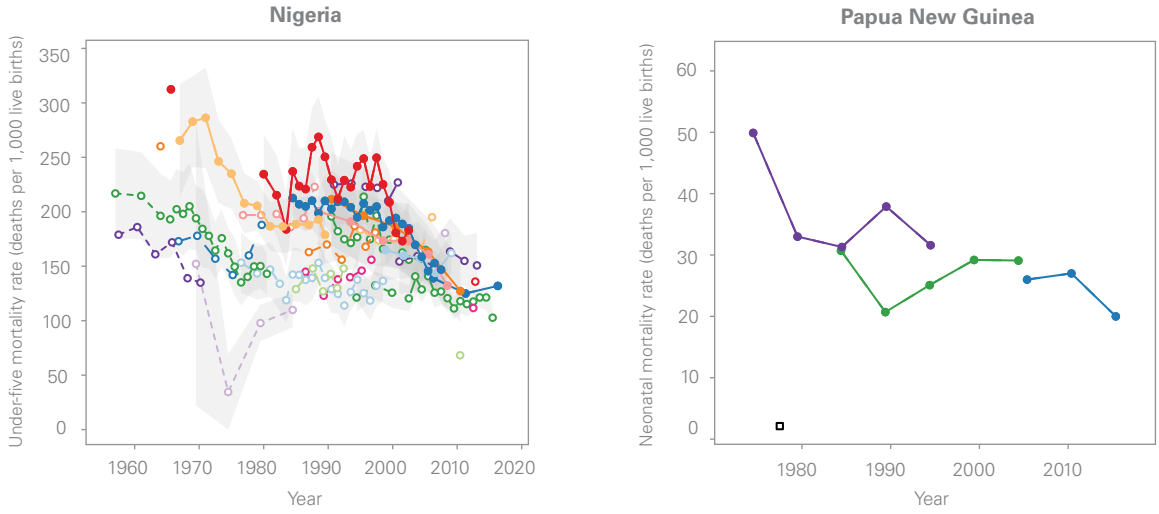
In the B3 model, log(U5MR) is estimated with a flexible splines regression model. The spline regression model is fitted to all U5MR observations in the country. An observed value for U5MR is considered to be the true value for U5MR multiplied by an error multiplier, i.e., observed U5MR = true U5MR * error multiplier, or on the log scale, log(observed U5MR) = log(true U5MR) + log(error multiplier). The error multiplier refers to the relative difference between an observation and the truth with error multiplier equal to 1 (and log(error multiplier) equal to zero) meaning no error.

While estimating the true U5MR, properties of the errors that provide information about the quality of the observation, or in other words, the extent of error that we expect, are taken into account. These properties include: the standard error of the observation, its source type (e.g., Demographic and Health Surveys versus census) and whether the observation is part of a data series from a specific survey (and how far the data series is from other series with overlapping observation periods). These properties are summarized in the so-called data model. When estimating the U5MR, the data model adjusts for errors in observations, including the average systematic biases associated with different types of data sources, using information on data quality for different source types from all countries.

Figure 12 displays the U5MR over time for Senegal, used here for illustrative purposes.

Compared with the previously applied Loess estimation approach, the B3 model better

FIGURE 11 **Empirical child mortality data in Nigeria and Papua New Guinea**



Note: All data available for the country are shown as coloured points, with observations from the same data series joined by lines, and each colour identifying different data sources. Grey bands in the left plot represent the standard errors of the observations where available or applicable. Filled points and solid lines represent data series/observations that were included in the statistical model.

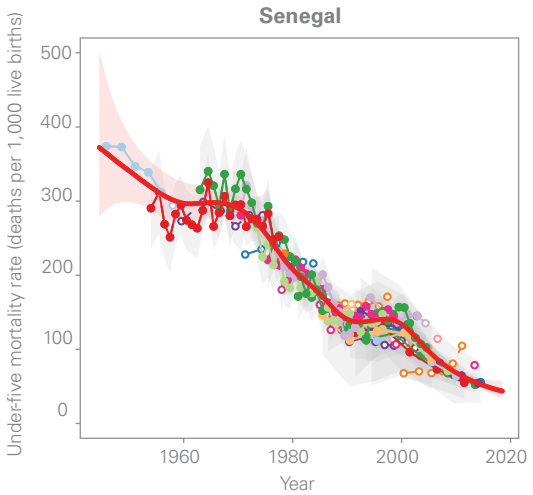
accounts for data errors, including biases and sampling and non-sampling errors in the data. It can more accurately capture short-term fluctuations in the U5MR and its annual rate of reduction, and thus is better able to account for evidence of acceleration in the decline of under-five mortality from new surveys. Validation exercises show that the B3 model also performs better in short-term projections.

The B3 method was developed and implemented for the UN IGME by Leontine Alkema and Jin Rou New with guidance and review by the UN IGME's TAG. A more complete technical description of the B3 model is available elsewhere.[18]

Estimation of infant mortality rates

In general, the B3 model described above is applied to the U5MR for all countries (except for the Democratic People's Republic of Korea, where a non-standard method was employed). For countries with high-quality vital registration data (covering a sufficient period of time and deemed to have high levels of completeness and coverage), the B3 model is also used, but is fitted to the logit transform of r, i.e., log(r/1-r), where r is the ratio of the IMR estimate to the median B3 estimate of U5MR in the corresponding country-year. This is to restrict the IMR estimate to be lower than the U5MR estimate for any given year. For the remaining countries, the IMR is derived from the U5MR, through the use of model life tables that contain known regularities in age patterns of child mortality.[28] The advantage of this approach is that it avoids potential problems with the underreporting of neonatal deaths in some countries and ensures that the internal relationships of the three indicators are consistent with established norms. For Sahelian countries (Burkina Faso, Chad, the Gambia, Mali, Mauritania, the Niger and Senegal), the relationship from model life tables does not apply between infant and child mortality, thus a logit transform of the ratio of IMR/U5MR is used to estimate IMR from U5MR using data from FBHs and a multilevel regression with country-specific intercept.

FIGURE 12 **Empirical under-five mortality data and estimates from the B3 model for Senegal**



Note: The B3 estimates are in red. Ninety per cent uncertainty intervals for the U5MR are given by the pink bands. All data available for the country are shown as coloured points, with observations from the same data series joined by lines. Filled points and solid lines represent data series/observations that were included for curve-fitting. Grey bands represent the standard errors of the observations where available or applicable.

Adjustment for rapidly changing child mortality driven by HIV/AIDS

To capture the extraordinarily rapid changes in child mortality driven by HIV/AIDS over the epidemic period in some countries, the regression models were fitted to data points for the U5MR from all causes other than HIV/AIDS, and then UNAIDS estimates of HIV/AIDS under-five mortality were added to estimates from the regression model. This method was used for 17 countries where the HIV prevalence rate exceeded 5 per cent at any point in time since 1980. Steps were as follows:

1. Compile and assess the quality of all newly available nationally representative data relevant to the estimation of child mortality

2. Adjust survey data to account for possible biases in data collection and in HIV/AIDS epidemic

3. Use UNAIDS estimates of HIV/AIDS child mortality[29] to adjust the data points from 1980 onwards to exclude HIV/AIDS deaths

4. Fit the standard statistical model to the observations to HIV-free data points

5. Extrapolate the model to the target year; in this case, 2018

6. Add back estimates of deaths due to HIV/AIDS (from UNAIDS)

7. Derive a non-AIDS curve of IMR from the estimated U5MR using model life tables; add the UNAIDS estimates of HIV/AIDS deaths for children under age 1 to generate the final IMR estimates

Estimation of under-five and infant mortality rates by sex

In 2012, the UN IGME produced estimates of U5MR for males and females separately for the first time.[30] In many countries, fewer sources have provided data by sex than for both sexes combined. For this reason, the UN IGME, rather than estimate U5MR trends by sex directly from reported mortality levels by sex, uses the available data by sex to estimate a time trend in the sex ratio (male/female ratio) of U5MR instead. Bayesian methods for the UN IGME estimation of sex ratios with a focus on the estimation and identification of countries with outlying levels or trends were used. A more complete technical description of the model is available elsewhere.[31]

Estimation of neonatal mortality rates

The NMR is defined as the probability of dying before 28 days, per 1,000 live births. In 2015, the UN IGME method for estimating NMR was updated. The new Bayesian methodology is similar to that used to estimate U5MR and derive estimates by sex. It has the advantage that, compared to the previous model, it can capture data-driven trends in NMR within countries and over time for all countries. A more complete technical description of the model is available elsewhere.[32]

For neonatal mortality in HIV-affected and crisis-affected populations, the ratio is estimated initially for non-AIDS and non-crisis mortality. After estimation, crisis neonatal deaths are added back on to the neonatal deaths to compute the total estimated neonatal mortality rate. No AIDS deaths are added to the NMR, thereby assuming these deaths only affect child mortality after the first month of life.

Estimation of mortality rates among children aged 5–14 years

Since 2017, UN IGME has generated country-specific trend estimates of the mortality in children aged 5–14 years – that is, the probability that a child aged 5 years dies before reaching his or her fifteenth birthday ($_{10}q_5$). The methods used are similar to those used to estimate the U5MR. The B3 statistical model developed for under-five mortality was used to obtain a smooth trend curve in $_{10}q_5$ as well. In 33 countries, there were not enough data inputs to estimate the probability $_{10}q_5$ from vital registration, surveys or censuses. For these cases, the probability $_{10}q_5$ was modelled on the draft estimates of U5MR, and an expected relation between mortality in the 0–4 and 5–14 age groups, as observed in countries with sufficient data series. A linear regression was used to regress $\log(_{10}q_5)$ against log(U5MR), with region-specific dummies, and the coefficients of this regression were used to predict the probability $_{10}q_5$ between 1990 and 2018 for countries with insufficient data sources. The advantage of this approach is that no model life tables are used (such life tables are based on the historical experience of countries with high-quality vital registration data and do not always adequately reflect mortality age patterns in low- and middle-income countries). A more complete technical description of the model is available elsewhere.[33]

No adjustment was included for HIV-related biases in the 5–14 age group, since no method currently exists to estimate the magnitude of this bias in the probability $_{10}q_5$. This bias should be less severe when estimating mortality in the 5–14 age group as compared with the U5MR, because in the absence of treatment, the majority of children infected through their mothers will die before reaching age 5.

Estimation of child mortality due to conflict and natural disasters

Estimated deaths for major crises were derived from various data sources from 1990 to present. Natural disasters were obtained from the Centre for Research on the Epidemiology of Disasters' International Disaster Database,[34] with under-five proportions estimated as described elsewhere,[35] and conflict deaths were taken from Uppsala Conflict Data Program/Peace Research Institute

Oslo data sets as well as reports prepared by the UN and other organizations. Estimated child deaths due to major crises were included if they met the following criteria: (1) the crisis was isolated to a few years; (2) under-five crisis deaths or crisis deaths among children aged 5–14 years were greater than 10 per cent of non-crisis deaths in the age group; (3) crisis U5MR or crisis $_{10}q_5$ was > 0.2 deaths per 1,000; (4) the number of crisis deaths among children under 5 years or among those 5–14 years old was > 10 deaths.

These criteria resulted in 18 different crises being explicitly incorporated into the UN IGME estimates for under-five mortality and 42 different crises being incorporated into the mortality estimates among children aged 5–14 years. Because the background mortality rates were relatively low in the 5–14 age group, crisis deaths represented a larger share of deaths, and thus more crises met these criteria than for under-five mortality. Crisis deaths were included in the estimates by first excluding data points from crisis years, fitting the B3 model to the remaining data, and then adding the crisis-specific mortality rate to the fitted B3 curve. Crisis death estimates are uncertain, but presently no uncertainty around crisis deaths is included in the uncertainty intervals of the estimates. Instead, we assume the relative uncertainty in the adjusted estimates is equal to the relative uncertainty in the non-adjusted estimates; this assumption will be revisited in the near future.

UN IGME has assessed recent crises and, based on the scarcity of currently available data and the difficulties of estimating the broader impact of these crises on health systems, decided to hold the estimates constant from the start of the crisis while increasing the uncertainty over the crisis time for four countries: South Sudan, the Syrian Arab Republic, Venezuela (Bolivarian Republic of) and Yemen. Where applicable, direct crisis deaths have been added to the constant trend estimate. UN IGME will review new data, if available, in the next estimation round and revise estimates accordingly.

Estimation of uncertainty intervals

Given the inherent uncertainty in child mortality estimates, 90 per cent uncertainty intervals are used by UN IGME instead of the more conventional 95 per cent intervals. While reporting intervals based on higher levels of uncertainty (i.e., 95 per cent instead of 90 per cent) would have the advantage that the chance of not having included the true value in the interval is smaller, the disadvantage of choosing higher uncertainty levels is that intervals lose their utility to present meaningful summaries of a range of likely outcomes if the indicator of interest is highly uncertain. Given this trade-off and the substantial uncertainty associated with child mortality estimates, UN IGME chose to report 90 per cent uncertainty intervals, or, in other words, intervals for which there is a 90 per cent chance that they contain the true value, to encourage wider use and interpretation of uncertainty intervals.

Extrapolation to common reference year

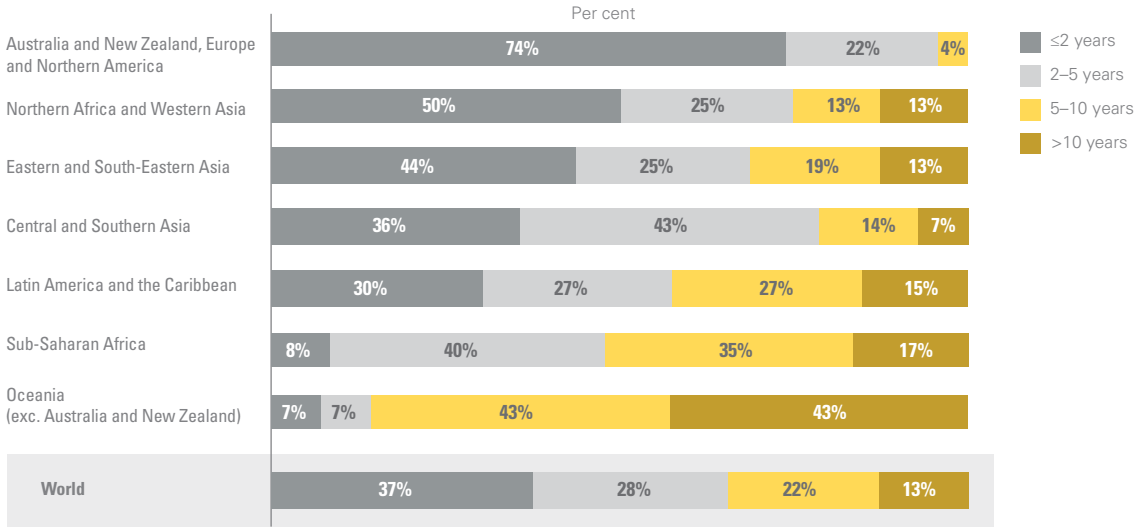
If the underlying empirical data refer to an earlier reference period than the end year of the period the estimates are reported, UN IGME extrapolates the estimates to the common end year, in this round to 2018. UN IGME does not use covariates to derive the estimates but uses the past trend in a country and the global trend to extrapolate to the target year. The average extrapolation period in the 2019 round of estimation was 4.7 years for under-five mortality, with half of the countries having data points within the past 3.1 years. For more than a third of all countries, the latest available child mortality data point was more than five years old (Figure 13).

Calculating number of deaths

Under-five, infant and neonatal deaths

A birth-week cohort method is used to calculate the absolute number of deaths among neonates, infants and children under age 5. First, each annual birth cohort is divided into 52 equal birth-week cohorts. Then each birth-week cohort is exposed throughout the first five years of life to the appropriate calendar year- and age-specific mortality rates depending on cohort age. For example, the twentieth birth-week cohort of the year 2000 will be exposed to the infant mortality rates in both 2000 and 2001. All deaths from birth-week cohorts occurring as a result of exposure to the mortality rate for a given calendar year are allocated to that year and are

FIGURE 13 **Distribution of the country extrapolation periods in each Sustainable Development Goal region and the world**



summed by age group at death to get the total number of deaths for a given year and age group. Continuing with the above example, deaths from the twentieth birth-week cohort of the year 2000 would contribute to infant deaths in year 2000 and 2001. Any deaths occurring among the twentieth birth-week cohort of year 2000 after the twentieth week in 2001 would contribute to under-five deaths for year 2001 and so forth. Under-five deaths in each calendar year are calculated by summing up all the deaths under age 5 across all age group cohorts in that year. The annual estimate of the number of live births in each country from the World Population Prospects 2019[8] is used to calculate the number of deaths.

Deaths among children aged 5–14 years

The absolute number of deaths among children aged 5–14 years in a given year and country is calculated using the central death rates for the 5–9 and 10–14 age groups, ${}_5M_9$ and ${}_{10}M_{14}$, computed from the estimated ${}_5q_5$ and ${}_5q_{10}$ using a standard period abridged life table. The central death rates are then multiplied by the country population estimates for the respective age groups from the World Population Prospects 2019[8] to calculate the number of deaths.

Notes

1. Values in parentheses indicate 90 per cent uncertainty intervals for the estimates.

2. United Nations, Convention on the Rights of the Child, Treaty Series, vol. 1577, 1989, p. 3.

3. Every Woman Every Child, The Global Strategy for Women's, Children's and Adolescents' Health (2016–2030), <www.who.int/life-course/partners/global-strategy/global-strategy-2016-2030/en>, accessed 3 September 2019.

4. See <sustainabledevelopment.un.org>.

5. These estimates supersede previously published estimates. Differences with previously published estimates should not be interpreted as representing time trends.

6. The annual rate of reduction (ARR) in the mortality rates is defined as $ARR=\log(\text{Mortality rate}_{t2}/\text{Mortality rate}_{t1}) / (t_1 - t_2)$ where t_1 and t_2 refer to different years with $t_1 < t_2$.

7. All references to regions in this report are based on the Sustainable Development Goal regional classification. See <unstats.un.org/sdgs/indicators/regional-groups>.

8. United Nations Department of Economic and Social Affairs Population Division, World Population Prospects 2019, United Nations, New York, 2019.

9. Fragility is defined as the combination of exposure to risk and insufficient coping capacity of the state, system and/or communities to manage, absorb or mitigate those risks. Fragility can lead to negative outcomes including violence, the breakdown of institutions, displacement, humanitarian crises or other emergencies (Organisation for Economic Co-operation and Development, (2016), States of Fragility 2016: Understanding Violence, p.22, OECD Publishing, Paris, https://doi.org/10.1787/9789264267213-en.).

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11. Li, Zehang, et al., with support from the United Nations Inter-agency Group for Child Mortality Estimation and its Technical Advisory Group, 'Changes in the Spatial Distribution of the Under-Five Mortality Rate: Small-area analysis of 122 DHS surveys in 262 subregions of 35 countries in Africa', *PLoS One*, vol. 14, no. 1, 22 January 2019.

12. The annual rate of reduction (ARR) from 2000–2018 is used to project mortality rates at the country level from 2019–2030, with the neonatal mortality rate constrained so as not to exceed the under-five mortality rate. If a country had a negative ARR in 2000–2018 (i.e., an increase in mortality rates in 2000–2018), the rate was held constant at the estimated 2018 value. If a country reached the current lowest observed mortality level among countries with more than 10,000 live births during the projection period, the mortality rate was held constant at that lowest observed level for the remainder of the projection period. Regional aggregates were calculated based on the projected country-level estimates. Crisis mortality was removed from the estimates for the calculation of the ARR. Uncertainty intervals (90 per cent) in the projections are calculated by projecting each sample trajectory from the posterior distribution forward in the manner described above and taking the 5th and 95th percentile for each year of the projection period.

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16. World Health Organization, United Nations Children's Fund, 'Every Newborn: An action plan to end preventable deaths', 30 June 2014, <www.healthynewbornnetwork.org/resource/every-newborn-action-plan>, accessed 3 September 2019.

17. Economic and Social Council, 'Statistical Commission Report on the Forty-eighth Session, 7–10 March 2017', E/2017/24-E/CN.3/2017/35, United Nations, New York, 2017.

18. Alkema, Leontine, and Jin Rou New, 'Global Estimation of Child Mortality Using a Bayesian B-spline Bias-reduction Method', *The Annals of Applied Statistics*, vol. 8, no. 4, 2014, pp. 2122–2149.

19. There were concerns about incompleteness of early infant mortality data from civil registration. A European report on perinatal indicators, for example, noted wide variation in how European countries define infant mortality, due to differences in birth and death registration practices (that is, differences in the cut-off points for acceptable weight or estimated gestation period to be registered as a birth and subsequent death).[36, 37] This discrepancy can lead to underreporting of infant deaths by some countries, particularly when compared with countries that use a broader definition for live birth.[38, 39]

The UN IGME previously carried out an analysis of the ratio of early neonatal (under seven days) deaths to total neonatal deaths, which showed that several countries, many in Eastern Europe, had significantly lower values than what would be expected, suggesting an undercounting of early infant deaths. The results of this analysis were used as an upwards adjustment of 10 per cent or 20 per cent to under-five mortality rates across all years for several countries in previous UN IGME reports.

This assessment was revisited in the 2017 estimation round using the latest data, and the clear signal of underreporting was no longer apparent across countries. Therefore, the UN IGME has removed these adjustment factors in the estimates for this publication. Going forward, the UN IGME will assemble finer age-specific child mortality data and attempt to determine the current level of underreporting bias in different countries, and how that bias has changed over time. This analysis could lead to a different adjustment approach in future estimates.

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Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

	Under-five mortality rate (U5MR) with 90 per cent uncertainty interval (deaths per 1,000 live births)									Number of under-five deaths with 90 per cent uncertainty interval (thousands)[a]					
	1990			2018			Annual rate of reduction (ARR) (per cent) 1990–2018			1990			2018		
Country	U5MR	Lower bound	Upper bound	U5MR	Lower bound	Upper bound	ARR	Lower bound	Upper bound	Under-five deaths	Lower bound	Upper bound	Under-five deaths	Lower bound	Upper bound
Afghanistan	**179**	164	195	**62**	50	75	**3.8**	3.0	4.6	**111**	102	120	**74**	60	90
Albania	**41**	36	46	**9**	8	9	**5.5**	5.0	6.0	**3**	3	4	**0**	0	0
Algeria	**50**	46	53	**23**	22	25	**2.7**	2.3	3.0	**41**	38	44	**24**	23	25
Andorra	**11**	7	19	**3**	2	5	**4.7**	1.8	7.7	**0**	0	0	**0**	0	0
Angola	**223**	198	252	**77**	36	144	**3.8**	1.5	6.5	**126**	112	142	**94**	44	175
Antigua and Barbuda	**28**	18	44	**6**	5	9	**5.2**	3.2	7.3	**0**	0	0	**0**	0	0
Argentina	**29**	28	29	**10**	10	11	**3.8**	3.6	4.0	**21**	20	21	**8**	7	8
Armenia	**49**	45	54	**12**	9	16	**4.9**	4.0	6.0	**4**	3	4	**1**	0	1
Australia	**9**	9	9	**4**	4	4	**3.3**	3.0	3.5	**2**	2	2	**1**	1	1
Austria	**10**	9	10	**4**	3	4	**3.6**	3.2	3.9	**1**	1	1	**0**	0	0
Azerbaijan	**96**	87	105	**22**	14	32	**5.3**	3.8	6.8	**20**	18	21	**4**	2	5
Bahamas	**24**	22	25	**10**	8	13	**3.0**	2.1	3.9	**0**	0	0	**0**	0	0
Bahrain	**23**	22	24	**7**	6	9	**4.2**	3.5	4.9	**0**	0	0	**0**	0	0
Bangladesh	**144**	140	148	**30**	27	33	**5.6**	5.2	6.0	**512**	498	528	**89**	80	98
Barbados	**18**	17	19	**12**	9	17	**1.4**	0.3	2.5	**0**	0	0	**0**	0	0
Belarus	**15**	15	16	**3**	3	4	**5.3**	5.1	5.6	**2**	2	2	**0**	0	0
Belgium	**10**	10	10	**4**	3	4	**3.6**	3.1	4.1	**1**	1	1	**0**	0	1
Belize	**38**	34	43	**13**	12	15	**3.9**	3.3	4.5	**0**	0	0	**0**	0	0
Benin	**175**	165	187	**93**	82	106	**2.3**	1.8	2.7	**38**	36	41	**38**	33	43
Bhutan	**127**	113	147	**30**	19	44	**5.2**	3.7	6.9	**2**	2	3	**0**	0	1
Bolivia (Plurinational State of)	**121**	115	128	**27**	21	34	**5.4**	4.5	6.3	**29**	27	30	**7**	5	8
Bosnia and Herzegovina	**18**	18	19	**6**	5	7	**4.1**	3.6	4.5	**1**	1	1	**0**	0	0
Botswana	**51**	44	59	**36**	16	73	**1.2**	-1.3	4.2	**2**	2	3	**2**	1	4
Brazil	**63**	59	68	**14**	13	17	**5.3**	4.7	5.8	**233**	217	250	**42**	37	48
Brunei Darussalam	**13**	13	14	**12**	10	13	**0.6**	0.0	1.1	**0**	0	0	**0**	0	0
Bulgaria	**18**	18	19	**7**	7	8	**3.4**	3.2	3.6	**2**	2	2	**0**	0	0
Burkina Faso	**199**	187	212	**76**	55	105	**3.4**	2.3	4.6	**79**	75	84	**56**	41	77
Burundi	**174**	158	192	**58**	40	85	**3.9**	2.5	5.3	**46**	41	50	**25**	17	36
Cabo Verde	**61**	59	63	**19**	16	25	**4.1**	3.2	4.9	**1**	1	1	**0**	0	0
Cambodia	**116**	107	125	**28**	15	50	**5.1**	3.0	7.2	**44**	41	48	**10**	6	18
Cameroon	**137**	128	147	**76**	60	96	**2.1**	1.3	3.0	**69**	65	75	**66**	52	84
Canada	**8**	8	8	**5**	5	5	**1.8**	1.6	2.0	**3**	3	3	**2**	2	2
Central African Republic	**180**	160	199	**116**	70	192	**1.5**	-0.3	3.4	**21**	18	23	**19**	11	32
Chad	**212**	197	229	**119**	92	150	**2.1**	1.2	3.0	**60**	56	65	**75**	58	94
Chile	**19**	19	20	**7**	6	9	**3.5**	2.8	4.2	**6**	5	6	**2**	1	2
China	**54**	50	59	**9**	8	10	**6.5**	6.0	7.1	**1,377**	1,273	1,501	**146**	128	167
Colombia	**35**	33	38	**14**	11	19	**3.2**	2.1	4.3	**31**	29	34	**10**	8	14
Comoros	**125**	111	140	**67**	34	142	**2.2**	-0.5	4.7	**2**	2	2	**2**	1	4
Congo	**90**	79	102	**50**	31	83	**2.1**	0.2	3.9	**8**	7	9	**9**	5	14
Cook Islands	**24**	22	27	**8**	5	13	**4.0**	2.2	5.8	**0**	0	0	**0**	0	0
Costa Rica	**17**	16	17	**9**	8	10	**2.3**	1.9	2.7	**1**	1	1	**1**	1	1
Côte d'Ivoire	**155**	145	166	**81**	66	99	**2.3**	1.6	3.1	**76**	71	82	**70**	57	86
Croatia	**13**	13	13	**5**	4	5	**3.6**	3.2	4.0	**1**	1	1	**0**	0	0

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

	Sex-specific under-five mortality rate (deaths per 1,000 live births)				Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)[a]		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)[a]		Probability of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years)		Number of deaths among children aged 5–14 years (thousands)[a]	
	1990		2018													
Country	Male	Female	Male	Female	1990	2018	1990	2018	1990	2018	1990	2018	1990	2018	1990	2018
Afghanistan	183	174	66	59	121	48	76	57	75	37	49	45	16	5	6	5
Albania	44	37	9	8	35	8	3	0	13	7	1	0	7	2	0	0
Algeria	54	45	25	22	42	20	35	21	23	15	19	15	9	4	6	3
Andorra	12	10	3	3	9	3	0	0	6	1	0	0	7	1	0	0
Angola	235	212	83	71	132	52	76	64	54	28	32	36	46	16	16	15
Antigua and Barbuda	31	25	7	6	24	5	0	0	15	3	0	0	5	1	0	0
Argentina	32	26	11	9	25	9	18	7	15	6	11	5	3	2	2	2
Armenia	54	44	14	11	42	11	3	0	23	6	2	0	3	2	0	0
Australia	10	8	4	3	8	3	2	1	5	2	1	1	2	1	0	0
Austria	11	8	4	3	8	3	1	0	5	2	0	0	2	1	0	0
Azerbaijan	101	90	24	19	76	19	16	3	33	11	7	2	5	3	1	0
Bahamas	25	22	11	9	20	8	0	0	13	5	0	0	4	2	0	0
Bahrain	24	22	7	7	20	6	0	0	15	3	0	0	4	2	0	0
Bangladesh	147	140	32	28	100	25	355	74	64	17	232	50	26	4	73	12
Barbados	20	16	13	11	16	11	0	0	12	8	0	0	3	2	0	0
Belarus	17	13	4	3	12	3	2	0	8	1	1	0	4	1	1	0
Belgium	11	9	4	3	8	3	1	0	5	2	1	0	2	1	0	0
Belize	42	35	14	12	31	11	0	0	19	9	0	0	5	3	0	0
Benin	183	168	99	87	106	61	24	25	46	31	11	13	45	22	7	7
Bhutan	132	122	32	27	89	25	2	0	43	16	1	0	20	7	0	0
Bolivia (Plurinational State of)	127	115	29	24	84	22	20	5	41	14	10	4	13	5	2	1
Bosnia and Herzegovina	20	16	6	5	16	5	1	0	11	4	1	0	3	1	0	0
Botswana	56	47	40	33	39	30	2	2	25	24	1	1	17	6	1	0
Brazil	69	57	16	13	53	13	194	37	25	8	94	24	5	2	16	7
Brunei Darussalam	15	12	12	11	10	10	0	0	6	5	0	0	4	2	0	0
Bulgaria	20	16	8	6	15	6	2	0	8	4	1	0	4	2	0	0
Burkina Faso	207	192	81	72	99	49	40	36	46	25	19	19	40	20	11	11
Burundi	182	166	63	54	105	41	28	18	40	22	11	9	62	23	10	7
Cabo Verde	65	56	21	18	47	17	1	0	20	12	0	0	6	2	0	0
Cambodia	124	108	31	25	85	24	32	9	40	14	15	5	35	5	9	2
Cameroon	144	129	81	71	85	51	44	45	40	27	21	24	35	32	12	22
Canada	9	7	5	5	7	4	3	2	4	3	2	1	2	1	1	0
Central African Republic	187	172	123	110	117	84	14	14	52	41	6	7	32	15	2	2
Chad	222	202	125	112	112	71	33	46	52	34	16	22	53	28	9	13
Chile	21	17	8	7	16	6	5	1	9	5	3	1	3	1	1	0
China	56	51	9	8	42	7	1,070	125	29	4	740	73	8	2	158	40
Colombia	39	31	16	13	29	12	26	9	18	8	16	6	5	2	4	2
Comoros	133	118	73	62	88	51	2	1	50	32	1	1	18	9	0	0
Congo	96	85	54	46	59	36	5	6	27	20	2	3	37	7	3	1
Cook Islands	27	21	9	7	20	7	0	0	13	4	0	0	5	2	0	0
Costa Rica	19	15	10	8	14	8	1	1	9	6	1	0	3	2	0	0
Côte d'Ivoire	166	142	89	73	105	59	53	52	49	34	26	30	31	25	10	17
Croatia	14	11	5	4	11	4	1	0	8	3	0	0	3	1	0	0

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

	Under-five mortality rate (U5MR) with 90 per cent uncertainty interval (deaths per 1,000 live births)									Number of under-five deaths with 90 per cent uncertainty interval (thousands)[a]					
	1990			2018			Annual rate of reduction (ARR) (per cent) 1990–2018			1990			2018		
Country	**U5MR**	Lower bound	Upper bound	**U5MR**	Lower bound	Upper bound	**ARR**	Lower bound	Upper bound	**Under-five deaths**	Lower bound	Upper bound	**Under-five deaths**	Lower bound	Upper bound
Cuba	**13**	12	15	**5**	4	6	**3.5**	2.8	4.1	**2**	2	3	**1**	1	1
Cyprus	**11**	11	12	**2**	2	3	**5.5**	4.6	6.4	**0**	0	0	**0**	0	0
Czechia	**12**	12	12	**3**	3	4	**4.6**	4.2	5.0	**2**	2	2	**0**	0	0
Democratic People's Republic of Korea	**43**	34	56	**18**	14	23	**3.1**	3.1	3.1	**18**	14	23	**6**	5	8
Democratic Republic of the Congo	**186**	168	206	**88**	59	129	**2.7**	1.3	4.1	**283**	257	312	**296**	197	432
Denmark	**9**	9	9	**4**	4	5	**2.7**	2.0	3.3	**1**	1	1	**0**	0	0
Djibouti	**118**	101	137	**59**	37	94	**2.5**	0.7	4.2	**3**	2	3	**1**	1	2
Dominica	**16**	15	18	**36**	28	46	**-2.8**	-3.8	-1.9	**0**	0	0	**0**	0	0
Dominican Republic	**60**	57	64	**29**	21	41	**2.6**	1.4	3.8	**13**	12	13	**6**	4	8
Ecuador	**54**	49	60	**14**	13	15	**4.8**	4.3	5.2	**16**	15	18	**5**	4	5
Egypt	**86**	82	90	**21**	16	29	**5.0**	3.9	6.1	**159**	152	166	**55**	40	75
El Salvador	**60**	55	65	**14**	9	21	**5.3**	3.7	6.7	**10**	9	11	**2**	1	2
Equatorial Guinea	**179**	158	201	**85**	51	134	**2.7**	1.0	4.5	**3**	3	3	**4**	2	6
Eritrea	**153**	141	166	**42**	26	67	**4.6**	2.9	6.3	**14**	13	15	**4**	3	7
Estonia	**18**	17	18	**3**	2	3	**6.8**	6.1	7.4	**0**	0	0	**0**	0	0
Eswatini	**71**	61	81	**54**	35	82	**0.9**	-0.6	2.5	**2**	2	3	**2**	1	2
Ethiopia	**202**	188	217	**55**	45	69	**4.6**	3.9	5.4	**436**	407	469	**191**	155	238
Fiji	**29**	25	35	**26**	24	28	**0.5**	-0.2	1.2	**1**	1	1	**0**	0	1
Finland	**7**	7	7	**2**	2	2	**4.9**	4.5	5.4	**0**	0	0	**0**	0	0
France	**9**	9	9	**4**	4	4	**2.9**	2.6	3.1	**7**	7	7	**3**	3	3
Gabon	**93**	80	108	**45**	29	69	**2.6**	0.9	4.3	**3**	3	4	**3**	2	5
Gambia	**167**	150	188	**58**	34	98	**3.8**	1.9	5.7	**7**	6	8	**5**	3	8
Georgia	**48**	43	53	**10**	8	12	**5.7**	4.9	6.3	**4**	4	5	**1**	0	1
Germany	**9**	8	9	**4**	3	4	**3.0**	2.6	3.4	**7**	7	7	**3**	3	3
Ghana	**127**	121	135	**48**	40	58	**3.5**	2.8	4.2	**73**	69	77	**41**	34	50
Greece	**10**	10	11	**4**	4	5	**3.0**	2.6	3.6	**1**	1	1	**0**	0	0
Grenada	**22**	21	24	**15**	13	19	**1.4**	0.6	2.1	**0**	0	0	**0**	0	0
Guatemala	**80**	75	85	**26**	21	34	**4.0**	3.1	4.9	**28**	27	30	**11**	9	14
Guinea	**236**	220	253	**101**	81	128	**3.0**	2.2	3.8	**68**	64	73	**44**	36	56
Guinea-Bissau	**223**	199	249	**81**	53	121	**3.6**	2.1	5.2	**10**	9	11	**5**	3	8
Guyana	**60**	55	67	**30**	19	48	**2.5**	0.8	4.1	**1**	1	1	**0**	0	1
Haiti	**144**	135	155	**65**	51	84	**2.9**	1.9	3.7	**37**	35	40	**17**	14	23
Honduras	**58**	54	63	**18**	12	26	**4.3**	2.9	5.6	**11**	10	12	**4**	3	5
Hungary	**17**	17	18	**4**	4	5	**5.0**	4.4	5.7	**2**	2	2	**0**	0	0
Iceland	**6**	6	7	**2**	2	3	**4.2**	3.1	5.3	**0**	0	0	**0**	0	0
India	**126**	122	131	**37**	33	40	**4.4**	4.0	4.8	**3,417**	3,304	3,534	**882**	788	974
Indonesia	**84**	80	88	**25**	22	29	**4.3**	3.8	4.9	**394**	376	413	**121**	104	141
Iran (Islamic Republic of)	**56**	52	61	**14**	9	23	**4.9**	3.2	6.5	**103**	95	112	**22**	14	34
Iraq	**54**	49	59	**27**	21	34	**2.5**	1.6	3.4	**35**	32	38	**29**	23	37
Ireland	**9**	9	10	**4**	3	5	**3.3**	2.5	4.0	**0**	0	1	**0**	0	0
Israel	**12**	11	12	**4**	4	4	**4.1**	3.8	4.3	**1**	1	1	**1**	1	1
Italy	**10**	10	10	**3**	3	3	**4.1**	3.8	4.5	**5**	5	6	**1**	1	2
Jamaica	**30**	26	36	**14**	9	25	**2.7**	0.7	4.6	**2**	2	2	**1**	0	1

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

	Sex-specific under-five mortality rate (deaths per 1,000 live births)				Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)[a]		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)[a]		Probability of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years)		Number of deaths among children aged 5–14 years (thousands)[a]	
	1990		2018													
Country	Male	Female	Male	Female	1990	2018	1990	2018	1990	2018	1990	2018	1990	2018	1990	2018
Cuba	15	12	5	4	11	4	2	0	7	2	1	0	4	2	1	0
Cyprus	12	10	3	2	10	2	0	0	6	1	0	0	2	1	0	0
Czechia	14	11	4	3	10	3	1	0	7	2	1	0	2	1	0	0
Democratic People's Republic of Korea	47	39	20	16	33	14	14	5	22	10	9	3	8	4	3	1
Democratic Republic of the Congo	194	177	95	81	119	68	186	232	42	28	67	98	41	29	40	70
Denmark	10	8	5	4	7	4	0	0	4	3	0	0	2	0	0	0
Djibouti	126	110	64	54	92	50	2	1	50	32	1	1	26	13	0	0
Dominica	17	15	38	33	13	33	0	0	10	28	0	0	3	3	0	0
Dominican Republic	64	56	32	26	46	24	10	5	24	19	5	4	8	3	1	1
Ecuador	59	49	16	13	42	12	13	4	23	7	7	2	8	3	2	1
Egypt	86	86	22	20	63	18	116	47	33	11	62	29	11	4	16	9
El Salvador	64	55	15	12	46	12	8	1	23	7	4	1	7	4	1	0
Equatorial Guinea	188	170	91	79	121	63	2	3	48	30	1	1	38	18	0	1
Eritrea	166	139	47	36	94	31	8	3	35	18	3	2	45	9	3	1
Estonia	20	15	3	2	14	2	0	0	10	1	0	0	5	1	0	0
Eswatini	77	65	59	49	54	43	2	1	21	17	1	1	11	13	0	0
Ethiopia	215	188	61	49	120	39	265	137	59	28	136	99	78	12	111	34
Fiji	32	27	28	23	24	22	1	0	12	11	0	0	10	5	0	0
Finland	7	6	2	2	6	1	0	0	4	1	0	0	2	1	0	0
France	10	8	4	4	7	3	6	2	4	3	3	2	2	1	1	1
Gabon	99	86	49	40	60	33	2	2	31	21	1	1	19	14	0	1
Gambia	176	158	63	54	82	39	4	3	49	26	2	2	36	13	1	1
Georgia	53	43	11	9	41	9	4	0	25	6	2	0	7	2	1	0
Germany	10	7	4	3	7	3	6	2	3	2	3	2	2	1	2	1
Ghana	135	119	52	43	80	35	46	30	42	24	25	21	27	12	11	8
Greece	11	10	5	4	9	4	1	0	6	3	1	0	2	1	0	0
Grenada	24	20	17	14	18	14	0	0	12	10	0	0	3	5	0	0
Guatemala	85	74	29	23	59	22	21	9	28	12	10	5	12	4	3	1
Guinea	243	228	105	96	139	65	41	29	62	31	19	14	49	21	9	8
Guinea-Bissau	234	211	88	75	132	54	6	4	64	37	3	2	40	16	1	1
Guyana	67	53	34	26	47	25	1	0	31	18	1	0	6	5	0	0
Haiti	153	136	70	59	100	49	26	13	39	26	10	7	31	12	6	3
Honduras	63	53	19	16	45	15	8	3	22	10	4	2	9	5	1	1
Hungary	19	15	5	4	15	4	2	0	11	2	1	0	3	1	0	0
Iceland	7	6	2	2	5	2	0	0	3	1	0	0	2	1	0	0
India	122	131	36	37	89	30	2,399	721	57	23	1,578	549	21	6	447	143
Indonesia	91	78	28	22	62	21	288	102	31	13	144	62	15	6	66	28
Iran (Islamic Republic of)	56	56	15	14	44	12	79	19	26	9	47	14	8	3	14	3
Iraq	58	50	29	24	42	22	27	25	26	15	17	17	9	7	5	7
Ireland	10	8	4	3	8	3	0	0	5	2	0	0	2	1	0	0
Israel	12	11	4	3	10	3	1	1	6	2	1	0	2	1	0	0
Italy	11	9	3	3	8	3	5	1	6	2	4	1	2	1	1	0
Jamaica	34	27	16	13	25	12	2	1	20	10	1	0	5	3	0	0

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

	Under-five mortality rate (U5MR) with 90 per cent uncertainty interval (deaths per 1,000 live births)									Number of under-five deaths with 90 per cent uncertainty interval (thousands)[a]					
	1990			2018			Annual rate of reduction (ARR) (per cent) 1990–2018			1990			2018		
Country	**U5MR**	Lower bound	Upper bound	**U5MR**	Lower bound	Upper bound	**ARR**	Lower bound	Upper bound	**Under-five deaths**	Lower bound	Upper bound	**Under-five deaths**	Lower bound	Upper bound
Japan	**6**	6	6	**2**	2	3	**3.3**	3.1	3.5	**8**	8	9	**2**	2	3
Jordan	**36**	34	39	**16**	13	21	**2.9**	1.9	3.8	**4**	4	5	**3**	3	5
Kazakhstan	**52**	48	57	**10**	10	10	**5.9**	5.6	6.3	**20**	18	22	**4**	4	4
Kenya	**107**	100	114	**41**	31	55	**3.4**	2.4	4.4	**105**	99	112	**60**	46	80
Kiribati	**95**	82	111	**53**	32	86	**2.1**	0.3	4.0	**0**	0	0	**0**	0	0
Kuwait	**18**	17	18	**8**	7	9	**2.9**	2.5	3.2	**1**	1	1	**0**	0	0
Kyrgyzstan	**65**	57	73	**19**	18	20	**4.4**	3.9	4.9	**9**	8	10	**3**	3	3
Lao People's Democratic Republic	**153**	141	167	**47**	36	61	**4.2**	3.3	5.2	**27**	25	29	**8**	6	10
Latvia	**17**	17	18	**4**	3	5	**5.3**	4.7	5.9	**1**	1	1	**0**	0	0
Lebanon	**32**	29	36	**7**	4	14	**5.2**	3.0	7.8	**3**	2	3	**1**	0	2
Lesotho	**90**	82	99	**81**	57	113	**0.4**	-0.8	1.6	**5**	5	6	**5**	3	6
Liberia	**262**	241	285	**71**	50	102	**4.7**	3.4	5.9	**25**	23	27	**11**	8	16
Libya	**42**	36	49	**12**	8	18	**4.4**	2.8	6.1	**5**	5	6	**2**	1	2
Lithuania	**15**	15	16	**4**	4	5	**4.7**	4.2	5.2	**1**	1	1	**0**	0	0
Luxembourg	**9**	8	9	**2**	2	3	**4.6**	3.6	5.6	**0**	0	0	**0**	0	0
Madagascar	**159**	148	171	**54**	40	71	**3.9**	2.9	5.0	**78**	73	84	**45**	34	59
Malawi	**239**	225	253	**50**	35	70	**5.6**	4.4	6.9	**98**	93	104	**30**	21	43
Malaysia	**17**	16	17	**8**	7	8	**2.7**	2.4	3.0	**8**	8	8	**4**	4	4
Maldives	**86**	78	94	**9**	7	11	**8.2**	7.3	9.1	**1**	1	1	**0**	0	0
Mali	**230**	216	244	**98**	81	117	**3.1**	2.4	3.7	**91**	86	97	**75**	63	90
Malta	**11**	11	12	**7**	6	9	**1.7**	1.0	2.4	**0**	0	0	**0**	0	0
Marshall Islands	**49**	42	57	**33**	22	50	**1.4**	-0.2	3.0	**0**	0	0	**0**	0	0
Mauritania	**117**	105	130	**76**	40	143	**1.6**	-0.8	3.9	**9**	8	10	**11**	6	21
Mauritius	**23**	22	24	**16**	14	17	**1.4**	1.0	1.8	**1**	0	1	**0**	0	0
Mexico	**45**	42	49	**13**	12	13	**4.5**	4.2	4.8	**108**	100	117	**28**	27	30
Micronesia (Federated States of)	**55**	45	69	**31**	13	75	**2.1**	-0.9	5.0	**0**	0	0	**0**	0	0
Monaco	**8**	7	9	**3**	2	5	**3.2**	1.9	4.4	**0**	0	0	**0**	0	0
Mongolia	**108**	99	117	**16**	10	25	**6.7**	5.2	8.4	**8**	7	8	**1**	1	2
Montenegro	**17**	16	17	**3**	2	3	**6.7**	5.9	7.4	**0**	0	0	**0**	0	0
Morocco	**79**	74	85	**22**	17	29	**4.5**	3.5	5.4	**57**	54	62	**15**	12	20
Mozambique	**241**	222	262	**73**	53	104	**4.3**	3.0	5.4	**140**	129	151	**79**	57	112
Myanmar	**115**	106	126	**46**	33	62	**3.3**	2.1	4.5	**131**	120	143	**43**	31	59
Namibia	**74**	67	81	**40**	25	65	**2.2**	0.4	3.9	**4**	4	4	**3**	2	4
Nauru	**60**	36	101	**32**	18	55	**2.2**	-0.7	5.3	**0**	0	0	**0**	0	0
Nepal	**140**	132	149	**32**	25	41	**5.2**	4.4	6.1	**99**	93	105	**18**	14	23
Netherlands	**8**	8	9	**4**	4	4	**2.7**	2.5	2.9	**2**	2	2	**1**	1	1
New Zealand	**11**	11	11	**6**	5	7	**2.4**	1.8	3.0	**1**	1	1	**0**	0	0
Nicaragua	**66**	62	72	**18**	17	19	**4.6**	4.3	4.9	**10**	9	11	**2**	2	3
Niger	**329**	307	351	**84**	56	125	**4.9**	3.4	6.4	**137**	128	147	**83**	55	123
Nigeria	**211**	198	225	**120**	97	151	**2.0**	1.2	2.8	**853**	800	910	**866**	701	1,094
Niue	**13**	8	22	**24**	10	56	**-2.1**	-5.7	1.7	**0**	0	0	**0**	0	0
North Macedonia	**36**	35	38	**10**	8	12	**4.7**	4.0	5.5	**1**	1	1	**0**	0	0
Norway	**9**	8	9	**3**	2	3	**4.4**	3.9	4.8	**0**	0	1	**0**	0	0

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

	Sex-specific under-five mortality rate (deaths per 1,000 live births)				Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)[a]		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)[a]		Probability of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years)		Number of deaths among children aged 5–14 years (thousands)[a]	
	1990		2018													
Country	Male	Female	Male	Female	1990	2018	1990	2018	1990	2018	1990	2018	1990	2018	1990	2018
Japan	7	6	3	2	5	2	6	2	3	1	3	1	2	1	3	1
Jordan	38	34	18	15	30	14	4	3	20	9	3	2	5	3	1	1
Kazakhstan	58	46	11	9	44	9	17	3	22	6	8	2	6	3	2	1
Kenya	112	101	45	37	68	31	67	45	28	20	28	29	18	10	13	14
Kiribati	102	89	57	48	69	41	0	0	36	23	0	0	16	9	0	0
Kuwait	19	16	9	7	15	7	1	0	10	4	0	0	5	2	0	0
Kyrgyzstan	70	59	21	17	54	17	7	3	24	13	3	2	6	3	1	0
Lao People's Democratic Republic	162	144	52	42	105	38	19	6	47	23	9	4	44	9	5	1
Latvia	19	15	4	4	13	3	0	0	8	2	0	0	6	1	0	0
Lebanon	34	31	8	7	27	6	2	1	20	4	2	1	8	2	1	0
Lesotho	97	83	88	74	72	66	4	4	39	35	2	2	17	9	1	0
Liberia	275	248	76	65	175	53	16	8	59	24	5	4	33	17	2	2
Libya	45	38	13	11	35	10	5	1	21	6	3	1	8	6	1	1
Lithuania	17	13	4	4	12	3	1	0	8	2	0	0	4	1	0	0
Luxembourg	10	8	3	2	7	2	0	0	4	1	0	0	2	0	0	0
Madagascar	167	152	58	49	97	38	49	32	39	21	20	18	41	12	14	8
Malawi	250	227	54	45	139	35	58	22	50	22	21	14	40	14	11	7
Malaysia	18	15	8	7	14	7	7	4	8	4	4	2	5	3	2	1
Maldives	91	80	9	8	63	7	1	0	39	5	0	0	12	2	0	0
Mali	238	221	103	92	120	62	48	48	67	33	28	26	44	26	11	15
Malta	12	10	8	6	10	6	0	0	8	5	0	0	2	1	0	0
Marshall Islands	53	44	37	29	39	27	0	0	20	15	0	0	9	6	0	0
Mauritania	124	109	81	70	71	52	6	8	46	33	4	5	21	8	1	1
Mauritius	26	20	17	14	20	14	0	0	15	9	0	0	4	2	0	0
Mexico	48	41	14	11	36	11	86	24	22	8	53	17	5	2	11	6
Micronesia (Federated States of)	60	51	34	27	43	26	0	0	26	16	0	0	10	6	0	0
Monaco	9	7	4	3	6	3	0	0	4	2	0	0	2	1	0	0
Mongolia	122	93	19	13	77	14	5	1	30	9	2	1	10	4	1	0
Montenegro	18	15	3	2	15	2	0	0	11	2	0	0	2	1	0	0
Morocco	84	74	25	20	62	19	45	13	36	14	26	9	10	3	7	2
Mozambique	250	232	78	68	161	54	93	59	60	28	36	31	60	17	24	14
Myanmar	122	107	51	42	82	37	92	35	48	23	54	22	31	5	33	5
Namibia	79	68	43	36	50	29	3	2	28	16	1	1	16	12	1	1
Nauru	64	55	35	29	46	26	0	0	29	20	0	0	11	6	0	0
Nepal	141	139	34	30	97	27	69	15	58	20	43	11	29	6	15	3
Netherlands	9	7	4	3	7	3	1	1	5	2	1	0	2	1	0	0
New Zealand	12	10	6	5	9	5	1	0	4	3	0	0	3	1	0	0
Nicaragua	72	61	20	16	51	16	8	2	23	9	3	1	8	4	1	0
Niger	331	326	87	80	133	48	57	49	54	25	24	26	68	37	17	26
Nigeria	221	200	127	113	125	76	512	552	50	36	211	267	41	20	111	110
Niue	15	12	26	21	12	20	0	0	7	12	0	0	4	5	0	0
North Macedonia	39	34	11	9	33	9	1	0	17	7	1	0	3	1	0	0
Norway	10	8	3	2	7	2	0	0	4	1	0	0	2	1	0	0

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

	Under-five mortality rate (U5MR) with 90 per cent uncertainty interval (deaths per 1,000 live births)									Number of under-five deaths with 90 per cent uncertainty interval (thousands)[a]					
	1990			2018			Annual rate of reduction (ARR) (per cent) 1990–2018			1990			2018		
Country	U5MR	Lower bound	Upper bound	U5MR	Lower bound	Upper bound	ARR	Lower bound	Upper bound	Under-five deaths	Lower bound	Upper bound	Under-five deaths	Lower bound	Upper bound
Oman	**39**	34	45	**11**	11	12	**4.4**	3.8	4.9	**3**	2	3	**1**	1	1
Pakistan	**139**	134	144	**69**	56	85	**2.5**	1.8	3.2	**593**	572	615	**409**	332	498
Palau	**35**	30	42	**18**	10	34	**2.4**	0.0	4.8	**0**	0	0	**0**	0	0
Panama	**31**	27	34	**15**	9	28	**2.5**	0.3	4.6	**2**	2	2	**1**	1	2
Papua New Guinea	**87**	79	95	**48**	38	60	**2.1**	1.3	3.0	**14**	12	15	**11**	9	14
Paraguay	**45**	41	51	**20**	11	38	**2.9**	0.6	5.1	**6**	6	7	**3**	2	5
Peru	**81**	77	85	**14**	11	19	**6.2**	5.2	7.0	**54**	51	57	**8**	6	11
Philippines	**57**	53	61	**28**	22	36	**2.5**	1.6	3.3	**113**	106	121	**63**	49	80
Poland	**17**	17	18	**4**	4	5	**4.9**	4.7	5.0	**10**	10	10	**2**	2	2
Portugal	**15**	14	15	**4**	4	4	**4.9**	4.6	5.1	**2**	2	2	**0**	0	0
Qatar	**21**	20	22	**7**	6	8	**4.0**	3.5	4.4	**0**	0	0	**0**	0	0
Republic of Korea	**15**	15	16	**3**	3	4	**5.6**	5.3	6.0	**10**	10	11	**1**	1	1
Republic of Moldova	**33**	29	39	**16**	12	21	**2.7**	1.4	3.8	**3**	2	3	**1**	0	1
Romania	**31**	30	32	**7**	6	9	**5.2**	4.5	5.9	**10**	10	11	**1**	1	2
Russian Federation	**22**	21	22	**7**	6	8	**3.9**	3.5	4.4	**45**	45	46	**13**	12	15
Rwanda	**154**	144	164	**35**	21	59	**5.3**	3.4	7.1	**49**	46	52	**13**	8	23
Saint Kitts and Nevis	**31**	28	34	**12**	9	16	**3.4**	2.2	4.5	**0**	0	0	**0**	0	0
Saint Lucia	**22**	21	24	**17**	13	22	**1.1**	0.0	2.1	**0**	0	0	**0**	0	0
Saint Vincent and the Grenadines	**24**	22	25	**16**	13	20	**1.3**	0.5	2.2	**0**	0	0	**0**	0	0
Samoa	**30**	26	34	**16**	11	22	**2.3**	1.0	3.6	**0**	0	0	**0**	0	0
San Marino	**13**	10	17	**2**	1	4	**6.8**	4.1	9.4	**0**	0	0	**0**	0	0
Sao Tome and Principe	**108**	96	122	**31**	20	49	**4.4**	2.8	6.2	**0**	0	1	**0**	0	0
Saudi Arabia	**45**	37	54	**7**	6	9	**6.6**	5.4	7.7	**25**	21	30	**4**	3	5
Senegal	**139**	132	146	**44**	34	57	**4.1**	3.1	5.1	**43**	41	45	**23**	18	31
Serbia	**28**	27	29	**6**	5	6	**5.8**	5.3	6.2	**4**	4	4	**0**	0	1
Seychelles	**17**	15	18	**14**	11	18	**0.5**	-0.4	1.4	**0**	0	0	**0**	0	0
Sierra Leone	**263**	242	284	**105**	85	128	**3.3**	2.5	4.1	**50**	46	54	**26**	21	32
Singapore	**8**	7	8	**3**	2	3	**3.6**	3.0	4.2	**0**	0	0	**0**	0	0
Slovakia	**15**	15	15	**6**	5	6	**3.5**	3.3	3.7	**1**	1	1	**0**	0	0
Slovenia	**10**	10	11	**2**	2	3	**5.6**	5.1	6.1	**0**	0	0	**0**	0	0
Solomon Islands	**39**	34	44	**20**	14	29	**2.3**	0.9	3.8	**0**	0	1	**0**	0	1
Somalia	**179**	150	219	**122**	65	233	**1.4**	-0.8	3.5	**59**	49	72	**73**	39	140
South Africa	**59**	52	66	**34**	30	38	**2.0**	1.4	2.6	**66**	59	74	**40**	35	45
South Sudan	**254**	212	297	**99**	44	186	**3.4**	0.9	6.4	**63**	53	73	**38**	17	71
Spain	**9**	9	9	**3**	3	3	**3.9**	3.7	4.2	**4**	4	4	**1**	1	1
Sri Lanka	**22**	22	22	**7**	6	9	**3.9**	3.3	4.4	**8**	8	8	**3**	2	3
State of Palestine	**44**	41	48	**20**	15	28	**2.8**	1.6	4.0	**4**	4	4	**3**	2	4
Sudan	**132**	122	142	**60**	46	79	**2.8**	1.8	3.8	**106**	99	115	**80**	61	104
Suriname	**48**	40	57	**19**	9	40	**3.3**	0.6	5.9	**1**	0	1	**0**	0	0
Sweden	**7**	7	7	**3**	3	3	**3.4**	3.1	3.6	**1**	1	1	**0**	0	0
Switzerland	**8**	8	9	**4**	4	5	**2.5**	2.0	2.9	**1**	1	1	**0**	0	0
Syrian Arab Republic	**37**	34	41	**17**	13	25	**2.9**	1.3	4.0	**17**	15	18	**7**	5	11
Tajikistan	**102**	93	112	**35**	24	51	**3.8**	2.4	5.2	**21**	19	23	**10**	7	14

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

	Sex-specific under-five mortality rate (deaths per 1,000 live births)				Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)[a]		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)[a]		Probability of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years)		Number of deaths among children aged 5–14 years (thousands)[a]	
	1990		2018													
Country	Male	Female	Male	Female	1990	2018	1990	2018	1990	2018	1990	2018	1990	2018	1990	2018
Oman	42	35	12	10	32	10	2	1	17	5	1	0	6	2	0	0
Pakistan	141	136	74	65	106	57	458	338	65	42	287	251	14	10	39	46
Palau	39	32	20	16	30	17	0	0	19	9	0	0	7	4	0	0
Panama	34	28	17	14	26	13	2	1	17	8	1	1	8	3	0	0
Papua New Guinea	93	81	52	44	64	38	10	9	31	22	5	5	15	9	2	2
Paraguay	49	41	22	18	36	17	5	2	22	11	3	2	7	3	1	0
Peru	85	76	16	13	57	11	38	6	28	7	19	4	11	3	6	2
Philippines	62	51	31	25	40	22	81	49	19	14	39	30	14	5	23	12
Poland	19	15	5	4	15	4	9	1	11	3	6	1	3	1	2	0
Portugal	16	13	4	3	12	3	1	0	7	2	1	0	4	1	1	0
Qatar	23	19	7	6	18	6	0	0	11	4	0	0	4	1	0	0
Republic of Korea	17	14	3	3	13	3	9	1	7	1	5	1	5	1	4	0
Republic of Moldova	37	30	18	14	28	14	2	1	19	12	2	0	5	2	0	0
Romania	34	28	8	7	24	6	8	1	15	3	5	1	5	2	2	0
Russian Federation	25	18	8	6	18	6	38	11	11	3	22	6	5	2	12	4
Rwanda	162	145	38	32	94	27	30	10	40	16	13	6	72	10	17	3
Saint Kitts and Nevis	34	28	13	11	25	10	0	0	19	8	0	0	5	2	0	0
Saint Lucia	25	20	18	15	19	15	0	0	12	12	0	0	4	2	0	0
Saint Vincent and the Grenadines	26	22	18	15	20	15	0	0	13	10	0	0	4	5	0	0
Samoa	33	27	17	14	25	14	0	0	16	8	0	0	6	4	0	0
San Marino	14	12	2	2	12	2	0	0	7	1	0	0	2	1	0	0
Sao Tome and Principe	114	102	34	28	69	24	0	0	26	14	0	0	20	8	0	0
Saudi Arabia	47	42	7	7	36	6	20	4	22	4	13	2	7	2	3	1
Senegal	146	132	48	39	71	32	22	17	40	21	13	11	37	13	8	6
Serbia	30	26	6	5	24	5	3	0	17	3	2	0	3	1	0	0
Seychelles	18	15	16	13	14	12	0	0	11	9	0	0	4	3	0	0
Sierra Leone	274	251	111	99	156	78	30	20	53	33	10	8	53	21	7	4
Singapore	8	7	3	3	6	2	0	0	4	1	0	0	2	1	0	0
Slovakia	16	13	6	5	13	5	1	0	9	3	1	0	3	1	0	0
Slovenia	11	9	2	2	9	2	0	0	6	1	0	0	2	1	0	0
Solomon Islands	42	35	22	18	31	17	0	0	15	8	0	0	8	4	0	0
Somalia	187	171	127	115	108	77	36	47	45	38	15	24	38	24	7	11
South Africa	64	54	37	31	46	28	51	34	20	11	23	13	8	6	8	6
South Sudan	261	246	103	93	150	64	37	24	65	40	16	15	52	20	8	6
Spain	10	8	3	3	7	3	3	1	5	2	2	1	2	1	1	0
Sri Lanka	24	20	8	7	19	6	7	2	13	4	5	2	6	2	2	1
State of Palestine	47	42	22	18	36	17	3	2	22	11	2	2	6	3	0	0
Sudan	139	124	65	55	82	42	68	56	43	29	37	38	29	8	17	9
Suriname	52	43	21	17	41	17	0	0	23	10	0	0	7	3	0	0
Sweden	8	6	3	2	6	2	1	0	4	2	0	0	1	1	0	0
Switzerland	9	7	4	4	7	4	1	0	4	3	0	0	2	1	0	0
Syrian Arab Republic	40	34	17	15	30	14	14	6	17	9	8	4	9	12	3	4
Tajikistan	110	94	39	31	81	30	17	8	31	15	7	4	12	5	2	1

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

	Under-five mortality rate (U5MR) with 90 per cent uncertainty interval (deaths per 1,000 live births)									Number of under-five deaths with 90 per cent uncertainty interval (thousands)[a]					
	1990			2018			Annual rate of reduction (ARR) (per cent) 1990–2018			1990			2018		
Country	**U5MR**	Lower bound	Upper bound	**U5MR**	Lower bound	Upper bound	**ARR**	Lower bound	Upper bound	**Under-five deaths**	Lower bound	Upper bound	**Under-five deaths**	Lower bound	Upper bound
Thailand	**37**	35	39	**9**	8	12	**5.0**	4.1	5.6	**40**	38	43	**7**	6	8
Timor-Leste	**174**	157	193	**46**	28	74	**4.8**	3.0	6.5	**5**	5	6	**2**	1	3
Togo	**145**	135	157	**70**	53	92	**2.6**	1.6	3.7	**22**	20	24	**18**	13	24
Tonga	**22**	19	27	**16**	9	26	**1.3**	-0.7	3.2	**0**	0	0	**0**	0	0
Trinidad and Tobago	**30**	25	36	**18**	8	43	**1.8**	-1.3	4.6	**1**	1	1	**0**	0	1
Tunisia	**55**	49	63	**17**	16	18	**4.2**	3.7	4.7	**12**	11	14	**3**	3	4
Turkey	**74**	69	79	**11**	9	12	**6.9**	6.4	7.4	**103**	97	111	**14**	12	16
Turkmenistan	**85**	73	98	**46**	19	101	**2.2**	-0.7	5.4	**11**	9	13	**6**	3	14
Tuvalu	**53**	44	64	**24**	14	44	**2.8**	0.6	5.0	**0**	0	0	**0**	0	0
Uganda	**185**	175	196	**46**	37	59	**4.9**	4.1	5.8	**150**	142	159	**74**	58	94
Ukraine	**19**	17	22	**9**	8	10	**2.9**	2.4	3.4	**13**	12	15	**4**	4	4
United Arab Emirates	**17**	14	20	**8**	7	9	**2.8**	2.1	3.5	**1**	1	1	**1**	1	1
United Kingdom	**9**	9	10	**4**	4	5	**2.8**	2.5	3.1	**7**	7	7	**3**	3	4
United Republic of Tanzania	**166**	157	176	**53**	41	69	**4.1**	3.1	5.0	**176**	167	187	**107**	83	139
United States	**11**	11	11	**7**	6	7	**1.9**	1.7	2.2	**44**	43	45	**25**	24	27
Uruguay	**23**	23	23	**8**	7	8	**4.0**	3.7	4.2	**1**	1	1	**0**	0	0
Uzbekistan	**72**	64	81	**21**	17	27	**4.3**	3.6	5.1	**51**	45	57	**15**	12	19
Vanuatu	**36**	30	43	**26**	17	42	**1.1**	-0.7	2.9	**0**	0	0	**0**	0	0
Venezuela (Bolivarian Republic of)	**30**	29	30	**25**	21	29	**0.7**	0.1	1.2	**16**	16	17	**13**	11	15
Viet Nam	**51**	47	56	**21**	17	25	**3.2**	2.5	3.9	**99**	91	107	**33**	28	40
Yemen	**126**	118	134	**55**	35	84	**3.0**	1.5	4.5	**75**	70	80	**47**	30	72
Zambia	**186**	174	198	**58**	44	76	**4.2**	3.2	5.1	**65**	61	69	**36**	27	47
Zimbabwe	**80**	74	88	**46**	32	65	**2.0**	0.7	3.3	**30**	27	32	**21**	14	29
Estimates of mortality among children under age 5 and children aged 5–14 years by Sustainable Development Goal region[b]															
Sub-Saharan Africa	**182**	178	186	**78**	73	88	**3.0**	2.6	3.3	**3,751**	3,679	3,834	**2,789**	2,598	3,128
Northern Africa and Western Asia	**74**	73	76	**26**	23	30	**3.8**	3.3	4.2	**681**	666	698	**296**	267	340
Northern Africa	**84**	81	87	**30**	26	36	**3.6**	3.0	4.2	**381**	370	394	**179**	155	212
Western Asia	**65**	63	68	**21**	18	26	**4.0**	3.3	4.6	**300**	290	311	**117**	100	144
Central Asia and Southern Asia	**124**	121	127	**40**	37	44	**4.0**	3.7	4.3	**4,958**	4,840	5,079	**1,534**	1,413	1,666
Central Asia	**72**	68	77	**23**	19	29	**4.1**	3.3	4.7	**112**	105	119	**38**	32	48
Southern Asia	**126**	123	129	**41**	38	45	**4.0**	3.7	4.3	**4,846**	4,729	4,968	**1,497**	1,374	1,627
Eastern and South-Eastern Asia	**57**	54	60	**15**	14	16	**4.8**	4.5	5.1	**2,284**	2,176	2,411	**448**	417	487
Eastern Asia	**51**	47	55	**8**	7	10	**6.4**	5.9	7.0	**1,422**	1,318	1,545	**157**	139	179
South-Eastern Asia	**72**	70	74	**25**	23	28	**3.7**	3.3	4.1	**862**	838	888	**291**	266	324
Latin America and the Caribbean	**55**	53	56	**16**	16	18	**4.3**	4.0	4.5	**641**	622	661	**172**	165	184
Oceania	**36**	34	39	**21**	18	25	**1.9**	1.2	2.6	**19**	17	20	**14**	12	17
Australia and New Zealand	**10**	9	10	**4**	4	4	**3.1**	2.9	3.3	**3**	3	3	**2**	1	2
Oceania (exc. Australia and New Zealand)	**74**	68	80	**43**	35	52	**2.0**	1.2	2.7	**16**	15	17	**13**	10	15
Europe and Northern America	**14**	14	14	**6**	5	6	**3.3**	3.2	3.4	**191**	189	193	**67**	65	70
Europe	**15**	15	16	**5**	5	5	**4.0**	3.8	4.1	**144**	142	146	**40**	38	42
Northern America	**11**	11	11	**6**	6	7	**1.9**	1.7	2.1	**47**	46	48	**27**	26	29
Landlocked developing countries	**167**	164	171	**58**	54	64	**3.8**	3.4	4.1	**1,757**	1,719	1,799	**897**	839	994
Least developed countries	**175**	173	178	**64**	60	72	**3.6**	3.2	3.8	**3,605**	3,555	3,672	**1,992**	1,874	2,223
Small island developing States	**78**	76	81	**40**	36	46	**2.4**	1.9	2.8	**93**	90	97	**48**	43	56
World	**93**	**92**	**95**	**39**	**37**	**42**	**3.1**	**2.9**	**3.3**	**12,524**	**12,352**	**12,724**	**5,322**	**5,100**	**5,709**

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

Country	Sex-specific under-five mortality rate (deaths per 1,000 live births) 1990 Male	1990 Female	2018 Male	2018 Female	Infant mortality rate (deaths per 1,000 live births) 1990	2018	Number of infant deaths (thousands)[a] 1990	2018	Neonatal mortality rate (deaths per 1,000 live births) 1990	2018	Number of neonatal deaths (thousands)[a] 1990	2018	Probability of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years) 1990	2018	Number of deaths among children aged 5–14 years (thousands)[a] 1990	2018
Thailand	41	33	10	8	30	8	33	6	20	5	22	4	9	5	11	4
Timor-Leste	181	167	50	42	131	39	4	1	55	20	2	1	27	8	0	0
Togo	154	136	75	64	90	47	14	12	43	25	7	6	37	21	4	4
Tonga	20	24	14	17	19	13	0	0	10	7	0	0	5	3	0	0
Trinidad and Tobago	33	28	20	17	27	16	1	0	20	12	0	0	4	2	0	0
Tunisia	59	52	18	15	43	15	9	3	29	11	6	2	7	3	2	1
Turkey	76	71	11	10	55	9	77	12	33	5	46	7	9	2	12	3
Turkmenistan	94	75	52	40	68	39	9	5	28	21	4	3	7	4	1	0
Tuvalu	57	50	27	22	42	21	0	0	28	16	0	0	10	5	0	0
Uganda	197	172	51	42	109	34	91	54	39	20	34	32	32	15	16	19
Ukraine	21	17	10	8	17	7	11	3	12	5	8	2	4	2	3	1
United Arab Emirates	19	15	8	7	14	6	1	1	8	4	0	0	5	2	0	0
United Kingdom	10	8	5	4	8	4	6	3	4	3	3	2	2	1	1	1
United Republic of Tanzania	172	160	57	49	101	38	109	77	40	21	44	44	30	13	22	20
United States	12	10	7	6	9	6	37	22	6	4	23	14	2	1	9	6
Uruguay	25	20	8	7	20	6	1	0	12	5	1	0	3	2	0	0
Uzbekistan	81	64	24	18	60	19	42	13	31	12	22	8	6	3	3	2
Vanuatu	38	33	28	24	29	22	0	0	17	12	0	0	7	5	0	0
Venezuela (Bolivarian Republic of)	32	27	26	23	25	21	14	11	13	15	7	8	4	3	2	2
Viet Nam	59	43	24	17	37	16	71	26	24	11	46	17	12	3	20	4
Yemen	131	120	59	51	88	43	54	37	43	27	27	23	20	8	7	6
Zambia	194	177	63	53	111	40	39	25	37	23	13	15	30	12	7	6
Zimbabwe	87	74	51	42	52	34	19	15	24	21	9	9	14	13	4	5

Estimates of mortality among children under age 5 and children aged 5–14 years by Sustainable Development Goal region[b] (continued)

Sub-Saharan Africa	191	172	84	72	108	53	2,276	1,917	46	28	985	1,016	40	18	575	510
Northern Africa and Western Asia	78	71	28	24	55	21	507	237	31	14	284	157	11	5	83	46
Northern Africa	87	81	32	28	61	24	278	141	33	16	153	95	13	5	48	23
Western Asia	68	62	23	20	49	17	229	96	28	11	131	62	9	4	35	23
Central Asia and Southern Asia	122	126	41	39	88	33	3,538	1,260	56	25	2,285	942	19	6	605	219
Central Asia	79	64	26	20	59	20	92	33	28	12	44	19	7	3	8	5
Southern Asia	124	128	42	40	90	34	3,446	1,226	57	25	2,241	922	20	6	597	214
Eastern and South-Eastern Asia	60	54	16	14	43	12	1,730	371	28	7	1,095	224	10	3	337	100
Eastern Asia	53	48	9	8	40	7	1,103	133	28	4	760	78	7	2	169	43
South-Eastern Asia	78	66	28	22	52	21	627	238	28	13	335	146	15	5	169	57
Latin America and the Caribbean	59	50	18	15	43	14	509	147	23	9	267	95	6	3	63	30
Oceania	39	33	23	19	27	17	14	11	14	10	7	7	6	4	3	2
Australia and New Zealand	11	8	4	4	8	3	2	1	5	2	1	1	2	1	1	0
Oceania (exc. Australia and New Zealand)	79	69	46	39	55	34	12	10	27	20	6	6	13	8	2	2
Europe and Northern America	16	12	6	5	12	5	159	57	7	3	98	36	3	1	42	16
Europe	17	13	6	5	13	4	120	34	8	3	74	21	3	1	33	10
Northern America	12	10	7	6	9	5	40	24	6	3	24	15	2	1	9	6
Landlocked developing countries	175	159	62	53	101	40	1,078	630	47	25	521	392	38	13	277	173
Least developed countries	183	168	69	59	108	46	2,264	1,432	52	26	1,113	821	39	14	571	371
Small island developing States	83	73	43	36	56	31	67	38	27	19	32	23	13	7	13	8
World	**96**	**91**	**41**	**36**	**65**	**29**	**8,733**	**4,000**	**37**	**18**	**5,022**	**2,476**	**15**	**7**	**1,708**	**923**

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

Estimates of mortality among children under age 5 and children aged 5–14 years by UNICEF region[b]

	Under-five mortality rate (U5MR) with 90 per cent uncertainty interval (deaths per 1,000 live births)									Number of under-five deaths with 90 per cent uncertainty interval (thousands)[a]					
	1990			2018			Annual rate of reduction (ARR) (per cent) 1990–2018			1990			2018		
Region	U5MR	Lower bound	Upper bound	U5MR	Lower bound	Upper bound	ARR	Lower bound	Upper bound	Under-five deaths	Lower bound	Upper bound	Under-five deaths	Lower bound	Upper bound
Sub-Saharan Africa	**180**	176	184	**78**	72	87	**3.0**	2.6	3.3	**3,857**	3,785	3,941	**2,869**	2,678	3,207
West and Central Africa	**197**	191	204	**97**	87	112	**2.5**	2.0	2.9	**2,031**	1,970	2,096	**1,845**	1,656	2,129
Eastern and Southern Africa	**164**	160	168	**57**	53	65	**3.8**	3.3	4.1	**1,827**	1,786	1,874	**1,024**	945	1,173
Middle East and North Africa	**65**	63	67	**22**	19	26	**3.9**	3.3	4.3	**547**	533	562	**220**	196	257
South Asia	**130**	126	133	**42**	39	46	**4.0**	3.7	4.3	**4,743**	4,626	4,864	**1,475**	1,352	1,605
East Asia and Pacific	**57**	54	60	**15**	14	16	**4.8**	4.4	5.1	**2,302**	2,195	2,430	**462**	432	502
Latin America and Caribbean	**55**	53	56	**16**	16	18	**4.3**	4.0	4.5	**641**	622	661	**172**	165	184
North America	**11**	11	11	**6**	6	7	**1.9**	1.7	2.1	**47**	46	48	**27**	26	29
Europe and Central Asia	**31**	30	32	**9**	8	10	**4.5**	4.1	4.8	**387**	377	398	**96**	90	107
Eastern Europe and Central Asia	**46**	45	48	**13**	12	14	**4.6**	4.2	4.9	**329**	319	340	**78**	71	88
Western Europe	**10**	10	11	**4**	4	4	**3.7**	3.6	3.8	**57**	57	58	**18**	18	19
World	**93**	**92**	**95**	**39**	**37**	**42**	**3.1**	**2.9**	**3.3**	**12,524**	**12,352**	**12,724**	**5,322**	**5,100**	**5,709**

Estimates of mortality among children under age 5 and children aged 5–14 years by World Health Organization region[b]

	Under-five mortality rate (U5MR) with 90 per cent uncertainty interval (deaths per 1,000 live births)									Number of under-five deaths with 90 per cent uncertainty interval (thousands)[a]					
	1990			2018			Annual rate of reduction (ARR) (per cent) 1990–2018			1990			2018		
Region	U5MR	Lower bound	Upper bound	U5MR	Lower bound	Upper bound	ARR	Lower bound	Upper bound	Under-five deaths	Lower bound	Upper bound	Under-five deaths	Lower bound	Upper bound
Africa	**177**	174	181	76	71	85	3.0	2.6	3.3	3,730	3,659	3,812	2,739	2,549	3,062
Americas	**43**	42	44	14	13	14	4.1	3.9	4.3	688	670	708	200	192	212
Eastern Mediterranean	**103**	100	105	47	42	54	2.8	2.3	3.2	1,372	1,342	1,404	829	741	958
Europe	**31**	30	32	9	8	10	4.5	4.1	4.8	388	378	399	97	90	108
South-East Asia	**119**	115	122	34	31	36	4.5	4.2	4.8	4,628	4,511	4,748	1,171	1,075	1,268
Western Pacific	**52**	48	55	12	11	13	5.3	4.8	5.7	1,714	1,609	1,837	283	260	313
World	**93**	**92**	**95**	**39**	**37**	**42**	**3.1**	**2.9**	**3.3**	**12,524**	**12,352**	**12,724**	**5,322**	**5,100**	**5,709**

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

Estimates of mortality among children under age 5 and children aged 5–14 years by UNICEF region[b] (continued)

	Sex-specific under-five mortality rate (deaths per 1,000 live births)				Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)[a]		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)[a]		Probability of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years)		Number of deaths among children aged 5–14 years (thousands)[a]	
	1990		2018													
Region	**Male**	**Female**	**Male**	**Female**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**
Sub-Saharan Africa	189	171	83	72	107	53	2,344	1,973	46	28	1,022	1,054	40	18	592	518
West and Central Africa	206	188	103	90	115	64	1,205	1,240	48	31	522	613	40	23	279	330
Eastern and Southern Africa	173	155	62	52	101	40	1,140	733	43	24	500	441	39	13	313	189
Middle East and North Africa	67	63	23	20	50	18	418	184	28	12	238	122	10	4	67	37
South Asia	127	132	43	41	92	35	3,367	1,207	59	26	2,194	909	20	6	583	211
East Asia and Pacific	60	53	16	14	43	12	1,744	383	27	8	1,102	230	10	3	340	103
Latin America and Caribbean	59	50	18	15	43	14	509	147	23	9	267	95	6	3	63	30
North America	12	10	7	6	9	5	40	24	6	3	24	15	2	1	9	6
Europe and Central Asia	34	28	10	8	25	8	311	83	14	5	175	50	4	2	54	17
Eastern Europe and Central Asia	50	42	14	11	37	11	263	68	21	6	145	39	6	2	42	13
Western Europe	12	9	4	3	9	3	48	15	6	2	30	11	2	1	13	4
World	**96**	**91**	**41**	**36**	**65**	**29**	**8,733**	**4,000**	**37**	**18**	**5,022**	**2,476**	**15**	**7**	**1,708**	**923**

Estimates of mortality among children under age 5 and children aged 5–14 years by World Health Organization region[b] (continued)

	Sex-specific under-five mortality rate (deaths per 1,000 live births)				Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)[a]		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)[a]		Probability of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years)		Number of deaths among children aged 5–14 years (thousands)[a]	
	1990		2018													
Region	**Male**	**Female**	**Male**	**Female**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**
Africa	186	168	81	70	106	52	2,273	1,889	45	27	988	1,006	39	17	573	501
Americas	47	39	15	12	34	12	548	170	18	7	291	110	5	2	73	36
Eastern Mediterranean	105	100	50	44	76	37	1,020	660	44	26	604	464	13	7	129	105
Europe	33	28	10	8	25	7	312	83	14	5	176	51	4	2	54	18
South-East Asia	117	120	34	33	84	28	3,262	960	53	20	2,089	704	20	6	650	198
Western Pacific	54	49	13	11	40	10	1,314	234	27	6	871	139	8	3	228	64
World	**96**	**91**	**41**	**36**	**65**	**29**	**8,733**	**4,000**	**37**	**18**	**5,022**	**2,476**	**15**	**7**	**1,708**	**923**

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

Estimates of mortality among children under age 5 and children aged 5–14 years by World Bank region[b]

	Under-five mortality rate (U5MR) with 90 per cent uncertainty interval (deaths per 1,000 live births)									Number of under-five deaths with 90 per cent uncertainty interval (thousands)[a]					
	1990			2018			Annual rate of reduction (ARR) (per cent) 1990–2018			1990			2018		
Region	**U5MR**	Lower bound	Upper bound	**U5MR**	Lower bound	Upper bound	**ARR**	Lower bound	Upper bound	**Under-five deaths**	Lower bound	Upper bound	**Under-five deaths**	Lower bound	Upper bound
East Asia and Pacific	**57**	54	60	**15**	14	16	**4.8**	4.4	5.1	**2,302**	2,195	2,430	**462**	432	502
Europe and Central Asia	**31**	30	32	**9**	8	10	**4.5**	4.1	4.8	**387**	377	398	**96**	90	107
Latin America and the Caribbean	**55**	53	56	**16**	16	18	**4.3**	4.0	4.5	**641**	622	661	**172**	165	184
Middle East and North Africa	**65**	64	67	**22**	19	26	**3.9**	3.3	4.3	**549**	535	564	**221**	197	259
North America	**11**	11	11	**6**	6	7	**1.9**	1.7	2.1	**47**	46	48	**27**	26	29
South Asia	**130**	126	133	**42**	39	46	**4.0**	3.7	4.3	**4,743**	4,626	4,864	**1,475**	1,352	1,605
Sub-Saharan Africa	**180**	177	184	**78**	72	87	**3.0**	2.6	3.3	**3,855**	3,782	3,939	**2,868**	2,677	3,206
Low income	**183**	179	187	**68**	63	77	**3.5**	3.1	3.8	**2,579**	2,529	2,636	**1,611**	1,497	1,815
Lower-middle income	**122**	120	124	**49**	46	54	**3.3**	2.9	3.5	**7,304**	7,174	7,443	**3,173**	2,966	3,472
Upper-middle income	**51**	49	54	**13**	12	13	**5.0**	4.7	5.2	**2,473**	2,366	2,598	**475**	454	507
High income	**13**	12	13	**5**	5	5	**3.3**	3.1	3.4	**169**	164	174	**63**	61	65
World	**93**	**92**	**95**	**39**	**37**	**42**	**3.1**	**2.9**	**3.3**	**12,524**	**12,352**	**12,724**	**5,322**	**5,100**	**5,709**

Estimates of mortality among children under age 5 and children aged 5–14 years by United Nations Population Division region[b]

	Under-five mortality rate (U5MR) with 90 per cent uncertainty interval (deaths per 1,000 live births)									Number of under-five deaths with 90 per cent uncertainty interval (thousands)[a]					
	1990			2018			Annual rate of reduction (ARR) (per cent) 1990–2018			1990			2018		
Region	**U5MR**	Lower bound	Upper bound	**U5MR**	Lower bound	Upper bound	**ARR**	Lower bound	Upper bound	**Under-five deaths**	Lower bound	Upper bound	**Under-five deaths**	Lower bound	Upper bound
More developed regions	**13**	13	13	**5**	5	5	**3.3**	3.1	3.4	**202**	200	204	**71**	69	74
Less developed regions	**103**	102	105	**42**	40	45	**3.2**	2.9	3.4	**12,322**	12,150	12,523	**5,250**	5,028	5,638
Least developed countries	**175**	173	178	**64**	60	72	**3.6**	3.2	3.8	**3,605**	3,555	3,672	**1,992**	1,874	2,223
Excluding least developed countries	**88**	86	90	**35**	33	38	**3.3**	3.0	3.5	**8,714**	8,542	8,902	**3,255**	3,053	3,540
Excluding China	**116**	115	118	**47**	45	51	**3.2**	2.9	3.4	**10,945**	10,809	11,099	**5,104**	4,884	5,490
Sub-Saharan Africa	**182**	178	186	**78**	73	88	**3.0**	2.6	3.3	**3,751**	3,679	3,834	**2,789**	2,598	3,128
Africa	**165**	162	168	**71**	67	80	**3.0**	2.6	3.2	**4,132**	4,059	4,217	**2,968**	2,778	3,308
Asia	**89**	88	92	**28**	27	30	**4.1**	3.8	4.3	**7,542**	7,383	7,719	**2,100**	1,978	2,244
Europe	**15**	15	16	**5**	5	5	**4.0**	3.8	4.1	**144**	142	146	**40**	38	42
Latin America and the Caribbean	**55**	53	56	**16**	16	18	**4.3**	4.0	4.5	**641**	622	661	**172**	165	184
Northern America	**11**	11	11	**6**	6	7	**1.9**	1.7	2.1	**47**	46	48	**27**	26	29
Oceania	**36**	34	39	**21**	18	25	**1.9**	1.2	2.6	**19**	17	20	**14**	12	17
World	**93**	**92**	**95**	**39**	**37**	**42**	**3.1**	**2.9**	**3.3**	**12,524**	**12,352**	**12,724**	**5,322**	**5,100**	**5,709**

Definitions

Under-five mortality rate: Probability of dying between birth and exactly 5 years of age, expressed per 1,000 live births.
Infant mortality rate: Probability of dying between birth and exactly 1 year of age, expressed per 1,000 live births.
Neonatal mortality rate: Probability of dying in the first 28 days of life, expressed per 1,000 live births.
Probability of dying among children aged 5–14 years: Probability of dying among children aged 5–14 years expressed per 1,000 children aged 5.

Note: Upper and lower bounds refer to the 90 per cent uncertainty intervals for the estimates. Estimates are generated by the United Nations Inter-agency Group for Child Mortality Estimation to ensure comparability; they are not necessarily the official statistics of United Nations Member States, which may use alternative rigorous methods.

a. Number of deaths are rounded to thousands. A zero indicates that the number of deaths is below 500. Unrounded number of deaths are available at <www.childmortality.org> for download.

b. The sum of the number of deaths by region may differ from the world total because of rounding.

Country, regional and global estimates of mortality among children under age 5 and children aged 5–14 years

Estimates of mortality among children under age 5 and children aged 5–14 years by World Bank region[b] (continued)

	Sex-specific under-five mortality rate (deaths per 1,000 live births)				Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)[a]		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)[a]		Probability of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years)		Number of deaths among children aged 5–14 years (thousands)[a]	
	1990		2018													
Region	**Male**	**Female**	**Male**	**Female**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**
East Asia and Pacific	60	53	16	14	43	12	1,744	383	27	8	1,102	230	10	3	340	103
Europe and Central Asia	34	28	10	8	25	8	311	83	14	5	175	50	4	2	54	17
Latin America and the Caribbean	59	50	18	15	43	14	509	147	23	9	267	95	6	3	63	30
Middle East and North Africa	67	63	23	20	50	18	420	185	28	12	239	123	10	4	67	37
North America	12	10	7	6	9	5	40	24	6	3	24	15	2	1	9	6
South Asia	127	132	43	41	92	35	3,367	1,207	59	26	2,194	909	20	6	583	211
Sub-Saharan Africa	189	171	83	72	107	53	2,342	1,972	46	28	1,021	1,054	40	18	591	518
Low income	191	174	73	63	110	48	1,585	1,150	49	26	720	641	42	17	420	330
Lower-middle income	123	121	51	47	84	37	5,064	2,391	49	24	2,992	1,553	20	8	962	478
Upper-middle income	54	48	14	12	41	11	1,943	406	26	7	1,223	247	7	3	288	100
High income	14	11	5	5	10	4	140	53	6	3	86	35	3	1	38	15
World	**96**	**91**	**41**	**36**	**65**	**29**	**8,733**	**4,000**	**37**	**18**	**5,022**	**2,476**	**15**	**7**	**1,708**	**923**

Estimates of mortality among children under age 5 and children aged 5–14 years by United Nations Population Division region[b] (continued)

	Sex-specific under-five mortality rate (deaths per 1,000 live births)				Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)[a]		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)[a]		Probability of dying among children aged 5–14 years (deaths per 1,000 children aged 5 years)		Number of deaths among children aged 5–14 years (thousands)[a]	
	1990		2018													
Region	**Male**	**Female**	**Male**	**Female**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**	**1990**	**2018**
More developed regions	15	12	6	5	11	4	168	60	7	3	103	38	3	1	45	17
Less developed regions	106	100	44	40	71	31	8,565	3,940	40	19	4,919	2,438	17	8	1,663	906
Least developed countries	183	168	69	59	108	46	2,264	1,432	52	26	1,113	821	39	14	571	371
Excluding least developed countries	89	86	36	33	63	27	6,299	2,505	38	17	3,805	1,616	13	6	1,091	535
Excluding China	119	113	50	45	79	35	7,496	3,815	43	22	4,179	2,365	20	9	1,505	865
Sub-Saharan Africa	191	172	84	72	108	53	2,276	1,917	46	28	985	1,016	40	18	575	510
Africa	172	156	76	66	100	49	2,554	2,058	43	26	1,138	1,111	35	16	623	533
Asia	90	89	29	27	65	23	5,497	1,727	41	17	3,511	1,227	14	5	977	341
Europe	17	13	6	5	13	4	120	34	8	3	74	21	3	1	33	10
Latin America and the Caribbean	59	50	18	15	43	14	509	147	23	9	267	95	6	3	63	30
Northern America	12	10	7	6	9	5	40	24	6	3	24	15	2	1	9	6
Oceania	39	33	23	19	27	17	14	11	14	10	7	7	6	4	3	2
World	**96**	**91**	**41**	**36**	**65**	**29**	**8,733**	**4,000**	**37**	**18**	**5,022**	**2,476**	**15**	**7**	**1,708**	**923**

Regional Classifications

The regional classifications that are referred to in the report and for which aggregate data are provided in the statistical table are Sustainable Development Goal regions. Aggregates presented for member organizations of the United Nations Inter-agency Group for Child Mortality Estimation may differ and regional classifications with the same name from different member organizations (e.g., Sub-Saharan Africa) may include different countries.

Whether a country belongs to the group of Least developed countries (LDC), Landlocked developing countries (LLDC) and/or Small island developing States (SIDS) is indicated in the brackets after the country name.

Sub-Saharan Africa

Angola (LDC), Benin (LDC), Botswana (LLDC), Burkina Faso (LDC, LLDC), Burundi (LDC, LLDC), Cabo Verde (SIDS), Cameroon, Central African Republic (LDC, LLDC), Chad (LDC, LLDC), Comoros (LDC, SIDS), Congo, Côte d'Ivoire, Democratic Republic of the Congo (LDC), Djibouti (LDC), Equatorial Guinea, Eritrea (LDC), Eswatini (LLDC), Ethiopia (LDC, LLDC), Gabon, Gambia (LDC), Ghana, Guinea (LDC), Guinea-Bissau (LDC, SIDS), Kenya, Lesotho (LDC, LLDC), Liberia (LDC), Madagascar (LDC), Malawi (LDC, LLDC), Mali (LDC, LLDC), Mauritania (LDC), Mauritius (SIDS), Mozambique (LDC), Namibia, Niger (LDC, LLDC), Nigeria, Rwanda (LDC, LLDC), Sao Tome and Principe (SIDS), Senegal (LDC), Seychelles (SIDS), Sierra Leone (LDC), Somalia (LDC), South Africa, South Sudan (LDC, LLDC), Togo (LDC), Uganda (LDC, LLDC), United Republic of Tanzania (LDC), Zambia (LDC, LLDC), Zimbabwe (LLDC)

Northern Africa and Western Asia

Northern Africa

Algeria, Egypt, Libya, Morocco, Sudan (LDC), Tunisia

Western Asia

Armenia (LLDC), Azerbaijan, Bahrain, Cyprus, Georgia, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, State of Palestine, Syrian Arab Republic, Turkey, United Arab Emirates, Yemen (LDC)

Central and Southern Asia

Central Asia

Kazakhstan (LLDC), Kyrgyzstan (LLDC), Tajikistan (LLDC), Turkmenistan (LLDC), Uzbekistan (LLDC)

Southern Asia

Afghanistan (LDC, LLDC), Bangladesh (LDC), Bhutan (LLDC), India, Iran (Islamic Republic of), Maldives (SIDS), Nepal (LDC, LLDC), Pakistan, Sri Lanka

Eastern and South-Eastern Asia

Eastern Asia

China, Democratic People's Republic of Korea, Japan, Mongolia (LLDC), Republic of Korea

South-Eastern Asia

Brunei Darussalam, Cambodia (LDC), Indonesia, Lao People's Democratic Republic (LDC, LLDC), Malaysia, Myanmar (LDC), Philippines, Singapore (SIDS), Thailand, Timor-Leste (LDC, SIDS), Viet Nam

Latin America and the Caribbean

Antigua and Barbuda (SIDS), Argentina, Bahamas (SIDS), Barbados (SIDS), Belize (SIDS), Bolivia (Plurinational State of) (LLDC), Brazil, Chile, Colombia, Costa Rica, Cuba (SIDS), Dominica (SIDS), Dominican Republic (SIDS), Ecuador, El Salvador, Grenada (SIDS), Guatemala, Guyana (SIDS), Haiti (LDC, SIDS), Honduras, Jamaica (SIDS), Mexico, Nicaragua, Panama, Paraguay (LLDC), Peru, Saint Kitts and Nevis (SIDS), Saint Lucia (SIDS), Saint Vincent and the Grenadines (SIDS), Suriname (SIDS), Trinidad and Tobago (SIDS), Uruguay, Venezuela (Bolivarian Republic of)

Oceania

Australia and New Zealand

Australia, New Zealand

Oceania (excluding Australia and New Zealand)

Cook Islands (SIDS), Fiji (SIDS), Kiribati (LDC, SIDS), Marshall Islands (SIDS), Micronesia (Federated States of) (SIDS), Nauru (SIDS), Niue (SIDS), Palau (SIDS), Papua New Guinea (SIDS), Samoa (SIDS), Solomon Islands (LDC, SIDS), Tonga (SIDS), Tuvalu (LDC, SIDS), Vanuatu (LDC, SIDS)

Europe and Northern America

Europe

Albania, Andorra, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova (LLDC), Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, North Macedonia (LLDC), Ukraine, United Kingdom of Great Britain and Northern Ireland

Northern America

Canada, United States of America

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The UN IGME's independent Technical Advisory Group, comprising leading academic scholars and independent experts in demography and biostatistics, provides technical guidance on estimation methods, technical issues and strategies for data analysis and data quality assessment.

The UN IGME updates its child mortality estimates annually after reviewing newly available data and assessing data quality. This report contains the latest UN IGME estimates of child mortality at the country, regional and global levels. Country-specific estimates and the data used to derive them are available at <www.childmortality.org>.

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