



COMMITTING TO CHILD SURVIVAL  
A PROMISE RENEWED

# Committing to Child Survival: A Promise Renewed



Progress Report 2012

unicef 

## Acknowledgements

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## Foreword

Anthony Lake, Executive Director, UNICEF



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The story of child survival over the past two decades is one of significant progress and unfinished business.

There is much to celebrate. More children now survive their fifth birthday than ever before — the global number of under-five deaths has fallen from around 12 million in 1990 to an estimated 6.9 million in 2011. All regions have shown steady reductions in under-five mortality over the past two decades. In the last decade alone, progress on reducing child deaths has accelerated,

with the annual rate of decline in the global under-five mortality rate rising from 1.8% in 1990-2000 to 3.2% in 2000-2011.

The gains have been broad, with marked falls in diverse countries. Between 1990 and 2011, nine low-income countries — Bangladesh, Cambodia, Ethiopia, Liberia, Madagascar, Malawi, Nepal, Niger and Rwanda — reduced their under-five mortality rate by 60% or more. Nineteen middle-income countries, among them Brazil, China, Mexico and Turkey, and 10 high-income countries, including Estonia, Oman, Portugal and Saudi Arabia, are also making great progress, reducing under-five mortality by two-thirds or more over the same period.

Our advances to date stem directly from the collective commitment, energy and efforts of governments, donors, non-governmental organizations, UN agencies, scientists, practitioners, communities, families and individuals. Measles deaths have plummeted. Polio, though stubbornly resistant thus far to elimination, has fallen to historically low levels. Routine immunization has increased almost everywhere. Among the most striking advances has been the progress in combatting AIDS. Thanks to the application of new treatments, better prevention and sustained funding, rates of new HIV infections — and HIV-associated deaths among children — have fallen substantially.

But any satisfaction at these gains is tempered by the unfinished business that remains. The fact remains that, on average, around 19,000 children still die every day from largely preventable causes. With necessary vaccines, adequate nutrition and basic medical and maternal care, most of these young lives could be saved.

Nor can we evade the great divides and disparities that persist among regions and within countries. The economically poorest regions, least developed countries, most fragile nations, and most disadvantaged and marginalized populations continue to bear the heaviest burden of child deaths. More than four-fifths of all under-five deaths in 2011 occurred in sub-Saharan Africa and

South Asia. Given the prospect that these regions, especially sub-Saharan Africa, will account for the bulk of the world's births in the next years, we must give new impetus to the global momentum to reduce under-five deaths.

This is the potential of *Committing to Child Survival: A Promise Renewed*, a global effort to accelerate action on maternal, newborn and child survival. In June 2012, the Governments of Ethiopia, India and the United States — together with UNICEF — brought together more than 700 partners from the public, private and civil society sectors for the Child Survival Call to Action. What emerged from the Call to Action was a rejuvenated global movement for child survival, with partners pledging to work together across technical sectors with greater focus, energy and determination. Since June, more than 110 governments have signed a pledge vowing to redouble efforts to accelerate declines in child mortality; 174 civil society organizations, 91 faith-based organizations, and 290 faith leaders from 52 countries have signed their own pledges of support.

Under the banner of *A Promise Renewed*, a potent global movement, led by governments, is mobilizing to scale up action on three fronts: sharpening evidence-based country plans and setting measurable benchmarks; strengthening accountability for maternal, newborn and child survival; and mobilizing broad-based social support for the principle that no child should die from preventable causes. Concerted action in these three areas will hasten declines in child and maternal mortality, enabling more countries to achieve MDGs 4 and 5 by 2015 and sustain the momentum well into the future.

As the message of this report makes clear, countries can achieve rapid declines in child mortality, with determined action by governments and supportive partners. Our progress over the last two decades has taught us that sound strategies, adequate resources and, above all, political will, can make a critical difference to the lives of millions of young children.

By pledging to work together to support the goals of *A Promise Renewed*, we can fulfill the promise the world made to children in MDGs 4 and 5: to give every child the best possible start in life. Join us.

## Overview

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### BACKGROUND

To advance *Every Woman Every Child*, a strategy launched by United Nations Secretary-General Ban Ki-moon, UNICEF and other UN organizations are joining partners from the public, private and civil society sectors in a global movement to accelerate reductions in preventable maternal, newborn and child deaths.

The Child Survival Call to Action was convened in June 2012 by the Governments of Ethiopia, India and the United States, together with UNICEF, to examine ways to spur progress on child survival. A modelling exercise presented at this event demonstrated that all countries can lower child mortality rates to 20 or fewer deaths per 1,000 live births by 2035 – an important milestone towards the ultimate aim of ending preventable child deaths.

Partners emerged from the Call to Action with a revitalized commitment to child survival under the banner of *A Promise Renewed*. Since June, more than 100 governments and many civil society and private sector organizations have signed a pledge to redouble their efforts, and many more are expected to follow suit in the days and months to come. This global movement will focus on learning from and building on the many successes made in reducing child deaths in numerous countries over the past two decades. More details on *A Promise Renewed* are available at <[www.apromiserenewed.org](http://www.apromiserenewed.org)>.

### PRIORITY ACTIONS

To meet the goals of *A Promise Renewed*, our efforts must focus on scaling up essential interventions through the following three priority actions:

**Evidence-based country plans:** Governments will lead the effort by setting and sharpening their national action plans, assigning costs to strategies and monitoring five-year milestones. Development partners can support the national targets by pledging to align their assistance with government-led action plans. Private-sector partners can spur innovation and identify new resources for child survival. And, through action and advocacy, civil society can support the communities and families whose decisions profoundly influence prospects for maternal and child survival.

**Transparency and mutual accountability:** Governments and partners will work together to report progress and to promote accountability for the global commitments made on behalf of children. UNICEF and partners will collect and disseminate data on each country's progress. A global monitoring template, based on the indicators developed by the UN Commission on Information and Accountability for Women's and Children's Health, has been

developed for countries to adapt to their own priorities. National governments and local partners are encouraged to take the lead in applying the template to national monitoring efforts.

**Global communication and social mobilization:** Governments and partners will mobilize broad-based social and political support for the goal of ending preventable child deaths. As part of this effort, the search for small-scale innovations that demonstrate strong potential for large-scale results will be intensified. Once identified, local innovations will be tested, made public, and taken to scale. By harnessing the power of mobile technology, civil society and the private sector can encourage private citizens, especially women and young people, to participate in the search for innovative approaches to maternal and child survival.

### ANNUAL REPORTS

In support of *A Promise Renewed*, UNICEF is publishing yearly reports on child survival to stimulate public dialogue and help sustain political commitment. This year's report, released in conjunction with the annual review of the child mortality estimates of the UN Inter-Agency Group on Mortality Estimation, presents:

- Trends and levels in under-five mortality over the past two decades.
- Causes of and interventions against child deaths.
- Brief examples of countries that have made radical reductions in child deaths over the past two decades.
- A summary of the strategies for meeting the goals of *A Promise Renewed*.
- Statistical tables of child mortality and causes of under-five deaths by country and UNICEF regional classification.

The analysis presented in this report provides a strong case for proceeding with optimism. The necessary interventions and know-how are available to drastically reduce child deaths in the next two decades. The time has come to recommit to child survival and renew the promise.





Chapter 1: Levels and trends in child mortality

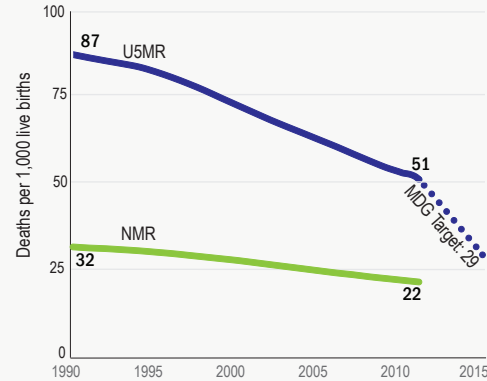
# Chapter 1: Levels and trends in child mortality

- ▶ The number of under-five deaths worldwide has decreased from nearly 12 million in 1990 to less than 7 million in 2011.
- ▶ The rate of decline in under-five mortality has drastically accelerated in the last decade – from 1.8% per year during the 1990s to 3.2% per year between 2000 and 2011.
- ▶ Under-five deaths are increasingly concentrated in sub-Saharan Africa and South Asia. In 2011, 82% of under-five deaths occurred in these two regions, up from 68% in 1990.

All regional aggregates refer to UNICEF's regional classification.

## The global under-five mortality rate fell by 41% from 1990 to 2011

Global under-five mortality rate (U5MR) and neonatal mortality rate (NMR), 1990-2011 **FIG. 2**



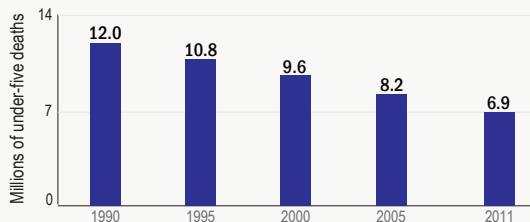
Source: IGME 2012.

## The progress

Much of the news on child survival is heartening. Reductions in under-five mortality rates, combined with declining fertility rates in many regions and countries, have diminished the burden (number) of under-five deaths from nearly 12 million in 1990 to an estimated 6.9 million in 2011 (Figure 1). About 14,000 fewer children die each day than did two decades ago – a testimony to the sustained efforts and commitment to child survival by many, including governments and donors, non-governmental organizations and agencies, the private sector, communities, families and individuals.

## The global burden of under-five deaths has fallen steadily since 1990

Global under-five deaths, millions, 1990-2011 **FIG. 1**



Source: IGME 2012.

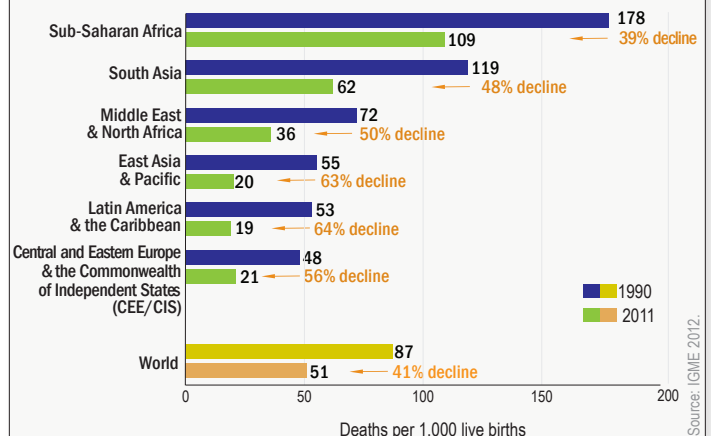
Mortality rates among children under 5 years of age fell globally by 41% between 1990 – the base year for the Millennium Development Goals (MDGs) – and 2011, lowering the global rate from 87 deaths per 1,000 live births to 51 (Figure 2). Importantly, the bulk of the progress in the past two decades has taken place since the MDGs were set in the year 2000, with the global rate of decline in under-five mortality accelerating to 3.2% annually in 2000-2011, compared with 1.8% for the 1990-2000 period.<sup>1</sup>

## REGIONAL PROGRESS

The most pronounced falls in under-five mortality rates have occurred in four regions: Latin America and the Caribbean; East Asia and the Pacific; Central and Eastern Europe and the Commonwealth of Independent States (CEE/CIS); and the Middle East and North Africa.<sup>2</sup> All have more than halved their regional rates of under-five mortality since 1990. The corresponding decline for South Asia was 48%, which in absolute terms translates into around 2 million fewer under-five deaths in 2011 than in 1990 – by far the highest absolute reduction among all regions (Figure 3).

## All regions have experienced marked declines in under-five mortality rates since 1990

Under-five mortality rate by region, 1990 and 2011, and percentage decline over this period **FIG. 3**



Source: IGME 2012.

## Levels and trends in child mortality

Sub-Saharan Africa, though lagging behind the other regions, has also registered a 39% decline in the under-five mortality rate. Moreover, the region has seen a doubling in its annual rate of reduction to 3.1% during 2000-2011, up from 1.5% during 1990-2000. In particular, there has been a dramatic acceleration in the rate of decline in Eastern and Southern Africa, which coincided with a substantial scale-up of effective interventions to combat major diseases and conditions, most notably HIV, but also measles and malaria.

### NATIONAL PROGRESS

Many countries have witnessed marked falls in mortality during the last two decades — including some with very high rates of mortality in 1990. Four — Lao People's Democratic Republic, Timor-Leste, Liberia and Bangladesh — achieved a reduction of at least two-thirds over the period (Figure 5). Over the past decade, momentum on lowering under-five deaths has strengthened in many high-mortality countries: 45 out of 66 such countries have accelerated their rates of reduction compared with the previous decade. Eight of the top 10 high-mortality countries with the highest increases in the annual rate of reduction between 1990-2000 and 2000-2011 are in Eastern and Southern Africa (Figure 4).

#### Among high-mortality countries, most of the sharpest accelerations in reducing under-five mortality have occurred in sub-Saharan Africa

Top 10 high-mortality countries\* with the sharpest increases in the annual rate of reduction in under-five mortality rate

FIG. 4

Country	Annual rate of reduction (%)**	
	1990-2000	2000-2011
Rwanda	-1.6	11.1
Cambodia	-2.9	4.1
Zimbabwe	1.4	7.9
Senegal	0.4	6.4
South Africa	-1.7	4.2
Lesotho	-2.9	2.8
Kenya	-1.5	4.0
Namibia	-0.1	5.2
Swaziland	-3.2	0.9
United Republic of Tanzania	2.2	5.7

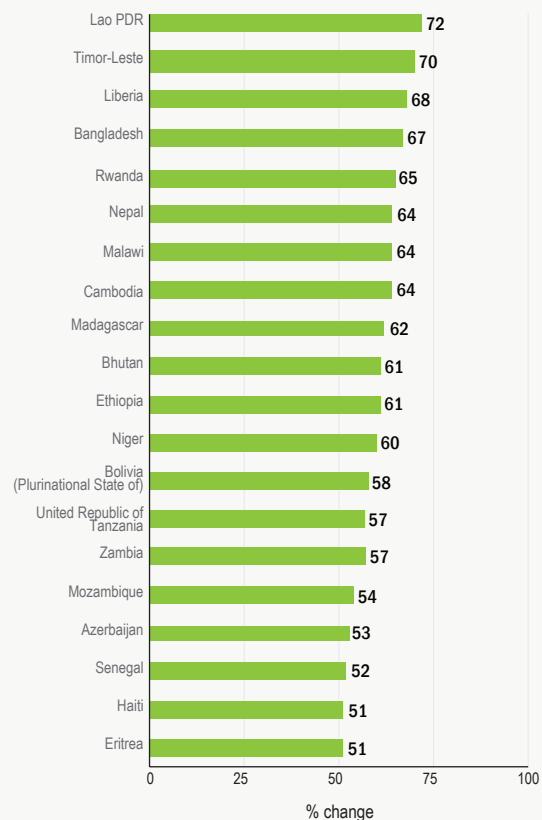
\*Countries with an under-five mortality rate of 40 or more deaths per 1,000 live births in 2011.  
\*\*A negative value indicates an increase in the under-five mortality rate over the period.

Source: IGME 2012.

#### Twenty high-mortality countries have reduced their under-five mortality rates by more than half since 1990

FIG. 5

High-mortality countries\* with the greatest percentage declines in under-five mortality rates since 1990



\*Countries with an under-five mortality rate of 40 or more deaths per 1,000 live births in 2011.

Source: IGME 2012.

### SOURCES OF PROGRESS

Global progress in child survival has been the product of multiple factors, including effective interventions in many sectors and more supportive environments for their delivery, access and use in many countries. The progress is attributable not to improvements in just one or two areas, but rather to a broad confluence of gains — in medical technology, development programming, new ways of delivering health services, strategies to overcome bottlenecks and innovation in household survey data analysis, along with improvements in education, child protection, respect for human rights and economic gains in developing countries. Underpinning all of these has been the resolute determination of many development actors and members of the international community to save children's lives.



## Levels and trends in child mortality

### The challenge

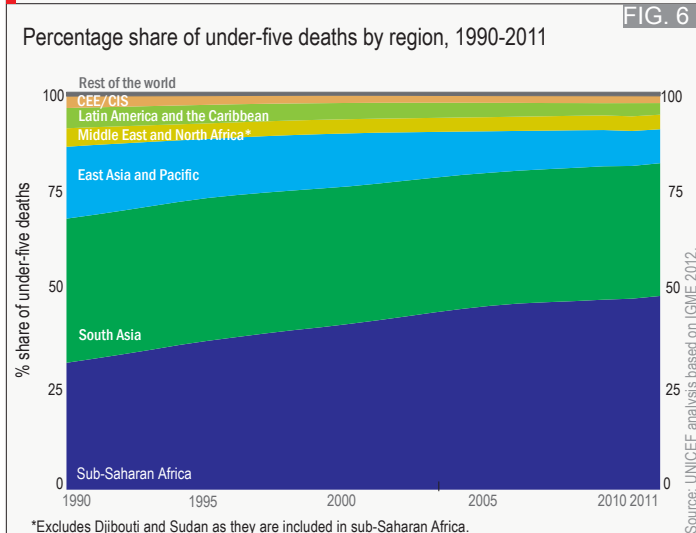
There are worrying caveats to this progress. At 2.5%, the annual rate of reduction in under-five mortality is insufficient to meet the MDG 4 target. Almost 19,000 children under 5 still die each day, amounting to roughly 1.2 million under-five deaths from mostly preventable causes every two months. Despite all we have learned about saving children's lives, our efforts still do not reach millions.

### A CONCENTRATED BURDEN

Even as the global and regional rates of under-five mortality have fallen, the burden of child deaths has become alarmingly concentrated in the world's poorest regions and countries. A look at how the burden of under-five deaths is distributed among regions reveals an increasing concentration of mortality in sub-Saharan Africa and South Asia; in 2011, more than four-fifths of all global under-five deaths occurred in these two regions alone (Figure 6). Sub-Saharan Africa accounted for almost half (49%) of the global total in 2011. Despite rapid gains in reducing under-five mortality, South Asia's share of global under-five deaths remains second highest, at 33% in 2011. In contrast, the rest of the world's regions have seen their share fall from 32% in 1990 to 18% two decades later.

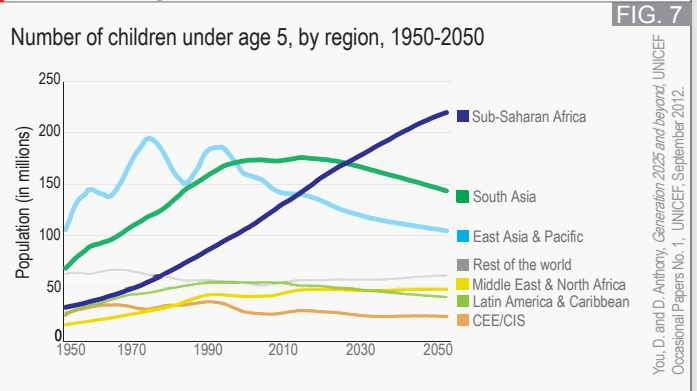
The highest regional rate of under-five mortality is found in sub-Saharan Africa, where, on average, 1 in 9 children dies before age 5. In some countries, the total number of under-five deaths has increased: Democratic Republic of the Congo, Chad, Somalia, Mali, Cameroon and Burkina Faso have experienced rises in their national burden of under-five deaths by 10,000 or more for 2011 as compared to 1990, due to a combination of population growth and insufficient decline of under-five mortality.

### The global burden of under-five deaths is increasingly concentrated in sub-Saharan Africa and South Asia



The outlook for child mortality in sub-Saharan Africa is made more uncertain by expected demographic changes: Of the world's regions, it is the only one where the number of births and the under-five population are set to substantially increase this century. If current trends persist, by mid-century, 1 in 3 children in the world will be born in sub-Saharan Africa, and its under-five population will grow rapidly (Figure 7).<sup>3</sup>

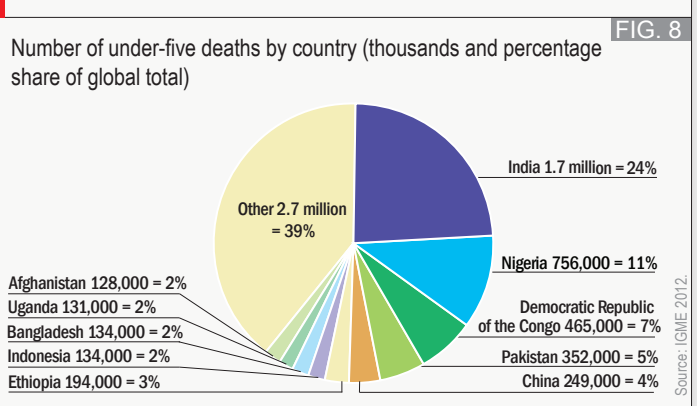
### The under-five population in sub-Saharan Africa will rise quickly over the coming decades



### GAPS IN PROGRESS

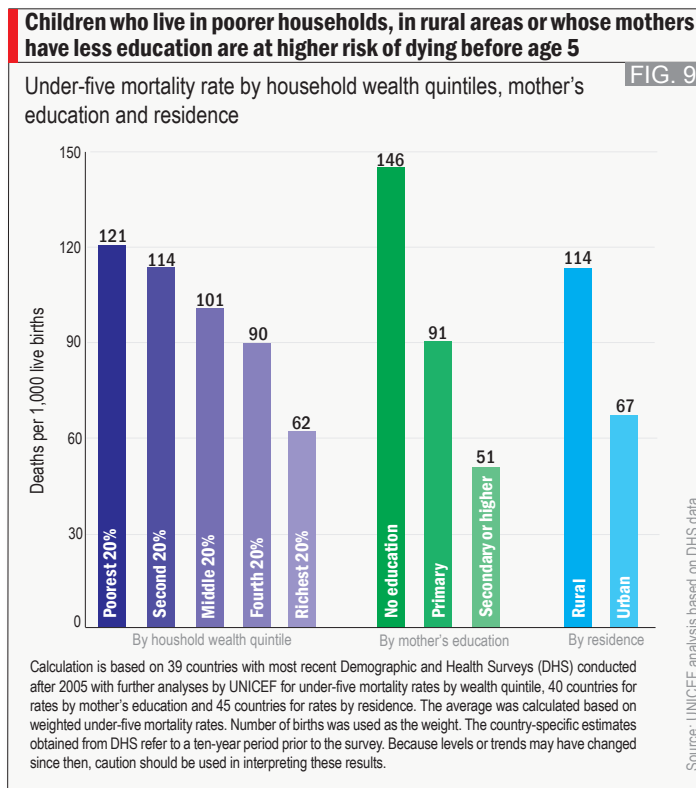
The growing breach between the rest of the world and sub-Saharan Africa and South Asia underscores the inequities that remain in child survival. In 2011, about half of global under-five deaths occurred in just five countries: India, Nigeria, the Democratic Republic of the Congo, Pakistan and China. Four of these (all but the Democratic Republic of the Congo) are populous middle-income countries. India and Nigeria together accounted for more than one-third of the total number of under-five deaths worldwide (Figure 8). Across regions, the least developed countries consistently have higher rates of under-five mortality than more affluent countries.

### Half of all under-five deaths occur in just five countries



## Levels and trends in child mortality

Furthermore, in recent years, emerging evidence has shown alarming disparities in under-five mortality at the subnational level in many countries. UNICEF analysis of international household survey data shows that children born into the poorest quintile (fifth) of households are almost twice as likely to die before age 5 as their counterparts in the wealthiest quintile. Poverty is not the only divider, however. Children are also at greater risk of dying before age 5 if they are born in rural areas, among the poor, or to a mother denied basic education (Figure 9). At the macro level, violence and political fragility (weakened capacity to sustain core state functions) also contribute to higher rates of under-five mortality. Eight of the 10 countries with the world's highest under-five mortality rates are either affected markedly by conflict or violence, or are in fragile situations.



### Countries with low or very low child mortality

Much of the discourse around child survival is related to high-mortality countries or regions, and rightly so. But the challenge of *A Promise Renewed* also encompasses those countries that have managed to reduce their rates and burden of child mortality to low, or even very low, levels. The UN Inter-agency Group for Child Mortality Estimation (IGME) reports annually on 195 countries; 98 of these countries posted an under-five mortality rate of less than 20 per 1,000 live deaths in 2011. This contrasts with just 53 such countries in 1990. Understanding how countries can lower the under-five mortality rate to 20 per 1,000 live births can provide a beacon for those countries still suffering from higher rates of child mortality, as well spurring all nations, low and high mortality alike, to do their utmost for children's survival.

#### LOW MORTALITY LEVELS

For the purposes of this report, low-mortality countries are defined as those with under-five mortality of 10-20 deaths per 1,000 live births in 2011; very-low-mortality countries have rates below 10 per 1,000 live births. Many of the 41 countries in the low-mortality category are commonly thought of as middle-income, and the majority only reached this threshold in the current millennium. Populous members of this group include Brazil, China, Mexico, the Russian Federation and Turkey, among others.

Although countries in this group have achieved low rates of under-five mortality, the group's share of the global burden of under-five deaths is still significant, numbering around 459,000 in 2011, about 7% of the global total; China accounts for more than half of these deaths.

As a group, the low-mortality countries have demonstrated continued progress in recent years, with an annual rate of reduction of 5.6% in the past two decades. This has resulted in a near-70% reduction in their overall under-five mortality from 47 deaths per 1,000 live births in 1990 to 15 in 2011. Twenty-two of the 41 low-mortality countries have more than halved their mortality rates since 1990 (see Figure 10 for top countries).

#### VERY LOW MORTALITY LEVELS

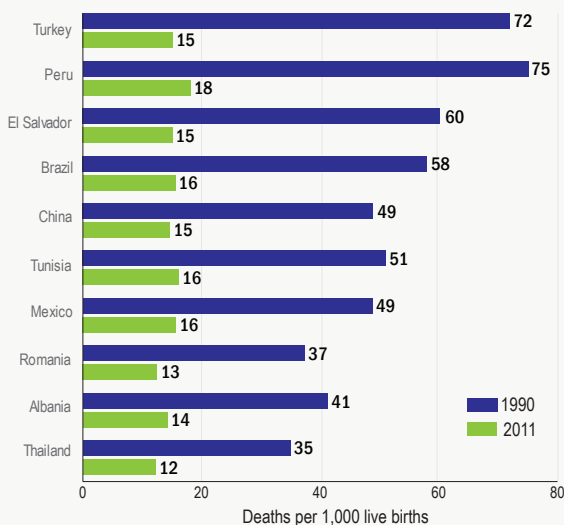
By 2011, 57 countries had managed to lower their national under-five mortality rate below 10 per 1,000 live births. The burden of under-five deaths in very-low-mortality countries stood at around 83,000 in 2011, representing just over 1% of the global total; the United States accounted for nearly 40% of the under-five deaths in very-low-mortality countries in 2011. This group includes mostly high-income countries in Europe and North America, joined by a small number of high-income and middle-income countries in East Asia and South America. The Nordic countries — Denmark, Iceland, Finland, Norway and Sweden — and the Netherlands were the earliest to attain under-five mortality rates below 20 per 1,000 live births. Sweden achieved

## Levels and trends in child mortality

### Several populous middle-income countries have posted rapid declines in under-five mortality in recent decades

Low-mortality countries\* with the highest annual rates of reduction, 1990-2011 (excluding countries with total population of less than 500,000)

FIG. 10



\*Low-mortality countries are those with under-five mortality of 10-20 deaths per 1,000 live births.

Source: IGME 2012.

this landmark first, in 1959; the other four, along with the Netherlands, had all achieved this level by 1966. Next were France, Japan and Switzerland, all in 1968, followed by Australia, Canada, Luxembourg, New Zealand and the United Kingdom in 1972, and Belgium, Singapore and the United States in 1974. Oman was the last country to reach this threshold, in 2002. *Figure 11* shows the 10 countries with the lowest under-five mortality rates.

Very-low-mortality countries have generally achieved substantial progress in reducing under-five mortality from 1990 to 2011. Notable examples include Oman, with an 82% reduction during this period; Estonia, also with 82%; Saudi Arabia, with 78%; Portugal, with 77%; and Serbia, with 75%. These successes challenge the long-held conventional wisdom that, as under-five mortality rates fall, the pace of decline is likely to slow as it becomes harder to make similar percentage gains on a lower base. From 1990 to 2011, very-low-mortality countries posted an annual rate of reduction of 3.7%, compared to just 2.5% globally.

### The world's lowest under-five mortality rates are in Singapore, the Nordic countries, small European countries and Japan

Ten countries with the lowest under-five mortality rates in 2011 (excluding countries with total population of less than 500,000)

FIG. 11

Country	U5MR in 2011
Singapore	2.6
Slovenia	2.8
Sweden	2.8
Finland	2.9
Cyprus	3.1
Norway	3.1
Luxembourg	3.2
Japan	3.4
Portugal	3.4
Denmark	3.7

Source: UNICEF analysis based on IGME 2012.

### The promise

The duality between the demonstrated advances in reducing under-five deaths since 1990, and the major gaps that remain, poses two linked challenges for the global child survival movement. The first is to do all we can to save children's lives, working at the global, national and subnational levels, in the remaining years until the 2015 MDG deadline. The second is to leverage the MDGs as a driving force, with 2015 as a stepping stone, to sustain sharp reductions in under-five deaths during the following two decades and provide universal access to essential health and nutrition services for the world's children. That is the promise renewed.

A diverse group of countries, including Oman, Estonia, Turkey, Saudi Arabia, Portugal, Peru and Egypt, among others, have been able to sustain high annual rates of reduction in under-five mortality over two decades. Others, such as Rwanda, Cambodia, Zimbabwe and Senegal, have succeeded in substantially accelerating their rates of reduction in mortality during the last decade. These facts underlie the promise of sharper progress in child survival in the future. The varied circumstances of these countries suggest that it is possible to lower child mortality at an accelerated pace over long periods, even from high base rates, when concerted action, sound strategies, adequate resources and resolute political commitment are consistently applied in support of child and maternal survival and human and gender rights.

## Under-five mortality rate league table 2011

Sub-Saharan Africa			Middle East & North Africa			Asia & Pacific		
Countries and territories	U5MR	U5MR rank	Countries and territories	U5MR	U5MR rank	Countries and territories	U5MR	U5MR rank
Sierra Leone	185	1	Djibouti	90	26	Afghanistan	101	23
Somalia	180	2	Sudan	86	29	Pakistan	72	39
Mali	176	3	Yemen	77	36	Myanmar	62	47
Chad	169	4	Iraq	38	67	India	61	49
Democratic Republic of the Congo	168	5	Morocco	33	69	Papua New Guinea	58	50
Central African Republic	164	6	Algeria	30	74	Bhutan	54	51
Guinea-Bissau	161	7	Iran (Islamic Republic of)	25	83	Timor-Leste	54	51
Angola	158	8	Occupied Palestinian Territory	22	87	Nepal	48	57
Burkina Faso	146	9	Egypt	21	91	Kiribati	47	58
Burundi	139	10	Jordan	21	91	Bangladesh	46	60
Cameroon	127	11	Libya	16	107	Cambodia	43	62
Guinea	126	12	Tunisia	16	107	Lao People's Democratic Republic	42	63
Niger	125	13	Syrian Arab Republic	15	115	Micronesia (Federated States of)	42	63
Nigeria	124	14	Kuwait	11	133	Nauru	40	66
South Sudan	121	15	Bahrain	10	135	Democratic People's Republic of Korea	33	69
Equatorial Guinea	118	16	Lebanon	9	141	Indonesia	32	71
Côte d'Ivoire	115	17	Oman	9	141	Mongolia	31	72
Mauritania	112	18	Saudi Arabia	9	141	Tuvalu	30	74
Togo	110	19	Qatar	8	145	Marshall Islands	26	80
Benin	106	20	United Arab Emirates	7	151	Philippines	25	83
Swaziland	104	21	Israel	4	169	Solomon Islands	22	87
Mozambique	103	22				Viet Nam	22	87
Gambia	101	23				Niue	21	91
Congo	99	25				Palau	19	100
Uganda	90	26				Samoa	19	100
Sao Tome and Principe	89	28				Fiji	16	107
Lesotho	86	29				China	15	115
Malawi	83	31				Tonga	15	115
Zambia	83	31				Vanuatu	13	125
Comoros	79	33				Sri Lanka	12	128
Ghana	78	34				Thailand	12	128
Liberia	78	34				Maldives	11	133
Ethiopia	77	36				Cook Islands	10	135
Kenya	73	38				Brunei Darussalam	7	151
Eritrea	68	41				Malaysia	7	151
United Republic of Tanzania	68	41				New Zealand	6	157
Zimbabwe	67	43				Australia	5	165
Gabon	66	44				Republic of Korea	5	165
Senegal	65	45				Japan	3	184
Madagascar	62	47				Singapore	3	184
Rwanda	54	51						
South Africa	47	58						
Namibia	42	63						
Botswana	26	80						
Cape Verde	21	91						
Mauritius	15	115						
Seychelles	14	122						

### DEFINITIONS OF INDICATORS

U5MR: Under-five mortality rate: Probability of dying between birth and exactly 5 years of age, expressed per 1,000 live births.

U5MR Rank: Country rank in descending order of U5MR.

Source: IGME 2012.



## Under-five mortality rate league table 2011

Americas			Europe & Central Asia		
Countries and territories	U5MR	U5MR rank	Countries and territories	U5MR	U5MR rank
Haiti	70	40	Tajikistan	63	46
Bolivia (Plurinational State of)	51	55	Turkmenistan	53	54
Guyana	36	68	Uzbekistan	49	56
Guatemala	30	74	Azerbaijan	45	61
Suriname	30	74	Kyrgyzstan	31	72
Trinidad and Tobago	28	78	Kazakhstan	28	78
Nicaragua	26	80	Georgia	21	91
Dominican Republic	25	83	Armenia	18	102
Ecuador	23	86	Republic of Moldova	16	107
Paraguay	22	87	Turkey	15	115
Honduras	21	91	Albania	14	122
Saint Vincent and the Grenadines	21	91	Romania	13	125
Barbados	20	98	Bulgaria	12	128
Panama	20	98	Russian Federation	12	128
Colombia	18	102	The former Yugoslav Republic of Macedonia	10	135
Jamaica	18	102	Ukraine	10	135
Peru	18	102	Bosnia and Herzegovina	8	145
Belize	17	106	Latvia	8	145
Bahamas	16	107	Slovakia	8	145
Brazil	16	107	Montenegro	7	151
Mexico	16	107	Serbia	7	151
Saint Lucia	16	107	Belarus	6	157
El Salvador	15	115	Hungary	6	157
Venezuela (Bolivarian Republic of)	15	115	Lithuania	6	157
Argentina	14	122	Malta	6	157
Grenada	13	125	Poland	6	157
Dominica	12	128	Croatia	5	165
Costa Rica	10	135	United Kingdom	5	165
Uruguay	10	135	Austria	4	169
Chile	9	141	Belgium	4	169
Antigua and Barbuda	8	145	Czech Republic	4	169
United States	8	145	Denmark	4	169
Saint Kitts and Nevis	7	151	Estonia	4	169
Canada	6	157	France	4	169
Cuba	6	157	Germany	4	169
			Greece	4	169
			Ireland	4	169
			Italy	4	169
			Monaco	4	169
			Netherlands	4	169
			Spain	4	169
			Switzerland	4	169
			Andorra	3	184
			Cyprus	3	184
			Finland	3	184
			Iceland	3	184
			Luxembourg	3	184
			Norway	3	184
			Portugal	3	184
			Slovenia	3	184
			Sweden	3	184
			San Marino	2	195
			Holy See	-	-
			Liechtenstein	-	-





## Chapter 2: Leading causes of child deaths



## Chapter 2: Leading causes of child deaths

- ▶ Four in 10 under-five deaths occur during the first month of life. Among children who survive past the first month, pneumonia, diarrhoea and malaria are the leading killers.
- ▶ Globally, infectious diseases account for almost two-thirds of under-five deaths.
- ▶ Many of these deaths occur in children already weakened by undernutrition; worldwide, more than one-third of all under-five deaths are attributable to this condition.

The estimates on cause of death in this report were derived from the work of the Child Health Epidemiology Reference Group (CHERG) pertaining to cause of death in 2010 and the work of the IGME pertaining to all-cause child deaths in 2011. The numbers of deaths by cause have been updated by applying the percentage breakdown by cause provided by CHERG to the estimates of number of under-five deaths provided by IGME. This approach was used for comparability across diseases, and therefore these estimates may differ from those presented elsewhere.

All regional aggregates refer to UNICEF's regional classification.

### Overview

Understanding the causes of child mortality provides important public health insights. Of the 6.9 million deaths in children under 5 that occurred in 2011,<sup>4</sup> almost two-thirds (64%) were caused by infectious diseases and conditions such as pneumonia, diarrhoea, malaria, meningitis, tetanus, HIV and measles. Around 40% of all under-five deaths occurred in the neonatal period (within the first 28 days of life), the majority from preterm birth complications and intrapartum-related complications (complications during delivery). Globally, more than one-third of under-five deaths are attributable to undernutrition (*Figure 12*).

Worldwide, the leading causes of death among children under 5 include pneumonia (18% of all under-five deaths), preterm birth complications (14%), diarrhoea (11%), intrapartum-related complications (9%), malaria (7%), and neonatal sepsis, meningitis and tetanus (6%). Cross-country comparisons show a wide variation among countries in the proportions of under-five deaths attributable to specific causes. Such variations indicate that optimal programmatic approaches for child survival will differ from country to country.

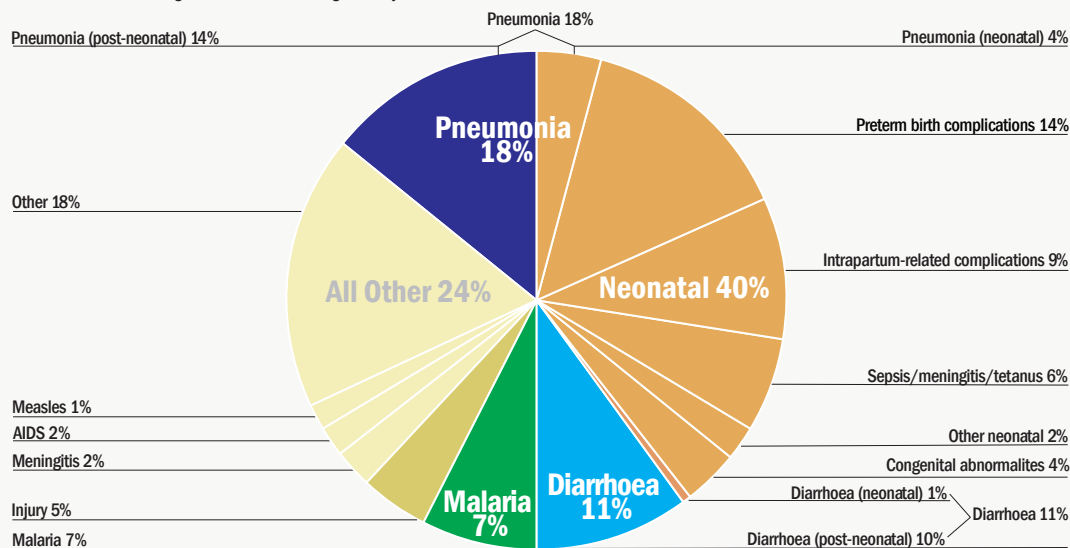
### INFECTIOUS DISEASES

Infectious diseases are characteristically diseases of the poor and vulnerable who lack access to basic prevention and treatment interventions. Taken as such, the proportion of deaths due to infectious diseases is a marker of equity. For example, in countries with very high mortality (those with under-five mortality rates of at least 100 deaths per 1,000 live births), approximately half of child deaths are due to infectious diseases. These deaths are largely preventable.

### Almost two-thirds of all child deaths are attributable to infectious diseases; around 40% of deaths in children under 5 occur during the neonatal period

Global distribution of deaths among children under age 5, by cause, 2010

FIG. 12

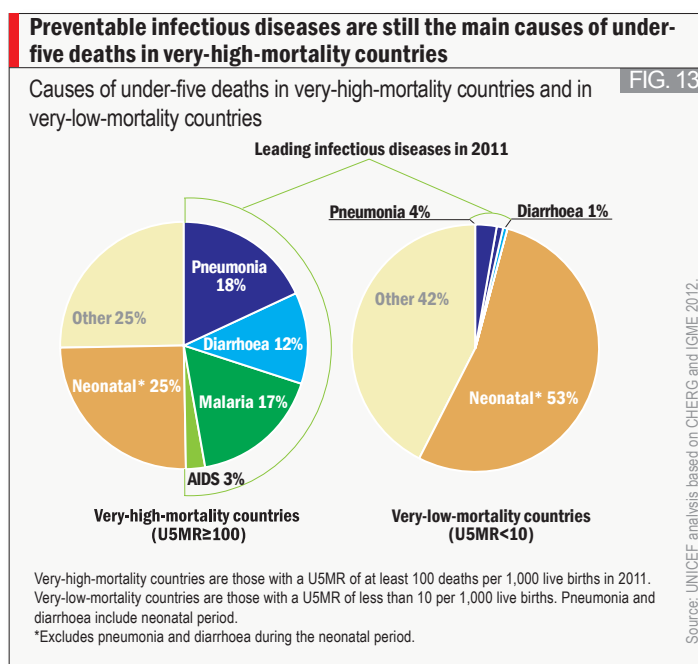


Globally, more than one-third of under-five deaths are attributable to undernutrition.

Source: Adapted from Child Health Epidemiology Reference Group (CHERG) and IGME, 2012.

## Leading causes of child deaths

On the other hand, in very-low-mortality countries (those with under-five mortality rates of less than 10 per 1,000 live births), there are almost no under-five deaths from infectious diseases (Figure 13). Such countries show a large proportion of deaths from neonatal causes, many of which can be also prevented, as well as from other causes such as injuries.

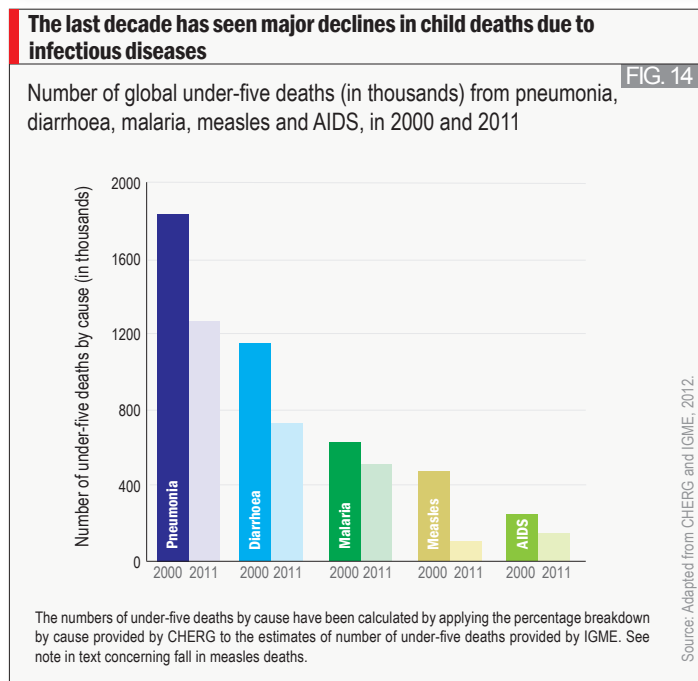


The evidence suggests many of the major declines in under-five deaths in all regions were related to expanded efforts against infectious diseases (Figure 14). The largest percentage fall — more than three-quarters — has been recorded in measles<sup>5</sup> thanks in large part to enhanced global and national vaccination programmes. (Refer to the following sections of this report for discussion of progress in fighting pneumonia, diarrhoea, malaria and HIV and AIDS.)

Just as the global burden of under-five child deaths from all causes has become concentrated in a small number of countries, so also has the burden of deaths from specific causes, notably preventable ones. More than half of under-five deaths caused by pneumonia or diarrhoea occur in just four countries: India, Nigeria, the Democratic Republic of the Congo and Pakistan.<sup>6</sup> Nigeria bears nearly 30% of the global burden of under-five malaria deaths and about 20% of the global burden of under-five HIV-associated deaths.<sup>7</sup> Countries with high burdens of child deaths and high proportions of deaths from infectious diseases require support to successfully combat these preventable killers.

### INJURIES

Injuries are a leading cause of child deaths in some countries. In a number of countries, injuries account for at least 10% of under-five deaths.<sup>8</sup> Although children living in countries that are in fragile situations are particularly vulnerable, it is notable that injury is an important cause of death in low- and very-low-mortality countries — including the United States, where close to 1 in 5 under-five deaths is from injury.<sup>9</sup> As with neonatal causes of death, injuries become an increasingly large proportion of child deaths as mortality rates decline.



### Challenges in monitoring child mortality

Reliable data on child survival are still very sparse. Only about 60 countries have complete vital registration systems that allow for systematic monitoring of causes and levels of child mortality. The majority of countries instead rely on other data sources, primarily household surveys such as Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS), to estimate levels and trends in under-five mortality. Furthermore, it is estimated that less than 3% of the causes of under-five deaths globally are medically certified, meaning that modelling often must be used to provide estimates of causes of death.

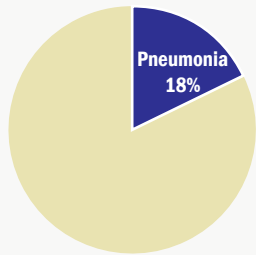
Greater investment is needed to strengthen vital registration systems to close these gaps in knowledge. For the foreseeable future, however, most countries will still rely on household surveys as their primary source of information on child mortality. Continued support and funding for these surveys represents the most cost-effective way to provide estimates of child mortality.



## 18% of global under-five deaths are caused by pneumonia

Pneumonia deaths among children under 5, global, 2010

FIG. 15



Source: CHERG 2012.

Pneumonia is the leading killer of children under 5, causing 18% of all child deaths worldwide — a loss of roughly 1.3 million lives in 2011<sup>a</sup> (Figure 15). Most of these deaths occur in sub-Saharan Africa and South Asia.

Pneumonia is a 'disease of poverty': It is closely associated with factors such as poor home environments, undernutrition and lack of

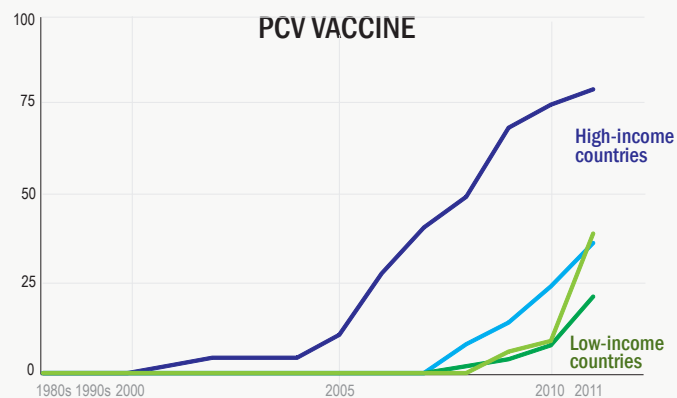
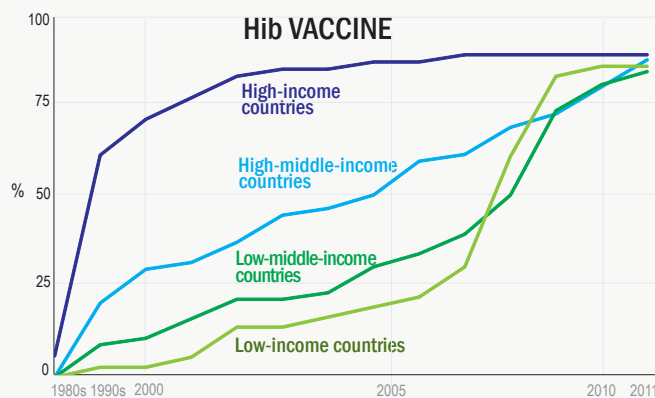
access to health services. Deaths are largely preventable through optimal breastfeeding practices and adequate nutrition, vaccinations, handwashing with soap and water, safe drinking water and basic sanitation, among other measures.

Efforts to tackle childhood pneumonia have had mixed results, with both impressive successes and lost opportunities. Globally, major progress has been made in providing access to improved drinking water sources and promoting exclusive breastfeeding in the first six months of life (see 'Undernutrition', p. 21). New vaccines against major causes of pneumonia have become available; most low-income countries have introduced the *Haemophilus influenzae* type b (Hib) vaccine — a success in efforts to reduce inequities in immunization (Figure 16). Pneumococcal conjugate vaccines (PCV) are also increasingly available, but gaps in vaccine uptake within countries could greatly reduce impact.

## Inequities are easing in the introduction of Hib and PCV vaccines

Percentage of countries introducing Hib and PCV into entire country, by income group, 1980-2011

FIG. 16

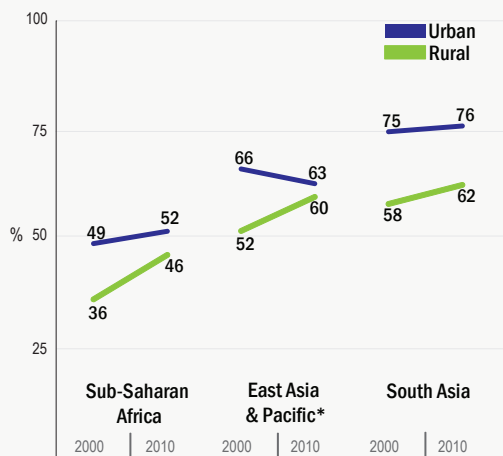


Source: World Health Organization, Department of Immunization, Vaccines and Biologicals, as published in *Pneumonia and Diarrhoea: Tackling the deadliest diseases for the world's poorest children* UNICEF, 2012. In the groups based on World Bank July 2011 classification applied to the entire time series.

## Some progress has been made in care-seeking, mostly in rural areas

Percentage of children under 5 with suspected pneumonia seeking appropriate care

FIG. 17



\* Excludes China. The estimates represent data from countries covering at least 50% of the regional population. Data coverage was insufficient to calculate the regional average for CEE/CIS, Middle East and North Africa, Latin America and the Caribbean regions as well as for the world.

Source: UNICEF global databases 2012 as presented in *Pneumonia and Diarrhoea: Tackling the deadliest diseases for the world's poorest children*, UNICEF, 2012.

Since 2000, some progress has been made in appropriate care-seeking (a critical factor in survival of children with pneumonia); in regions with available estimates, these gains have mostly occurred among rural populations (Figure 17).

Although the majority of children with symptoms are taken to an appropriate provider, less than one-third of children with suspected pneumonia use antibiotics.<sup>b</sup> It should be noted, however, that treatment data have limitations and are difficult to interpret.

Prioritizing the poorest saves more lives. A clear illustration is provided by modelled estimates for Bangladesh: These indicate that roughly seven times as many children's lives could be saved in the poorest households, compared to the richest ones, by scaling up key pneumonia interventions to near-universal levels (around 90% coverage) (Figure 18).

## Prioritize the poorest, save more lives

Predicted number of pneumonia deaths averted among children under age 5 if near-universal coverage (90%) of key pneumonia interventions is achieved among the poorest and richest 20% of households in Bangladesh

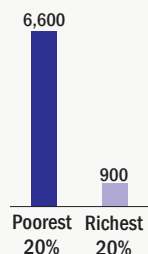


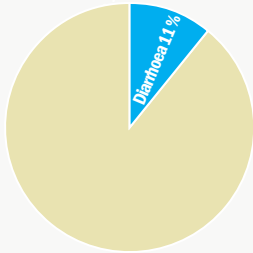
FIG. 18

Source: Johns Hopkins University as published in *Pneumonia and Diarrhoea: Tackling the deadliest diseases for the world's poorest children*, UNICEF, 2012.

## 11% of global under-five deaths are caused by diarrhoeal diseases

Diarrhoea deaths among children under 5, global, 2010

FIG. 19



Source: CHERG, 2012.

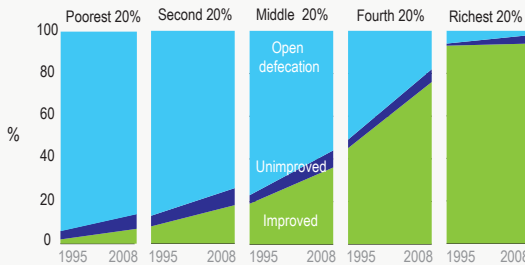
Diarrhoea is still a major killer of children under 5, although its toll has dropped by a third over the past decade, from 1.2 million deaths in 2000 to 0.7 million in 2011.<sup>a</sup> Diarrhoeal diseases now cause about 11% of child deaths worldwide (Figure 19). Nine-tenths of these deaths occur in sub-Saharan Africa and South Asia.

Like pneumonia, diarrhoea is closely associated with poor home environments, undernutrition and lack of access to basic health services. Deaths are largely preventable through optimal breastfeeding practices (non-breastfed children are 11 times more likely to die of diarrhoeal disease than exclusively breastfed children),<sup>b</sup> adequate nutrition, vaccinations (including for rotavirus), handwashing with soap, and safe drinking water and basic sanitation, among other measures. Open defecation, which is still practised by around 1.1 billion people worldwide, remains a major contributing factor to diarrhoeal disease (Figure 20).

## Open defecation, a major contributing factor to diarrhoeal deaths, is still widely practised in South Asia

Percentage of population using improved and unimproved sanitation facilities and practising open defecation in Bangladesh, India and Nepal, by household wealth quintile

FIG. 20



The analysis is based on population-weighted averages. Patterns across quintiles in individual countries may vary from the regional pattern.

Source: WHO and UNICEF Joint Monitoring Programme for Water Supply and Sanitation, as published in *Pneumonia and Diarrhoea: tackling the deadliest diseases for the world's poorest children*, UNICEF, 2012.

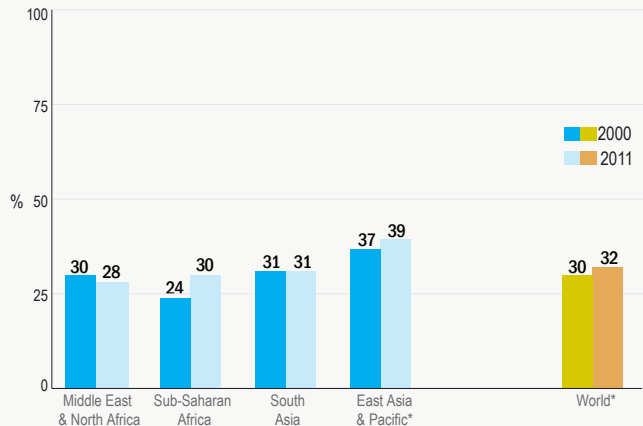
Effective treatment of diarrhoeal disease rests on three key interventions: administration of oral rehydration salt (ORS) solutions to prevent life-threatening dehydration; continued feeding; and zinc supplementation. ORS is the 'gold standard' for rehydration therapy; a formulation developed in the early 2000s (low-osmolarity ORS) has improved overall outcomes. Continued feeding supports fluid absorption and nutritional status. Zinc, a recently added component of standard diarrhoeal treatments, reduces the duration and severity of illness.

These inexpensive life-saving treatments remain inaccessible for the vast majority of children in the poorest countries, and those in the poorest groups within countries. Even more worrisome is the lack of any real progress in expanding treatment coverage since 2000. Globally, less than one-third of children with diarrhoea receive ORS (Figure 21). Zinc use is also low (Figure 22).

## Diarrhoea remains a big killer and little progress has been made in overcoming it

Percentage of children under 5 with diarrhoea receiving ORS, by region, in 2000 and in 2010

FIG. 21



\*Excludes China.

Estimates are based on a subset of 68 countries with available data covering 57% of total under-five population (excluding China for which comparable data are not available), and at least 50% of the regional population. Data coverage was insufficient to calculate the regional average for Central and Eastern Europe and the Commonwealth of Independent States and Latin America and the Caribbean.

Source: UNICEF global databases 2012.

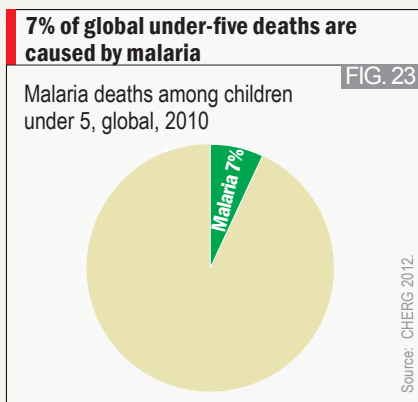
## Recent data suggest low zinc use in treating diarrhoea

Percentage of children under 5 with diarrhoea receiving zinc treatment, countries with household survey data from 2010 or later

FIG. 22

Country	%
Bhutan	1
Cambodia	2
Chad	<1
Democratic Republic of the Congo	2
Malawi	<1
Nepal	6
Timor-Leste	6
United Republic of Tanzania	5
Zimbabwe	<1

Source: UNICEF global databases 2012.

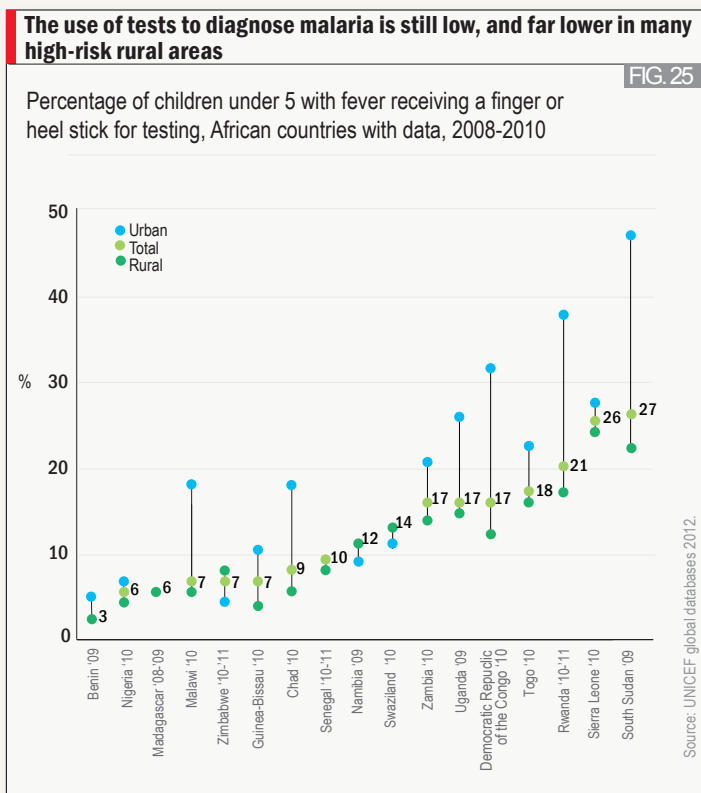


Malaria is among the biggest killers of children under 5, accounting for 7% of child deaths worldwide — a loss of roughly 0.5 million lives in 2011<sup>a</sup> (Figure 23). Nearly all of these deaths occur in sub-Saharan Africa. Nevertheless, the last decade has seen substantial gains in combating malaria transmission and reducing deaths.

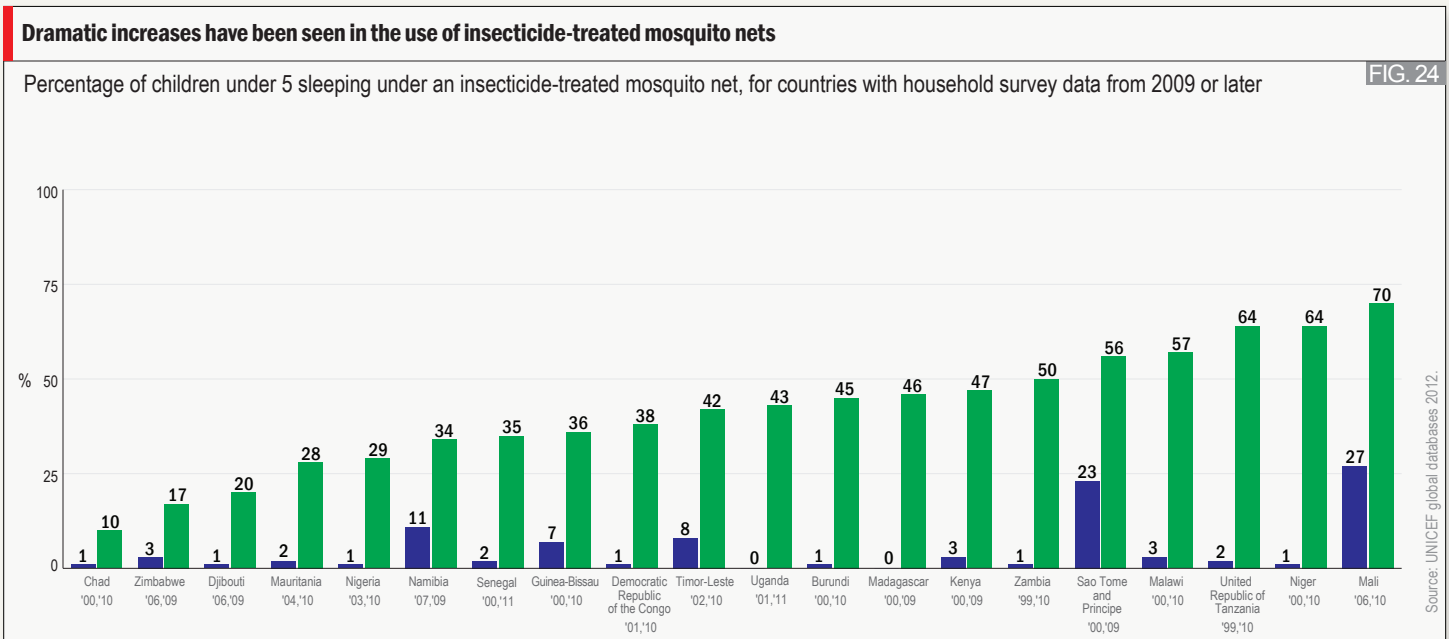
Global financing for malaria control has risen substantially over the past decade, thanks in large part to efforts by the Global Fund to Fight AIDS, Malaria and Tuberculosis; the US President’s Malaria Initiative; and the World Bank Malaria Booster Program.

Today, about half of all African households own at least one insecticide-treated mosquito net (ITN) — a major improvement over the dismally low availability in 2000. The proportion of children under 5 in Africa that sleep under ITNs has risen from 2% in 2000 to 38% in 2010,<sup>b</sup> with some countries attaining levels of over 60% (Figure 24). Recent studies confirm that the best way to further increase use of ITNs is simply to provide more of them: Even in households that already own at least one net, children still may not sleep under a net because not enough nets are available for all family members.<sup>c</sup>

In 2010, the World Health Organization (WHO) instituted a major shift in malaria treatment procedures by recommending diagnostic testing of all suspected cases before starting anti-malarial treatment<sup>d</sup> (the previous recommendation had been to presumptively treat all febrile children in malaria-endemic areas). Test-based malaria case management has great potential to improve malaria case detection,



as well as treatment of other causes of fever, such as pneumonia. National health systems are now building up diagnostic capacities, but test use is still low and is unduly concentrated in urban areas (Figure 25). Diagnosis and treatment must prioritize children who are at greatest risk of malaria — often those in rural areas.

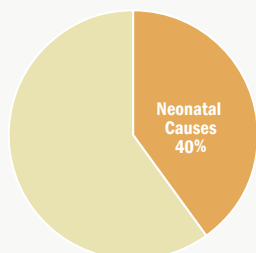


## Neonatal deaths

### 40% of global under-five deaths occur during the neonatal period

Neonatal deaths among children under 5, global, 2010

FIG. 26



#### Distribution of causes of death during the neonatal period (%)

Preterm birth complications	35%
Complications during birth	23%
Sepsis/meningitis/tetanus	15%
Pneumonia	11%
Congenital abnormalities	9%
Diarrhoea	2%
Other conditions	6%

Source: CHERG 2012.

About 40% of all under-five deaths are neonatal, occurring during the first 28 days of life; in 2011 this amounted to 3 million deaths worldwide<sup>a</sup> (Figure 26). The heaviest burdens are in South Asia and sub-Saharan Africa, which have both the highest neonatal mortality rates among regions and the largest numbers of annual births.

The majority of neonatal deaths result from complications related to preterm birth (before 37 completed weeks of gestation) or from complications during birth. Many mothers in the world's poorest countries deliver their babies at home rather than in a health facility; both they and

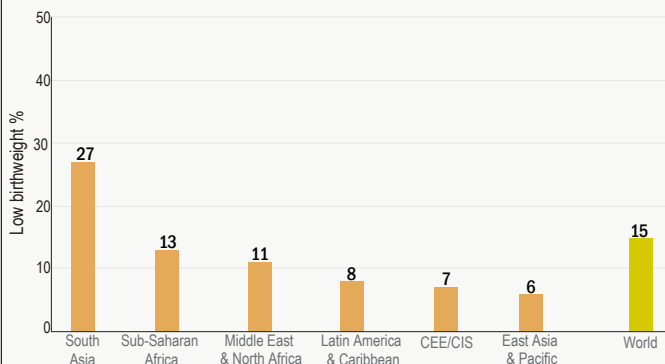
their babies are therefore at greater risk if complications occur. Coverage of institutional deliveries averages only 60% worldwide.<sup>b</sup> Another significant cause of neonatal death is infection, including sepsis, meningitis, tetanus, pneumonia and diarrhoea.

Low birthweight (less than 2,500 grams), caused by preterm birth and/or fetal growth restriction, greatly increases children's risk of dying during their early months and years (Figure 27). Those who survive may have impaired immune function, increased risk of disease, and are likely to have cognitive disabilities and to remain undernourished throughout their lives. Low birthweight stems primarily from poor maternal health and nutrition, either before conception or during pregnancy.

### More than one-quarter of newborns in South Asia have low birthweights

Percentage of infants weighing less than 2,500 grams at birth

FIG. 27



Source: UNICEF global databases, 2011.

Postnatal care visits from a skilled health worker can be very effective in encouraging proper care to prevent neonatal deaths. According to WHO postnatal-care guidelines, such care includes "early and exclusive breastfeeding, keeping the baby warm, increasing handwashing and providing hygienic umbilical cord and skin care, identifying conditions requiring additional care and counselling on when to take a newborn to a health facility"<sup>c</sup> (Figure 28). Community health workers can play a critical role in providing care to families who do not have easy access to a health facility.<sup>d</sup>

A growing body of evidence confirms the significant impact of early initiation of breastfeeding, preferably within the first hour after birth, in reducing overall neonatal mortality. It does so by preventing hypothermia and strengthening the baby's immune system through colostrum (the mother's milk during the first days after birth). It also helps establish the bond between mother and mother and child.<sup>e</sup> Much more must be done to promote this practice: In most regions of the world, fewer than half of all newborns are put to the breast within one hour of birth.<sup>f</sup>

### A broad range of interventions can reduce neonatal mortality

Key interventions for reducing neonatal morbidity and mortality\*

FIG. 28

STAGE	INTERVENTION
Preconception	Folic acid supplementation
	Family planning
	Prevention and management of sexually transmitted infections including HIV
Antenatal	Syphilis screening and treatment
	Pre-eclampsia and eclampsia prevention
	Tetanus toxoid immunization
	Intermittent preventive treatment for malaria
	Detection and treatment of asymptomatic bacterium
Intrapartum (birth)	Antibiotics for preterm rupture of membranes
	Corticosteroids for preterm labour
	Detection and management of breech
	Labour surveillance for early diagnosis of complications
	Clean delivery practices
Postnatal	Resuscitation of newborn baby
	Breastfeeding
	Prevention and management of hypothermia
	Kangaroo mother care (for infants with low birthweights) initiation in health facilities
	Community-based case management of pneumonia

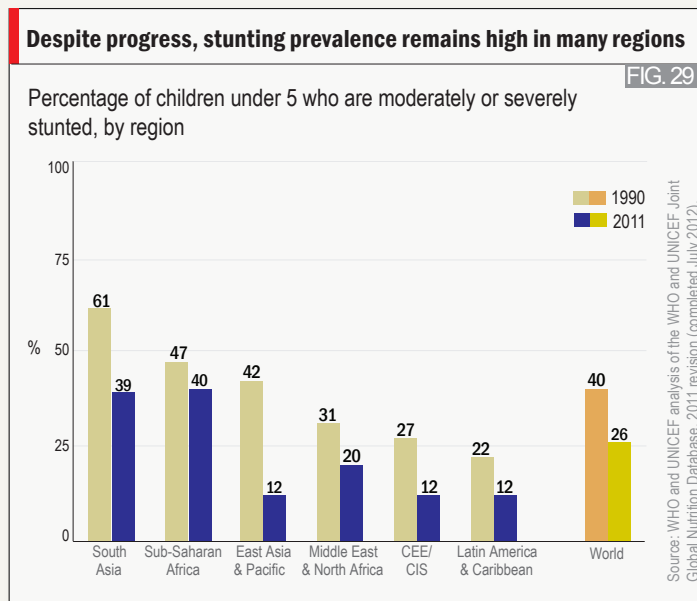
\*Based on Darmstadt, G. L. et al., "Evidence-based, Cost-effective Interventions: How many newborns can we save?", *The Lancet*, vol. 365, no. 9463, 12 March 2005, pp. 977-988 (accessed from [www.childinfo.org](http://www.childinfo.org)) with updates from [http://www.who.int/pmnch/topics/part\\_publications/essential\\_interventions\\_18\\_01\\_2012.pdf](http://www.who.int/pmnch/topics/part_publications/essential_interventions_18_01_2012.pdf).



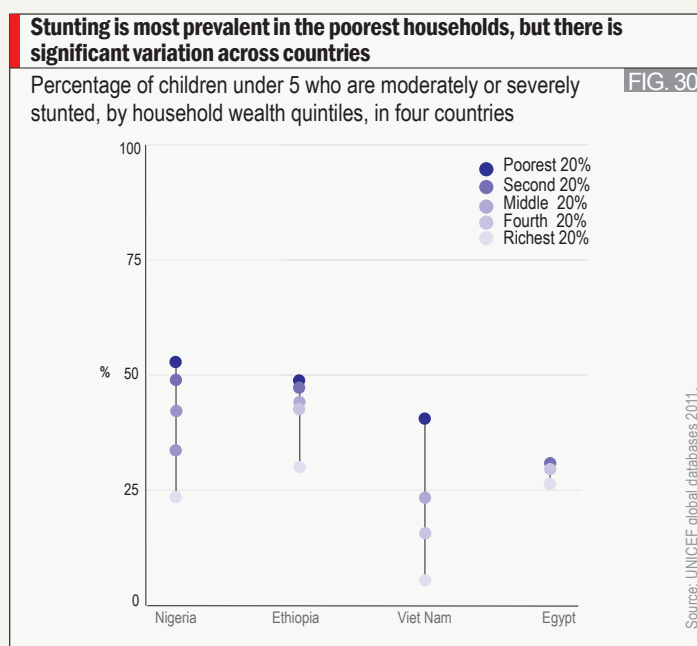
## Undernutrition

Globally, more than one-third of under-five deaths are attributable to undernutrition.<sup>a</sup> Children weakened by undernutrition are more likely to die from common childhood illnesses such as pneumonia, diarrhoea, malaria, and measles, as well as from AIDS (if they are HIV-positive). Primary causes of undernutrition include a lack of quality food; poor infant and young child feeding and care practices, such as sub-optimal breastfeeding; deficiencies of micronutrients such as zinc, vitamin A or iodine; and repeated bouts of infectious disease, often exacerbated by intestinal parasites.

Because of chronic undernutrition, a quarter of the world's children under 5 – about 165 million children – are stunted<sup>b</sup> (i.e., have low height for their age). Stunting inflicts largely irreversible physical and mental damage. Stunting rates have declined in all regions, with the greatest declines in East Asia and the Pacific and South Asia in recent decades (Figure 29).



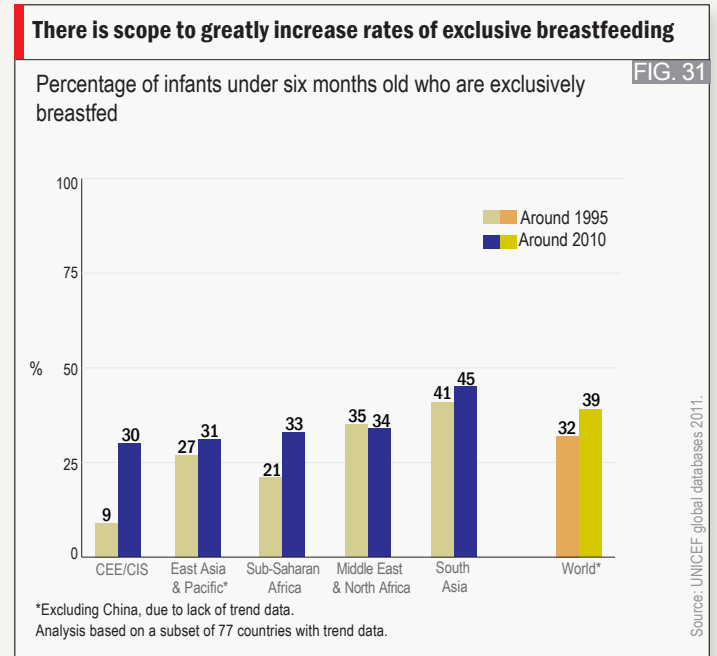
Stunting prevalence is routinely highest in the poorest households, but other aspects of the relationship between stunting and household wealth can vary (Figure 30). Country-specific analysis of disparities is needed to identify and target interventions for the most vulnerable populations.



Around 8% of the world's children under 5 – an estimated 51 million children – suffer from wasting<sup>c</sup> (i.e., low weight for their height) as a result of acute undernutrition. Children who suffer from wasting face a markedly increased risk of death. Countries with higher than 10% prevalence of wasting are considered to be experiencing a public health emergency; immediate intervention is required in the form of emergency feeding programmes.

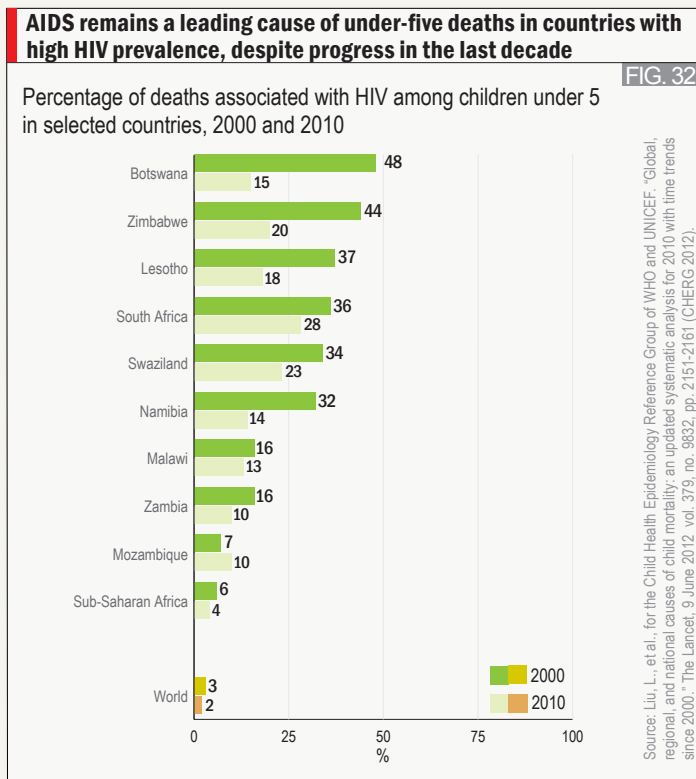
Simple, inexpensive solutions applied during the critical window of opportunity – while the mother is pregnant and during the child's first two years – can prevent undernutrition, decrease mortality, support growth and promote child health and well-being. These solutions include:

- **Early initiation of breastfeeding:** Initiating breastfeeding within the first hour after birth can reduce neonatal mortality by up to 20%.<sup>d</sup> More than half of the world's newborns are not breastfed within an hour of birth.<sup>e</sup>
- **Exclusive breastfeeding:** Globally, less than 40% of children under six months old are exclusively breastfed (Figure 31). A non-breastfed child is 14 times more likely to die of all causes in the first six months of life than an exclusively breastfed child.<sup>f</sup> Increasing rates of early initiation of breastfeeding and exclusive breastfeeding is critical for improving child survival and development.
- **Continued breastfeeding:** In developing regions, 3 in 4 children continue breastfeeding through the first year of life, but only one in two children (56%) continue until age 2.<sup>g</sup>
- **Complementary feeding:** Appropriate complementary feeding during the first two years of life is an essential aspect of improved feeding practices, which together represent the most effective nutrition intervention for preventing and reducing stunting, and for supporting child survival and health generally.
- **Micronutrients:** Vitamin and mineral deficiencies impact a child's health and chance of survival. Some research indicates that vitamin A supplementation reduces mortality from all causes among children aged 6-59 months.<sup>h</sup> One child in three in this age cohort does not receive two annual doses of vitamin A and is not fully protected against vitamin A deficiency.<sup>i</sup>



## HIV and AIDS

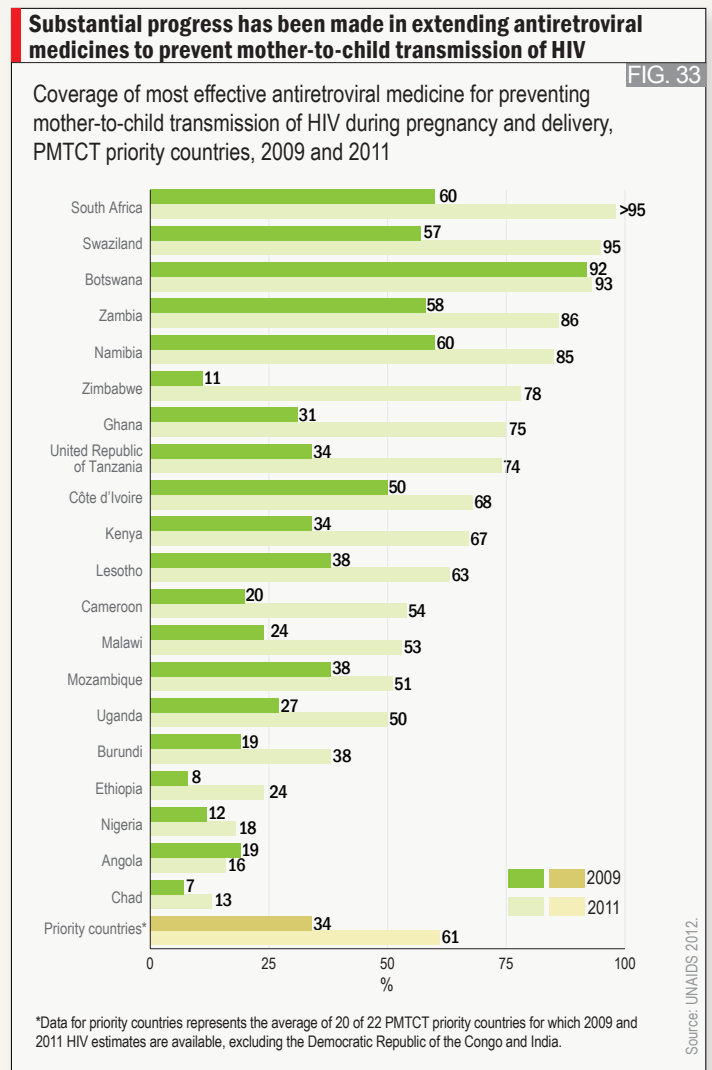
An estimated 3.4 million children\* under 15 years old were living with HIV in 2011, 91% of them in sub-Saharan Africa. About 230,000\*\* of these children subsequently died that year of HIV-associated causes.<sup>a</sup> Access to antiretroviral therapy (ART) is still low in most countries. Only about 28% of children in need of ART received it in 2011, in contrast to the 57%<sup>†</sup> coverage among adults needing the medications.<sup>b</sup> However, progress in access to treatment has been made in all regions. Without treatment, 50% of infected children die before the age of 2.<sup>c</sup> In countries with high HIV prevalence in sub-Saharan Africa, HIV-associated mortality in 2010 among children under 5 ranged from 10% in Mozambique and Zambia to 28% in South Africa (Figure 32).<sup>d</sup>



In high-income countries, universal access to prevention of mother-to-child transmission of HIV (PMTCT) services has cut rates of transmission to about 2%.<sup>e</sup> But in low- and middle-income countries, only 57% of an estimated 1.5 million<sup>‡</sup> pregnant women living with HIV in 2011 received the antiretrovirals needed to prevent HIV transmission to their babies, and similarly low proportions received the ART necessary for their own health.<sup>f</sup> Nonetheless progress is being made in nearly every country (Figure 33).

To accelerate progress, a 'Global Plan towards the elimination of new HIV infections in children by 2015 and keeping their mothers alive'<sup>g</sup> was launched in June 2011 at the UN Special Session on HIV/AIDS. The Plan involves all countries, but prioritizes 22 countries that are home to nearly 90% of pregnant women living with HIV. The Plan sets two ambitious targets for 2015, both from a 2009 baseline: reduce the number of children newly infected with HIV by 90%; and reduce the number of HIV-associated deaths among women during pregnancy, childbirth and the six weeks that follow by 50%.

There is growing momentum behind a concerted scale-up of coverage of PMTCT and paediatric HIV care and treatment services, although progress is hampered by weak health systems in heavily affected countries. New and emerging technologies are improving diagnosis and treatment of infants and young children. However, simplification of treatment regimens and medicines is needed, as are programmatic innovations for identifying HIV-infected children and retaining them on ART care and treatment. Other urgent priorities include community mobilization and support for HIV-positive women and their children, and better integration of PMTCT services into stronger systems of maternal, newborn and child health care.



\*Data range: 3.1 million-3.9 million

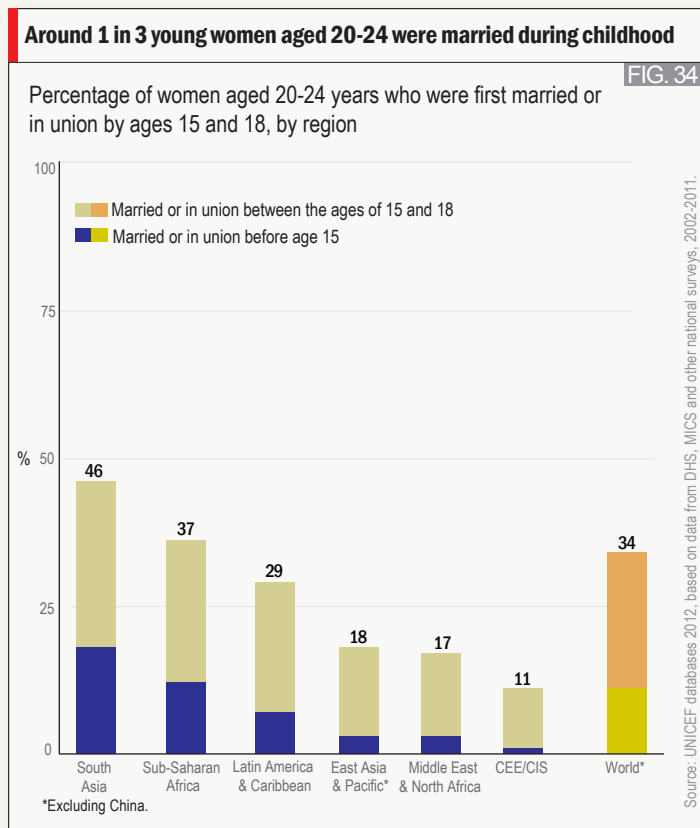
\*\*Data range: 200,000-370,000

†Data range: 53%-60%

‡Data range: 1.3 million-1.6 million

### CHILD MARRIAGE AND EARLY CHILDBEARING

Child marriage and early childbearing can have significant harmful effects on the survival and well-being of both children and mothers. Globally, almost 400 million women aged 20-49 (or 41% of the total population of women of this age) were married or entered into union while they were children (i.e., at less than 18 years old). Although the proportion of child brides has generally decreased over the last 30 years, in some regions child marriage remains common, even among the youngest generations, particularly in rural areas and among the poorest. Among young women worldwide aged 20-24, around 1 in 3 (or 70 million) were married as children, and around 11% (or 23 million) entered into marriage or union before they reached 15 years of age<sup>a</sup> (Figure 34).



Child marriage increases health risks both for the girl and for her children. Child brides are often less able to negotiate sexual relationships or contraceptive use, and are therefore at greater risk for unintended and frequent pregnancies and for sexually transmitted infections.<sup>b</sup> Early marriage frequently leads to early childbearing, as marriage often marks the time in a woman's life when it becomes socially acceptable, or even expected, to have children. For instance, in Niger, three-quarters of young women aged 20-24 were married as children; half of them gave birth to their first child before turning 18.<sup>c</sup> Pregnancy during adolescence undermines a girl's development by stopping her growth<sup>d</sup> and increases the likelihood of complications or even death during delivery, for both the mother and child.

Maternal deaths related to pregnancy and childbirth are an important component of mortality for girls aged 15-19 worldwide, accounting for some 50,000 deaths each year.<sup>e</sup> Stillbirths and death are 50% more likely for babies born to mothers younger than 20 than for babies born to mothers aged 20-29.<sup>f</sup> Children born to mothers with early age at first birth are significantly more likely to suffer from stunting, wasting or underweight conditions, and also have increased incidence of low birthweight.<sup>g</sup>

### MOTHERS' EDUCATION

Low levels of maternal education are associated with higher rates of child mortality. Research indicates that more than half of recent reductions in child deaths are linked to gains in women's educational attainment,<sup>h</sup> and that education levels of women in the mother's community also strongly affect child mortality.<sup>i</sup> Even slight improvements in maternal educational status confer a survival benefit on children,<sup>j</sup> and more extensive education confers a correspondingly greater benefit, with some research suggesting that mortality rates of children whose mothers have at least seven years of education are up to 58% lower than rates among children whose mothers have no education.<sup>k</sup>

Possible mechanisms for this improvement include the impact of economic benefits conferred by education on the mother, in the form of improvements in housing, sanitation and health care;<sup>l</sup> changes in use of antenatal and preventive health care;<sup>m</sup> and improved immunization status of children whose mothers have higher educational attainment.<sup>n</sup> The greatest benefits for child survival are obtained when girls' and women's education programmes are undertaken together with poverty-reduction efforts.<sup>o</sup>

### WATER, SANITATION AND HYGIENE

Unsafe drinking water and poor or absent sanitation services are very significant contributors to child mortality, primarily through diarrhoeal disease, but also through other infectious diseases such as pneumonia and cholera. Almost 90% of diarrhoeal deaths globally are attributed to unsafe water, poor sanitation or inadequate hygiene.<sup>p</sup> Evidence suggests that unsafe water may also raise the incidence of stunting among children through the effects of repeated episodes of diarrhoeal disease.<sup>q</sup> Children are particularly vulnerable to water-borne diseases and contaminants, since their immune systems are still developing and they have a lower body mass than adults.

Global progress in water and sanitation has been noteworthy. Since 1990, more than 2 billion people have received access to improved drinking water sources, while about 1.8 billion have gained access to improved sanitation.<sup>r</sup> But an estimated 2.5 billion people still lack access to improved sanitation – more than half of them in India or China – while over 780 million are not using improved drinking water sources.<sup>s</sup> Among regions, sub-Saharan Africa has the lowest coverage of improved drinking water sources. Large disparities in access to both improved drinking water sources and improved sanitation exist across countries, wealth quintiles within countries and urban and rural populations. Open defecation is still practised by an estimated 1.1 billion people, mainly in rural areas in South Asia and sub-Saharan Africa;<sup>t</sup> elimination of this practice is an essential step towards reducing child mortality from disease. Growing global recognition of the right to water (for personal and domestic use) and to sanitation will have increasingly important implications for programmes that have the potential to significantly reduce child mortality.

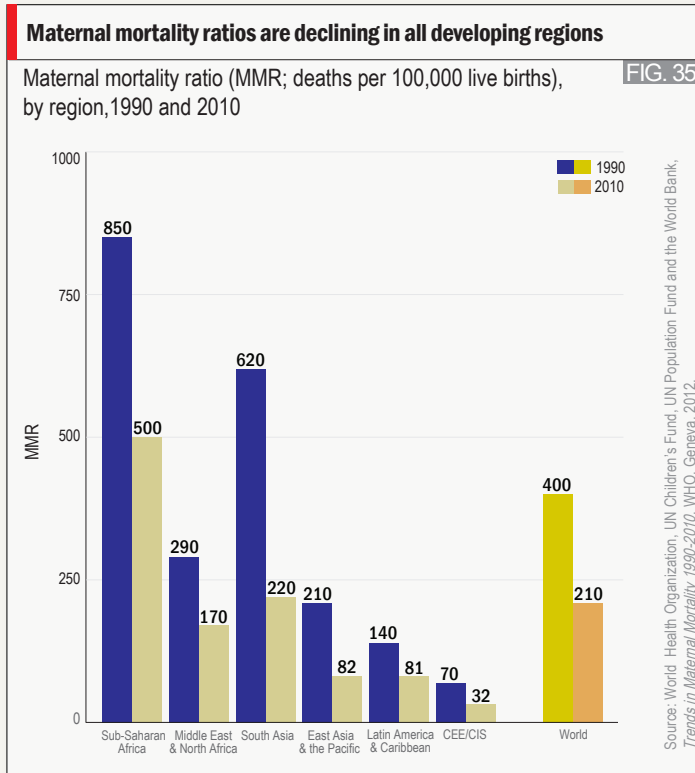
## Other contributing factors

### MATERNAL MORTALITY: AN IMPORTANT CONTRIBUTING FACTOR IN CHILD DEATHS

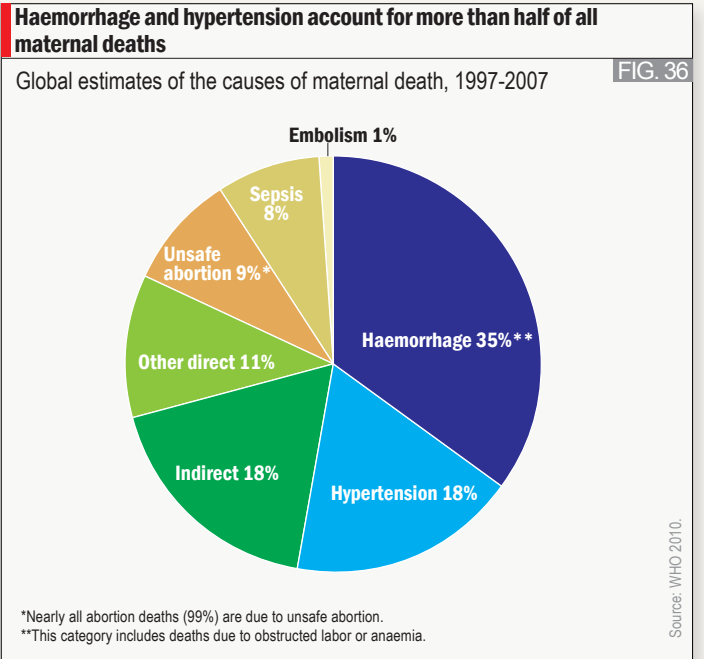
The link between child mortality and maternal mortality is indelible. Evidence shows that infants whose mothers die within the first six weeks of their lives are more likely to die before reaching age 2 than infants whose mothers survive.<sup>a</sup> In addition, for every woman who dies in pregnancy or childbirth, 20 others endure injury, infection, disease and disabilities, such as obstetric fistula, which can cause life-long suffering.<sup>b</sup> Sometimes these disabilities are so severe that women are effectively removed from family life and prevented from playing a major role in supporting their children's health.

Women face considerable risks during pregnancy and childbirth, which are exacerbated by conditions of poverty and deprivation. An estimated 287,000 maternal deaths occurred in 2010. The vast majority of these deaths occurred in sub-Saharan Africa (with over half of these deaths) and South Asia (with more than a quarter).<sup>c</sup> The latest available estimates indicate that there has been substantial global progress in reducing maternal mortality since 1990, with the world's maternal mortality rate falling by around half between 1990 and 2010; most regions have seen marked declines over this period (Figure 35). But too many women are still dying – and millions suffering from illness and injury – from causes related to pregnancy, childbirth and the postnatal period.

Just as the bulk of under-five deaths in high-mortality countries are preventable, so also are most maternal deaths in these countries. The lifetime risk of maternal mortality (the probability that a woman will die from complications of pregnancy and childbirth over her lifetime), is 1 in 39 in sub-Saharan Africa, compared with a lifetime risk of 1 in 4,700 in wealthy countries.<sup>d</sup> This stark contrast reflects a massive inequality in access to essential pre- and postnatal health care, as well as delivery care.



Haemorrhage remains the leading cause of maternal death, followed by hypertension and other indirect causes (Figure 36). However, the available data are sparse and inconsistent. The majority of countries (particularly poorer countries) lack complete vital registration systems with good cause-of-death attribution. In order to understand causes of, and trends in, maternal mortality, information is needed on the cause of death, pregnancy status, and the time of death in relation to the pregnancy. In many countries this information is missing, misclassified or underreported for a variety of reasons, among which are births at home instead of in health facilities, and incomplete registration systems.



The disparity in maternal mortality ratios is certainly among the greatest health-related inequities in the world. The provision of adequate nutrition for women and the creation of a safe environment for pregnancy and childbirth – including the attendance of a skilled health professional during delivery – should be top priorities for policymakers, health experts and practitioners. While significant progress has been made, much more needs to be done to protect the lives of mothers and their children, and to allow families to experience what is supposed to be one of the most important and joyous moments in life.









**Chapter 3: Getting to '20 by 2035':  
Strategies for accelerating progress on child survival**

## Chapter 3: Getting to '20 by 2035': Strategies for accelerating progress on child survival

The unfinished business of child survival remains substantial. But, as this report has demonstrated, extraordinary progress is possible in reducing under-five deaths in all regions and mortality settings. Many countries have managed to sustain high rates of reduction over more than two decades; indeed, more than half have already reached low-mortality status. For some very-high-mortality countries, the challenge involved in reaching a mortality rate of 20 or fewer under-five deaths per 1,000 live births is immense, but projections by UNICEF have shown that it is not insurmountable (Figure 37). The following pages show eight examples of countries that have sustained significant reductions in under-five mortality rates over the past two decades.

Fresh thinking and new strategies are required to ensure that the goal is met at the global level and in all countries. Around half of the world's countries have already achieved the 2035 target; for them, the challenge of *A Promise Renewed* is to sustain and further deepen gains by directing efforts towards subnational populations that are still missing out on essential interventions.

For the other half, the task will be more demanding, depending in large part on their current rates and burden of under-five mortality. Particularly for those nations whose national rates of mortality are classified as high (40 deaths per 1,000 live births or greater), redoubled efforts in all areas are required, with equity-based targeting complemented by ample investment in strengthening health systems and building up a supportive environment

for children. Special attention, strategies and investment will need to be applied in countries with the highest rates and burdens — those whose mortality rates currently exceed 100 per 1,000 live births, many of which are in West and Central Africa, and most of which are either fragile states or conflict-affected.

The partners of *A Promise Renewed* have jointly committed to five crucial shifts in planning and action.

### 1. CONCENTRATE RESOURCES ON COUNTRIES AND REGIONS WITH THE MOST CHILD DEATHS:

The increasing concentration of under-five deaths — among regions, in sub-Saharan Africa and South Asia; among countries, in low-income and large lower-middle-income countries; and within countries, by household wealth and geographic location, among other factors — has several important implications for global efforts in support of *A Promise Renewed* over the next two and a half decades.

First, child survival efforts must become even more firmly focused on sub-Saharan Africa, South Asia, fragile states and the least developed countries, which are dominated by countries from these two regions. Since these regions and country groups also bear the largest burdens of childhood diseases, targeting health resources to them has the potential to yield substantial returns. The potential is demonstrated by successes in the area of measles immunization, which has produced the stunning result of lowering global measles deaths by more than three-quarters in the last decade.<sup>10</sup>

### What is needed to reach '20 by 2035'

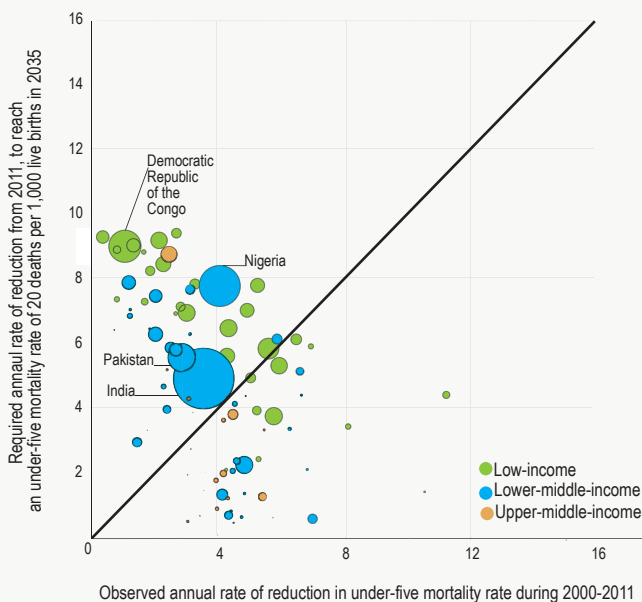


Figure 37 illustrates the mortality rate reductions needed by individual countries to achieve an under-five mortality rate of 20 deaths per 1,000 live births by the year 2035.

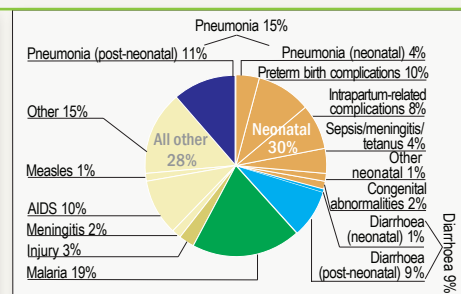
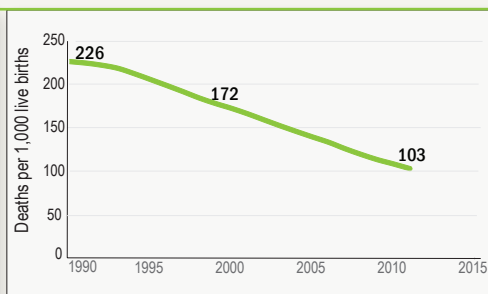
- Each bubble represents a country. The size of the bubble represents the number of under-five deaths in 2011. The color of the bubble represents national income levels: green is low income; blue is lower-middle-income; orange is upper-middle-income.
- The horizontal axis shows the observed rate of reduction in under-five mortality, per year over 2000-2011.
- The vertical axis shows the required rate of reduction per year from 2011 to 2035 to reach an under-five mortality rate of 20 under-five deaths per 1,000 live births.
- Countries above the diagonal line need faster rates of reduction (i.e., accelerated progress) in order to achieve the target.
- Countries below the diagonal line will be able to achieve the target at their current rates of reduction.
- Countries that already have an under-five mortality rate below 20 in 2011 are not shown on the graph since they have already achieved the target.

FIG. 37

## Country examples

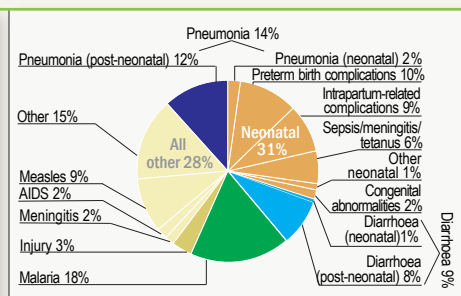
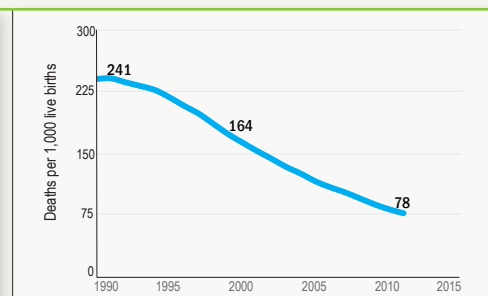
These eight diverse countries — representing various stages of economic and social development, and all regions of the world, and presented here in descending mortality rank order — demonstrate that sustained reductions in child mortality are possible over long periods of time. Such progress will be needed to achieve the goals of *Committing to Child Survival: A Promise Renewed*.

Mozambique	1990	2011
Under-five mortality rate	226	103
Under-five deaths (thousands)	128	86
Mortality ranking 2011	–	22
Annual rate of reduction 1990-2011	–	3.7
Percentage reduction in mortality rate 1990-2011	–	54



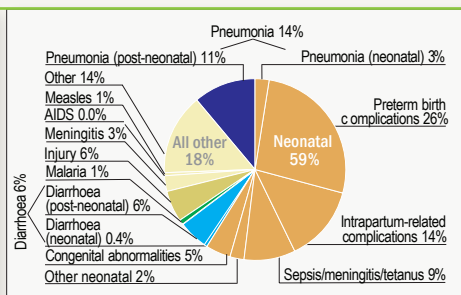
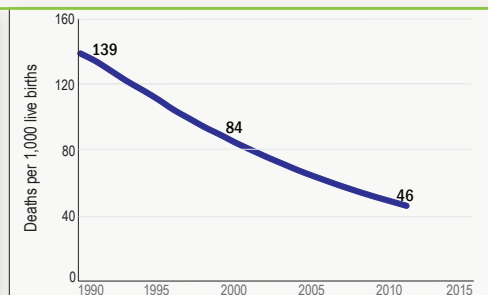
Since the end of Mozambique's 16-year civil war in 1992, significant social and economic progress has been made; Mozambique is currently one of the fastest-growing economies in the world. Reductions in child mortality over the last 20 years have been accompanied by significant reforms in the health sector, including improvements in institutional coordination. Major advances have occurred in malaria prevention and control, immunization and, lately, the community health workers programme.

Liberia	1990	2011
Under-five mortality rate	241	78
Under-five deaths (thousands)	22	12
Mortality ranking 2011	–	34
Annual rate of reduction 1990-2011	–	5.4
Percentage reduction in mortality rate 1990-2011	–	68



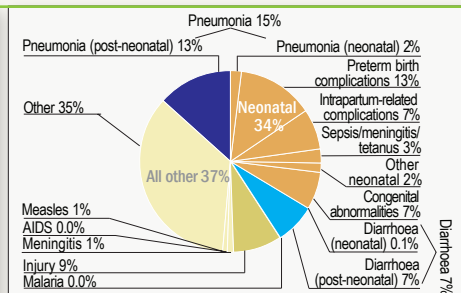
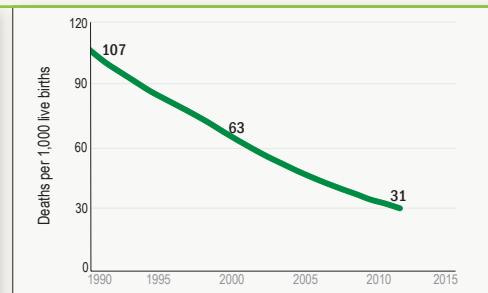
The end of civil war in 2003 allowed reconstruction of Liberia's badly damaged health system to begin. This in turn has permitted much improved access to basic services, including among others HIV testing, PMCT interventions and malaria treatment and prevention. Perhaps the greatest positive impact in reducing child mortality has resulted from immunization, which continued even during the war and which has been expanded through community outreach programmes.

Bangladesh	1990	2011
Under-five mortality rate	139	46
Under-five deaths (thousands)	509	134
Mortality ranking 2011	–	60
Annual rate of reduction 1990-2011	–	5.3
Percentage reduction in mortality rate 1990-2011	–	67



In Bangladesh, expansion of childhood immunization, oral rehydration therapy and nationwide vitamin A supplementation have been important drivers of mortality reductions — reflected in notable declines in deaths from acute respiratory infections, diarrhoeal diseases and measles. An expanded cadre of community health workers, together with behaviour change programmes, have enhanced quality and use of health facilities and increased breastfeeding rates. Women's empowerment, maternal education and poverty reduction strategies have been key contributing factors.

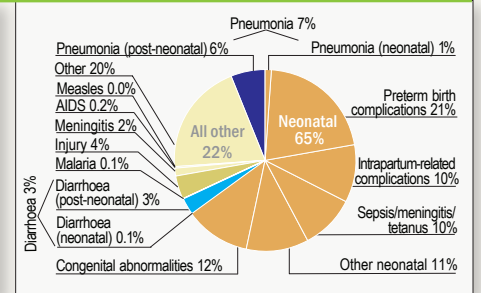
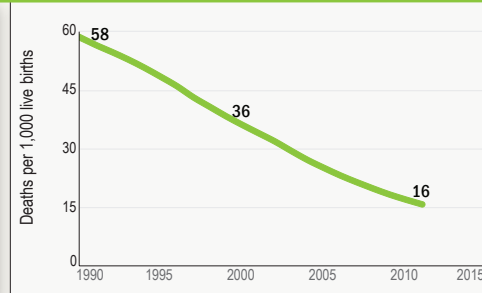
Mongolia	1990	2011
Under-five mortality rate	107	31
Under-five deaths (thousands)	8	2
Mortality ranking 2011	–	72
Annual rate of reduction 1990-2011	–	5.9
Percentage reduction in mortality rate 1990-2011	–	71



Mongolia's government successfully maintained its policy commitment to equitable provision of health services through the economic transition of the early 1990s. Community health interventions supported by local authorities and involving family members have contributed to reducing child mortality. Other constructive factors included a shift towards greater emphasis on primary health care as well as the development of compulsory health insurance, with financial support for vulnerable groups, including children.

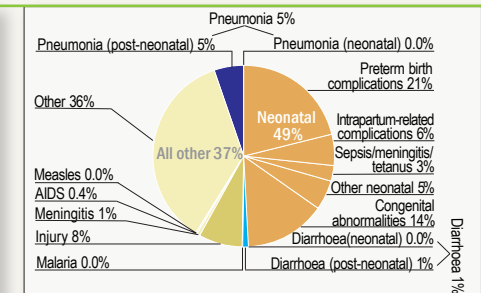
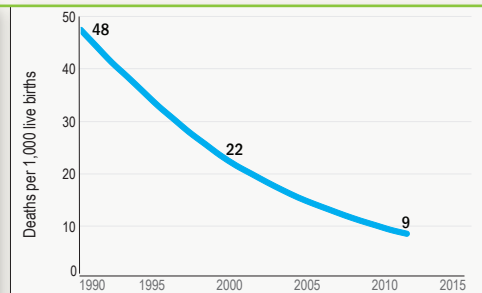


Brazil	1990	2011
Under-five mortality rate	58	16
Under-five deaths (thousands)	205	44
Mortality ranking 2011	-	107
Annual rate of reduction 1990-2011	-	6.3
Percentage reduction in mortality rate 1990-2011	-	73



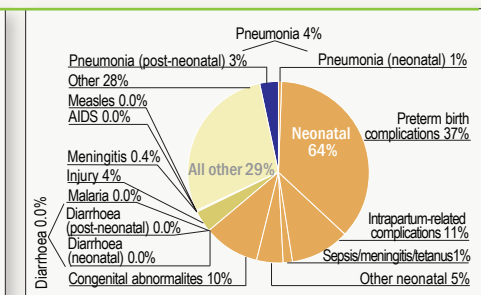
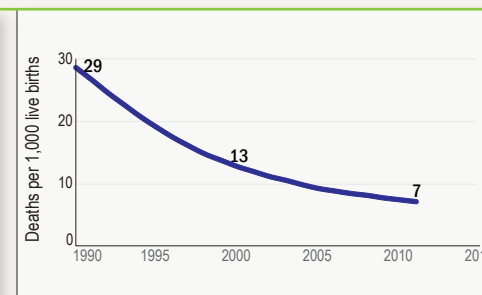
In Brazil, community health programmes and family health strategies were established in the 1990s to deliver primary health care through community health workers, doctors and nurses. These helped greatly expand access to health services, reduced inequities in coverage and cut child mortality. Other important factors in preventing child deaths have included improvements in sanitation, maternal education, breastfeeding and immunization coverage, and growth in vulnerable families' incomes, in part due to cash transfer programmes.

Oman	1990	2011
Under-five mortality rate	48	9
Under-five deaths (thousands)	3	0.5
Mortality ranking 2011	-	141
Annual rate of reduction 1990-2011	-	8.1
Percentage reduction in mortality rate 1990-2011	-	82



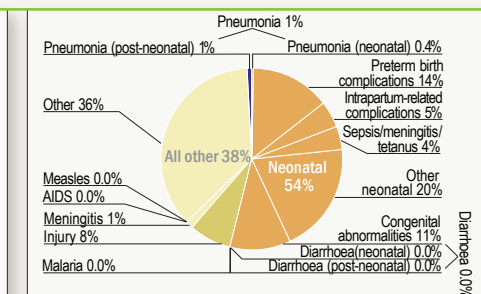
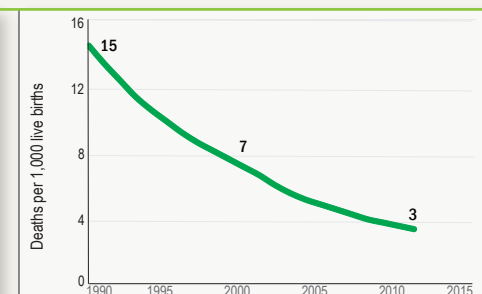
Oman has made major inroads in fighting communicable diseases, including eradication of polio and measles within its borders. Vaccination rates for major diseases approach 99%, and immunization in general has greatly reduced children's chances of contracting serious illnesses. Other factors contributing to improved child survival include better urban infrastructure, expanded access to clean drinking water, improved educational levels, high levels of social development and a strong commitment to equity.

Serbia	1990	2011
Under-five mortality rate	29	7
Under-five deaths (thousands)	4	0.7
Mortality ranking 2011	-	151
Annual rate of reduction 1990-2011	-	6.6
Percentage reduction in mortality rate 1990-2011	-	75



Having recovered from the conflict and economic disruptions that marked the early 1990s, Serbia has sustained significant reductions in child as well as maternal mortality over two decades. Strong commitment to improving the quality of child health care services, wide coverage of ante- and post-natal care, high vaccination rates among children and improved home management and treatment of pneumonia and diarrhoea were the main contributing factors in these achievements.

Portugal	1990	2011
Under-five mortality rate	15	3
Under-five deaths (thousands)	2	0.3
Mortality ranking 2011	-	184
Annual rate of reduction 1990-2011	-	6.9
Percentage reduction in mortality rate 1990-2011	-	77

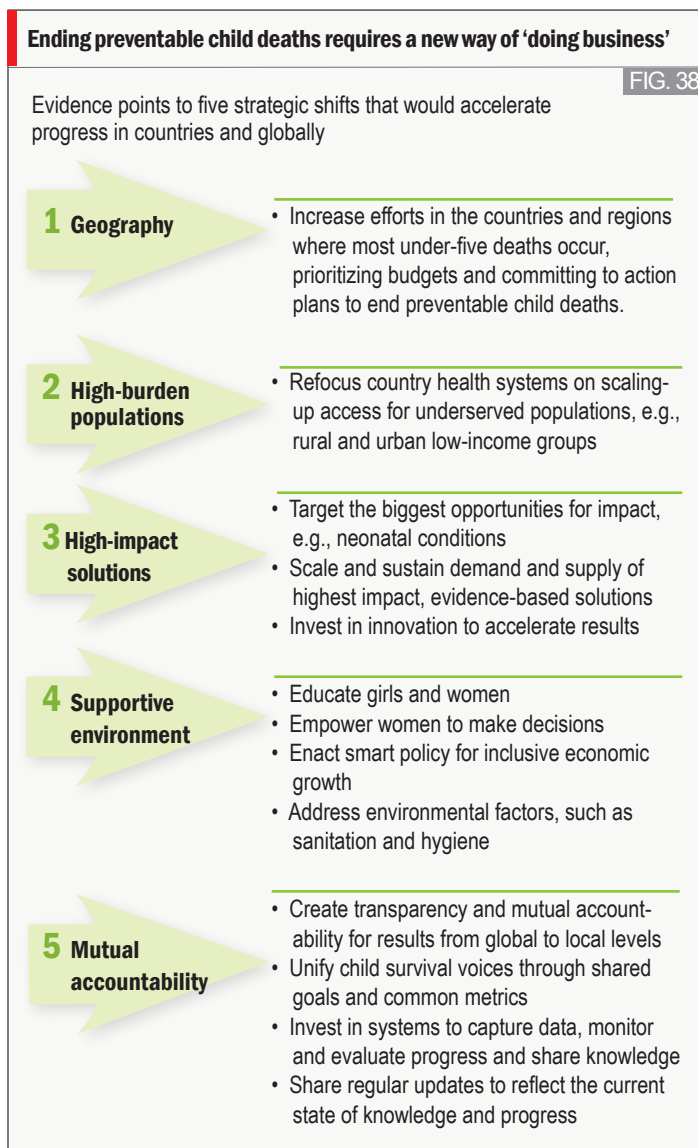


Recent improvements in child survival have resulted mainly from decreases in neonatal mortality. These were associated with increases in human, material and financial resources devoted to health care, as well as a general improvement in the country's social and economic conditions. Government reforms, including establishment of a universal health-care system, were made in 2002 to improve the efficiency and effectiveness of health spending. Portugal allocates a substantial proportion of its GDP to health.

## Chapter 3: Getting to ‘20 by 2035’: Strategies for accelerating progress on child survival

### 2. INCREASE EFFORTS AMONG HIGH-BURDEN POPULATIONS:

Second, the discourse and debate on reaching the unreached in child survival must be intensified in populous, often middle-income countries with pockets of high child mortality. In several of these countries, including India and Nigeria, rapid economic growth and strong inflows of trade and investment in recent years have failed to bring about a corresponding reduction of inequities in under-five mortality. Disaggregated data on child survival and health and development in these countries shows clearly the wide differentials in health status, access to and use of essential services, and health risks among subnational socioeconomic groups and geographic areas.



Children dying in these populous countries are also often dying of largely preventable causes, such as infectious diseases and lack of basic and maternal health care. Greater attention must be devoted to reaching the poorest and most geographically isolated households with essential services in all countries. The statistical evidence clearly shows that these groups have the highest burden of under-five deaths — and therefore the greatest potential for child survival gains (see *Figure 9*). Efforts must therefore refocus country health systems on scaling up access for underserved populations.

**3. FOCUS ON HIGH-IMPACT SOLUTIONS:** Across the world, many children from the poorest and most marginalized groups within countries are still dying of diseases such as pneumonia, diarrhoea and malaria, which are easily preventable through access to quality health services — a fact borne out by the low rates of such deaths among wealthier and more mainstream groups that have the appropriate access.

Effective interventions exist to address all of the main causes of child deaths. Enhancing access to and use of life-saving commodities is essential, as is investing in neonatal and maternal health care and nutrition. And although many initiatives are being undertaken to expand vital services, there are still simply not enough countries paying close attention to and investing in these solutions. Those that do, in all mortality settings, stand to reap the benefits of radical reductions in under-five mortality rates.

### 4. CREATE A SUPPORTIVE ENVIRONMENT FOR CHILD SURVIVAL:

In addition to medical and nutritional factors, there are many other considerations that influence a child’s risk of dying before age 5. Poverty, geographic isolation, educational disadvantage, child protection violations and gender exclusion are all key factors that exacerbate the risk of under-five death. Addressing these underlying causes has become a more pressing issue than ever before. Investment in non-health development, notably education, infrastructure, water and sanitation, and income- and employment-generation are now seen as vital components of a comprehensive plan to reduce under-five deaths.

**5. SUSTAIN MUTUAL ACCOUNTABILITY:** It is critical that the challenge of reducing under-five deaths is taken up in the right way, for amid all of the complexities lies an enormous opportunity. That means, however, taking bold steps that prioritize both efficiency and mutual accountability, and harness the growing consensus that economic and social progress should be equitable. As outlined in the ‘Overview’ (p. 5), each and every partner has a particular and important role to play in *A Promise Renewed*. Common to all, however, is the imperative of taking shared responsibility

## Chapter 3: Getting to '20 by 2035': Strategies for accelerating progress on child survival

for the goal of radically reducing under-five deaths in the next two decades, and embedding these efforts within their current and future strategies and operations.

Committing to *A Promise Renewed* will have striking implications for national policies and programmes in many developing countries, and for the work of UN country teams, and will challenge us all to change the way we do business. Meeting this challenge is within our grasp: The analysis presented at the Child Survival Call to Action Forum provides a strong case for proceeding with optimism.

We now face a stark choice: more of the same strategies, with the likelihood of further moderate gains but only a modest narrowing of the gaps; or a refocus on radically reducing child deaths not only to accelerate progress but to contribute to the development of a more just and equitable world — one that is truly fit for all children.

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#### CHAPTER 1

- 1 The UN Inter-agency Group for Child Mortality Estimation (IGME), *Levels and Trends in Child Mortality: Report 2012*. UNICEF, New York, 2012. (The reference 'IGME 2012' refers to this report.)
- 2 For further details on UNICEF's regional classification, please refer to *State of the World's Children 2012*, pp. 124-125, <http://www.unicef.org/sowc2012/>.
- 3 You, D., and D. Anthony. "Generation 2025: The critical importance of understanding demographic trends for the children of the 21st century". UNICEF Occasional Paper, no. 1, September 2012.

#### CHAPTER 2

- 4 The estimates on cause of death in this report were derived from the work of the Child Health Epidemiology Reference Group (CHERG) pertaining to cause of death in 2010 and the work of the IGME pertaining to all-cause child deaths in 2011. The numbers of deaths by cause have been updated by applying the percentage breakdown by cause provided by CHERG to the estimates of number of under-five deaths provided by UN IGME. This approach was used for comparability across diseases, and therefore these estimates may differ from those presented elsewhere.
- 5 For comparability across diseases, this report presents updated numbers of under-five deaths by cause, derived by applying the percentage breakdown by cause provided by CHERG (the Child Health Epidemiology Reference Group of WHO and UNICEF) (2012) to the estimates of number of under-five deaths provided by UN IGME (2012). These estimates differ, therefore, from those presented in "Assessment of the 2010 global measles mortality reduction goal: results from a model of surveillance data", by E. Simons, et al., *The Lancet*, vol. 379, no 9832, 9 June 2012, pp. 2173-2178.
- 6 UNICEF reanalysis based on CHERG, IGME, 2012. UNICEF. *Pneumonia and Diarrhoea: Tackling the deadliest diseases for the world's poorest children*. New York: UNICEF, 2012
- 7 UNICEF reanalysis based on CHERG, IGME, 2012.
- 8 Liu, L., et al., for the Child Health Epidemiology Reference Group of WHO and UNICEF. "Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000." *The Lancet*, 9 June 2012 vol. 379, no. 9832, pp. 2151-2161 (CHERG 2012).
- 9 Liu, L., et al., for the Child Health Epidemiology Reference Group of WHO and UNICEF. "Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000." *The Lancet*, 9 June 2012 vol. 379, no. 9832, pp. 2151-2161 (CHERG 2012).

#### PNEUMONIA

- a The estimates on cause of death in this report were derived from the work of the Child Health Epidemiology Reference Group (CHERG) pertaining to cause of death in 2010 and the work of the IGME pertaining to all-cause child deaths in 2011. The numbers of deaths by cause have been updated by applying the percentage breakdown by cause provided by CHERG to the estimates of number of under-five deaths provided by UN IGME. This approach was used for comparability across diseases, and therefore these estimates may differ from those presented elsewhere.
- b UNICEF, *Pneumonia and Diarrhoea: Tackling the deadliest diseases for the world's poorest children*. New York: UNICEF, 2012.

#### DIARRHOEA

- a The estimates on cause of death in this report were derived from the work of the Child Health Epidemiology Reference Group (CHERG) pertaining to cause of death in 2010 and the work of the IGME pertaining to all-cause child deaths in 2011. The numbers of deaths by cause have been updated by applying the percentage breakdown by cause provided by CHERG to the estimates of number of under-five deaths provided by UN IGME. This approach was used for comparability across diseases, and therefore these estimates may differ from those presented elsewhere.
- b Black, R., et al., "Maternal and child undernutrition: global and regional exposures and health consequences." *The Lancet* 2008 vol. 371, no. 9608, 19 January 2008, pp. 243-260.

#### MALARIA

- a The estimates on cause of death in this report were derived from the work of the Child Health Epidemiology Reference Group (CHERG) pertaining to cause of death in 2010 and the work of the IGME pertaining to all-cause child deaths in 2011. The numbers of deaths by cause have been updated by applying the percentage breakdown by cause provided by CHERG to the estimates of number of under-five deaths provided by UN IGME. This approach was used for comparability across diseases, and therefore these estimates may differ from those presented elsewhere.
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### CHAPTER 3

- 10 For comparability across diseases, this report presents updated numbers of under-five deaths by cause, derived by applying the percentage breakdown by cause provided by CHERG (2012) to the estimates of number of under-five deaths provided by UN IGME (2012). These estimates differ, therefore, from those presented in "Assessment of the 2010 global measles mortality reduction goal: results from a model of surveillance data", by E. Simons, et al., *The Lancet*, vol. 379, no 9832, 9 June 2012, pp. 2173-2178.





Tables: Country and regional estimates of child mortality and causes of under-five deaths

## Country estimates of child mortality and causes of under-five deaths

Countries and territories	Under-5 mortality rank	Under-5 mortality rate (deaths per 1,000 live births)					Number of under-5 deaths (thousands)		Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)	
	2011	1990	2000	2011	Decline (%) 1990-2011	Annual rate of reduction (%) 1990-2011	1990	2011	1990	2011	1990	2011	1990	2011	1990	2011
<b>SUB-SAHARAN AFRICA</b>																
Angola	8	243	199	158	35	2.1	123	120	144	96	74	72	53	43	29	35
Benin	20	177	140	106	40	2.4	37	36	107	68	23	24	40	31	9	11
Botswana	80	53	81	26	51	3.4	2	1	41	20	2	1	21	11	1	1
Burkina Faso	9	208	182	146	30	1.7	87	101	105	82	44	57	41	34	18	25
Burundi	10	183	165	139	24	1.3	45	39	110	86	27	24	50	43	13	12
Cameroon	11	145	140	127	12	0.6	71	88	90	79	44	55	36	33	19	24
Cape Verde	91	58	39	21	63	4.8	1	0	45	18	1	0	21	10	0	0
Central African Republic	6	169	172	164	3	0.2	20	25	112	108	13	16	46	46	6	7
Chad	4	208	189	169	19	1.0	55	79	113	97	30	46	47	42	13	22
Comoros	33	122	100	79	35	2.0	2	2	86	59	1	2	41	32	1	1
Congo	25	119	109	99	17	0.9	10	14	75	64	7	9	35	32	3	5
Côte d'Ivoire	17	151	139	115	24	1.3	76	75	104	81	52	53	47	41	25	28
Democratic Republic of the Congo	5	181	181	168	8	0.4	312	465	117	111	206	307	49	47	91	137
Equatorial Guinea	16	190	152	118	38	2.3	3	3	118	80	2	2	47	37	1	1
Eritrea	41	138	98	68	51	3.4	17	13	86	46	11	9	32	22	4	4
Ethiopia	36	198	139	77	61	4.5	433	194	118	52	264	129	52	31	122	82
Gabon	44	94	82	66	31	1.7	3	3	69	49	2	2	32	25	1	1
Gambia	23	165	130	101	39	2.3	7	6	78	58	3	4	44	34	2	2
Ghana	34	121	99	78	36	2.1	67	60	76	52	43	40	38	30	22	23
Guinea	12	228	175	126	45	2.8	58	48	135	79	35	30	53	39	15	15
Guinea-Bissau	7	210	186	161	24	1.3	9	9	125	98	5	5	50	44	2	3
Kenya	38	98	113	73	26	1.4	95	107	64	48	62	72	33	27	32	42
Lesotho	29	88	117	86	2	0.1	5	5	71	63	4	4	45	39	3	2
Liberia	34	241	164	78	68	5.4	22	12	161	58	15	9	49	27	5	4
Madagascar	47	161	104	62	62	4.6	79	45	98	43	51	31	40	23	20	17
Malawi	31	227	164	83	64	4.8	94	52	134	53	56	34	48	27	21	18
Mali	3	257	214	176	32	1.8	103	121	132	98	53	68	58	49	25	36
Mauritania	18	125	118	112	10	0.5	10	13	81	76	6	9	43	40	3	5
Mauritius	115	24	19	15	37	2.2	1	0	21	13	1	0	16	9	0	0
Mozambique	22	226	172	103	54	3.7	128	86	151	72	84	59	53	34	32	30
Namibia	63	73	74	42	43	2.7	4	2	49	30	3	2	29	18	2	1
Niger	13	314	216	125	60	4.4	125	89	133	66	53	49	49	32	21	25
Nigeria	14	214	188	124	42	2.6	876	756	127	78	519	480	51	39	220	254
Rwanda	51	156	183	54	65	5.1	50	23	95	38	31	17	39	21	12	9
Sao Tome and Principe	28	96	93	89	8	0.4	0	0	62	58	0	0	31	29	0	0
Senegal	45	136	130	65	52	3.5	41	30	69	47	21	22	40	26	13	12
Seychelles	122	17	14	14	17	0.9	0	0	14	12	0	0	10	9	0	0
Sierra Leone	1	267	241	185	31	1.7	43	42	158	119	25	27	58	49	10	11
Somalia	2	180	180	180	0	0.0	52	71	108	108	33	43	50	50	15	21
South Africa	58	62	74	47	25	1.4	67	47	48	35	51	35	26	19	28	20
South Sudan	15	217	165	121	45	2.8	54	43	129	76	32	28	51	38	13	13
Swaziland	21	83	114	104	-24	-1.0	3	4	61	69	2	2	32	35	1	1
Togo	19	147	128	110	25	1.4	22	21	85	73	13	14	42	36	6	7
Uganda	26	178	141	90	49	3.3	146	131	106	58	89	86	39	28	35	43
United Republic of Tanzania	41	158	126	68	57	4.0	169	122	97	45	105	83	41	25	47	48
Zambia	31	193	154	83	57	4.0	64	46	114	53	38	30	43	27	15	17
Zimbabwe	43	79	106	67	15	0.8	30	24	53	43	20	16	32	30	12	11

### DEFINITIONS OF INDICATORS

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 month of life, expressed per 1,000 live births.

- Not available

\* Includes all neonatal causes except neonatal pneumonia and diarrhoea.

Source: Mortality rates and number of deaths, IGME 2012; cause of death, CHERG 2012.

## Country estimates of child mortality and causes of under-five deaths

Sex-specific under-5 mortality rate (deaths per 1,000 live births)				Deaths among children under 5 years of age due to: (%)										Countries and territories
				2010										
1990		2011		Neonatal causes*	Pneumonia	Diarrhoea	Malaria	AIDS	Measles	Injuries	Others	Total		
Male	Female	Male	Female											
<b>SUB-SAHARAN AFRICA</b>														
254	232	165	150	24	17	15	10	2	0	4	28	100	Angola	
183	171	109	103	23	17	10	23	1	0	3	22	100	Benin	
57	49	28	24	37	13	6	0	15	0	4	24	100	Botswana	
215	202	151	142	17	18	12	24	1	3	3	23	100	Burkina Faso	
190	175	145	133	29	19	15	4	6	0	5	23	100	Burundi	
154	137	135	120	23	15	13	16	5	0	3	24	100	Cameroon	
62	54	23	20	38	19	8	0	0	0	4	31	100	Cape Verde	
175	163	170	157	24	16	11	26	3	0	3	17	100	Central African Republic	
219	198	177	160	22	19	14	20	3	0	3	19	100	Chad	
130	113	85	74	32	18	9	14	0	0	4	23	100	Comoros	
124	113	103	94	26	14	7	26	5	0	3	19	100	Congo	
164	138	125	105	28	15	9	25	3	0	3	17	100	Côte d'Ivoire	
192	171	178	158	24	19	13	18	1	0	3	23	100	Democratic Republic of the Congo	
199	180	124	112	27	14	7	21	8	0	2	21	100	Equatorial Guinea	
151	125	74	61	29	19	11	1	2	2	8	27	100	Eritrea	
212	184	82	72	30	21	14	2	2	4	6	23	100	Ethiopia	
103	86	72	59	33	11	7	15	8	3	3	20	100	Gabon	
175	154	107	94	29	15	9	20	3	0	3	20	100	Gambia	
128	114	83	72	35	13	7	18	3	1	4	19	100	Ghana	
232	224	128	123	26	16	10	27	1	0	3	17	100	Guinea	
227	193	174	147	24	18	12	18	3	0	3	21	100	Guinea-Bissau	
104	92	78	67	33	17	9	3	7	0	5	26	100	Kenya	
95	80	93	79	40	12	7	0	18	1	4	18	100	Lesotho	
255	227	83	74	28	14	9	18	2	10	3	17	100	Liberia	
171	152	65	58	34	18	10	6	0	1	7	23	100	Madagascar	
235	219	87	79	28	14	7	13	13	2	4	19	100	Malawi	
267	248	182	169	21	20	14	16	0	3	3	22	100	Mali	
134	115	120	104	30	17	11	6	0	7	4	24	100	Mauritania	
27	21	16	14	62	9	0	0	1	0	6	22	100	Mauritius	
233	218	107	99	25	15	9	19	10	1	3	17	100	Mozambique	
78	67	45	38	38	12	5	0	14	4	5	22	100	Namibia	
320	307	127	122	20	22	14	15	1	0	4	23	100	Niger	
222	205	129	119	26	17	11	20	4	1	3	18	100	Nigeria	
165	148	57	51	31	20	12	2	2	0	6	28	100	Rwanda	
99	93	92	86	29	18	11	4	0	1	5	32	100	Sao Tome and Principe	
143	129	69	60	32	16	9	14	1	2	4	21	100	Senegal	
18	15	15	13	59	7	1	0	0	0	4	30	100	Seychelles	
280	253	194	176	23	17	12	23	1	0	3	21	100	Sierra Leone	
190	170	190	170	27	25	16	7	1	0	3	21	100	Somalia	
66	58	50	44	29	11	5	0	28	1	4	22	100	South Africa	
220	215	122	119	33	19	12	3	2	1	5	25	100	South Sudan	
91	76	113	94	27	14	7	0	23	0	5	24	100	Swaziland	
158	136	118	102	28	16	10	18	3	0	4	21	100	Togo	
192	164	97	83	26	17	10	13	7	0	5	22	100	Uganda	
163	152	70	65	34	15	9	11	5	1	5	21	100	United Republic of Tanzania	
200	186	86	80	27	14	9	13	10	4	4	19	100	Zambia	
86	72	73	61	32	11	8	8	20	1	3	16	100	Zimbabwe	



## Country estimates of child mortality and causes of under-five deaths

Countries and territories	Under-5 mortality rank	Under-5 mortality rate (deaths per 1,000 live births)					Number of under-5 deaths (thousands)		Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)	
	2011	1990	2000	2011	Decline (%) 1990-2011	Annual rate of reduction (%) 1990-2011	1990	2011	1990	2011	1990	2011	1990	2011	1990	2011
<b>MIDDLE EAST &amp; NORTH AFRICA</b>																
Algeria	74	66	46	30	55	3.8	52	21	54	26	42	18	29	17	23	12
Bahrain	135	21	12	10	51	3.4	0	0	18	9	0	0	7	4	0	0
Djibouti	26	122	106	90	26	1.5	3	2	94	72	2	2	39	33	1	1
Egypt	91	86	44	21	75	6.7	158	40	63	18	117	34	20	7	36	14
Iran (Islamic Republic of)	83	61	44	25	59	4.3	115	33	47	21	87	28	27	14	48	17
Iraq	67	46	43	38	18	0.9	30	42	37	31	24	35	23	20	15	23
Israel	169	12	7	4	63	4.7	1	1	10	4	1	1	6	2	1	0
Jordan	91	37	28	21	44	2.7	5	3	31	18	4	3	19	12	2	2
Kuwait	133	17	13	11	36	2.1	1	1	14	9	1	1	10	5	0	0
Lebanon	141	33	19	9	72	6.0	2	1	27	8	2	1	16	5	1	0
Libya	107	44	27	16	63	4.8	5	2	33	13	3	2	21	10	2	1
Morocco	69	81	53	33	60	4.3	57	21	64	28	44	18	35	19	25	12
Occupied Palestinian Territory	87	43	30	22	49	3.2	4	3	36	20	3	3	22	13	2	2
Oman	141	48	22	9	82	8.1	3	0	36	7	3	0	21	5	2	0
Qatar	145	20	13	8	62	4.6	0	0	17	6	0	0	10	4	0	0
Saudi Arabia	141	43	21	9	78	7.3	23	6	34	8	19	5	20	5	11	3
Sudan	29	123	104	86	30	1.7	96	95	77	57	61	63	38	31	32	35
Syrian Arab Republic	115	36	23	15	58	4.1	16	7	30	13	13	6	18	9	8	4
Tunisia	107	51	30	16	68	5.5	12	3	40	14	9	3	23	10	5	2
United Arab Emirates	151	22	12	7	70	5.8	1	1	19	6	1	1	12	4	1	0
Yemen	36	126	99	77	39	2.4	73	70	89	57	52	53	43	32	27	30
<b>ASIA &amp; PACIFIC</b>																
Afghanistan	23	192	136	101	47	3.1	117	128	129	73	80	94	51	36	38	51
Australia	165	9	6	5	51	3.4	2	1	8	4	2	1	5	3	1	1
Bangladesh	60	139	84	46	67	5.3	509	134	97	37	351	105	52	26	195	80
Bhutan	51	138	89	54	61	4.5	3	1	96	42	2	1	44	25	1	0
Brunei Darussalam	151	12	10	7	41	2.6	0	0	9	6	0	0	7	4	0	0
Cambodia	62	117	102	43	64	4.8	37	13	85	36	23	11	37	19	15	6
China	115	49	35	15	70	5.8	1,296	249	39	13	1,036	215	23	9	555	143
Cook Islands	135	19	17	10	50	3.3	0	0	16	8	0	0	9	5	0	0
Democratic People's Republic of Korea	69	45	58	33	26	1.4	16	12	23	26	10	9	22	18	9	6
Fiji	107	30	22	16	45	2.8	1	0	25	14	0	0	13	8	0	0
India	49	114	88	61	46	3.0	3,061	1,655	81	47	2,174	1,273	47	32	1,288	876
Indonesia	71	82	53	32	61	4.5	386	134	54	25	251	104	29	15	140	66
Japan	184	6	5	3	47	3.0	8	4	5	2	5	3	3	1	3	1
Kiribati	58	88	65	47	46	2.9	0	0	64	38	0	0	28	19	0	0
Lao People's Democratic Republic	63	148	81	42	72	6.0	25	6	102	34	17	5	38	18	7	2
Malaysia	151	17	11	7	62	4.6	9	4	15	6	7	3	9	3	4	2
Maldives	133	105	53	11	90	10.9	1	0	76	9	1	0	36	7	0	0
Marshall Islands	80	52	38	26	50	3.3	0	0	41	22	0	0	19	12	0	0
Micronesia (Federated States of)	63	56	49	42	26	1.5	0	0	44	34	0	0	22	17	0	0
Mongolia	72	107	63	31	71	5.9	8	2	76	26	6	2	27	12	2	1
Myanmar	47	107	84	62	42	2.6	115	53	77	48	82	40	42	30	44	25
Nauru	66	40	40	40	0	0.0	0	0	32	32	0	0	22	22	0	0
Nepal	57	135	83	48	64	4.9	94	34	94	39	66	27	51	27	37	20
New Zealand	157	11	7	6	47	3.0	1	0	9	5	1	0	4	3	0	0
Niue	91	14	29	21	-49	-1.9	0	0	12	18	0	0	7	10	0	0
Pakistan	39	122	95	72	41	2.5	544	352	95	59	426	293	49	36	218	169
Palau	100	32	25	19	42	2.6	0	0	27	14	0	0	14	9	0	0
Papua New Guinea	50	88	72	58	34	2.0	12	12	64	45	9	9	29	23	4	5
Philippines	83	57	39	25	55	3.8	115	57	40	20	82	45	22	12	45	29



## Country estimates of child mortality and causes of under-five deaths

Sex-specific under-5 mortality rate (deaths per 1,000 live births)				Deaths among children under 5 years of age due to: (%)										Countries and territories
1990		2011		2010										
Male	Female	Male	Female	Neonatal causes*	Pneumonia	Diarrhoea	Malaria	AIDS	Measles	Injuries	Others	Total		
														<b>MIDDLE EAST &amp; NORTH AFRICA</b>
70	62	32	28	45	12	5	0	0	11	5	22	100	Algeria	
21	20	10	10	42	2	0	0	0	0	6	50	100	Bahrain	
129	114	95	84	30	20	11	1	4	1	4	29	100	Djibouti	
86	86	22	20	43	11	7	0	0	0	2	37	100	Egypt	
62	60	25	25	49	13	4	0	0	0	6	28	100	Iran (Islamic Republic of)	
50	42	41	35	47	18	6	0	0	0	6	24	100	Iraq	
12	11	5	4	50	2	0	0	0	0	4	44	100	Israel	
37	36	22	19	54	8	4	0	0	0	7	28	100	Jordan	
18	15	12	10	43	6	1	0	0	0	10	39	100	Kuwait	
34	32	10	9	50	8	4	0	1	0	7	31	100	Lebanon	
46	42	17	16	59	3	1	0	0	0	28	9	100	Libya	
86	77	35	30	47	15	6	0	0	0	6	25	100	Morocco	
46	41	23	21	-	-	-	-	-	-	-	-	-	Occupied Palestinian Territory	
49	46	9	8	49	5	1	0	0	0	8	36	100	Oman	
22	19	8	7	57	2	0	0	0	1	4	35	100	Qatar	
46	39	10	8	49	7	2	0	0	0	11	31	100	Saudi Arabia	
129	116	91	81	33	19	12	3	2	1	5	25	100	Sudan	
39	33	16	14	53	8	7	0	0	0	4	27	100	Syrian Arab Republic	
55	47	18	15	55	7	3	0	0	0	7	28	100	Tunisia	
24	20	7	6	60	2	0	0	0	0	4	34	100	United Arab Emirates	
131	121	80	73	36	22	11	1	0	0	6	24	100	Yemen	
														<b>ASIA &amp; PACIFIC</b>
196	188	103	99	27	25	16	0	0	2	5	25	100	Afghanistan	
10	8	5	4	57	3	0	0	0	0	8	32	100	Australia	
140	138	48	44	56	14	6	1	0	1	6	17	100	Bangladesh	
147	130	57	50	41	20	7	0	0	1	5	25	100	Bhutan	
14	11	8	7	54	5	0	0	0	0	11	29	100	Brunei Darussalam	
125	108	47	37	40	16	8	2	1	0	7	25	100	Cambodia	
50	48	15	14	54	17	3	0	0	0	8	17	100	China	
22	17	11	8	49	5	1	0	0	0	13	31	100	Cook Islands	
47	43	35	32	50	15	5	0	0	0	6	23	100	Democratic People's Republic of Korea	
32	27	18	15	44	10	4	0	0	0	12	29	100	Fiji	
110	119	59	64	42	24	13	0	0	3	3	14	100	India	
88	75	34	29	46	14	5	2	0	5	6	22	100	Indonesia	
7	6	4	3	36	6	2	0	0	0	9	47	100	Japan	
92	83	50	45	36	20	9	0	0	0	8	28	100	Kiribati	
156	139	44	39	37	19	10	1	1	0	8	24	100	Lao People's Democratic Republic	
19	16	7	6	53	6	2	0	0	0	4	35	100	Malaysia	
110	101	12	10	57	11	3	0	0	0	6	23	100	Maldives	
57	46	29	23	38	19	6	0	0	0	9	28	100	Marshall Islands	
64	48	47	36	35	20	6	0	0	1	7	31	100	Micronesia (Federated States of)	
121	91	35	26	31	15	7	0	0	1	9	36	100	Mongolia	
119	96	69	56	45	17	8	1	1	1	5	23	100	Myanmar	
56	24	56	24	46	17	7	0	0	0	5	25	100	Nauru	
137	133	49	47	55	16	6	0	0	0	5	17	100	Nepal	
12	10	7	5	43	8	0	0	0	0	15	34	100	New Zealand	
14	14	21	21	-	-	-	-	-	-	-	-	-	Niue	
126	118	76	68	41	19	11	0	0	1	5	23	100	Pakistan	
40	24	23	14	48	6	2	0	0	3	20	21	100	Palau	
92	84	60	55	35	17	8	10	2	0	6	21	100	Papua New Guinea	
63	51	29	22	46	16	6	0	0	0	8	24	100	Philippines	

## Country estimates of child mortality and causes of under-five deaths

Countries and territories	Under-5 mortality rank	Under-5 mortality rate (deaths per 1,000 live births)					Number of under-5 deaths (thousands)		Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)		
		2011	1990	2000	2011	Decline (%) 1990-2011	Annual rate of reduction (%) 1990-2011	1990	2011	1990	2011	1990	2011	1990	2011	1990	2011
Republic of Korea	165	8	6	5	36	2.1	4	3	6	4	4	2	3	2	2	1	
Samoa	100	30	23	19	37	2.2	0	0	25	16	0	0	11	8	0	0	
Singapore	184	8	4	3	65	5.0	0	0	6	2	0	0	4	1	0	0	
Solomon Islands	87	42	31	22	48	3.1	0	0	34	18	0	0	17	11	0	0	
Sri Lanka	128	29	19	12	58	4.1	10	5	24	11	8	4	16	8	6	3	
Thailand	128	35	19	12	65	5.0	38	10	29	11	31	9	18	8	20	6	
Timor-Leste	51	180	109	54	70	5.7	5	2	135	46	4	2	48	24	2	1	
Tonga	115	25	20	15	37	2.2	0	0	21	13	0	0	12	8	0	0	
Tuvalu	74	58	43	30	48	3.1	0	0	45	25	0	0	22	14	0	0	
Vanuatu	125	39	23	13	66	5.1	0	0	31	11	0	0	16	7	0	0	
Viet Nam	87	50	34	22	57	4.0	96	32	36	17	69	25	22	12	45	17	
<b>AMERICAS</b>																	
Antigua and Barbuda	145	27	15	8	72	6.0	0	0	23	6	0	0	13	4	0	0	
Argentina	122	28	20	14	49	3.2	20	10	24	13	18	9	16	8	11	5	
Bahamas	107	22	17	16	26	1.4	0	0	18	14	0	0	9	7	0	0	
Barbados	98	18	17	20	-10	-0.5	0	0	16	18	0	0	9	10	0	0	
Belize	106	44	26	17	62	4.5	0	0	35	15	0	0	18	8	0	0	
Bolivia (Plurinational State of)	55	120	81	51	58	4.1	28	13	83	39	19	10	37	22	9	6	
Brazil	107	58	36	16	73	6.3	205	44	49	14	170	39	27	10	97	29	
Canada	157	8	6	6	33	1.9	3	2	7	5	3	2	4	4	2	1	
Chile	141	19	11	9	53	3.6	6	2	16	8	5	2	9	5	3	1	
Colombia	102	34	25	18	48	3.2	31	16	28	15	25	14	19	11	17	10	
Costa Rica	135	17	13	10	41	2.5	1	1	15	9	1	1	10	6	1	0	
Cuba	157	13	9	6	56	4.0	2	1	11	5	2	0	7	3	1	0	
Dominica	128	17	15	12	32	1.8	0	0	14	11	0	0	12	8	0	0	
Dominican Republic	83	58	39	25	58	4.1	12	5	45	21	9	4	26	14	6	3	
Ecuador	86	52	34	23	56	4.0	15	7	41	20	12	6	19	10	6	3	
El Salvador	115	60	34	15	75	6.6	10	2	47	13	8	2	18	6	3	1	
Grenada	125	21	16	13	39	2.4	0	0	17	10	0	0	10	7	0	0	
Guatemala	74	78	48	30	61	4.5	26	14	56	24	18	11	28	15	10	7	
Guyana	68	63	49	36	43	2.7	1	0	48	29	1	0	29	20	1	0	
Haiti	40	143	102	70	51	3.4	36	19	99	53	24	14	37	25	10	7	
Honduras	91	55	35	21	61	4.5	10	4	43	18	8	4	22	11	4	2	
Jamaica	102	35	26	18	47	3.0	2	1	28	16	2	1	19	11	1	1	
Mexico	107	49	29	16	68	5.4	116	34	38	13	91	29	17	7	41	15	
Nicaragua	80	66	42	26	61	4.5	10	4	50	22	7	3	25	13	4	2	
Panama	98	33	26	20	41	2.5	2	1	26	17	2	1	14	9	1	1	
Paraguay	87	53	35	22	57	4.1	7	3	41	19	6	3	24	13	3	2	
Peru	102	75	39	18	76	6.8	49	11	54	14	35	8	26	9	17	5	
Saint Kitts and Nevis	151	28	16	7	74	6.4	0	0	22	6	0	0	17	5	0	0	
Saint Lucia	107	23	18	16	31	1.7	0	0	18	14	0	0	13	9	0	0	
Saint Vincent and the Grenadines	91	27	22	21	21	1.1	0	0	21	20	0	0	16	13	0	0	
Suriname	74	52	40	30	43	2.7	0	0	44	26	0	0	24	16	0	0	
Trinidad and Tobago	78	37	32	28	25	1.4	1	1	32	25	1	0	23	18	1	0	
United States	145	11	9	8	34	2.0	44	32	9	6	37	27	6	4	22	18	
Uruguay	135	23	17	10	55	3.8	1	1	20	9	1	0	11	5	1	0	
Venezuela (Bolivarian Republic of)	115	31	22	15	51	3.4	18	9	26	13	15	8	15	8	9	5	
<b>EUROPE &amp; CENTRAL ASIA</b>																	
Albania	122	41	26	14	65	5.0	3	1	36	13	3	1	17	7	1	0	
Andorra	184	8	5	3	60	4.4	0	0	7	3	0	0	3	1	0	0	
Armenia	102	47	30	18	63	4.7	4	1	40	16	3	1	23	11	2	1	
Austria	169	9	6	4	55	3.8	1	0	8	4	1	0	4	3	0	0	

## Country estimates of child mortality and causes of under-five deaths

Sex-specific under-5 mortality rate (deaths per 1,000 live births)				Deaths among children under 5 years of age due to: (%)										Countries and territories
1990		2011		2010										
Male	Female	Male	Female	Neonatal causes*	Pneumonia	Diarrhoea	Malaria	AIDS	Measles	Injuries	Others	Total		
8	7	5	4	39	2	0	0	0	0	13	46	100	Republic of Korea	
33	26	21	16	41	8	3	0	0	0	10	38	100	Samoa	
8	7	3	2	44	7	1	0	0	0	4	44	100	Singapore	
41	43	21	22	41	16	5	10	0	0	8	20	100	Solomon Islands	
31	27	13	11	60	7	3	0	0	0	6	24	100	Sri Lanka	
39	31	13	11	58	9	3	0	1	0	4	24	100	Thailand	
190	169	57	51	40	20	8	4	0	0	6	22	100	Timor-Leste	
28	21	18	13	48	9	3	0	0	0	7	33	100	Tonga	
63	52	33	27	42	9	1	0	0	0	22	25	100	Tuvalu	
41	36	14	12	45	9	3	19	0	0	5	18	100	Vanuatu	
57	43	25	19	49	12	10	0	1	5	3	20	100	Viet Nam	
<b>AMERICAS</b>														
30	23	9	7	64	0	0	0	0	0	12	24	100	Antigua and Barbuda	
31	25	16	13	51	10	2	0	0	0	7	31	100	Argentina	
23	20	17	15	32	27	0	0	0	0	8	33	100	Bahamas	
20	16	22	18	46	7	0	0	0	0	0	47	100	Barbados	
49	39	19	15	48	7	10	0	0	0	12	22	100	Belize	
127	112	54	48	42	15	9	0	0	0	6	28	100	Bolivia (Plurinational State of)	
64	52	17	14	64	7	3	0	0	0	4	22	100	Brazil	
9	7	6	5	60	1	0	0	0	0	5	34	100	Canada	
21	17	10	8	52	7	1	0	0	0	8	33	100	Chile	
38	31	20	16	60	10	4	0	0	0	6	21	100	Colombia	
19	15	11	9	61	3	1	0	0	0	4	29	100	Costa Rica	
15	12	6	5	45	11	2	0	0	0	8	35	100	Cuba	
19	16	13	11	77	3	0	0	0	0	0	20	100	Dominica	
62	54	27	23	53	11	4	0	2	0	5	24	100	Dominican Republic	
56	49	25	21	47	10	4	0	1	0	9	30	100	Ecuador	
65	55	17	14	35	11	5	0	4	0	11	34	100	El Salvador	
22	20	13	12	48	0	0	0	0	0	0	52	100	Grenada	
82	74	33	28	45	15	7	0	2	0	8	23	100	Guatemala	
70	55	40	32	74	4	3	7	1	0	2	9	100	Guyana	
152	134	74	66	14	10	7	0	1	0	55	12	100	Haiti	
58	52	23	20	46	11	5	0	2	0	3	33	100	Honduras	
39	29	21	16	34	13	4	0	3	0	12	33	100	Jamaica	
53	44	17	14	42	12	4	0	0	0	8	33	100	Mexico	
72	60	29	22	42	14	9	0	0	0	4	31	100	Nicaragua	
36	31	21	18	44	9	11	0	0	0	5	30	100	Panama	
57	48	25	20	54	11	5	0	0	0	5	24	100	Paraguay	
79	71	20	17	46	10	4	0	1	0	9	30	100	Peru	
32	25	8	6	83	0	0	0	0	0	6	11	100	Saint Kitts and Nevis	
25	20	17	14	56	0	3	0	0	0	0	41	100	Saint Lucia	
29	24	23	19	57	2	0	0	0	0	21	21	100	Saint Vincent and the Grenadines	
57	46	33	26	48	9	3	0	2	0	7	31	100	Suriname	
41	33	31	24	64	7	0	0	3	0	5	22	100	Trinidad and Tobago	
13	10	8	7	56	2	0	0	0	0	19	23	100	United States	
26	21	11	9	50	11	2	0	0	0	7	30	100	Uruguay	
34	28	17	13	52	10	7	0	0	0	9	21	100	Venezuela (Bolivarian Republic of)	
<b>EUROPE &amp; CENTRAL ASIA</b>														
43	39	15	14	47	11	1	0	0	0	10	30	100	Albania	
9	8	4	3	25	4	0	0	0	0	11	60	100	Andorra	
51	43	19	15	58	11	1	0	0	0	9	21	100	Armenia	
11	8	5	4	58	2	0	0	0	0	4	36	100	Austria	

## Country estimates of child mortality and causes of under-five deaths

Countries and territories	Under-5 mortality rank	Under-5 mortality rate (deaths per 1,000 live births)					Number of under-5 deaths (thousands)		Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)	
	2011	1990	2000	2011	Decline (%) 1990-2011	Annual rate of reduction (%) 1990-2011	1990	2011	1990	2011	1990	2011	1990	2011	1990	2011
Azerbaijan	61	95	69	45	53	3.6	19	8	75	39	16	7	31	19	6	4
Belarus	157	17	14	6	67	5.3	3	1	14	4	2	0	8	3	1	0
Belgium	169	10	6	4	57	4.0	1	1	9	4	1	0	5	2	1	0
Bosnia and Herzegovina	145	19	10	8	59	4.3	1	0	17	7	1	0	12	5	1	0
Bulgaria	128	22	21	12	45	2.9	3	1	19	11	2	1	12	7	1	0
Croatia	165	13	8	5	60	4.4	1	0	11	4	1	0	9	3	0	0
Cyprus	184	11	7	3	72	6.0	0	0	10	3	0	0	5	1	0	0
Czech Republic	169	14	7	4	73	6.2	2	0	13	3	2	0	10	2	1	0
Denmark	169	9	6	4	57	4.1	1	0	7	3	0	0	4	2	0	0
Estonia	169	20	11	4	82	8.1	0	0	16	3	0	0	12	2	0	0
Finland	184	7	4	3	57	4.0	0	0	6	2	0	0	4	2	0	0
France	169	9	5	4	53	3.6	6	3	7	3	5	3	3	2	3	2
Georgia	91	47	33	21	56	3.9	4	1	40	18	4	1	27	15	2	1
Germany	169	9	5	4	53	3.6	7	3	7	3	6	2	4	2	3	2
Greece	169	13	8	4	65	5.0	1	1	12	4	1	0	9	3	1	0
Holy See	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	157	19	11	6	66	5.2	3	1	17	5	2	1	13	4	2	0
Iceland	184	6	4	3	60	4.4	0	0	5	2	0	0	3	1	0	0
Ireland	169	9	7	4	56	3.9	0	0	8	3	0	0	5	2	0	0
Italy	169	10	6	4	62	4.6	5	2	8	3	5	2	6	2	3	1
Kazakhstan	78	57	42	28	50	3.3	23	11	48	25	19	9	24	14	9	5
Kyrgyzstan	72	70	47	31	56	4.0	10	4	58	27	8	4	28	16	4	2
Latvia	145	21	17	8	60	4.3	1	0	17	7	1	0	13	5	0	0
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithuania	157	17	12	6	67	5.3	1	0	14	5	1	0	10	3	1	0
Luxembourg	184	8	5	3	62	4.6	0	0	7	2	0	0	4	2	0	0
Malta	157	11	8	6	48	3.1	0	0	10	5	0	0	7	4	0	0
Monaco	169	8	5	4	50	3.3	0	0	6	3	0	0	4	2	0	0
Montenegro	151	18	13	7	59	4.3	0	0	16	7	0	0	11	5	0	0
Netherlands	169	8	6	4	52	3.5	2	1	7	3	1	1	5	3	1	0
Norway	184	8	5	3	63	4.7	0	0	7	3	0	0	4	2	0	0
Poland	157	17	10	6	66	5.2	9	2	15	5	8	2	11	4	6	1
Portugal	184	15	7	3	77	6.9	2	0	11	3	1	0	7	2	1	0
Republic of Moldova	107	35	24	16	54	3.7	3	1	29	14	2	1	15	8	1	0
Romania	125	37	27	13	67	5.2	15	3	31	11	13	2	17	8	5	2
Russian Federation	128	27	21	12	56	4.0	62	20	23	10	51	17	13	7	26	11
San Marino	195	12	5	2	85	9.0	0	0	11	2	0	0	5	1	0	0
Serbia	151	29	13	7	75	6.6	4	1	25	6	3	1	15	4	2	0
Slovakia	145	18	12	8	56	3.9	1	0	16	7	1	0	12	4	1	0
Slovenia	184	10	5	3	73	6.2	0	0	9	2	0	0	5	2	0	0
Spain	169	11	7	4	61	4.5	4	2	9	4	4	2	7	3	3	1
Sweden	184	7	4	3	58	4.2	1	0	6	2	1	0	3	2	0	0
Switzerland	169	8	6	4	46	2.9	1	0	7	4	0	0	4	3	0	0
Tajikistan	46	114	95	63	45	2.8	25	12	89	53	19	10	35	25	7	5
The former Yugoslav Republic of Macedonia	135	38	16	10	74	6.5	1	0	34	9	1	0	17	6	1	0
Turkey	115	72	35	15	79	7.4	96	20	60	12	78	15	29	9	41	12
Turkmenistan	54	94	71	53	44	2.8	12	5	75	45	10	5	31	22	4	2
Ukraine	135	19	19	10	48	3.1	14	5	17	9	12	5	9	5	6	2
United Kingdom	165	9	7	5	45	2.8	7	4	8	4	6	4	5	3	4	2
Uzbekistan	56	75	61	49	35	2.1	55	30	62	42	45	25	20	15	14	9



## Country estimates of child mortality and causes of under-five deaths

Sex-specific under-5 mortality rate (deaths per 1,000 live births)				Deaths among children under 5 years of age due to: (%)										Countries and territories
				1990		2011		2010						
Male	Female	Male	Female	Neonatal causes*	Pneumonia	Diarrhoea	Malaria	AIDS	Measles	Injuries	Others	Total		
100	88	47	43	38	17	8	0	0	0	6	31	100	Azerbaijan	
20	15	6	5	42	9	1	0	0	0	7	42	100	Belarus	
11	9	5	4	54	1	1	0	0	0	8	36	100	Belgium	
21	16	9	7	56	9	1	0	0	1	5	29	100	Bosnia and Herzegovina	
25	20	13	11	46	24	1	0	0	0	4	24	100	Bulgaria	
14	11	6	5	59	3	0	0	0	0	6	32	100	Croatia	
12	10	3	3	44	3	0	0	0	0	6	46	100	Cyprus	
16	12	4	4	50	5	1	0	0	0	7	37	100	Czech Republic	
10	8	4	3	61	2	0	0	0	0	7	29	100	Denmark	
23	17	4	3	46	3	0	0	2	0	18	32	100	Estonia	
7	6	3	3	55	4	0	0	0	0	3	39	100	Finland	
10	8	5	4	54	2	1	0	0	0	6	37	100	France	
52	42	23	18	61	11	1	0	0	0	7	20	100	Georgia	
10	7	4	4	55	2	0	0	0	0	6	36	100	Germany	
14	12	5	4	52	7	0	0	0	0	8	33	100	Greece	
-	-	-	-	-	-	-	-	-	-	-	-	-	Holy See	
21	17	7	6	56	4	0	0	0	0	3	37	100	Hungary	
7	6	3	2	45	0	0	0	0	0	0	55	100	Iceland	
10	8	4	4	50	1	0	0	0	0	7	42	100	Ireland	
11	9	4	3	58	1	0	0	0	0	4	36	100	Italy	
64	50	32	24	44	13	6	0	0	0	7	31	100	Kazakhstan	
77	63	34	28	43	14	6	0	0	0	7	29	100	Kyrgyzstan	
23	18	9	8	50	9	0	0	0	0	6	34	100	Latvia	
-	-	-	-	-	-	-	-	-	-	-	-	-	Liechtenstein	
19	15	6	5	46	9	1	0	0	0	13	31	100	Lithuania	
9	7	3	3	44	0	0	0	0	0	28	28	100	Luxembourg	
13	10	7	5	60	0	0	0	0	0	0	40	100	Malta	
9	7	4	3	50	4	0	0	0	0	7	40	100	Monaco	
19	16	8	7	65	0	0	0	0	0	0	35	100	Montenegro	
9	7	4	4	67	3	0	0	0	0	4	27	100	Netherlands	
9	7	3	3	55	1	0	0	0	0	2	41	100	Norway	
19	15	6	5	56	5	0	0	0	0	4	34	100	Poland	
16	13	4	3	53	1	0	0	0	0	8	38	100	Portugal	
39	30	17	15	35	21	0	0	0	0	13	31	100	Republic of Moldova	
41	33	14	11	49	29	0	0	0	0	6	15	100	Romania	
31	23	13	10	50	8	1	0	9	0	6	26	100	Russian Federation	
12	12	2	2	-	-	-	-	-	-	-	-	-	San Marino	
30	27	8	6	63	4	0	0	0	0	4	29	100	Serbia	
20	15	9	7	50	8	1	0	0	0	6	35	100	Slovakia	
12	9	3	3	54	3	3	0	0	0	8	33	100	Slovenia	
12	10	5	4	53	3	1	0	0	0	5	38	100	Spain	
7	6	3	3	52	3	0	0	0	0	2	42	100	Sweden	
9	7	5	4	67	1	0	0	0	0	5	27	100	Switzerland	
122	106	70	56	38	17	9	0	0	0	6	30	100	Tajikistan	
39	36	11	9	61	5	3	0	0	0	3	29	100	The former Yugoslav Republic of Macedonia	
76	68	16	14	54	11	1	0	0	0	4	30	100	Turkey	
103	86	57	48	40	16	8	0	0	0	5	31	100	Turkmenistan	
22	17	11	9	40	12	2	0	1	0	9	36	100	Ukraine	
10	8	6	5	55	4	0	0	0	0	4	37	100	United Kingdom	
82	68	55	42	40	15	7	0	0	0	6	32	100	Uzbekistan	

## Regional estimates of child mortality and causes of under-five deaths

Region	Under-5 mortality rate (deaths per 1,000 live births)					Number of under-5 deaths (thousands)		Infant mortality rate (deaths per 1,000 live births)		Number of infant deaths (thousands)		Neonatal mortality rate (deaths per 1,000 live births)		Number of neonatal deaths (thousands)	
	1990	2000	2011	Decline (%) 1990-2011	Annual rate of reduction (%) 1990-2011	1990	2011	1990	2011	1990	2011	1990	2011	1990	2011
Sub-Saharan Africa	178	154	109	39	2.3	3,821	3,370	107	69	2,318	2,170	45	34	1,018	1,122
Eastern & Southern Africa	162	135	84	48	3.1	1,664	1,177	100	55	1,041	779	43	29	456	429
West & Central Africa	197	175	132	33	1.9	2,058	2,096	116	83	1,214	1,327	48	39	530	658
Middle East & North Africa	72	52	36	50	3.3	656	351	54	28	486	274	27	16	244	158
South Asia	119	89	62	48	3.1	4,340	2,309	85	48	3,109	1,796	48	32	1,784	1,199
East Asia & Pacific	55	39	20	63	4.7	2,164	590	41	17	1,631	484	24	11	895	312
Latin America & Caribbean	53	34	19	64	4.8	610	203	42	16	481	170	22	10	256	107
CEE/CIS	48	35	21	56	3.9	358	125	40	18	295	105	19	10	136	57
<b>World</b>	<b>87</b>	<b>73</b>	<b>51</b>	<b>41</b>	<b>2.5</b>	<b>11,968</b>	<b>6,914</b>	<b>61</b>	<b>37</b>	<b>8,354</b>	<b>4,989</b>	<b>32</b>	<b>22</b>	<b>4,362</b>	<b>2,955</b>

## Regional estimates of child mortality and causes of under-five deaths (continued)

Region	Sex-specific under-5 mortality rate (deaths per 1,000 live births)				Deaths among children under 5 years of age due to: (%)								
	1990		2011		Neonatal causes*	Pneumonia	Diarrhoea	Malaria	AIDS	Measles	Injuries	Others	Total
Male	Female	Male	Female										
Sub-Saharan Africa	186	168	114	103	26	17	12	15	4	1	4	21	100
Eastern & Southern Africa	171	153	89	79	29	17	11	8	7	1	5	22	100
West & Central Africa	206	188	138	126	25	17	12	19	2	1	3	20	100
Middle East & North Africa	75	70	38	34	40	16	9	1	1	1	5	26	100
South Asia	116	122	61	63	42	22	12	0	0	2	4	17	100
East Asia & Pacific	57	52	21	19	49	16	5	1	0	1	7	20	100
Latin America & Caribbean	57	48	21	17	45	10	5	0	1	0	15	24	100
CEE/CIS	52	43	23	19	45	14	5	0	1	0	6	30	100
<b>World</b>	<b>89</b>	<b>85</b>	<b>53</b>	<b>50</b>	<b>35</b>	<b>18</b>	<b>11</b>	<b>7</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>20</b>	<b>100</b>

All regional aggregates refer to UNICEF's regional classification. For further details on this classification please refer to State of the World's Children 2012, pp.124-125, <http://www.unicef.org/sowc2012/>



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