

1

Why are IMR Rates so Important?

*Infant death is a critical indicator of the health of a population.
Infant death reflects the overall state of maternal health, as well
as the quality and accessibility of primary health care available to
pregnant women and infants.*

- National Vital Statistics Mortality Reporting – CDC - [cdc.gov](https://www.cdc.gov)

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**Infant Mortality Statistics From the 2013 Period
Linked Birth/Infant Death Data Set**

by T.J. Mathews, M.S.; Marian F. MacDorman, Ph.D.; and Marie E. Thoma, Ph.D., Division of Vital Statistics

Mathews, MacDorman, & Thoma (2015). NVSR, Vol. 64, No. 9

NCHS Data Brief ■ No. 326 ■ November 2018

Infant Mortality by Age at Death in the United States, 2016

Danielle M. Ely, Ph.D., Anne K. Driscoll, Ph.D., and T.J. Mathews, M.S.

Ely, Driscoll & Mathews (Nov 2018). Fig. 2. NCHS Data Brief, No. 326

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3

Infant Mortality in U.S. — Linked birth/death data

3,932,181 Live Births 2013

2013 Mortality Rate Data*	Infant 0 – 365 days	Neonatal 0 – 27 days	Early Neonatal 0 – 6 days	Late Neonatal 7 – 27days
Race	23,446 5.96 / 1000	15,893 4.04 / 1000	12,900 3.28 / 1000	2,993 0.76 / 1000
Asian / PI	4.07 / 1000	2.99 / 1000		
Hispanic	5 / 1000	3.55 / 1000		
White	5.06 / 1000	3.34 / 1000		
Am Ind / AN	7.61 / 1000	4.11 / 1000		
Black	11.11 / 1000	7.46 / 1000		

PI – Pacific Islander, AN – Alaskan Native

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Births by gest/weight	% of all births	Died (N)	% all infant deaths	% all neonatal deaths
< 37 weeks 447,361	11.4	15,552	66	
< 32 weeks 75,464	1.9	12,354	53	
< 1000 grams 27,808	0.7	10,997	47	69

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Weight (in grams)	Deaths per 1000 live births
> 2,500	2.05
< 2,500	50.26
2,000 to 2,499	9.93
1,500 to 1,999	24.68
< 1,500	219.56
< 500	853.03

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Infant Mortality in U.S. – Linked birth/death data

- For all race and ethnic groups, infant mortality rate

Weeks gestation	Terminology	Deaths per 1000 live births
< 32	Early preterm	163.71
32 – 33	Early preterm	16.02
34 – 36	Late preterm	7.23
37 – 38	Early term	3.01
39 – 40	Full term	1.85
41	Late term	1.8
42 or >	Postterm	2.39

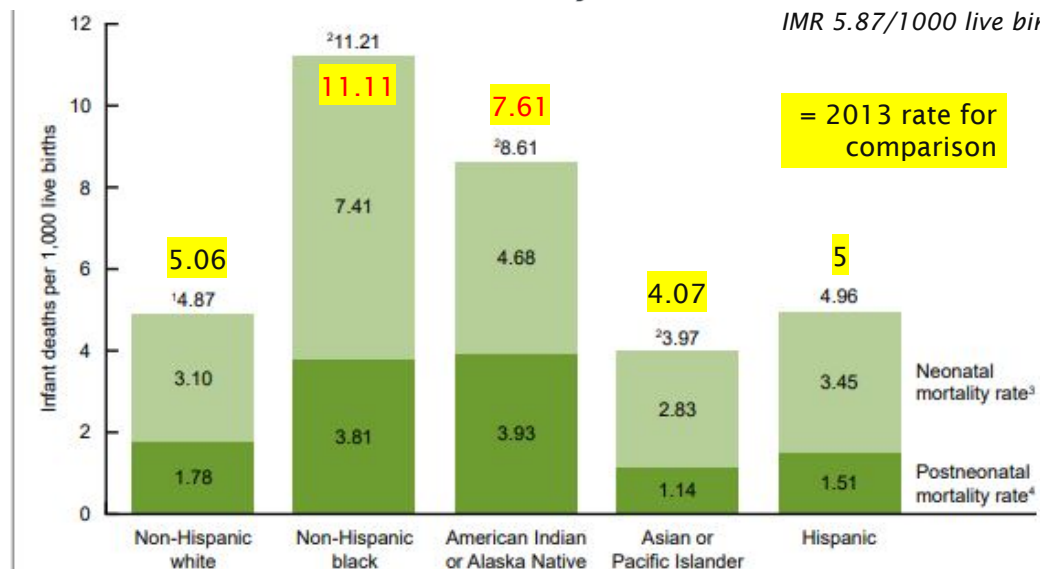
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Infant, Neonatal, Postneonatal Mortality rates/1000 live births - 2016

IMR 5.87/1000 live births

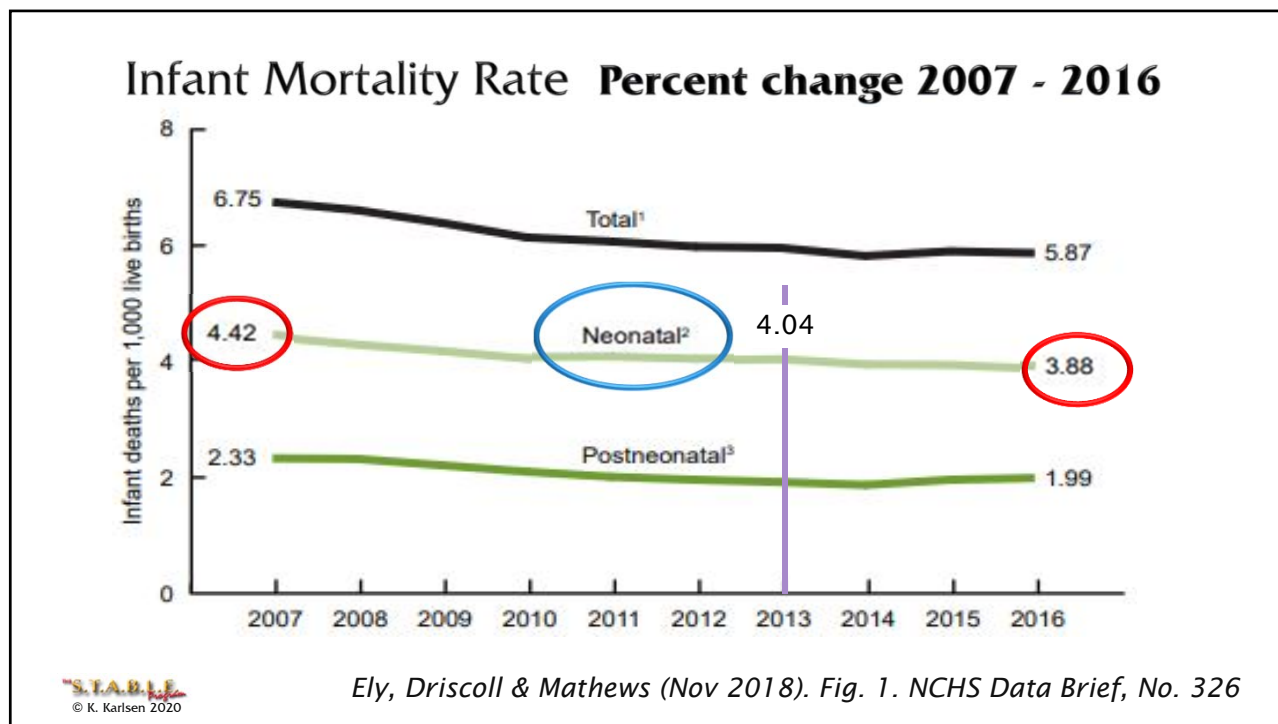


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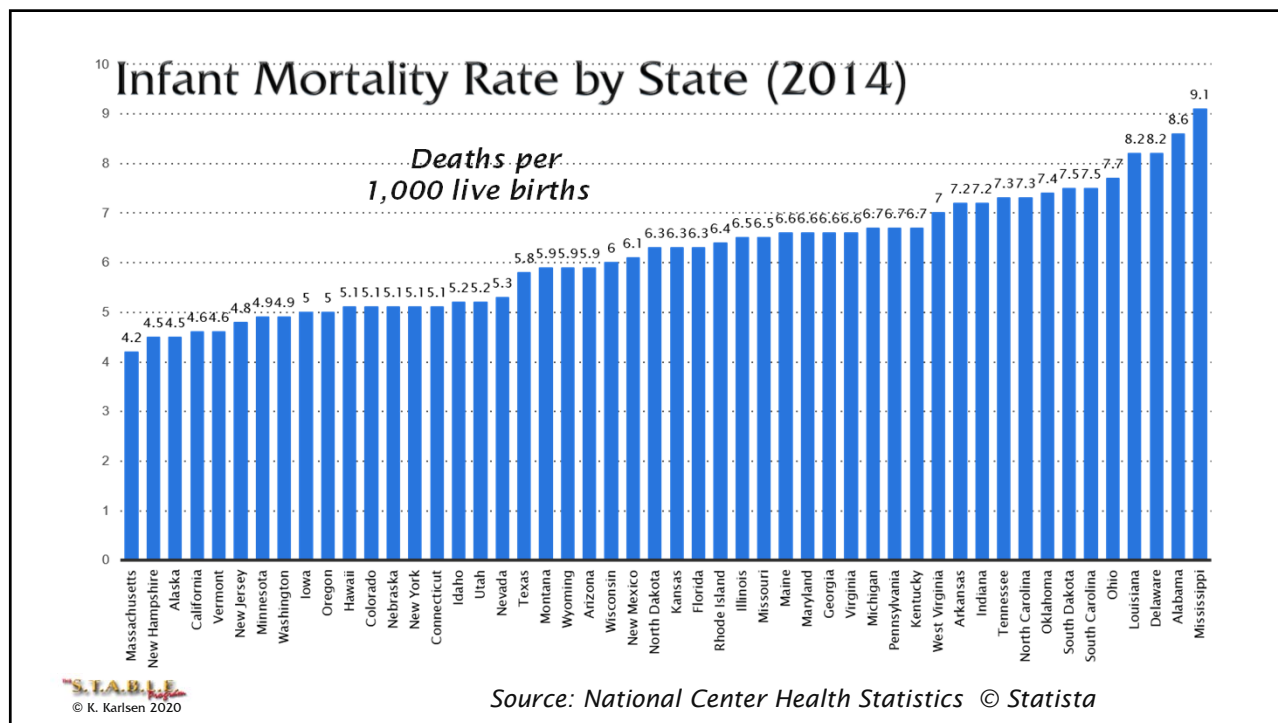
Ely, Driscoll & Mathews (Nov 2018). Fig. 2. NCHS Data Brief, No. 326

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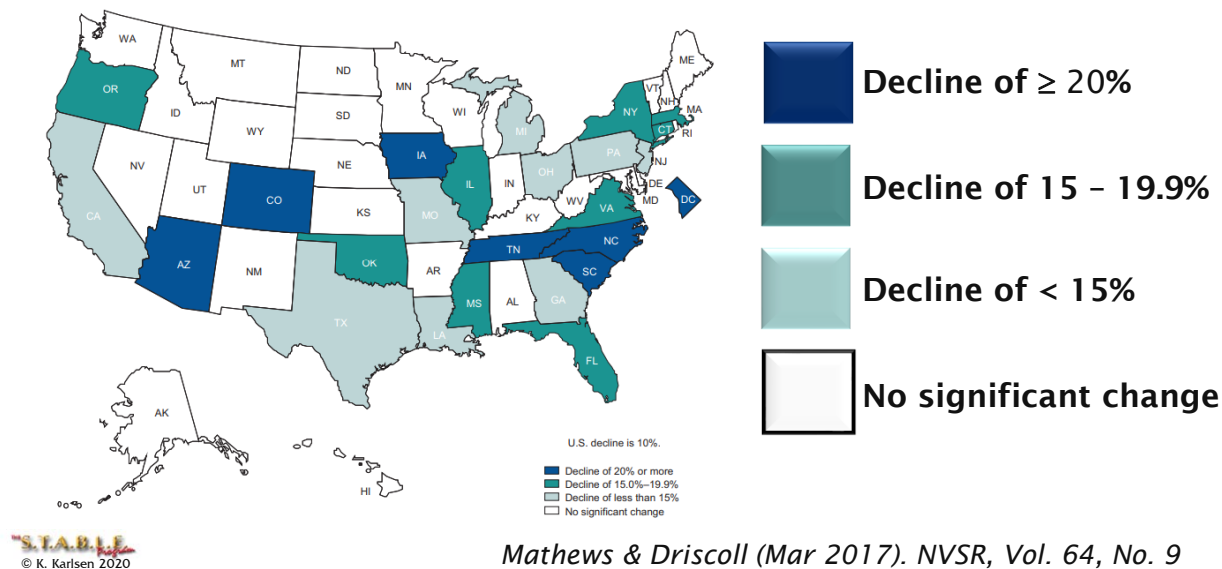
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% change in IMR by State 2005-2013



11

10 Leading Causes Neonatal Mortality US 2010

Cause of Death	Deaths	% of Total Deaths
Disorders related to short gestation and low birthweight*	4,063	25.1
Congenital malformations, deformations, and chromosomal abnormalities	3,605	22.3
Newborn affected by maternal complications of pregnancy	1,547	9.6
Newborn affected by complications of placenta, cord, and membranes	1,015	6.3
Bacterial sepsis of newborn	562	3.4
Respiratory distress of newborn	497	3.1
Neonatal hemorrhage	458	2.8
Necrotizing enterocolitis of newborn	409	2.5
Intrauterine hypoxia and birth asphyxia	300	1.9
Atelectasis	231	1.4
All other causes	3,511	21.7

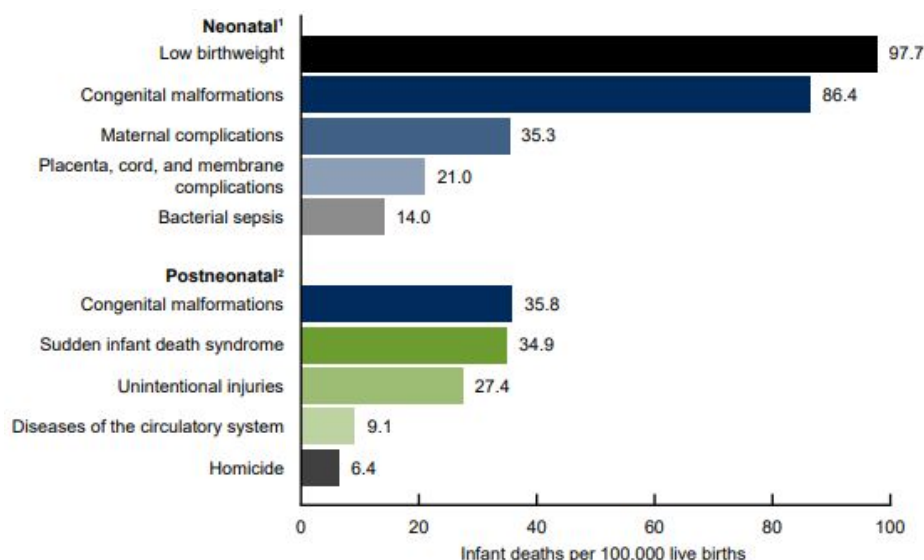
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Heron, 2013. National Vital Statistics Reports, Vol 62, No 6

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5 Leading Causes Neonatal / Postneonatal Mortality 2016



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Ely, Driscoll & Mathews (Nov 2018). Fig. 4. NCHS Data Brief, No. 326

13

Key Birth Statistics - 2018

- ▶ Births: **3,791,712**
- ▶ Prenatal care initiated in the 1st trimester: **77.5%**
- ▶ Percent born < 36 completed weeks of gestation: **10.02%**
- ▶ Percent cesarean delivery: **31.9%**
- ▶ Teen birth rate (ages 15 to 18) **17.4 births per 1,000**
(a 1 year decline of 7%); Rates fell for each race and Hispanic-origin group
- ▶ Medicaid as source of payment for the delivery: **42.3%**

Martin et al. Births in the U.S., 2018, NCHS, 346, July 2019

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14



National Vital Statistics System

[CDC](#) > [NCHS](#) > [National Vital Statistics System](#)

Linked Birth and Infant Death Data

Follow for new reports at:

<https://www.cdc.gov/nchs/nvss/linked-birth.htm>

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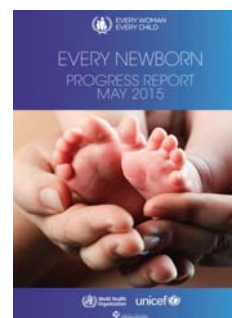
U.S. Compared with the World

- ▶ U.S. annual births 3.93 million
 - Neonatal deaths (2013) ... 15,893 (1.8/hour)
- ▶ **Global annual births** 130 million
- ▶ **Global neonatal deaths** 2.5 million (**285/hour**)
18/1000 live births
- ▶ 3rd trimester stillborn 2.6 million (range 2.4 - 3 mill.)
- ▶ 2018 - Maternal death related
to pregnancy or childbirth ..295,000 (211 / 100,000)

Save the Children (2014) Ending Newborn Deaths
Every Newborn Progress Report (May 2015) – WHO, Unicef
<https://data.unicef.org/resources/dataset/sowc-2019-statistical-tables/>

Lawn et al. (2016) Stillbirths...Lancet 387: 587-603.

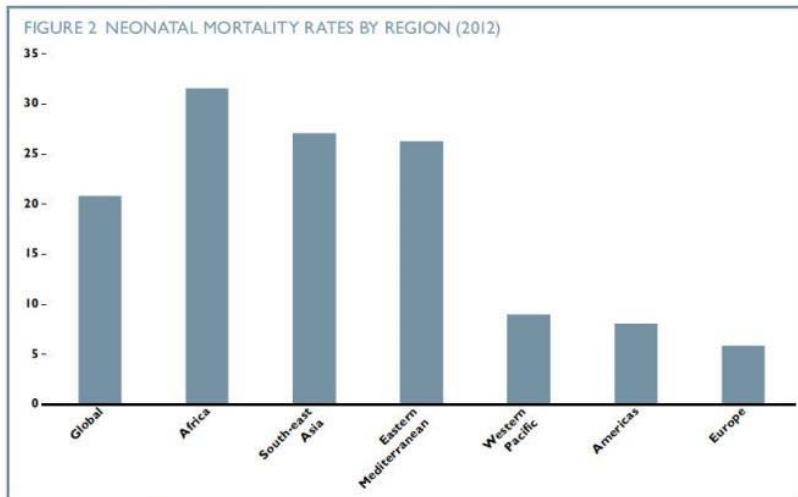
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Neonatal Mortality Rates by Region



Source: WHO, Global Health Observatory

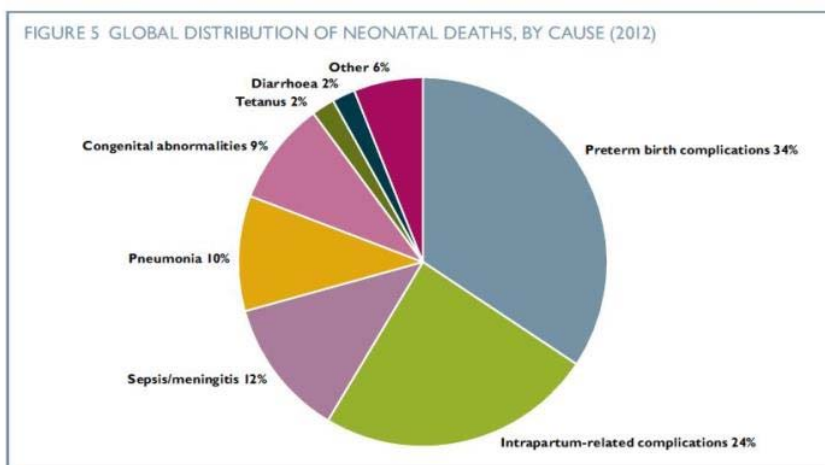
Save the Children (2014) Ending Newborn Deaths

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17

Global Distribution of Neonatal Deaths



Source: UNICEF, Committing to Child Survival: A promise renewed – progress report 2013

Note: Due to rounding percentages do not add up to 100.

Save the Children (2014) Ending Newborn Deaths

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Most deaths are from preventable causes



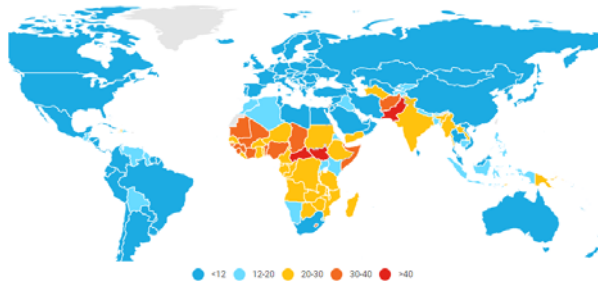
18

Resources

- ▶ <https://childmortality.org/>
- ▶ <https://data.unicef.org/topic/child-survival/neonatal-mortality/>

Huge disparities in the level of neonatal mortality persist across regions and countries

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



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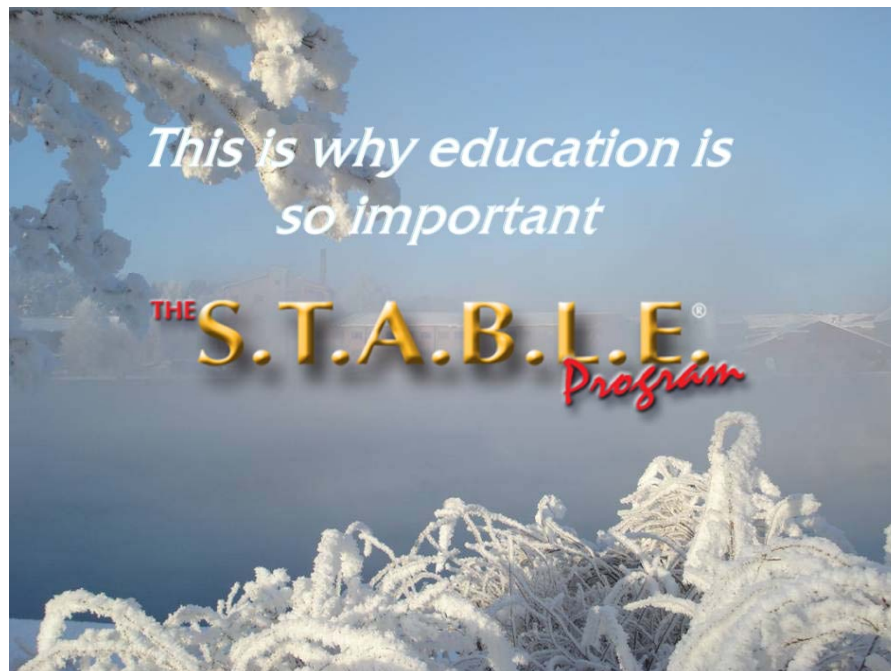
Neonatal mortality

September 2019

The neonatal period is the most vulnerable time for a child

The first 28 days of life – the neonatal period – is the most vulnerable time for a child's survival. Children face the highest risk of dying in their first month of life at an average global rate of 18 deaths per 1,000 live births in 2018. Comparatively, the probability of dying after the first month but before reaching age 1 was 11 and after age 1 but before turning age 5 was 10. Globally, 2.5 million children died in the first month of life in 2018 – approximately 7,000 neonatal deaths every day – most of which close to three quarters dying, with one third dying on the first day.

19



20

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