# **GBD PROFILE: SIERRA LEONE**

### GLOBAL BURDEN OF DISEASES, INJURIES, AND RISK FACTORS STUDY 2010

The Global Burden of Disease Study 2010 (GBD 2010) is a collaborative project of nearly 500 researchers in 50 countries led by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington. It is the largest systematic scientific effort in history to quantify levels and trends of health loss due to diseases, injuries, and risk factors. GBD serves as a global public good to inform evidence-based policymaking and health systems design.

## PROFILE OVERVIEW

- In terms of the number of years of life lost (YLLs) due to premature death in Sierra Leone, malaria, protein-energy malnutrition, and lower respiratory infections were the highest ranking causes in 2010.
- Of the 25 most important causes of burden, as measured by disability-adjusted life years (DALYs), diarrheal diseases showed the largest decrease, falling by 54% from 1990 to 2010.
- The leading risk factor in Sierra Leone is childhood underweight.

## ALL-CAUSE MORTALITY RATE

- This chart shows the change in mortality rate at every age range. The points above 0 on the chart indicate positive declines in the all-cause mortality rate, while points below 0 indicate an increase in mortality rate between 1990 and 2010.
- The greatest reductions in all-cause mortality rate were experienced by females aged 1-4 years (73%). Females aged 35-39 years saw the largest increase in mortality rate (33%).





#### CAUSES OF PREMATURE DEATH

Years of life lost (YLLs) quantify premature mortality by weighting younger deaths more than older deaths.

(% of total)       Rank and disorder 1990       Rank and disorder 2010       (% of total)       % change         (701 (15.4%)       1 Protein-energy malnutrition       1 Malaria       640 (19.3%)       -3         654 (14.3%)       2 Malaria       54       -54       -54         705 (13.1%)       3 Lower respiratory infections       384 (8.4%)       4 Diarrheal diseases       -52       -52         384 (8.4%)       4 Diarrheal diseases       4 Preterm birth complications       236 (7.2%)       -14       -56         182 (4.0%)       6 Meningitis       6 Meningitis       6 Meningitis       133 (3.0%)       -56         130 (2.9%)       7 Neonatal encephalopathy       7 HIV/AIDS       123 (3.8%)       4,124       56         100 (2.2%)       10 Neonatal sepsis       100 Fueroulosis       89 (2.7%)       4       rate         86 (1.9%)       11 Tuberculosis       89 (2.7%)       4       rate         113 (2.5%)       13 Stroke       63 (1.9%)       16       55       17         114 (1.9%)       11 Tuberculosis       89 (2.7%)       4       rate       13 Road injury       59 (1.8%)       10         124 (1.9%)       11 Tuberculosis       89 (2.7%)       10       42       13%       51	# YLLs in thou	sands	S 01 TLLS 1990-2010,		# YLLs in thous	ands
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Ranks for top 25 causes of YLLs 1990-2010, Sierra Leone

his chart shows the hange in the top 25 auses of YLLs due to remature mortality om 1990 to 2010. olid lines indicate a use has moved up in ink or stayed the ime. Broken lines idicate a cause has loved down in rank. he causes are color oded by blue for on-communicable iseases, green for juries, and red for ommunicable, aternal, neonatal, and utritional causes of eath.

#### YEARS LIVED WITH DISABILITY (YLDs)

Years lived with disability (YLDs) are estimated by weighting the prevalence of different conditions based on severity. The top five leading causes of YLDs in Sierra Leone are iron-deficiency anemia, major depressive disorder, low back pain, schistosomiasis, and malaria.

The size of the colored portion in each bar represents the number of YLDs attributable to each cause. The height of each bar shows which age groups had the most YLDs in 2010. The causes are aggregated. For example, musculoskeletal disorders include low back pain and neck pain.



## DISABILITY-ADJUSTED LIFE YEARS (DALYs)

Disability-adjusted life years (DALYs) quantify both premature mortality (YLLs) and disability (YLDs) within a population. In Sierra Leone, the top three causes of DALYs in 2010 were malaria, protein-energy malnutrition, and lower respiratory infections. The only cause to appear in the 10 leading causes of DALYs in 2010 and not 1990 was HIV/AIDS.

The top 25 causes of DALYs are ranked from left to right in order of the number of DALYs they contributed in 2010. Bars going up show the percent by which DALYs have increased since 1990. Bars going down show the percent by which DALYs have decreased. Globally, non-communicable diseases and injuries are generally on the rise, while communicable, maternal, neonatal, and nutritional causes of DALYs are generally on the decline.

Communicable, maternal, neonatal, and nutritional

Non-communicable

Injuries





## **RISK FACTORS**

Overall, the three risk factors that account for the most disease burden in Sierra Leone are childhood underweight, household air pollution from solid fuels, and iron deficiency. The leading risk factors for children under 5 and adults aged 15-49 years were childhood underweight and alcohol use, respectively, in 2010.



Burden of disease attributable to 15 leading risk factors in 2010, expressed as a percentage of Sierra Leone DALYs

## COUNTRY BENCHMARKING OF BURDEN OF DISEASE

Understanding the relative performance of Sierra Leone against other comparator countries provides key insight into public health successes and areas where Sierra Leone might be falling behind. The table identifies Sierra Leone's rank across 14 other comparator countries, selected and ordered by income per capita, for five metrics of interest, with 1 indicating the best rank and 15 indicating the worst rank.

- Age-standardized rates are used to make meaningful comparisons across time by adjusting for changes in population size and age structure.
- Life expectancy incorporates mortality, and health-adjusted life expectancy further incorporates years lived in less than ideal health.
- In 2010, Sierra Leone ranked 7th for age-standardized YLL rate and 13th for age-standardized YLD rate.

Age-st	andardize	d death	rates, YLI	. rates, Y	LD rates,	and life	expectan	cy at birt	h and hea	alth-adju	sted life e	xpectan	y at birth	n for 199	0 and 20	10, both	sexes co	mbined		
_	Age-standardized death rate (per 100,000)				Age-standardized YLL rate (per 100,000)				Age-		lized YLD 0,000)	rate	Life	e expecta	ncy at bi	irth		e h		
Country	19	90	20	10	19	90	20	10	19	90	20	10	19	90	20	10	19	90	20	10
	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	LE	Rank	LE	Rank	HALE	Rank	HALE	Rank
Myanmar	1,640	5	1,185	3	55,134	3	36,251	2	13,542	1	11,974	1	56.5	3	63.9	2	48.6	3	55.6	1
Rwanda	2,000	13	1,062	1	76,083	10	35,591	1	15,064	9	13,895	З	49.7	10	64.6	1	42.3	9	54.8	2
Guinea-Bissau	1,603	4	1,391	9	72,398	8	55,214	10	14,670	7	14,148	7	50.8	8	56.6	10	42.8	7	48	9
Afghanistan	1,931	12	1,668	11	68,958	6	52,078	8	17,727	15	17,252	15	51.9	6	57.7	8	42.4	8	47.3	11
Madagascar	1,451	3	1,156	2	56,586	4	37,200	3	14,116	3	14,145	6	56.1	4	63.6	3	47.6	4	53.8	3
Togo	1,282	2	1,199	4	51,184	2	46,594	6	14,577	6	13,973	5	58.3	2	60.2	6	49.1	2	51	6
Mozambique	1,659	6	1,725	12	74,370	9	67,547	14	15,342	12	14,841	11	50	9	52.5	14	41.9	10	44.5	14
Sierra Leone	1,682	7	1,347	7	78,271	11	49,641	7	15,322	11	15,221	13	48.9	11	58.6	7	40.9	12	49.1	7
Ethiopia	2,152	15	1,292	6	86,420	14	43,719	4	13,713	2	12,723	2	46.7	14	60.9	4	40.2	14	52.5	4
Malawi	1,768	10	1,730	13	79,007	12	66,486	13	15,082	10	14,549	9	48.7	12	52.9	13	41	11	45	12
Central African Republic	2,131	14	2,408	15	81,026	13	90,581	15	15,696	14	15,022	12	48.3	13	46.2	15	40.8	13	39.5	15
Eritrea	1,807	11	1,353	8	67,111	5	44,346	5	15,508	13	14,614	10	52.4	5	60.6	5	44	5	51.2	5
Somalia	1,738	8	1,606	10	70,184	7	57,208	11	14,350	4	14,546	8	51.3	7	55.8	11	43.6	6	47.4	10
Niger	1,765	9	1,268	5	88,497	15	52,955	9	14,526	5	13,915	4	46.1	15	57.7	9	39	15	48.9	8
Zimbabwe	1,144	1	1,801	14	39,368	1	65,919	12	15,058	8	15,659	14	63	1	53.1	12	52.7	1	44.7	13

# COUNTRY BENCHMARKING OF BURDEN OF DISEASE, CONTINUED

This figure shows the rank of Sierra Leone relative to the same comparator countries for the leading causes of DALYs in 1990 (top) and 2010 (bottom).

- The columns are ordered by the absolute number of DALYs in Sierra Leone for that particular year, with greatest burden on the left.
- The numbers indicate the rank across countries for each cause in terms of age-standardized DALY rates, with 1 as the best performance and 15 as the worst.

Ranking of leading age	-star	ndard	ized I	rates	of di	sabili	ty-ad	ljuste	d life	year	s (DA	LYs)	relati	ve to	comp	barate	or cou	Intrie	es in 1	L990					
Country	Protein-energy malnutrition	Malaria	Lower respiratory infections	Diarrheal diseases	Preterm birth complications	Meningitis	Iron-deficiency anemia	Neonatal encephalopathy	Tuberculosis	Neonatal sepsis	Measles	Tetanus	Stroke	Congenital anomalies	Road injury	Maternal disorders	СОРД	Epilepsy	Ischemic heart disease	Falls	Major depressive disorder	Low back pain	Fire	Syphilis	Cirrhosis
Myanmar	2	7	2	7	7	2	3	13	13	1	5	6	11	12	1	2	14	2	8	12	6	1	2	3	15
Rwanda	7	10	7	5	8	4	1	9	10	8	2	2	13	7	15	12	12	7	12	7	14	12	9	7	13
Guinea-Bissau	8	13	10	9	13	12	13	11	5	14	12	11	6	8	12	10	9	13	7	13	4	6	7	12	8
Afghanistan	3	2	13	3	4	6	2	1	4	3	3	15	15	14	14	6	4	1	15	10	15	15	8	1	9
Madagascar	10	4	4	6	11	3	4	2	1	9	10	3	14	11	8	4	8	8	13	2	2	11	5	14	5
Тодо	4	8	3	2	9	8	10	10	2	13	9	5	5	3	7	3	3	11	4	11	9	10	3	10	7
Mozambique	5	15	9	8	12	10	9	14	11	15	11	4	1	4	3	8	1	12	1	9	11	9	12	15	3
Sierra Leone	15	14	12	4	15	13	15	15	6	10	8	12	7	9	6	5	10	14	6	15	3	8	6	6	12
Ethiopia	6	5	14	10	14	11	6	6	14	6	15	14	3	10	11	14	13	5	3	6	1	2	15	8	14
Malawi	9	12	5	14	2	5	7	12	8	12	4	9	12	15	9	9	5	6	11	3	7	3	14	5	10
Central African Republic	13	11	6	12	10	14	12	5	15	4	7	8	10	13	13	11	15	4	14	8	13	5	4	13	11
Eritrea	11	3	8	13	1	7	11	4	12	5	14	7	9	1	5	15	11	9	10	4	12	13	10	9	4
Somalia	12	9	11	11	5	9	5	7	9	7	6	10	8	6	10	13	7	10	9	5	10	14	11	4	2
Niger	14	6	15	15	3	15	14	8	7	11	13	13	4	5	4	7	6	15	5	14	5	7	13	11	6
Zimbabwe	1	1	1	1	6	1	8	3	3	2	1	1	2	2	2	1	2	3	2	1	8	4	1	2	1
Ranking of leading age	-star	dard	ized	rates		sabili	tv-ad	iuste	d life	Vear	e (DA	Ve)	relati	ve to	comr	arato		Intrie	s in 7	2010					
1		<b>_</b>	S	S																					
Country	Malaria	Protein-energy malnutrition	Lower respiratory infections	Preterm birth complications	Diarrheal diseases	Meningitis	HIV/AIDS	Neonatal encephalopathy	Iron-deficiency anemia	Tuberculosis	Neonatal sepsis	Road injury	Maternal disorders	Stroke	Major depressive disorder	Epilepsy	Congenital anomalies	Ischemic heart disease	Low back pain	Cirrhosis	СОРD	Schistosomiasis	Sickle cell	Diabetes	Falls
Country Myanmar	3	1	Lower respiratory	பு Preterm birth	4	1	6	13	L Iron-deficiency	7	н Neonatal	3	<mark>н</mark> Maternal	12	A Major depressive	2	T Congenital	b) Ischemic heart	Low back	15	13	L Schistosomias	ь Sickle	11	Lal 15
Myanmar Rwanda	3 7	1 4	μ μ Lower respiratory	<mark>о</mark> и Preterm birth	4 1	1 3	6 8	13 9	Deficiency	7 6	L Neonatal	3 6	c Maternal	12 5	H Aljor depressive	2 5	<ul><li>F</li><li>Congenital</li></ul>	b β schemic heart	Low back	15 1	13 3	L Schistosomias	<mark>9</mark> T Sickle	11 4	15 3
Myanmar	3 7 15	1 4 10	о г сомег respiratory	11 Preterm birth	4 1 12	1 3 14	6 8 9	13 9 12	Lron-deficiency	7 6 4	L Neonatal	3 6 11	6 Naternal	12 5 7	A Major depressive	2 5 15	14 11	8 Ischemic heart	row pack 1 01 9	15 1 8	13 3 6	G L Schistosomias	1 Sickle	11 4 12	тед 15 3 14
Myanmar Rwanda	3 7 15 1	1 4 10 2	0   8   Lower respiratory	<ul> <li>Breterm birth</li> <li>Dreterm birth</li> </ul>	4 1 12 2	1 3 14 6	6 8 9 1	13 9 12 1	Lron-deficiency 3	7 6 4 3	1 Veonatal	3 6 11 14	1 Maternal	12 5 7 15	Vajor depressive11212	2 5 15 1	14 Congenital	<ul><li>8</li><li>8</li><li>11</li><li>15</li></ul>	row pack 1 10 9 15	15 1 8 9	13 3 6 12	1 Schistosomias	1 Sickle	11 4 12 15	15 3 14 11
Myanmar Rwanda Guinea-Bissau	3 7 15	1 4 10	о Lower respiratory	021111	4 1 12	1 3 14	6 8 9	13 9 12	Lron-deficiency	7 6 4	L Neonatal	3 6 11	6 Naternal	12 5 7	Major depressive	2 5 15	14 11	8 Ischemic heart	row pack 1 01 9	15 1 8	13 3 6	G L Schistosomias	1 Sickle	11 4 12	тед 15 3 14
Myanmar Rwanda Guinea-Bissau Afghanistan	3 7 15 1	1 4 10 2	0   8   Lower respiratory	<ul> <li>Breterm birth</li> <li>Dreterm birth</li> </ul>	4 1 12 2	1 3 14 6	6 8 9 1	13 9 12 1	Lron-deficiency 3	7 6 4 3	1 Veonatal	3 6 11 14	1 Maternal	12 5 7 15	Vajor depressive11212	2 5 15 1	14 Congenital	<ul><li>8</li><li>8</li><li>11</li><li>15</li></ul>	row pack 1 10 9 15	15 1 8 9	13 3 6 12	1 Schistosomias	1 Sickle	11 4 12 15	15 3 14 11
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Myanmar Rwanda Guinea-Bissau Afghanistan Madagascar Togo Mozambique <b>Sierra Leone</b> Ethiopia Malawi Central African Republic Eritrea Somalia	3 7 15 1 6 11 14 12 4 8 13 5 9	1 4 2 7 6 5 <b>14</b> 9 8 15 11 11 13	kortespiratori Conserved Conser	High       5       6       11       12       7       10       9       14       13       3       4	4 12 2 5 9 6 3 7 10 15 11 13	1 3 14 6 2 11 8 <b>12</b> 7 5 5 15 9 10	6 8 9 1 1 1 3 7 4 14 12 5 10	13 9 12 1 2 10 15 15 14 3 11 6 5 7	Solution           1           2           12           3           6           8           7           15           4           5           13           11           9	7 6 3 1 2 12 8 10 9 15 11 11 14	Veouatal 7 14 2 10 15 13 9 5 11 4 8 8 6	3 6 11 14 2 5 12 4 9 13 15 8 8 7	Material           0           1           2           9           11           6           3           8           7           5           13           15           12           14	12 5 7 15 14 4 <b>1</b> <b>8</b> <b>2</b> 13 11 10 9	evissandep Jolegi 7 14 2 15 6 4 7 5 8 10 9 9 10 9 11	2 5 15 1 7 13 12 11 6 8 8 4 10 9	Interpretation         Congenitation           11         11           11         13           2         9           3         9           3         7           4         12           15         5           6         6	listensing statements and statements	урек раска и казана и каз и казана и ка и казана и каз и казана и ка	15 8 9 2 7 4 10 13 14 6 5	13 3 6 12 10 1 5 4 11 8 15 7 9	2 2 3 2 3 3 3 4 3 3 3 10 11 10 11	<ul> <li>Sickle</li> <li>Sickl</li></ul>	11 4 12 15 1 7 3 <b>14</b> 2 9 10 8 8 6	I       15       3       14       11       1  <

Institute for Health Metrics and Evaluation 2301 Fifth Ave., Suite 600 Seattle, WA 98121 USA Telephone: +1-206-897-2800 E-mail: comms@healthmetricsandevaluation.org www.healthmetricsandevaluation.org

