

GBD PROFILE: BENIN

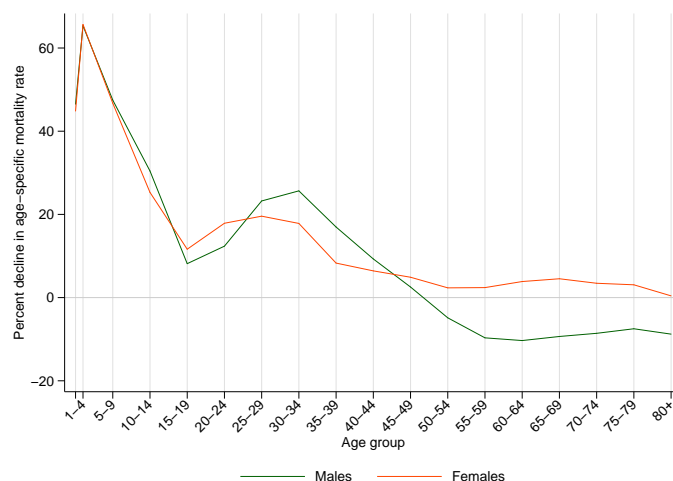
GLOBAL BURDEN OF DISEASES, INJURIES, AND RISK FACTORS STUDY 2010

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 Benin, malaria, lower respiratory infections, and preterm birth complications were the highest ranking causes in 2010.
- Of the 25 most important causes of burden, as measured by disability-adjusted life years (DALYs), measles showed the largest decrease, falling by 84% from 1990 to 2010.
- The leading risk factor in Benin is childhood underweight.

Percent decline in age-specific mortality rate by sex from 1990-2010 in Benin



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 (66%). Males aged 60-64 years saw the largest increase in mortality rate (10%).

CAUSES OF PREMATURE DEATH

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

Ranks for top 25 causes of YLLs 1990-2010, Benin

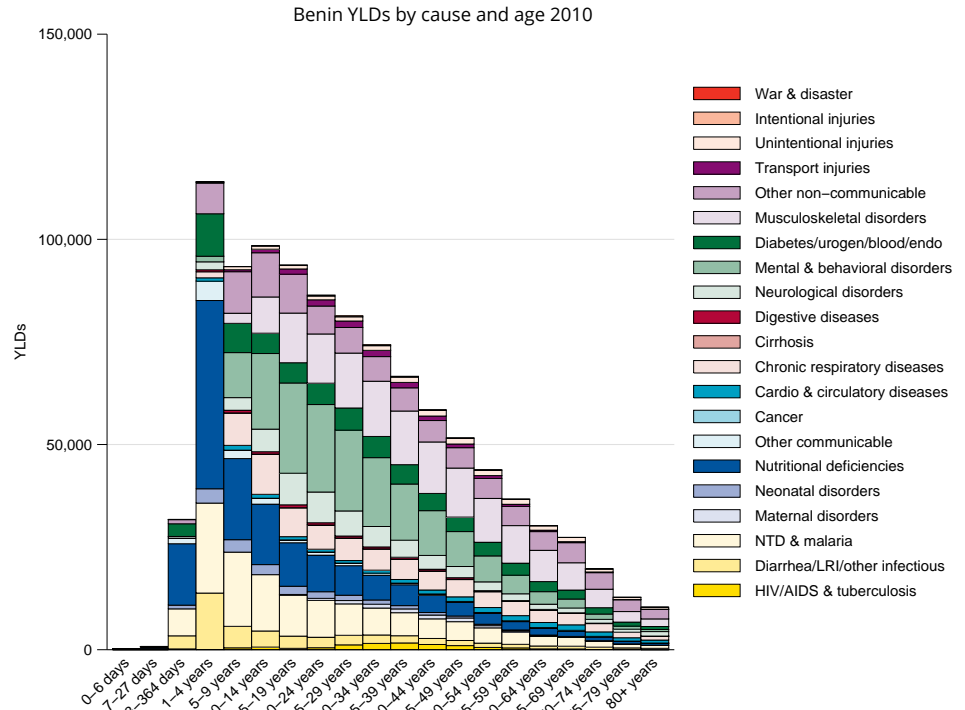
# YLLs in thousands (% of total)	Rank and disorder 1990	Rank and disorder 2010	# YLLs in thousands (% of total)	% change
686 (15.7%)	1 Lower respiratory infections	1 Malaria	935 (22.8%)	68
563 (12.9%)	2 Malaria	2 Lower respiratory infections	452 (11.1%)	-35
414 (9.5%)	3 Diarrheal diseases	3 Preterm birth complications	217 (5.4%)	21
297 (6.8%)	4 Protein-energy malnutrition	4 Neonatal sepsis	220 (5.5%)	40
331 (7.5%)	5 Measles	5 Diarrheal diseases	183 (4.5%)	-56
181 (4.2%)	6 Preterm birth complications	6 Meningitis	176 (4.3%)	-3
180 (4.1%)	7 Meningitis	7 Protein-energy malnutrition	158 (3.9%)	-47
160 (3.7%)	8 Neonatal sepsis	8 Neonatal encephalopathy	149 (3.7%)	30
114 (2.6%)	9 Neonatal encephalopathy	9 HIV/AIDS	144 (3.6%)	360
66 (1.5%)	10 Tuberculosis	10 Road injury	92 (2.3%)	64
67 (1.5%)	11 Congenital anomalies	11 Stroke	82 (2.0%)	32
63 (1.4%)	12 Stroke	12 Tuberculosis	72 (1.8%)	9
57 (1.3%)	13 Road injury	13 Congenital anomalies	65 (1.6%)	-6
53 (1.2%)	14 Maternal disorders	14 Ischemic heart disease	62 (1.5%)	64
48 (1.1%)	15 Iron-deficiency anemia	15 Maternal disorders	55 (1.3%)	3
46 (1.1%)	16 Syphilis	16 Epilepsy	59 (1.4%)	53
39 (0.9%)	17 Ischemic heart disease	17 Measles	52 (1.3%)	-84
42 (1.0%)	18 Epilepsy	18 Cirrhosis	35 (0.9%)	62
37 (0.9%)	19 Fire	19 Fire	36 (0.9%)	-3
37 (0.9%)	20 Tetanus	20 Diabetes	29 (0.7%)	84
30 (0.7%)	21 Falls	21 Falls	30 (0.7%)	1
24 (0.5%)	22 COPD	22 Syphilis	26 (0.7%)	-43
22 (0.5%)	23 Cirrhosis	23 Iron-deficiency anemia	25 (0.6%)	-50
21 (0.5%)	24 Asthma	24 Interpersonal violence	25 (0.6%)	29
20 (0.5%)	25 Interpersonal violence	25 Liver cancer	22 (0.5%)	33
	27 Liver cancer	30 COPD		
	28 Diabetes	36 Asthma		
	33 HIV/AIDS	39 Tetanus		

This chart shows the change in the top 25 causes of YLLs due to premature mortality from 1990 to 2010. Solid lines indicate a cause has moved up in rank or stayed the same. Broken lines indicate a cause has moved down in rank. The causes are color coded by blue for non-communicable diseases, green for injuries, and red for communicable, maternal, neonatal, and nutritional causes of death.

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 Benin are iron-deficiency anemia, low back pain, major depressive disorder, malaria, and schistosomiasis.

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.

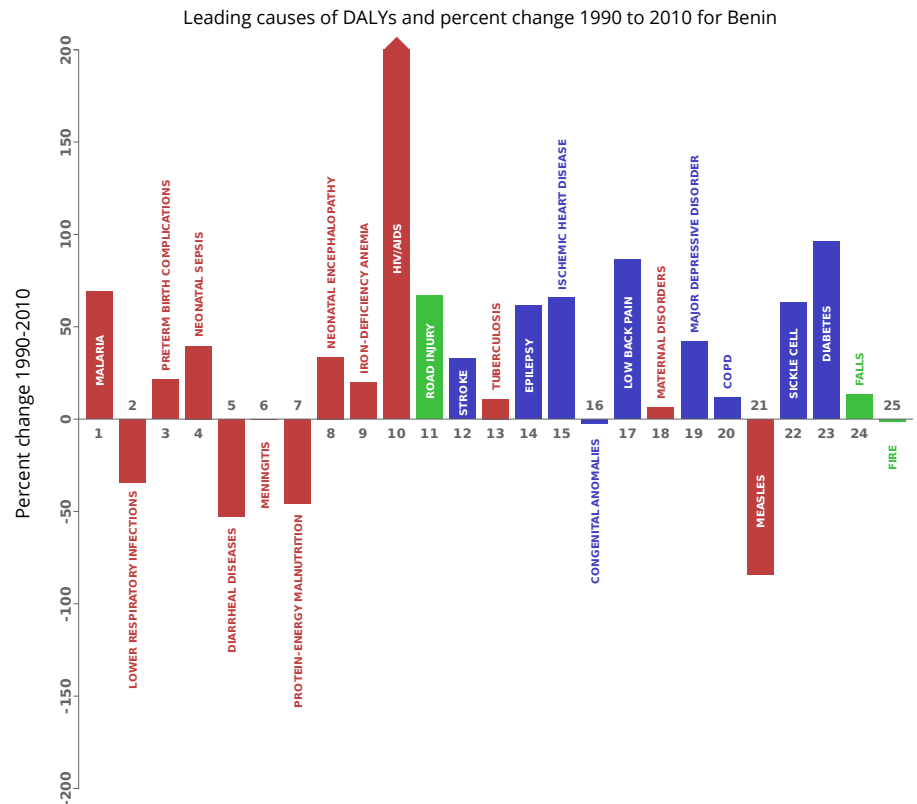


DISABILITY-ADJUSTED LIFE YEARS (DALYs)

Disability-adjusted life years (DALYs) quantify both premature mortality (YLLs) and disability (YLDs) within a population. In Benin, the top three causes of DALYs in 2010 were malaria, lower respiratory infections, and preterm birth complications. 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

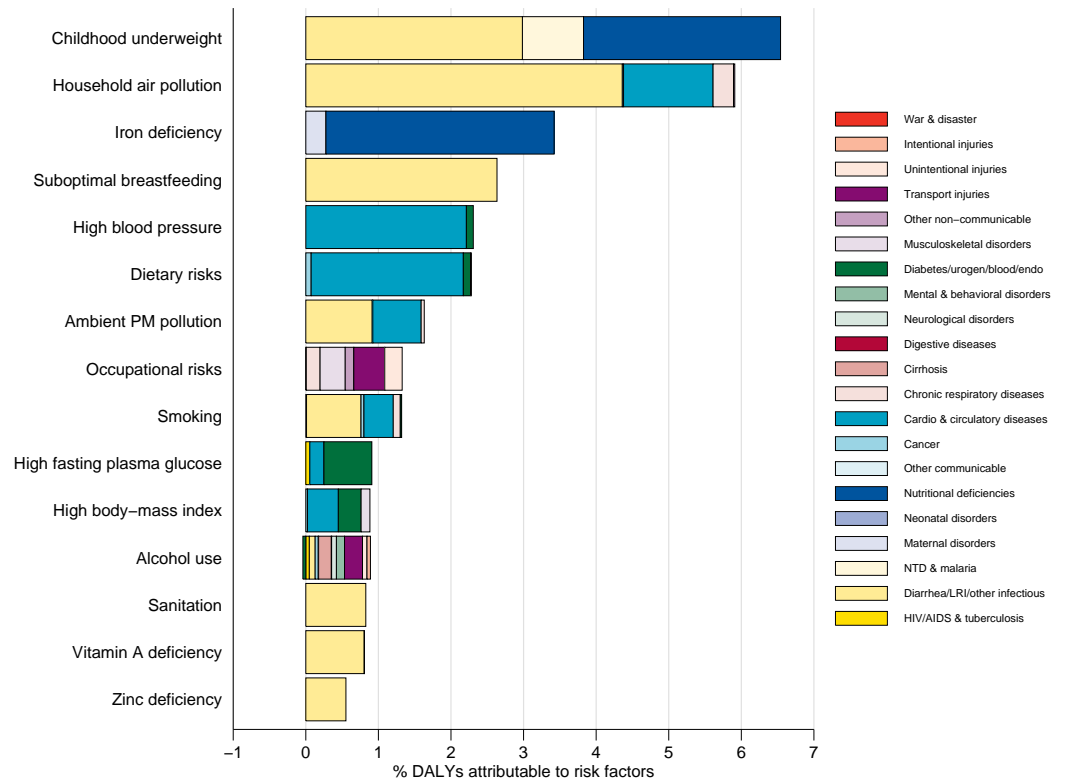


RISK FACTORS

Overall, the three risk factors that account for the most disease burden in Benin 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 iron deficiency, respectively, in 2010.

The graph shows the top 15 risk factors for Benin. The colored portion of each bar represents the specific diseases attributable to that risk factor while bar size represents the percentage of DALYs linked to specific risk factors.

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



COUNTRY BENCHMARKING OF BURDEN OF DISEASE

Understanding the relative performance of Benin against other comparator countries provides key insight into public health successes and areas where Benin might be falling behind. The table identifies Benin'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, Benin ranked 8th for age-standardized death rate and 10th for age-standardized YLD rate.

Age-standardized death rates, YLL rates, YLD rates, and life expectancy at birth and health-adjusted life expectancy at birth for 1990 and 2010, both sexes combined																				
Country	Age-standardized death rate (per 100,000)				Age-standardized YLL rate (per 100,000)				Age-standardized YLD rate (per 100,000)				Life expectancy at birth				Health-adjusted life expectancy at birth			
	1990		2010		1990		2010		1990		2010		1990		2010		1990		2010	
	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	LE	Rank	LE	Rank	HALE	Rank	HALE	Rank
Senegal	1,278	6	1,009	5	49,632	8	33,824	5	13,914	5	13,379	7	58.8	8	65.3	5	49.9	7	55.6	5
São Tomé and Príncipe	1,044	2	794	1	39,144	2	24,592	2	13,532	4	13,252	4	63.5	2	70.2	2	53.9	2	59.6	2
Côte d'Ivoire	1,400	12	1,457	12	58,331	11	56,879	11	14,774	11	13,910	11	55.7	12	56	11	46.8	11	47.7	12
The Gambia	1,315	9	1,109	9	54,039	9	41,302	9	14,365	6	13,291	5	57.2	9	62.2	9	48.4	9	53.2	9
Kenya	1,092	3	1,013	6	39,731	3	36,153	7	13,184	2	12,884	2	63	3	64.8	7	53.8	3	55.5	6
Timor-Leste	1,223	5	872	4	45,244	5	26,770	4	14,698	9	13,715	8	60.5	6	68.7	4	50.7	6	58	4
Chad	1,508	13	1,389	11	67,610	14	58,839	13	15,080	14	14,364	13	52.5	14	55.5	13	43.9	14	46.8	13
Benin	1,312	8	1,080	8	58,713	12	38,726	8	15,237	15	13,830	10	55.9	11	63.4	8	46.6	12	53.7	8
Ghana	1,185	4	1,030	7	45,628	6	35,128	6	14,555	8	13,298	6	60.5	5	64.9	6	50.9	5	55.3	7
Bangladesh	1,295	7	864	3	49,258	7	26,361	3	14,743	10	13,206	3	58.9	7	69	3	49.2	8	58.4	3
Lesotho	1,316	10	2,130	14	43,569	4	85,888	14	13,503	3	15,483	14	60.9	4	47.4	14	52	4	40.2	14
Zambia	1,722	15	1,533	13	73,053	15	57,620	12	15,030	12	13,732	9	50.6	15	55.8	12	42.7	15	47.8	11
North Korea	895	1	832	2	25,915	1	21,755	1	10,569	1	10,347	1	68.9	1	70.8	1	60.7	1	62.4	1
Haiti	1,717	14	3,321	15	61,823	13	137,295	15	15,059	13	16,428	15	54.1	13	37.2	15	45.7	13	31.8	15
Tanzania	1,357	11	1,137	10	55,603	10	43,461	10	14,553	7	14,177	12	56.6	10	61.7	10	47.8	10	52.2	10

COUNTRY BENCHMARKING OF BURDEN OF DISEASE, CONTINUED

This figure shows the rank of Benin 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 Benin 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-standardized rates of disability-adjusted life years (DALYs) relative to comparator countries in 1990																									
Country	Lower respiratory infections	Malaria	Diarrheal diseases	Protein-energy malnutrition	Measles	Meningitis	Preterm birth complications	Neonatal sepsis	Iron-deficiency anemia	Neonatal encephalopathy	Tuberculosis	Congenital anomalies	Stroke	Road injury	Maternal disorders	Epilepsy	COPD	Syphilis	Ischemic heart disease	Major depressive disorder	HIV/AIDS	Fire	Low back pain	Falls	Tetanus
Senegal	11	11	12	3	11	9	5	8	10	3	9	1	3	3	12	14	10	3	2	7	6	5	2	9	8
São Tomé and Príncipe	2	9	4	9	8	5	8	10	7	7	2	13	11	5	2	8	12	2	5	13	4	6	11	8	5
Côte d'Ivoire	7	12	13	7	9	10	14	13	6	10	5	7	8	14	7	13	9	5	10	11	14	8	8	14	10
The Gambia	14	10	6	11	10	11	6	14	12	4	8	9	14	13	13	12	11	8	13	15	5	11	12	12	11
Kenya	9	7	2	10	7	7	4	7	5	5	6	3	4	8	4	5	2	7	4	5	9	7	5	3	1
Timor-Leste	10	5	5	5	13	6	12	2	4	2	13	14	10	4	9	2	8	6	15	12	1	2	6	4	13
Chad	15	6	15	14	14	14	11	11	14	8	11	4	5	7	14	10	7	13	6	9	8	13	14	11	15
Benin	13	13	7	13	15	13	13	12	13	14	3	8	6	12	15	15	6	9	8	6	12	12	10	10	9
Ghana	5	8	3	6	12	8	10	15	11	11	4	5	7	6	5	9	3	4	9	10	11	3	1	6	7
Bangladesh	4	3	10	8	5	1	15	4	8	15	7	11	1	2	6	3	15	10	1	1	1	4	15	13	12
Lesotho	3	1	9	2	3	3	9	3	3	9	15	12	13	1	3	6	13	11	7	3	7	10	7	1	2
Zambia	8	14	8	15	4	15	1	5	2	13	12	6	9	15	8	11	5	14	11	14	15	15	4	15	3
North Korea	1	2	1	1	1	2	2	1	1	1	1	15	12	10	1	1	14	1	12	2	3	1	9	7	4
Haiti	6	4	14	4	2	12	7	9	15	12	14	10	15	9	11	4	1	15	14	8	10	9	3	5	14
Tanzania	12	15	11	12	6	4	3	6	9	6	10	2	2	11	10	7	4	12	3	4	13	14	13	2	6
Ranking of leading age-standardized rates of disability-adjusted life years (DALYs) relative to comparator countries in 2010																									
Country	Malaria	Lower respiratory infections	Preterm birth complications	Neonatal sepsis	Diarrheal diseases	Meningitis	Protein-energy malnutrition	Neonatal encephalopathy	Iron-deficiency anemia	HIV/AIDS	Road injury	Stroke	Tuberculosis	Epilepsy	Ischemic heart disease	Congenital anomalies	Low back pain	Maternal disorders	Major depressive disorder	COPD	Measles	Sickle cell	Diabetes	Falls	Fire
Senegal	8	10	5	8	12	10	2	2	12	4	2	3	7	12	2	1	2	10	5	8	15	9	12	9	5
São Tomé and Príncipe	7	3	4	7	4	5	6	4	6	7	3	7	1	6	4	8	10	3	15	12	4	11	2	5	6
Côte d'Ivoire	15	13	13	15	13	14	12	13	8	11	15	12	10	15	13	10	8	12	7	11	8	13	13	14	11
The Gambia	13	12	9	13	7	11	9	6	11	8	13	8	6	9	8	11	11	11	8	7	14	12	9	10	7
Kenya	6	9	6	9	9	8	13	5	7	12	9	4	9	5	3	4	5	6	10	2	7	5	3	4	9
Timor-Leste	5	4	10	2	5	3	4	3	3	1	4	9	14	2	15	15	6	8	12	10	11	1	5	3	2
Chad	11	15	12	12	15	15	15	10	14	10	14	5	12	14	6	9	14	15	9	9	6	10	8	13	13
Benin	14	11	11	11	6	12	11	8	13	6	10	6	5	11	9	6	12	9	3	4	13	14	7	8	8
Ghana	10	6	8	14	3	9	10	7	9	9	8	10	3	10	12	5	1	4	4	6	10	15	10	6	3
Bangladesh	3	2	15	3	2	1	5	15	5	2	1	1	4	4	5	7	15	2	2	15	3	3	6	12	4
Lesotho	2	14	14	4	14	6	3	14	4	15	5	14	15	7	7	14	7	13	13	14	12	4	14	1	15
Zambia	12	8	2	6	10	13	14	12	2	14	12	11	13	13	10	3	4	7	11	5	9	7	11	15	14
North Korea	1	1	1	1	1	2	1	1	1	3	6	13	2	1	11	13	9	1	13	1	2	1	7	1	1
Haiti	4	5	7	10	11	7	7	9	15	5	7	15	11	3	14	12	3	5	6	1	2	8	15	11	12
Tanzania	9	7	3	5	8	4	8	11	10	13	11	2	8	8	1	2	13	14	14	3	5	6	4	2	10
Ranking Legend		1 - 3			4 - 7			8 - 11			12 - 15														