

# GBD PROFILE: MARSHALL ISLANDS

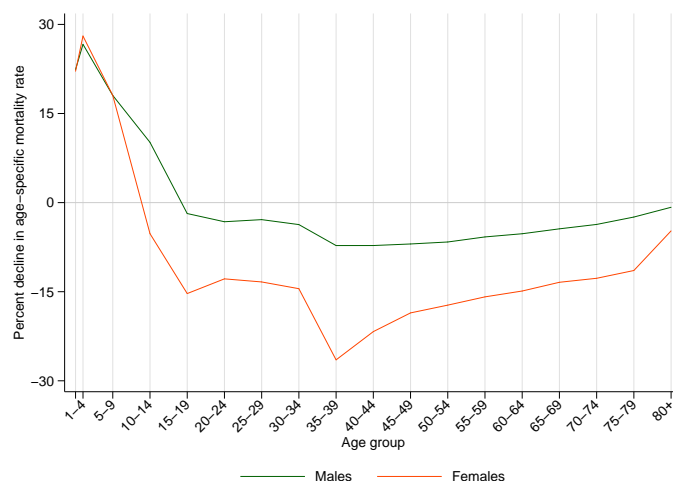
## GLOBAL BURDEN OF DISEASES, INJURIES, AND RISK FACTORS STUDY 2010

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 the Marshall Islands, diabetes mellitus, ischemic heart disease, 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), protein-energy malnutrition showed the largest decrease, falling by 48% from 1990 to 2010.
- The leading risk factor in the Marshall Islands is high body-mass index.

Percent decline in age-specific mortality rate by sex from 1990-2010 in the Marshall Islands



### 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 (28%). Females aged 35-39 years saw the largest increase in mortality rate (26%).

### 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, Marshall Islands

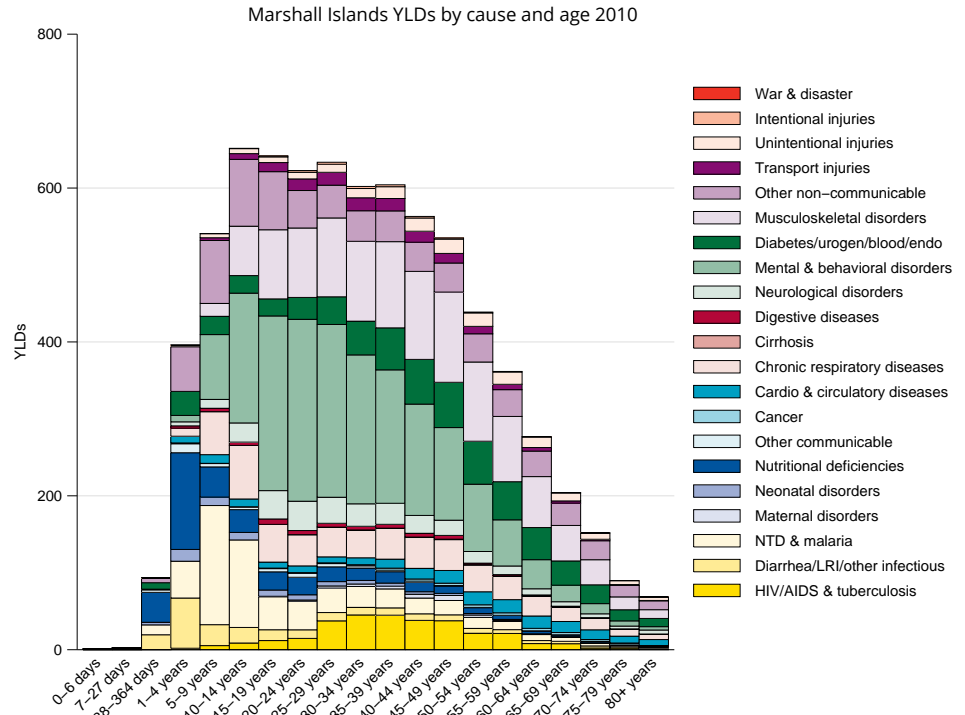
# YLLs in hundreds (% of total)	Rank and disorder 1990	Rank and disorder 2010	# YLLs in hundreds (% of total)	% change
17 (11.0%)	1 Lower respiratory infections	1 Diabetes	19 (10.4%)	228
11 (7.0%)	2 Preterm birth complications	2 Ischemic heart disease	10 (5.7%)	65
7 (4.5%)	3 Diarrheal diseases	3 Lower respiratory infections	9 (5.3%)	-45
6 (4.0%)	4 Ischemic heart disease	4 Stroke	9 (4.9%)	50
6 (3.7%)	5 Stroke	5 Preterm birth complications	7 (4.1%)	-34
6 (3.7%)	6 Diabetes	6 Chronic kidney disease	6 (3.1%)	227
6 (3.8%)	7 Protein-energy malnutrition	7 Diarrheal diseases	4 (2.4%)	-39
5 (3.4%)	8 Neonatal encephalopathy	8 Meningitis	4 (2.2%)	-18
5 (3.1%)	9 Meningitis	9 Congenital anomalies	4 (2.2%)	42
4 (2.6%)	10 Syphilis	10 Neonatal encephalopathy	4 (2.1%)	-27
4 (2.3%)	11 Neonatal sepsis	11 Road injury	4 (2.0%)	20
4 (2.5%)	12 Measles	12 Interpersonal violence	3 (1.7%)	47
3 (1.9%)	13 Road injury	13 Protein-energy malnutrition	3 (1.7%)	-49
3 (1.8%)	14 Self-harm	14 Self-harm	3 (1.6%)	-1
3 (2.0%)	15 Congenital anomalies	15 Cirrhosis	3 (1.5%)	42
3 (1.6%)	16 Drowning	16 Drug use disorders	3 (1.9%)	252
2 (1.5%)	17 Tuberculosis	17 Tuberculosis	3 (1.5%)	16
2 (1.4%)	18 Interpersonal violence	18 Neonatal sepsis	3 (1.4%)	-30
2 (1.4%)	19 Asthma	19 Liver cancer	2 (1.4%)	247
2 (1.2%)	20 Cirrhosis	20 Drowning	2 (1.2%)	-14
2 (1.1%)	21 Poisonings	21 Other musculoskeletal	2 (1.3%)	351
2 (1.1%)	22 Chronic kidney disease	22 Cardiomyopathy	2 (1.3%)	123
2 (1.1%)	23 Fire	23 Asthma	2 (1.1%)	-9
1 (1.0%)	24 Epilepsy	24 Epilepsy	2 (1.0%)	18
1 (0.8%)	25 COPD	25 Leukemia	1 (0.7%)	11
	28 Leukemia	26 Syphilis		
	33 Cardiomyopathy	34 COPD		
	35 Drug use disorders	36 Fire		
	39 Liver cancer	37 Poisonings		
	47 Other musculoskeletal	51 Measles		

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 the Marshall Islands are major depressive disorder, low back pain, diabetes mellitus, trichuriasis, and tuberculosis.

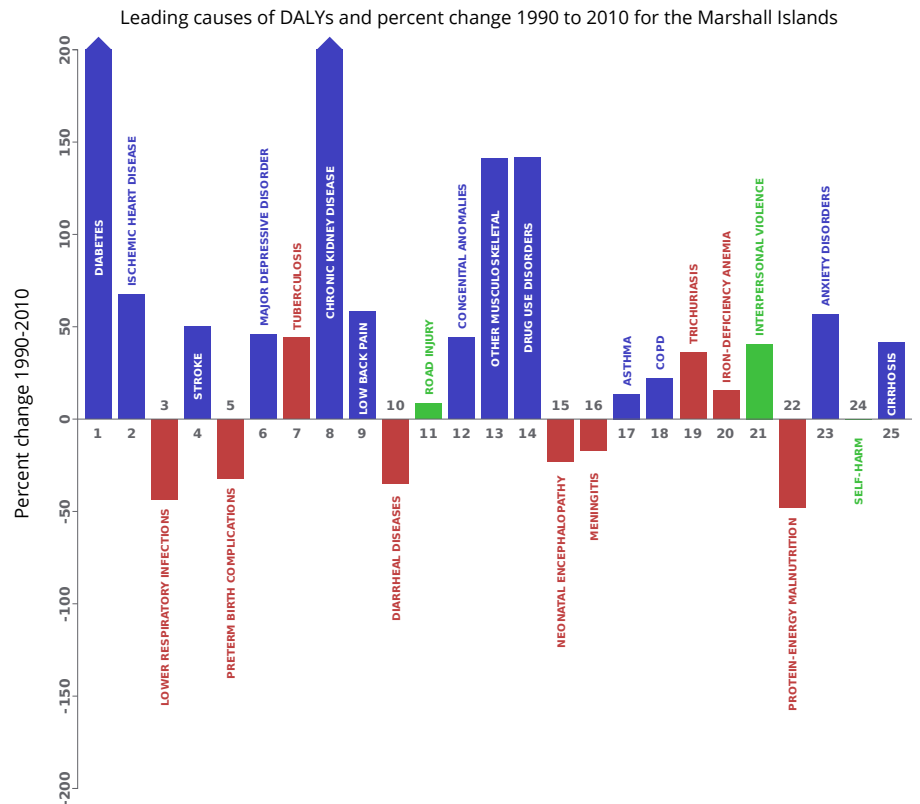
The size of the colored portion in each bar represents the number of YLDs attributable to each cause. The height of each bar shows which age groups had the most YLDs in 2010. The causes are aggregated. For example, musculoskeletal disorders include low back pain and neck pain.



## DISABILITY-ADJUSTED LIFE YEARS (DALYs)

Disability-adjusted life years (DALYs) quantify both premature mortality (YLLs) and disability (YLDs) within a population. In the Marshall Islands, the top three causes of DALYs in 2010 were diabetes mellitus, ischemic heart disease, and lower respiratory infections. The causes that were in the 10 leading causes of DALYs in 2010 and not 1990 were tuberculosis, chronic kidney diseases, and low back pain.

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.

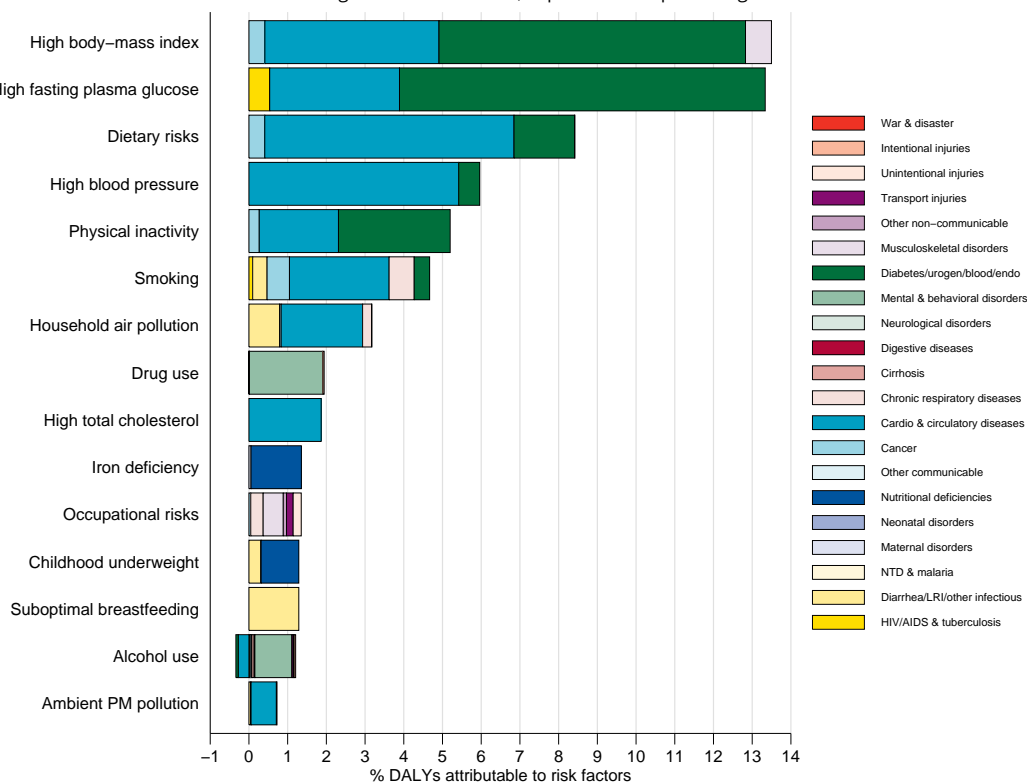


## RISK FACTORS

Overall, the three risk factors that account for the most disease burden in the Marshall Islands are high body-mass index, high fasting plasma glucose, and dietary risks. The leading risk factors for children under 5 and adults aged 15-49 years were childhood underweight and dietary risks, respectively, in 2010.

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

The graph shows the top 15 risk factors for the Marshall Islands. 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.



## COUNTRY BENCHMARKING OF BURDEN OF DISEASE

Understanding the relative performance of the Marshall Islands against other comparator countries provides key insight into public health successes and areas where the Marshall Islands might be falling behind. The table identifies the Marshall Islands' 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, the Marshall Islands ranked 14th for health-adjusted life expectancy and 15th 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
Tunisia	698	2	541	2	21,287	3	13,716	2	11,328	3	11,199	4	72	2	76.4	3	62.2	2	66	4
Ecuador	700	3	522	1	22,420	4	14,956	4	12,265	7	11,404	5	72	3	77	1	61.7	5	66.4	2
Bosnia and Herzegovina	834	6	584	4	19,064	1	12,248	1	12,186	6	11,057	2	71.9	4	76.5	2	61.8	3	66.3	3
Algeria	762	4	584	3	23,346	7	15,484	6	12,395	8	12,215	13	70.9	5	75.5	5	60.3	7	64.2	6
El Salvador	809	5	661	7	26,931	9	18,474	7	12,585	11	11,781	9	69.6	8	74.2	7	59.5	9	63.9	7
Albania	666	1	653	6	19,166	6	15,110	5	11,609	4	11,628	7	73.1	1	74.9	6	63	1	64.6	5
Ukraine	913	8	917	12	22,976	2	23,559	11	11,316	2	11,159	3	70	7	69.7	12	60.9	6	60.8	11
<b>Marshall Islands</b>	<b>1,270</b>	<b>15</b>	<b>1,309</b>	<b>15</b>	<b>36,253</b>	<b>13</b>	<b>36,337</b>	<b>14</b>	<b>14,368</b>	<b>15</b>	<b>13,968</b>	<b>15</b>	<b>63.9</b>	<b>13</b>	<b>63.9</b>	<b>14</b>	<b>54</b>	<b>13</b>	<b>54.4</b>	<b>14</b>
Tonga	914	9	882	11	22,822	5	22,195	10	12,546	10	11,940	11	70	6	70.4	11	60.1	8	61	10
Turkmenistan	1,144	13	919	13	39,780	15	24,522	13	11,911	5	11,933	10	62.8	14	69.3	13	54.4	12	60	12
China	896	7	607	5	24,989	8	14,024	3	9,639	1	8,782	1	69.3	9	75.7	4	61.7	4	67.8	1
Namibia	1,259	14	1,298	14	39,681	14	42,112	15	13,774	14	13,809	14	62.4	15	61.6	15	53.2	15	52.5	15
Samoa	1,088	12	863	10	28,245	10	21,441	8	12,397	9	11,587	6	67.2	10	70.8	8	58	10	61.5	8
Egypt	1,065	11	844	9	35,058	11	22,148	9	12,868	13	11,979	12	64.6	11	70.6	9	53.6	14	59.1	13
Guatemala	1,061	10	787	8	36,242	12	24,337	12	12,800	12	11,705	8	64.5	12	70.5	10	55.3	11	61	9

## COUNTRY BENCHMARKING OF BURDEN OF DISEASE, CONTINUED

This figure shows the rank of the Marshall Islands 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 the Marshall Islands 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	Preterm birth complications	Diarrheal diseases	Diabetes	Ischemic heart disease	Stroke	Protein-energy malnutrition	Neonatal encephalopathy	Meningitis	Major depressive disorder	Road injury	Tuberculosis	Syphilis	Neonatal sepsis	Asthma	Low back pain	Measles	Congenital anomalies	Iron-deficiency anemia	COPD	Self-harm	Drowning	Trichuriasis	Interpersonal violence	Falls
Tunisia	3	10	8	5	11	5	14	4	4	8	15	2	12	7	10	4	4	14	8	3	3	2	8	3	3
Ecuador	8	6	10	8	2	2	11	8	5	7	13	12	9	11	5	2	9	7	13	8	7	9	13	12	12
Bosnia and Herzegovina	1	7	2	9	12	14	2	7	2	10	1	5	5	3	4	10	2	6	4	7	11	3	1	1	11
Algeria	5	15	7	12	9	7	10	11	10	15	9	7	13	14	7	12	7	15	9	1	2	4	7	5	7
El Salvador	6	14	11	7	5	3	9	12	8	14	14	3	8	15	12	5	6	9	10	4	12	11	11	15	2
Albania	12	1	3	1	8	6	4	1	9	4	4	1	6	1	2	15	3	4	6	2	4	8	1	6	8
Ukraine	2	2	1	2	14	8	1	6	1	5	11	6	1	4	6	14	1	12	5	9	15	13	1	7	5
<b>Marshall Islands</b>	<b>10</b>	<b>8</b>	<b>9</b>	<b>15</b>	<b>10</b>	<b>12</b>	<b>13</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>10</b>	<b>14</b>	<b>15</b>	<b>12</b>	<b>15</b>	<b>6</b>	<b>14</b>	<b>2</b>	<b>3</b>	<b>12</b>	<b>14</b>	<b>12</b>	<b>15</b>	<b>10</b>	<b>15</b>
Tonga	4	3	6	13	6	4	6	2	14	3	6	8	4	8	13	7	13	3	7	6	8	5	9	9	13
Turkmenistan	15	11	12	6	15	15	5	15	12	6	12	10	2	5	8	9	5	10	11	10	10	14	1	8	9
China	7	5	4	3	1	11	3	14	3	1	5	9	10	2	1	3	12	11	1	15	13	15	12	4	10
Namibia	11	9	14	11	4	10	7	13	11	12	3	15	14	10	11	1	15	8	14	14	5	7	10	13	1
Samoa	9	4	5	14	7	13	8	5	13	2	7	13	7	9	14	8	11	1	2	11	9	10	6	11	14
Egypt	13	12	13	10	13	9	12	3	7	11	8	4	3	6	9	13	8	13	12	13	1	6	5	2	6
Guatemala	14	13	15	4	3	1	15	9	6	13	2	11	11	13	3	11	10	5	15	5	6	1	14	14	4
Ranking of leading age-standardized rates of disability-adjusted life years (DALYs) relative to comparator countries in 2010																									
Country	Diabetes	Ischemic heart disease	Lower respiratory infections	Stroke	Preterm birth complications	Major depressive disorder	Tuberculosis	Chronic kidney disease	Low back pain	Diarrheal diseases	Road injury	Congenital anomalies	Other musculoskeletal	Drug use disorders	Neonatal encephalopathy	Meningitis	Asthma	COPD	Trichuriasis	Iron-deficiency anemia	Interpersonal violence	Protein-energy malnutrition	Anxiety disorders	Self-harm	Cirrhosis
Tunisia	8	10	2	5	11	14	3	5	4	5	15	13	2	4	5	4	10	6	8	8	3	14	7	2	3
Ecuador	6	1	10	2	8	5	10	9	2	8	14	10	9	6	10	7	4	4	13	13	12	10	14	8	7
Bosnia and Herzegovina	5	9	1	8	5	2	4	2	8	1	1	2	6	2	2	2	5	8	1	3	1	2	8	13	5
Algeria	10	8	5	7	15	15	11	8	13	6	7	11	4	11	12	10	9	2	7	10	5	9	15	1	2
El Salvador	9	7	7	1	7	11	2	14	5	9	13	12	12	3	4	5	11	1	12	7	15	6	10	14	11
Albania	1	11	8	10	1	8	1	6	15	2	8	3	5	10	3	8	3	5	1	4	8	5	12	4	1
Ukraine	2	14	4	11	3	3	12	1	14	4	10	14	10	12	11	3	6	7	1	6	7	1	2	15	12
<b>Marshall Islands</b>	<b>15</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>12</b>	<b>14</b>	<b>15</b>	<b>7</b>	<b>13</b>	<b>6</b>	<b>8</b>	<b>15</b>	<b>13</b>	<b>13</b>	<b>15</b>	<b>15</b>	<b>11</b>	<b>15</b>	<b>5</b>	<b>11</b>	<b>13</b>	<b>11</b>	<b>11</b>	<b>10</b>
Tonga	13	6	6	4	6	6	8	12	10	10	5	7	13	15	7	14	14	9	9	9	10	11	4	7	9
Turkmenistan	7	15	12	15	9	13	13	4	6	12	9	4	7	8	15	9	7	13	1	11	6	4	13	12	13
China	3	3	3	9	2	1	6	3	3	3	12	6	3	1	9	1	1	14	11	1	2	3	1	9	4
Namibia	12	4	14	12	14	7	15	7	1	15	4	9	8	5	14	13	12	15	10	15	13	8	6	5	6
Samoa	14	2	11	6	4	4	7	11	9	7	3	1	14	14	6	12	13	10	5	2	9	7	3	6	8
Egypt	4	13	9	14	10	9	5	13	12	11	11	15	1	9	1	6	8	12	6	12	4	12	5	3	15
Guatemala	11	5	15	3	12	10	9	10	11	14	2	5	11	7	8	11	2	3	14	14	14	15	9	10	14
Ranking Legend	1 - 3		4 - 7			8 - 11			12 - 15																