

# GBD PROFILE: CANADA

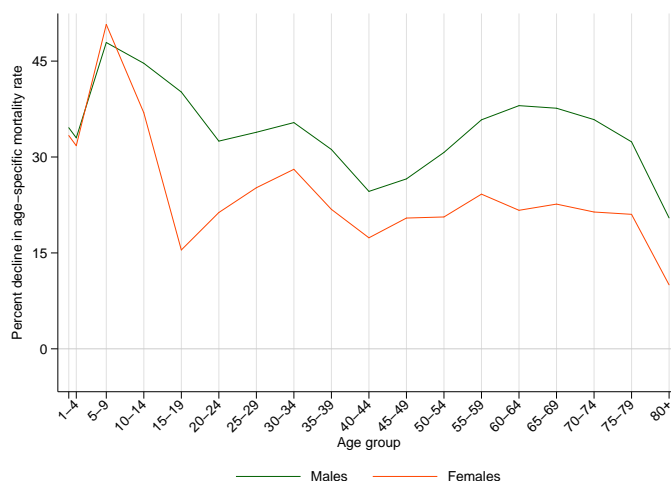
## GLOBAL BURDEN OF DISEASES, INJURIES, AND RISK FACTORS STUDY 2010

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 Canada, ischemic heart disease, trachea, bronchus, and lung cancers, and cerebrovascular disease were the highest ranking causes in 2010.
- Of the 25 most important causes of burden, as measured by disability-adjusted life years (DALYs), road injury showed the largest decrease, falling by 31% from 1990 to 2010.
- The leading risk factor in Canada is dietary risks.

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



### ALL-CAUSE MORTALITY RATE

- This chart shows the decline in mortality rate at every age range. The higher points on the chart indicate that declines in mortality rates were faster in those age groups between 1990 and 2010.
- The greatest reductions in all-cause mortality rate were experienced by females aged 5-9 years (51%). Females aged 80+ years saw the smallest decrease 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, Canada

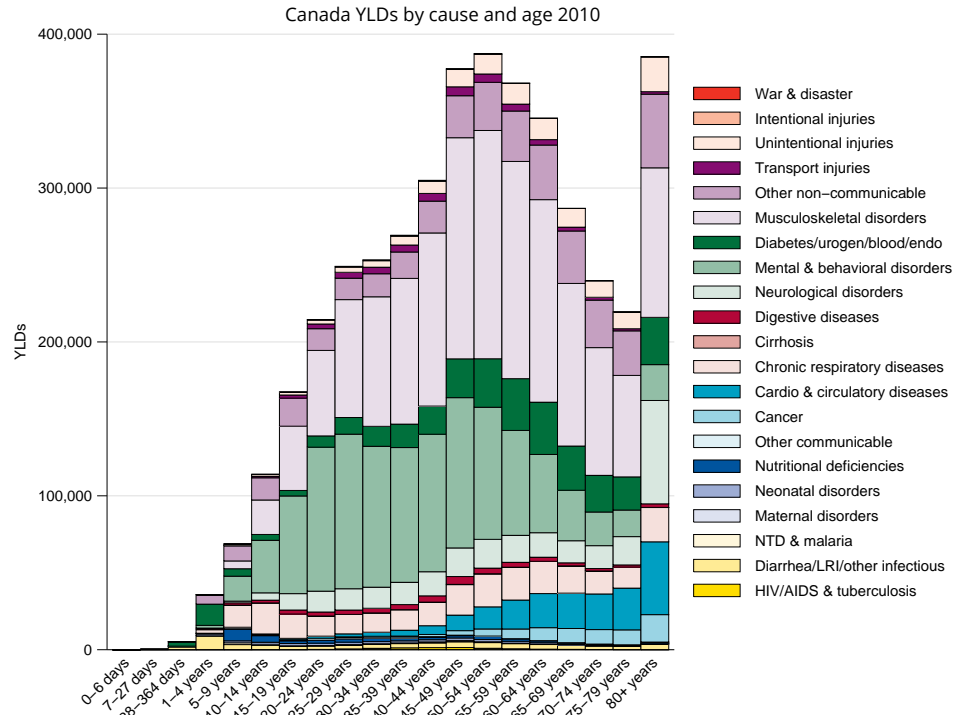
# YLLs in thousands (% of total)	Rank and disorder 1990	Rank and disorder 2010	# YLLs in thousands (% of total)	% change
778 (20.7%)	1 Ischemic heart disease	1 Ischemic heart disease	660 (16.4%)	-16
294 (7.8%)	2 Lung cancer	2 Lung cancer	354 (8.8%)	21
212 (5.6%)	3 Stroke	3 Stroke	188 (4.7%)	-11
200 (5.3%)	4 Road injury	4 Self-harm	170 (4.2%)	-9
184 (4.9%)	5 Self-harm	5 Colorectal cancer	145 (3.6%)	25
116 (3.1%)	6 Colorectal cancer	6 COPD	140 (3.5%)	24
113 (3.0%)	7 COPD	7 Alzheimers disease	127 (3.2%)	271
108 (2.9%)	8 Breast cancer	8 Road injury	124 (3.1%)	-40
93 (2.5%)	9 Congenital anomalies	9 Diabetes	120 (3.0%)	74
91 (2.4%)	10 Lower respiratory infections	10 Breast cancer	114 (2.8%)	4
74 (2.0%)	11 Preterm birth complications	11 Lower respiratory infections	88 (2.2%)	-5
69 (1.8%)	12 Diabetes	12 Cirrhosis	79 (2.0%)	17
67 (1.8%)	13 Cirrhosis	13 Pancreatic cancer	75 (1.9%)	40
54 (1.4%)	14 HIV/AIDS	14 Non-Hodgkin lymphoma	61 (1.5%)	48
54 (1.4%)	15 Pancreatic cancer	15 Other cardio & circulatory	60 (1.5%)	25
48 (1.3%)	16 Other cardio & circulatory	16 Congenital anomalies	60 (1.5%)	-37
48 (1.3%)	17 Leukemia	17 Leukemia	55 (1.4%)	15
44 (1.2%)	18 Prostate cancer	18 Prostate cancer	56 (1.4%)	25
43 (1.2%)	19 Stomach cancer	19 Brain cancer	53 (1.3%)	24
43 (1.1%)	20 Brain cancer	20 Kidney cancers	53 (1.3%)	114
42 (1.1%)	21 Non-Hodgkin lymphoma	21 Chronic kidney disease	50 (1.3%)	49
35 (0.9%)	22 Alzheimers disease	22 Preterm birth complications	50 (1.2%)	-33
34 (0.9%)	23 Chronic kidney disease	23 Falls	42 (1.0%)	36
34 (0.9%)	24 Interpersonal violence	24 Stomach cancer	38 (0.9%)	-13
31 (0.8%)	25 Falls	25 Ovarian cancer	35 (0.9%)	19
	27 Ovarian cancer	29 Interpersonal violence		
	31 Kidney cancers	33 HIV/AIDS		

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 Canada are low back pain, major depressive disorder, other musculoskeletal disorders, neck pain, and drug use disorders.

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.

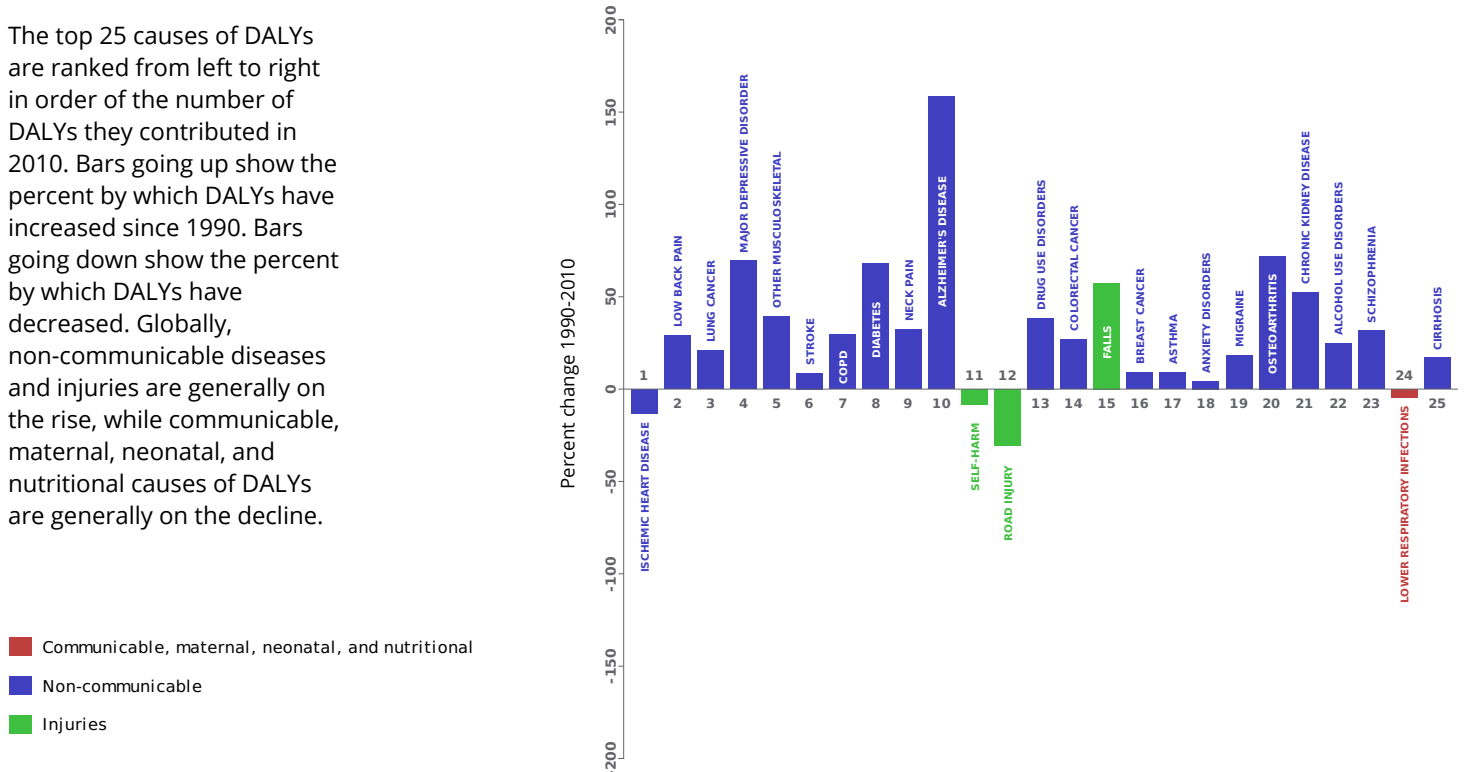


## DISABILITY-ADJUSTED LIFE YEARS (DALYs)

Disability-adjusted life years (DALYs) quantify both premature mortality (YLLs) and disability (YLDs) within a population. In Canada, the top three causes of DALYs in 2010 were ischemic heart disease, low back pain, and trachea, bronchus, and lung cancers. Two causes that appeared in the 10 leading causes of DALYs in 2010 and not 1990 were diabetes mellitus and Alzheimer's disease and other dementias.

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.

Leading causes of DALYs and percent change 1990 to 2010 for Canada

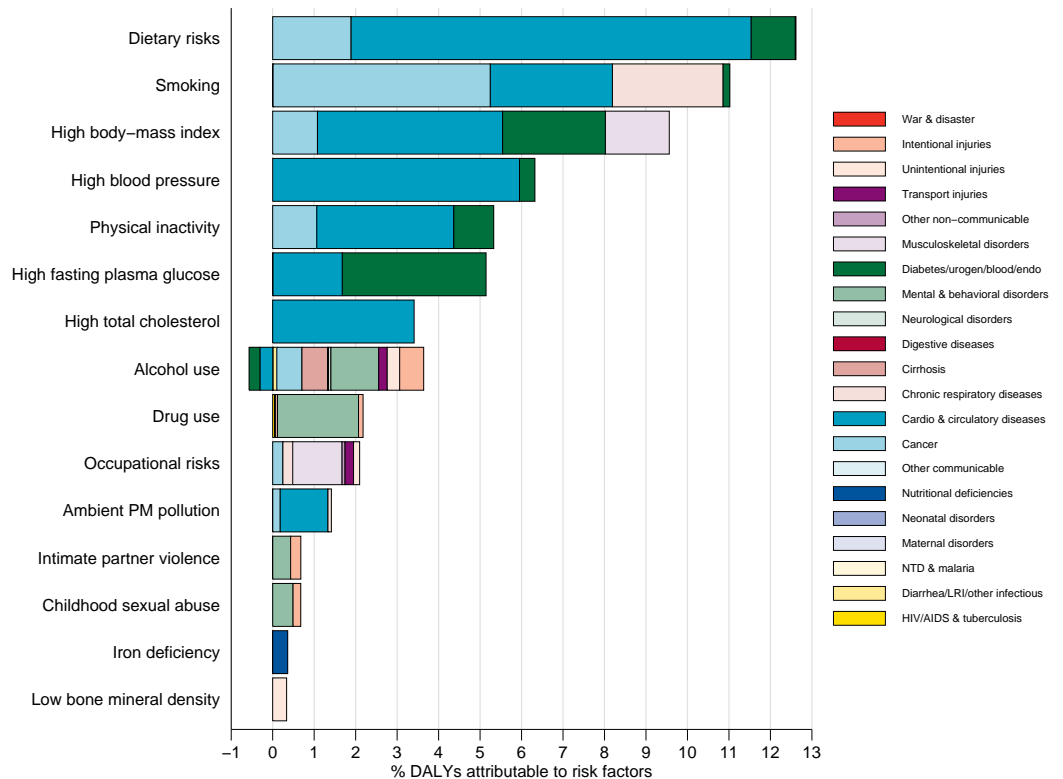


## RISK FACTORS

Overall, the three risk factors that account for the most disease burden in Canada are dietary risks, tobacco smoking, and high body-mass index. The leading risk factors for children under 5 and adults aged 15-49 years were zinc deficiency and alcohol use, respectively, in 2010.

The graph shows the top 15 risk factors for Canada. 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 Canada DALYs



## COUNTRY BENCHMARKING OF BURDEN OF DISEASE

Understanding the relative performance of Canada against other comparator countries provides key insight into public health successes and areas where Canada might be falling behind. The table identifies Canada'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, Canada ranked 3rd for age-standardized YLD rate and 8th for age-standardized YLL 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
Kuwait	489	1	511	14	11,796	3	12,133	15	12,022	15	11,867	15	77.8	1	77.4	15	66.1	6	65.9	15
United States	639	11	516	15	15,130	15	11,447	14	10,503	1	10,509	1	75.2	12	78.2	14	65.6	9	67.9	12
Switzerland	532	2	369	2	11,825	4	7,071	2	10,663	2	10,807	2	77.5	4	82.2	2	67.5	1	70.8	1
Netherlands	572	7	426	7	11,847	5	7,988	5	11,355	12	11,492	14	77	6	80.6	7	66.5	4	69.1	6
Ireland	692	15	453	10	14,298	12	8,764	9	11,024	5	11,138	8	74.8	15	79.9	10	65.2	14	68.9	8
Iceland	548	4	365	1	11,310	2	6,675	1	10,763	3	11,108	7	77.6	2	82.2	1	65.5	10	68.4	11
Australia	568	6	389	3	12,381	7	7,722	4	11,153	9	10,979	5	76.9	7	81.5	3	66.4	5	70.1	2
<b>Canada</b>	<b>558</b>	<b>5</b>	<b>422</b>	<b>6</b>	<b>12,079</b>	<b>6</b>	<b>8,546</b>	<b>8</b>	<b>10,806</b>	<b>4</b>	<b>10,845</b>	<b>3</b>	<b>77.2</b>	<b>5</b>	<b>80.6</b>	<b>5</b>	<b>67</b>	<b>2</b>	<b>69.6</b>	<b>4</b>
Austria	622	9	418	5	13,732	10	8,401	6	11,052	6	11,381	11	75.7	9	80.6	6	65.8	7	69.1	5
Sweden	539	3	403	4	11,196	1	7,296	3	11,378	13	11,250	10	77.6	3	81.4	4	66.8	3	69.6	3
Denmark	656	14	504	13	14,383	13	9,592	13	11,209	11	11,456	13	75.2	13	78.9	13	65.3	13	67.9	13
Belgium	615	8	460	12	13,458	9	9,381	12	11,119	8	10,933	4	75.9	8	79.5	12	65.7	8	68.5	10
United Kingdom	638	10	455	11	13,452	8	8,949	10	11,453	14	11,435	12	75.7	10	79.9	11	65.4	11	68.6	9
Germany	644	12	433	8	14,032	11	8,512	7	11,165	10	11,015	6	75.4	11	80.2	8	65.3	12	69	7
Finland	655	13	437	9	14,467	14	9,050	11	11,092	7	11,248	9	75.1	14	80.1	9	63.8	15	67.3	14

## COUNTRY BENCHMARKING OF BURDEN OF DISEASE, CONTINUED

This figure shows the rank of Canada 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 Canada 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	Ischemic heart disease	Low back pain	Lung cancer	Stroke	Road injury	Other musculoskeletal	COPD	Major depressive disorder	Self-harm	Neck pain	Diabetes	Colorectal cancer	Breast cancer	Anxiety disorders	Drug use disorders	Asthma	Congenital anomalies	Migraine	Falls	Lower respiratory infections	Alzheimer's disease	Preterm birth complications	Alcohol use disorders	Schizophrenia	Cirrhosis
Kuwait	11	2	1	13	14	1	3	15	1	1	15	1	1	13	3	9	15	1	3	13	1	14	1	8	3
United States	12	1	14	3	12	15	13	8	5	14	14	6	5	15	13	8	6	2	1	10	8	15	10	14	12
Switzerland	1	3	4	4	10	7	11	10	14	12	9	5	9	6	8	6	12	12	14	4	12	1	8	6	9
Netherlands	3	6	11	7	3	12	8	14	3	8	7	8	12	12	2	1	11	6	4	3	4	6	2	2	4
Ireland	15	11	9	11	6	11	15	1	4	11	6	14	10	8	5	12	13	8	9	14	5	9	3	5	2
Iceland	6	8	7	2	4	6	4	5	7	13	1	3	11	3	9	3	1	9	7	11	7	5	9	11	1
Australia	5	4	6	5	11	13	10	2	6	4	3	12	4	11	15	15	4	15	5	1	10	12	5	13	6
<b>Canada</b>	<b>4</b>	<b>7</b>	<b>10</b>	<b>1</b>	<b>7</b>	<b>14</b>	<b>7</b>	<b>4</b>	<b>8</b>	<b>6</b>	<b>10</b>	<b>7</b>	<b>6</b>	<b>4</b>	<b>10</b>	<b>11</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>6</b>	<b>13</b>	<b>7</b>	<b>6</b>	<b>15</b>	<b>8</b>
Austria	8	10	5	14	13	9	6	7	12	10	11	9	7	7	12	2	10	7	13	2	2	13	11	3	15
Sweden	7	13	2	6	2	5	1	13	11	2	5	4	2	9	4	13	8	13	6	9	9	2	14	10	5
Denmark	10	14	13	10	8	10	14	6	13	3	12	15	14	5	11	7	14	4	12	5	11	4	15	1	13
Belgium	2	5	15	9	15	4	9	9	10	9	8	10	13	1	6	4	3	10	10	8	14	8	7	4	10
United Kingdom	13	12	12	1	2	12	3	2	5	2	11	15	14	14	14	14	2	14	8	15	6	10	4	12	7
Germany	9	15	8	8	9	8	5	11	9	7	13	13	8	10	7	10	7	3	11	7	3	11	13	7	14
Finland	14	9	3	15	5	3	2	12	15	15	4	2	3	2	1	5	9	11	15	12	15	3	12	9	11
Ranking of leading age-standardized rates of disability-adjusted life years (DALYs) relative to comparator countries in 2010																									
Country	Ischemic heart disease	Low back pain	Lung cancer	Major depressive disorder	Other musculoskeletal	Stroke	COPD	Diabetes	Neck pain	Alzheimer's disease	Self-harm	Road injury	Drug use disorders	Colorectal cancer	Falls	Breast cancer	Asthma	Anxiety disorders	Migraine	Osteoarthritis	Chronic kidney disease	Alcohol use disorders	Schizophrenia	Lower respiratory infections	Cirrhosis
Kuwait	15	2	1	14	1	15	4	15	1	1	1	15	6	1	4	1	10	12	1	15	15	1	10	15	8
United States	14	1	12	6	15	10	15	14	14	14	8	13	15	5	2	7	9	15	2	12	14	10	14	12	12
Switzerland	2	3	5	13	2	3	12	9	13	4	13	7	2	4	14	8	8	6	10	8	4	5	6	3	5
Netherlands	1	7	14	15	9	8	10	4	6	8	3	3	1	14	6	13	2	10	6	1	6	3	2	10	2
Ireland	12	10	8	4	10	9	9	6	11	5	9	9	10	13	11	11	11	7	9	5	10	7	4	13	7
Iceland	4	8	6	7	3	1	2	2	12	13	4	1	8	3	5	2	4	14	8	10	5	6	11	4	1
Australia	3	4	4	1	13	2	7	5	4	7	6	12	13	12	3	6	15	11	15	2	7	2	13	2	3
<b>Canada</b>	<b>7</b>	<b>5</b>	<b>11</b>	<b>5</b>	<b>14</b>	<b>4</b>	<b>6</b>	<b>12</b>	<b>10</b>	<b>12</b>	<b>10</b>	<b>5</b>	<b>12</b>	<b>8</b>	<b>1</b>	<b>10</b>	<b>12</b>	<b>2</b>	<b>5</b>	<b>14</b>	<b>12</b>	<b>4</b>	<b>15</b>	<b>7</b>	<b>6</b>
Austria	10	11	7	10	5	7	8	11	8	2	12	11	11	6	13	5	1	4	7	6	11	12	3	1	14
Sweden	5	13	2	8	4	5	3	7	2	10	11	2	3	7	7	3	13	8	13	13	1	13	9	5	4
Denmark	6	14	15	11	12	14	14	13	3	9	7	10	9	15	10	12	7	5	4	4	9	14	1	9	11
Belgium	8	6	13	3	8	12	11	8	9	11	14	14	7	11	12	15	3	3	11	9	8	8	7	11	9
United Kingdom	9	12	10	2	11	11	13	1	5	6	2	4	14	10	8	14	14	13	14	11	3	9	12	14	10
Germany	11	15	9	9	7	6	5	10	7	3	5	6	4	9	9	9	5	9	3	7	13	11	5	8	13
Finland	13	9	3	12	6	13	1	3	15	15	15	8	5	2	15	4	6	1	12	3	2	15	8	6	15
Ranking Legend	1 - 3			4 - 7			8 - 11			12 - 15															