

RAPID HEALTH TRANSITIONS: GBD 2010 RESULTS

In most countries in Europe and Central Asia, loss of healthy life, or DALYs, from non-communicable diseases are rising, while DALYs from communicable, newborn, nutritional, and maternal causes are declining. To help decision-makers establish health service priorities within countries when faced with limited resources, we will explore changes in disease burden around the globe, in Europe and Central Asia, and in specific countries in this section. In the section entitled “Using GBD to assess countries’ health progress,” we will compare how well countries are performing in health relative to other countries in the region using a metric called age-standardized rates.

In terms of disease burden at the global level, GBD 2010 found that the leading causes of loss of healthy life have evolved dramatically over the past 20 years. Figure 1 shows the changes in the leading global causes of DALYs in 1990 and 2010. Communicable, newborn, maternal, and nutritional causes are shown in red, non-communicable diseases appear in blue, and injuries are shown in green. Dotted lines indicate causes that have fallen in rank during this period, while solid lines signal causes that have risen in rank.

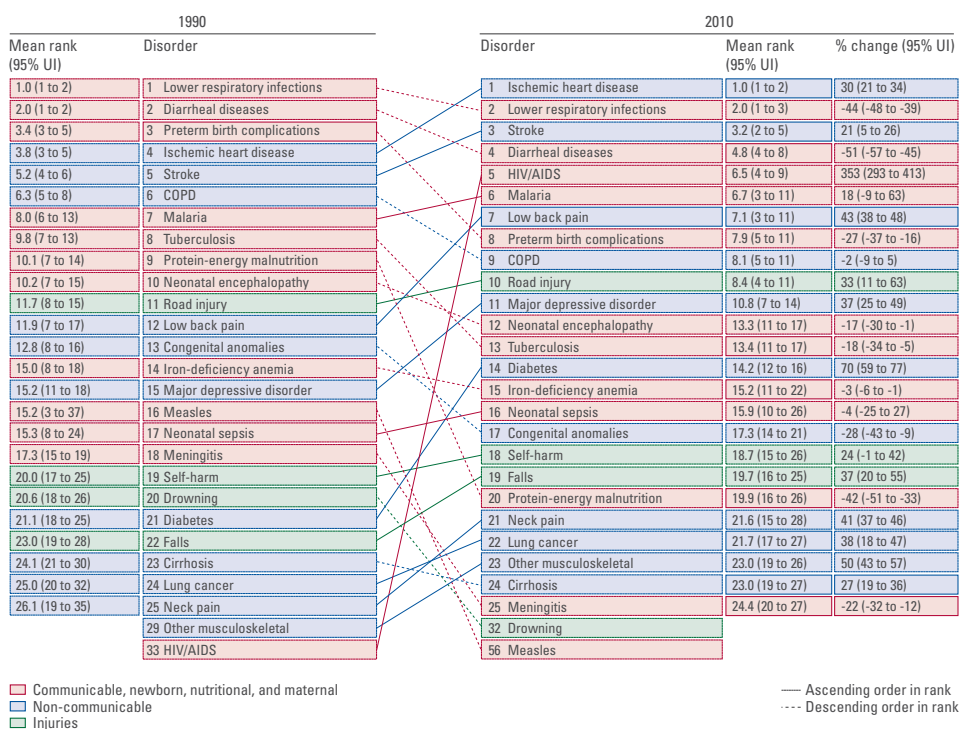
Causes associated with ill health and death in adults, such as ischemic heart disease, stroke, and low back pain, increased in rank between 1990 and 2010, while causes that primarily affect children, such as lower respiratory infections, diarrhea, preterm birth complications, and protein-energy malnutrition, decreased in rank. Unlike most of the leading communicable causes, HIV/AIDS and malaria increased by 353% and 18%, respectively. Since 2005, however, premature mortality and disability from these two causes have begun to decline. Four main trends have driven changes in the leading causes of DALYs globally: aging populations, increases in non-communicable diseases, shifts toward disabling causes and away from fatal causes, and changes in risk factors.

To provide a closer look at the epidemiological changes occurring at the regional level, Figure 2 shows how the leading causes of premature death and disability have changed over time in Europe and Central Asia. Figures showing changes in the leading causes of DALYs by country can be found in the Annex of this report. Many trends observed in this region mirror the global trends seen in Figure 1. For example, there was an increase in burden caused by non-communicable diseases and a drop in most communicable, maternal, nutritional, and newborn causes. HIV/AIDS increased dramatically in most parts of the world, but its increase of more than 7,000% was extraordinarily sharp in Europe and Central Asia and put HIV/AIDS in the top 10 causes of disease burden. The degree of the rise in HIV/AIDS

burden varied across countries, however; Kyrgyzstan and Ukraine were among the countries that experienced the greatest increases in health loss associated with HIV/AIDS, and countries such as Bosnia and Herzegovina and Macedonia experienced the smallest.

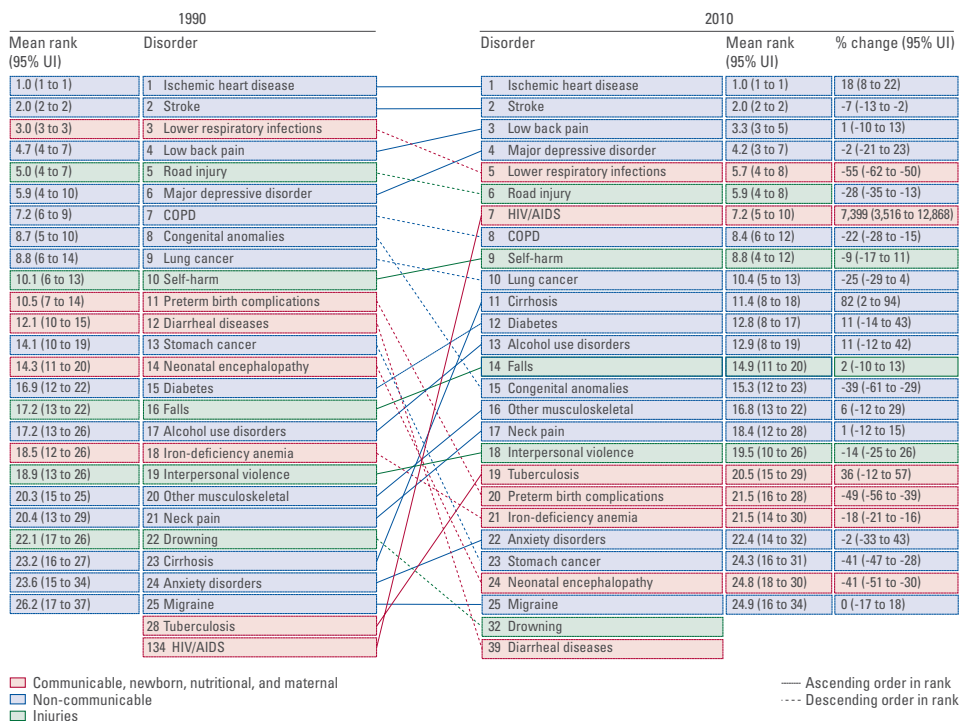
While the trends in Europe and Central Asia were largely consistent with global patterns, the region is unique in many ways. Health loss from tuberculosis decreased by 18% at the global level, but it increased by 36% in Europe and Central Asia. Also, certain non-communicable diseases were much more prominent causes of premature death and disability in the region compared to the world as a whole. Depression ranked fourth in this region, for example, but ranked 11th globally. Road injuries ranked sixth as a cause of premature death and disability in the region and ranked 10th at the global level. Another cause that ranked higher in this region compared to the world overall was cirrhosis. Cirrhosis was the 24th leading cause of DALYs globally but ranked 11th in this region.

Figure 1: Global disability-adjusted life year ranks, top 25 causes, and percentage change, 1990-2010



Note: Solid lines indicate a cause that has moved up in rank or stayed the same. Broken lines indicate a cause that has moved down in rank. The causes of DALYs are color coded, with blue for non-communicable diseases, green for injuries, and red for communicable, newborn, nutritional, and maternal causes. COPD: Chronic obstructive pulmonary disease. To view an interactive version of this figure, visit IHME's website: <http://ihmeuw.org/gbdarrowdiagram>.

Figure 2: Disability-adjusted life year ranks, top 25 causes, and percentage change in Europe and Central Asia, 1990-2010



Note: Solid lines indicate a cause that has moved up in rank or stayed the same. Broken lines indicate a cause that has moved down in rank. The causes of DALYs are color coded, with blue for non-communicable diseases, green for injuries, and red for communicable, newborn, nutritional, and maternal causes.

MOST OF THE WORLD'S POPULATION IS LIVING LONGER AND DYING AT LOWER RATES

In much of the world, GBD 2010 found that people are living to older ages than ever before, and the entire population is getting older. Since 1970, the average age of death has increased 20 years globally. Sub-Saharan Africa, however, has not made nearly as much progress as other developing regions, and people in this part of the world tend to die at much younger ages than in any other region. Progress in sub-Saharan Africa has in particular been held back by the HIV/AIDS epidemic, maternal deaths, and child mortality caused by infectious diseases and malnutrition, but some of these trends have begun to change in the past decade. Figure 3 illustrates the changes that occurred during this period in Europe and Central Asia.

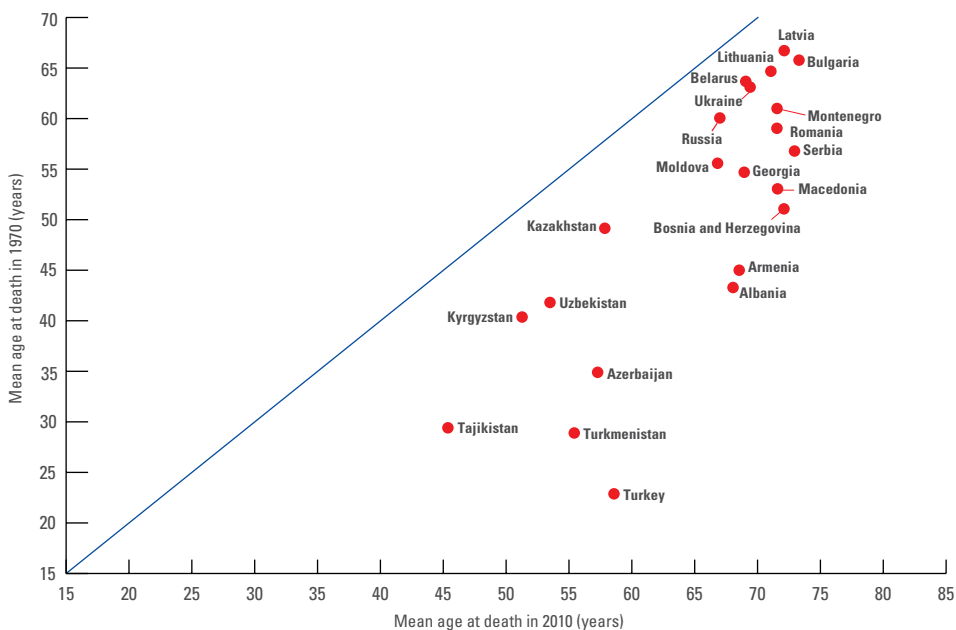
Overall, from 1970 to 2010, the countries of Europe and Central Asia made measurable progress in extending the lives of their populations, as seen in Figure 3. There were variations, however, in the size of the increases in average age at death across

the countries of the region. For example, the average age of death grew by the greatest amount in Turkey (35.7 years) during this period. Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, and Turkmenistan each extended their average age of death by more than 20 years between 1970 and 2010. Belarus and Latvia had the smallest increases in average age at death in the region (5.4 years), and Bulgaria, Kazakhstan, Lithuania, Russia, and Ukraine added less than 10 years to their average age of death.

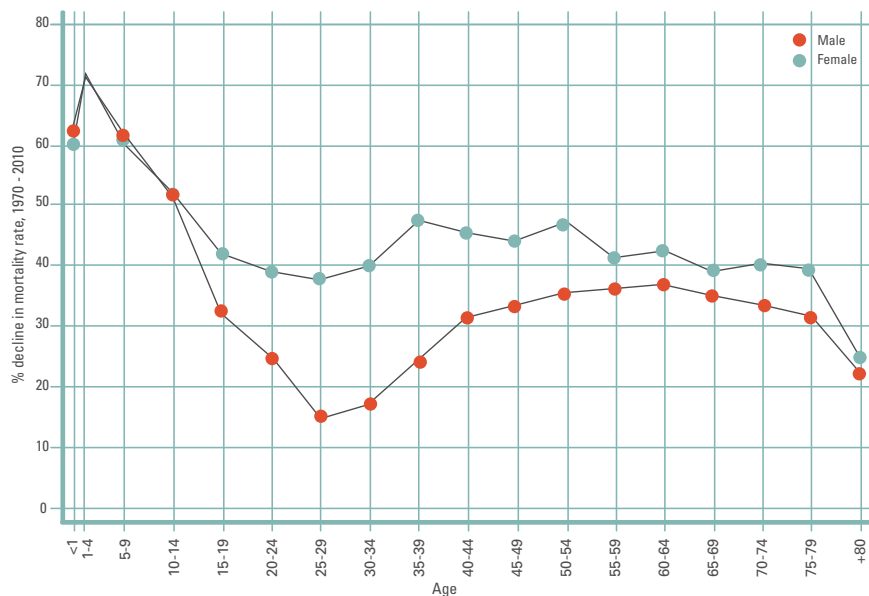
Another way to understand changes in global demographic trends is to explore reductions in mortality rates by sex and age group. Figure 4 shows how death rates have declined in all age groups between 1970 and 2010. These changes have been most dramatic among males and females aged 0 to 9 years, whose death rates have dropped over 60% since 1970. Among age groups 15 and older, the decrease in female death rates since 1970 has been greater than the drop in male death rates. The gap in progress between men and women was largest between the ages of 15 to 54, most likely due to the persistence of higher mortality from injuries, as well as alcohol and tobacco use, among men.

Figure 5 depicts the decline in mortality rates in Europe and Central Asia. In nearly every age group older than 10 to 14 years, declines in mortality were faster among

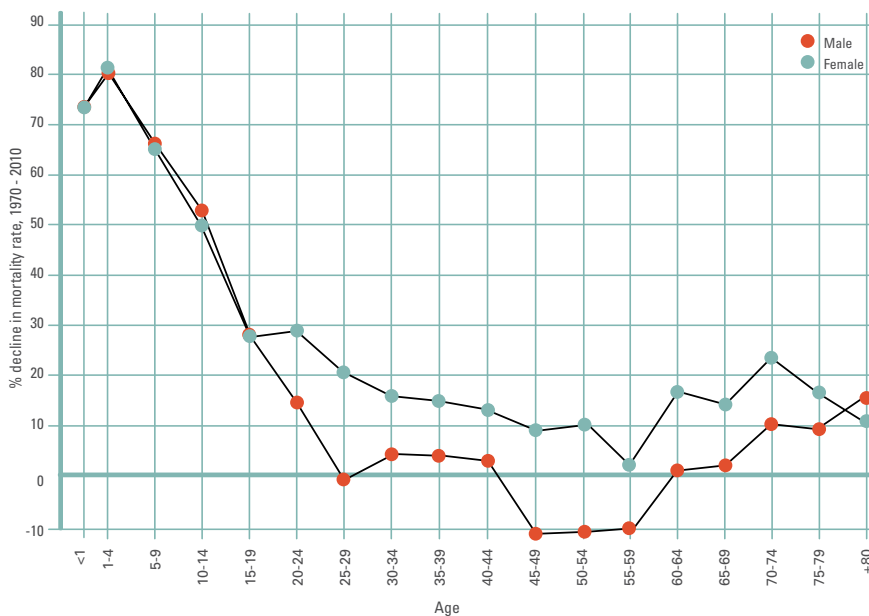
Figure 3: Average age of death for countries in Europe and Central Asia, 1970 compared with 2010



Note: Countries falling on the right side of the 45-degree angle line had a greater average age of death in 2010 compared to 1970.

Figure 4: Global decline in age-specific mortality rate, 1970-2010

Note: Higher values indicate greater declines in mortality; lower values indicate smaller declines in mortality.

Figure 5: Decline in age-specific mortality rate in Europe and Central Asia, 1970-2010

Note: Higher values indicate greater declines in mortality; lower values indicate smaller declines in mortality. Points below 0 indicate an increase in mortality rate between 1970 and 2010.

women than in men. Compared to global trends, declines in mortality rates among adult males and females were smaller in Europe and Central Asia with the exception of those groups under age 5. Mortality rates barely changed among 25- to 29-year-old men in the region over the past 40 years, and men ages 45 to 59 died at higher rates in 2010 compared to 1970, largely due to alcohol use.

LEADING CAUSES OF DEATH ARE SHIFTING TO NON-COMMUNICABLE DISEASES

In part because many people are living longer lives and the population is growing older, the leading causes of death have changed. Worldwide, the number of people dying from non-communicable diseases, such as ischemic heart disease and diabetes, has grown 30% since 1990. To a lesser extent, overall population growth also contributed to this increase in deaths from non-communicable diseases.

The rise in the total number of deaths from non-communicable diseases has increased the number of healthy years lost, or DALYs, from these conditions. Figure 6 shows global changes in the 25 leading causes of DALYs between 1990 and 2010 ordered from highest to lowest ranking cause from top to bottom. Non-communicable causes are shown in blue; communicable, nutritional, maternal, and newborn causes in red; and injuries in green.

Figure 7 shows that, among non-communicable diseases with the largest burden, health loss from cirrhosis, ischemic heart disease, diabetes, alcohol use disorders, and low back and other musculoskeletal disorders increased the most in Europe and Central Asia between 1990 and 2010. While there was a decrease in disease burden from many communicable diseases in the region, HIV/AIDS was a notable exception.

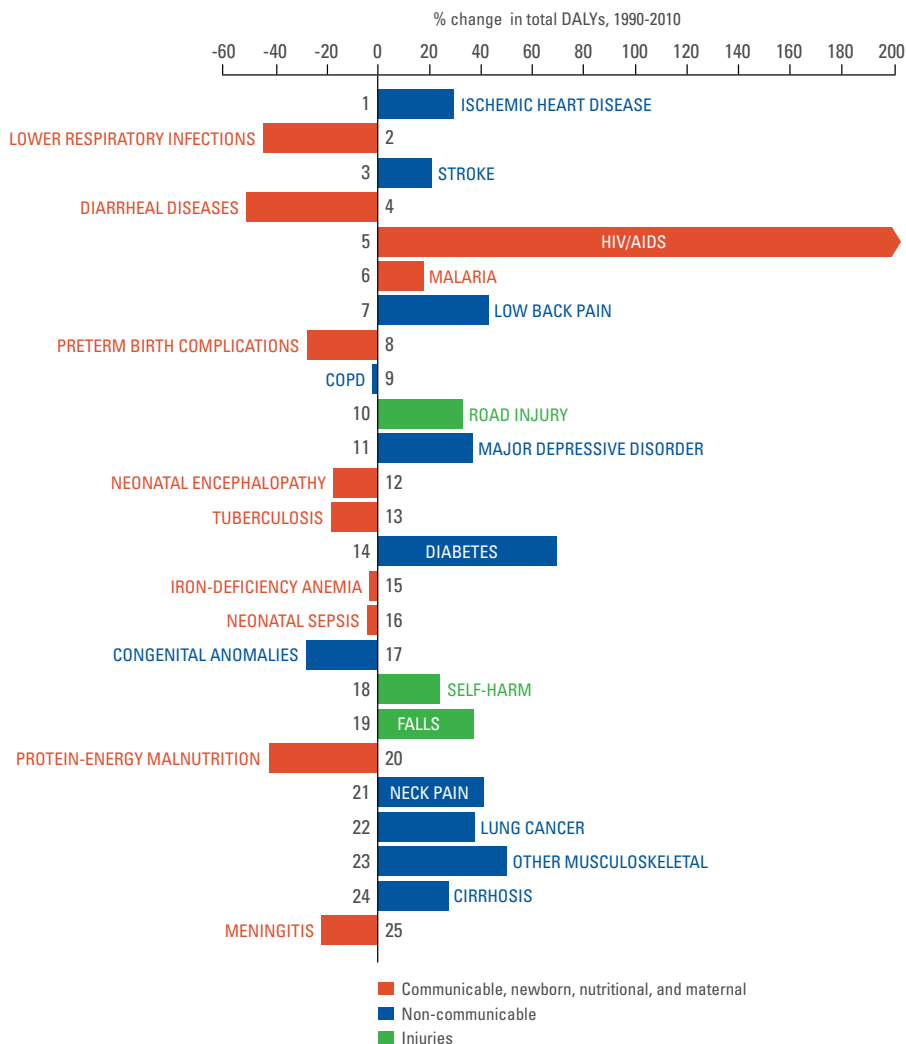
In many countries, non-communicable diseases account for the majority of DALYs. Figure 8 shows the percent of healthy years lost from this disease group by country in 2010. In most countries outside of sub-Saharan Africa, non-communicable diseases caused 50% or more of all DALYs. In Australia, Japan, and richer countries in Western Europe and North America, the percentage was greater than 80%.

Figure 8 shows the important role played by non-communicable diseases in Europe and Central Asia. Among countries in the region, Bulgaria had the highest percentage of DALYs due to non-communicable diseases (86.7%), while Tajikistan had the lowest percentage of DALYs from these conditions (51.3%).

An in-depth look at the country-level data reveals the specific diseases that are driving overall shifts from communicable to non-communicable diseases. As an example, Figure 9 displays the changes in the top 20 causes of DALYs in Turkish females between 1990 and 2010. The causes are organized by ranking from

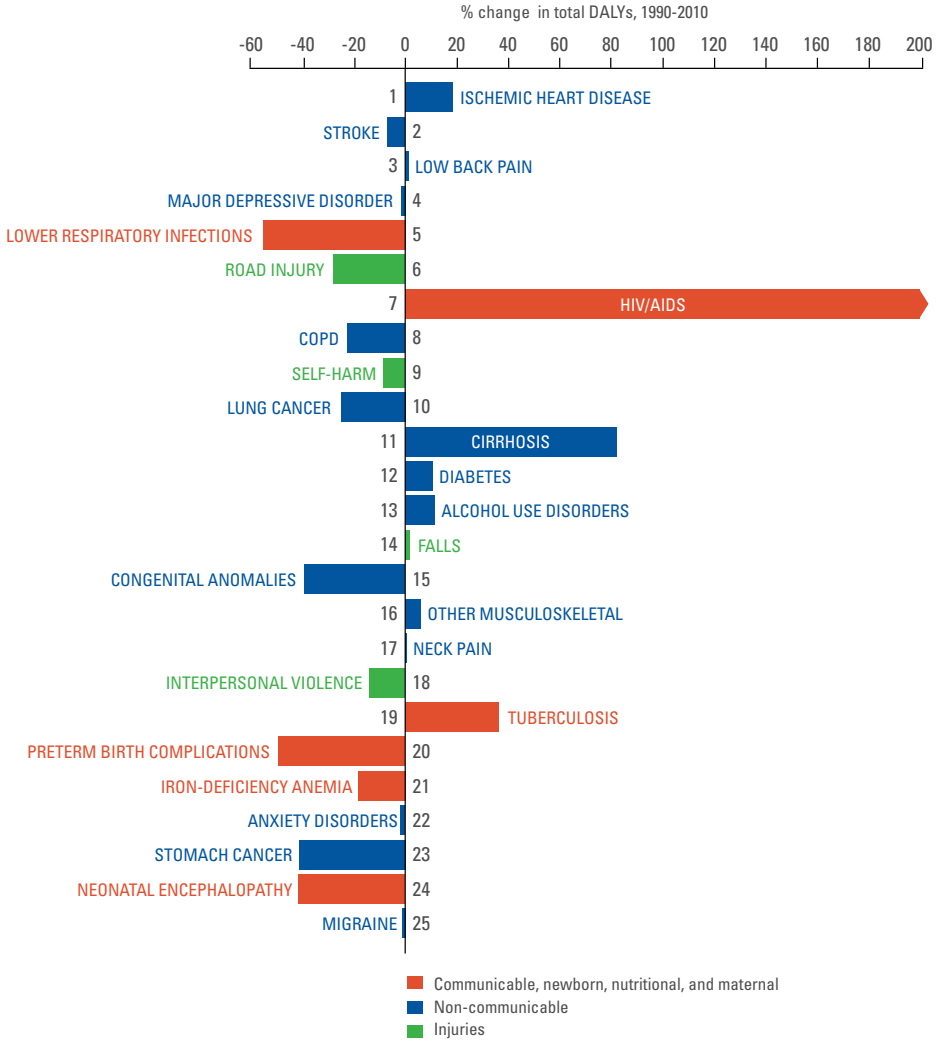
top to bottom. Most non-communicable diseases rose over time, while most communicable, newborn, nutritional, and maternal conditions fell during this period. Among the top five causes of DALYs in 2010, low back pain increased the most (63%), followed by anxiety and depression, which grew 59% and 53%, respectively. Among communicable, nutritional, newborn, and maternal conditions, lower respiratory infections and meningitis experienced the most dramatic declines, falling by 81% and 60%, respectively.

Figure 6: Global shifts in leading causes of DALYs, 1990-2010



Note: The leading 25 causes of DALYs are ranked from top to bottom in order of the number of DALYs they contributed in 2010. Bars to the right of the vertical line show the percent by which DALYs have increased since 1990. Bars on the left show the percent by which DALYs have decreased. Pointed arrows indicate causes that have increased by a greater amount than shown on the x-axis.

Figure 7: Shifts in leading causes of DALYs in Europe and Central Asia, 1990-2010



Note: The leading 25 causes of DALYs are ranked from top to bottom in order of the number of DALYs they contributed in 2010. Bars to the right of the vertical line show the percent by which DALYs have increased since 1990. Bars on the left show the percent by which DALYs have decreased. Pointed arrows indicate causes that have increased by a greater amount than shown on the x-axis.

Figure 8: Percent of global DALYs due to non-communicable diseases, 2010

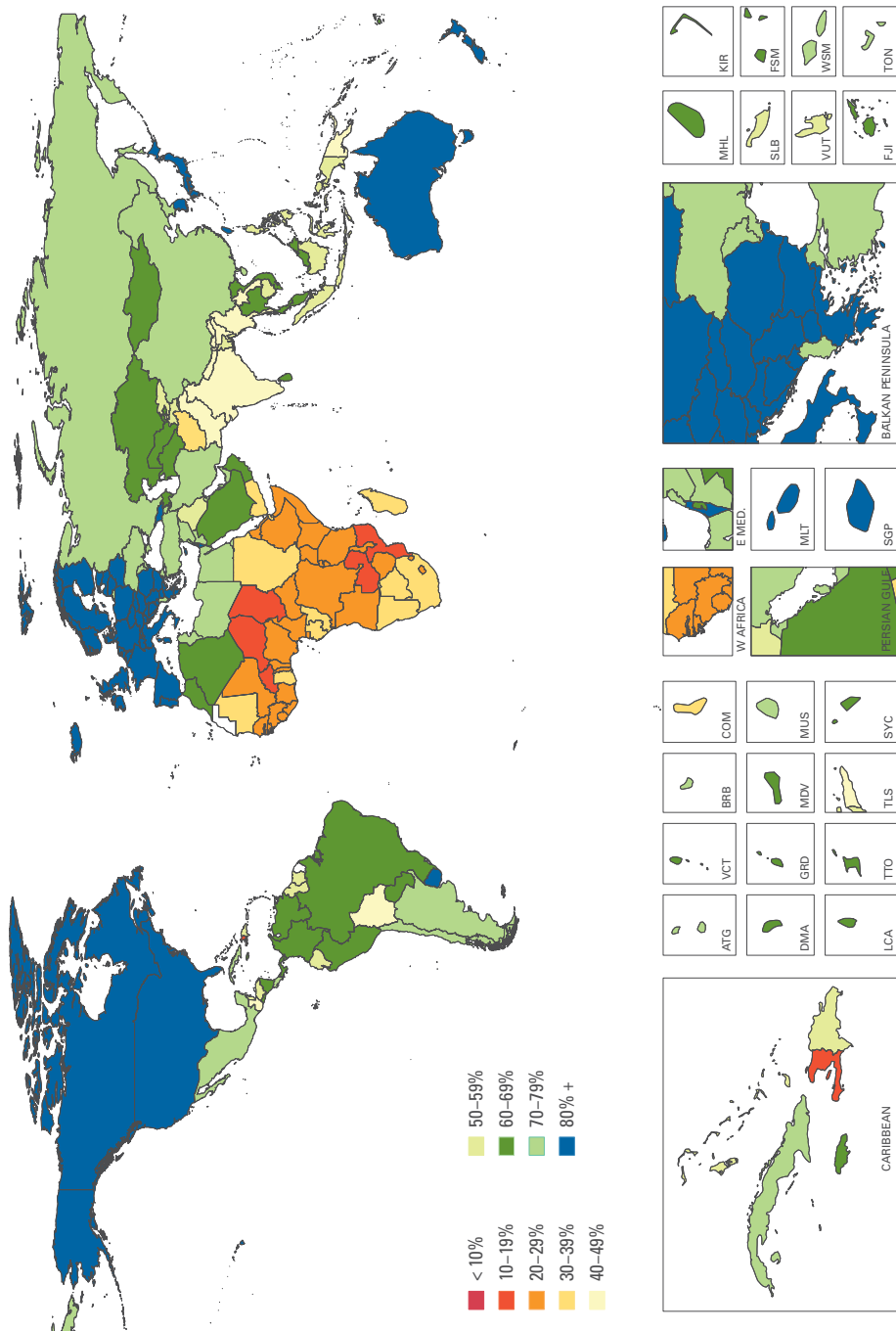
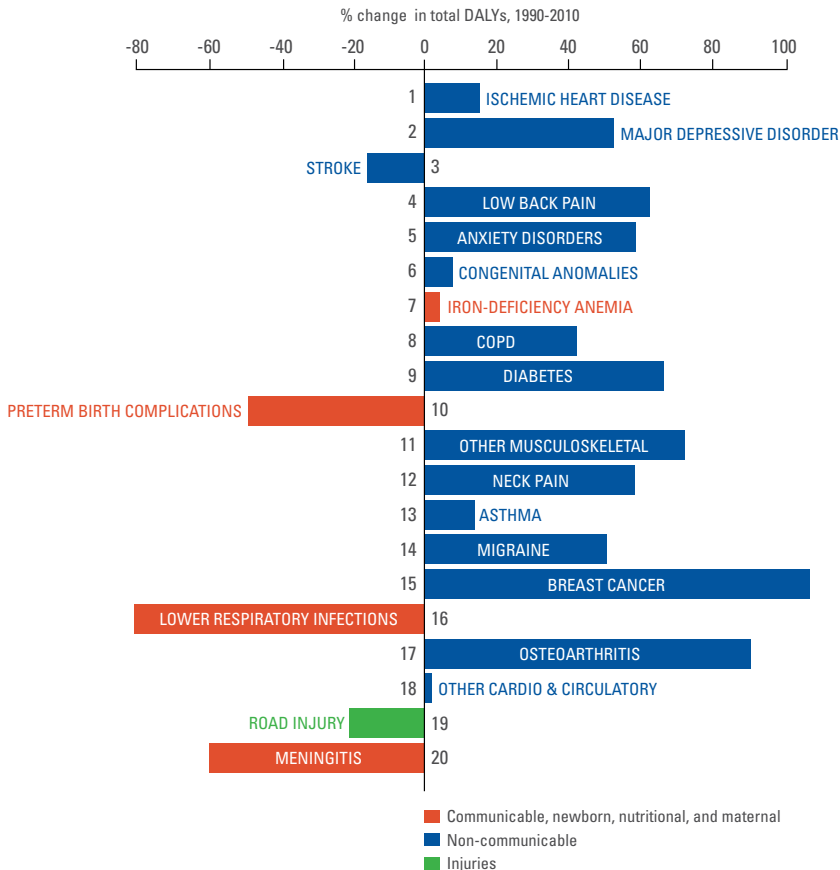


Figure 10 shows declines in DALYs among Turkish males from communicable, nutritional, and newborn conditions coupled with increases in non-communicable diseases between 1990 and 2010. Out of all the non-communicable diseases shown in this figure, drug use disorders increased the most over the period (78%). Other leading causes of DALYs, such as lung cancer, increased by 74%, depression grew by 55%, and low back pain by 56%. In addition to displaying the rising prominence of non-communicable diseases, this visualization shows that injuries are among the most dominant causes of healthy life lost in men in Turkey. DALYs caused by self-harm increased by 459% to a ranking of 15th, while falls increased by 50% to 16th.

Another visualization tool, GBD Compare, displays proportional changes in disease patterns over time using a treemap diagram, which is essentially a square pie chart. Causes of DALYs, or numbers of healthy years lost, are shown in boxes. The size of each box represents the percentage of total DALYs due to a specific cause. Figures

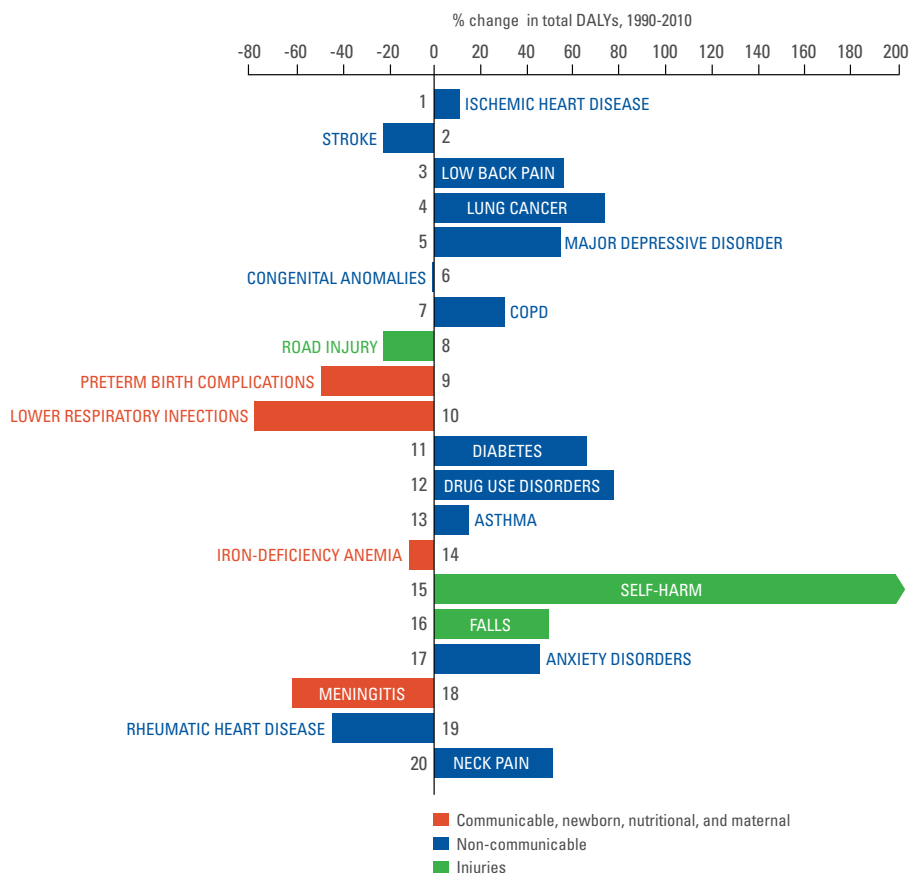
Figure 9: Shifts in leading causes of DALYs for females, Turkey, 1990-2010



Note: The leading 20 causes of DALYs are ranked from top to bottom in order of the number of DALYs they contributed in 2010. Bars to the right of the vertical line show the percent by which DALYs have increased since 1990. Bars on the left show the percent by which DALYs have decreased.

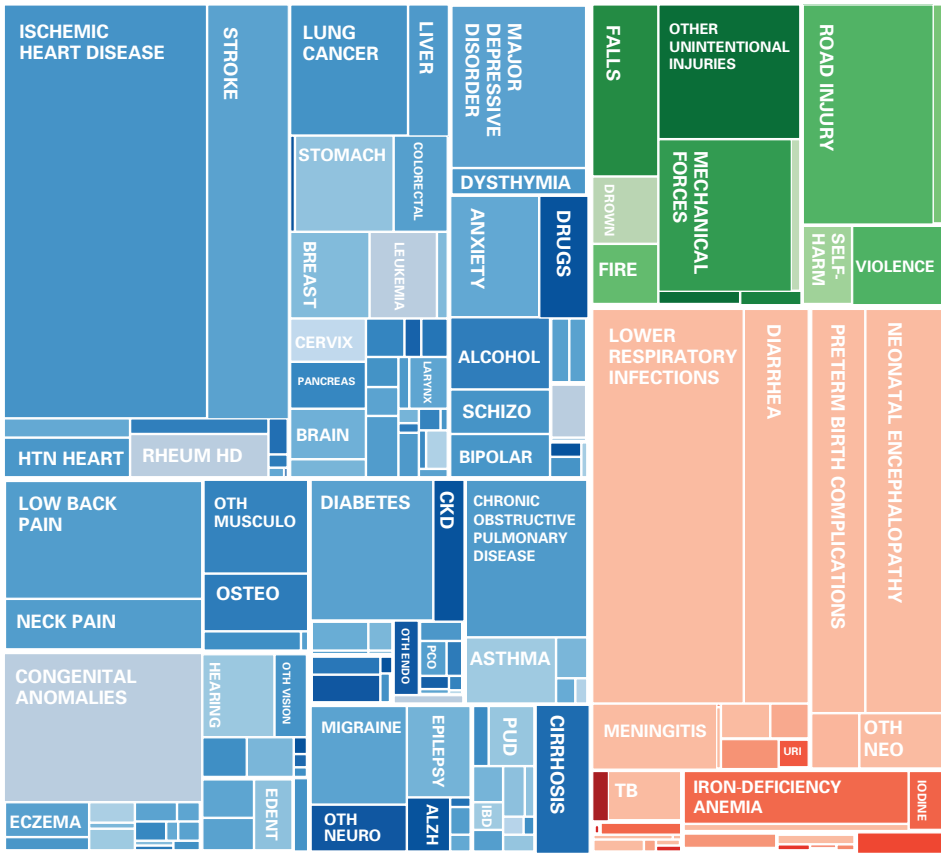
11a and 11b show how DALYs have changed in Armenia between 1990 and 2010. In 1990, non-communicable diseases accounted for 62.4% of DALYs in both sexes, while communicable, nutritional, maternal, and newborn causes accounted for 24.2%. By 2010, they represented 79.6% and 10.3% of total disease burden, respectively. Premature death and disability from most communicable, nutritional, maternal, and newborn causes decreased during this period, with the notable exception of HIV/AIDS and tuberculosis. DALYs from many non-communicable causes rose. Increases occurred in causes such as ischemic heart disease (20%), stroke (26%), cirrhosis (70%), and diabetes (69%). In 2010, ischemic heart disease caused 15.7% of total DALYs in the country, the largest percentage by any non-communicable cause. Contrary to global trends, health loss from road traffic injuries and falls decreased by 35% and 20%, respectively, while DALYs from fire-related injuries declined 68% between 1990 and 2010.

Figure 10: Shifts in leading causes of DALYs for males, Turkey, 1990-2010



Note: The leading 20 causes of DALYs are ranked from top to bottom in order of the number of DALYs they contributed in 2010. Bars to the right of the vertical line show the percent by which DALYs have increased since 1990. Bars on the left show the percent by which DALYs have decreased. Pointed arrows indicate causes that have increased by a greater amount than shown on the x-axis.

Figure 11a: Causes of DALYs, both sexes, all ages, Armenia, 1990



Annual % change, 2005 to 2010, DALYs per 100,000

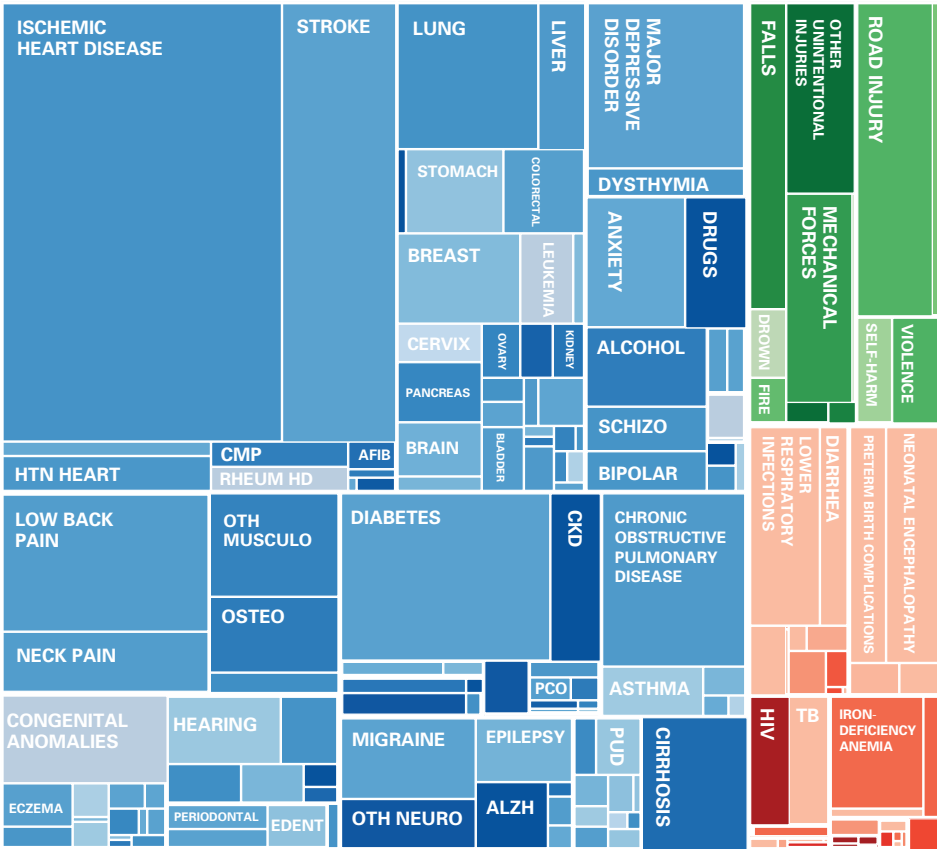
3% 2% 1% 0% -1% -2% -3%



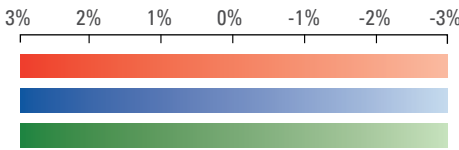
Communicable, newborn, nutritional, and maternal
 Non-communicable
 Injuries

Note: The size of each box in this square pie chart represents the percentage of total DALYs caused by a particular disease or injury. To view an interactive version of this figure, visit IHME's website: <http://ihmeuw.org/gbdcompare>.

Figure 11b: Causes of DALYs, both sexes, all ages, Armenia, 2010



Annual % change, 2005 to 2010, DALYs per 100,000



Note: The size of each box in this square pie chart represents the percentage of total DALYs caused by a particular disease or injury. To view an interactive version of this figure, visit IHME's website: <http://ihmeuw.org/gbdcompare>.

DISABILITY INCREASES IN MIDDLE- AND HIGH-INCOME COUNTRIES

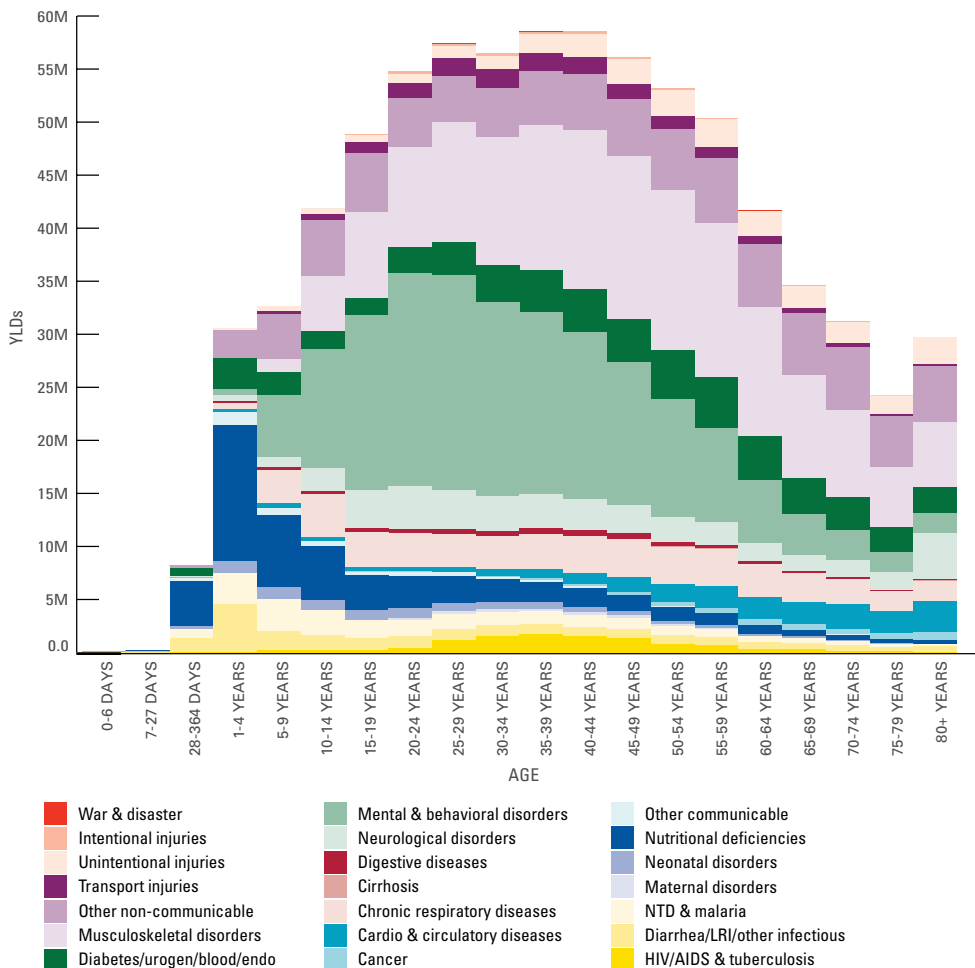
Most countries in the world have succeeded in reducing deaths early in life. To a growing extent, longer lives are redefining “old age” in many countries, and people in all age groups are dying at lower rates than in the past. Simply living longer does not mean that people are healthier. Little progress has been made in reducing the prevalence of disability, so people are living to an older age but experiencing more ill health. Many people suffer from different forms of disability throughout their lives, such as mental and behavioral health problems starting in their teens and musculoskeletal disorders beginning in middle age. These findings have far-reaching implications for health systems.

Healthy years lost (DALYs) are calculated by adding together years lived with disability (YLDs) and years of life lost (YLLs, also known as years lost to premature death). Between 1990 and 2010, years lived with disability increased as a percentage of total DALYs in all areas of the world except Eastern Europe, southern sub-Saharan Africa, and the Caribbean. This disability transition has been most dramatic in parts of Latin America, the Middle East and North Africa, and many areas in Asia. The percentage of burden from YLDs also increased in sub-Saharan Africa with the exception of the southern part of the region.

Figure 12 tells a more detailed story about the different conditions that cause disability globally. It is important to keep in mind that these estimates reflect both how many individuals suffer from a particular condition as well as the severity of that condition. Mental and behavioral disorders, such as depression, anxiety, and drug use, were the primary drivers of disability worldwide and caused over 40 million years of disability in 20- to 29-year-olds. Musculoskeletal conditions, which include low back pain and neck pain, accounted for the next largest number of years lived with disability. People aged 45 to 54 were most impacted by these conditions, as musculoskeletal disorders caused over 30 million years of disability in each of these age groups.

Figure 13 shows the causes of disability in Europe and Central Asia. Disability patterns in this region exhibit marked differences from global trends for people aged 45 to 59. At the global level, overall disability dropped in these ages, but disability increased in these age groups in Europe and Central Asia. Increases in disability in these age groups were driven by musculoskeletal disorders; diabetes; urogenital, blood, and endocrine disorders; other non-communicable disorders; and unintentional injuries.

Another way to view the world’s health challenges is by comparing how different conditions rank. Figure 14 ranks the leading causes of disability globally and in each of the six World Bank regions in 2010, using color coding to indicate how high a condition ranks in a region. Low back pain caused the most disability in East Asia and the Pacific, Europe and Central Asia, and in the Middle East and North Africa. This condition can inhibit people’s ability to perform different types of work both inside

Figure 12: Global disability patterns by broad cause group and age, 2010

Note: The size of the colored portion in each bar represents the number of YLDs attributable to each cause for a given age group. The height of each bar shows total YLDs for a given age group in 2010. The causes are aggregated. For example, musculoskeletal disorders include low back pain and neck pain. To view an interactive version of this figure, visit IHME's website: <http://ihmeuw.org/gbdcausepattern>.

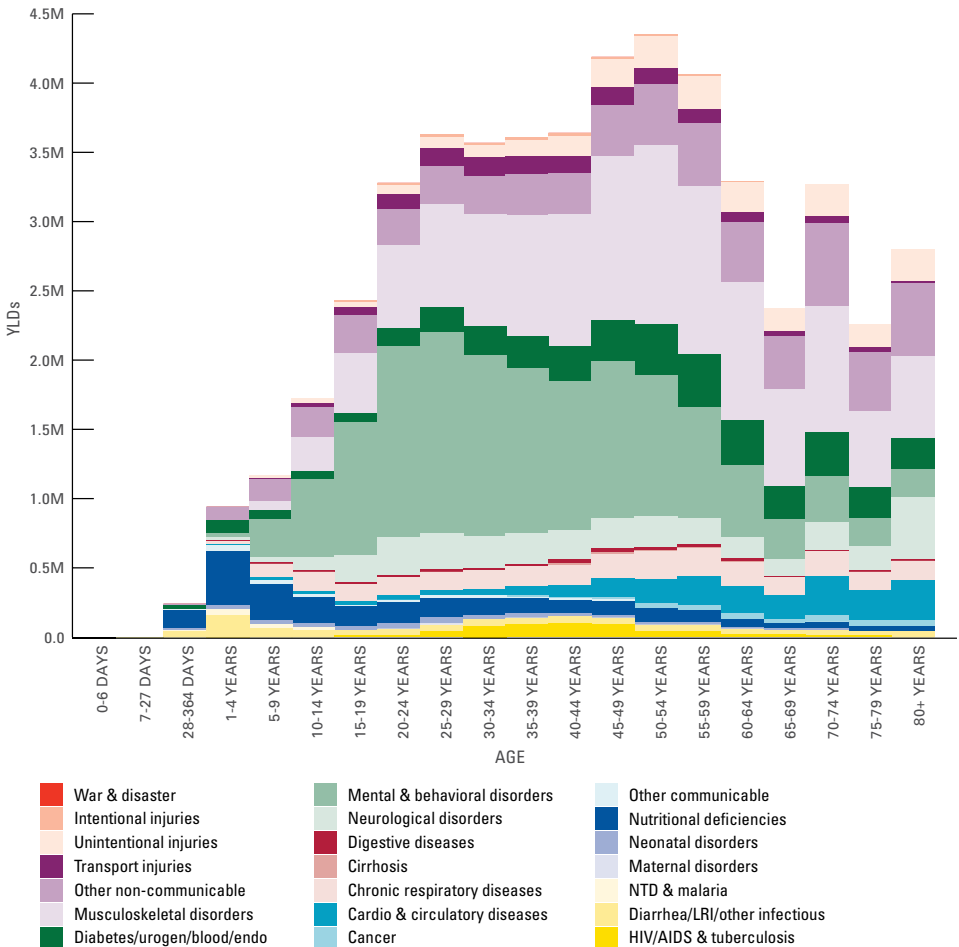
and outside the home and impair their mobility. In addition to low back pain, neck pain and other musculoskeletal disorders ranked in the top 10 causes of disability in most regions. Another musculoskeletal disorder, osteoarthritis, appeared in the top 20 causes of disability in every region.

Depression was also a major cause of disability and was one of the top three causes of disability in every region. This disorder can cause fatigue, decreased ability to work or attend school, and suicide. Anxiety, a different type of mental disorder, was one of the top 10 causes of disability in all regions, but ranked highest in Latin

America and the Caribbean and the Middle East and North Africa. Additionally, two other mental disorders, schizophrenia and bipolar disorder, appeared among the top 20 causes of disability in many regions.

While mental and musculoskeletal disorders ranked high among causes of disability across regions, Figure 14 also reveals substantial regional variation among other causes. For example, iron-deficiency anemia was the leading cause of disability in sub-Saharan Africa and South Asia, but was less important as a cause of disability in the other regions. The substantial burden in these two regions contributed to iron-deficiency anemia's ranking as the third leading cause of disability at the global level. Iron-deficiency anemia can lead to fatigue and lowered ability to fight infection and may decrease cognitive ability.

Figure 13: Disability patterns by broad cause group and age in Europe and Central Asia, 2010



Note: The size of the colored portion in each bar represents the number of YLDs attributable to each cause for a given age group. The height of each bar shows total YLDs for a given age group in 2010. The causes are aggregated. For example, musculoskeletal disorders include low back pain and neck pain.

Chronic obstructive pulmonary disease (COPD), a term used to describe emphysema and other chronic respiratory diseases, was among the top five causes of disability in East Asia and Pacific, South Asia, and sub-Saharan Africa and was the eighth-leading cause of disability in the Middle East and North Africa. COPD ranked lower in Europe and Central Asia (11th) and Latin America and the Caribbean (13th).

In Europe and Central Asia, many of the leading causes of disability were similar to global rankings, but key differences merit further discussion. Globally, iron-deficiency anemia ranked as a higher cause of disability (third in both 1990 and 2010) than in the region, where it ranked fifth. COPD ranked 11th in Europe and Central Asia and fifth globally. In contrast to the global ranking of ninth place, diabetes was a more

Figure 14: Rankings of leading causes of disability by region, 2010

	GLOBAL	EAST ASIA & PACIFIC	EUROPE & CENTRAL ASIA	LATIN AMERICA & CARIBBEAN	MIDDLE EAST & NORTH AFRICA	SOUTH ASIA	SUB-SAHARAN AFRICA
LOW BACK PAIN	1	1	1	2	1	2	3
MAJOR DEPRESSIVE DISORDER	2	2	2	1	2	3	2
IRON-DEFICIENCY ANEMIA	3	6	5	5	3	1	1
NECK PAIN	4	3	3	3	6	7	6
COPD	5	5	11	13	8	4	4
OTHER MUSCULOSKELETAL	6	4	4	6	7	8	11
ANXIETY DISORDERS	7	10	7	4	4	6	5
MIGRAINE	8	11	8	7	12	5	13
DIABETES	9	7	6	10	5	10	23
FALLS	10	9	9	16	11	12	25
OSTEOARTHRITIS	11	8	10	11	9	19	18
DRUG USE DISORDERS	12	17	16	9	10	9	17
OTHER HEARING LOSS	13	12	13	15	16	11	12
ASTHMA	14	23	21	8	13	14	10
ALCOHOL USE DISORDERS	15	13	12	12	37	15	34
ROAD INJURY	16	16	14	21	14	13	22
BIPOLAR DISORDER	17	15	17	17	15	16	20
SCHIZOPHRENIA	18	14	18	18	18	22	29
DYSTHYMIA	19	18	19	19	19	20	26
EPILEPSY	20	20	22	14	20	26	14
ISCHEMIC HEART DISEASE	21	19	15	24	23	31	40
ECZEMA	22	22	23	20	21	21	21
DIARRHEAL DISEASES	23	25	28	22	17	23	15
ALZHEIMER'S DISEASE	24	34	20	26	39	49	62
TUBERCULOSIS	25	21	30	42	22	17	24

1-10
 11-20
 21-30
 31-50
 51-90

Note: In this figure, shading is used to indicate the ranking of each cause of disability in a particular region.

important cause of disability in Europe and Central Asia (sixth). Country-level disability rankings can be viewed on IHME's website: <http://ihmeuw.org/gbdheatmap>.

Using GBD tools to identify leading causes of disability, such as mental and behavioral disorders and musculoskeletal disorders, can help guide health system planning and medical education. Decision-makers can use GBD's findings to ensure that health care systems are designed to address the primary drivers of disability in a cost effective way.

THE GLOBAL RISK FACTOR TRANSITION

Data on potentially modifiable causes of health loss, or risk factors, can help policymakers and donors prioritize prevention strategies to achieve maximum health gains. GBD tools estimate the number of deaths, premature deaths, years lived with disability, and DALYs attributable to 67 risk factors worldwide. This study benefited from the availability of new data, such as newly available epidemiologic evidence about the health impacts of different risk factors; population, nutrition, health, and medical examination surveys; and high-resolution satellite data on air pollution.

Figure 15 shows changes in the 15 leading global risk factors for premature death and disability, or DALYs, between 1990 and 2010. Over this period, many risk factors that primarily cause communicable diseases in children declined. Examples of these risk factors are childhood underweight and suboptimal breastfeeding, which dropped by 61% and 57%, respectively, from 1990 to 2010. Childhood underweight is commonly used to measure malnutrition, and was formerly the leading risk factor for DALYs in 1990, but ranked eighth in 2010. DALYs attributable to household air pollution, which contributes to lower respiratory tract infections in children, dropped by 37% between 1990 and 2010. Unlike other risk factors that primarily cause DALYs from communicable diseases, progress in reducing premature death and disability from iron deficiency was much lower, declining by just 7% between 1990 and 2010. Slow progress in reducing iron deficiency helps explain why iron-deficiency anemia ranks as the third leading cause of disability globally.

As most risk factors for communicable diseases in children have declined, many risks associated with non-communicable diseases have grown. As the leading global risk factor for DALYs in 2010, dietary risks increased 30% between 1990 and 2010. Dietary risks include components such as high sodium intake and lack of fruit, nuts and seeds, and whole grain intake. GBD found that the diseases linked to poor diets and physical inactivity were primarily cardiovascular diseases as well as cancer and diabetes. While the focus of many public health messages about diet have stressed the importance of eating less saturated fat, GBD 2010's findings indicate that these messages should emphasize a broader range of dietary components.

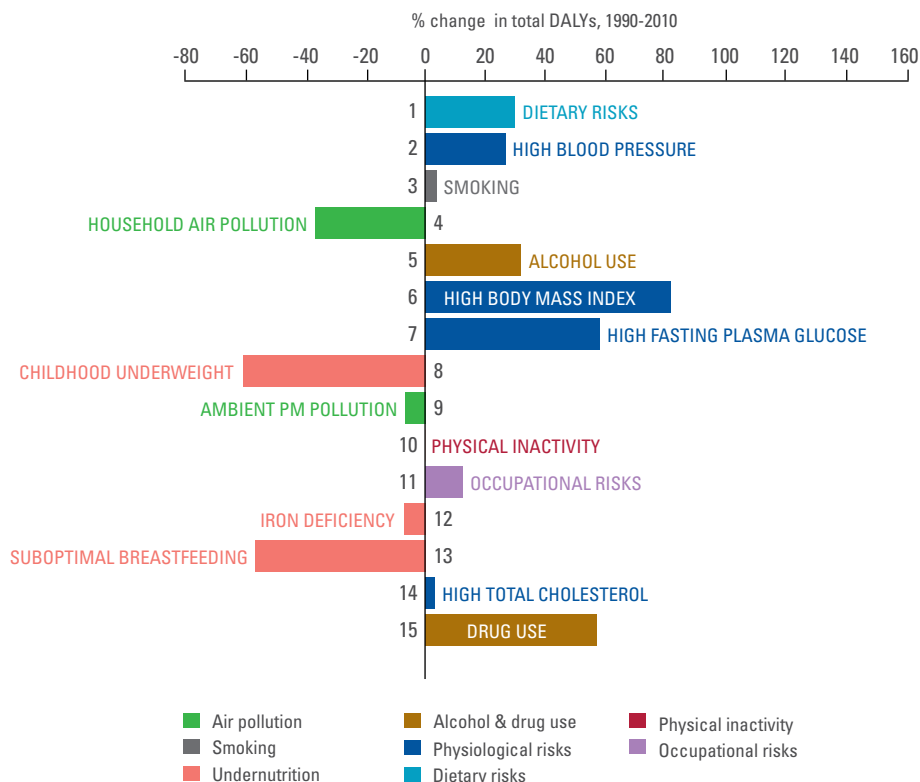
GBD 2010 used the most recent data available on the effects of different dietary risk factors. It is important to note that these data are constantly evolving as new studies on diet are conducted. Compared to data on the negative health impacts of smoking, which have been well understood for decades, the scientific evidence surrounding

dietary risk factors is much newer. Future updates of GBD will incorporate new data on risk factors as they emerge.

The second leading global risk factor, high blood pressure, increased by 27% as a cause of DALYs between 1990 and 2010. High blood pressure is a major risk factor for cardiovascular and circulatory diseases. DALYs attributable to another risk factor for non-communicable diseases, tobacco smoking, increased slightly by 3% between 1990 and 2010. Smoking increases the risk of chronic respiratory diseases, cardiovascular and circulatory diseases, and cancer. DALYs attributable to another substance, alcohol use, increased 32% during this period. Alcohol use contributes to cardiovascular and circulatory diseases, cirrhosis, and cancer. In addition to being a contributor to non-communicable diseases, alcohol increases the risk of injuries.

High BMI was another major contributor to DALYs in 2010 and was the sixth leading risk factor. High BMI is typically used as an indicator of overweight and obesity. It increased by a dramatic 82% over the period 1990 to 2010. High BMI is a leading risk factor for cardiovascular and circulatory diseases as well as diabetes. It is striking

Figure 15: Global shifts in rankings of DALYs for top 15 risk factors, 1990-2010



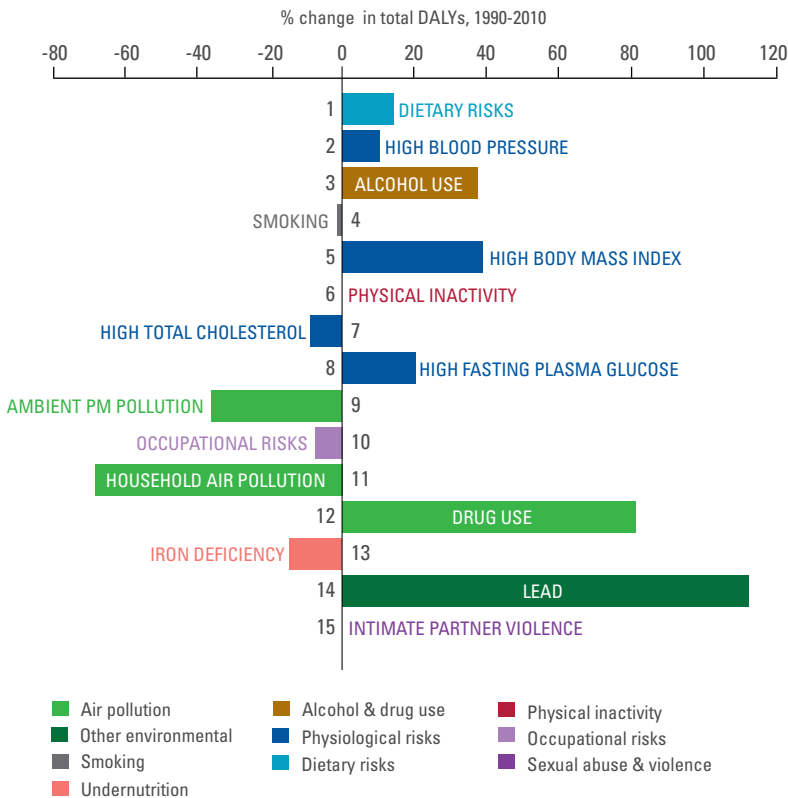
Note: The leading 15 risk factors are ranked from top to bottom in order of the number of DALYs they contributed in 2010. Bars to the right of the vertical line show the percent by which DALYs attributable to different risk factors have increased since 1990. Bars on the left show the percent by which DALYs attributable to different risk factors have decreased. Attributable DALYs were not quantified for physical inactivity for 1990.

that high BMI was a more important cause of poor health worldwide than childhood underweight in 2010, whereas childhood underweight was a much more prominent risk factor than high BMI in 1990.

Figure 16 depicts changes in the top 15 leading risk factors for DALYs in Europe and Central Asia between 1990 and 2010. While the trends in the region were largely consistent with the global trends, there are a few notable exceptions. DALYs attributable to high BMI for example, increased globally by 82% but increased by a lower rate of 39% in the region. Conversely, premature death and disability associated with drug use increased more sharply in the region compared to the world as a whole (82% in Europe and Central Asia and 57% globally).

Global and regional rankings of risk factors mask important differences across countries. Figure 17 shows the leading risk factors for DALYs in select countries in Europe

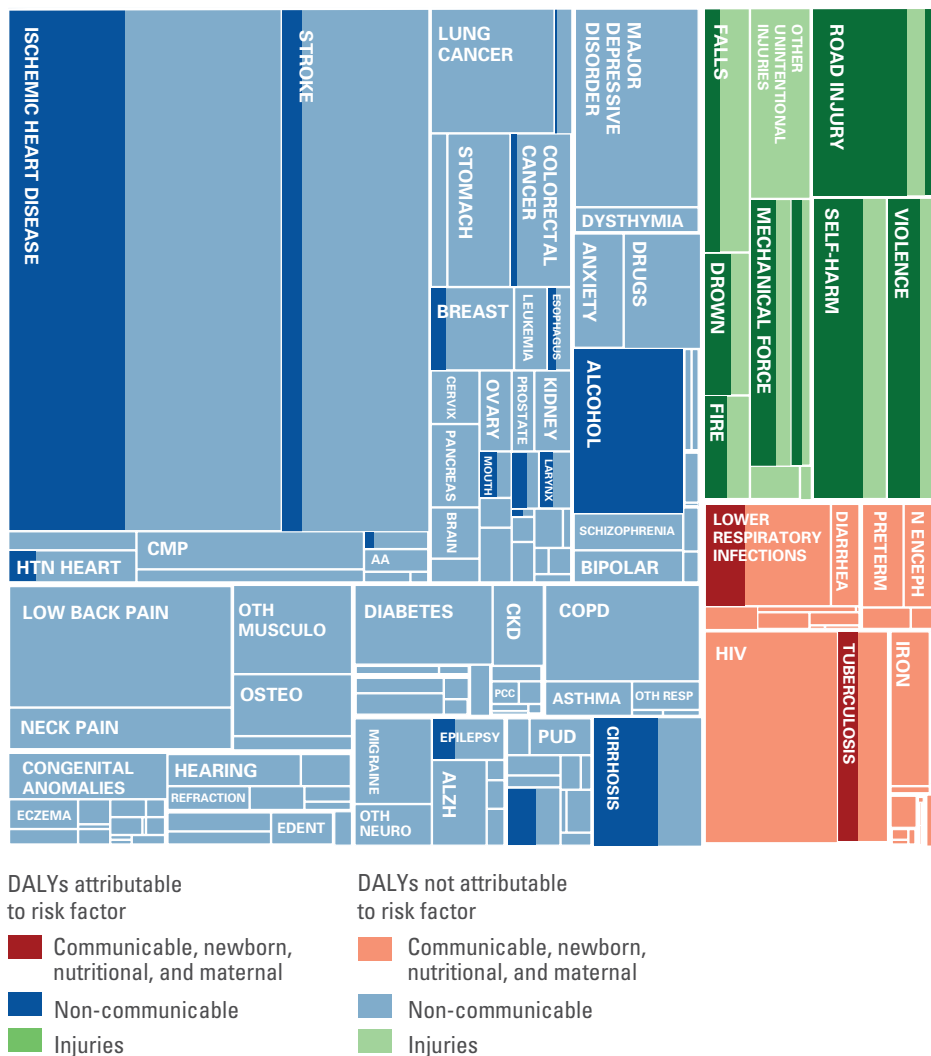
Figure 16: Shifts in rankings of DALYs in Europe and Central Asia for top 15 risk factors, 1990-2010



Note: The top 15 risk factors are ranked from top to bottom in order of the number of DALYs they contributed in 2010. Bars to the right of the vertical line show the percent by which DALYs attributable to different risk factors have increased since 1990. Bars on the left show the percent by which DALYs attributable to different risk factors have decreased. Attributable DALYs were not quantified for physical inactivity and intimate partner violence for 1990.

and Central Asia in 2010. There is some variation in risk factors across individual countries. Childhood underweight, for example, did not rank in the top 15 for most countries in the region, but it ranked ninth in Tajikistan. Globally, childhood underweight ranked eighth. In Georgia, Kyrgyzstan, and Tajikistan, household air pollution ranked in the top five risk factors, which is consistent with the global ranking, but the other countries in the region performed better than the world as a whole. Alcohol use ranked as the second-leading risk factor in Belarus and Russia, while

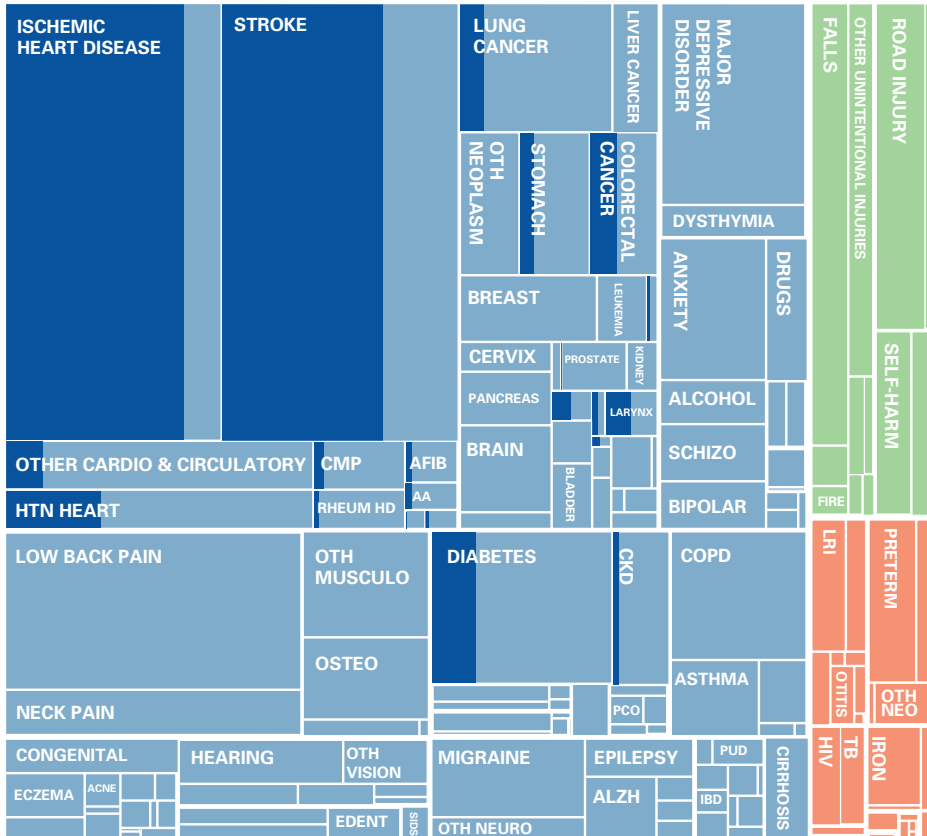
Figure 18: DALYs attributable to alcohol use, both sexes, all ages, Russia, 2010



Note: The size of each box represents the percentage of total DALYs caused by a particular disease or injury, and the proportion of each cause attributable to the risk factor is shaded. To view an interactive version of this figure, visit IHME's website: <http://ihmeuw.org/gbdcompare>.

it ranked below the global ranking of fifth in the other countries in the region. The importance of alcohol use was particularly low in Montenegro and Serbia, where it ranked 11th. High total cholesterol had a more prominent role in health loss in the region compared to the rest of the world; it ranked in the top 10 in every country except Kyrgyzstan, Tajikistan, and Uzbekistan, where the effect of high cholesterol on DALYs was similar to its effect globally, where it ranked 14th.

Figure 19: DALYs attributable to dietary risks, both sexes, all ages, Macedonia, 2010



DALYs attributable to risk factor

- Communicable, newborn, nutritional, and maternal
- Non-communicable
- Injuries

DALYs not attributable to risk factor

- Communicable, newborn, nutritional, and maternal
- Non-communicable
- Injuries

Note: The size of each box represents the percentage of total DALYs caused by a particular disease or injury, and the proportion of each cause attributable to the risk factor is shaded. To view an interactive version of this figure, visit IHME's website: <http://ihmeuw.org/gbdcompare>.

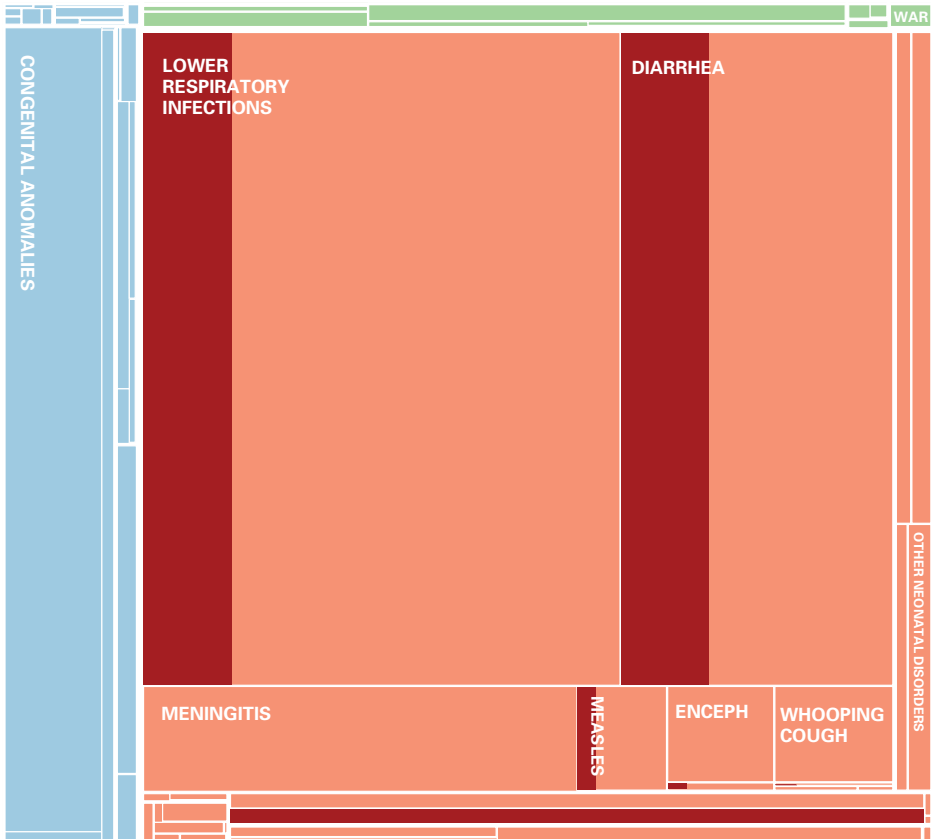
In addition to allowing users to explore how different risk factors rank across countries, decision-makers can use GBD visualization tools to understand how many DALYs could potentially be averted by addressing different risk factors. Figure 18 shows the number of DALYs attributable to alcohol use that contribute to different diseases and injuries in Russia. The percentage of DALYs that could be averted by reducing this risk factor is shown in dark shading.

The figure indicates how reductions in alcohol use could prevent substantial amounts of premature death and disability from ischemic heart disease, stroke, cirrhosis, and several cancers, as indicated by the portion of these causes that are shaded in dark blue. Reductions in alcohol use could also reduce DALYs from a variety of injuries, such as road injuries, self-harm, and interpersonal violence, as seen by the portion of these causes shaded in dark green.

Dietary risks include elements such as low consumption of fruits, nuts and seeds, and whole grains, as well as high salt intake. Figure 19 shows how many DALYs in Macedonia could be averted by improving people's diets. Substantial health loss from ischemic heart disease and stroke could be prevented, as indicated by the portion of these causes shaded in dark blue. Reduction of dietary risks could also reduce DALYs from diabetes and some cancers.

Figure 20 shows the number of DALYs attributable to childhood underweight in children aged 1 to 11 months in Tajikistan. More than 32% of the DALYs attributable to diarrhea could potentially be prevented by reducing undernutrition in this age group, as indicated by the dark shading in the boxes representing this cause. Adequate nutrition would also greatly reduce illness from lower respiratory infections and measles among these children.

Figure 20: DALYs attributable to childhood underweight, both sexes, ages 1-11 months, Tajikistan, 2010



DALYs attributable to risk factor

- Communicable, newborn, nutritional, and maternal
- Non-communicable
- Injuries

DALYs not attributable to risk factor

- Communicable, newborn, nutritional, and maternal
- Non-communicable
- Injuries

Note: The size of each box represents the percentage of total DALYs caused by a particular disease or injury, and the proportion of each cause attributable to the risk factor is shaded. To view an interactive version of this figure, visit IHME's website: <http://ihmeuw.org/gbdcompare>.