



Ethiopia Health Atlas, 2021

By

Burden of Disease Unit (BoD), National Data Management Center (NDMC) for health, Ethiopian Public Health Institute



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HEALTHIER CITIZENS FOR PROSPEROUS NATION!



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Abbreviations

Abbreviation	Term
AA	Addis Ababa
DALYs	Disability-Adjusted Life Years
DHS	Demographic and Health Survey
GBD	Global Burden of Disease
HALE	Health Adjusted Life Expectancy
HSTP	Health Sector Transformation Plan
LE	Life Expectancy
TFR	Total Fertility Rate
MDG	Millennium Development Goals
TB	Tuberculosis
SDG	Sustainable Development Goals
SDI	Socio-Demographic Index
WaSH	Water, Sanitation, and Hygiene
YLDs	Years Lived with Disability
YLLs	Years of Life Lost

Definitions

Term	Definition
Disability-adjusted life years (DALYs)	Years of healthy life lost due to premature death and disability. It is the sum of years of life lost and years lived with disability.
Healthy life expectancy (HALE)	The number of years that a person at a given age can expect to live in good health, considering mortality and disability.
Life expectancy	Number of years a person is expected to live based on their present age.
Replacement rate	The total fertility rate at which a population replaces itself from generation to generation, assuming no migration, or approximately 2.05 live births per woman.
Risk factors	Potentially modifiable causes of disease and injury.
Socio-demographic Index (SDI)	A summary measure that identifies where a country or regional segment area sit on the spectrum of development. Expressed on a scale of 0 to 1, SDI is a composite average of the rankings of the incomes per capita, average educational attainment, and fertility rates of all areas in the GBD study.
Total fertility rate	The average number of children a woman would bear if she survived through the end of the reproductive age span and experienced at each age a particular set of age-specific fertility rates observed in the year of interest.
Under-5 mortality	The probability (expressed as the rate per 1,000 live births) that children born alive will die before reaching the age of 5 years.
Years lived with disability (YLDs)	Years of life lived with any short-term or long-term health loss.
Years of life lost (YLLs)	Years of life lost due to premature mortality.

Compiled by

Tezera Moshago Berheto, Burden of Disease Unit, Team leader

Yihunie Lakew, Burden of Disease Unit, Senior Demographer

Wondeson Tekilemariam, Burden of Disease Unit, Public Health Expert

Chalie Belete, Burden of Disease Unit, Geo-spatial Epidemiologist

Shewayiref Geremaw, Burden of Disease Unit, R-programmer

Dr. Awoke Misganaw, NDMC Advisor, Clinical Assistant Professor, IHME

Dr. Alemnesh Mirkuzie, NDMC Senior Researcher and former NDMC Coordinator

Dr. Fentabil Getnet, NDMC Coordinator and Public Health Researcher

Lydia Haile, IHME, Post Bachelor Fellow

Ally Walker, IHME, Engagement Officer, East and Southern Africa, Ethiopia Subnational Burden of Disease Project

Prof. Mohsen Naghavi, IHME, Director of Subnational Burden of Disease Estimation

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Introduction

Ethiopia is Sub-Saharan Africa's second-most populous nation, with an estimated population of 103 million in 2017[1]. The country is administratively divided into eleven regional states and two city administration, namely - Afar, Tigray, Amhara, Oromia, Southern Nations, Nationalities, and People's Region (SNNPR), Sidama, South West, Benishangul-Gumuz, Gambela, Harari, and Somali, and two city administrations, Addis Ababa and Dire Dawa. The national regional states as well as the two cities administrative councils are further divided into 841 Woredas. More than 80% of the population resides in three regions; Oromia, Amhara and SNNPR [2].

The Ethiopia Public Health Institute (EPHI) is a technical wing for the Ministry of Health responsible for co-ordination of notifiable diseases and public health emergencies. Moreover, the Institute is responsible for public health research and national health data management. The objectives of the National Data Management Centre for health (NDMC) include collecting and archiving available health and health related data; undertaking in-depth data analysis by integrating different data sources and applying robust statistical analytic methods; identifying evidence gaps and research priorities and synthesizing evidence for policy and decision [3]. The Centre has strong collaboration with the Institute of Health Metrics and Evaluation (IHME), the University of Washington, which produced burden of disease estimates for 204 countries and additional sub-national regions in 2019 [3]. The Centre also has a Burden of Disease Unit and is actively involved in the estimation of national and sub-national disease burden. The Burden of Disease Unit at the National Data Management Centre for health aspires to be a strong burden of disease evidence-generating unit. It believes that evidence-based public health policy and practice are at the core of monitoring actions for population health progress and achievement. Furthermore, the creation of a good environment for teaching and research is highly dependent on available evidence. Existing evidence provides indicators that are simple tools for monitoring and evaluation.

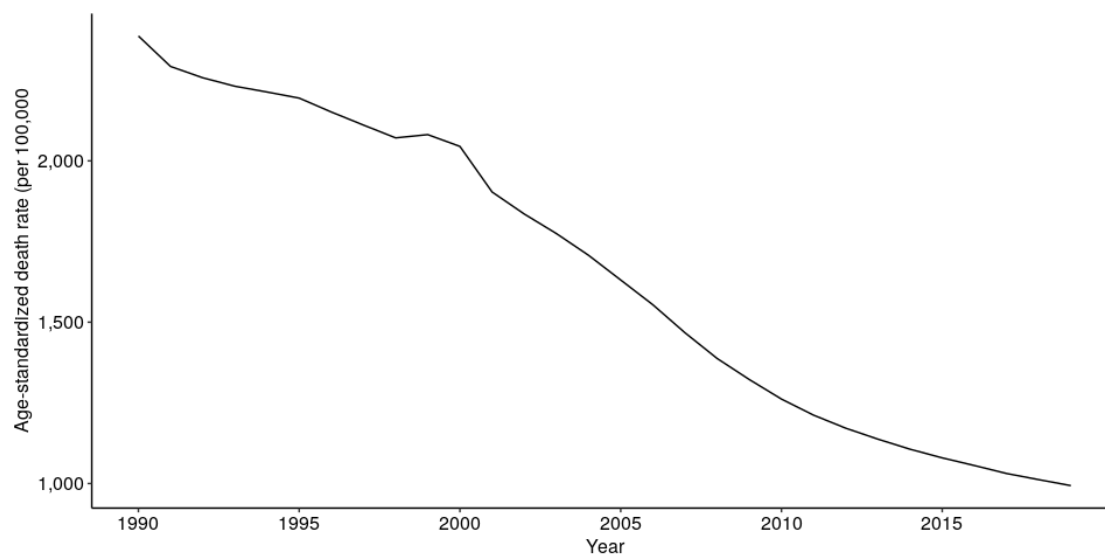
Ethiopia's progress towards achieving the Health Sector Transformation Plan (HSTP) and Sustainable Development Goals (SDGs) can only be monitored and evaluated using updated

indicators. The HSTP indicators are generated from available scarce data. More robust triangulated multiple data are good sources of strong and reliable indicators that can guide and monitor healthcare decision-making, teaching, and research. The BoD unit's efforts to map, archive, and analyse all available health and health-related data and estimate burden of disease are important resources to support the Ethiopian Public Health Institute, the Ministry of Health and partners in health and development. This health atlas presents key results from EPHI and IHME collaborative subnational burden of disease analysis as part of the Global Burden of Disease Study 2019 for of Ethiopia. For additional information, please refer to the [GBD Results Tool](#), the [GBD Compare visualization tool](#), and the [EPHI National Data Management Center website](#). This health atlas focuses on priority diseases measured in terms of death, disability adjusted life years, years lived with disability, years of life lost, life expectancy and health adjusted life expectancy, demographics, and other related measures.

Chapter one: Mortality and Fertility Dynamics

This chapter contains health-related statistics for Ethiopia at the national level and for each of the nine regional states and two city administrations. In this report, the Sidama and South West region was contained within the SNNP regional state. The data include the primary aspects and determinants of health such as basic demographic data, mortality, and sociodemographic and regional disparities, total fertility rate, change in fertility in the last thirty years, life expectancy at birth, and indicators on socio-demographic index. The data presented in maps aims to reveal specific regional patterns and disparities in health indicators across regions. The line chart and bar graph show trends of health and health-related data from **1990** to **2019** for the nation and nine regional states and two city administrations. Average trends for the whole country and important subnational differences in health trends have been given.

Figure 1.1: Trends of all-cause mortality, 1990- 2019



Death and cause-of-death data are scarce in Ethiopia due to the lack of complete death registration systems. Ethiopia has made remarkable progress in the reduction of gross mortality over the last three decades. Since early 2000, many regions in the country have achieved substantial improvement from the loss of premature life. All-cause mortality reduced from about 2,390 per 100,000 persons in 1990 to about 994 per 100,000 persons

in 2019. The three most populous regions, Oromia, Amhara, and SNNP, made considerable progress in the reduction of gross death.

Figure 1.2: Trends of death from all causes by region, age-standardised, 1990-2019

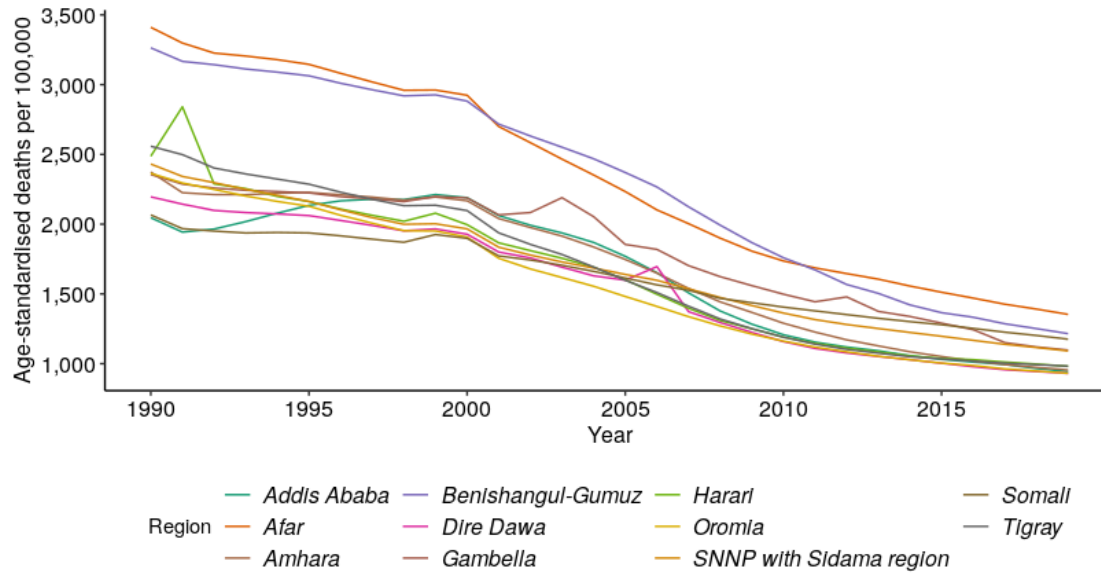
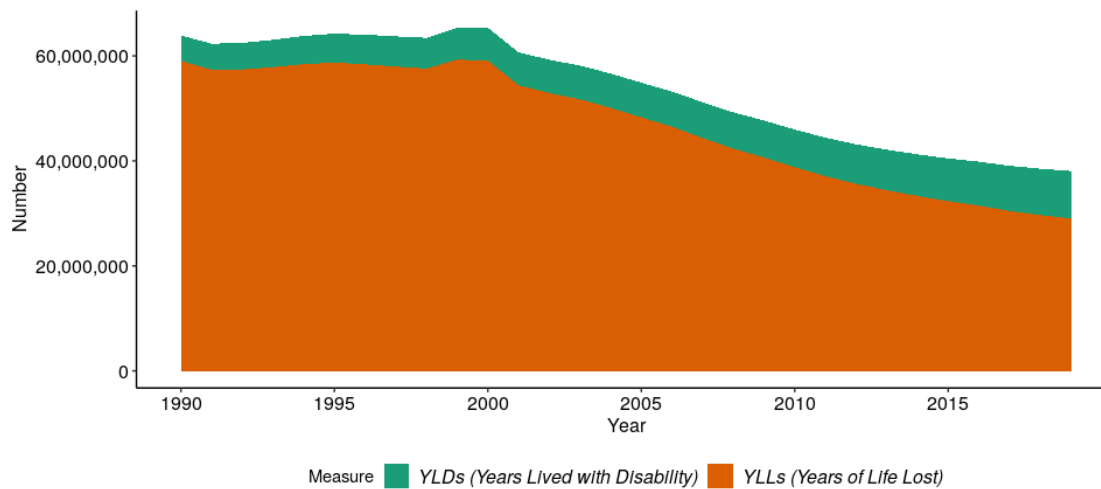
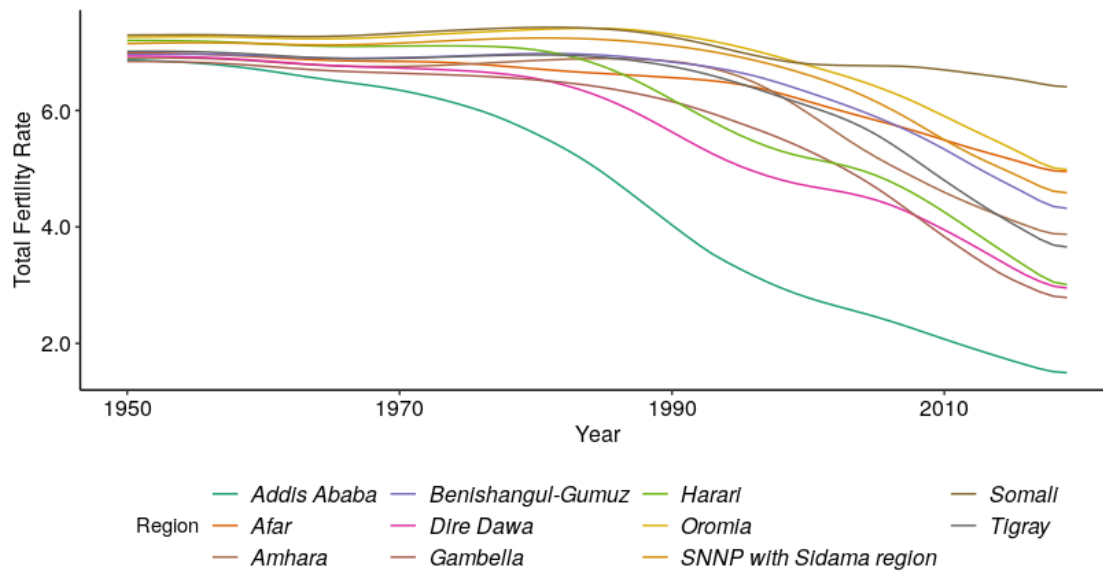


Figure 1.3: Trends in burden of YLLs and YLDs in Ethiopia, 1990- 2019



Health service coverage has improved in the country over the last few decades. As a result, the number of DALYs has significantly reduced from about 60,000,000 DALYs in 1990 to 40,000,000 in 2019.

Figure 1.4: Trends of Total Fertility by states in Ethiopia, 1950-2020

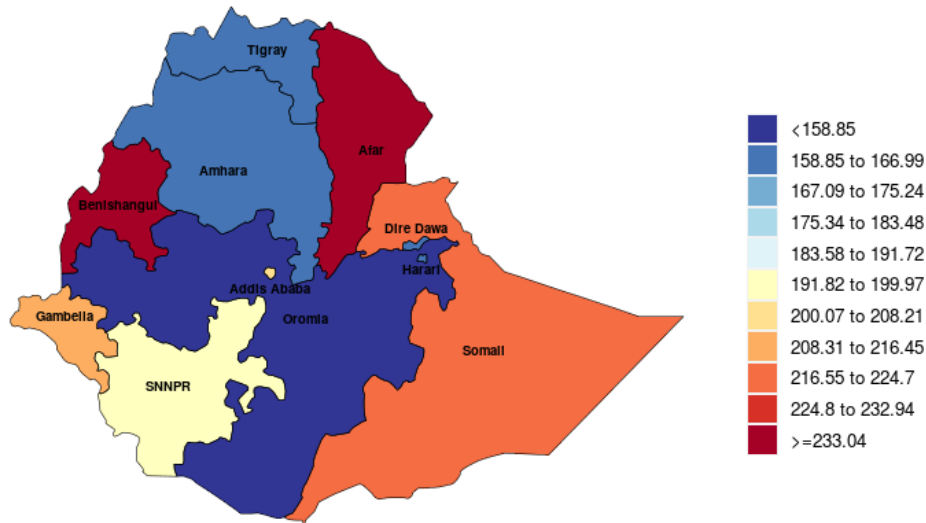


The fertility rate for Ethiopia was **4.43** births per woman in 2019. Improvements in the socio-economic situation and achievements in health coverage contribute to improved health outcomes. Ethiopia has made significant progress towards improving the health of its population, in particular with women and children. Improvement in under-five survival and neonatal survival has been included as a vital priority and target in the Sustainable Development Goal (SDG) agenda. Ethiopia adopted the SDG target for under-five survival in HSTP II. Continued enhancement of health worker productivity and health workforce capacity is necessary for Ethiopia to improve the quality of life for its citizens and increase life expectancy.

1.1 Adult mortality

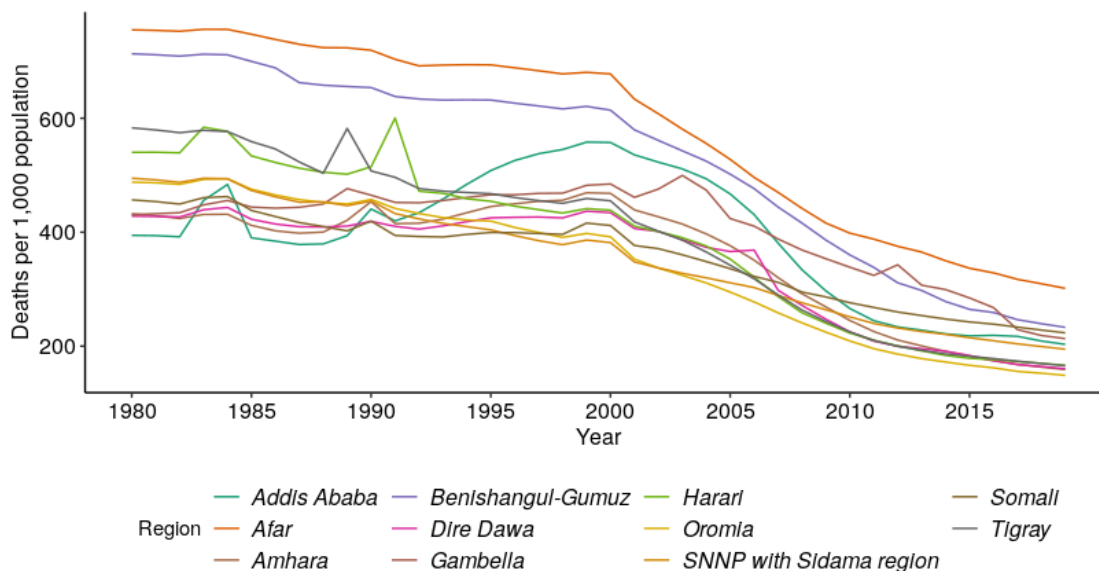
This section aims to describe levels, trends, and patterns of adult mortality in Ethiopia. The **adult mortality rate** refers to the probability of a 15-year-old dying before reaching age 60, if subject to age-specific mortality rates of the specified year between those ages. To date, adult mortality has not been prioritized on the health agenda in Ethiopia. Therefore, there is a shortage of information on the magnitude and causes of adult mortality in the country.

Figure 1.5: Adult mortality rate per 1,000 adult population, 2019



GBD results indicate that all-cause mortality decreased over the last 30 years (Figure 1.1). According to the study, the mortality rate for women decreased from 265 deaths per 1,000 female adults in 2008 to 156 per 1,000 female adults and from 287 deaths per 1,000 male adults in 2018 to 197 per 1,000 male adults in 2018.

Figure 1.6: Adult mortality rate, 1980– 2019

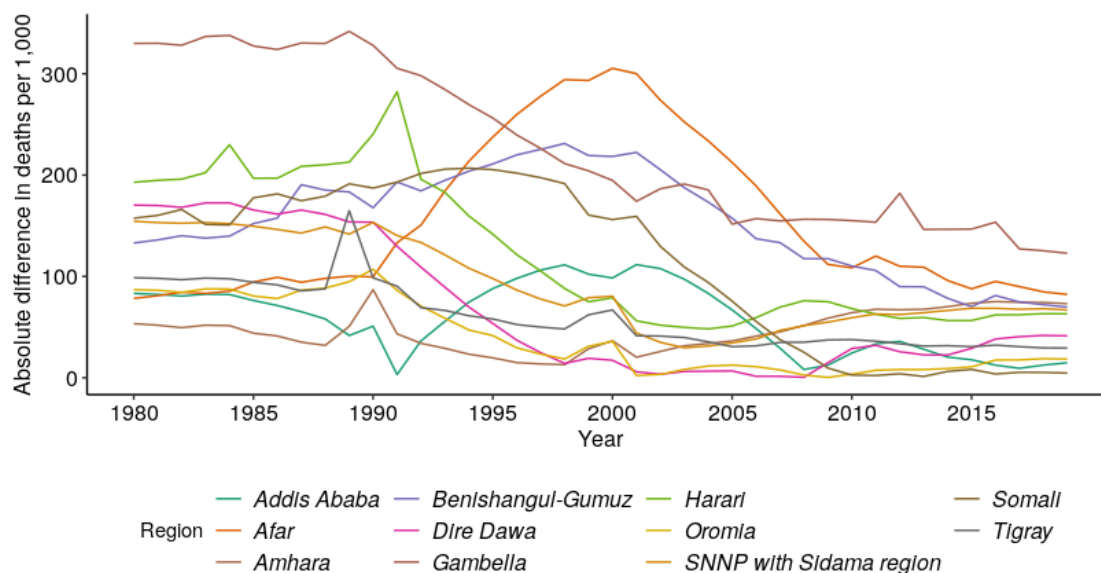


There is clear variation in adult mortality patterns across regional states in the country (Figure 1.5). *Afar* had the highest adult mortality rate in 2019, with **301** deaths per 1,000

adults. *Oromia* and *Amhara* regions had the lowest mortality rates in 2019, at about **149** and **159** deaths per 1,000 adults, respectively.

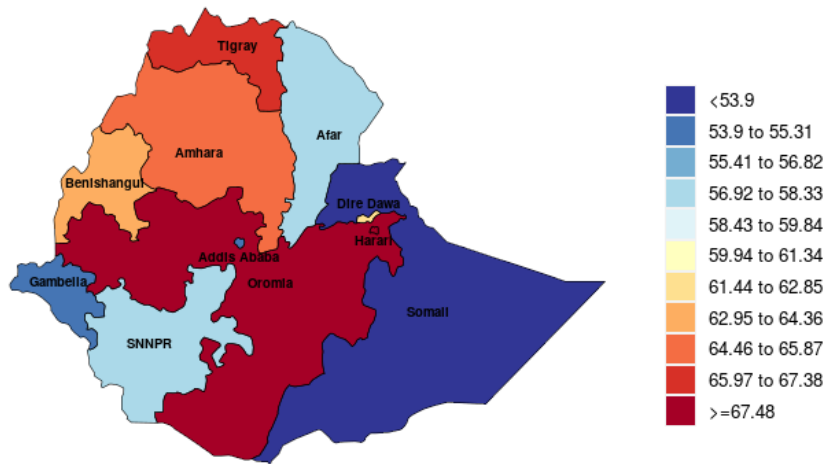
Adult mortality was very high and stagnant before 2000, when it started to decrease steadily in all regions in Ethiopia. *Afar* and *Benishangul-Gumuz* have the highest mortality rates whereas *Oromia* and *Amhara* have the lowest mortality rates.

Figure 1.7: Difference between female and male probability of death by time (1980–2019), ages 15-60



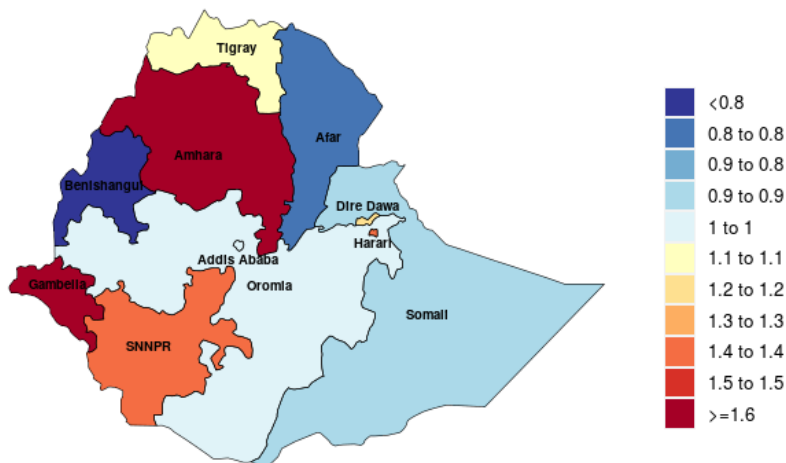
To date much is unknown about gender differentials in adult mortality. The GBD data indicates that adult mortality is lower in women. However, the pattern of difference by sex is heterogeneous over time and by region. Before 2000, there were large differences in the probability of death. The emerging regions have large differences in the probability of death. *Somali* and *Addis Ababa* have the lowest differences in male to female probability of death. Conversely, high maternal mortality in the country has affected differences in adult mortality.

Figure 1.8: Adult mortality percent change, 1990--2019



From 1990-2019, Ethiopia regions exhibited **47%** to **68%** decreases in adult mortality. *Harari* and *Oromia* regions had the highest percent change in adult mortality whereas the *Somali* and *Addis Ababa* regions had the lowest percent change.

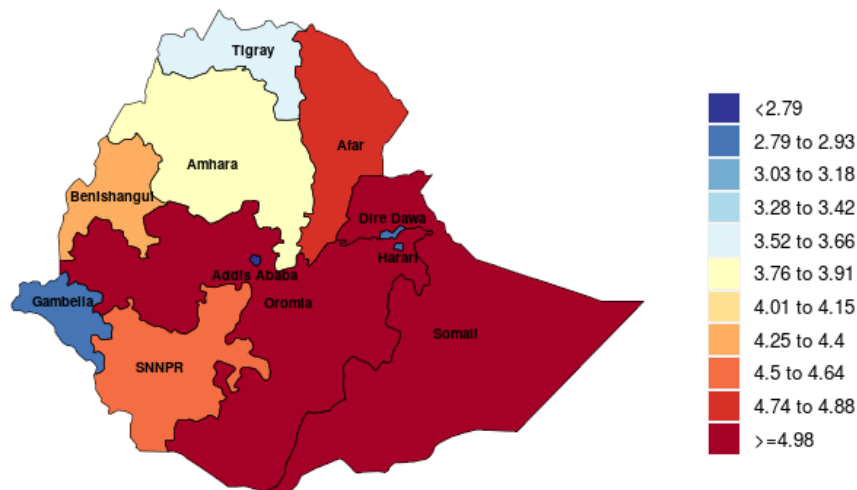
Figure 1.9: Male/female ratio of probability of death, 2019



The map reveals male/female differences in mortality rates in regions in Ethiopia. Generally, males have a greater probability of death in Ethiopia; there is significant inconsistency across regions in sex differences in probability of death. In *Benishangul-Gumuz* and *Afar* males do better, which in *Gambella* and *Amhara* males do worse. In *Somali* and *Oromia* there was no considerable sex difference in probability of death.

1.2 Total Fertility rate

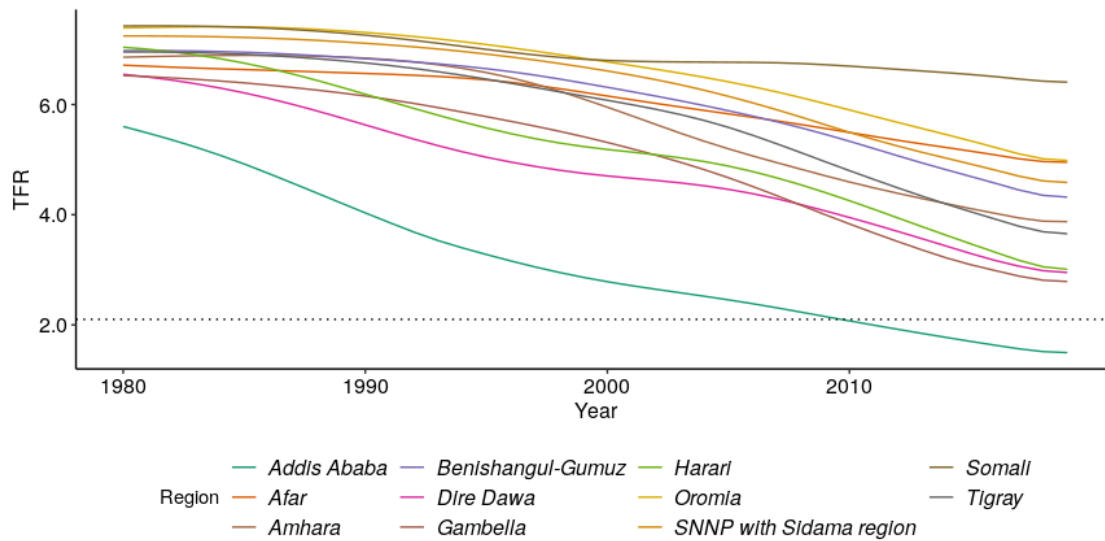
Figure 1.10: Total fertility rate, 2019



The map presents the **total fertility rate** (births per woman) in Ethiopia. The *Somali* region has the highest total fertility rate at **6.4** children per woman in 2019, followed by *Oromia* region, which has a total fertility of **5** children per woman. *Addis Ababa*, *Gambella* and *Dire Dawa* have the lowest total fertility, at about **3** children per woman.

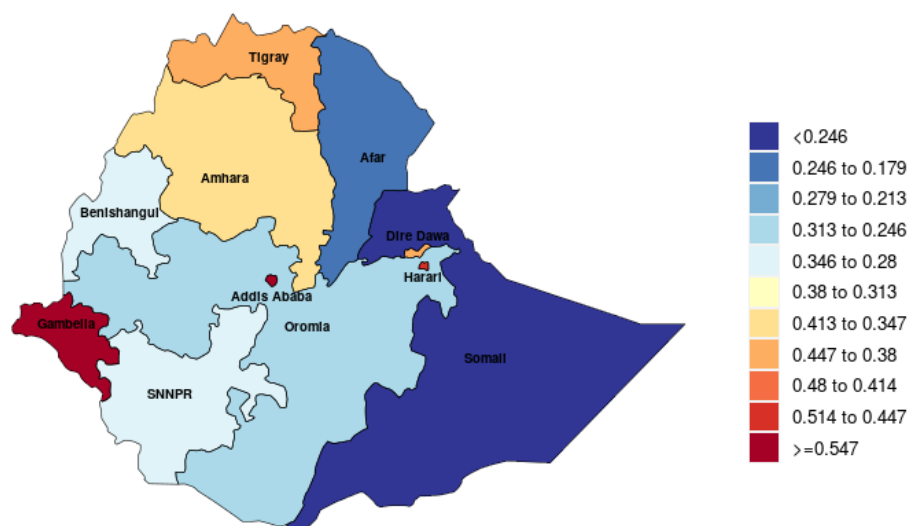
Overall, more urbanised regions have a relatively lower estimated TFR in GBD 2019, as compared to the national estimate references, whereas less urbanized regions such as *Somali*, *Oromia* and *Afar* have higher TFR estimates.

Figure 1.11: Total fertility rate, 1980-2019



The graph presents fertility trends and the magnitude of interregional differentials in fertility in Ethiopia. Total fertility declined from **7.1** births per woman in the 1980 to **4.4** births per woman in 2019. Overall fertility has declined in every region since 1980. The greatest decline was in *Addis Ababa*, from **5.6** children per woman in 1980 to less than replacement level in 2019. *Somali*, *Afar*, and *Oromia* showed the least change in fertility over the last 40 years.

Figure 1.12: Total fertility rate percent change, 1990–2019



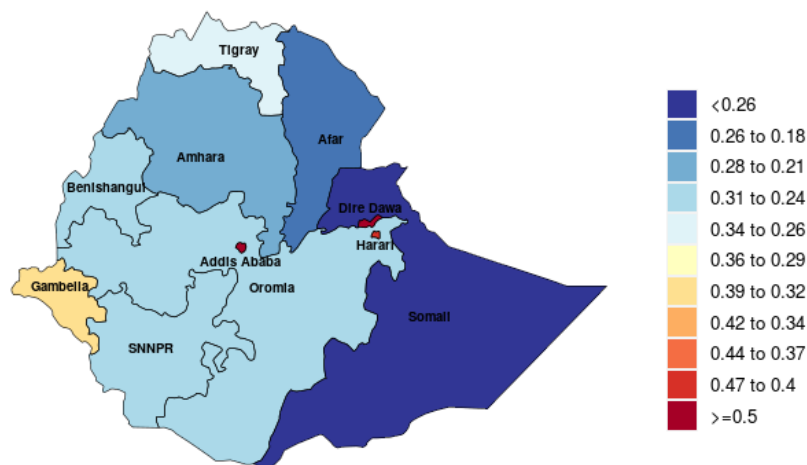
Total fertility decreased in all regions in Ethiopia from 1990 to 2019. The fastest decrease in fertility was recorded in *Addis Ababa* and *Gambella* by **63%** and **55%** respectively, whereas the slowest change was a **12%** decrease recorded in *Somali* region.

1.3 Socio-demographic index

Socio-demographic index (SDI) is a composite measure that identifies where countries or other geographic areas are found on the spectrum of development. According to the GBD study, SDI is based on average income per person, educational attainment, and total fertility rate (*TFR*). SDI is a composite average of the rankings of the incomes per capita, average educational attainment, and fertility rates of all areas in the GBD study. SDI contains an interpretable scale from 0 to 1, where zero represents the lowest income per capita, lowest educational attainment, and highest TFR observed across geographic areas, and one represents the highest income per capita, highest educational attainment, and lowest TFR.

Ethiopia is one of the least developed countries in terms of economy, and literacy also has a limited coverage. According to EDHS 2016, about half of women (**48%**) and **28%** of men aged 15-49 have no education. As a result, Ethiopia is amongst the countries with the lowest SDI globally.

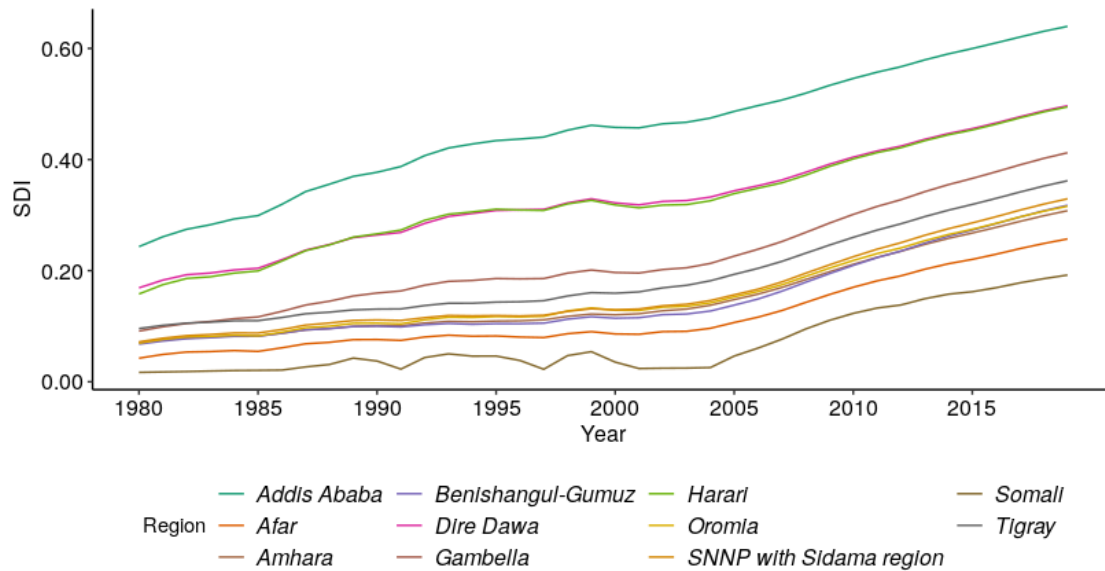
Figure 1.13: Socio-demographic index, Ethiopia, 2019



Addis Ababa has the highest SDI at **0.6**, followed by *Dire Dawa* and *Harari*. *Somali* has the lowest SDI at **0.2**, followed by *Afar* at **0.26**. This is not a surprise as the fertility rate and

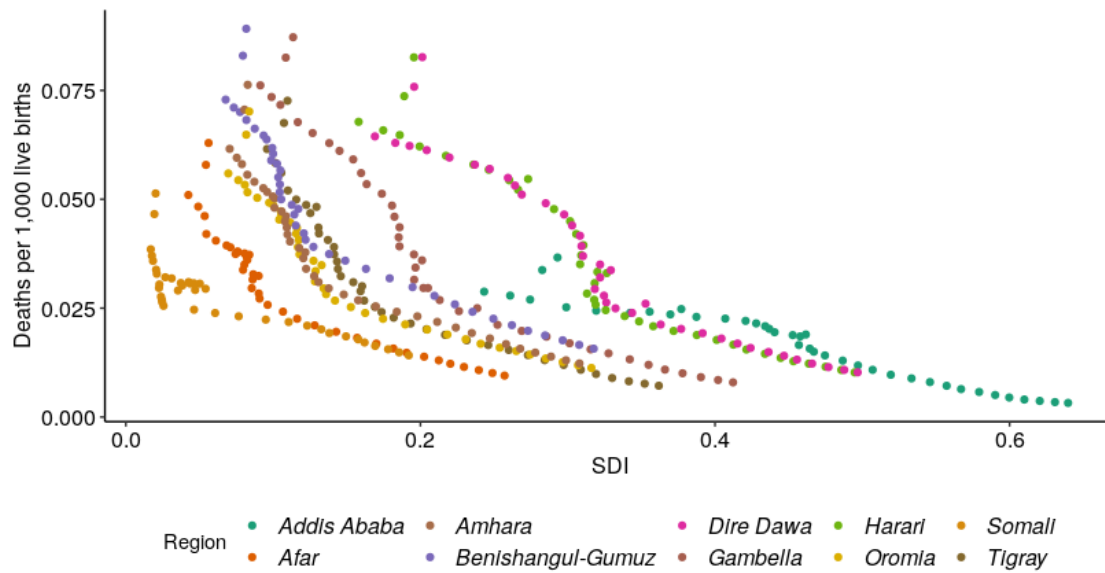
educational attainment varies by residence and across each region [2, 4]. For instance, women in rural areas have an average of **5.2** children, as compared to **2.3** children among women in urban areas in 2016. Fertility was lowest in *Addis Ababa* (**1.5** children per woman).

Figure 1.14: Socio-demographic index, 1980-2019



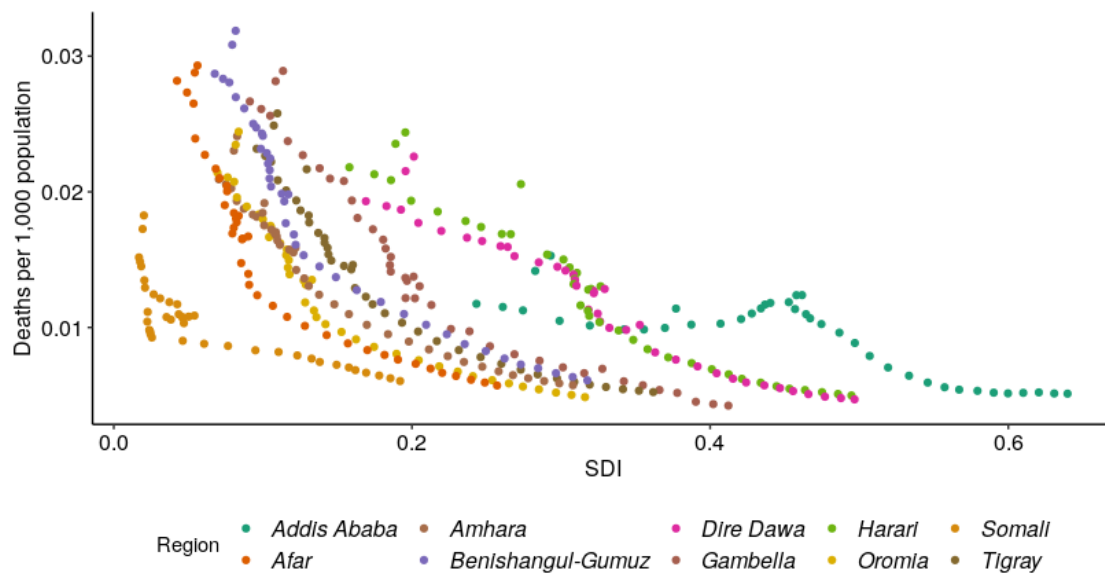
SDI improved throughout the nation over the last half century. The SDI of Ethiopia increased steadily from **0.09** in 1980 to **0.3** in 2019. The highest incremental improvement of SDI was recorded in *Addis Ababa*, *Harari* and *Dire Dawa* between 1950 and 2019. *Somali*, *Afar* and *Amhara* regions have the slowest improvement in SDI. The fastest improvement in SDI was recorded in all regions after 2000.

Figure 1.15: Socio-demographic index and child mortality, 1980-2019



A high socio-demographic index is correlated with low child mortality in Ethiopia. As SDI improves, child mortality decreases. Regions with high SDI such as *Addis Ababa*, *Dire Dawa*, and *Harari* have a relatively low child mortality rate whereas regions with low SDI such as *Somali* and *Afar* have high child mortality.

Figure 1.16: Socio-demographic index and adult mortality, 1980-2019



As presented in **Figure 1.16** there is no clear relationship between SDI and adult mortality. Regions with low SDI such as *Somali* and *Afar* have a low adult mortality rate as compared with *Addis Ababa*, which has a high SDI.

Chapter two: Causes of death and disability

This chapter quantifies death and disability in terms of disability adjusted life years (*DALYs*), years of life lost (*YLLs*) and years lived with disability (*YLDs*) attributable to maternal and child malnutrition, high systolic blood pressure, air pollution and poor diet in Ethiopia.

On the World Health Organization (WHO) website, it is clearly stated that mortality alone does not give a complete picture of the burden of disease borne by individuals in different population group. DALYs are a summary measure used to give an indication of overall burden of disease. One DALY represents the loss of the equivalent of one year of full health. Using DALYs, the burden of diseases that cause premature death but little disability (such as drowning or measles) can be compared to that of diseases that do not cause death but do cause disability (such as cataract causing blindness).

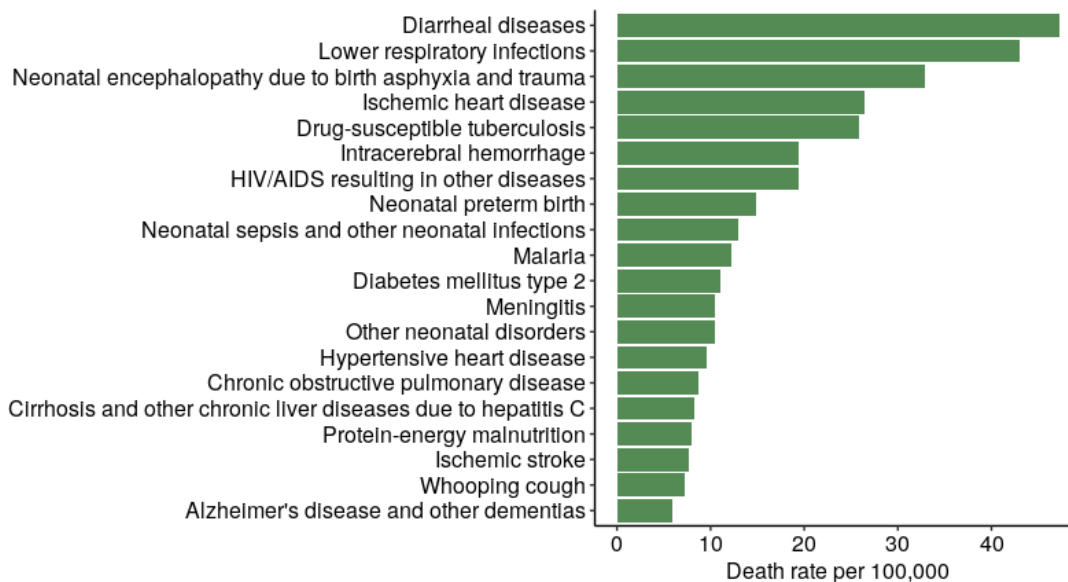
As a result of multi-sectoral interventions, the burden of disease, stated in DALYs per 1000 population, has decreased in the last two decades in Africa. The continent, however, still bears the highest burden. Worldwide, a disproportionate proportion of DALYs are caused by communicable, maternal, neonatal, and nutritional causes. The African region has a strikingly high proportion (**61%**) of DALYs due to communicable, maternal, neonatal, and nutritional causes compared to other regions.

2.1 Causes of Death

The leading causes of death, in order of total number of lives lost, are mainly associated with communicable and maternal disorders, non-communicable such as cardiovascular (*ischaemic heart disease, stroke*), respiratory (*chronic obstructive pulmonary disease, lower respiratory infections*), injuries and neonatal disorders that include *birth asphyxia, encephalopathy, and birth trauma, neonatal sepsis and infections, and preterm birth complications*. According to a study in Ethiopia, the top five leading causes of premature loss

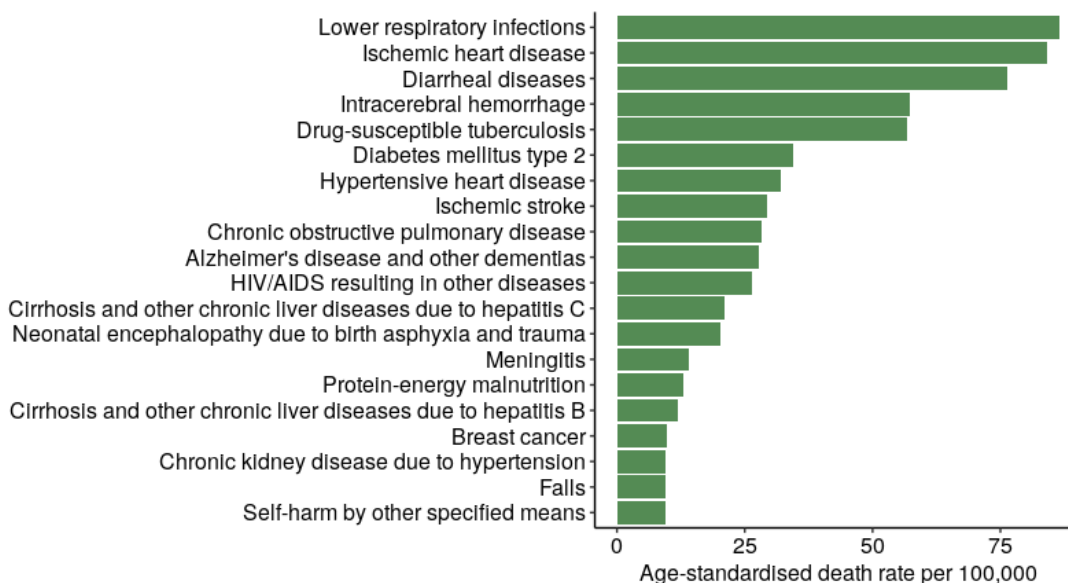
of life in 2015 were *lower respiratory infections, tuberculosis, diarrheal disease, ischemic heart disease, and HIV/AIDS* [5].

Figure 2.1: The top twenty leading causes of death in Ethiopia, all ages, 2019



The chart presents an estimation of the top twenty specific leading causes of death regardless of age and sex. *Diarrheal diseases, Lower respiratory infections, and Neonatal encephalopathy due to birth asphyxia and trauma* were the top three causes of death.

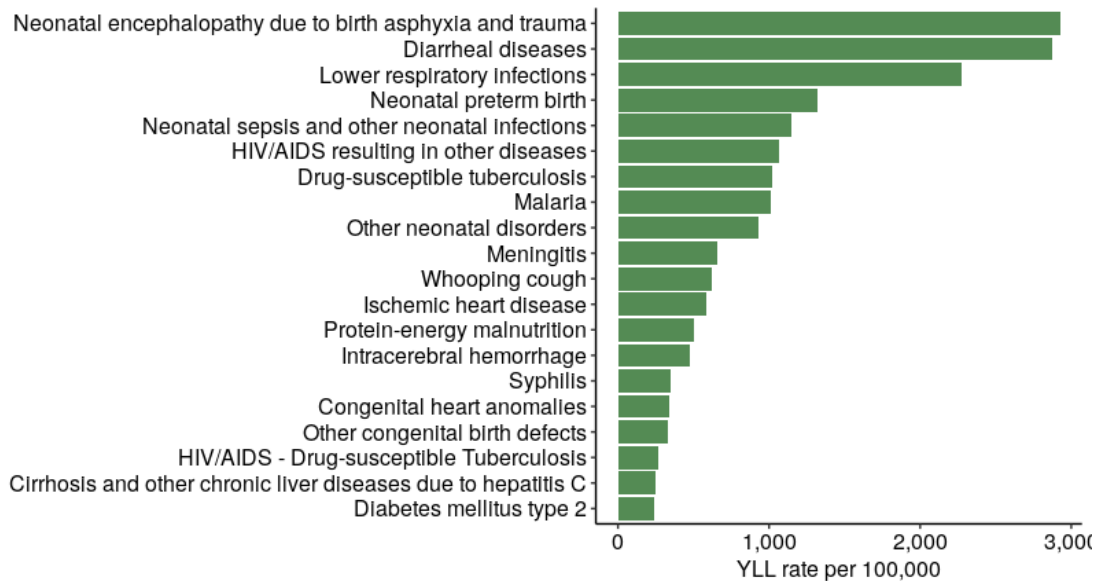
Figure 2.2: The age-standardised top twenty causes of death in Ethiopia, 2019



The above figure presents an estimation of the age-standardized top twenty leading causes of death in Ethiopia. *Lower respiratory infections, ischemic heart disease* and *Diarrheal diseases* are the leading causes in Ethiopia.

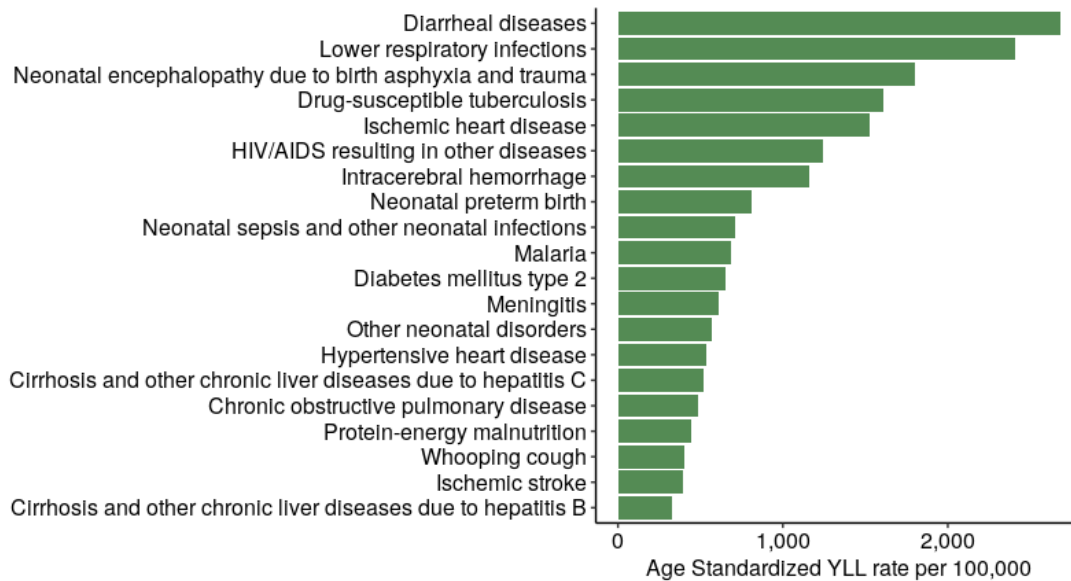
2.2 Causes of premature mortality

Figure 2.3: The top twenty causes of premature loss of life in Ethiopia, all ages, 2019



The figure above presents an estimation of the top twenty diseases that results in a year of life lost (YLLs). *Neonatal encephalopathy due to birth asphyxia and trauma, Diarrheal diseases* and *Lower respiratory infections* cause the most YLLs.

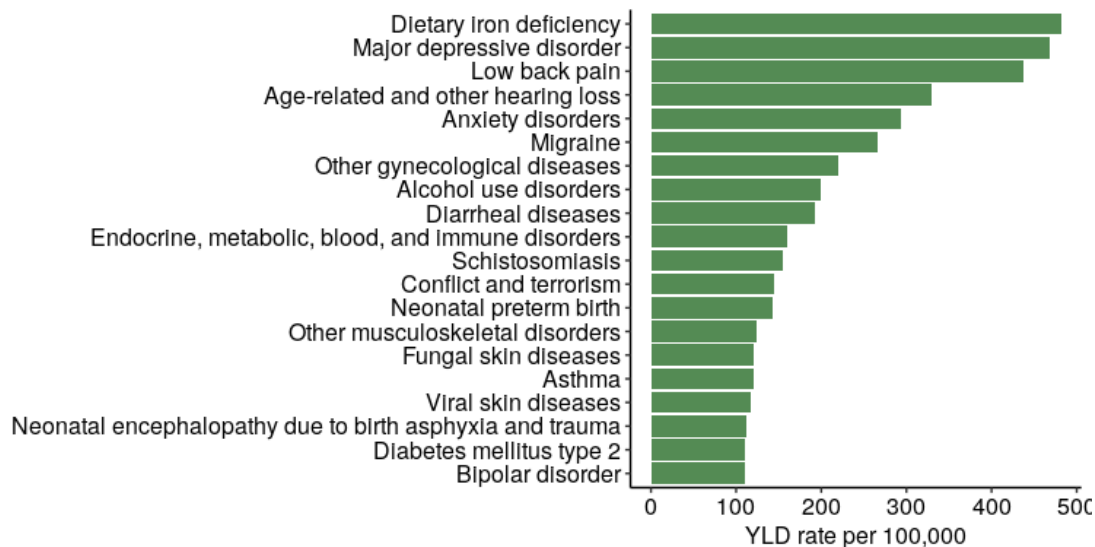
Figure 2.4: Top twenty causes of age-standardized YLLs in Ethiopia, 2019



The chart presents an estimation of age-standardised leading causes of disease that result in a premature life lost. *Diarrheal diseases*, *Lower respiratory infections*, and *Neonatal encephalopathy due to birth asphyxia and trauma* caused the most YLLs.

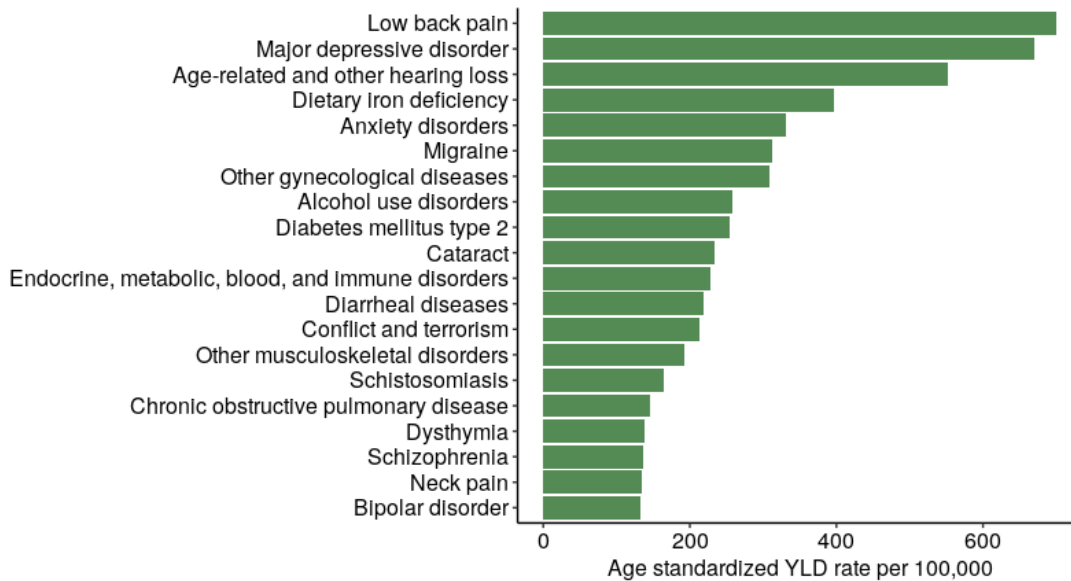
2.3 Causes of disability

Figure 2.5: Top twenty causes of YLDs in Ethiopia, all ages, 2019



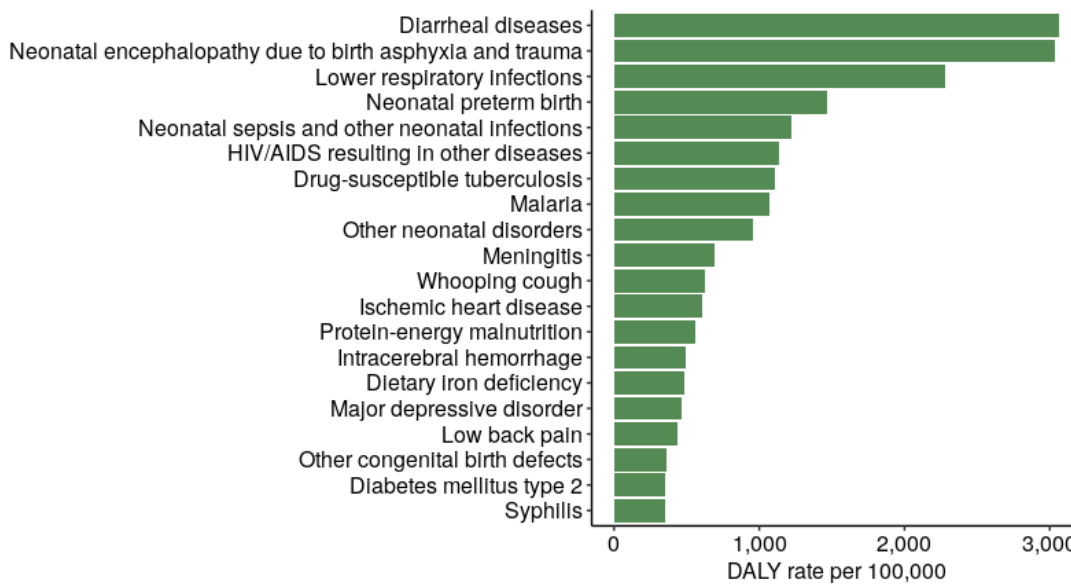
The chart presents an estimation of all-age leading causes of YLDs. *Dietary iron deficiency*, *Major depressive disorder*, and *Low back pain* caused the most YLLs.

Figure 2.6: Age-standardised leading causes of years lived with disability in Ethiopia, 2019



This figure presents the leading causes of age-standardised years lived with disability (YLDs) rates regardless of sex and location in Ethiopia. *Low back pain*, *Major depressive disorder* and *Age-related and other hearing loss* contribute the first-, second- and third-leading age-standardised YLD rates in Ethiopia.

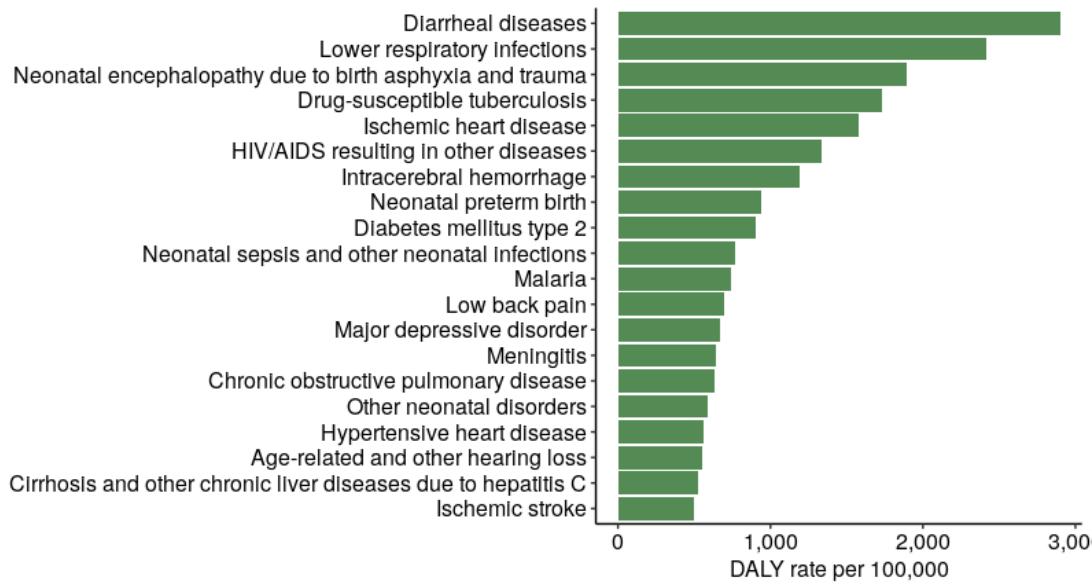
Figure 2.7: The twenty-leading causes of DALYs in Ethiopia, 2019



The graph presents the twenty most important drivers of increasing burden in number of disability-adjusted life-years (DALYs) in Ethiopia. In 2019, *Diarrheal diseases*, *Neonatal*

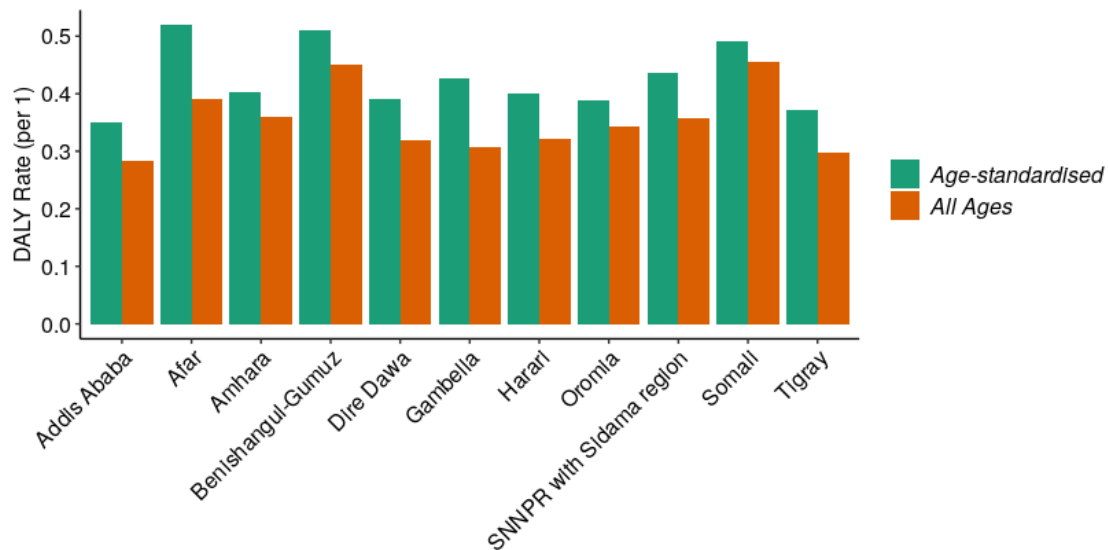
encephalopathy due to birth asphyxia and trauma, and *Lower respiratory infections* were the top three drivers of DALYs.

Figure 2.8: Age-standardised twenty leading causes of DALYs in Ethiopia, 2019



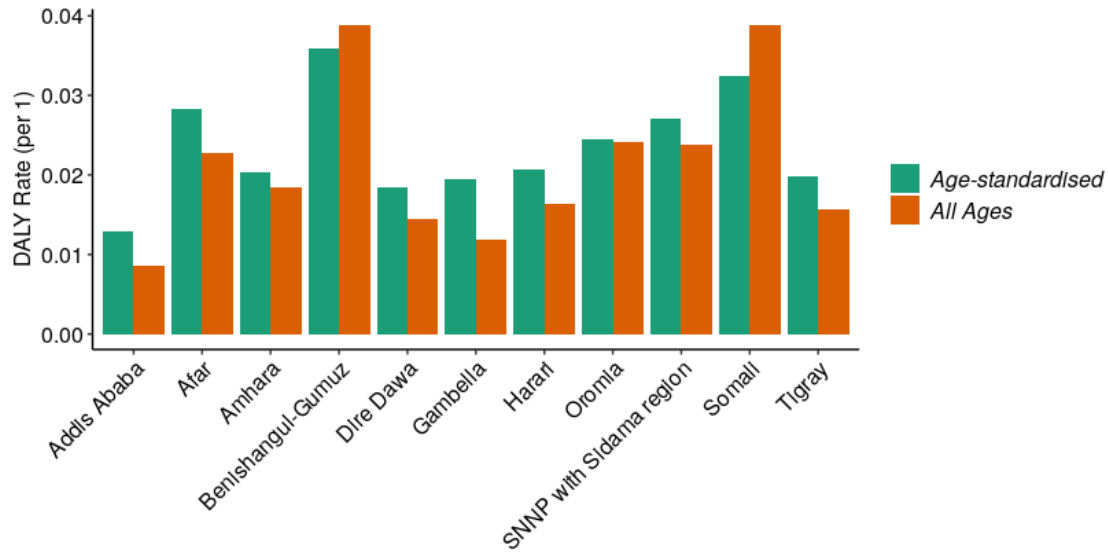
The figure shows the age-standardised twenty leading drivers of DALYs in Ethiopia. In 2019, *Diarrheal diseases*, *Lower respiratory infections*, and *Neonatal encephalopathy due to birth asphyxia and trauma* were the top three drivers of age-standardised DALYs in Ethiopia.

Figure 2.9 Age-standardised leading causes of disability adjusted life years in Ethiopia, 2019



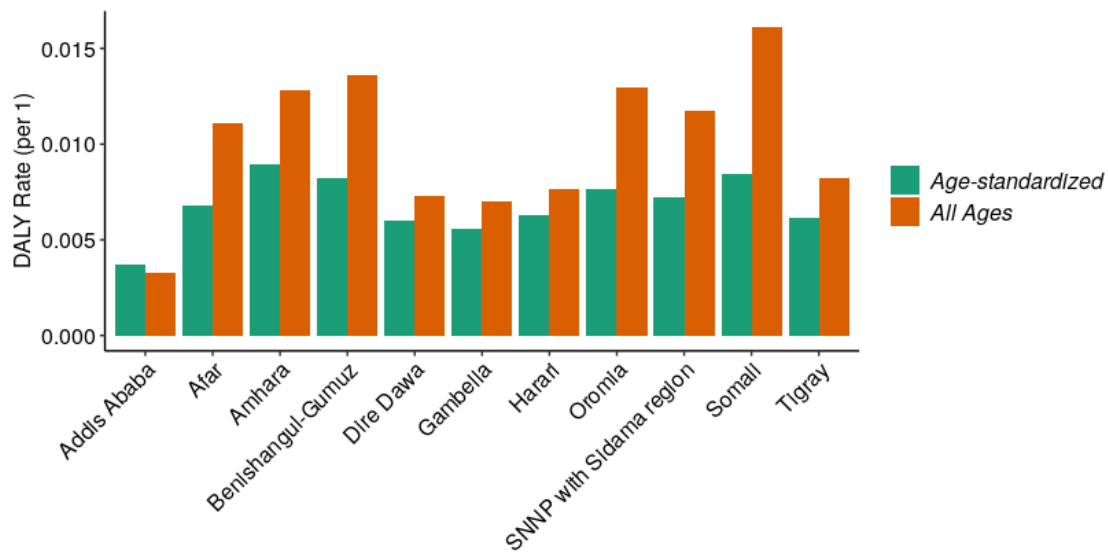
This figure shows the magnitude of age-standardised and all-age DALY rates per 100,000 individuals from all causes, both sexes by regions in Ethiopia. *Benishangul-Gumuz, Somali, and Afar* regions have the highest burden of DALYs.

Figure 2.10: The burden of lower respiratory disease by regions in Ethiopia, 2019



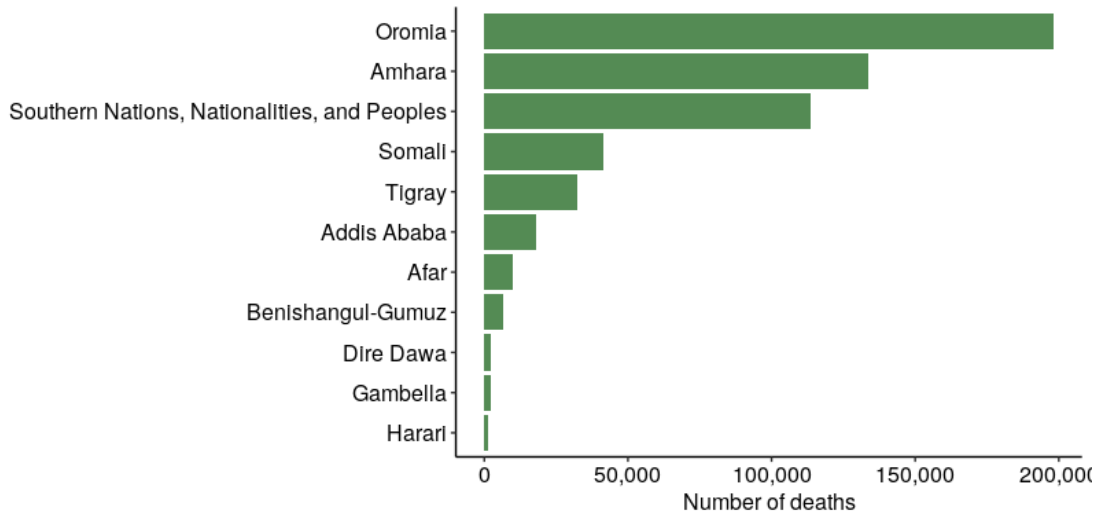
This figure shows the magnitude of age standardised and all-age DALYs rates from lower respiratory infection, both sexes by regions in Ethiopia. *Benishangul-Gumuz, Somali, and Afar* have the highest burden of DALYs associated with lower respiratory infection.

Figure 2.11: The burden of neonatal sepsis by regions in Ethiopia, 2019



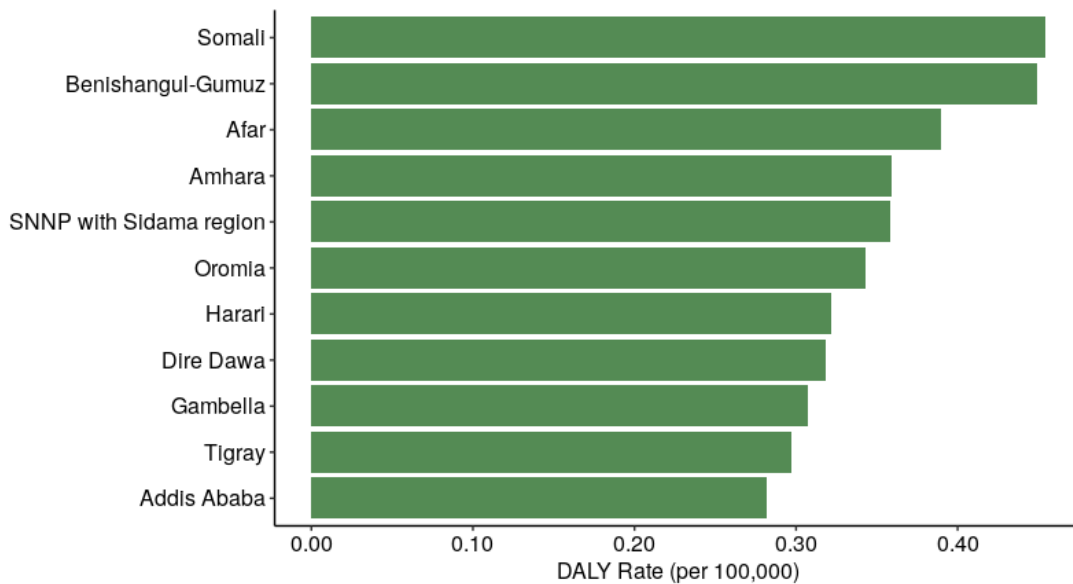
This figure shows the magnitude of age-standardised and all-age DALYs rates from neonatal sepsis, both sexes by regions in Ethiopia. *Somali, Benishangul-Gumuz* and *Amhara* have the highest burden of DALYs associated with neonatal sepsis.

Figure 2.12: The burden of death by regions in Ethiopia, 2019



All-age counts of deaths for all causes show that *Oromia, Amhara* and *SNNP with Sidama region* have the highest number of deaths in Ethiopia

Figure 2.13: The burden of DALYs by regions in Ethiopia, all ages, 2019



All-age both-sex DALY rates per 100,000 individuals for all causes show that *Somali, Benishangul-Gumuz* and *Afar* regions have the highest DALY rates in Ethiopia.

Figure 2.14: The burden of age-standardized DALYs by regions in Ethiopia, 2019

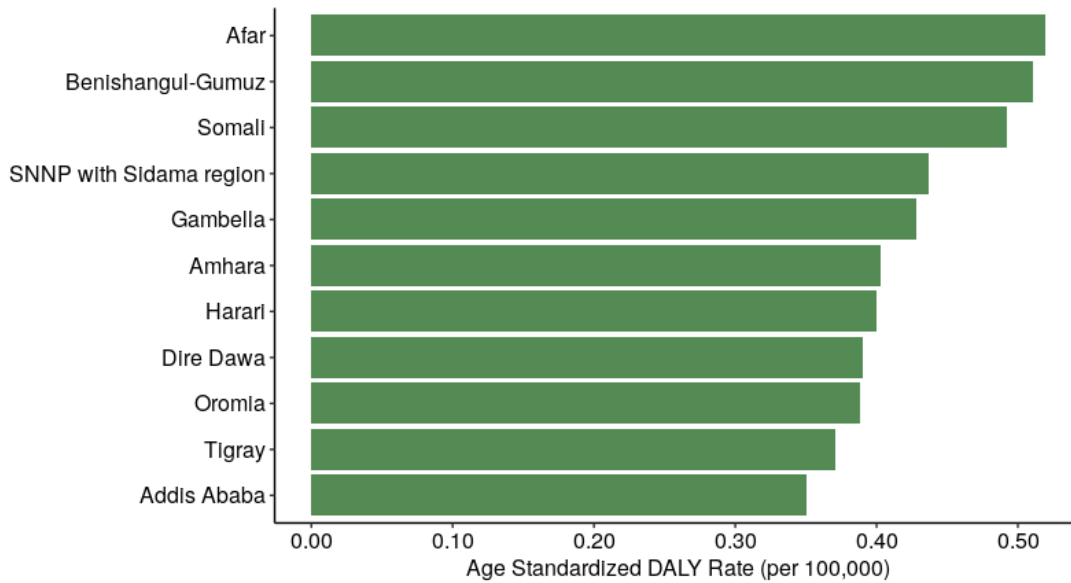
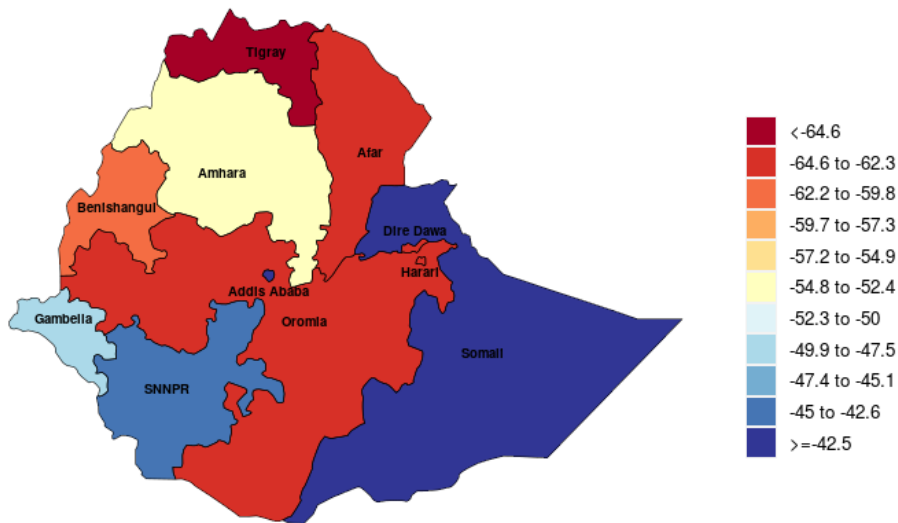
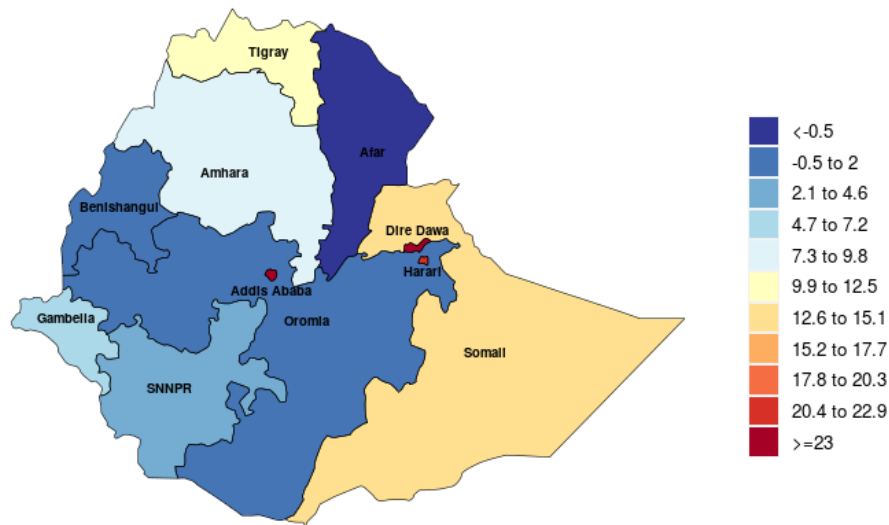


Figure 2.15: Percent change in DALYS of self-harm, 1990 – 2019 (%)



DALYs of self-harm decreased throughout the country at least by one point annually since 1990. *Tigray*, *Harari*, and *Dire Dawa* have high annualized rates of change in self-harm DALYs, whereas *Somali* has the smallest percent change.

Figure 2.17: Percent change in DALYS of low back pain, 1990 – 2019 (%)



DALYs of low back pain increased substantially throughout the country annually since 1990. *Addis Ababa*, *Dire Dawa*, *Harari*, and *Harari* have high annualized rates of change in low back pain DALYs, whereas *Afar* has the lowest percent change.

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.

Chapter three: Risk factors attributable mortality and disability

Attributable risk (AR) is the portion of an outcome rate attributable to the exposure factor in the epidemiologic context. In the clinical context, it is the portion of the correct diagnosis rate attributable to a positive result or the portion of the beneficial outcome rate attributable to a treatment. It allows us to quantify the added risk imposed by factors a particular population is exposed to and improves our understanding of public health by identifying the main drivers of poor health.

This chapter quantifies premature death and disability in terms of DALYs, YLLs and YLDs attributable to maternal and child malnutrition, high systolic blood pressure, and air pollution and poor diet in Ethiopia.

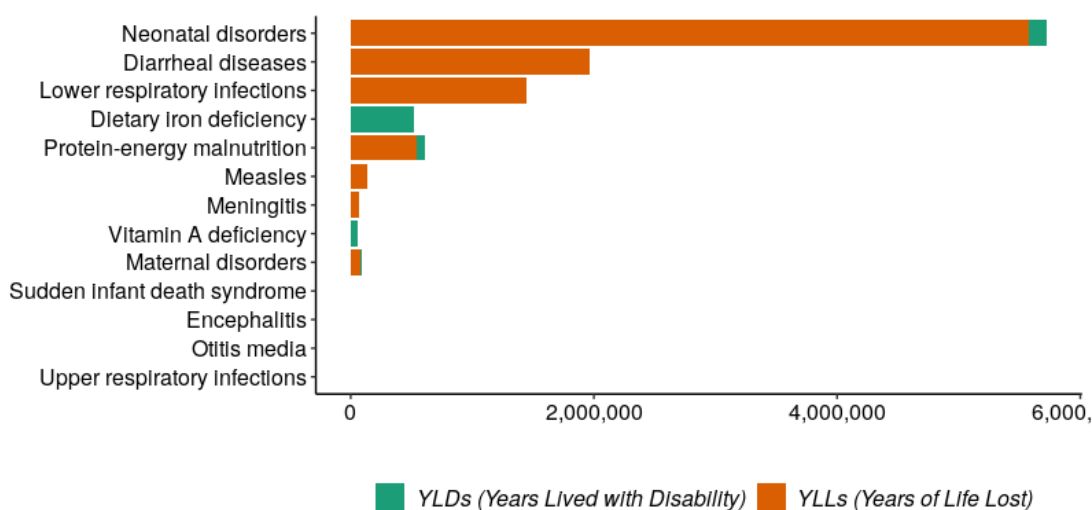
Child and maternal malnutrition

According to the GBD 2019 study, DALYs, YLLs and YLDs attributable to child and maternal malnutrition bore a significant burden of death and disability in Ethiopia. The child and maternal malnutrition risk factors in GBD comprise low birth weight and short gestation, child growth failure, suboptimal breastfeeding, and micronutrient deficiencies. *Low birth weight and short gestation* includes low birth weight for gestation and short gestation for birth weight. *Child growth failure* includes child stunting, child wasting, and child underweight. *Suboptimal breastfeeding* includes non-exclusive breastfeeding and discontinued breastfeeding, and *micronutrient deficiencies* include iron, vitamin A, and zinc deficiencies.

Ethiopia has one of the world's highest child and maternal death and disability rates, attributable years of life lost due to premature mortality (YLLs), years of life lived with any short-term or long-term health loss (YLDs) and a noticeably high cumulative sum of years lost due to YLLs and YLDs (DALYs).

Innovative nutritional intervention to prevent stunting and promote proper growth of the mother from conception through infancy to adulthood is important to prevent adverse outcomes of pregnancy and improve child survival [6-7].

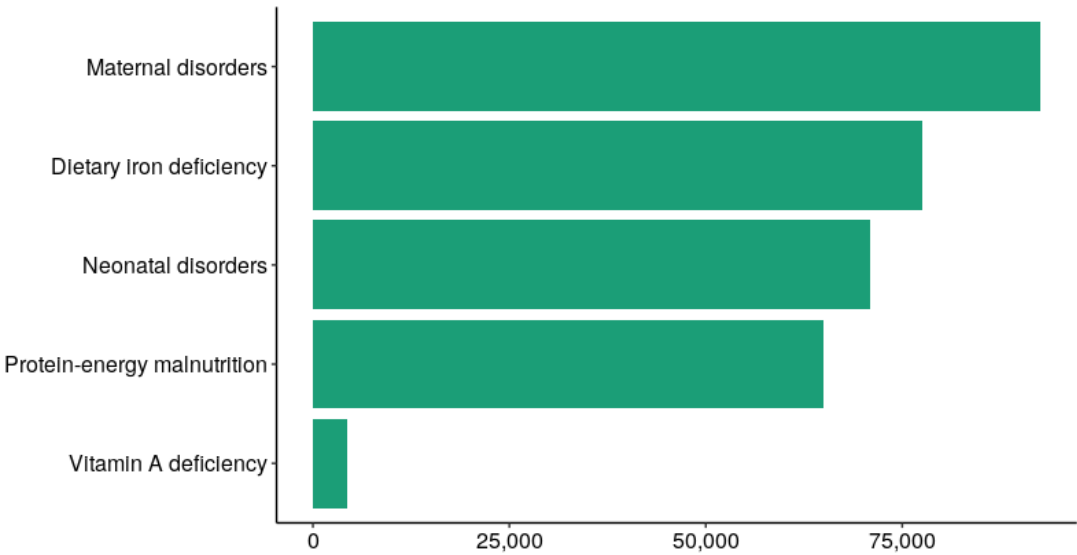
Figure 3.1: YLLs and YLDs attributable to child and maternal malnutrition in Ethiopia, both sexes, all ages, 2019



The chart shows the thirteen leading diseases attributable years of life lost (YLLs) and years lived with disability (YLDs) due to child and maternal malnutrition in Ethiopia, both sexes, all ages in 2019. *Dietary iron deficiency*, *Neonatal disorders* and *Protein-energy malnutrition* are the top three leading contributors to YLDs due to child and maternal malnutrition in Ethiopia, whereas *Neonatal disorders*, *Diarrheal diseases* and *Lower respiratory infections* are the leading cause of YLLs due to child and maternal malnutrition in Ethiopia.

Estimated attributable disability-adjusted life-years (DALYs), deaths, YLDs and YLLs for risk factors of child and maternal malnutrition in Ethiopia are considerably high. About **28%** of total DALYs, **20%** of deaths, and **34%** of YLLs in Ethiopia are attributable to child and maternal malnutrition. Child and maternal malnutrition cause a total of 10,600,000 DALYs, 114,000 deaths, 9,810,000 YLLs and 818,000 YLDs.

Figure 3.2: DALYs attributable to child and maternal malnutrition in Ethiopia, both sexes, ages 15 to 64, 2019

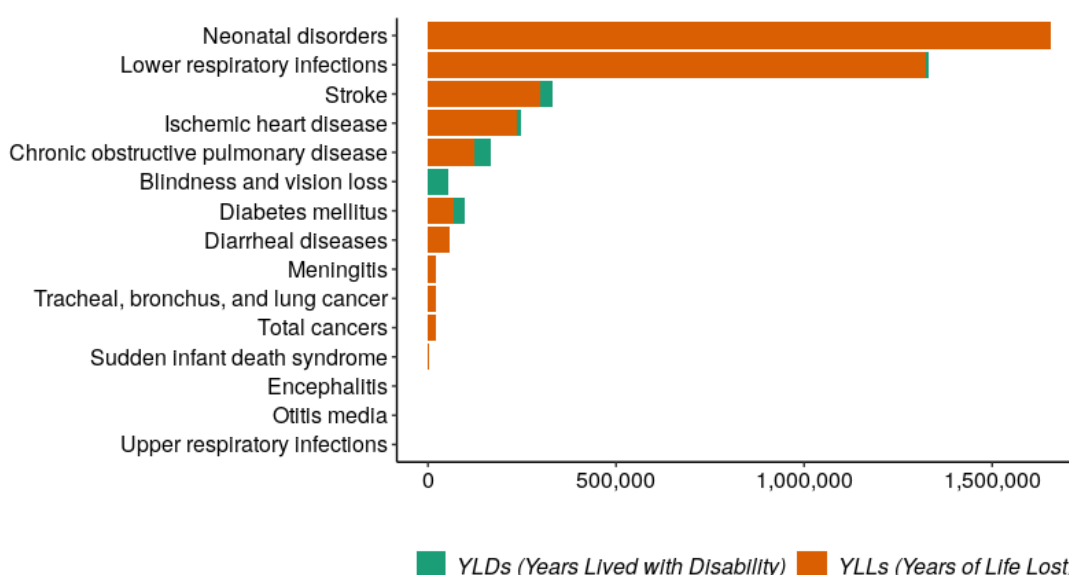


Of the thirteen leading disease attributable DALYs due to child and maternal malnutrition in Ethiopia for both sexes, ages 15 to 64 in 2019, *Maternal disorders*, *Dietary iron deficiency*, *Neonatal disorders*, and *Protein-energy malnutrition* are the leading causes of DALYs.

Air pollution

Air pollution mainly includes ambient particulate matter pollution and household air pollution [8-11]. The major sources of ambient particulate matter pollution vary in industrialized and agrarian countries [8, 9]. Coal burning, industry emissions, construction activity, transport vehicles, waste burning, and diesel generators are the major sources of air pollution [8-10]. Estimated attributable DALYs, deaths, YLDs and YLLs for risk factors of air pollution in Ethiopia are very high. About **10%** of DALYs, **14%** of deaths, and **13%** of YLLs in Ethiopia are attributable to air pollution. Air pollution causes 4,000,000 DALYs, 77,000 deaths, 176,000 YLDs and 3,800,000 YLLs in Ethiopia.

Figure 3.3: YLLs and YLDs attributable to air pollution in Ethiopia, both sexes, all ages, 2019



Of the leading diseases with DALYs attributable due to air pollution in Ethiopia for both sexes, all ages in 2019, *Neonatal disorders*, *Lower respiratory infections* and *Stroke* are the leading causes of YLLs due to air pollution in Ethiopia. In contrast, *Blindness and vision loss*, *Chronic obstructive pulmonary disease* and *Diabetes mellitus* are the top three leading causes of YLDs attributable to air pollution.

According to a study conducted by Sanbata et al, an estimated 95% of the population in Ethiopia uses traditional biomass fuels, such as wood, dung, charcoal, or crop residues, to meet household energy needs [12]. In line with this, the Ethiopian Demographic and Health

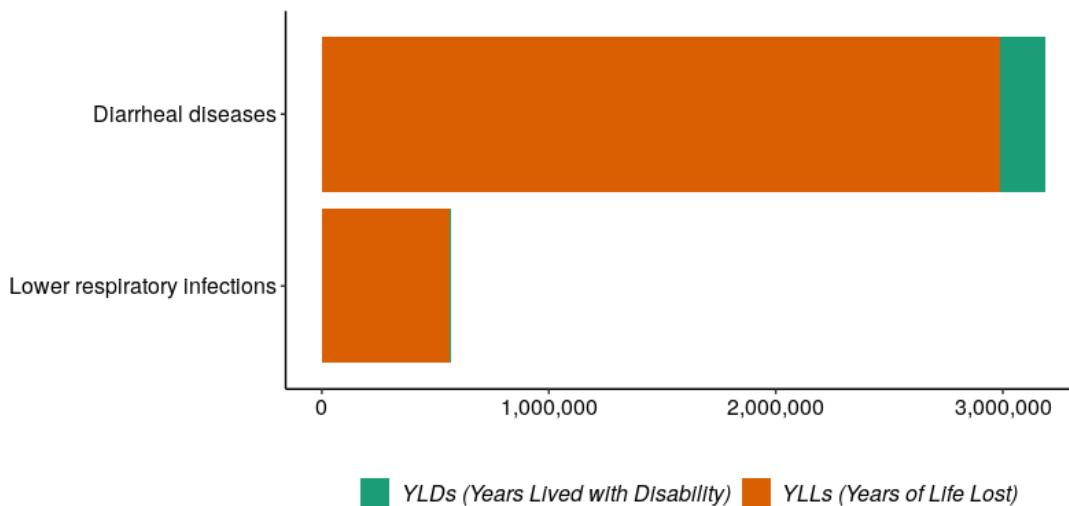
Survey revealed that only 8% of rural households have electricity access in Ethiopia [4]. As a result of the harmful smoke emitted from the combustion of biomass fuels, indoor air pollution is responsible for more than 50,000 deaths annually and causes nearly 5% of the burden of disease in Ethiopia [12].

Though there is a huge attributable risk associated burden of disease, air pollution has never been a priority in the public health agenda in Ethiopia. The present data reveals that **10.5%** of DALYs and **14%** of deaths from all causes are attributable to air pollution. In Ethiopia substantial progress has been made to improve access to electricity, but thus far the majority of Ethiopia households use firewood or charcoal for household fuel.

Unsafe water, Sanitation and Handwashing

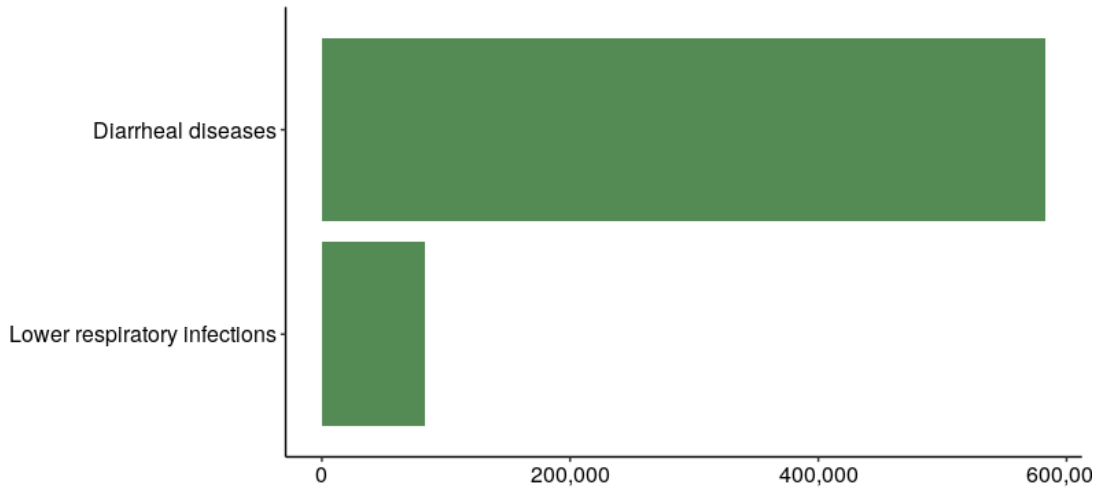
About **10%** of DALYs, **11%** of deaths, **12%** of YLLs in Ethiopia are attributable to unsafe water, sanitation, and hand washing practices. Unsafe water, sanitation and poor handwashing practices cause about 3,760,000 DALYs, 59,700 deaths, 201,000 YLDs and 3,560,000 YLLs in Ethiopia.

Figure 3.4: YLLs and YLDs attributable to unsafe water, sanitation, and handwashing in Ethiopia, both sexes, all ages, 2019



About 3,000,000 and 565,000 of years of life lost due to diarrheal diseases and lower respiratory infections are attributable to unsafe water, sanitation, and handwashing, respectively.

Figure 3.5: DALYs attributable to unsafe water, sanitation, and handwashing in Ethiopia, both sexes, ages 15 to 64, 2019



About 580,000 and 84,000 of DALYs due to diarrheal diseases and lower respiratory infections are attributable to unsafe water, sanitation, and handwashing, respectively.

The disease burden attributable to unsafe water, sanitation and hygiene practices includes multiple factors, including the ingestion of unsafe water, lack of water linked to inadequate hygiene, poor personal and domestic hygiene practices, contact with unsafe water, and inadequate development and management of water.

Every year notable deaths occur due to diarrheal and other infectious disease as a result of inadequate water, sanitation, and hygiene; this disease burden can be reduced by increasing access to safe water and sanitation and promoting basic hygiene practices. The total burden from schistosomiasis, trachoma, ascariasis, trichuriasis and hookworm disease are highly attributable to unsafe WaSH. Unsafe WaSH is an important determinant in several additional diseases, such as malaria, yellow fever, filariasis, dengue, hepatitis A and hepatitis E, typhoid fever, and fluorosis.

A well-targeted and well-executed intervention to improve water or sanitation can reduce the prevalence of diarrheal disease by **75%**. A low faecal–oral pathogen load in the environment was assumed if sanitation coverage exceeded **98%** as evident from developed nations. The provision of clean water and soap enables and encourages people to wash their hands, reducing the likelihood of disease transmission. Safely managed sanitation can

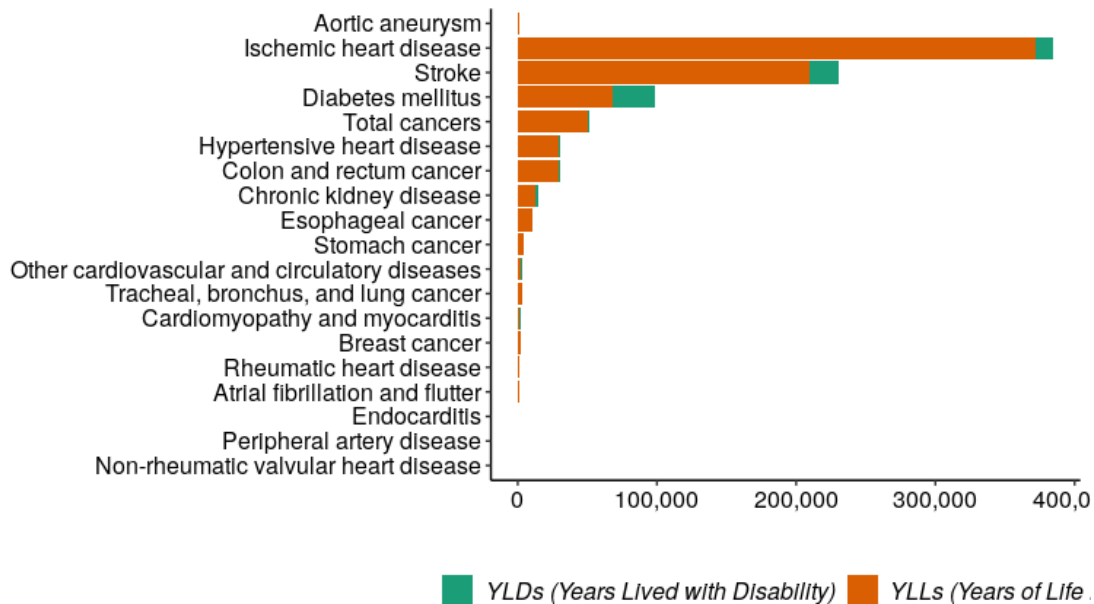
control flies and other insects that spread disease, and prevent contact with infectious organisms shed in faeces, such as helminth ova and diarrheagenic pathogens. An adequate and continuous supply of safe drinking-water on-premises can interrupt waterborne disease transmission. Collectively, these factors reduce rates of diarrhoea and malnutrition leading causes of death in low-income countries.

In Ethiopia, up to **80%** of communicable diseases are attributed to limited access to safe water and inadequate sanitation and hygiene services. In addition, an estimated 50% of the consequences of undernutrition are caused by environmental factors that include poor hygiene and lack of access to water supply and sanitation. There are strong links between sanitation and stunting, and open defecation can lead to faecal-oral diseases such as diarrhoea, which can cause and worsen malnutrition. *Diarrhoea* is the leading cause of under-five mortality in Ethiopia, accounting for **23%** of all under-five deaths and more than 70,000 children a year.

Dietary Risk

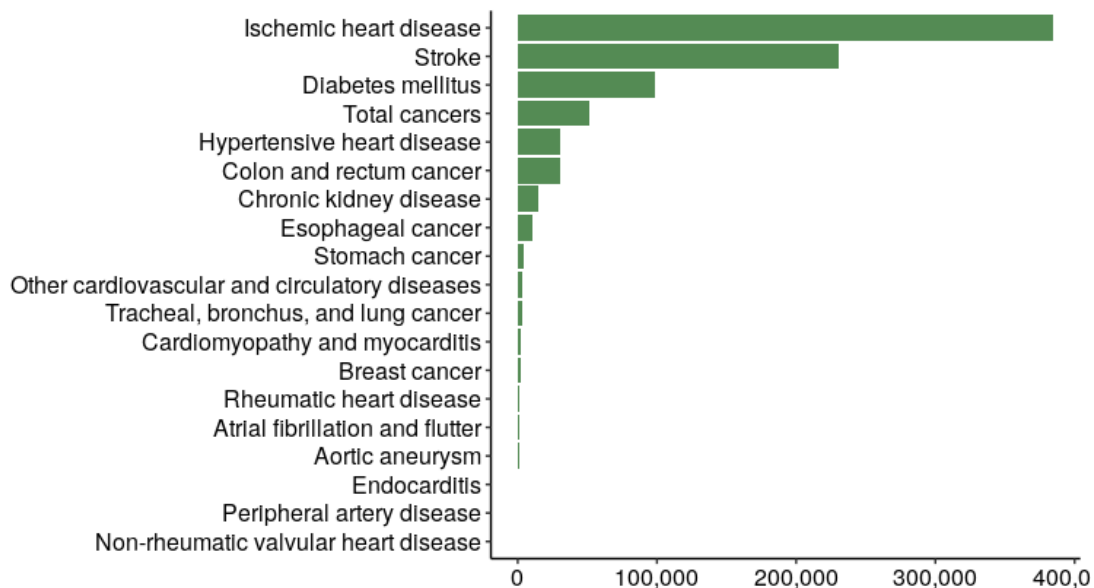
Estimated attributable disability-adjusted life-years (*DALYs*), death, years of life lived with disability (*YLDs*) and years of life lost (*YLLs*) due to dietary risk in Ethiopia are growing. About 2% of *DALYs*, 6% of deaths, and 3% of *YLLs* in Ethiopia are attributable to dietary risk. Dietary risk causes 820,000 *DALYs*, 32,000 deaths, 71,000 *YLDs* and 750,000 *YLLs* in Ethiopia.

Figure 3.6: YLLs and YLDs attributable to dietary risks in Ethiopia, both sexes, all ages, 2019



Of the eighteen-leading diseases with YLL and YLD attributable to dietary risks in Ethiopia in 2019, *Diabetes mellitus*, *Stroke* and *Ischemic heart disease* are the top three causes of attributable YLDs.

Figure 3.7: DALYs attributable to dietary risks in Ethiopia, both sexes, ages 15 to 64, 2019



Of the eighteen leading causes of DALYs attributable to dietary risks in Ethiopia, Ischemic heart disease, Stroke and Diabetes mellitus are the top three causes of attributable DALYs.

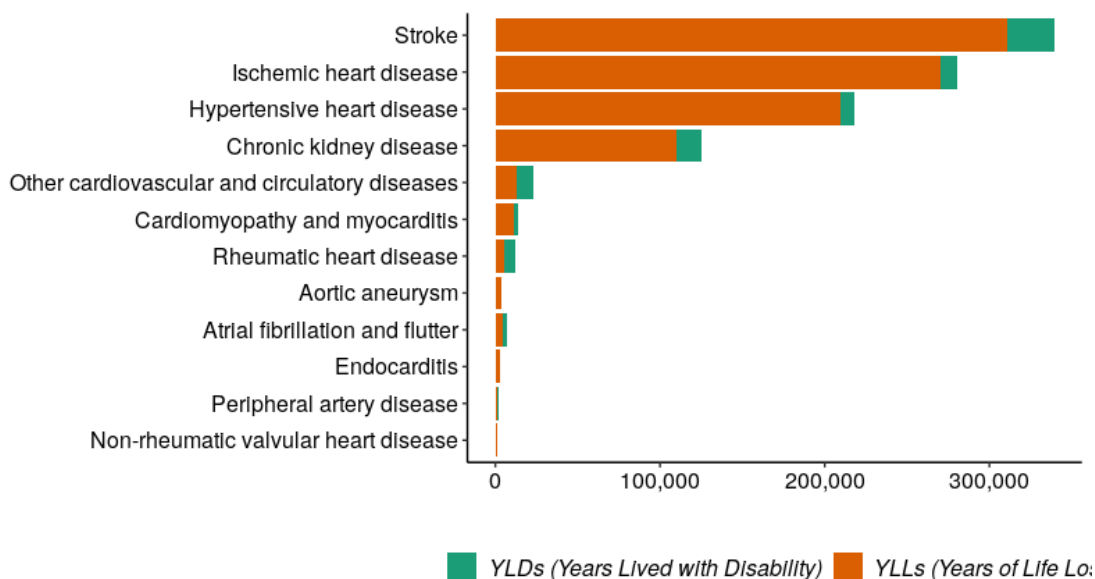
Ethiopia, at the edge of epidemiological transition, is challenged by the triple burden of disease: the high prevalence of non-communicable disease, communicable and nutritional problems.

Dietary risk behavior comprises the quantities, proportions, variety or combinations of different foods and beverages in diets, and the frequency with which they are habitually consumed [13-15]. Even though the majority of staple foods in Ethiopia communities are plant-based, the prevalence of diseases associated with a poor-quality diet is increasing [13-15]. Studies indicate that the increasing burden of non-communicable diseases is mainly attributable to dietary risk behaviours [13, 16, 17]. Intakes of diet low in fruits and vegetables and high in sodium are the leading dietary risks behaviors linked to non-communicable disease in Ethiopia [13-15]. Some studies have reported potential links between certain dietary patterns and high depression risk [18].

A dietary pattern characterized by a high intake of fruit, vegetables, whole grain, fish, olive oil, low-fat dairy and antioxidants and low intakes of animal foods is associated with a decreased risk of depression [16, 18]. A dietary pattern characterized by a high consumption of red and/or processed meat, refined grains, sweets, high-fat dairy products, butter, potatoes and high-fat gravy, and low intake of fruits and vegetables is associated with an increased risk of depression.

High systolic blood pressure

Figure 3.8: YLLs and YLDs attributable to high systolic blood pressure in Ethiopia, both sexes, all ages, 2019



Of the twelve leading causes of YLLs and YLDs attributable to high systolic blood pressure in Ethiopia for both sexes, all ages in 2019, *Stroke*, *Ischemic heart disease* and *Hypertensive heart disease* are the top three causes.

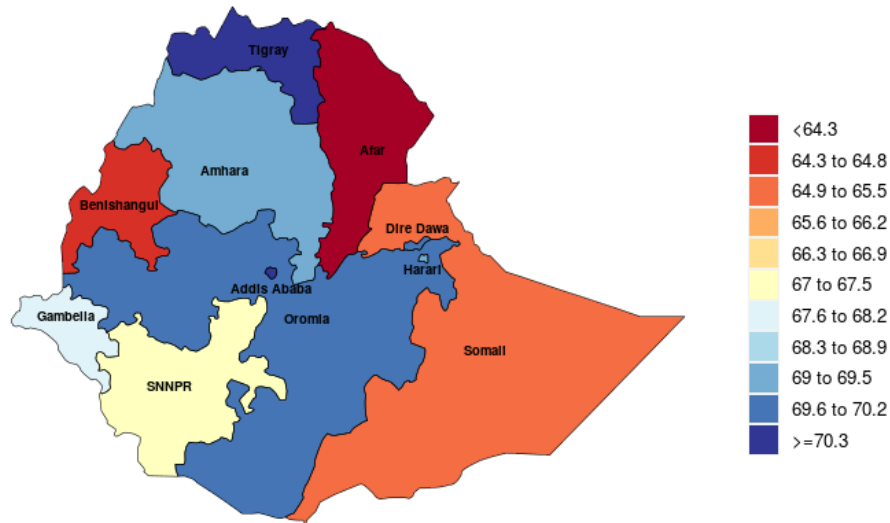
Chapter four: Life expectancy

Life expectancy is a numerical measure of the median time a person is expected to live, based on their year of birth, current age, and other demographic factors including gender. The most used measure is life expectancy at birth.

Life expectancy at birth

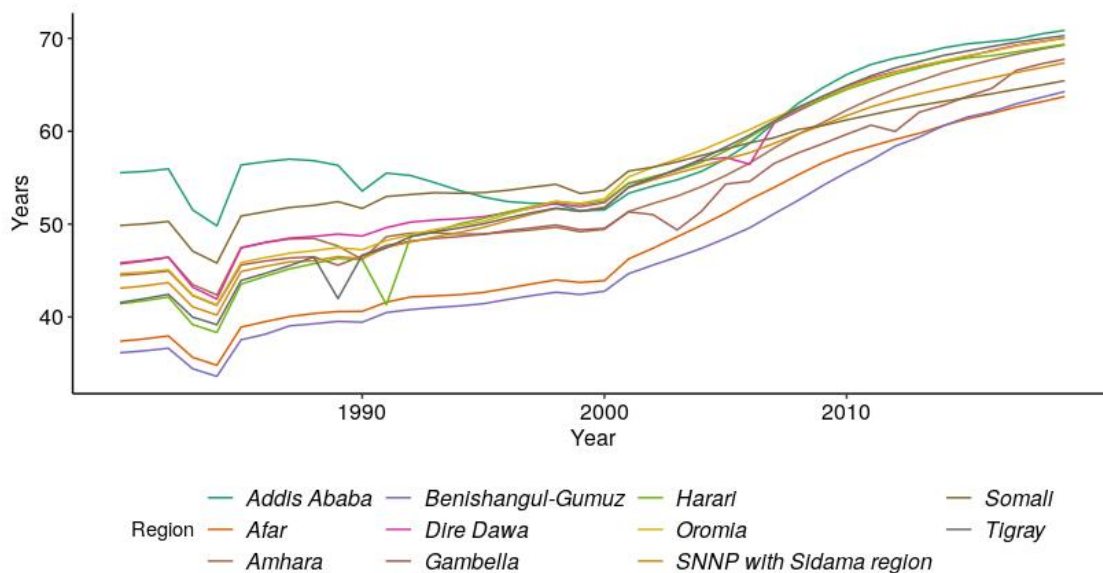
Life expectancy at birth refers the number of years a new-born infant could expect to live if prevailing patterns of age-specific mortality rates at the time of birth stay the same throughout the infant's life.

Figure 4.1: Life expectancy at birth (years), 2019



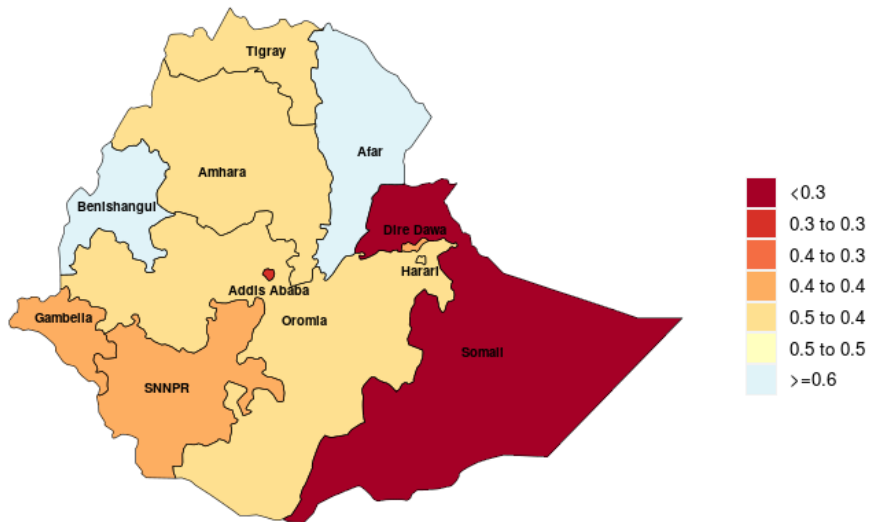
The inter-regional differential in life expectancy ranges from **64** to **71** years. *Addis Ababa*, *Tigray*, and *Dire Dawa* have a life expectancy of 70 years or more whereas *Afar*, *Benishangul-Gumuz* and *Somali* have a lower life expectancy at about 64 years or less. There are vast disparities across regions in healthy life expectancy (*HALE*), which is the number of years a person can expect to live in full health. Inequalities in life expectancy between males and females were greatest in regions at the lowest levels of comprehensive development.

Figure 4.2: Life expectancy at birth, 1980-2019



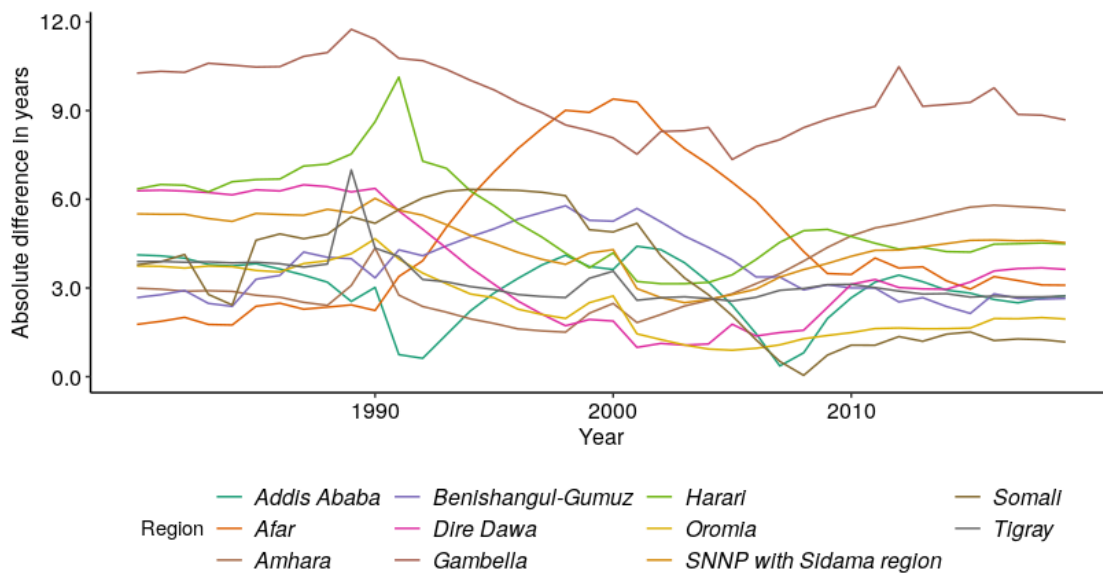
The life expectancy in Ethiopia increased from **45** years in 1980 to **69** years in 2019. *Tigray* has the highest increment of life expectancy, whereas *Addis Ababa* has the lowest increment.

Figure 4.3: Life expectancy percent change, 1990–2019



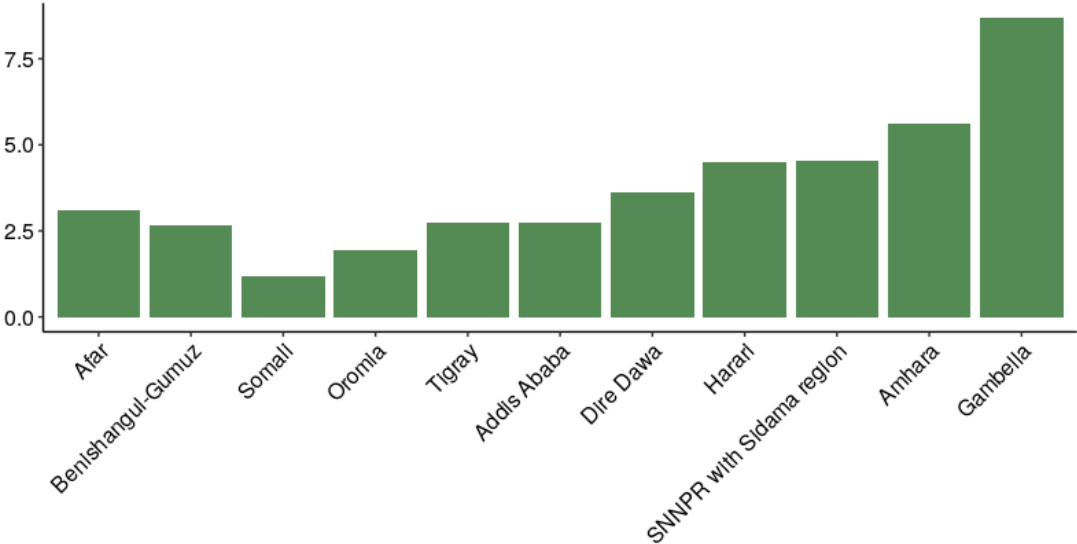
Through 1990 to 2019, life expectancy has increased in all regions at least between **27%** and **63%**. The lowest percentage change was recorded in *Somali* and *Addis Ababa* while the highest percentage change was in *Benishangul-Gumuz* and *Afar*.

Figure 4.4: Difference in life expectancy at birth 1980-2019 between males and females



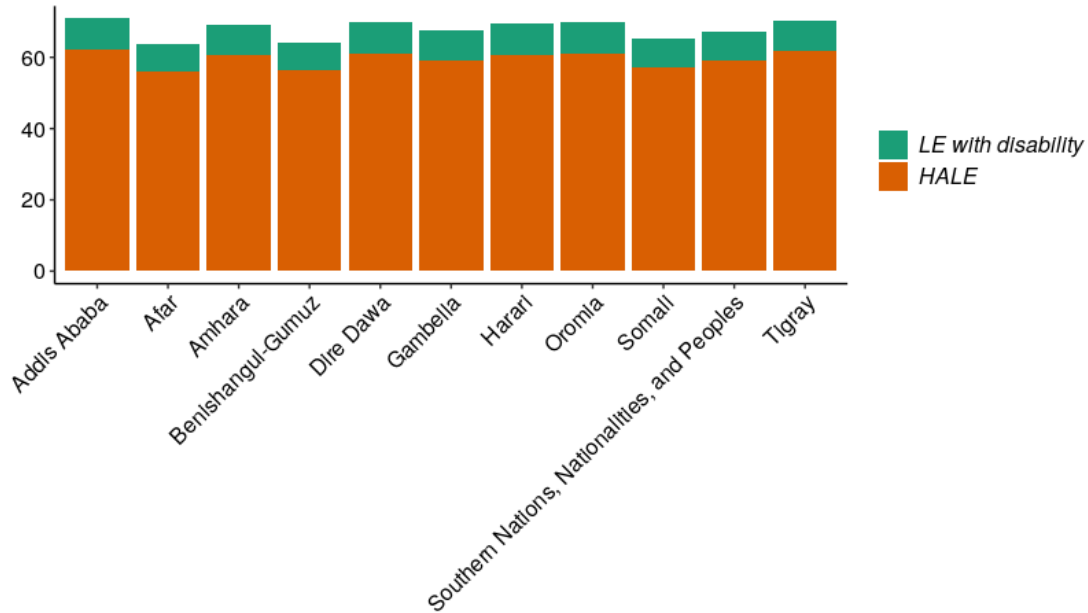
Generally, women do better in terms of life expectancy throughout Ethiopia. *Gambella* had the highest life expectancy sex difference, whereas *Somali* region had the lowest life expectancy sex difference.

Figure 4.5: Difference in LE at birth between males and females in 2019



Women live longer than men throughout the country. Although the absolute difference in life expectancy varies across regions, the proportional difference is higher in *Gambella*, *Amhara*, *SNNPR with Sidama region*, and *Harari*. On average, women can expect to live **9** years longer than men in *Gambella* while it is **2** years in *Oromia* and **1** year in *Somali*.

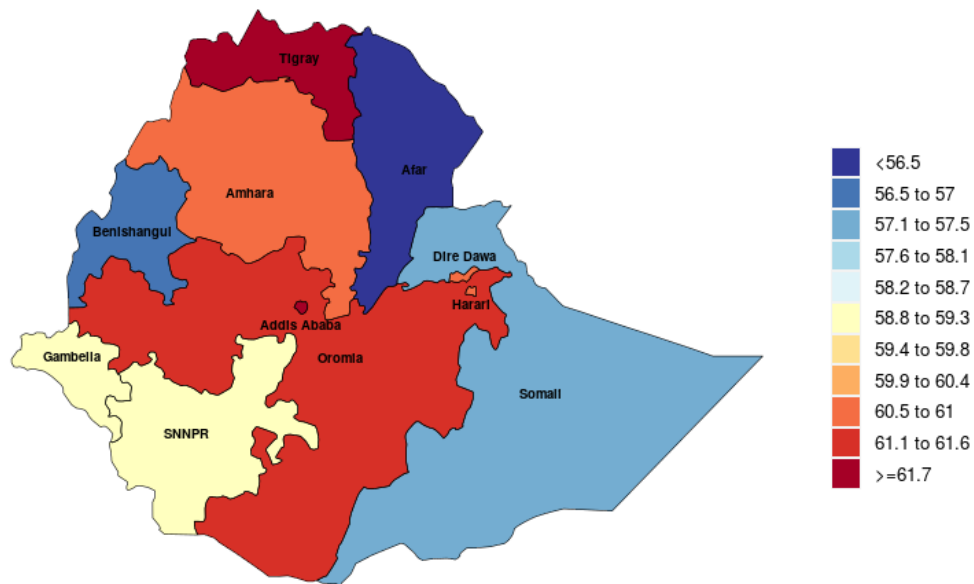
Figure 4.6: Life expectancy by region in Ethiopia, 2019



Ethiopia citizens will live, on average, **60** years, with **9** years lived with disability. Poor health results a loss of **8** to **9** years. Years lived with disability are similar across all regions, but LE varies from region to region. People in *Addis Ababa* and *Tigray* live longer and healthier.

Healthy life expectancy

Figure 4.7: Healthy life expectancy by region in Ethiopia, 2019



Healthy life expectancy in Ethiopia ranges from **56** years in *Afar* to **62** years in *Addis Ababa*. Relatively more years of life are spent in poor health in emerging regions such as *Afar*, *Benishangul-Gumuz* and *Somali*.

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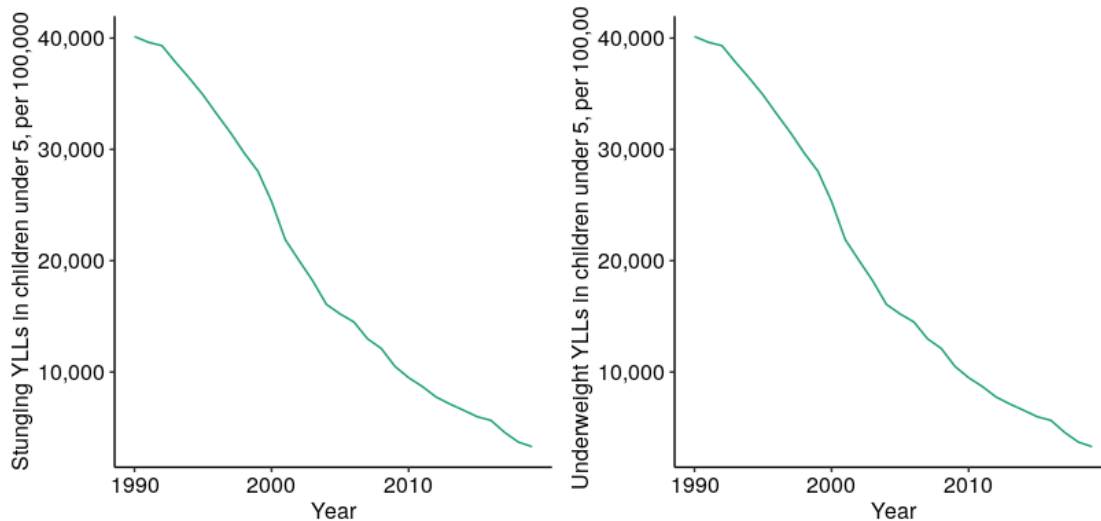
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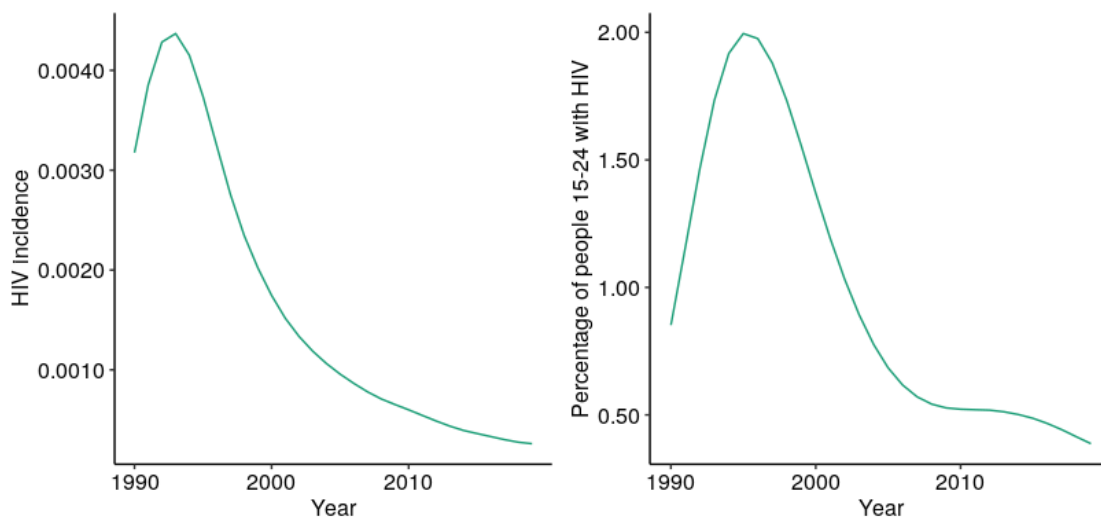
HSTP Indicator Annex

This annex contains information on Health Sector Transformation Plans for Ethiopia that can be assessed by the Global Burden of Disease (GBD) study. The full list of HSTP-II indicators can be found [here](#).

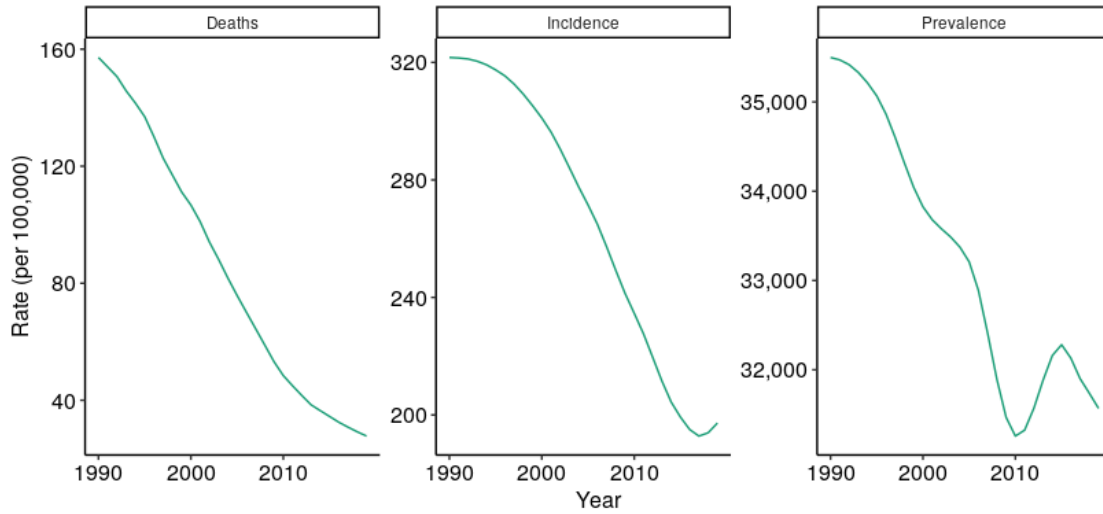
Stunting and Underweight YLLs in children aged less than 5 years, per 100,000



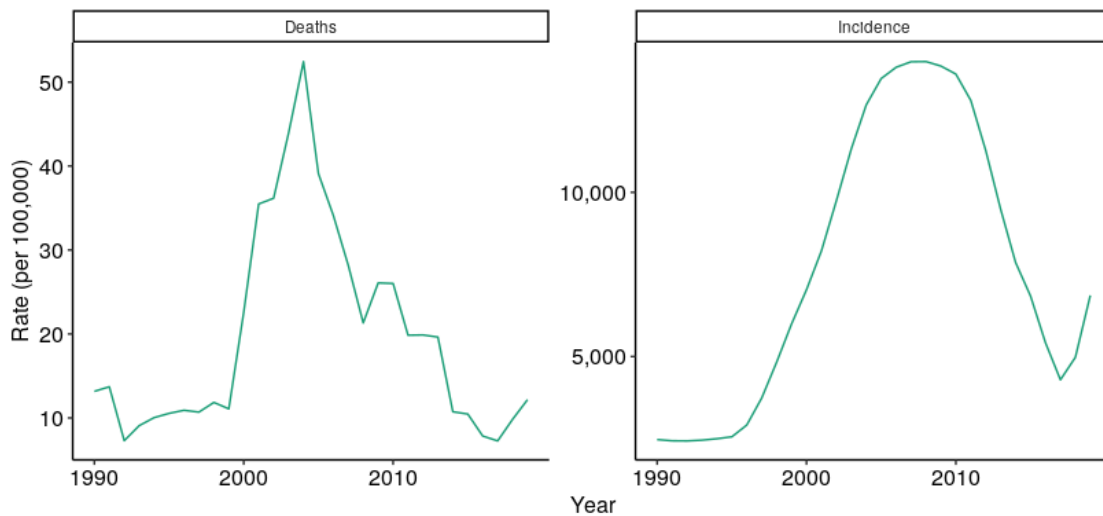
HIV incidence in Ethiopia and percentage of young people aged 15-24 who are living with HIV



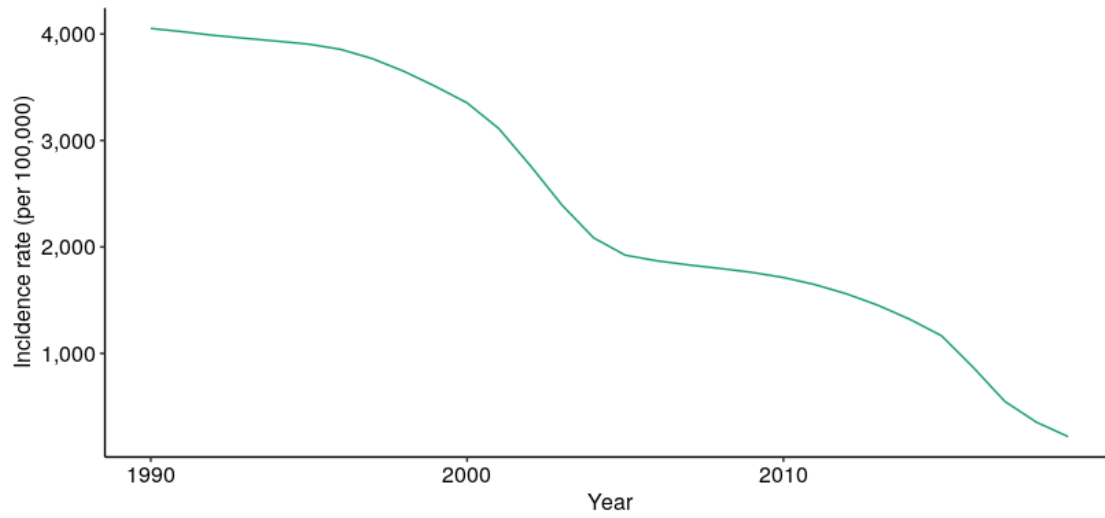
Tuberculosis prevalence, incidence, and mortality rate, per 100,000, all ages



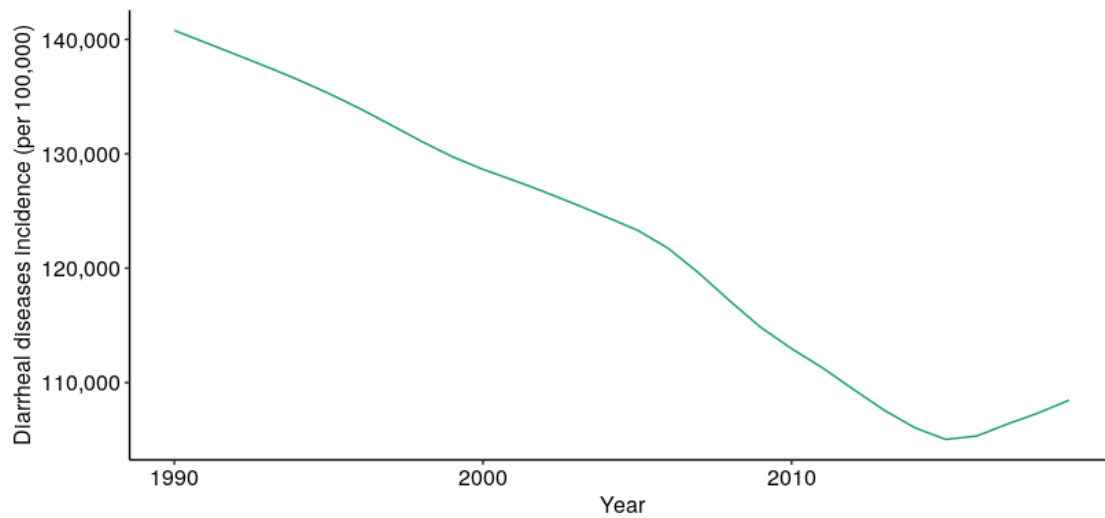
Malaria incidence and mortality per 100,000, all ages



Measles incidence



Diarrheal diseases incidence



Mortality rate from all NCDs

Full table of key HSTP indicators

HSTP Indicator	GBD 2019 Estimate
Stunting YLLs in children aged less than 5 years per 100,000	3,290.04
Underweight YLLs in children aged less than 5 years per 100,000	3,290.04
HIV incidence, all ages, per 100,000	26.00
Percentage of young people aged 15-24 who are living with HIV	0.39
Tuberculosis prevalence rate (per 100,000 populations)	31,568.06
Tuberculosis incidence rate (per 100,000 populations)	197.25
Tuberculosis mortality rate (per 100,000 populations)	27.77
Malaria deaths (per 100,000)	12.18
Malaria incidence (per 100,000)	6,862.37
Measles incidence rate (per 100,000)	219.00
Diarrheal diseases incidence rate (per 100,000)	108,476.79
Neonatal sepsis incidence rate per 100,000	737.62
Neonatal encephalopathy incidence rate per 100,000	75.82
Viral hepatitis prevalence rate per 100,000	454.47
Prevalence of trachomatous trichiasis (TT) per 1,000	5.26
TF prevalence in 1-9 years old, %	0.00
Prevalence of schistosomiasis among children 5-14 years of age, %	0.00
Mortality rate due to all NCDs per 100,000	203.81
Diabetes prevalence rate (per 100,000)	1,327.01
Diabetes mortality rate (per 100,000)	11.96
Hypertensive heart disease prevalence rate (per 100,000)	92.08
Cancer incidence rate (per 100,000)	NA
Cervical cancer incidence rate (per 100,000)	26.13

HSTP Indicator	GBD 2019 Estimate
Cancer mortality rate (per 100,000)	36.70
Depression prevalence rate (per 100,000)	3,312.82
Substance abuse prevalence rate (per 100,000)	2,260.90
Alcohol use disorders prevalence rate (per 100,000)	1,989.54
Bipolar disorder prevalence rate (per 100,000)	505.09
Epilepsy prevalence rate (per 100,000)	276.85
Cardiovascular disease mortality rate (per 100,000)	71.54
COPD mortality rate (per 100,000)	8.65
Tobacco DALY rate (per 100,000)	291.77
High alcohol consumption DALY rate (per 100,000)	859.98
Low physical activity DALY rate (per 100,000)	16.82
Low fruit consumption DALY rate (per 100,000)	199.90
Road accidents DALY rate (per 100,000)	546.35
Injury mortality rate (per 100,000)	40.58
Road traffic injury mortality rate (per 100,000)	8.56