

Improving mortality data for national and subnational decision making in Ethiopia

EPHI-IHME collaborative study for Ethiopia

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Outline

- Ethiopia's causes of death estimates
- Overview of the methods
- Key Findings
- Implications of the study



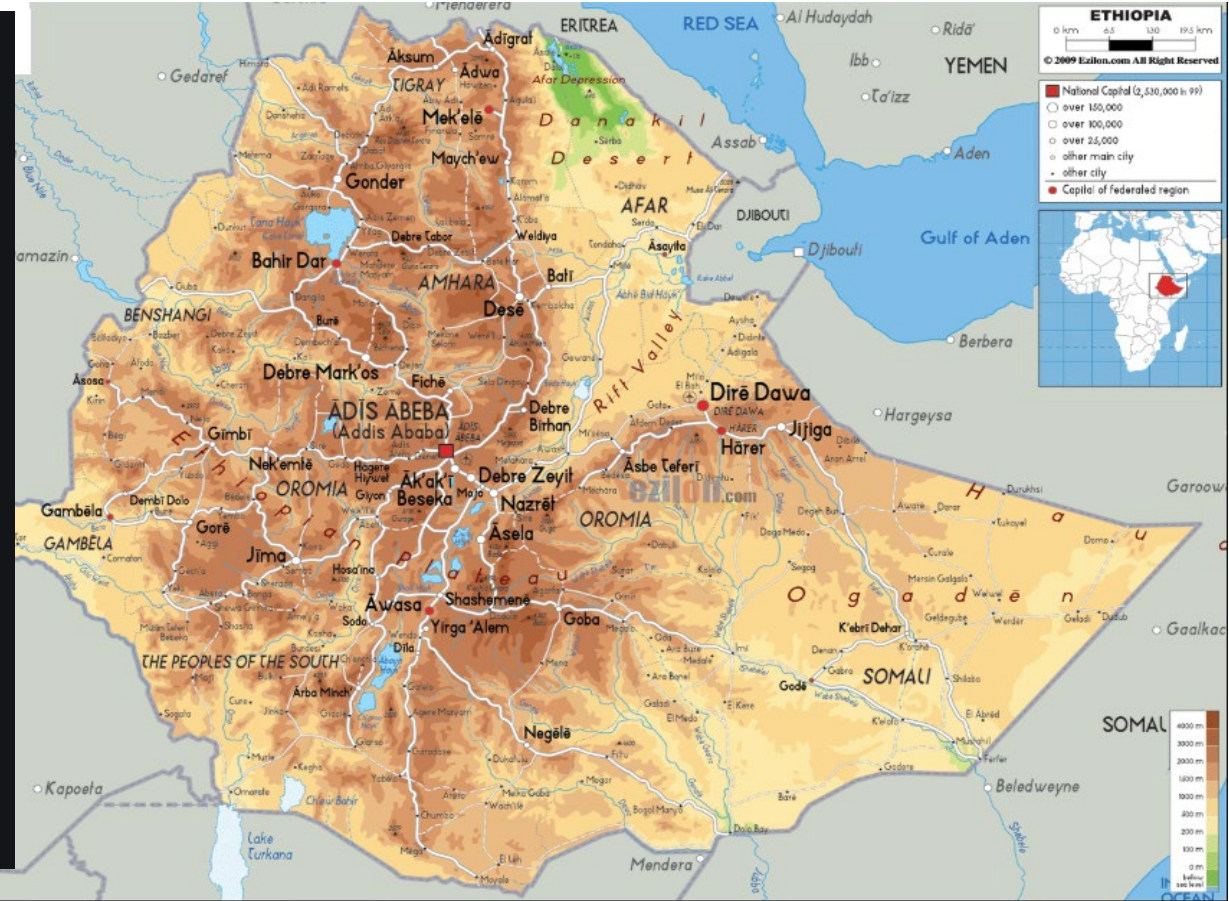
Ethiopia causes of death estimates, GBD 2019

- **We can not save lives in the regions or cities if we do not know what people are dying from in each region or city**
- Data on causes of death and premature mortality is vital for national and subnational decision making,
- It is important to understand priorities and disparities between regions and chartered cities in Ethiopia and
- Health resource allocation across regions and chartered cities



Ethiopia causes of death estimates, GBD 2019

Global Burden of Disease is a **systematic scientific** effort to quantify the **comparative** magnitude of **health loss** due to diseases, injuries and risk factors by age, sex, geographies for specific points in time.



Overview of the Methods

Causes of death data sources in Ethiopia

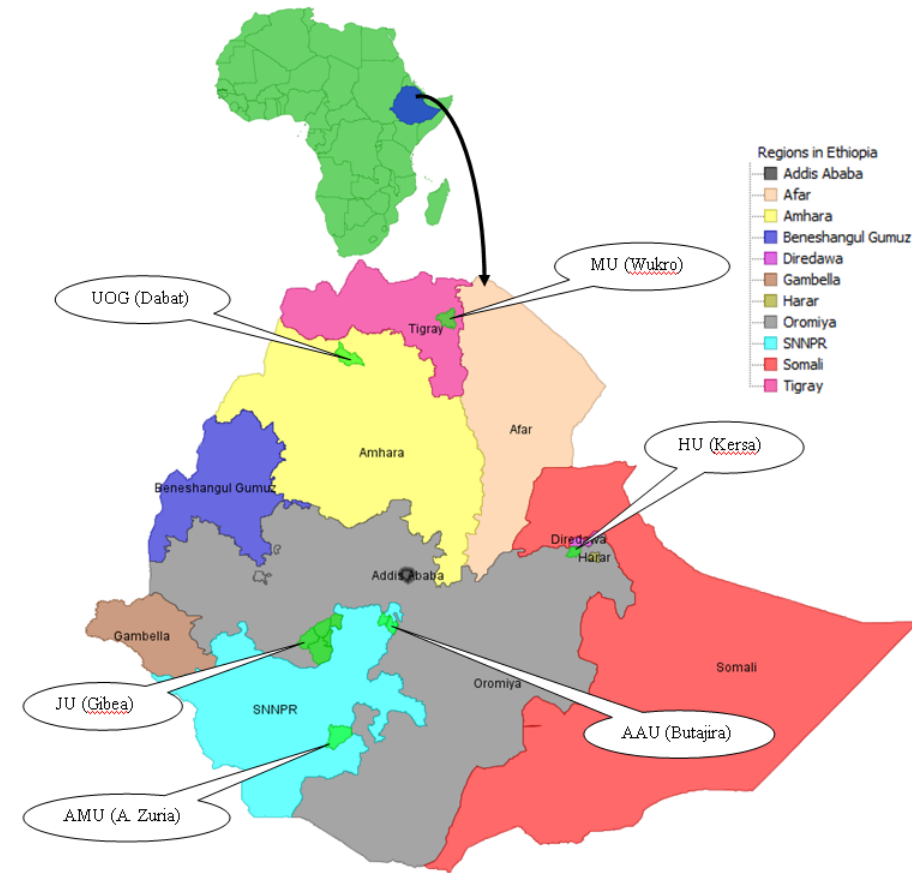
- **Verbal Autopsy:** A major data source for Ethiopia's causes of death and premature mortality estimation in the GBD study
- **Vital Registration:** under development in Ethiopia which may take years to function fully.



Overview of the Methods

Causes of death data sources in Ethiopia

- Health and Demographic Surveillance (>13 HDSS) and CHAMPS
- Burial based mortality surveillance
- Censuses and household surveys
- Police Reports
- Hospital Records
- District Health Information System (DHIS-2)
- Others



Health and demographic system (HDSS) in Ethiopia

Overview of the methods

- **Verbal Autopsy** – it is assigning cause of death based on signs/symptoms reported by the family
- HDSS implement three types of VA questionnaires using WHO VA tools
 - Neonatal
 - Child
 - Adult
- Trained interviewers collect VA data
- Finally assigning COD by physician (2/3 physicians independently) using ICD-10



Addis Ababa Mortality Surveillance program, VA interview

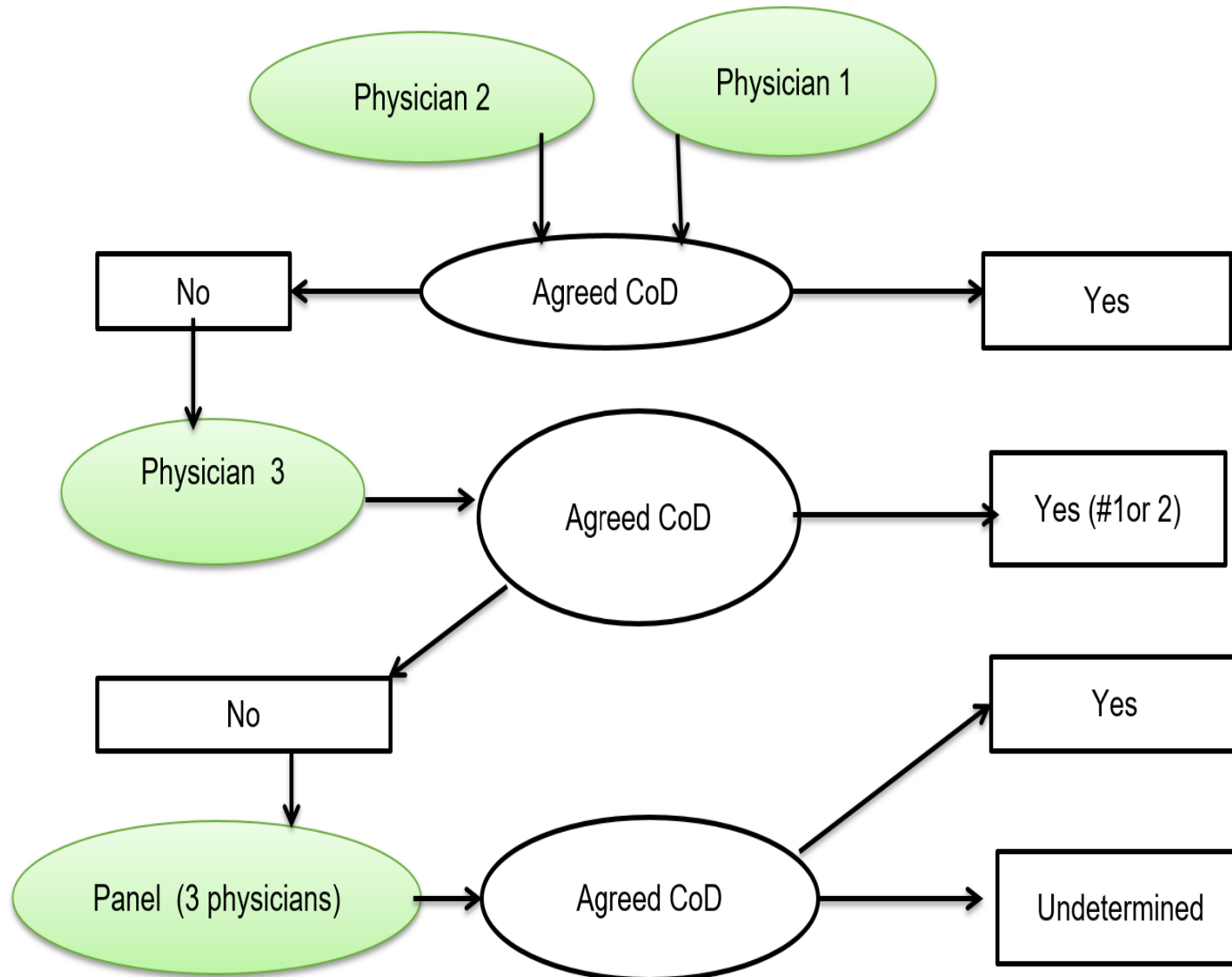


EPHI and HDSS partnership



Overview of the Methods

Physician review

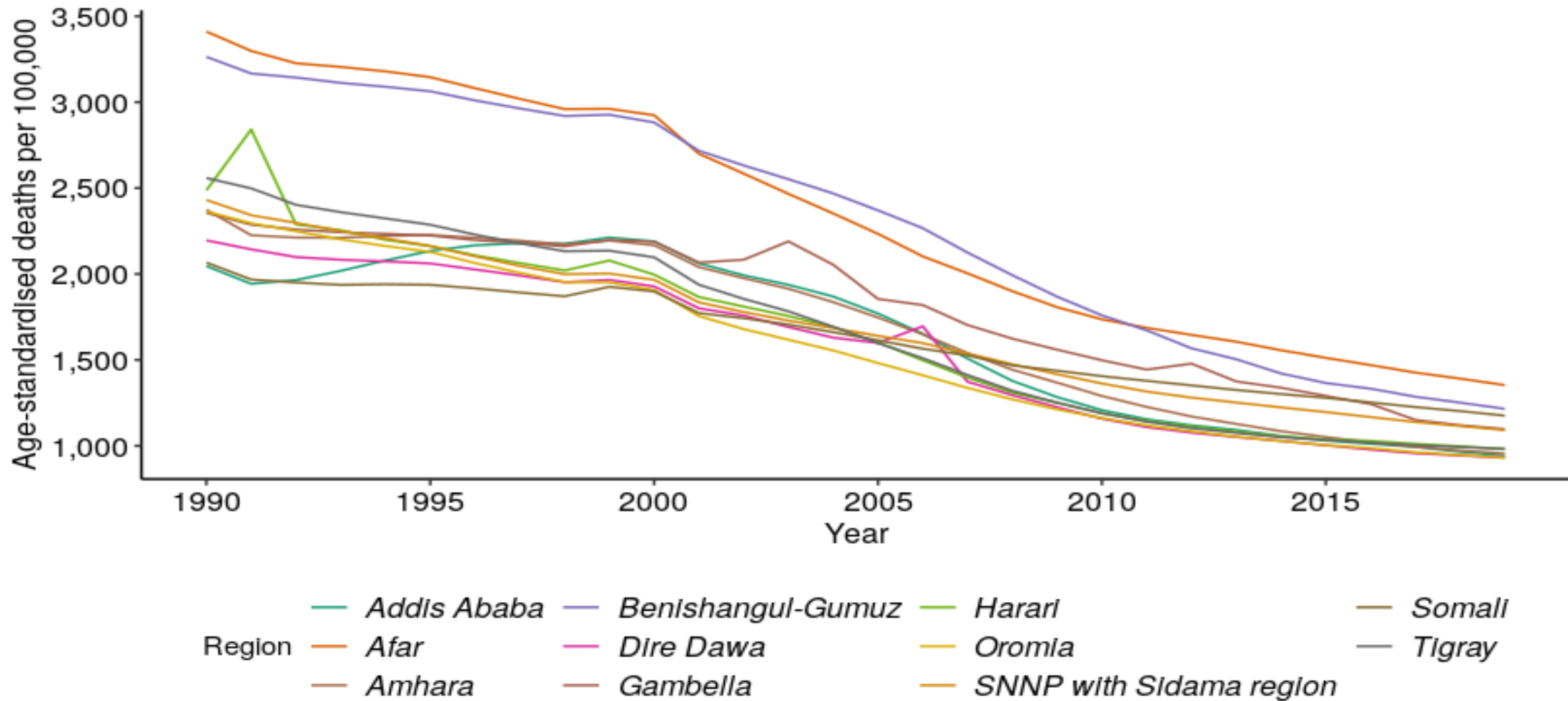


GBD Causes of Death Modeling

- Apply a cause of death ensemble modelling (CODEm) to assign causes of death by age, sex, year and location
- Mixed Effects Linear Models
- Space- time GPR models
- <https://pophealthmetrics.biomedcentral.com/articles/10.1186/1478-7954-10-1>



Key Findings

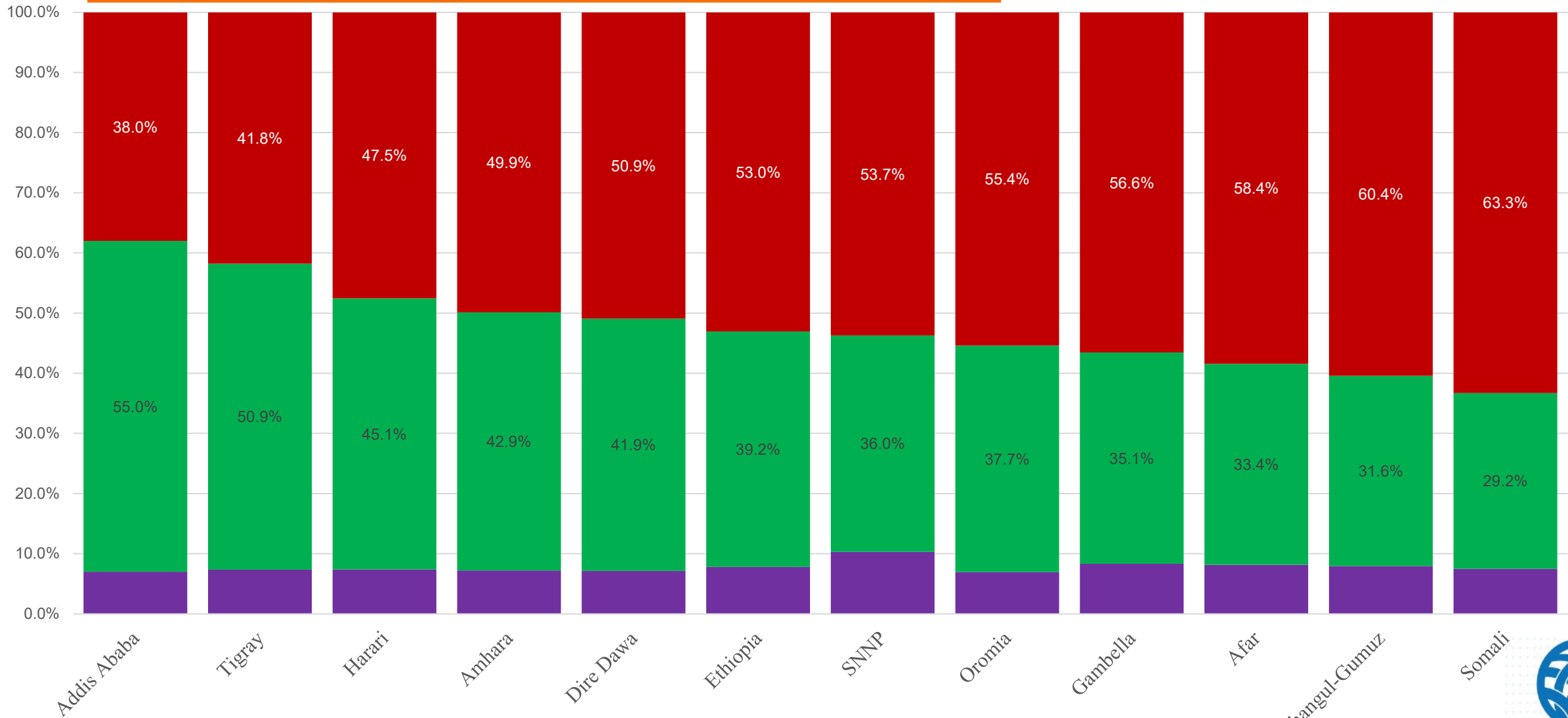


Trends of death from all causes by region, age -standardized, 1990-2019



Key Findings

■ injuries ■ Non-communicable diseases ■ Communicable, maternal, neonatal, and nutritional diseases

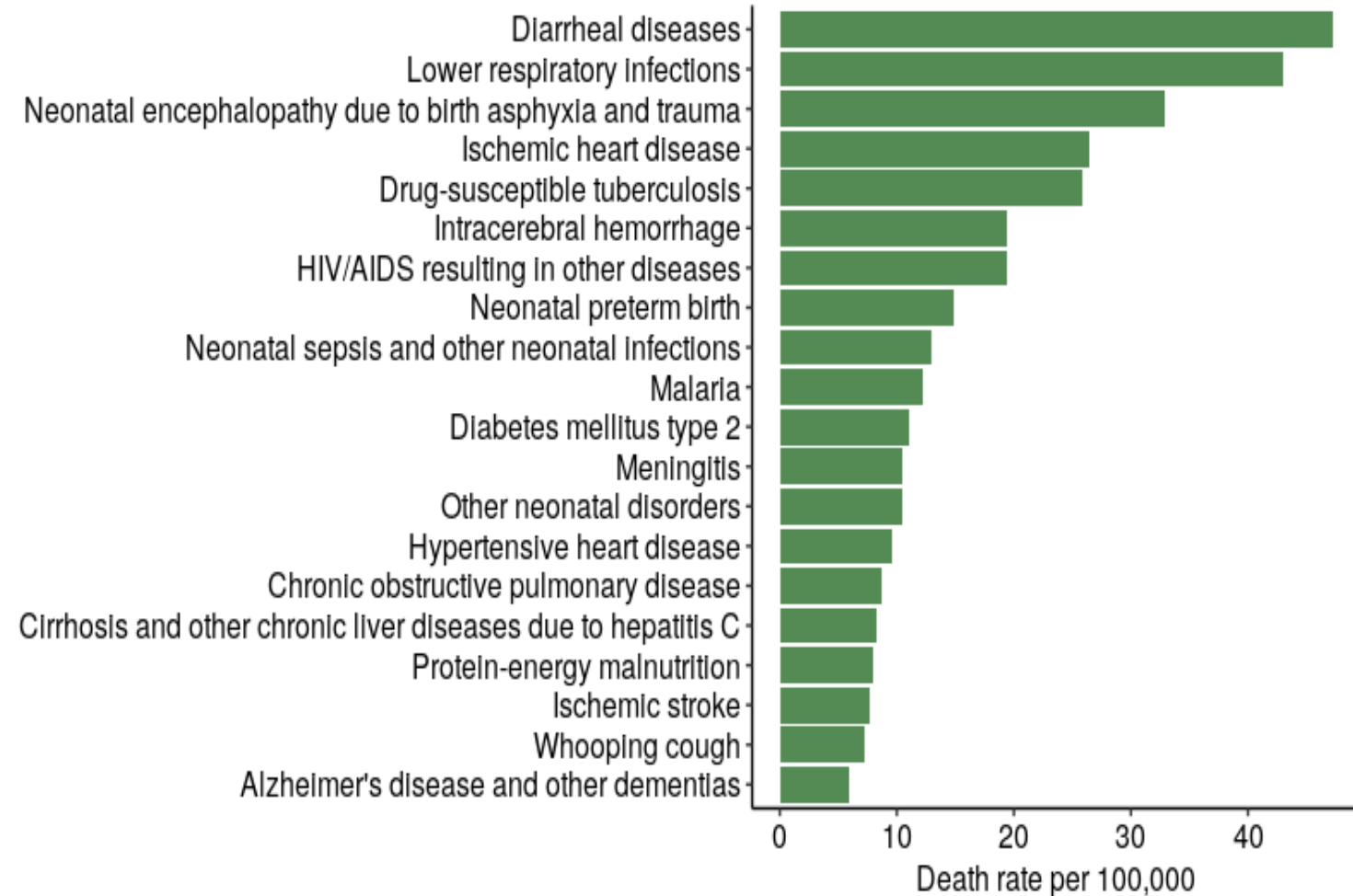


Epidemiological transition in Ethiopia by Regions – based on death fraction, GBD 2019



Key Findings

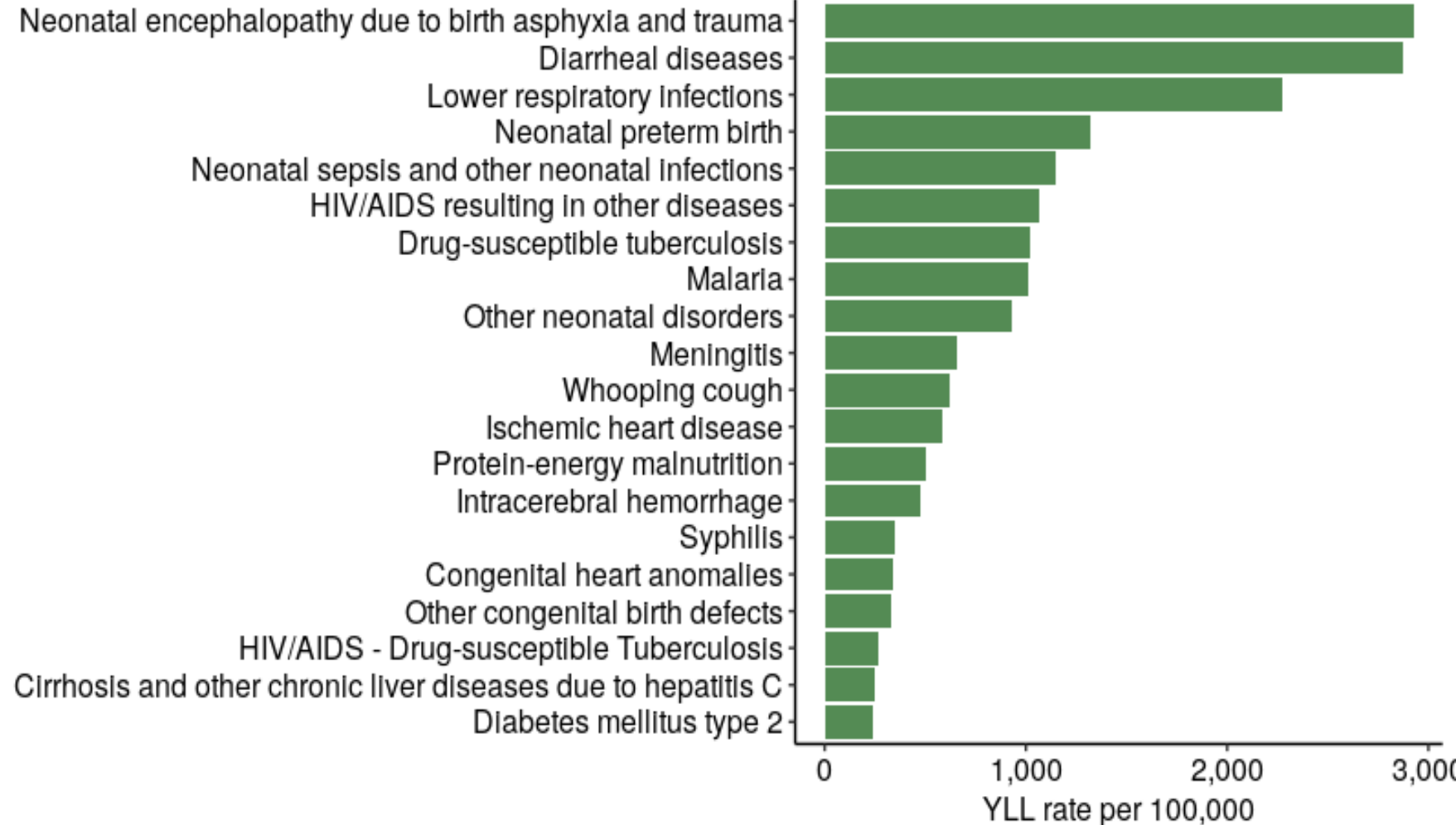
- The top twenty leading causes of death in Ethiopia, GBD 2019
- Figure shows the **double burden of infectious and non communicable diseases**



Key Findings

20 leading causes of premature loss of life in Ethiopia, GBD 2019

- Common under 5 causes of death are the leading
- Priority diseases during MDG era are still priorities (HIV, TB, Malaria, Malnutrition and others)
- Non communicable diseases such as CVD, Diabetes and others are also leading cause of premature mortality



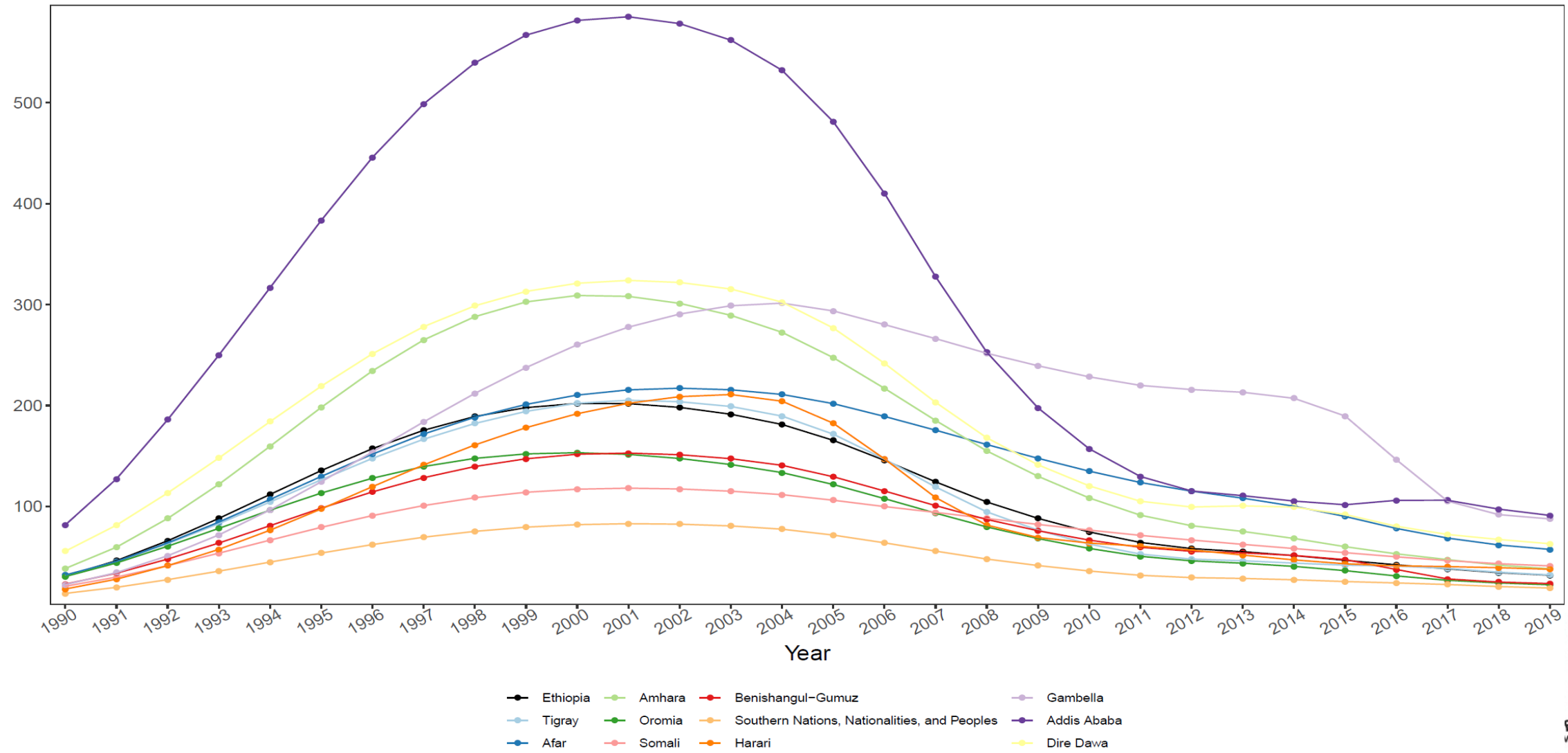
Key Findings

Patterns of age-standardised leading causes of premature mortality in Ethiopia and regions and chartered cities, 2019

	Ethiopia	Addis Ababa	Afar	Amhara	B-Gumuz	Dire Dawa	Gambella	Harari	Oromia	Somali	SNNP	Tigray
Neonatal disorders	1	7	2	1	1	1	2	1	1	1	1	1
Diarrheal diseases	2	9	3	2	3	6	7	6	2	3	2	4
Lower respiratory infections	3	4	5	3	2	3	6	3	3	2	3	3
Tuberculosis	4	5	1	5	4	8	3	5	4	4	4	7
Stroke	5	3	6	6	5	4	4	4	5	5	5	2
HIV/AIDS	6	1	4	4	9	2	1	2	8	6	8	6
Ischemic heart disease	7	2	7	7	6	7	5	7	6	7	6	5
Cirrhosis and other CLD	8	6	8	8	7	9	8	9	7	8	7	8
Congenital birth defects	9	20	18	9	12	11	18	11	9	12	11	11
Diabetes mellitus	10	8	11	11	14	10	10	10	10	13	10	9
Malaria	11	40	22	10	8	5	9	8	11	15	9	14
Meningitis	12	15	10	12	13	15	15	14	12	10	12	17
Hypertensive heart disease	13	10	13	13	15	12	11	12	14	17	15	10
Chronic kidney disease	14	11	14	16	17	13	12	13	13	18	13	13
Road injuries	15	13	15	15	16	14	13	15	16	16	14	15
Chronic obstructive pulmonary disease	16	14	19	14	19	18	17	16	17	20	16	12
Protein-energy malnutrition	17	24	12	24	11	17	20	20	15	9	20	22
Maternal disorders	18	27	9	21	10	23	33	23	18	11	18	16
Interpersonal violence	19	16	17	19	18	16	16	17	20	19	17	18
Whooping cough	20	48	16	17	20	25	21	18	19	14	21	31
Self-harm	21	19	20	23	23	24	19	22	22	21	19	20
Alzheimer's disease and other dementias	22	21	28	22	26	20	22	24	21	27	24	19
Leukemia	23	22	26	20	22	22	23	25	23	22	23	24
Breast cancer	24	12	24	28	24	21	25	21	25	33	25	21
Cervical cancer	25	23	21	27	21	28	32	27	24	25	26	23

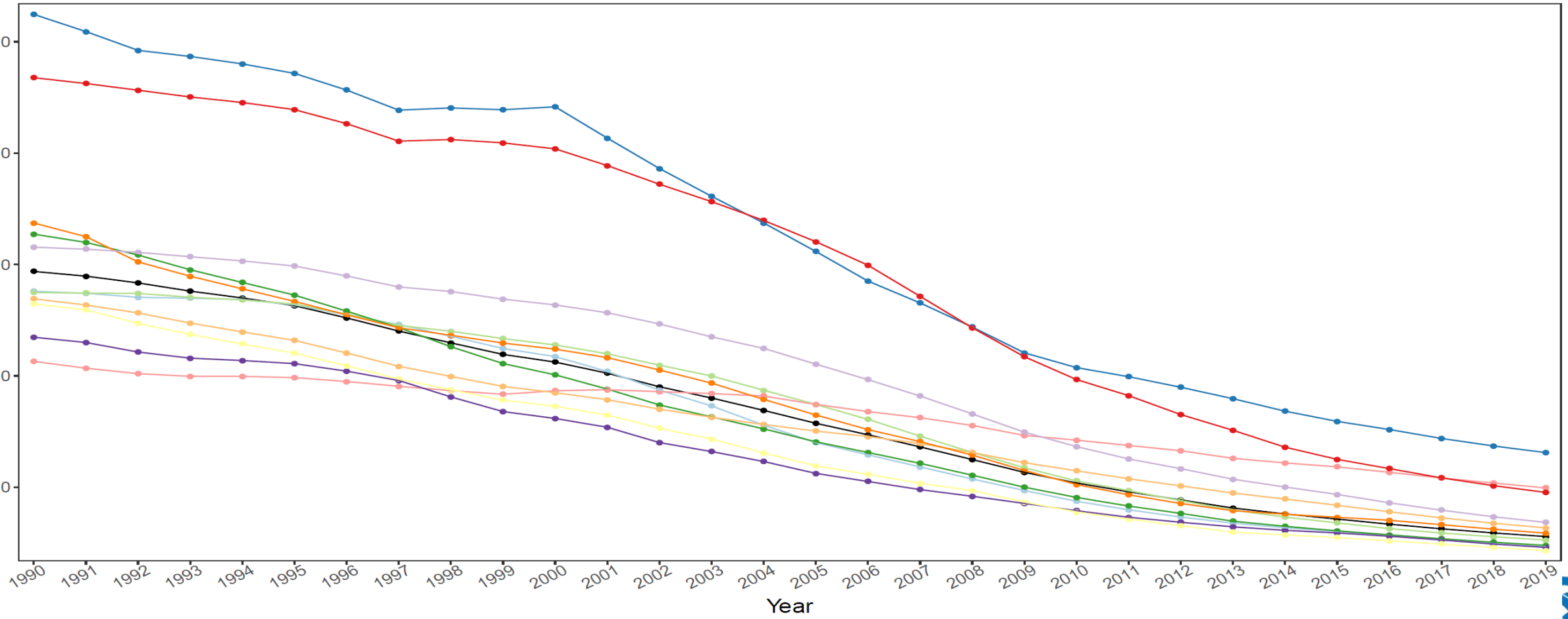
Key Findings

HIV/AIDS mortality, both sexes, 1990-2019



Key Findings

Tuberculosis mortality, both sexes, 1990-2019



- Ethiopia
- Amhara
- Benishangul-Gumuz
- Gambella
- Tigray
- Oromia
- Southern Nations, Nationalities, and Peoples
- Addis Ababa
- Afar
- Somali
- Harari
- Dire Dawa

Implications of the study

- Cause of death data incorporated into GBD 2019 were scarce for Ethiopia and its regions and cities that needs further collaboration and investment in primary data collection.
- Input for tracking HSTP, SDG, HiAP, programs and interventions
- Designing and revising EHSP, Insurance schemes,
- Evaluating subnational NHA, Drug and supply chain
- Input for planning and resource mobilization and others



Links for further exploration

- Ethiopia subnational results: <https://vizhub.healthdata.org/gbd-compare/>
- GBD methods: <https://www.healthdata.org/gbd/publications>
- NDMC data access, data analytic, publications: <https://ndmc.ephi.gov.et/>

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Thank you!

