



Air Pollution and Health in East Africa

Perspectives from the State of Global Air (SoGA) Initiative

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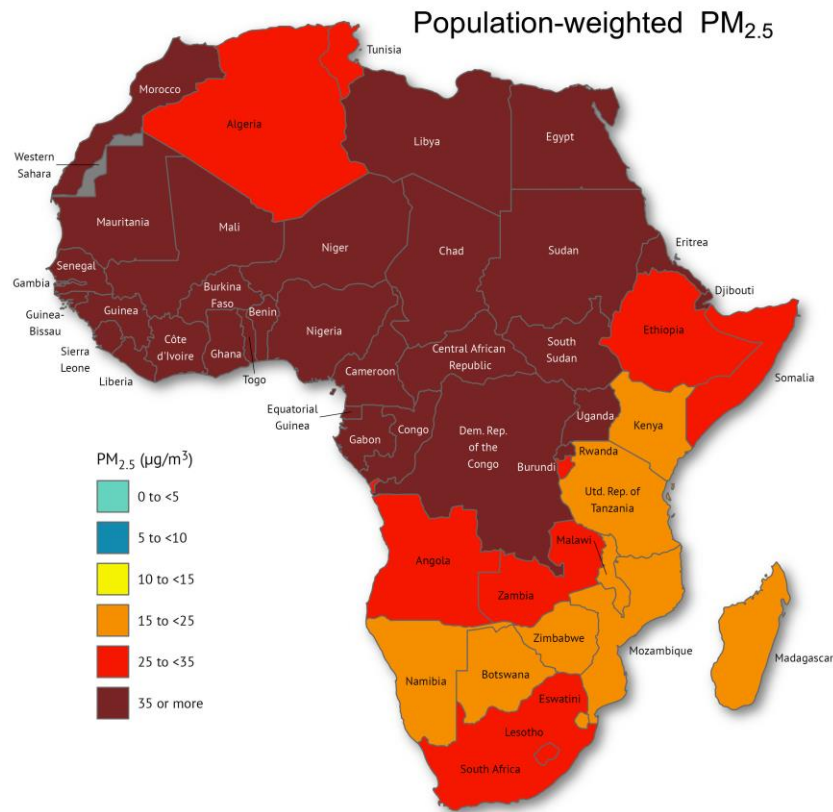
STATE OF
GLOBAL AIR

Key messages

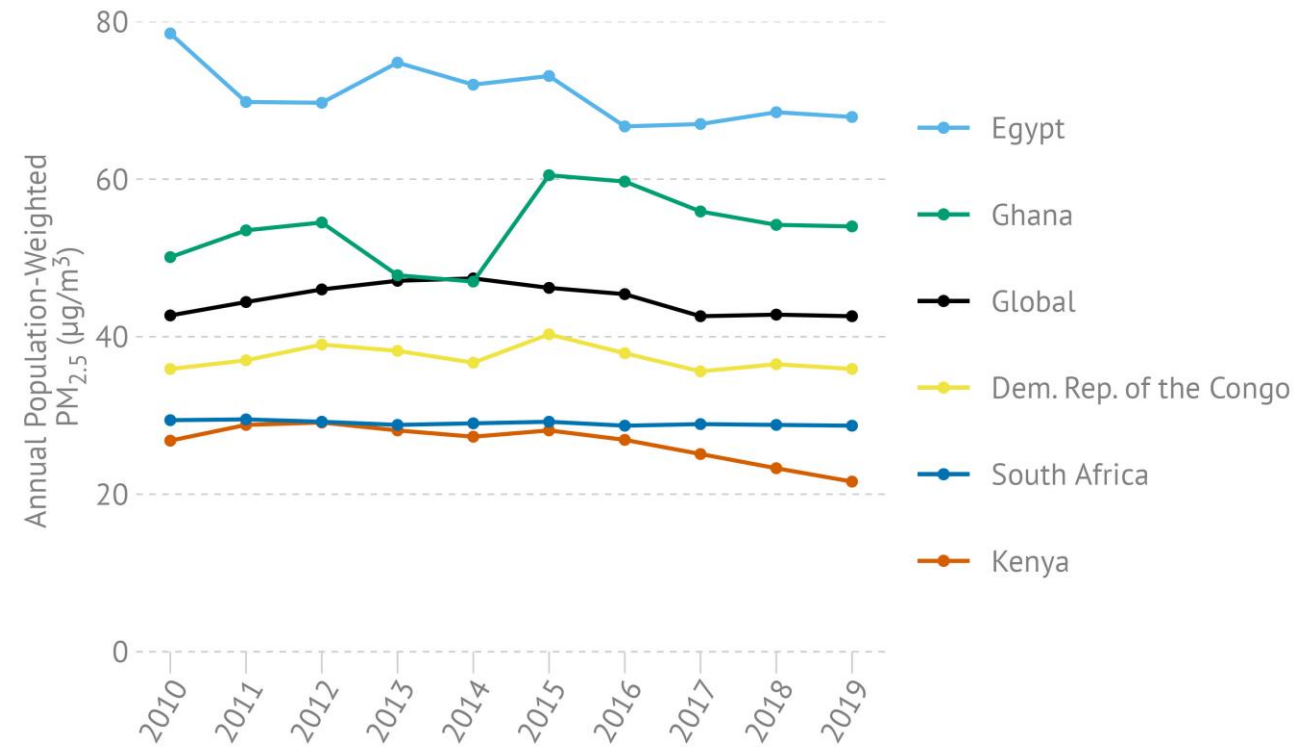
- **More than 1 million deaths** linked to air pollution in Africa
- Stark differences in exposure to $PM_{2.5}$ across the continent, **highest exposures in Western African countries**
- **Household air pollution** due to use of solid fuels for cooking remains a **significant source of $PM_{2.5}$** across much of the continent.
- Varying trends for contribution of fossil fuel emissions to $PM_{2.5}$; highest contribution in Southern African countries

Patterns of exposure to air pollution across Africa

Average Exposure to PM_{2.5}



Trends in average PM_{2.5} Exposure, 2010 – 2019



Producing the air quality estimates; gaps in data

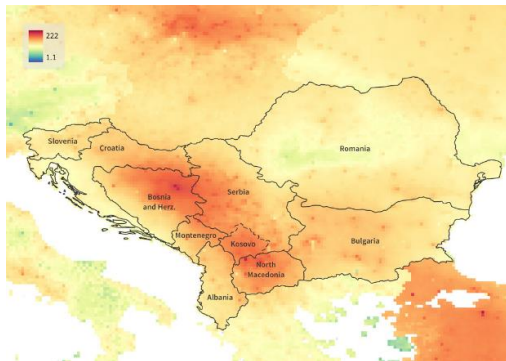


Satellite data



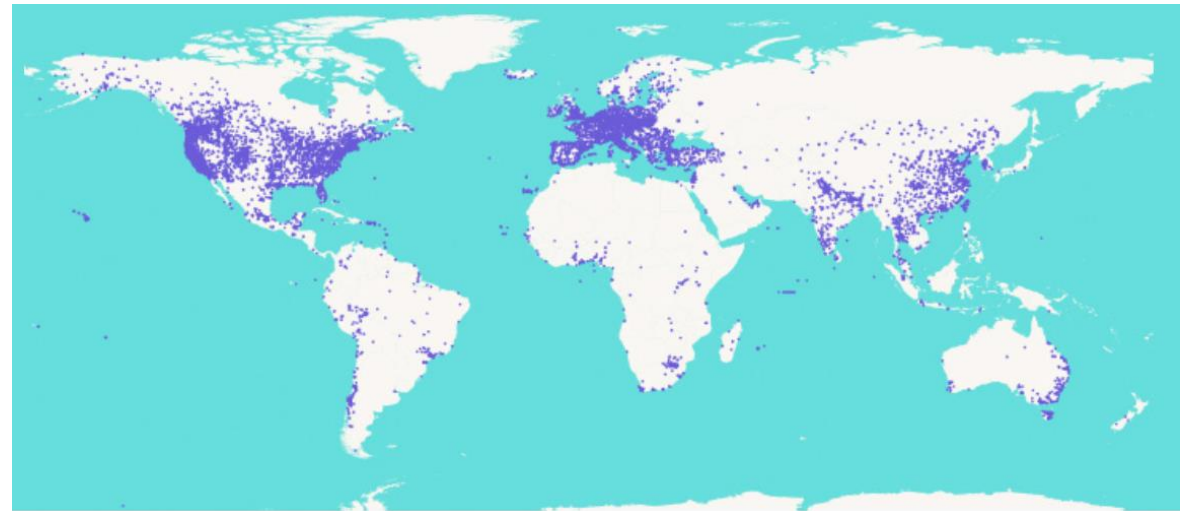
Chemical Transport Models

Ground monitoring data




Minimum risk exposure level

Limited ground monitoring data from Africa >>
higher uncertainties in exposure estimates



Source: 2022 Open Air Quality Data: The Global Landscape, OpenAQ

Household air pollution and health

A photograph showing a person's lower body and legs, wearing a patterned skirt and sandals, standing over an open fire. Several large, dark metal pots are placed on a makeshift tripod of logs and stones over the fire. Steam is rising from the pots, and the scene is set outdoors on a dirt ground.

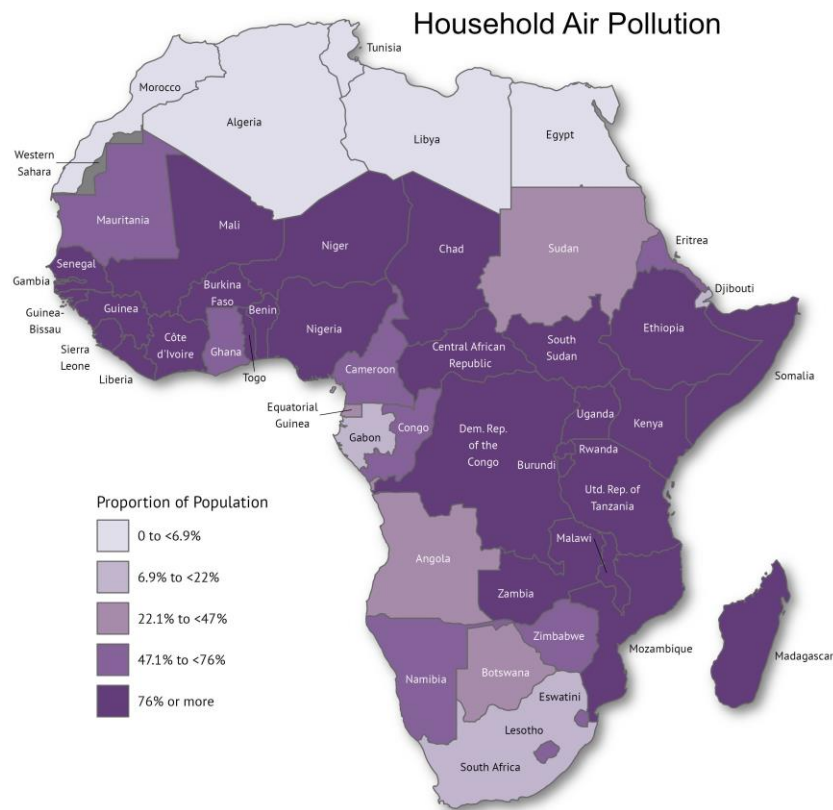
Exposures to particulate matter from household air pollution often exceed levels in outdoor air by orders of magnitude.

increased risk of non-communicable diseases, including lung and heart diseases, type II diabetes and lung cancer as well as death.

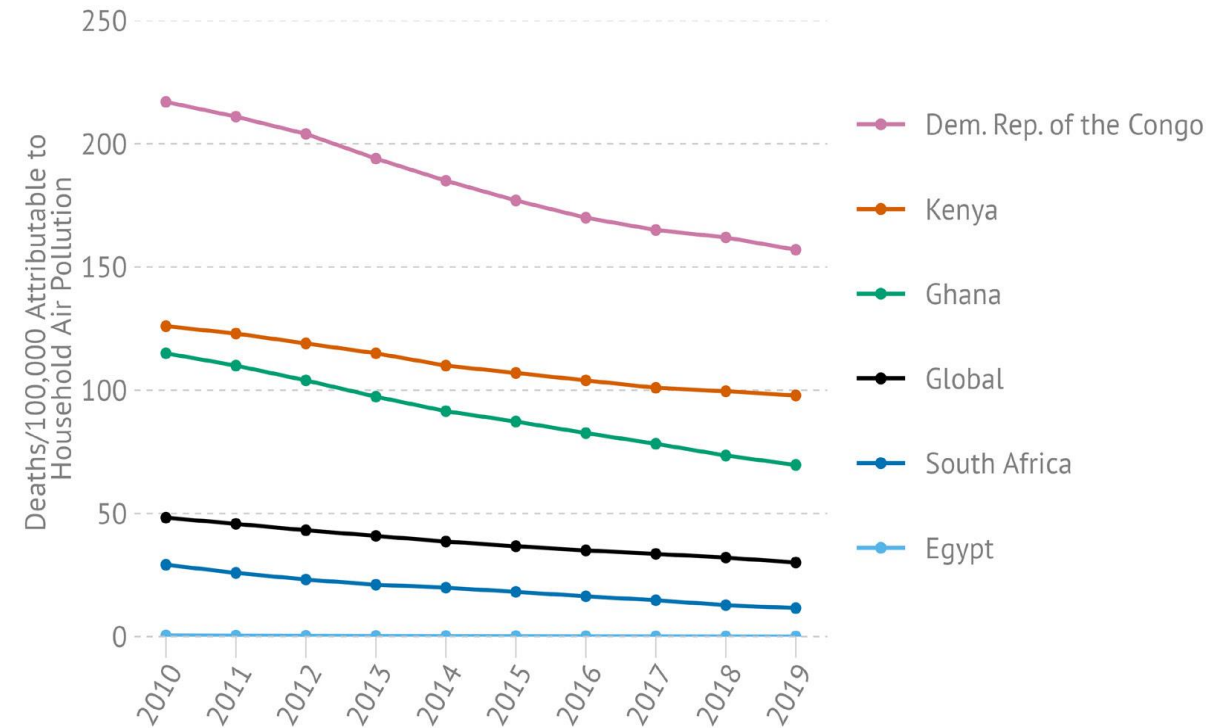
Exposure to air pollution in mothers can result in increased risk of their infants being born too small or too early

Trends in HAP Exposure in Africa

Percentage of population using solid fuels for cooking

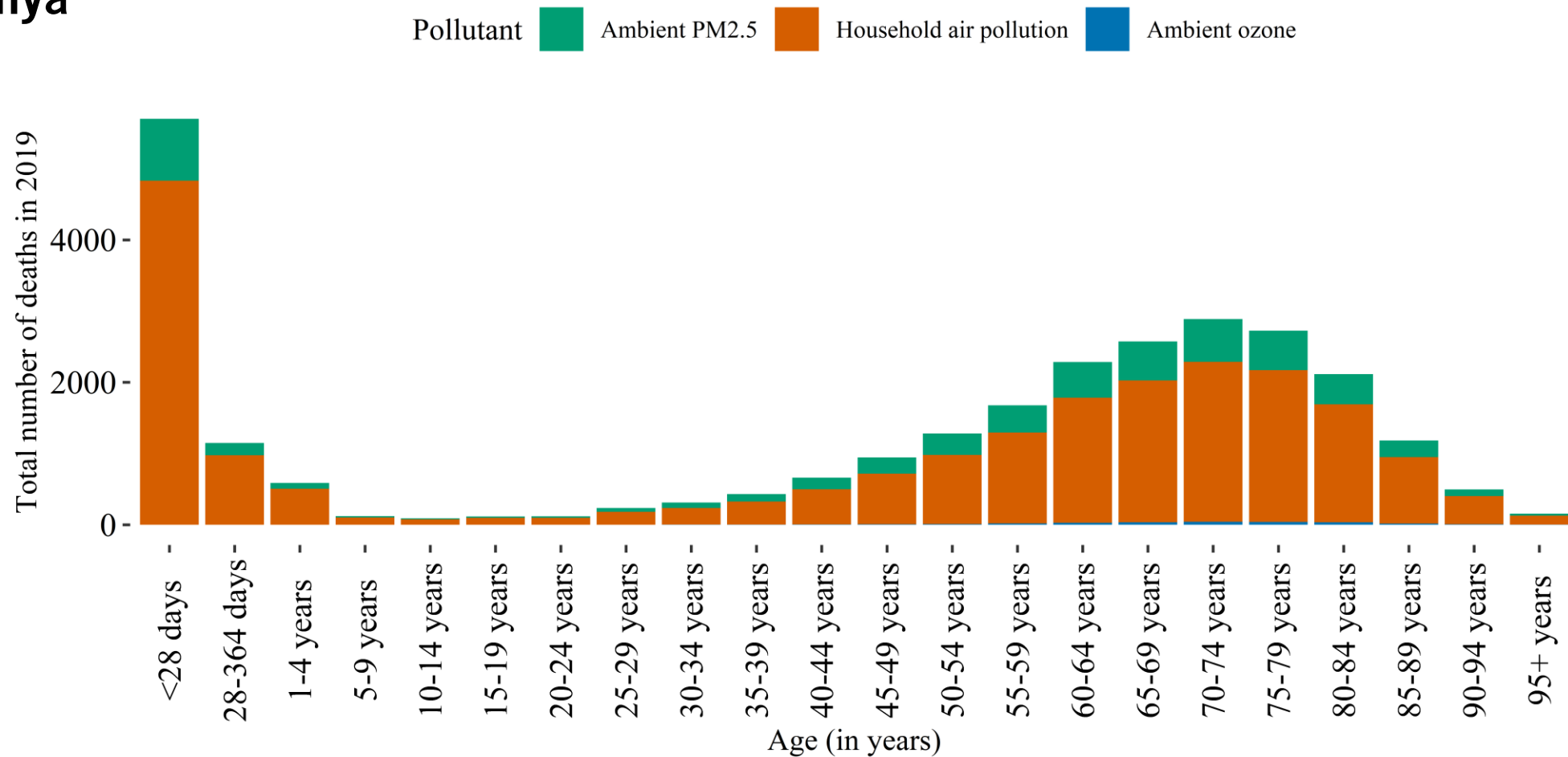


Trends in death rates linked to HAP, 2010 – 2019



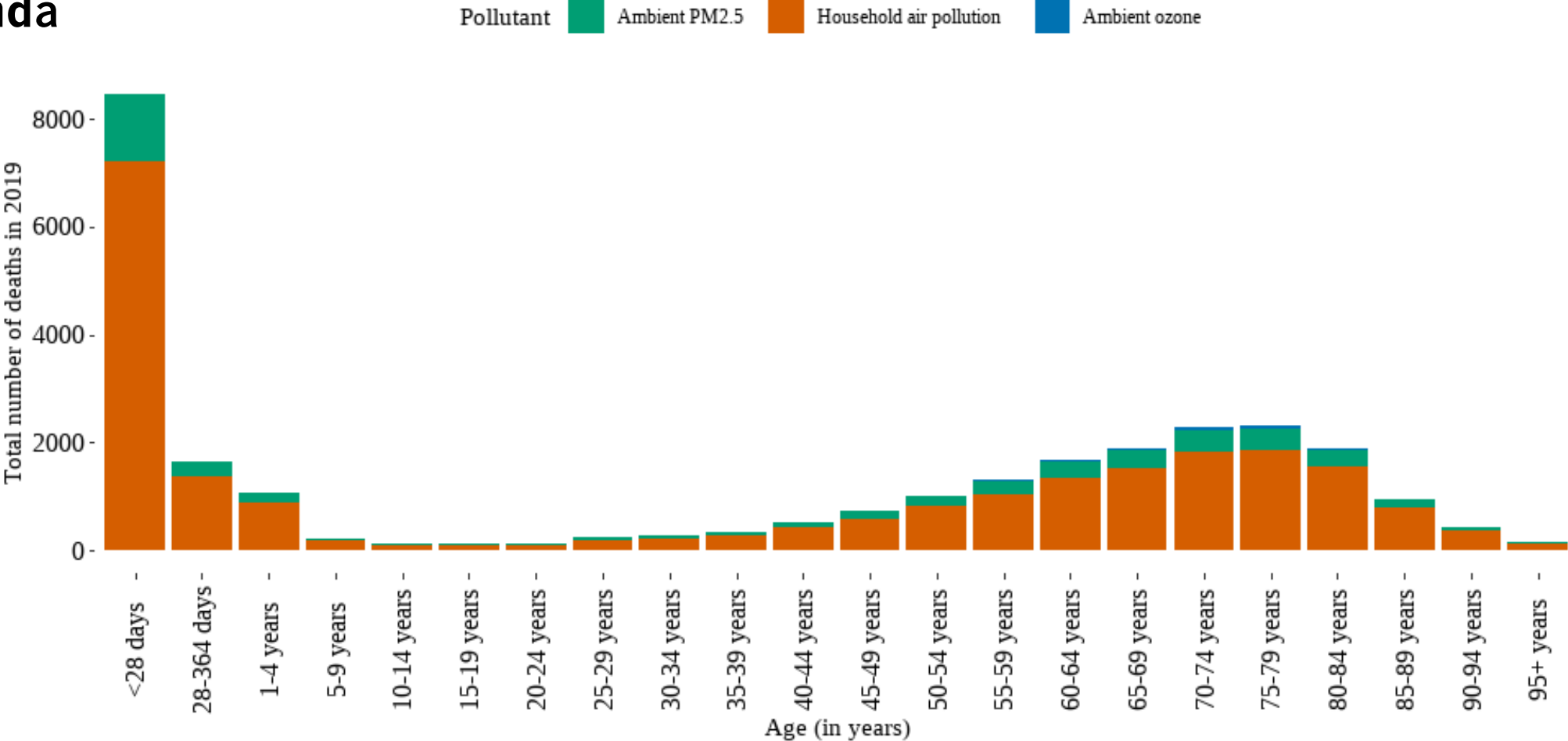
Patterns of disease burden linked to air pollution vary across East Africa

Kenya



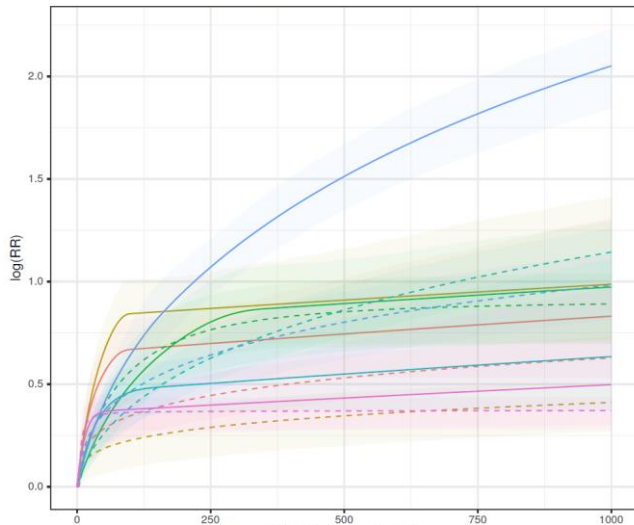
Patterns of disease burden linked to air pollution vary across East Africa

Uganda



Estimating health impacts; gaps

Concentration-response relationship

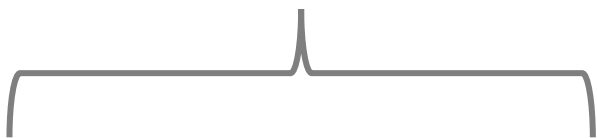


Baseline
disease
rates

Burden of
Disease
Linked to
Air Pollution

Limited studies on health effects of air pollution in high-pollution environments, no studies from Africa in the integrated concentration-response functions

Limited availability of baseline disease rates



Epidemiology studies on health effects of air pollution

How are the estimates produced?

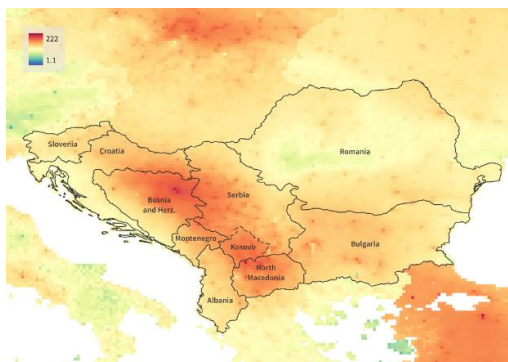


Satellite data

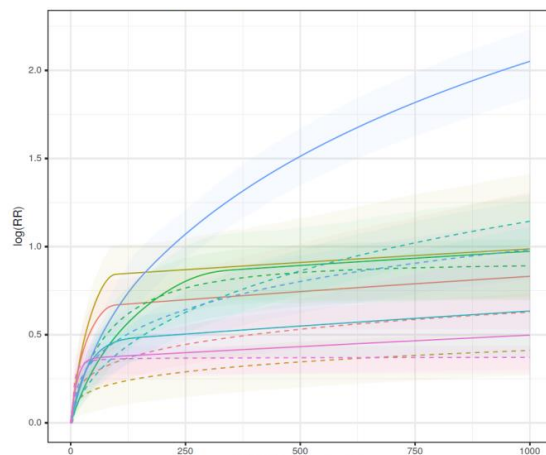


Chemical Transport Models

Ground monitoring data



Concentration-response relationship



Baseline disease rates




































Burden of Disease Linked to Air Pollution

Minimum risk exposure level



Epidemiology studies on health effects of air pollution

Major air pollution sources across Africa

	Energy	Industry	Transport	Waste	Residential	Agriculture	Windblown Dust
South Africa	 22.5%	 6.8%	 6.5%	 3.9%	 16%	 6.2%	 8.5%
DRC	 1.8%	 4.4%	 1.4%	 1.2%	 11.7%	 2.2%	 10.6%
Kenya	 7.9%	 4.6%	 6.1%	 2.1%	 26.7%	 0.5%	 25.1%
Ghana	 2.2%	 1.2%	 3.1%	 0.7%	 6.6%	 1.8%	 67.6%
Egypt	 11.7%	 5.3%	 6.3%	 5.8%	 4%	 5.9%	 42%

- Understanding major **air pollution sources** underpins **clean air action planning and** identification of **cost-effective solutions**
- Sources responsible for PM_{2.5} pollution **vary within** and **between countries** and **regions** across Africa

Interactive literature database for East Africa

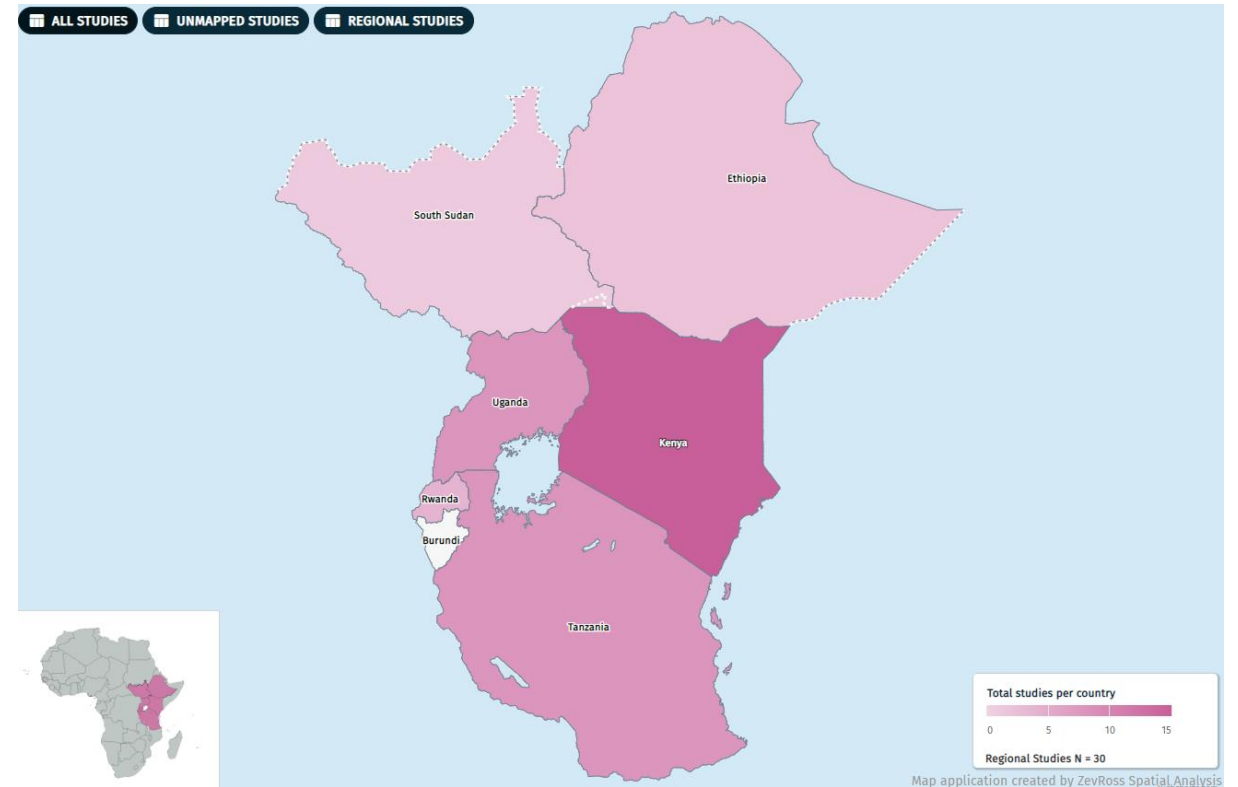
Online (dynamic) database of published evidence on air pollution and health in East Africa

80 articles | **6** countries

Highlight available data and evidence and geographic distribution across East Africa

Upcoming: synthesis of the local health evidence for broad audiences, support for local organizations

Welcome input and feedback



Let's talk!

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