New WHO Global Air Quality Guidelines 2021

Considerations for Implementation

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The WHO Air Quality Guidelines should form the basis of local air quality standards.

- No safe level of pollution – incremental improvements in air quality will have significant health benefits
- Improving air quality can achieve substantial health benefits for people everywhere – 80% of air pollution-related deaths would be prevented with achievement of health-based guidelines
- IT targets help meet countries where they are to encourage progress
- Local implementation of standards should include monitoring to evaluate compliance in population centers

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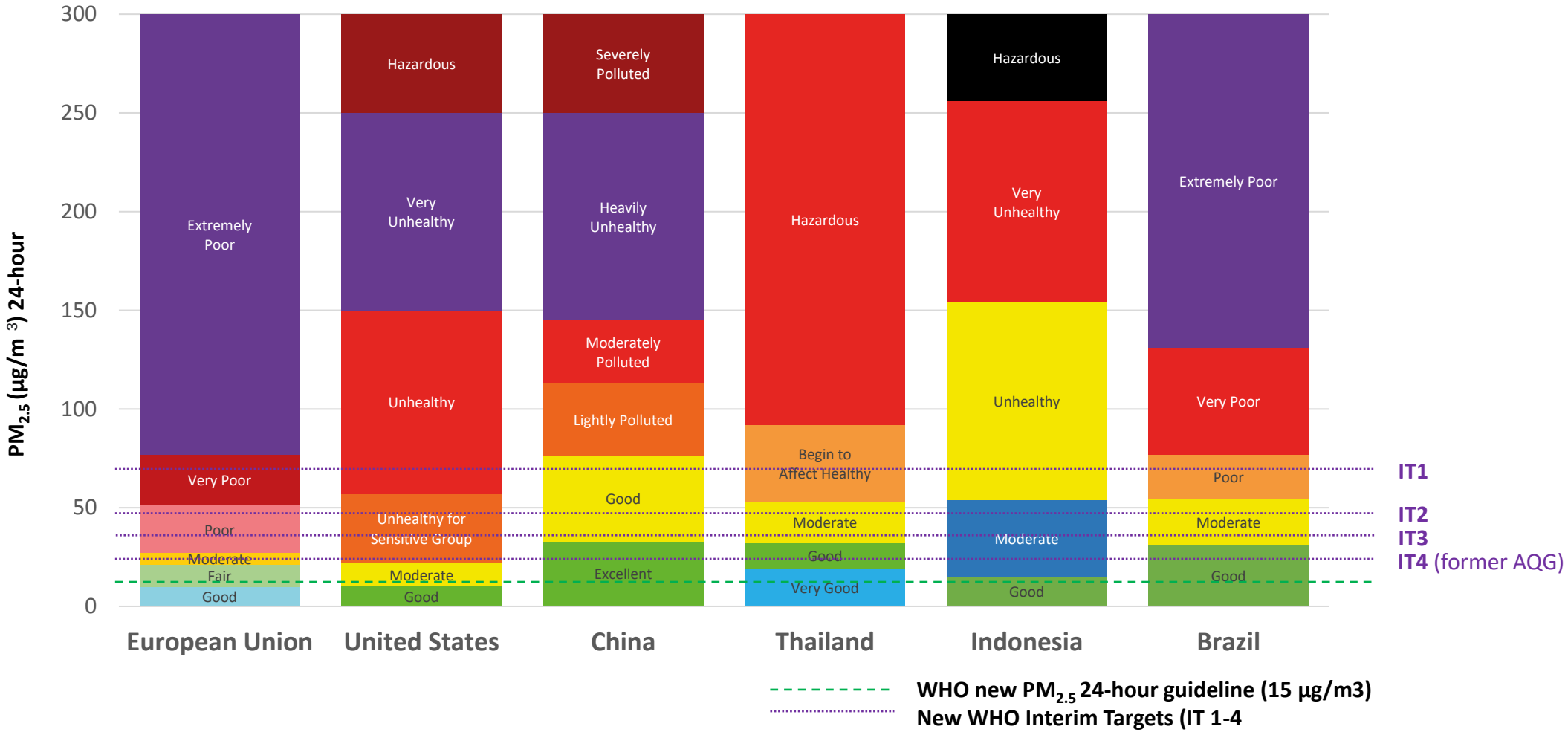
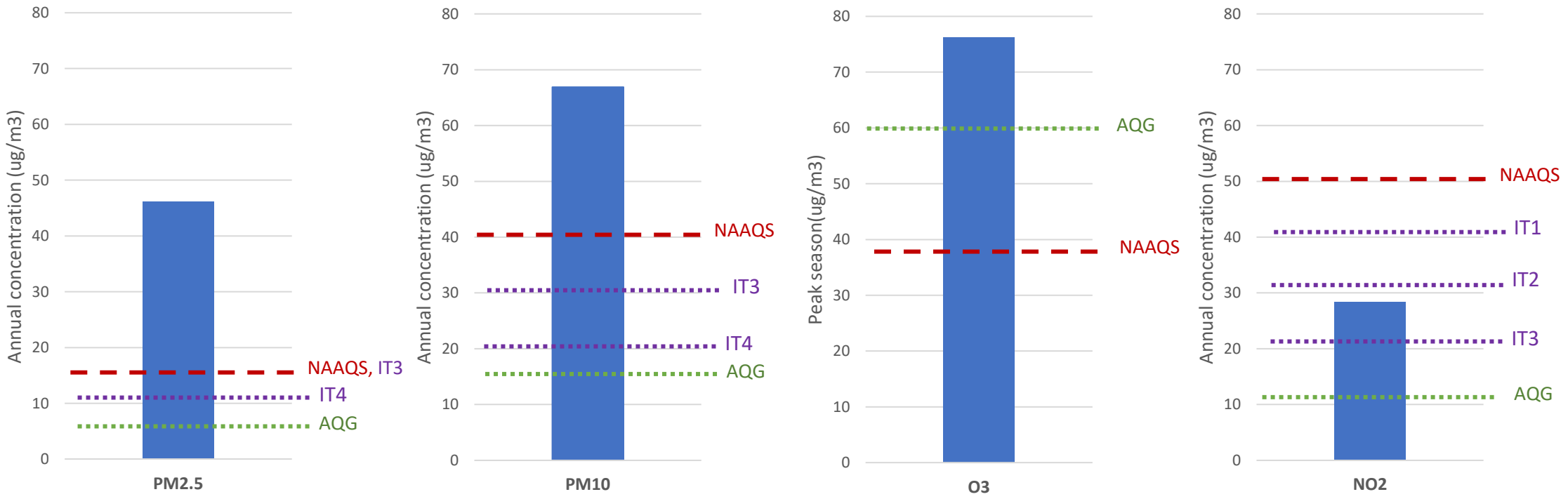
National alert levels (AQI) are well aligned with short-term $PM_{2.5}$ guideline levels

Comparison of $PM_{2.5}$ AQI and WHO air quality guideline and interim targets



Challenge: how can we better characterize and communicate the impact of long-term exposures to air pollution and impacts on health?

2020 Air Quality in Jakarta – NAAQS and WHO Guideline Levels



Standards set by the National Government through Government Regulation No. 22/2021 (NAAQS)
New WHO Interim Target (IT 1-4)
New WHO Air Quality Guideline (AQG)

Source: Dinas Lingkungan Hidup DKI Jakarta

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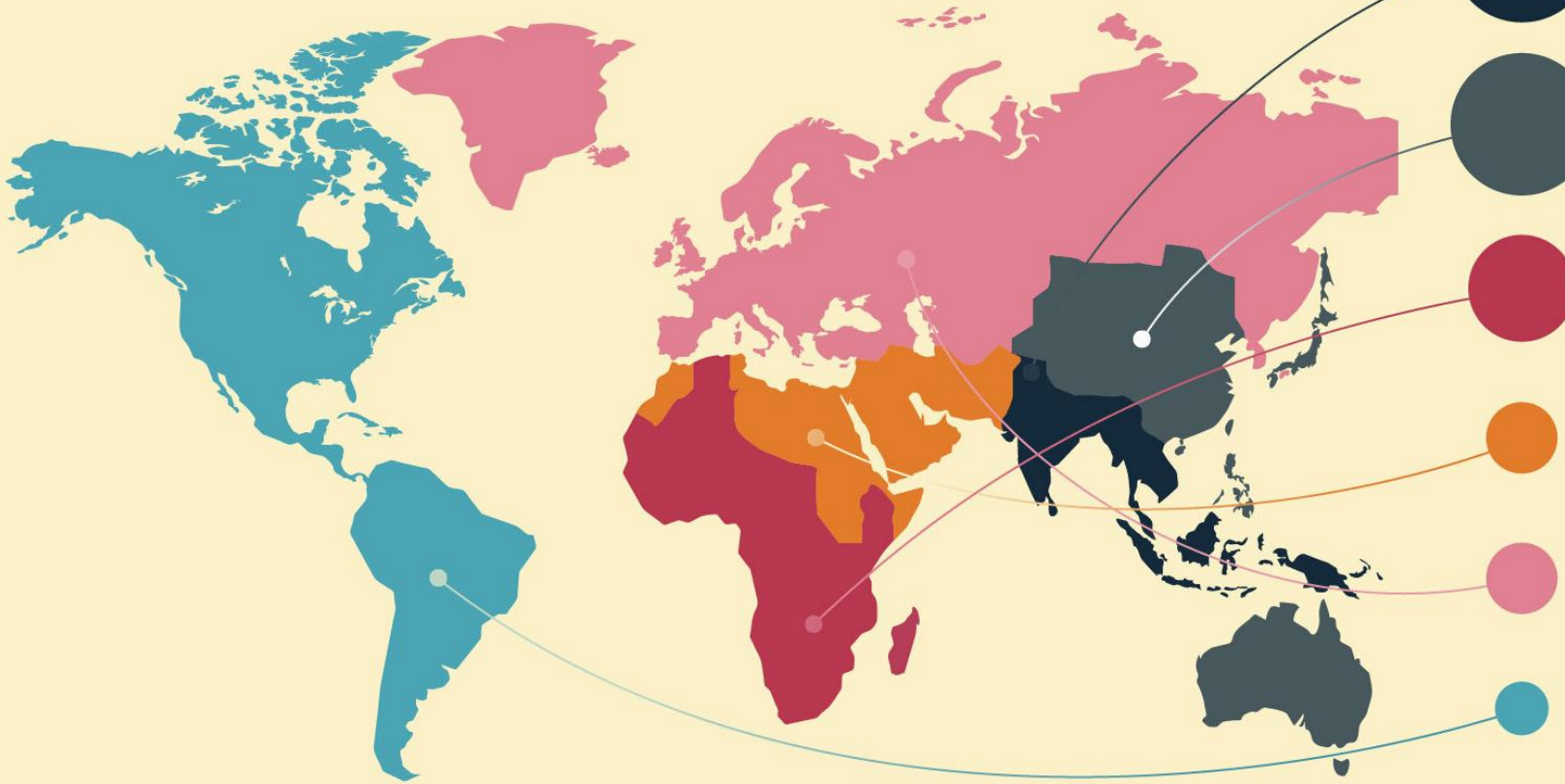
Air pollution-related illness and death are not equally distributed.

REGIONAL ESTIMATES ACCORDING TO WHO REGIONAL GROUPINGS:



More than 2 million
in South-East Asia Region

More than 2 million
in Western Pacific Region

1 million
in Africa Region

500 000
deaths in Eastern Mediterranean Region

500 000
deaths in European Region

More than 300 000
in the Region of the Americas

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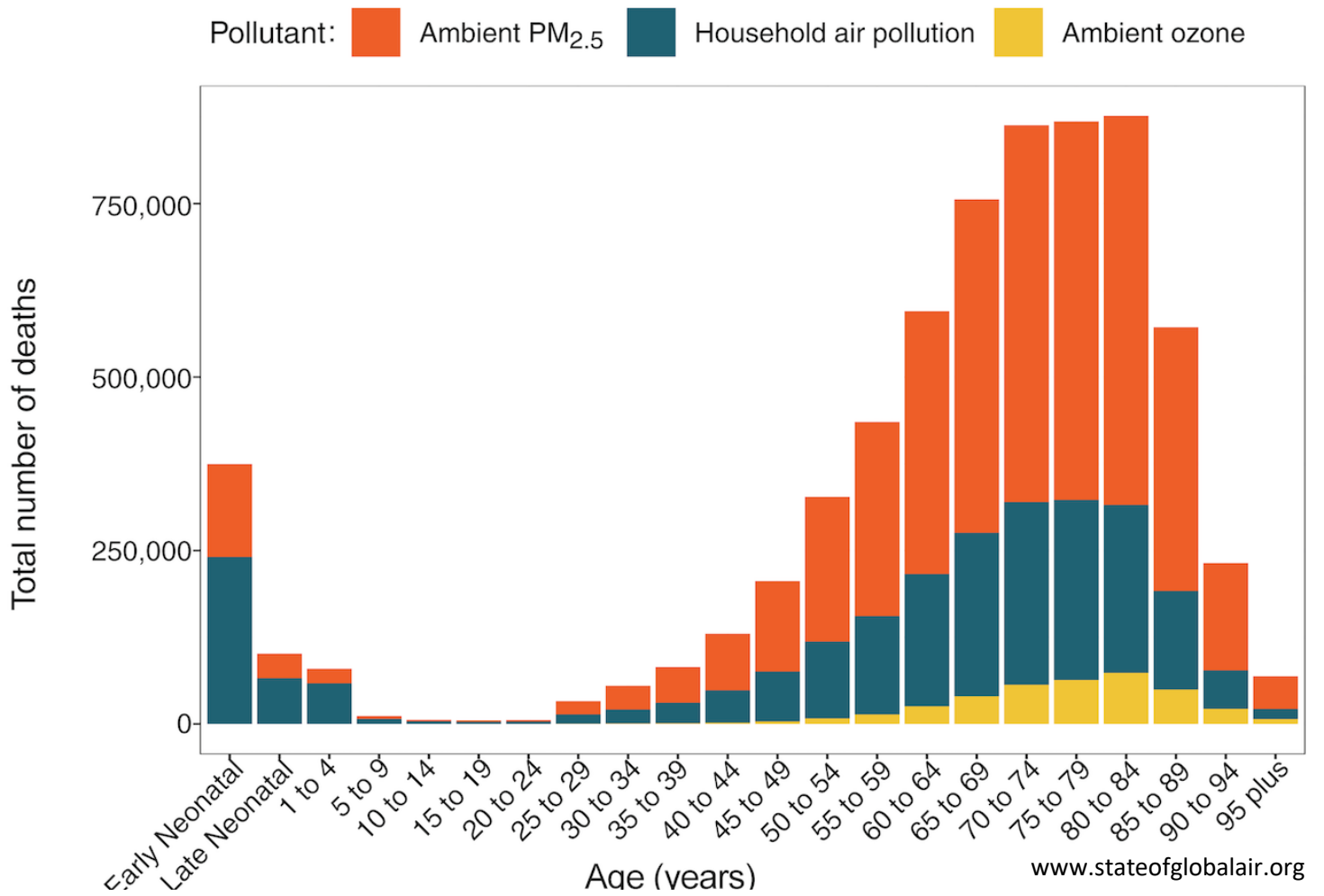
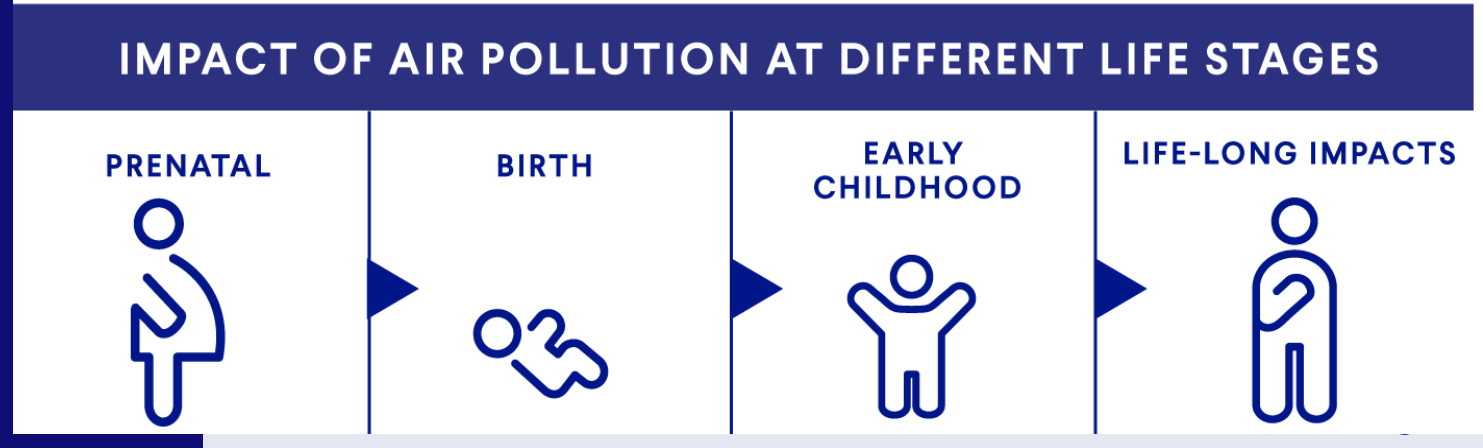
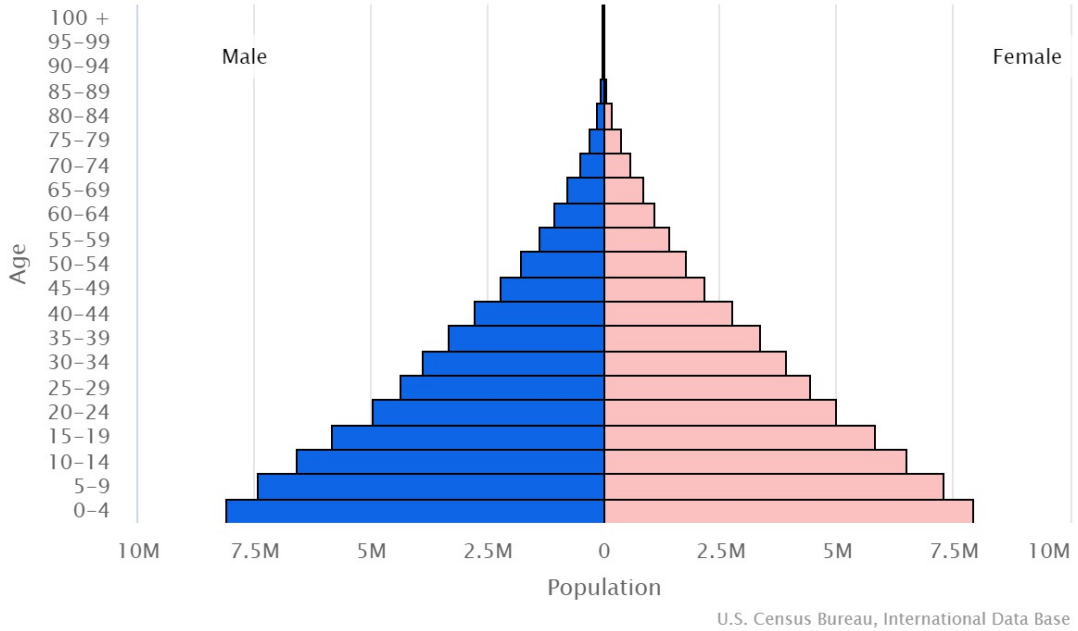
Air pollution affects people differently by age

- underlying health status
- prevalence of diseases associated with air pollution

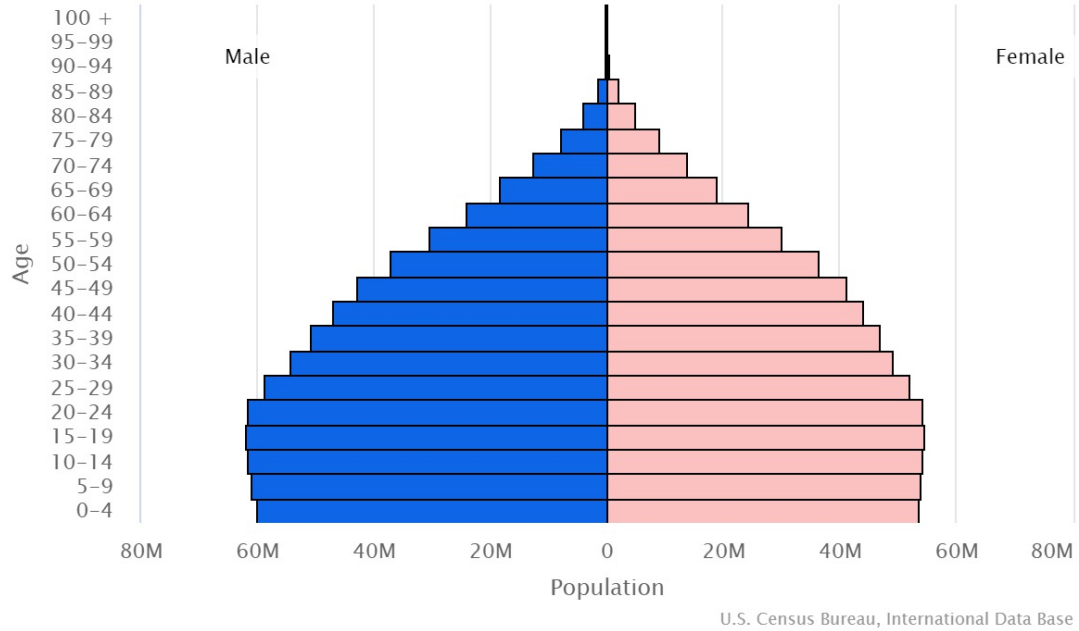




At the population level, differences in age distribution matters.



Ethiopia



India

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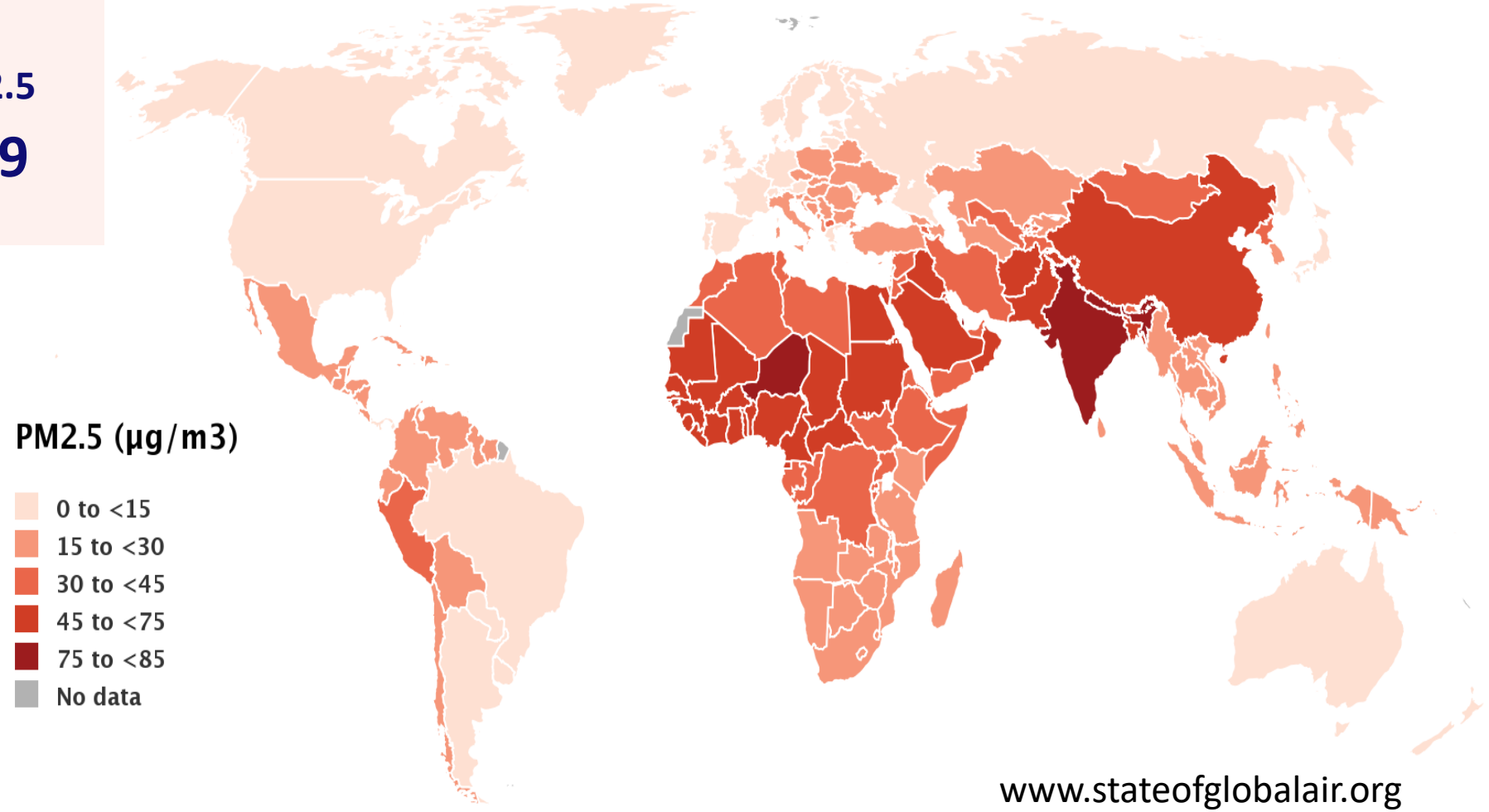
At the population level, differences in average exposure matters.

Average annual $PM_{2.5}$ concentrations, 2019



www.stateofglobalair.org

Inequities play out differently across geographies!

- Are the poor more exposed?
- Are the poor more susceptible due to age, competing risk factors, underlying health status?
- Are certain neighborhoods closer to leading sources of pollution?
- How do different lifestyles impact exposures?
  - Commuting patterns
  - Cooking/heating
  - Occupations
  - etc…

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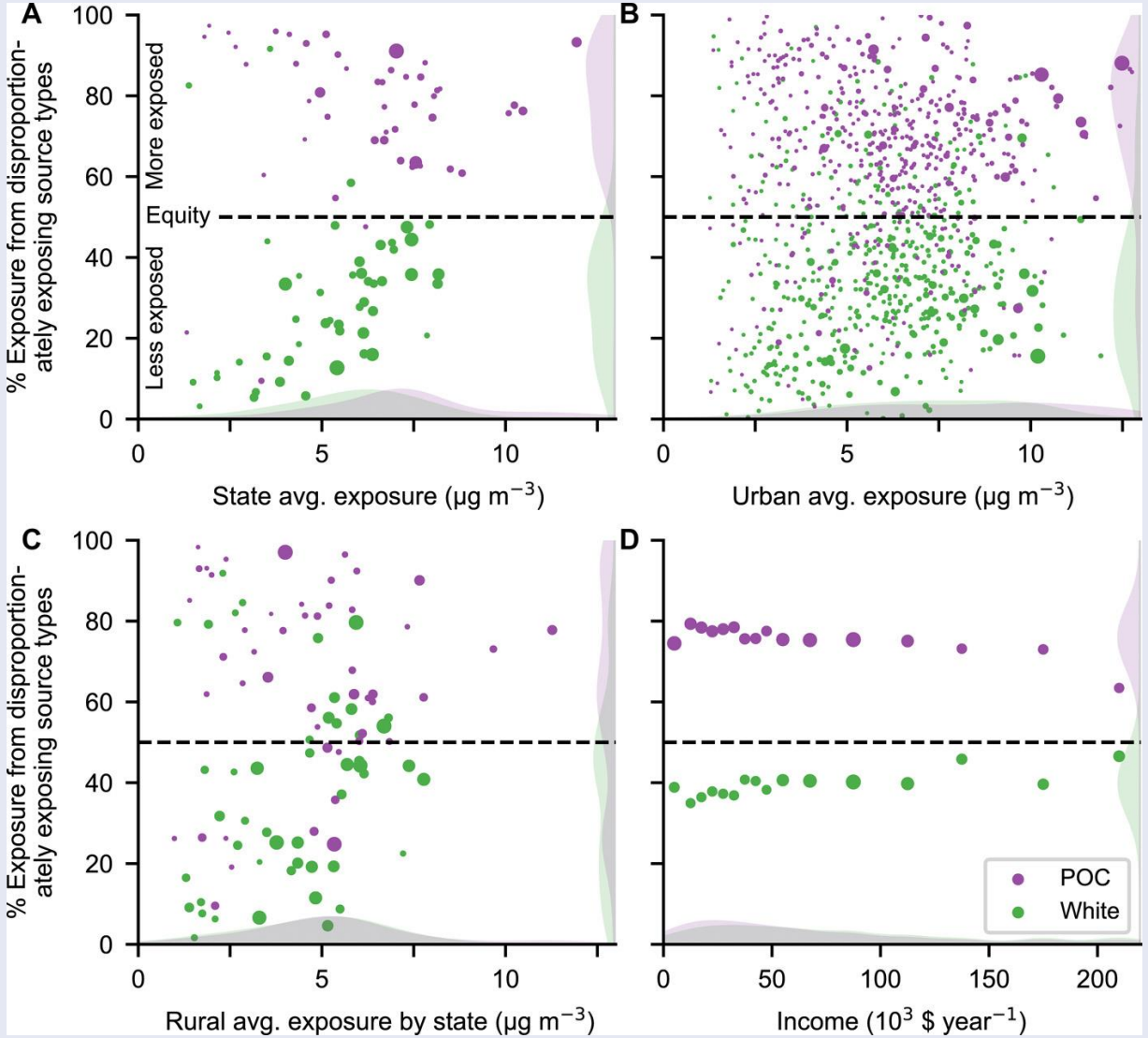
Example: United States

People of color are disproportionately exposed to $PM_{2.5}$

- at the state level
- in urban areas
- in rural areas
- at every income level



Christopher W. Tessum et al. Sci Adv 2021;7:eabf4491

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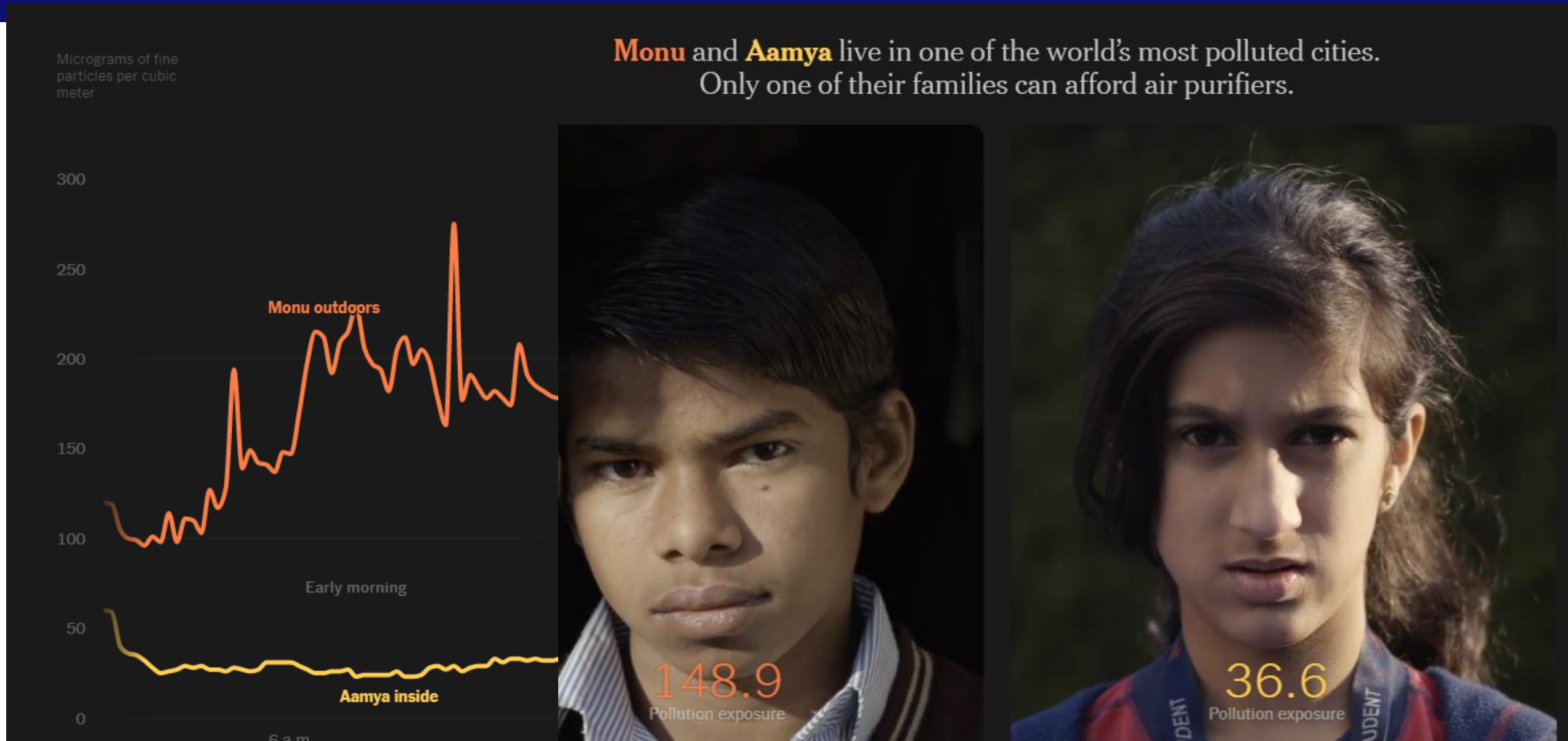
https://www.nytimes.com/interactive/2020/12/17/world/asia/india-pollution-inequality.html

Example: New Delhi, India



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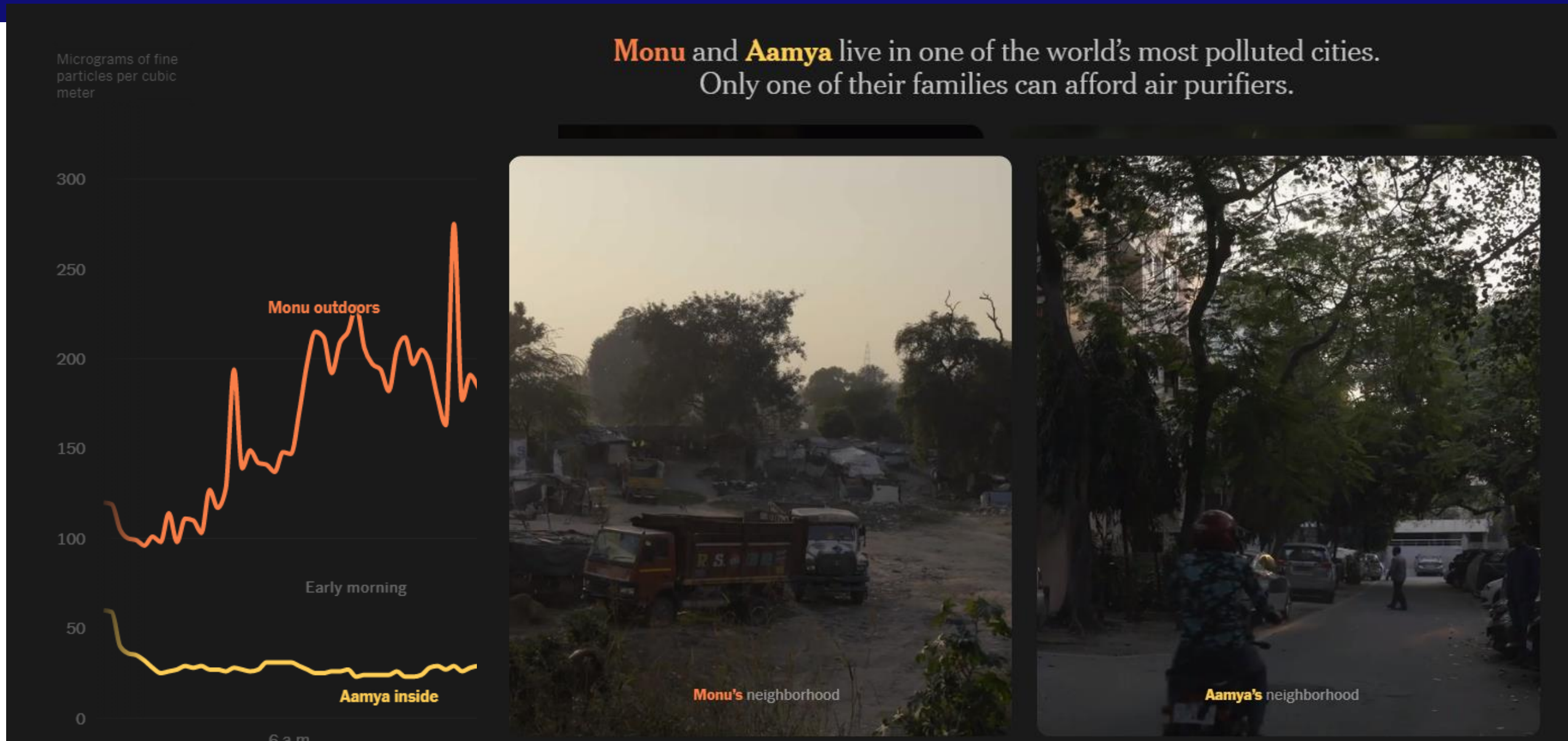
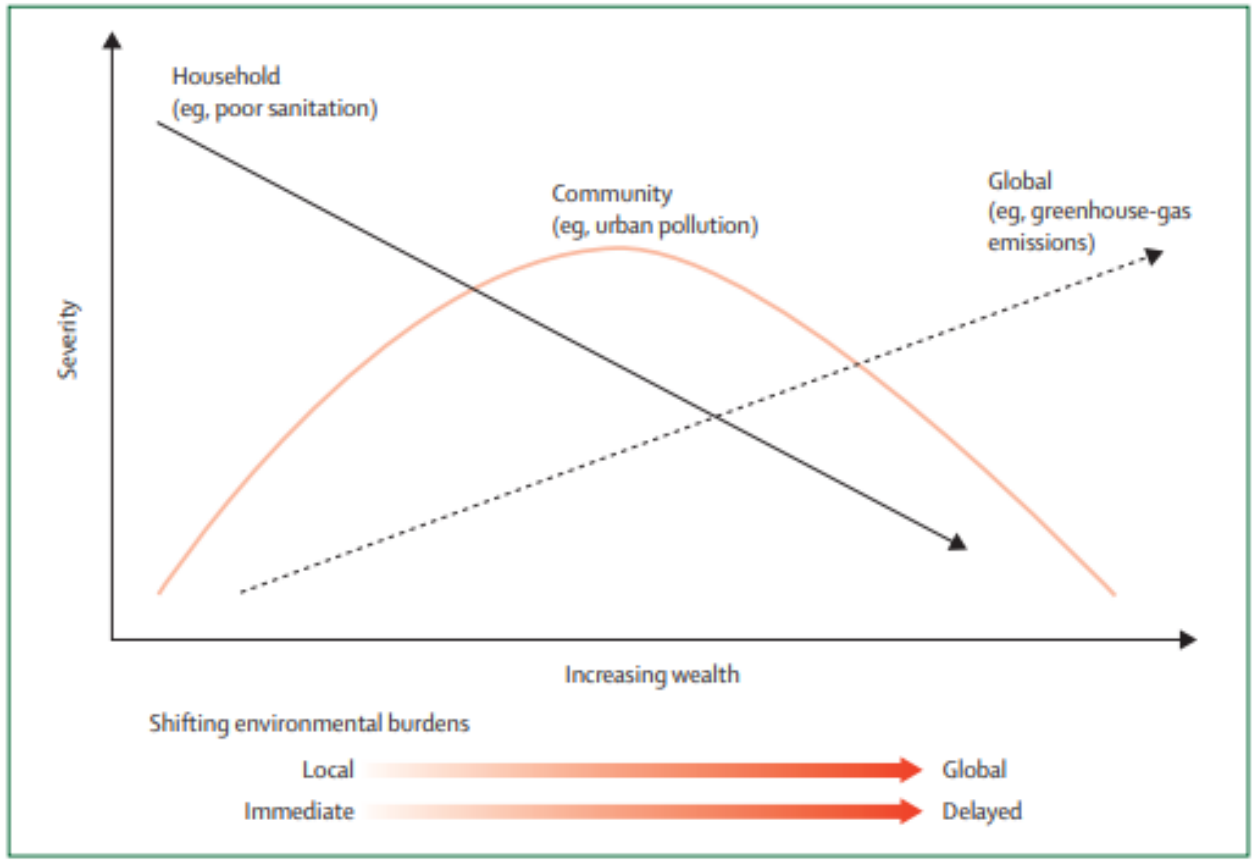


Challenge: how can we characterize and address inequities in exposure, susceptibility, and resulting health effects

- at individual level?
- at community level?
- at population level?



(Friel, Marmot, McMichael, Kjellstrom, Vågerö, Lancet, 2008)

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Clean air action for health must prioritize efforts to address leading sources, ideally while reducing inequities in exposure and impacts

*For every **$1** invested to reduce emissions*

How much public health benefit will we receive in return?

SOLUTIONS

INVEST IN ENERGY-EFFICIENT POWER GENERATION.

IMPROVE DOMESTIC, INDUSTRY AND MUNICIPAL WASTE MANAGEMENT.

REDUCE AGRICULTURAL WASTE INCINERATION, FOREST FIRES AND CERTAIN AGRO-FORESTRY ACTIVITIES.

MAKE GREENER AND MORE COMPACT CITIES WITH ENERGY-EFFICIENT BUILDINGS.

PROVIDE UNIVERSAL ACCESS TO CLEAN, AFFORDABLE FUELS AND TECHNOLOGIES FOR COOKING, HEATING AND LIGHTING.

BUILD SAFE AND AFFORDABLE PUBLIC TRANSPORT SYSTEMS AND PEDESTRIAN- AND CYCLE-FRIENDLY NETWORKS.

WHO Air Quality Guidelines set goals to protect millions of lives from air pollution.

CLEAN AIR FOR HEALTH #AirPollution World Health Organization