

Unhealthy Years and Life-Years Lost Attributable to Air Particulate Matter in Asia-Pacific Region

Pattheera (Paire) Somboonsin and Vladimir Canudas-Romo

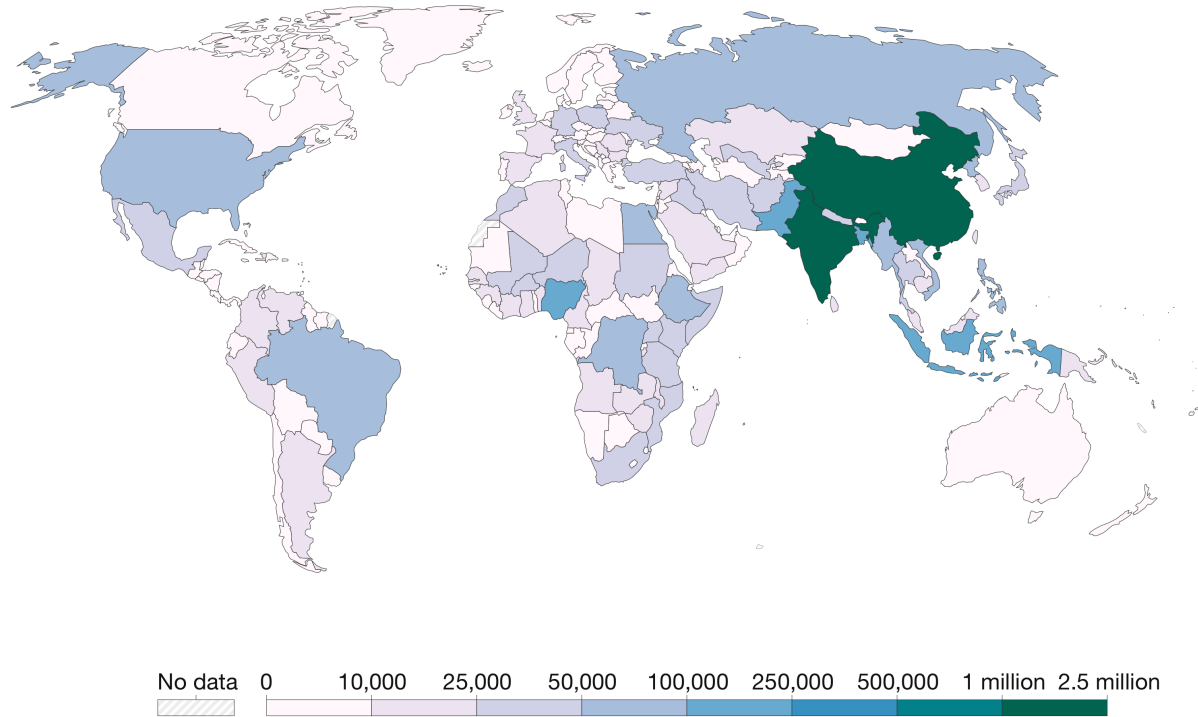
ANU School of Demography



Australian
National
University

How many people die from air particulate matter pollution in recent year?

18% of all deaths were from air particulate matter

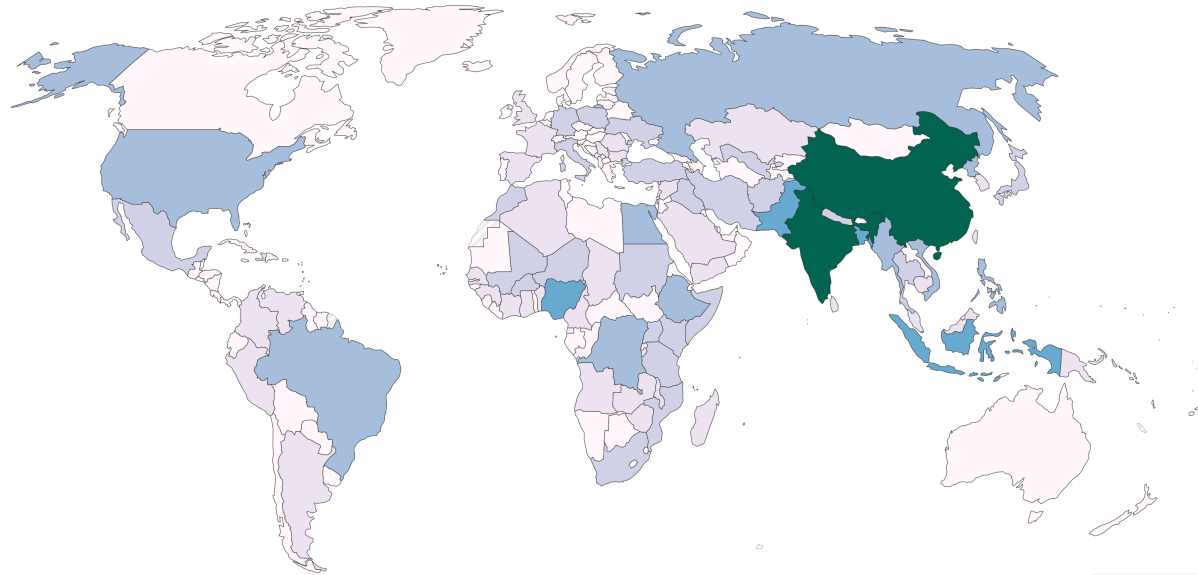


4th
highest-ranking
risk factor for
death

Source: IHME, Global Burden of Disease (2019)

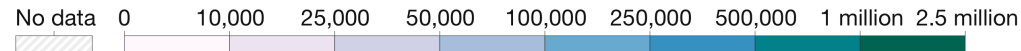
How many people die from air particulate matter pollution in recent year?

18% of all deaths were from air particulate matter



4th
highest-ranking
risk factor for
death

7 million deaths every year

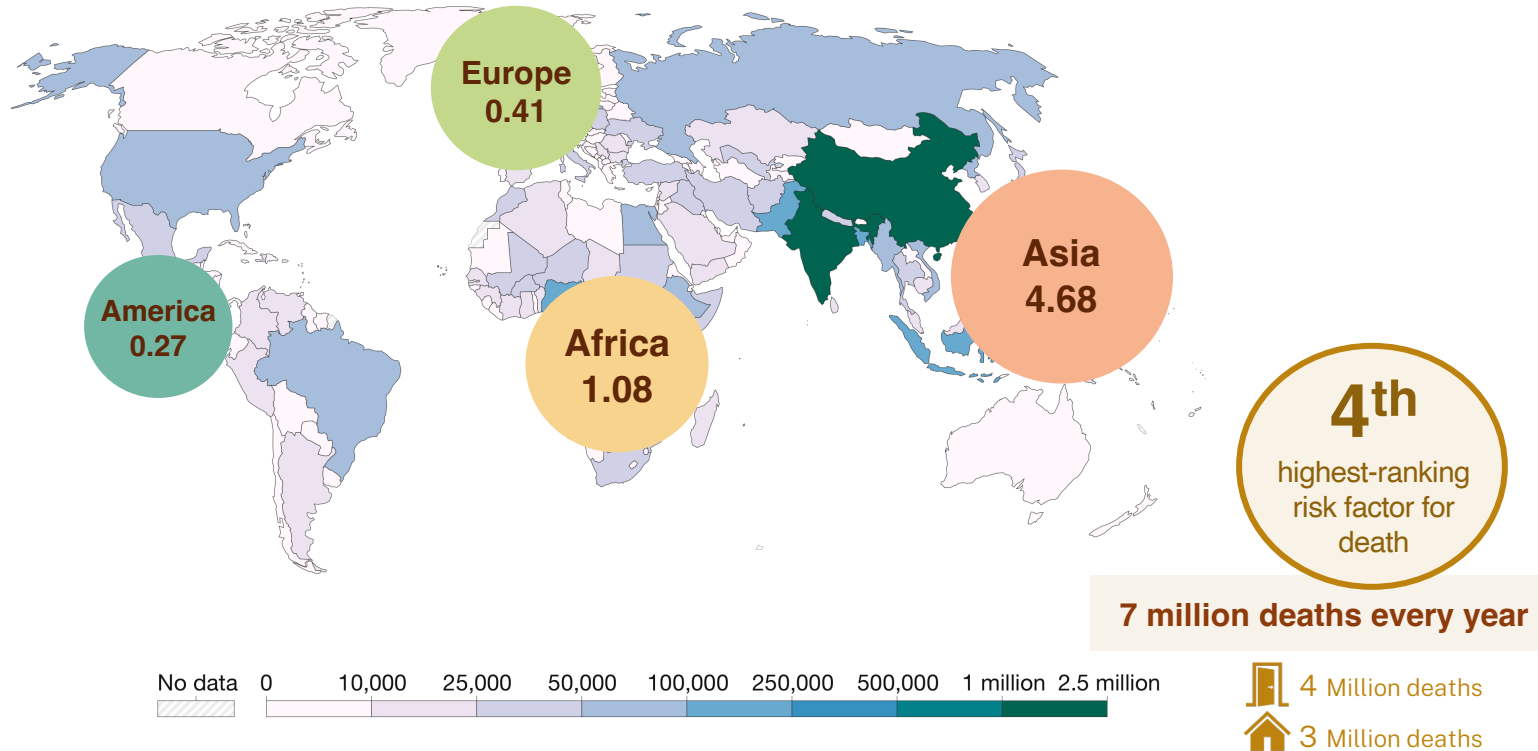


 4 Million deaths
 3 Million deaths

Source: IHME, Global Burden of Disease (2019)

How many people die from air particulate matter pollution in recent year?

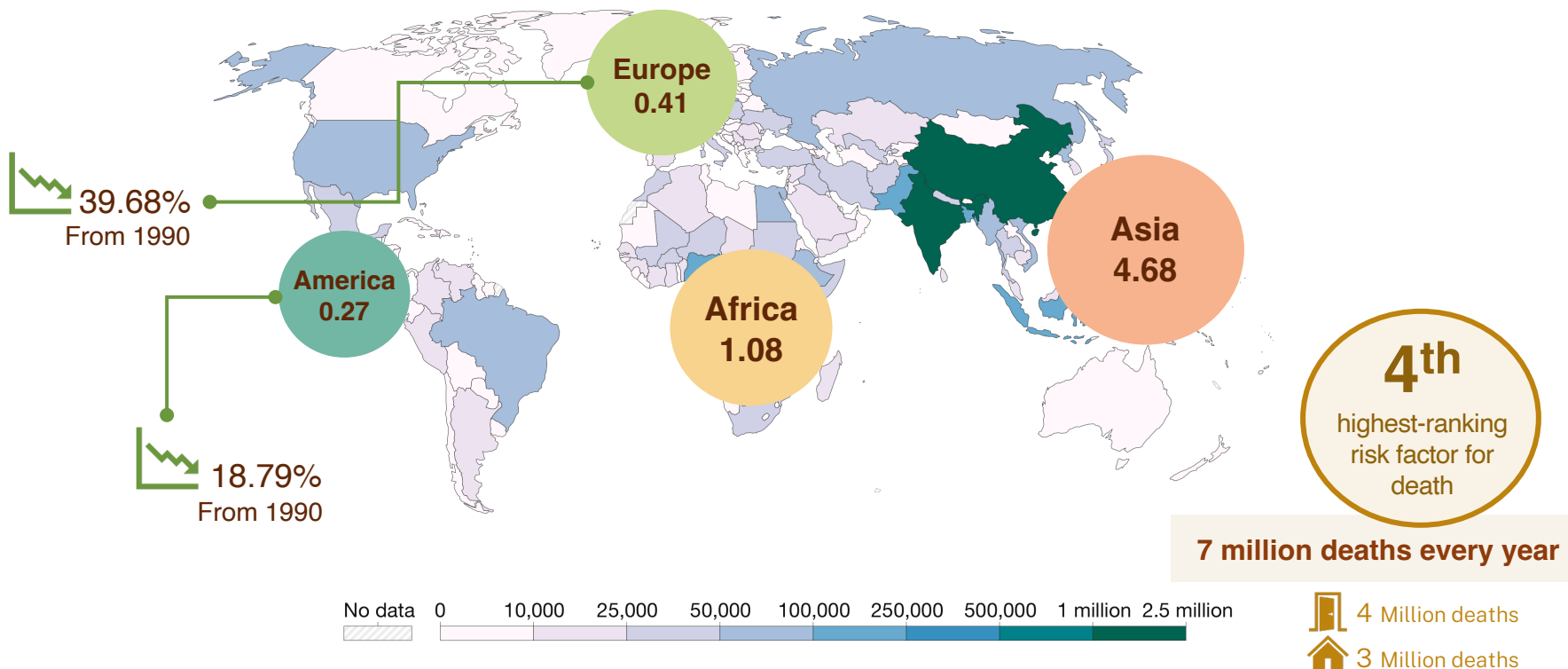
18% of all deaths were from air particulate matter



Source: IHME, Global Burden of Disease (2019)

How many people die from air particulate matter pollution in recent year?

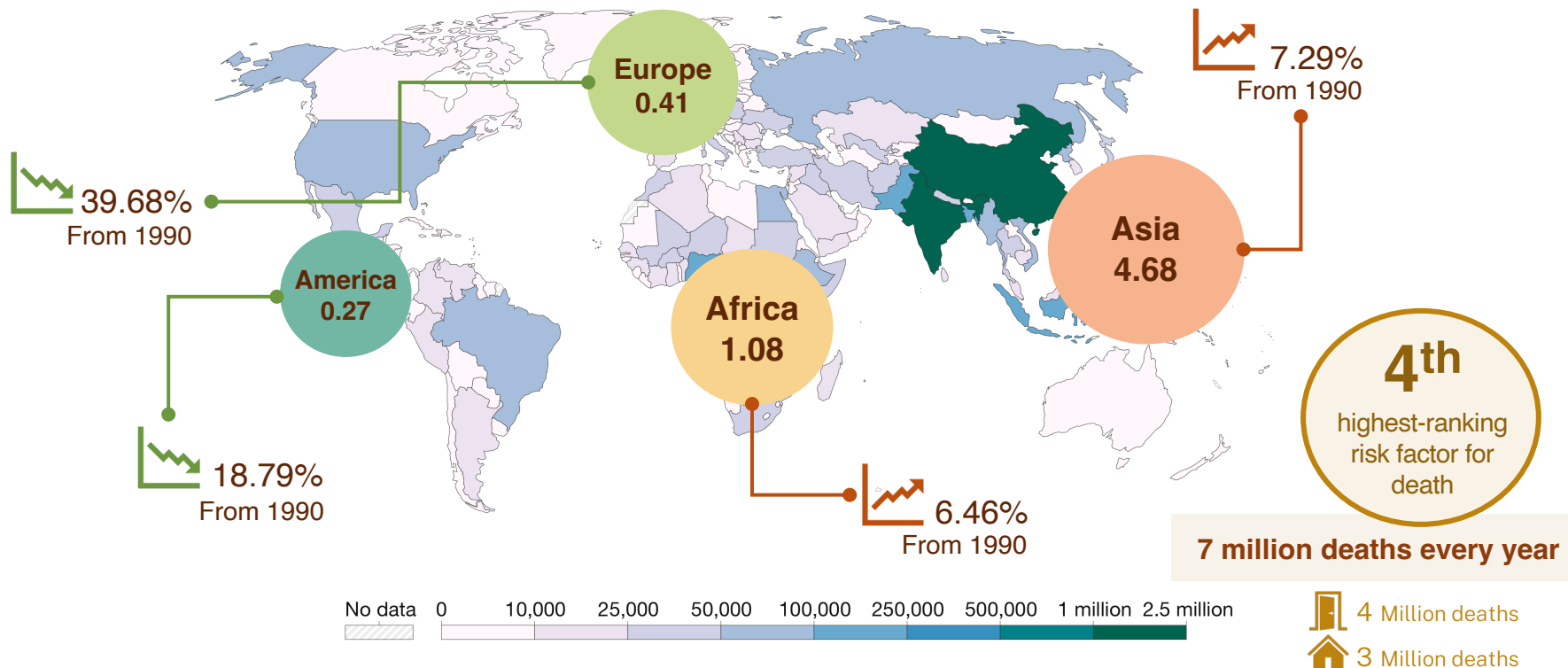
18% of all deaths were from air particulate matter



Source: IHME, Global Burden of Disease (2019)

How many people die from air particulate matter pollution in recent year?

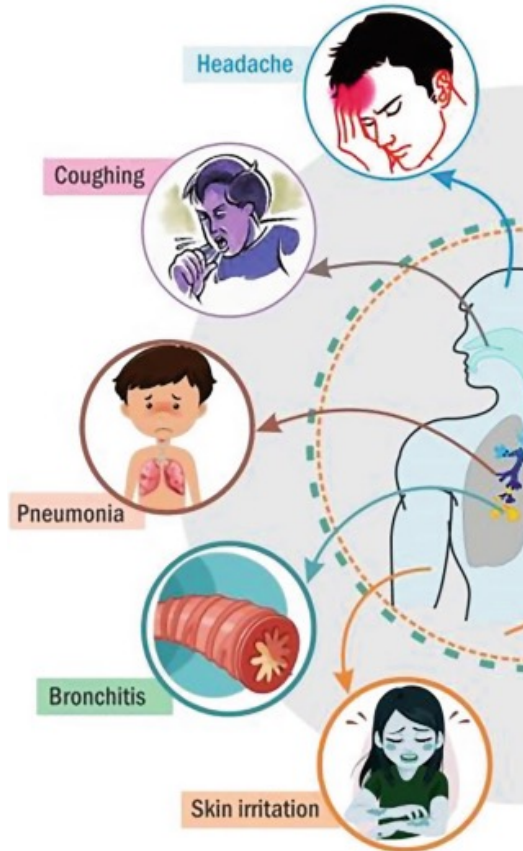
18% of all deaths were from air particulate matter



Source: IHME, Global Burden of Disease (2019)

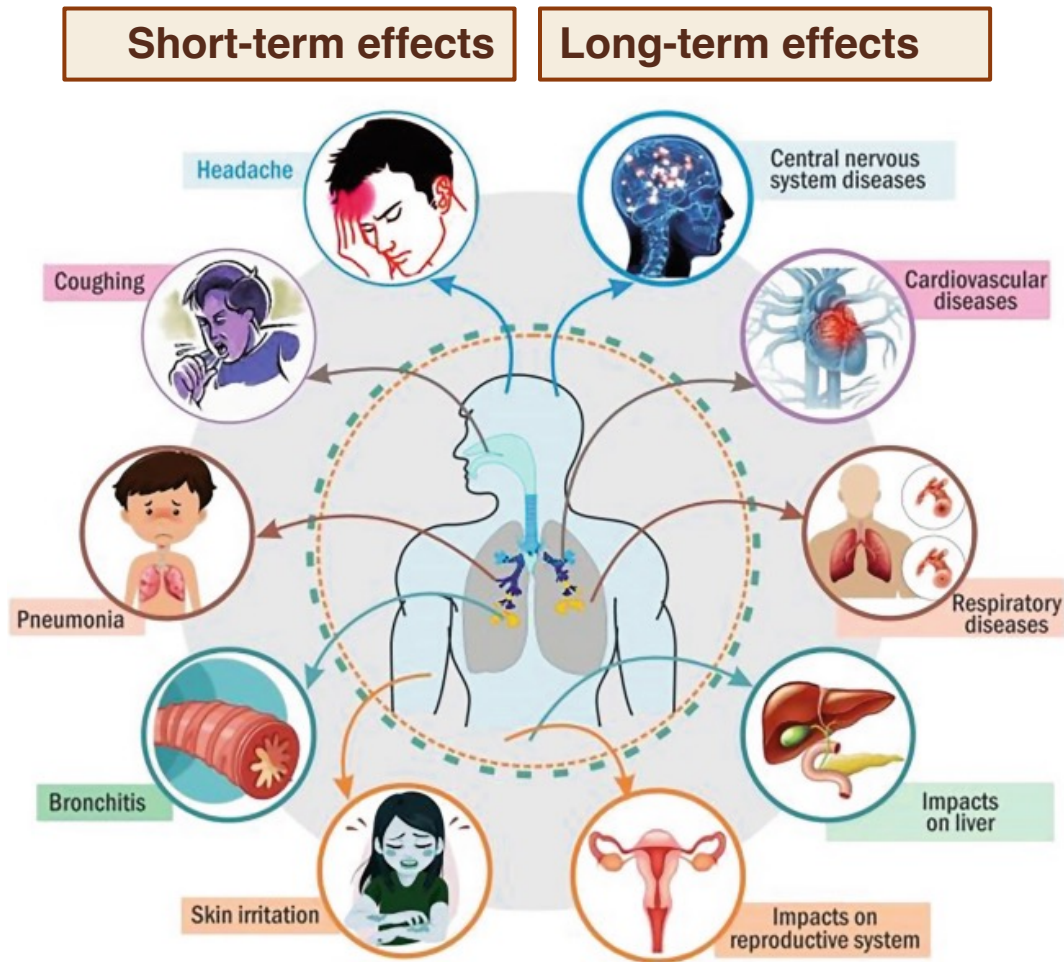
Effects from air pollution

Short-term effects



Source: Mikael Häggström (2012)

Effects from air pollution



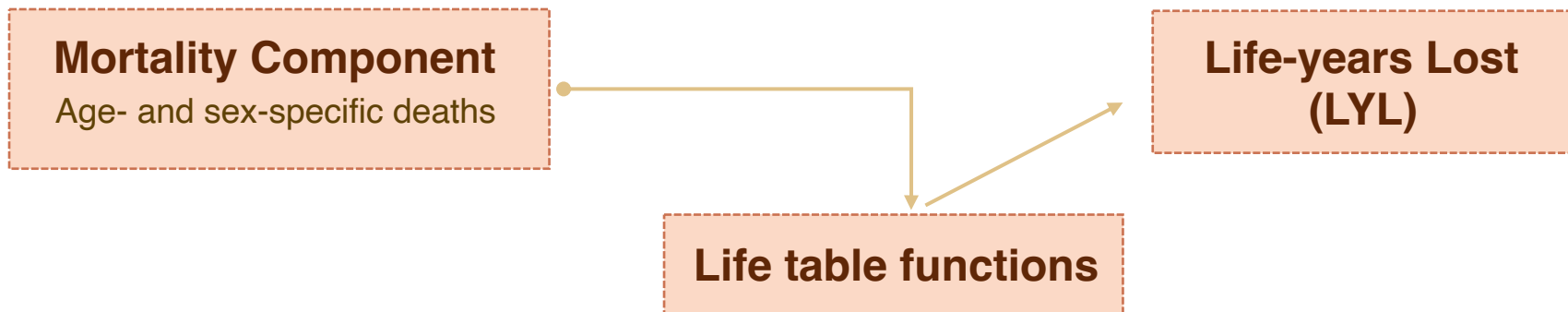
Source: Mikael Häggström (2012)

AIMS

To quantify and compare the burden of unhealthy years (UY) and life-years lost (LYL) resulting from household air pollution from solid fuels (HAP) and ambient particulate matter (APM) from 1990 to 2019 across various countries, genders and age groups within Asia-Pacific region.

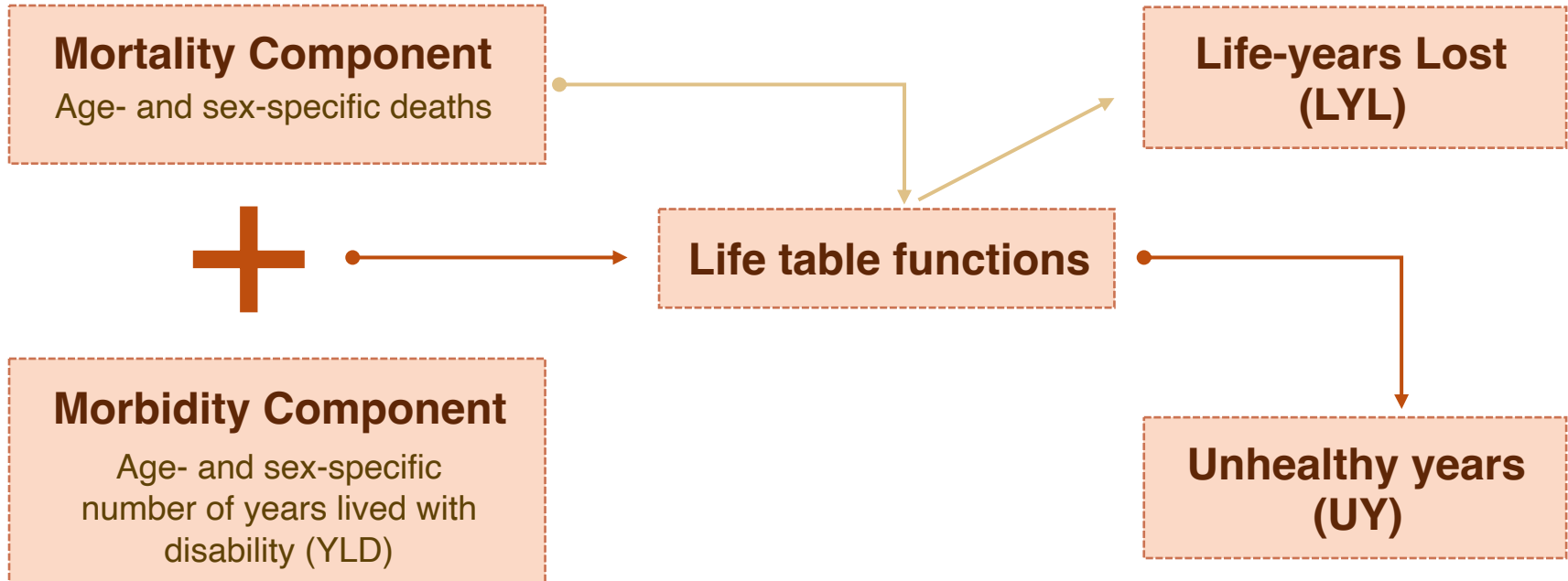
METHODOLOGY

Data Source: Institute for Health Metrics and Evaluation (IHME)

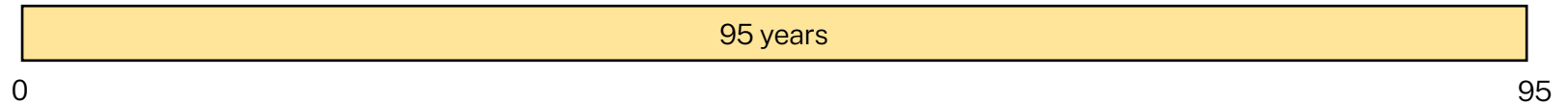


METHODOLOGY

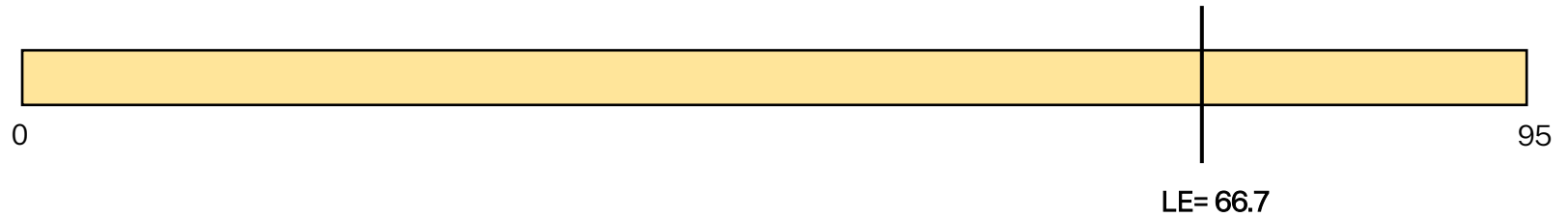
Data Source: Institute for Health Metrics and Evaluation (IHME)



METHODOLOGY

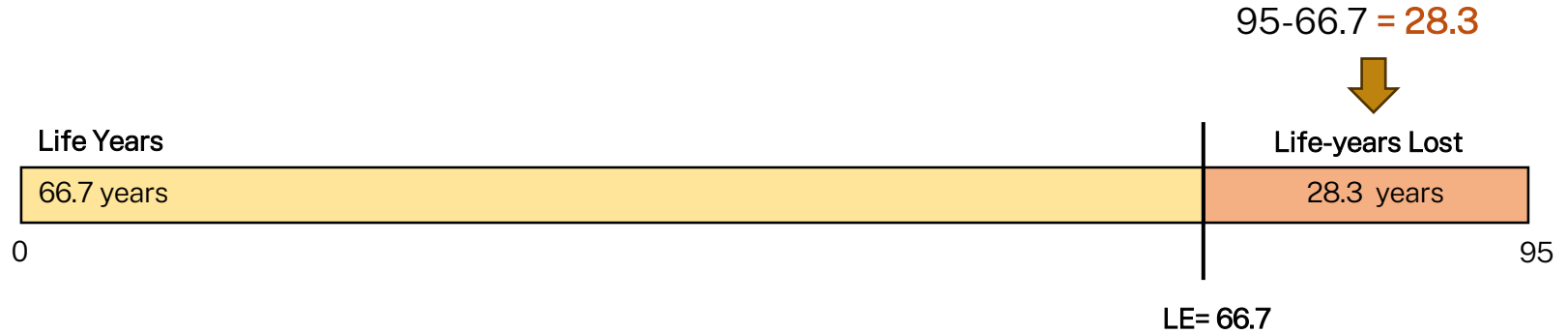


METHODOLOGY

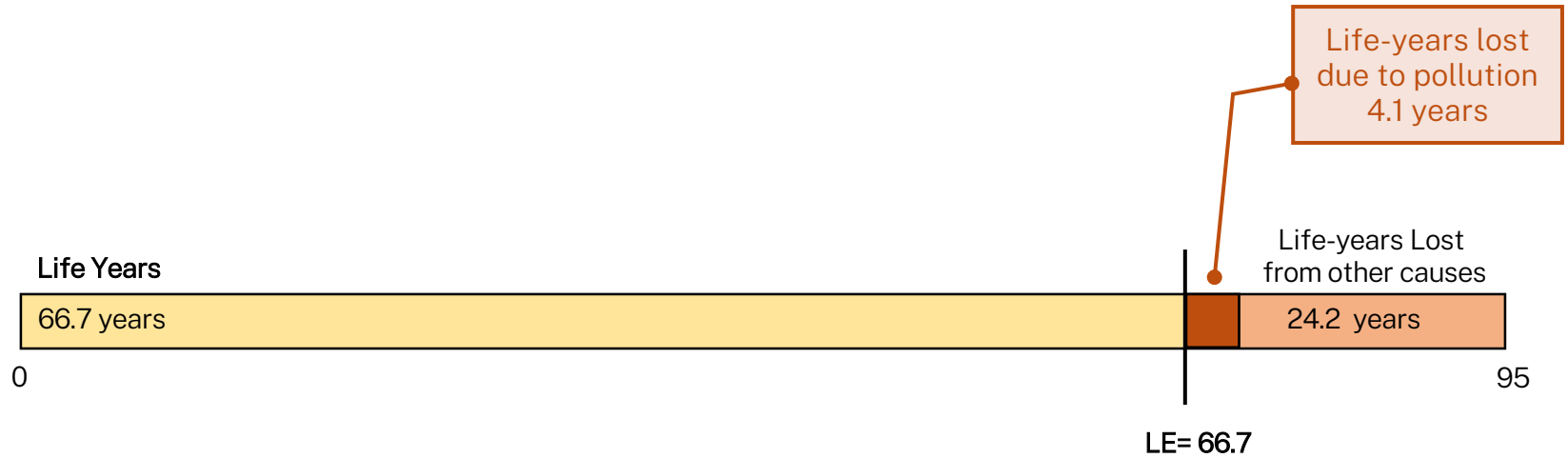


METHODOLOGY

$$95 = {}_{95}e_0 + {}_{95}\vartheta_0$$



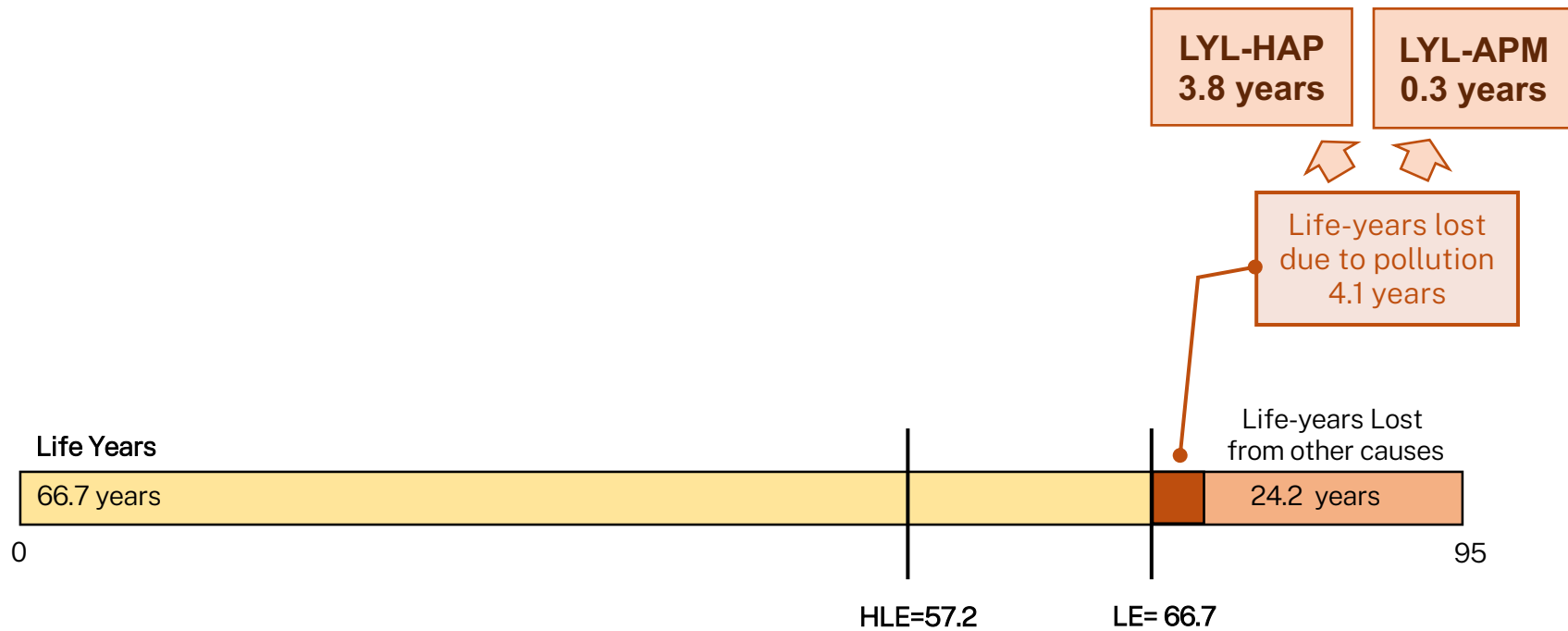
METHODOLOGY



METHODOLOGY

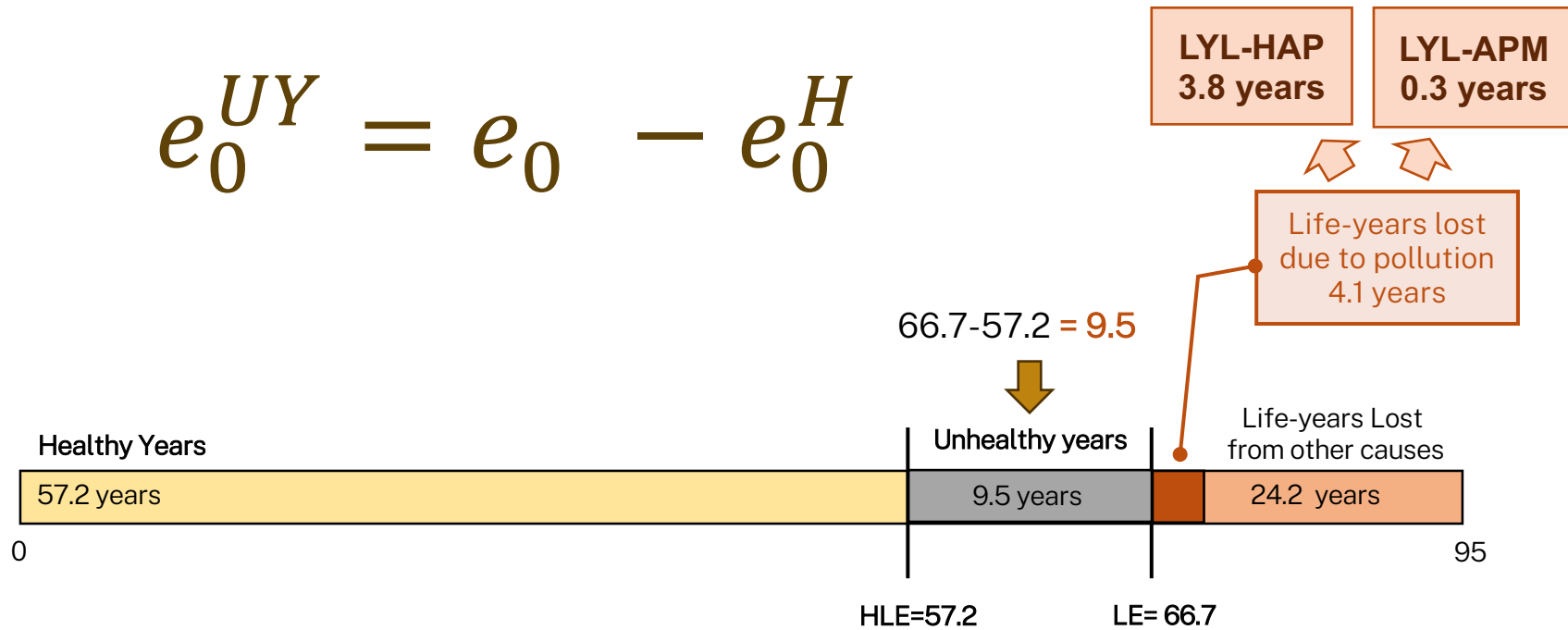


METHODOLOGY

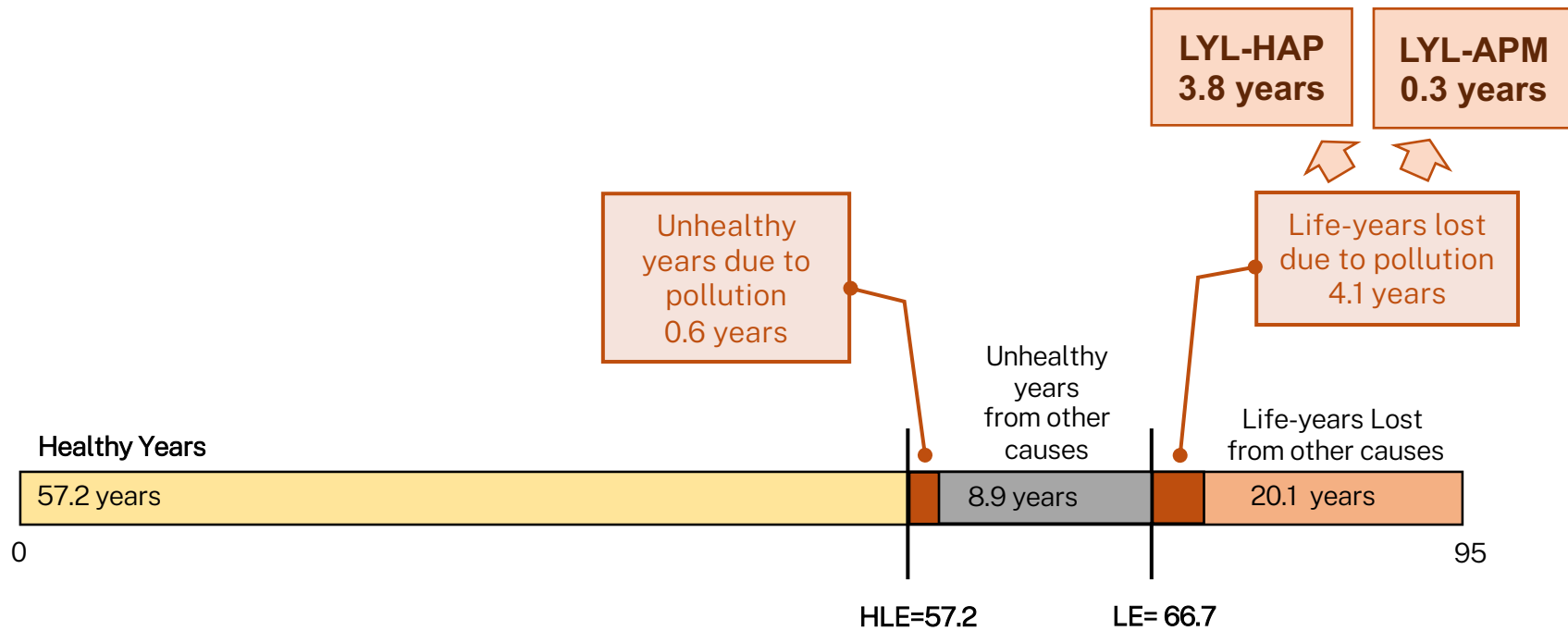


METHODOLOGY

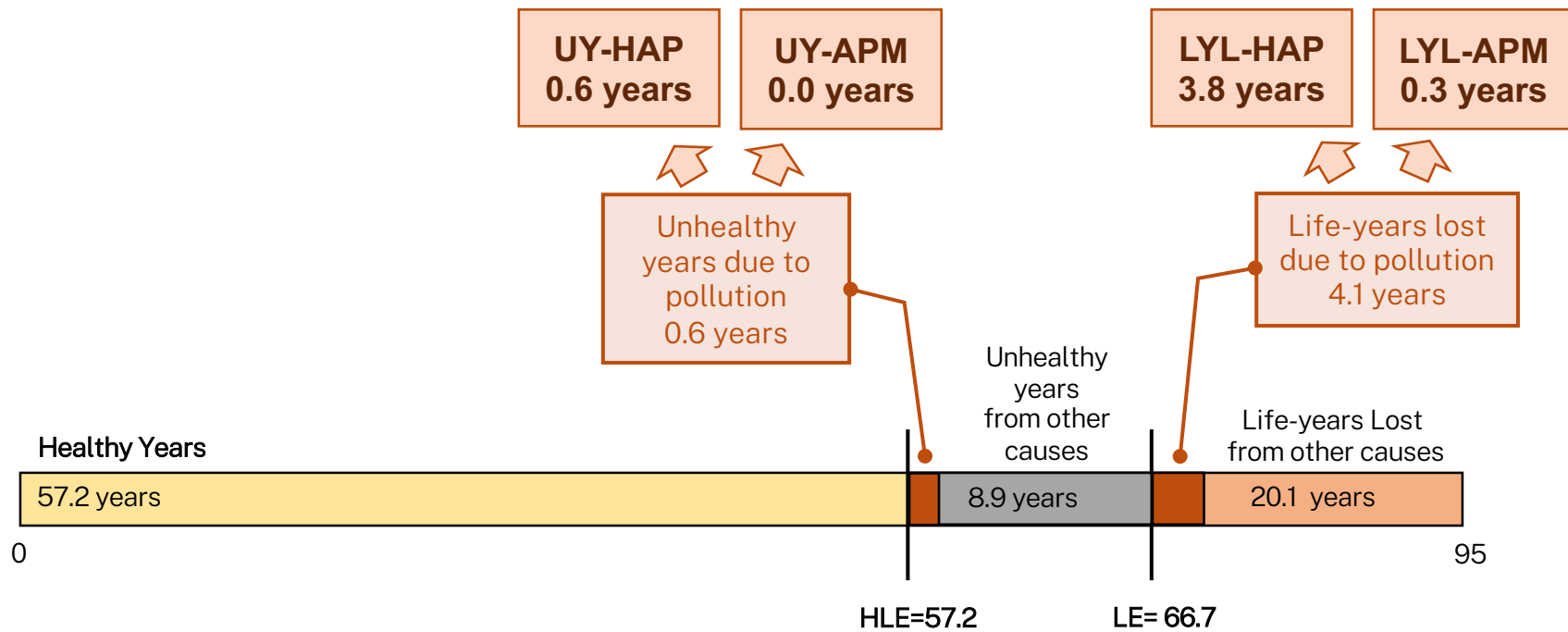
$$e_0^{UY} = e_0 - e_0^H$$



METHODOLOGY



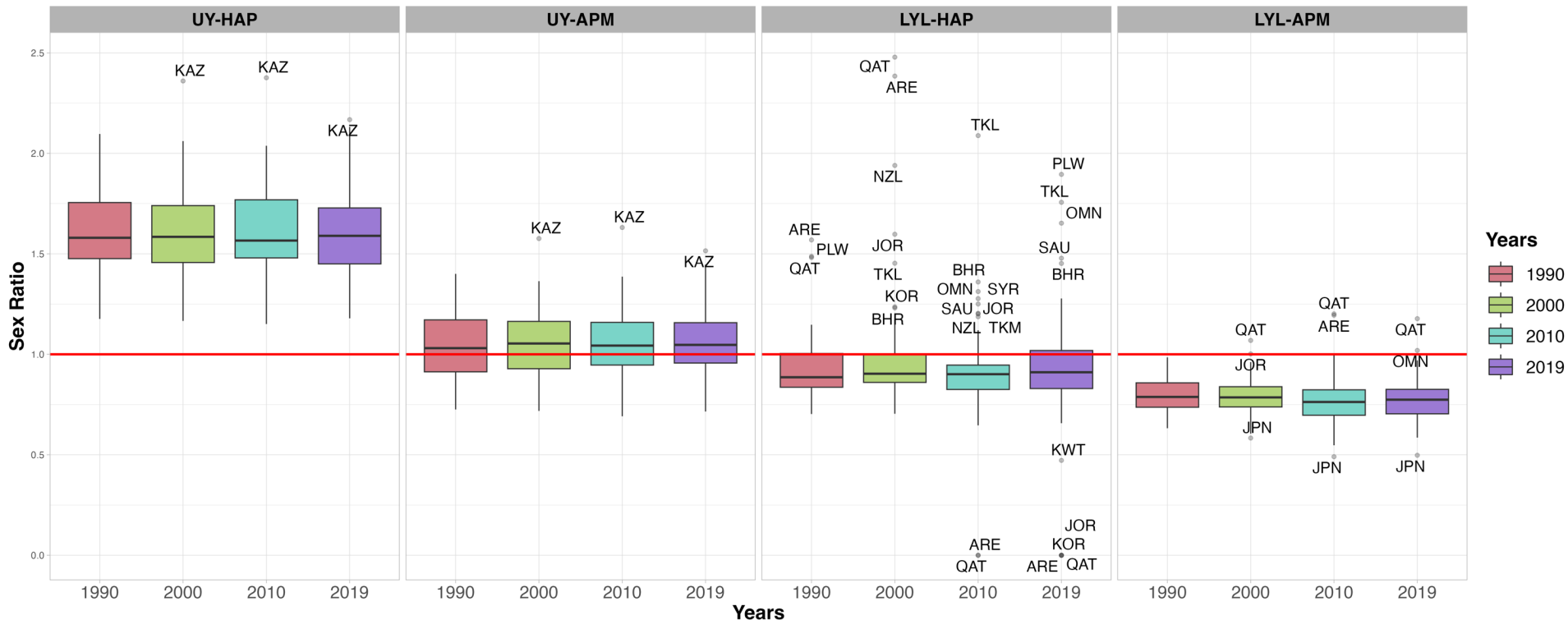
METHODOLOGY



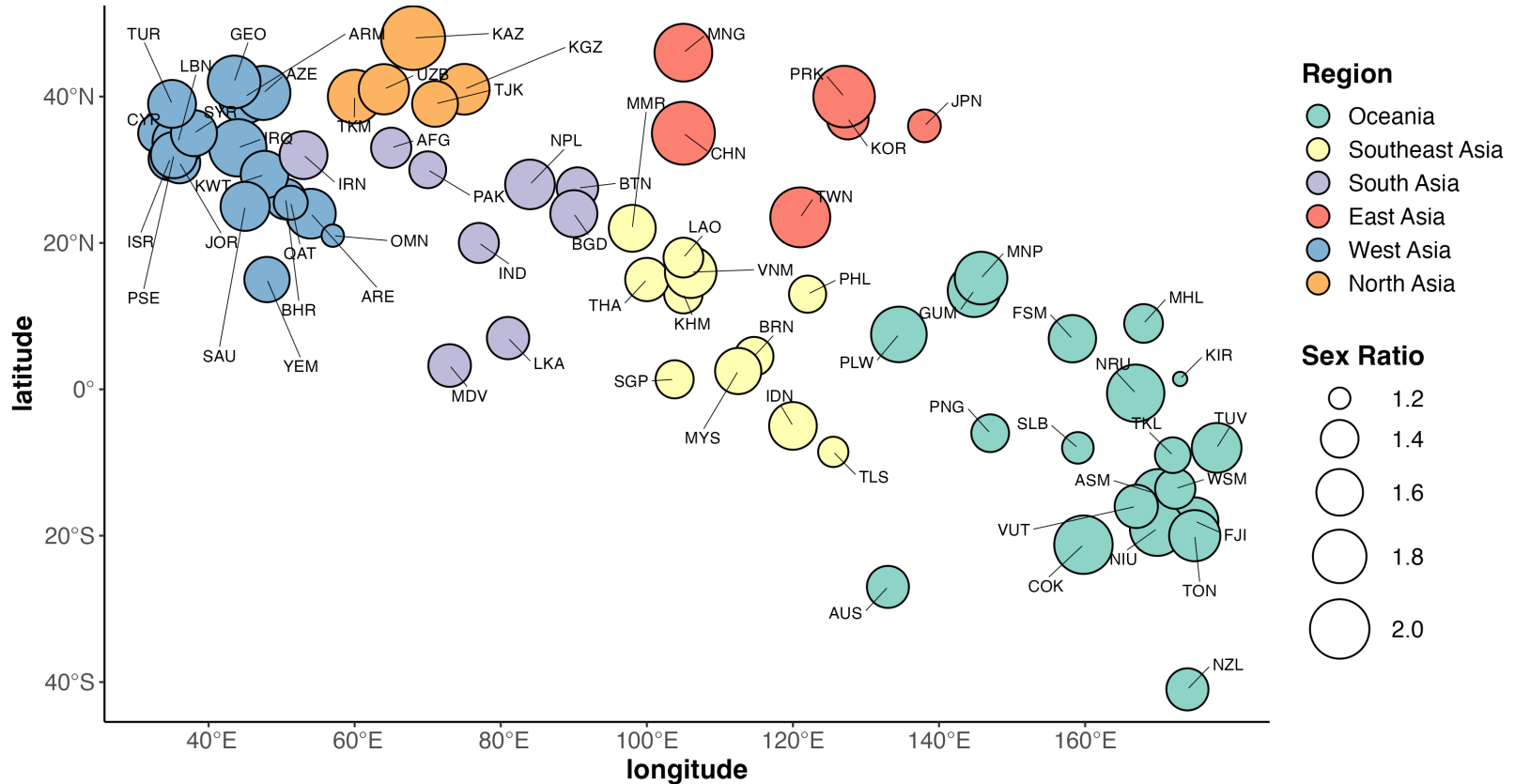
Sex ratios of UY and LYL caused by air particulate matter



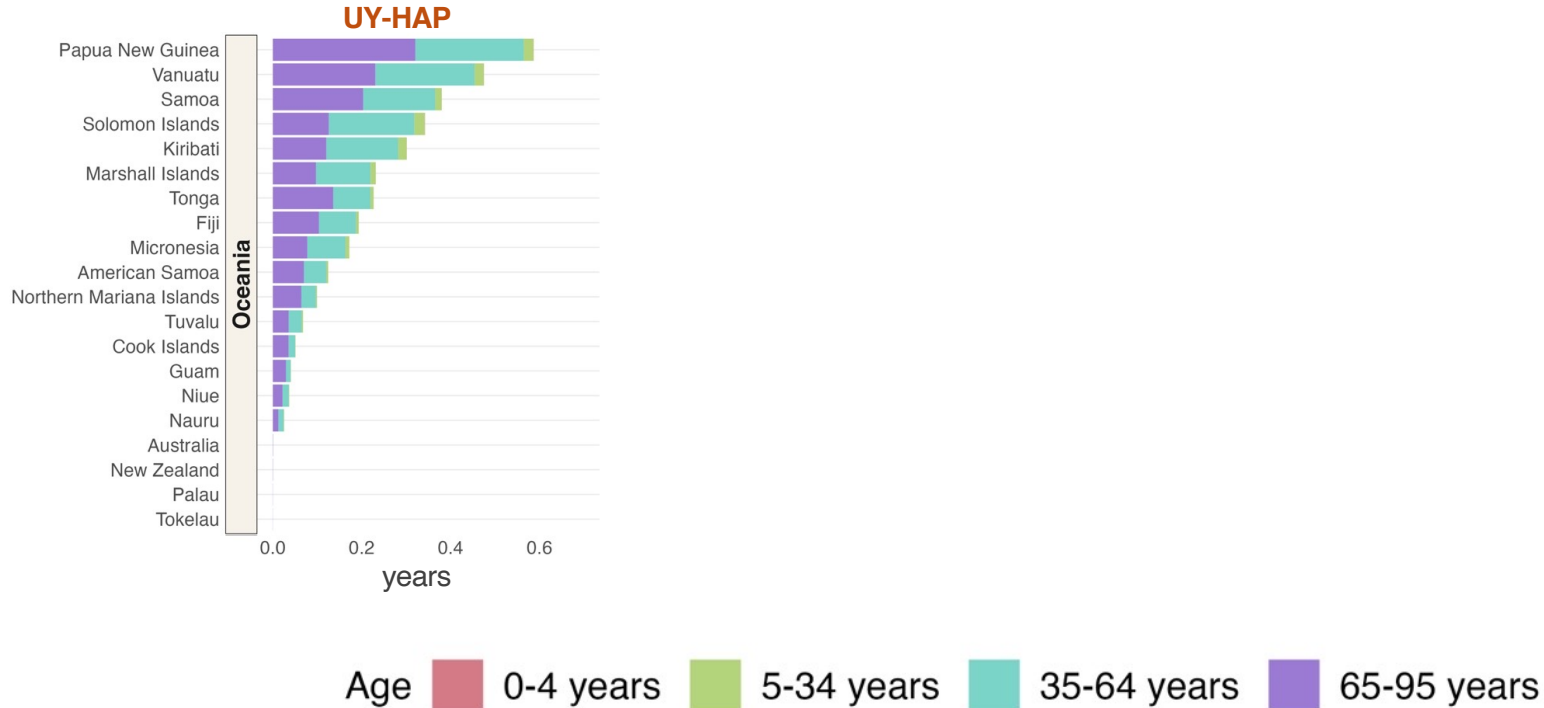
Sex ratios of UY and LYL caused by air particulate matter



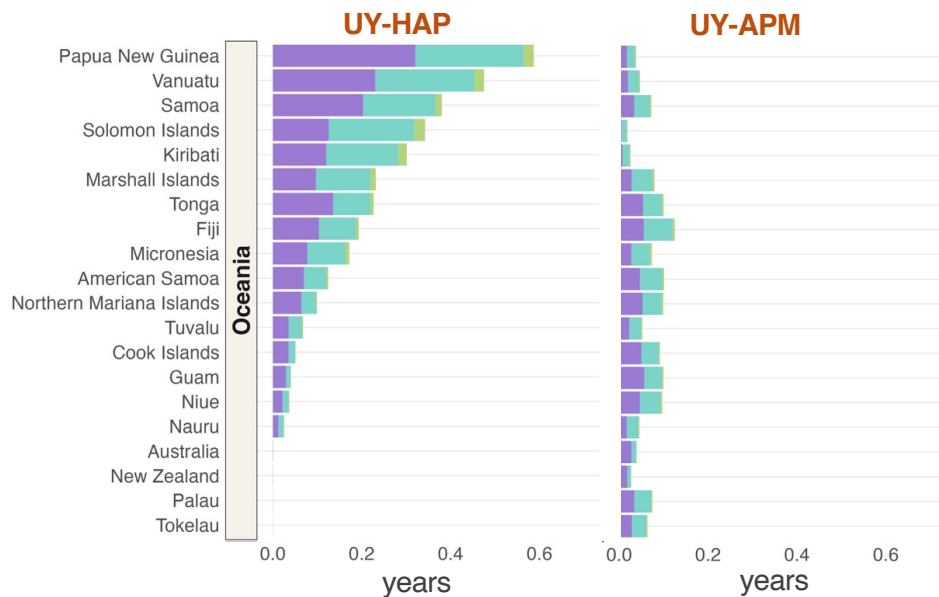
Sex ratios of UY due to HAP in 2019



UY for females in Oceania, by age groups

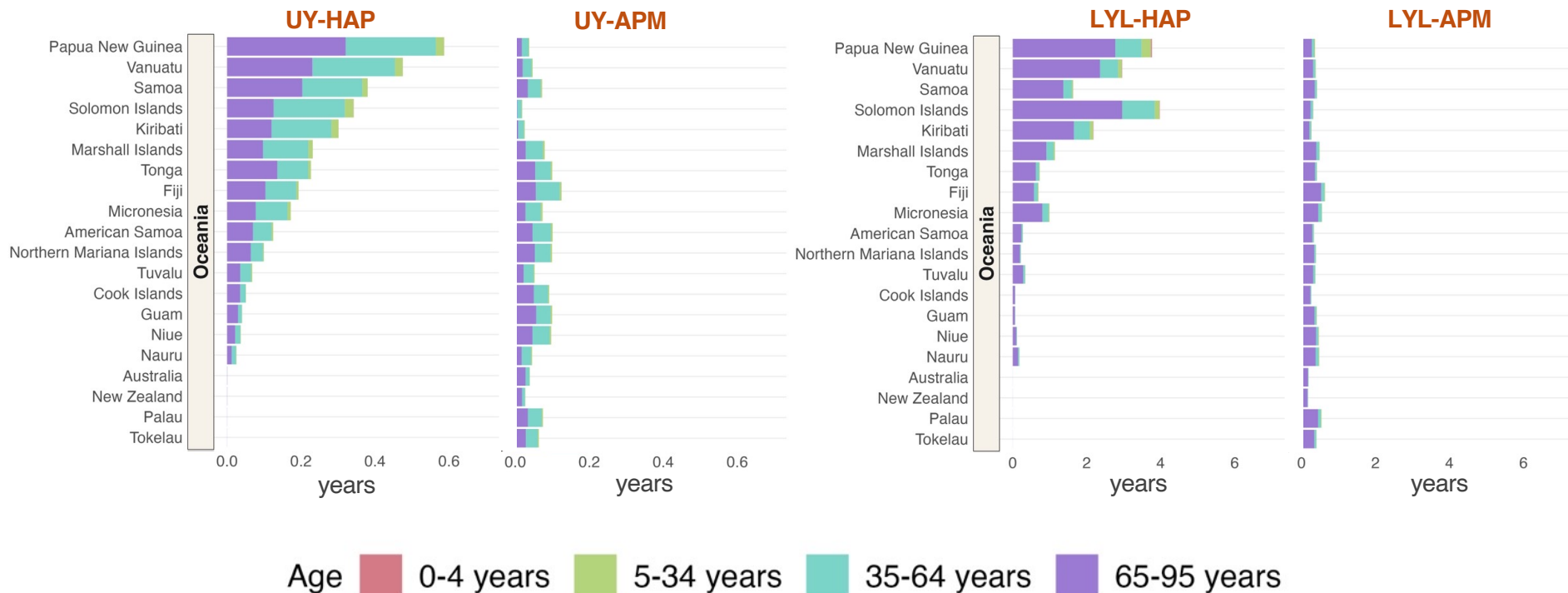


UY for females in Oceania, by age groups

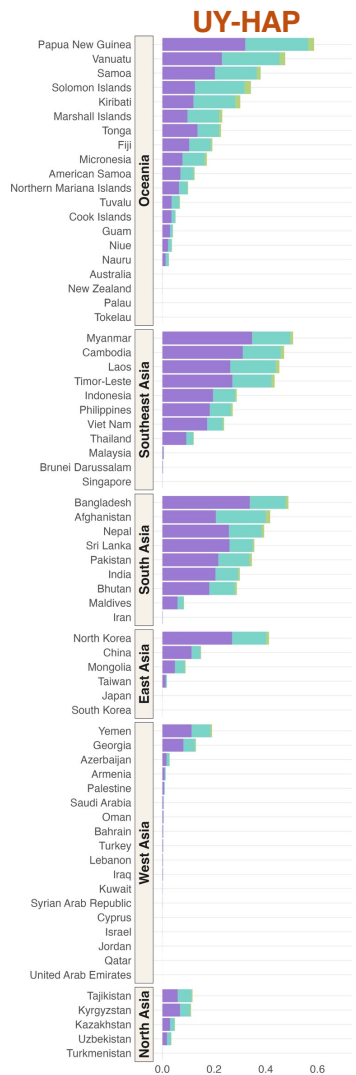


Age 0-4 years 5-34 years 35-64 years 65-95 years

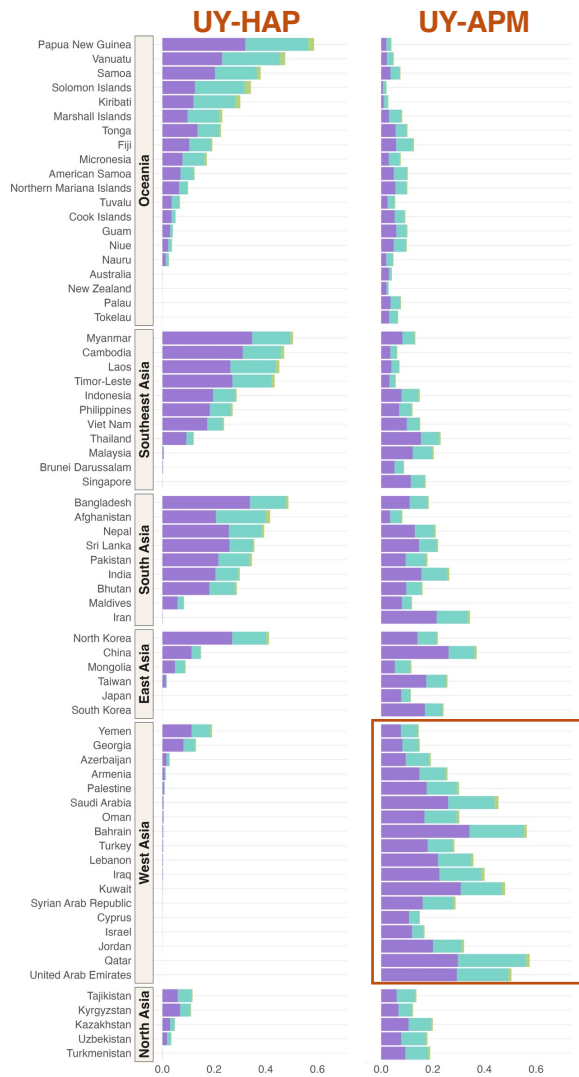
UY and LYL for females in Oceania, by age groups



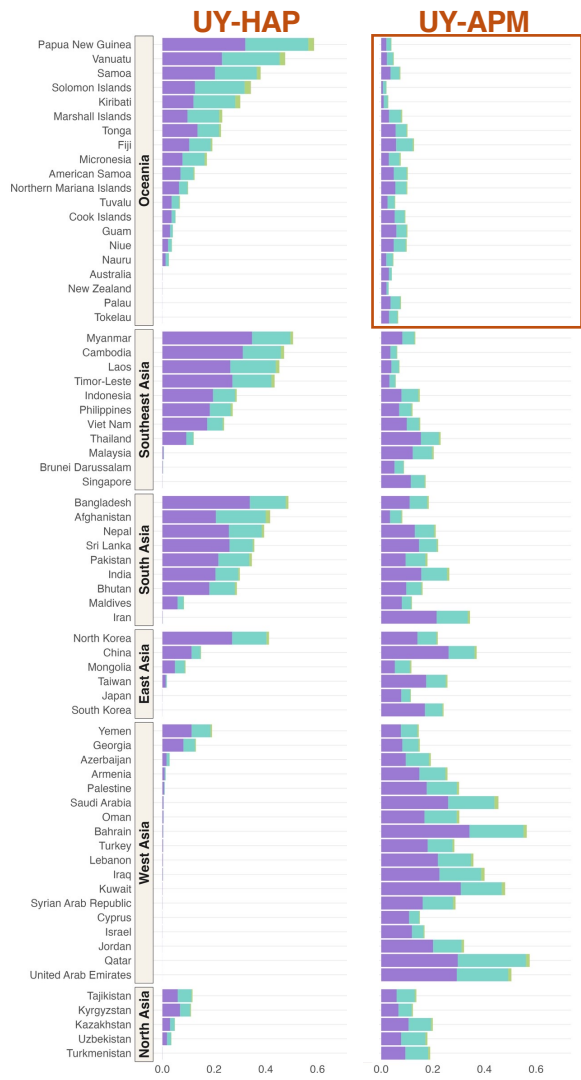
UY for females by age groups



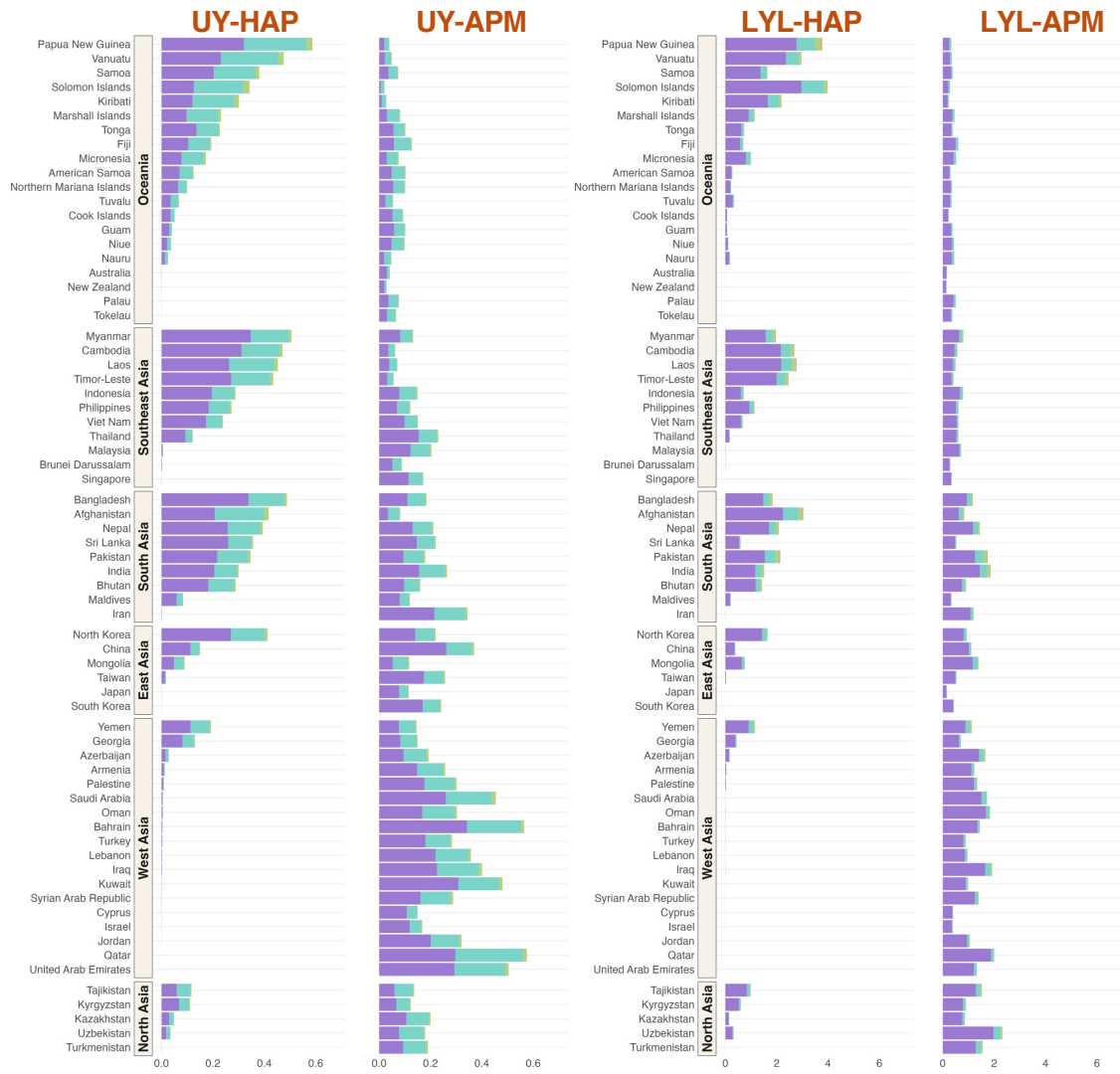
UY for females by age groups



UY for females by age groups



UY and LYL for females by age groups



CONCLUSION

- Females more affected by HAP than males.

CONCLUSION

- Females more affected by HAP than males.
- Females had higher UY, but males had higher LYL.

CONCLUSION

- Females more affected by HAP than males.
- Females had higher UY, but males had higher LYL.
- Oceania had highest UY and LYL from HAP

CONCLUSION

- Females more affected by HAP than males.
- Females had higher UY, but males had higher LYL.
- Oceania had highest UY and LYL from HAP
- West Asia had higher UY and LYL from APM.

CONCLUSION

- Females more affected by HAP than males.
- Females had higher UY, but males had higher LYL.
- Oceania had highest UY and LYL from HAP
- West Asia had higher UY and LYL from APM.
- The impact of air pollution mainly seen in the elderly and adults.

CONCLUSION

- Females more affected by HAP than males.
- Females had higher UY, but males had higher LYL.
- Oceania had highest UY and LYL from HAP
- West Asia had higher UY and LYL from APM.
- The impact of air pollution mainly seen in the elderly and adults.
- Policies and interventions are needed for vulnerable populations

THANK YOU

Contact Us

Pattheera (Paire) Somboonsin

ANU School of Demography

E: paire.somboonsin@anu.edu.au

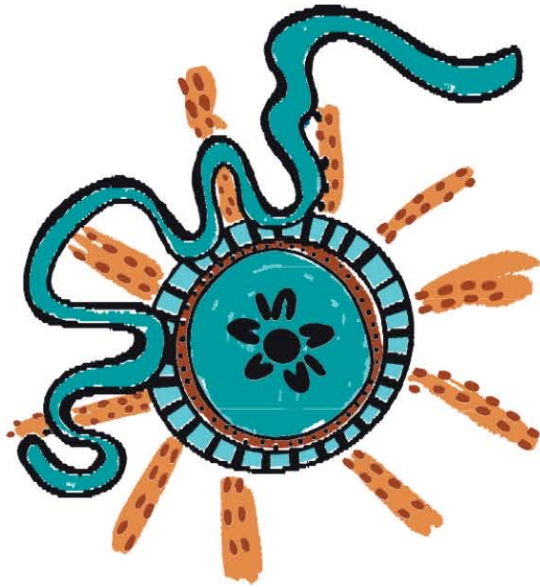


Australian
National
University

DON'T FORGET TO COME AND JOIN
US IN BRISBANE
13-18 JULY 2025!



Register
here for
more info



30TH INTERNATIONAL
POPULATION
CONFERENCE

13-18 JULY 2025
BRISBANE CONVENTION
& EXHIBITION CENTRE
AUSTRALIA

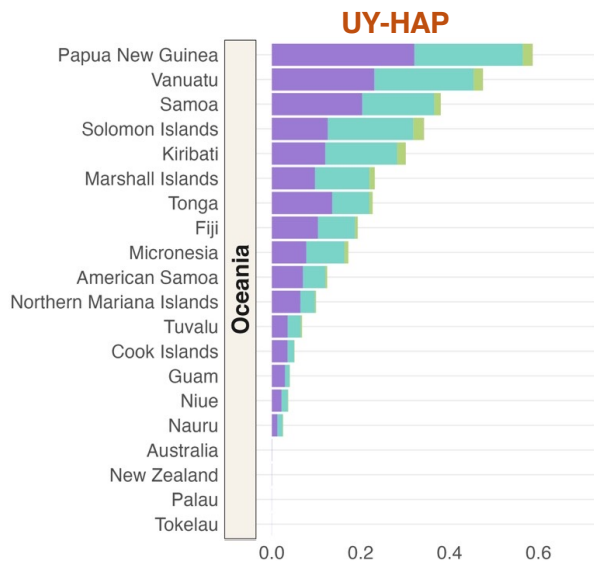


TOURISM
& EVENTS
Queensland



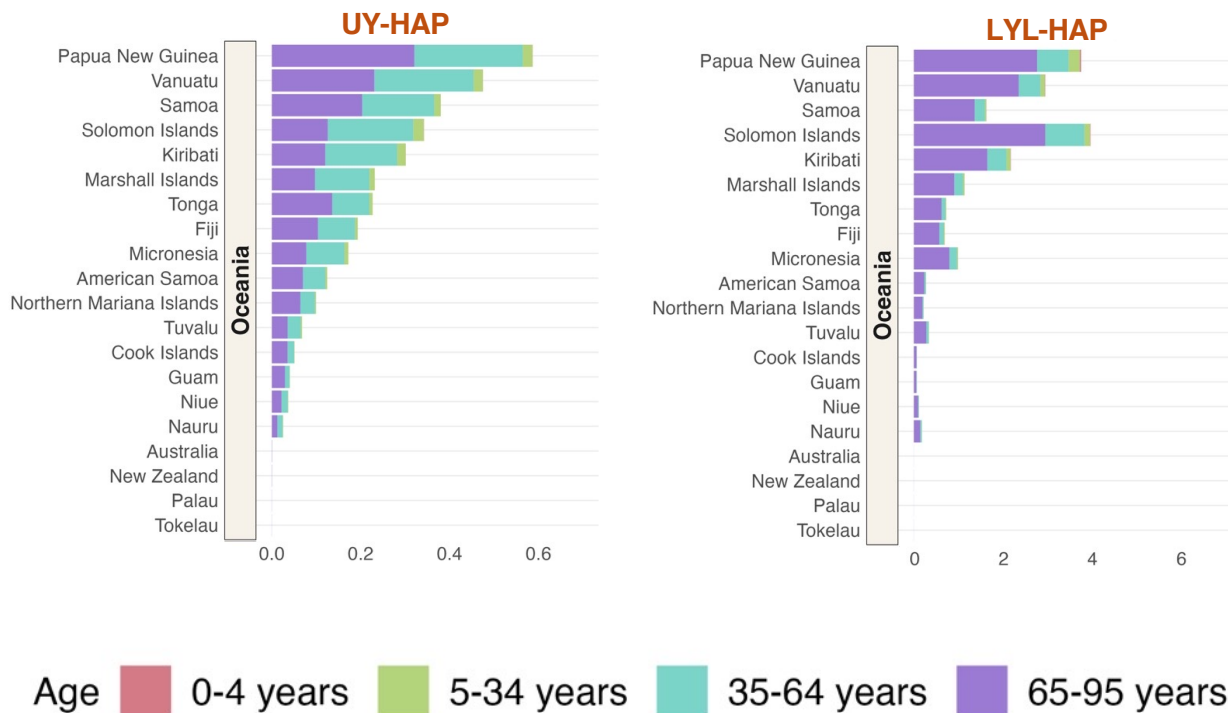
Australian
National
University

Age-specific UY and LYL due to HAP for females in Oceania

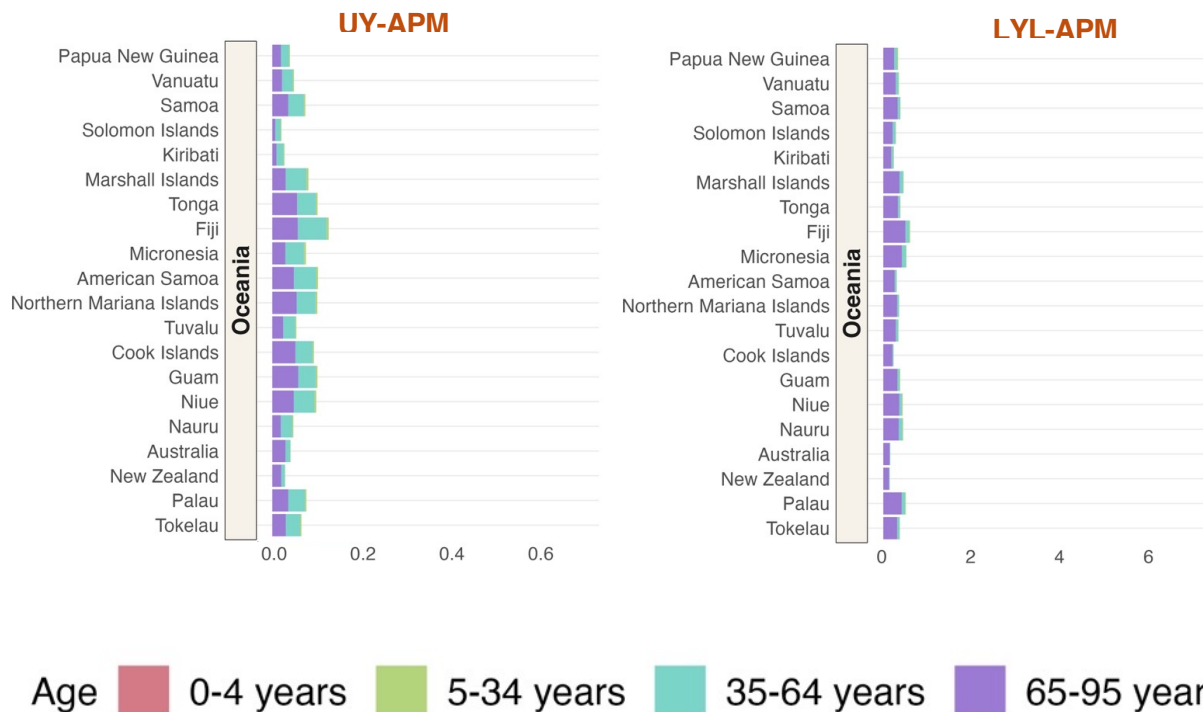


Age 0-4 years 5-34 years 35-64 years 65-95 years

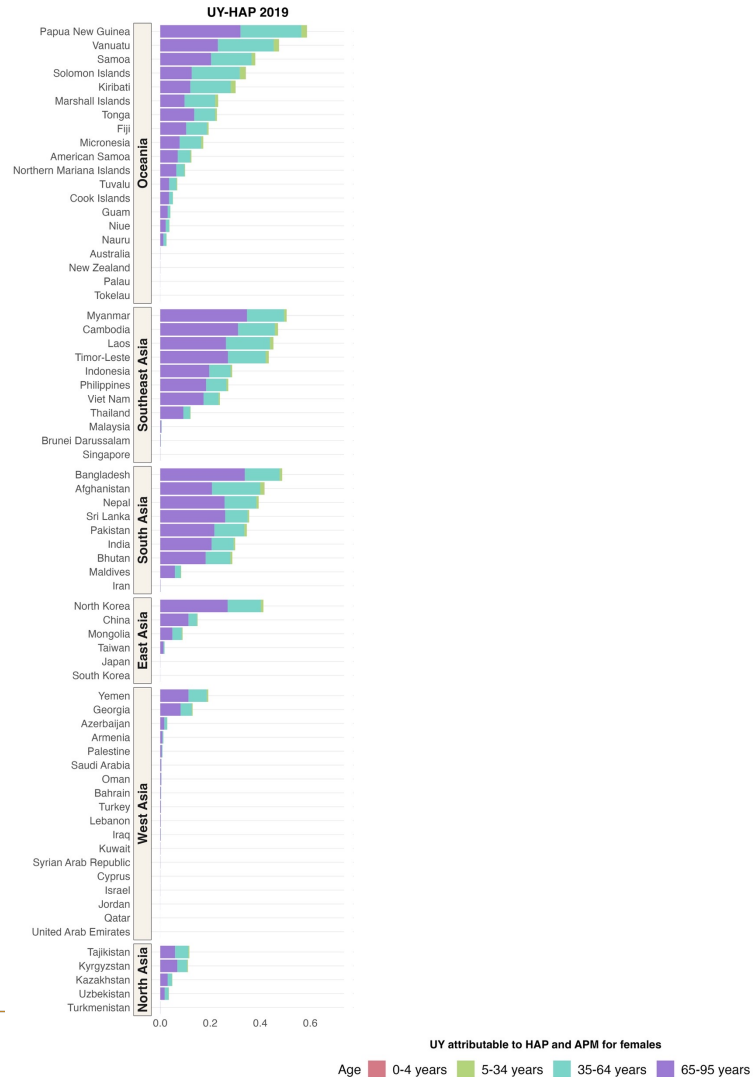
Age-specific UY and LYL due to HAP for females in Oceania



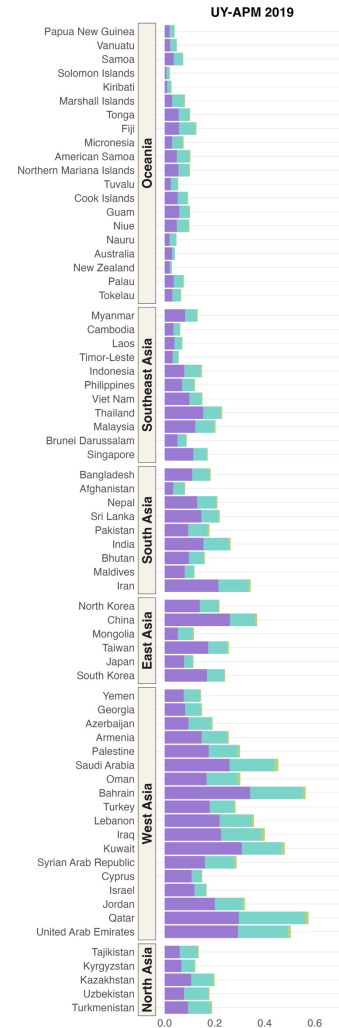
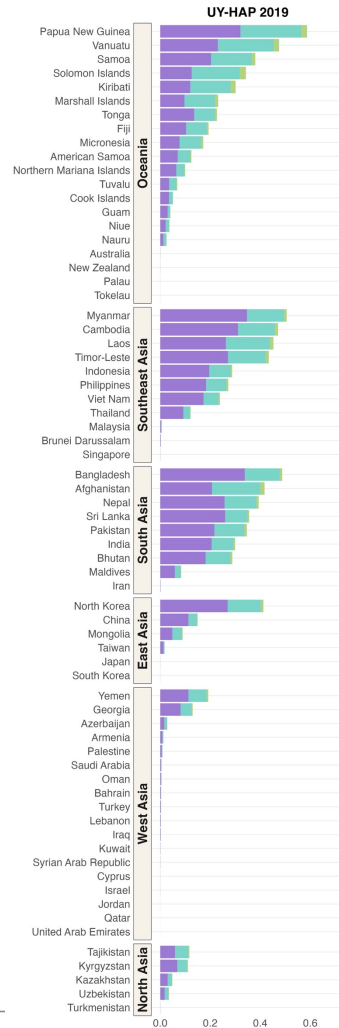
Age-specific UY and LYL due to APM for females in Oceania



Age-specific unhealthy years for females



Age-specific unhealthy years for females

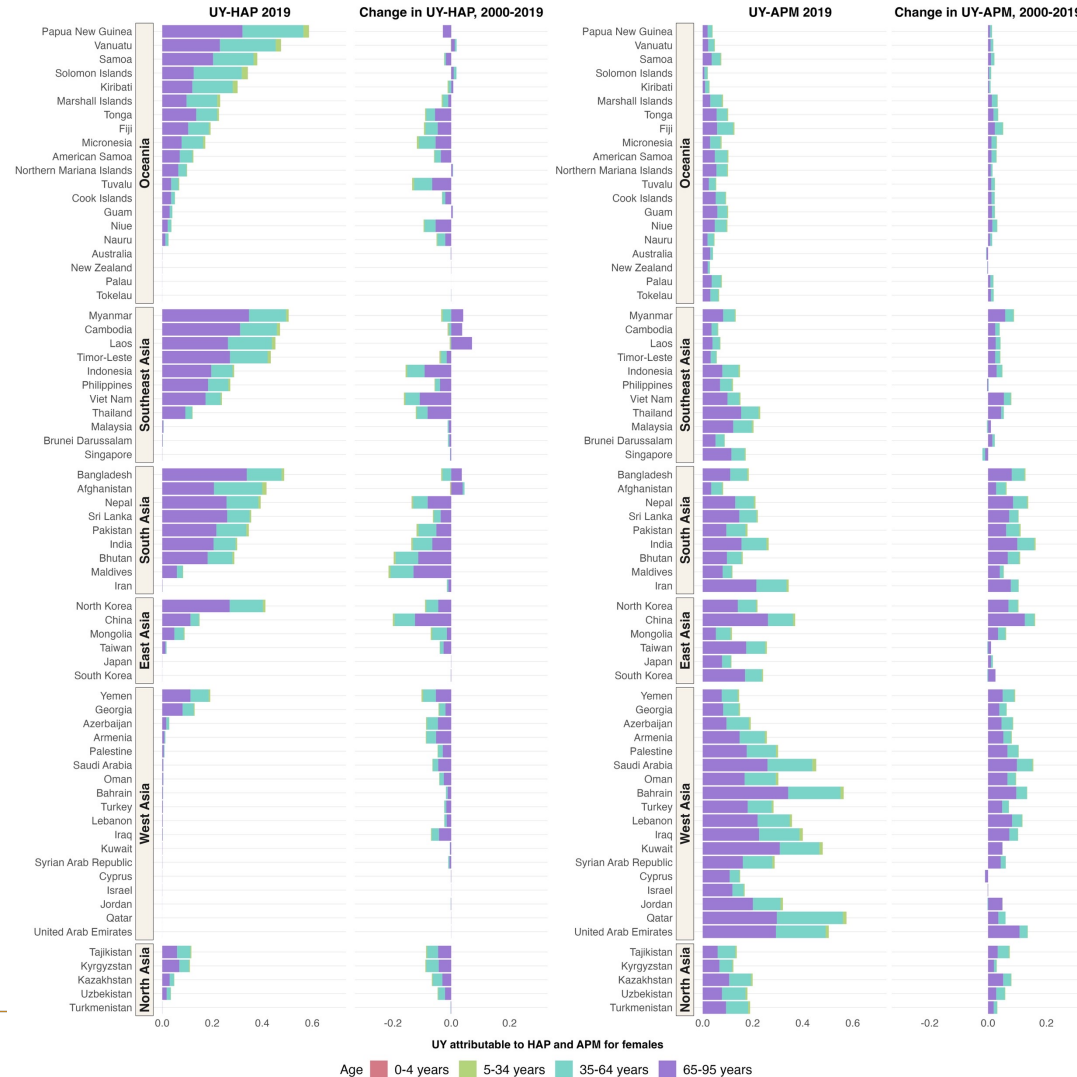


UY attributable to HAP and APM for females

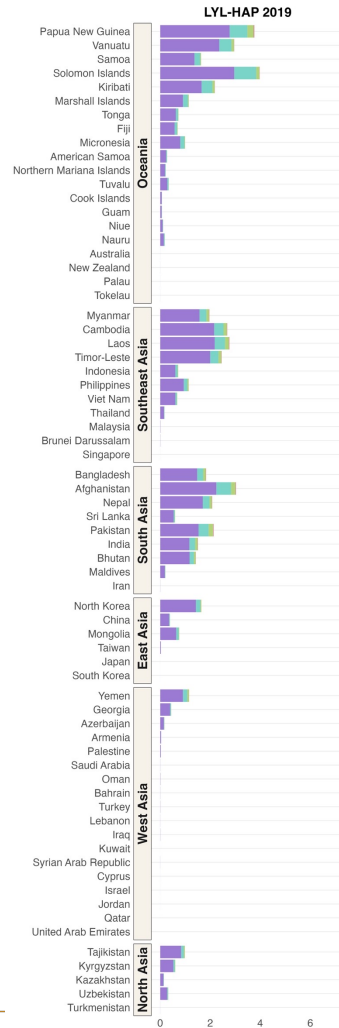
Age 0-4 years 5-34 years 35-64 years 65-95 years



Age-specific unhealthy years for females



Age-specific life-years lost for females

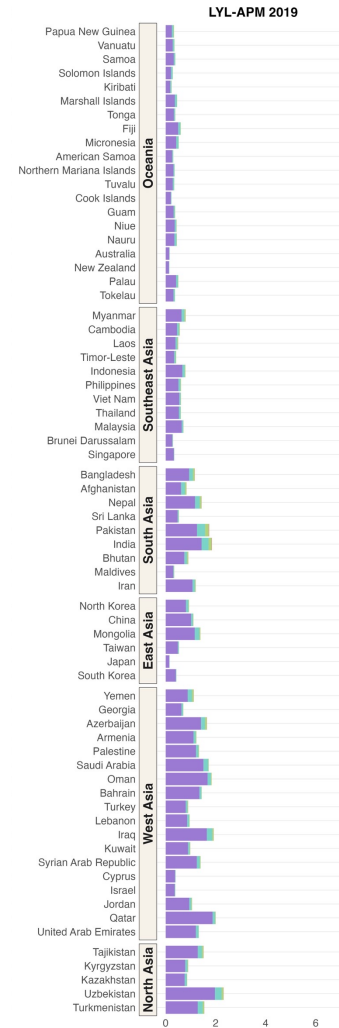
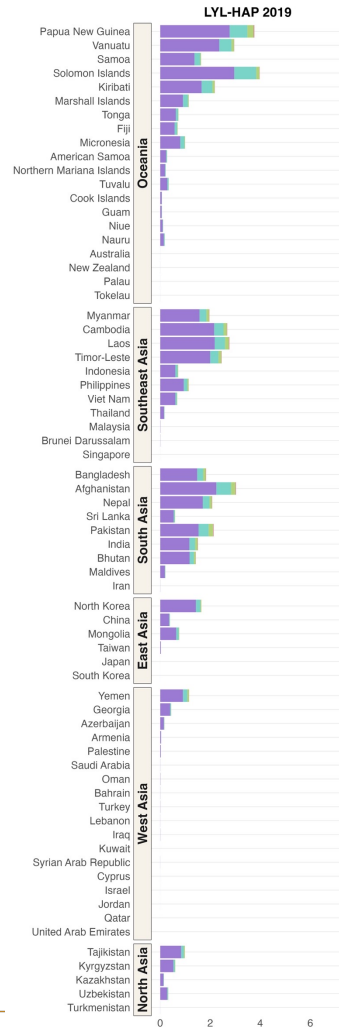


LYL attributable to HAP and APM for females

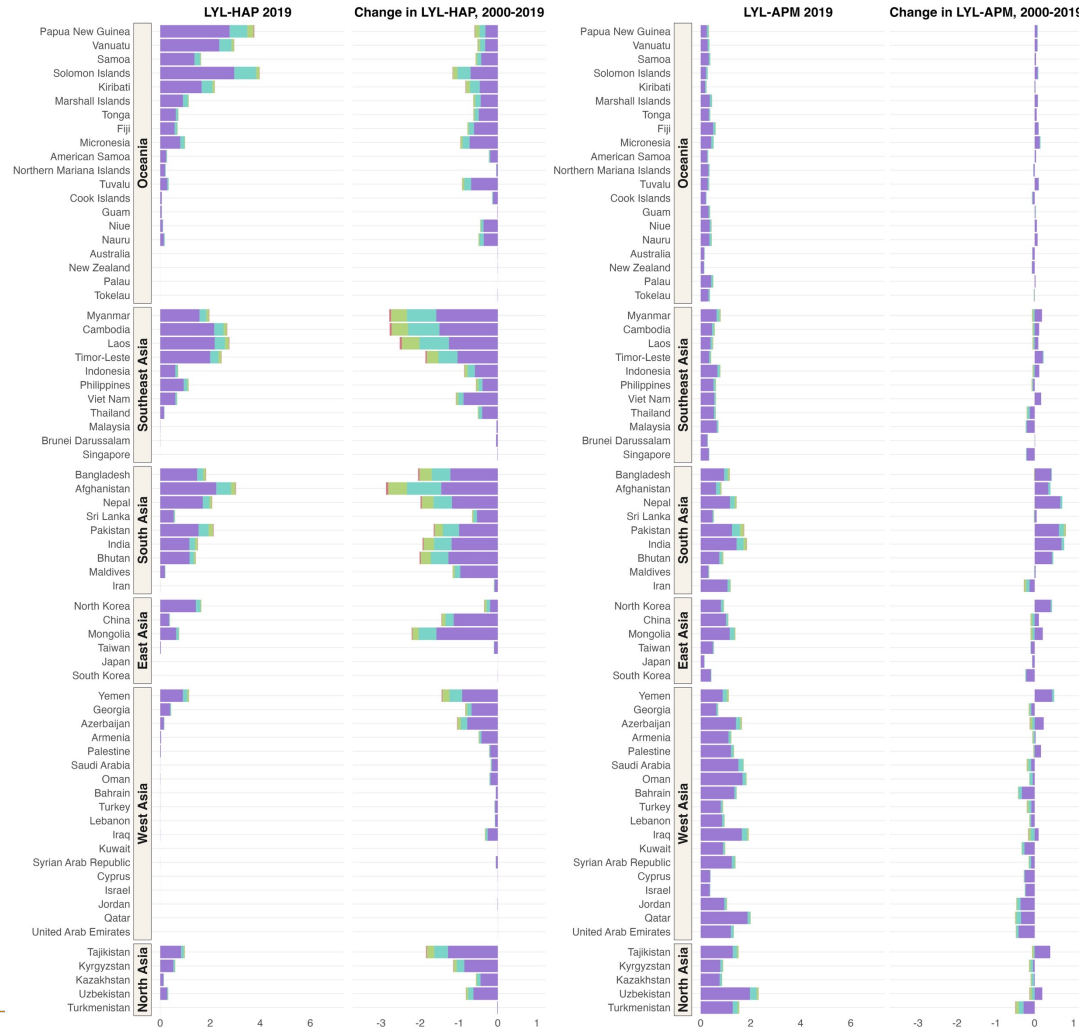
Age 0-4 years 5-34 years 35-64 years 65-95 years



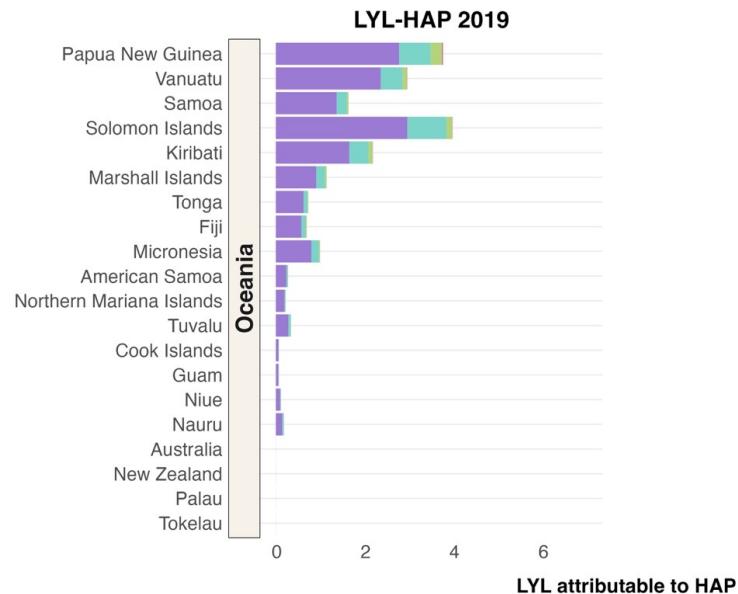
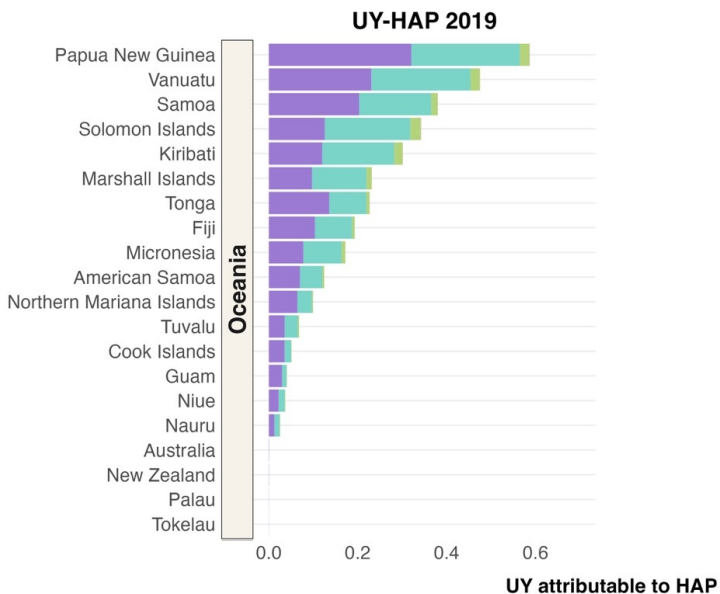
Age-specific life-years lost for females



Age-specific life-years lost for females

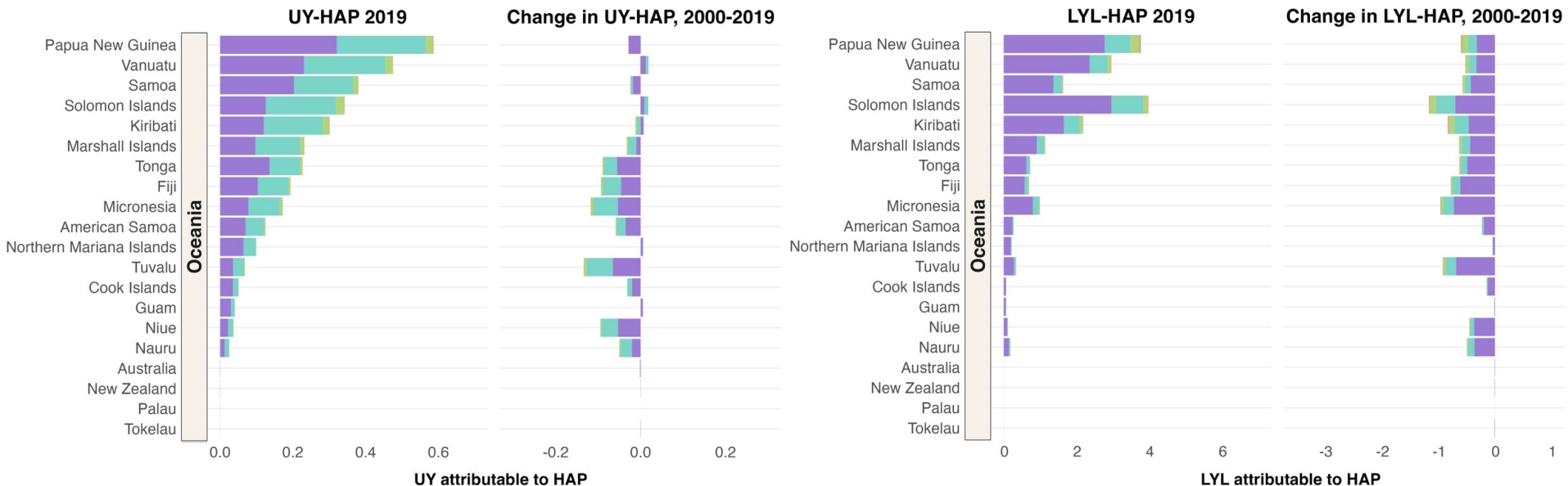


Age-specific UY and LYL due to HAP for females in Oceania



Age 0-4 years 5-34 years 35-64 years 65-95 years

Age-specific UY and LYL due to HAP for females in Oceania



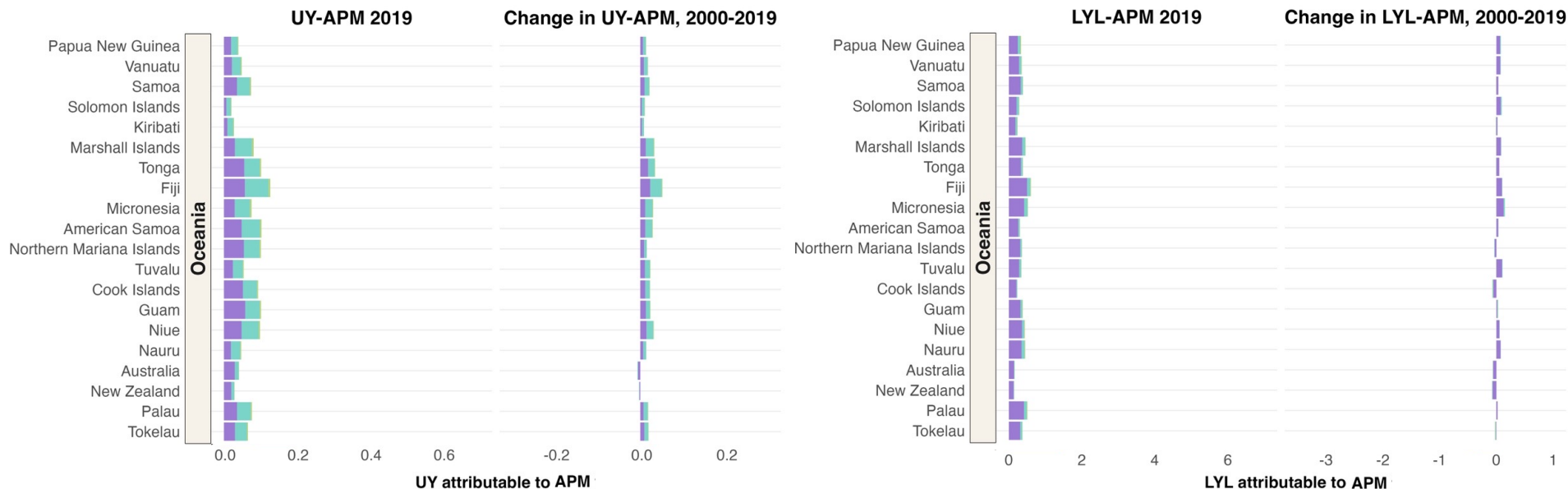
Age ■ 0-4 years ■ 5-34 years ■ 35-64 years ■ 65-95 years

Age-specific UY and LYL due to APM for females in Oceania



Age 0-4 years 5-34 years 35-64 years 65-95 years

Age-specific UY and LYL due to APM for females in Oceania



Age 0-4 years 5-34 years 35-64 years 65-95 years