Future impact of heat on mortality in the Philippines, under a no-adaptation assumption

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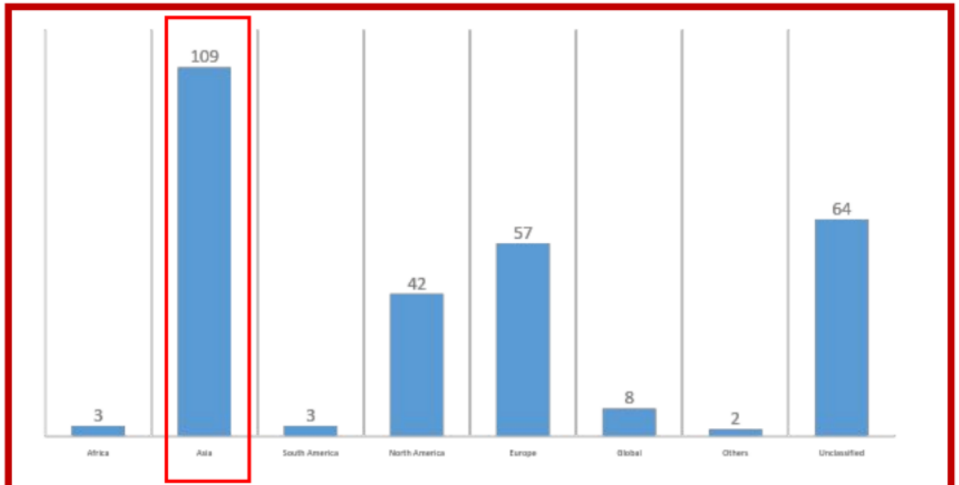
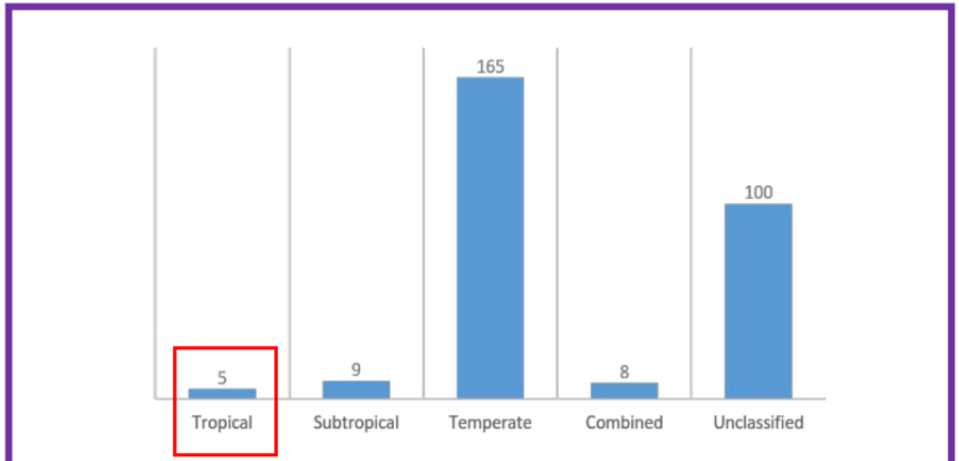
A global overview of the temperature-health studies



Distribution of the studies based on the region



Distribution of studies based on the climate type

The Philippines (1)

- Philippines is an archipelagic country of 7,107 islands
- Devolved health system overseen by the Department of Health
- Overall climate change activities are overseen by the Climate Change Commission
- One of the current mandates and signatories of the country is on addressing the challenges by climate change on health

Philippine National Environmental Health Action Plan

- Specified in the mandate for the Philippine National Environmental Health Action Plan (NEHAP) from the Department of Health:

"to provide evidence based policy advocacy on the burden of health impacts of climate change. The disease surveillance mechanisms and data collection systems need to be enhanced to factor in the correlation between climate change and health"

- There is a big gap of knowledge, particularly on how to quantify the impacts of climate change on health in the Philippines

National Climate Change Action Plan

- National Climate Change Action Plan (NCCAP) 2011-2028 through the Climate Change Commission

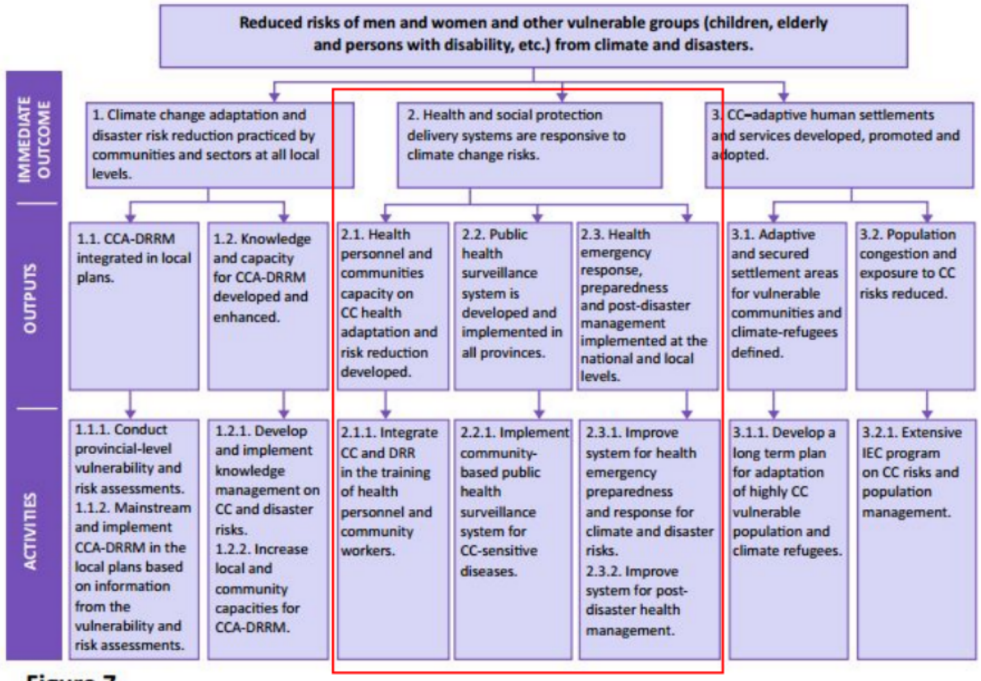
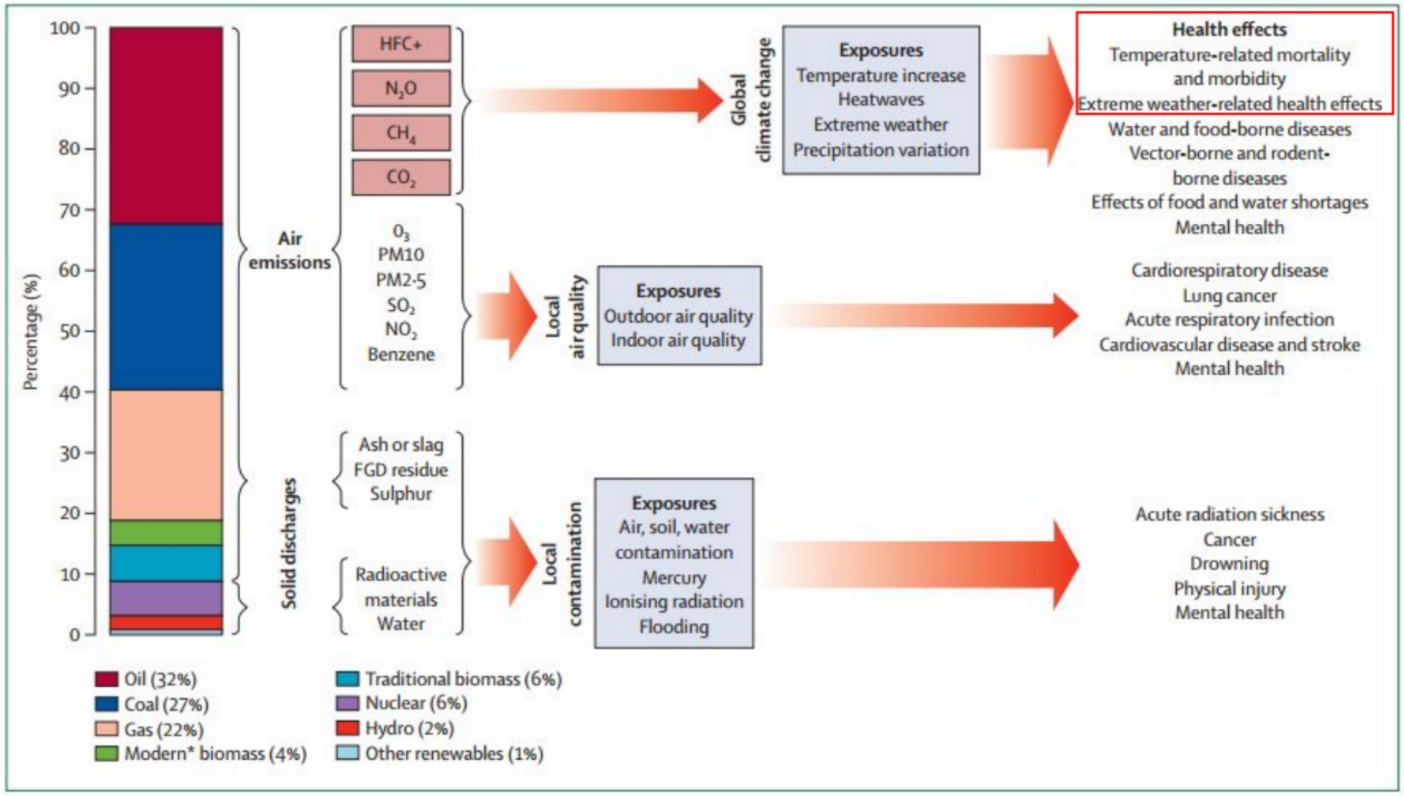


Figure 7
Strategic Actions on Human Security for 2011 to 2028

The sub-concept of Health as a component of Human security is overshadowed by mainstream idea of Disaster risk management.

Linking climate change and health



Objective

- To estimate the future attributable mortality as well as years life lost due to the theoretical temperature increase scenarios in the future (0.5, 1.5, 2.0), under a no-adaptation assumption.

Methods (1)

- Data
  - Daily all-cause mortality data were acquired from the Philippine Statistics Agency (PSA) – 2006-2011.
  - Likewise, same period of meteorological variables (daily temperature and daily relative humidity) were gathered from the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA).

Methods (2)

- Statistical analyses
  - Two-stage risk coefficient estimation

  1) City-specific temperature-mortality risk curve

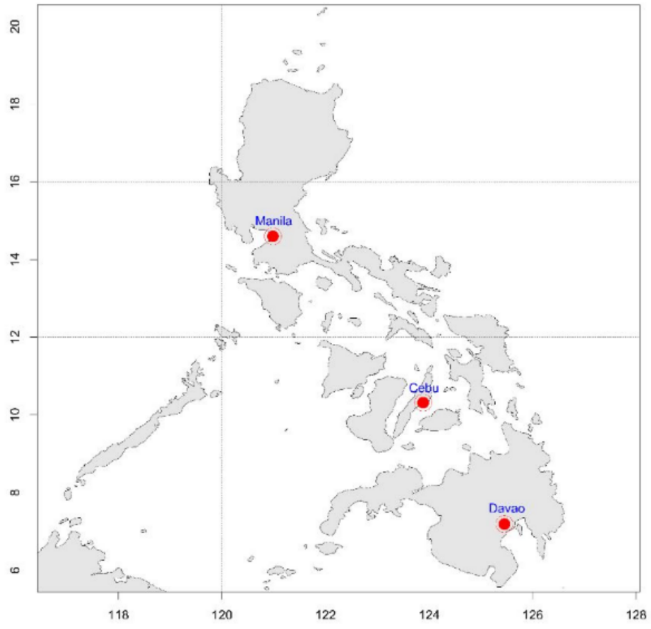
  $$mortality_t = \alpha + CB_{t,l} + ns(RHave, 4) + ns(date, 7 \times 6) + dow_t$$

  2) Pooled analysis (via random effects meta-analysis)

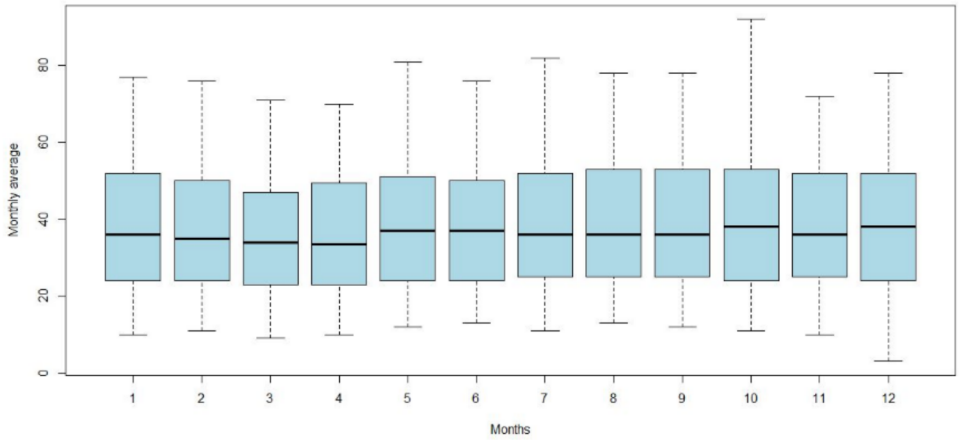
- Calculated the projected attributable mortality and projected attributable YLL

Results (1)

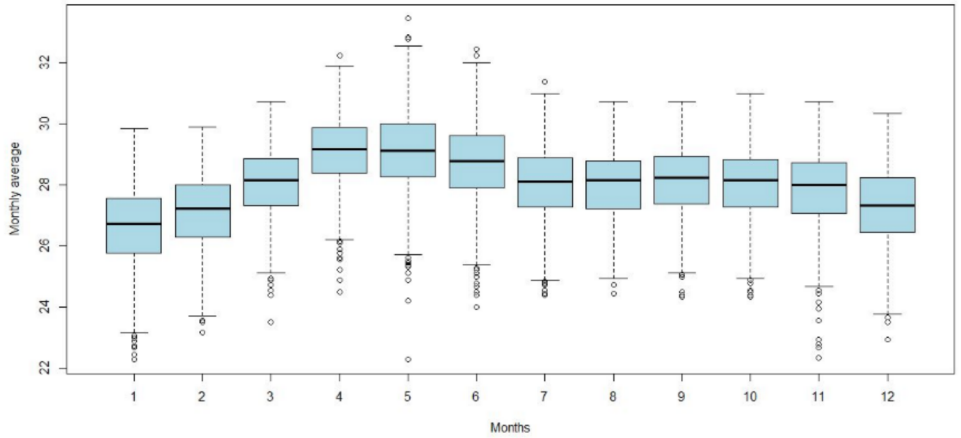
Locations of the three metropolitan cities



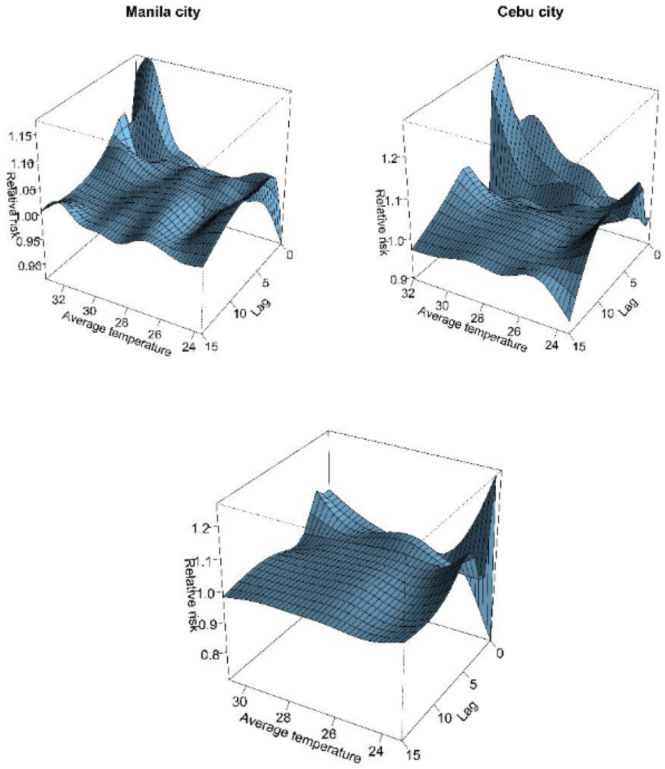
Monthly average of all-cause mortality

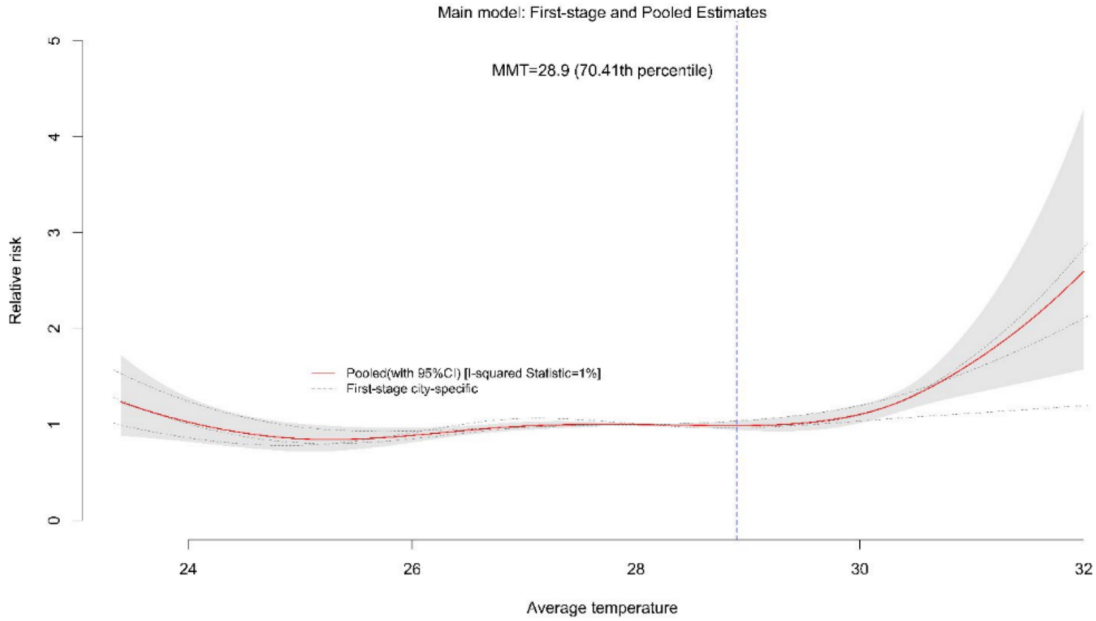


Monthly average of average temperature



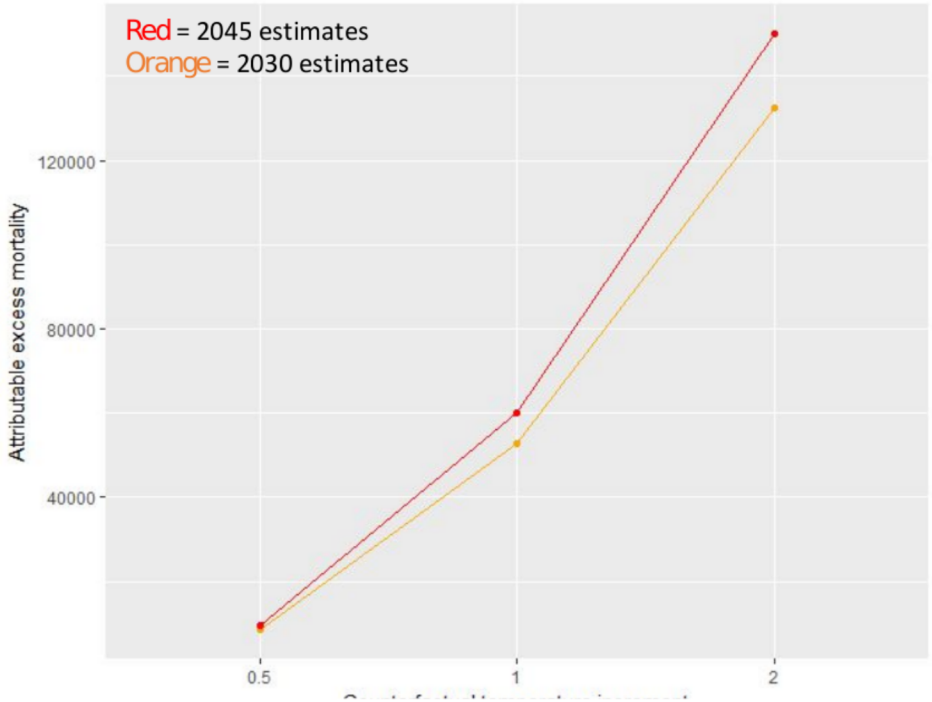
Results (2)


Manila city
Cebu city
Relative risk
Average temperature
Lag

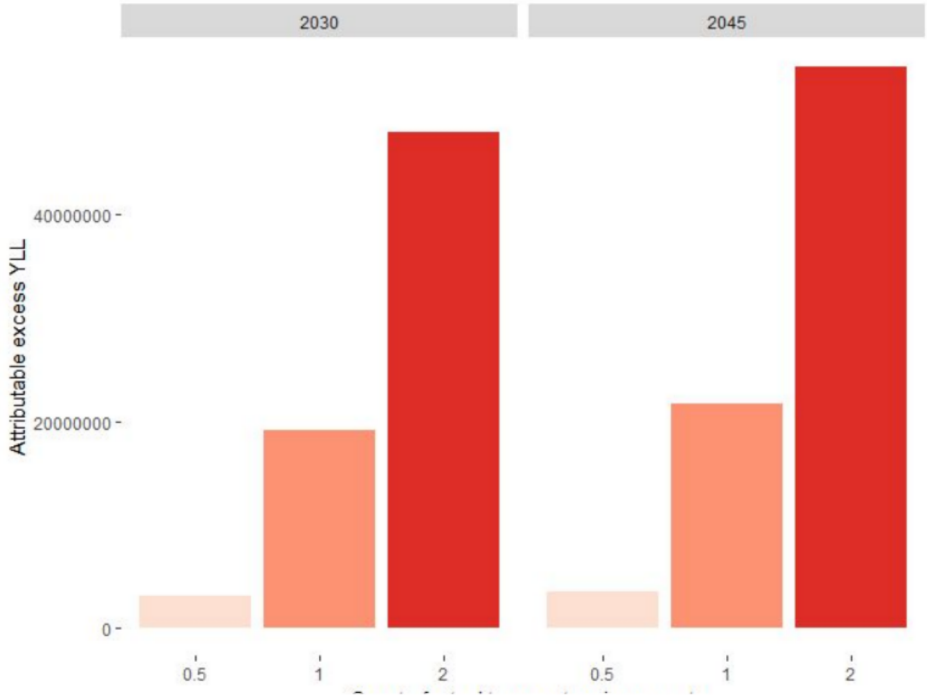

Main model: First-stage and Pooled Estimates
MMT=28.9 (70.41th percentile)
Pooled(with 95%CI) [I-squared Statistic=1%]
First-stage city-specific
Relative risk
Average temperature

Results (3)

Attributable mortality due to increasing temperature



Attributable years life lost due to increasing temperature



Conclusions

- Risks are evident in both the low and high temperatures in the Philippines.
- The increasing temperature, subject to a no-adaptation assumption, may lead to greater population at risk in terms of increased attributable mortality.
  - *2℃ increase in annual average temperature resulted to 132,378 and 150,077 excess deaths in 2030 and 2045, respectively.*
- Likewise, greater number of life years lost.
  - *Years life lost were also magnified at 47,964,647 life years lost and 54,377,511 life years lost, in both 2030 and 2045, respectively.*

Recommendation/s

- Explicit integration to short-, middle- and long term plans.
  - The risks are highly evident, it is therefore integral to assimilate the climate change-health nexus into the comprehensive medium and long-term plans of the country.

- Incorporation to existing frameworks of adaptation.
  - There is no need to overhaul and create a new system for the climate change-health nexus, rather, we can utilize existing governmental and non-governmental linkages to efficiently facilitate the adoption of these scientific results.

Thank you very much for listening.

The now, lies in our hands.

The then, will be in theirs, so let's do our part to safeguard the earth we know now for the next generations to come.