

Taking Action on Heat Deaths in Hong Kong

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- **Problem: Heat-related Deaths Burden in Hong Kong**
 - Translate estimated RR into understandable death counts
- **Solution: Heat Health Action Plans (HHAPs)**
- **Role of Public Health Practice in HHAP Development**

Methods to Quantify Health-Related Death Burden in Hong Kong over Last Decade

Heat Wave Definitions:
Applicable criteria in defining extreme heat events in HK



RR from 4 Exposures	Name	Refs
HWD_Tavg	Daily average temperature-based definition	Liu et al. (2020)
HWD_Tmax	Daily maximum temperature-based definition	Wang et al. (2019)
HWD_Tmin	Daily minimum temperature-based definition	
HWD_Tcombined	Combined daily temperature threshold-based definition	

Counterfactual Framework



❑ *Excess deaths = Deaths during heat – Deaths under non-heat condition*

❑ *Model Specification: $EHD = (RR_t - 1) \times DD_t \times L$*

Data Sources



❑ **RR:** Relative risks based on daily time series studies ([Liu et al. \(2020\)](#) & [Wang et al. \(2019\)](#))

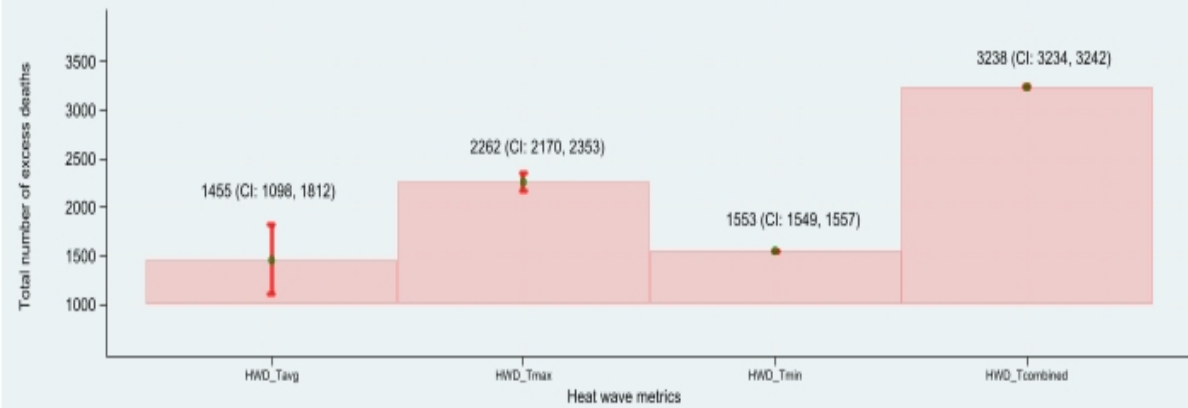
❑ **DD:** Daily Death count from Hong Kong Life Tables (Census Bureau)

❑ **L:** Lengths of heat wave using historical temperature data from the Hong Kong Observatory

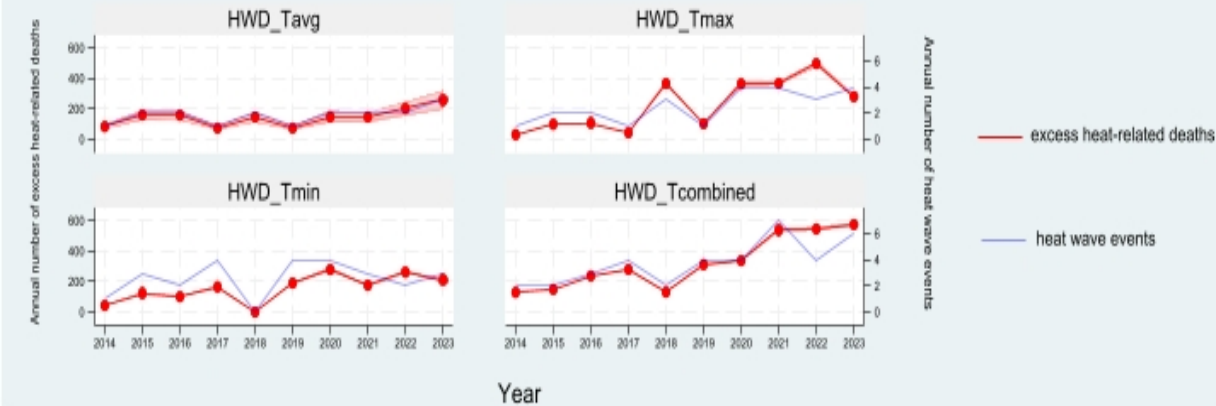
Excess Mortality Over the Last Decade

Excess heat-related deaths (2014-2023) under 4 scenarios.

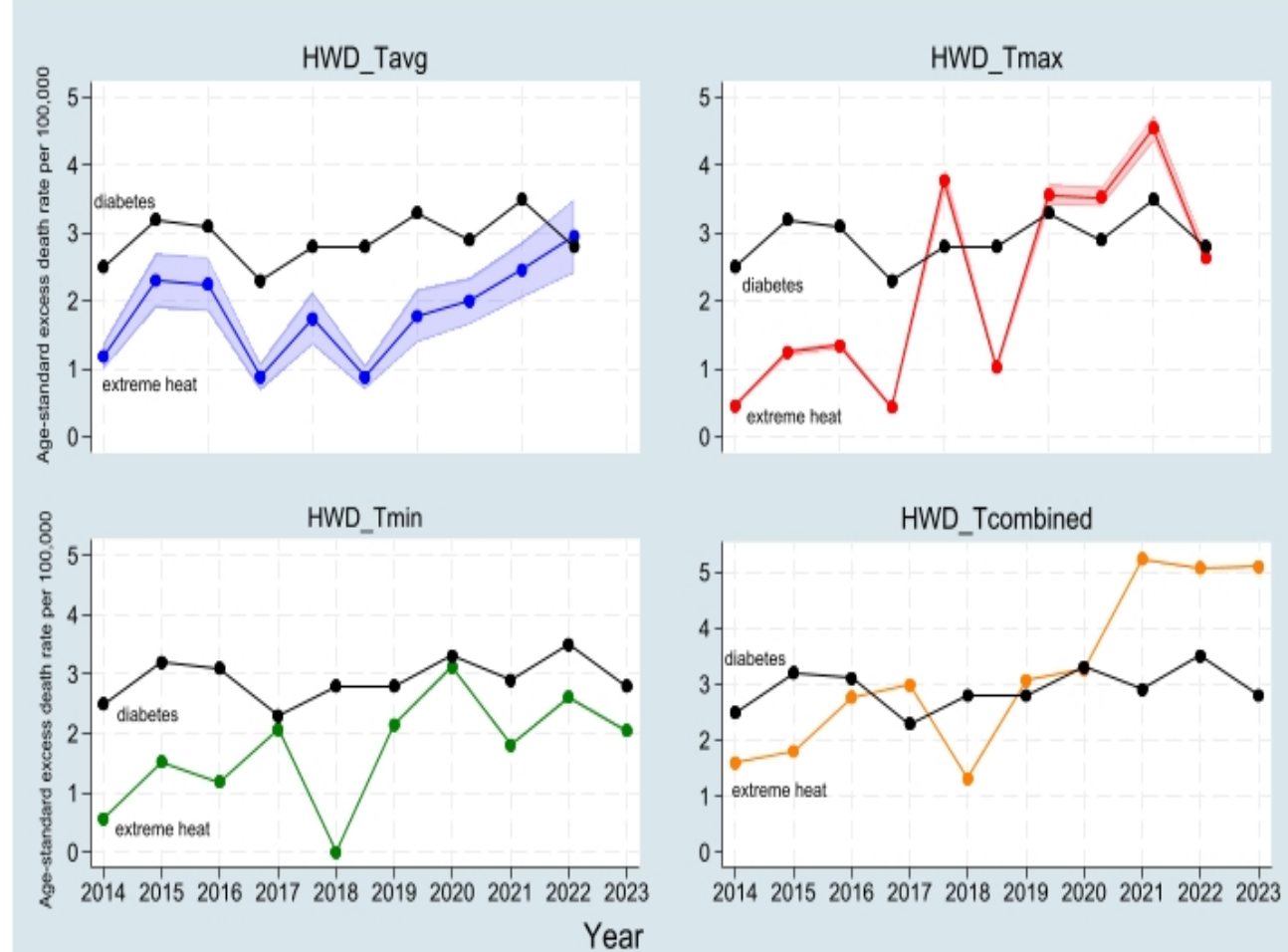
(A) Total number of excess heat-related deaths under 4 heat wave metrics in 10 years



(B) Annual Trends in Excess Deaths and Extreme Heat Events (2014 - 2023)



Annual Trends in Age-Standardized Excess Death Rates



- Excess deaths ranged from 1,455 to 3,238.
- Annual trends in excess deaths fluctuated, coinciding with fluctuations in heat waves.

- Considered heat wave as an independent cause of death.
- Heat-related deaths rate exceeded that of diabetes rates for nearly half of the decade.
- Extreme heat even caused nearly double the death rate of diabetes.
- Heat could become a leading cause of death in Hong Kong.

Preventable !

From the perspective of public health, the focus of HHAP lies on the **capacity building in the health and social care system preparedness** against to the extreme heat, especially for the elderly and other population at high risks.



Successful Practices supported by empirical evidence

Ahmedabad, India

a guide for other cities attempting to increase resilience to extreme heat.



Effectiveness

- ✓ Reduced relative risk of death from 2.34 to 1.25
- ✓ Prevented an estimated 1,190 deaths per year
- ✓ Ref: Hess et al. 2018

New York, US

Improved warning system in the Heat Emergency Plan



Effectiveness

- ✓ Associated with a reduction of 0.80 deaths per day
- ✓ Equivalent to approximately 292 fewer deaths per year
- ✓ Ref: Benmarhnia et al. (2019)

How Hong Kong can develop its own unique HHAP

- ✓ **Public Health 3.0: Convene intersectoral planning**
- ✓ **Bring together experts from different sectors.**
- ✓ **Look at data, local needs, and proven methods.**
- ✓ **Leadership forms a team to coordinate efforts across sectors.**