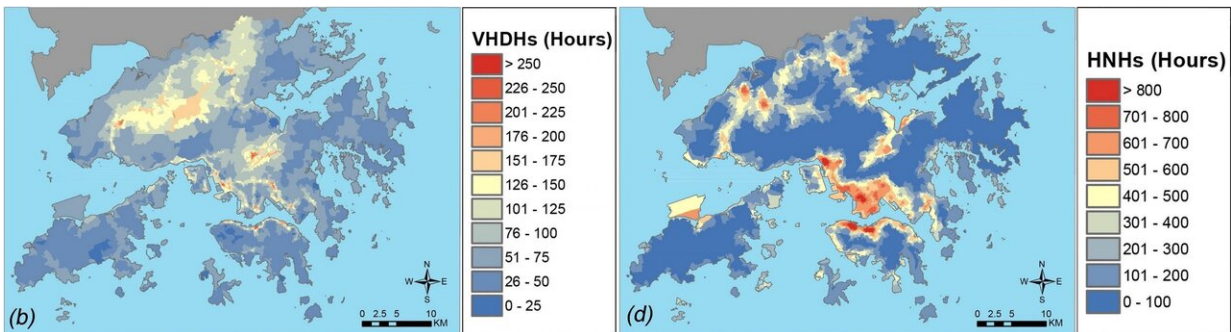


Study suggests hot nights pose greater threat to public health than hot days

August 24 2020



Congested environment, poor air ventilation and lack of green spaces in the urban area attribute to the spatial difference between very hot day hours for daytime (left) and hot night hours for nighttime (right). Credit: The Chinese University of Hong Kong (CUHK)

Hong Kong has been experiencing hotter summers and more scorching days in recent years due to climate change and heat island effect. Amid the increasing number of "hot nights," it is found that consecutive "hot nights" are more detrimental to human health than "very hot days," although the actual temperature does not reach the level of daytime, according to a collaborative research conducted by the Institute of Future Cities at The Chinese University of Hong Kong (CUHK), as well as researchers from the University of Hong Kong. The research also identified that lack of urban greenery and poor air ventilation in a high-density context are factors that lead to more "hot nights" than "hot days"

in some areas. The team suggests that better urban planning and building design are long-term mitigation measures.

Consecutive "hot nights" are more detrimental to human health than "very hot days"

The "very hot warning" was in force for 467 hours (20 days) in July, the longest since the introduction of the warning. Not only in daytime, but in many of the nights, temperature were high. There were 18 "hot nights" (daily minimum temperature reaches 28 degrees or above) in June and 21 in July, breaking the record for the number of "hot nights" in a month.

To better understand the health and social impacts of "hot nights," a research team led by Dr. Lau Ka Lun Kevin and Dr. Shi Yuan, Research Assistant Professors from the Institute of Future Cities at CUHK, together with Dr. Ren Chao, Associate Professor from the Faculty of Architecture of the University of Hong Kong, have analyzed the data of various combinations of "very [hot days](#)" (daily maximum temperature reaches 33 degrees or above) and "hot nights."

Apparently consecutive "hot nights" brought more health problems compared with "very hot days," especially for five or more consecutive "hot nights." It was also found that when consecutive "very hot days" were joined with consecutive "hot nights," such as two consecutive "very hot days" with three "hot nights," the health impact was significantly amplified, compared with only consecutive "very hot days." Moreover, females and older adults were determined to be relatively more vulnerable to extreme hot weather.

Dr. Lau said that society should pay greater attention to the health impact of "hot nights." He stated, "Many people think that they only

need to prevent heat stroke during daytime and do not observe the severe health problems brought about by consecutive 'hot nights.' Nighttime is supposed to provide the body with a chance to recover and rest from the heat of the day, but 'hot nights' make the recovery and resting less effective. Due to the congested living environment with poor air ventilation, the occupants in sub-divided flats are particularly vulnerable and not able to recover from the heat of the day."

Downtown areas are the hottest at night; improved design from long-term urban planning is needed

Researchers led by Dr. Shi Yuan, Research Assistant Professor from the Institute of Future Cities, have studied the amount of cumulative hot hours for daytime and nighttime and investigated their spatial patterns and differences in Hong Kong. It was found that downtown areas in Hong Kong Island and Kowloon have fewer "very hot days" but more "hot nights" when compared with the New Territories. Yau Tsim Mong District, Tsuen Wan, Central and Sheung Wan are among the most affected, while Yuen Long and Tin Shui Wai also have many "hot nights."

Dr. Shi stated, "Land use and building morphology are the factors contributing to the geographical variation in high temperatures. Urban areas are hotter than rural areas at night as there is less greenery and poor air ventilation while heat stored in bulky and dense buildings during the day continues to dissipate at night."

The team suggests that better urban planning and [building design](#) are long-term mitigation measures, and urban development should take into consideration [health](#) and climate change adaptation. For example, improved city and indoor natural ventilation, and increased greenery ratio are effective to mitigate higher air temperatures and can lead to a

better and healthier living.

Provided by The Chinese University of Hong Kong (CUHK)

Citation: Study suggests hot nights pose greater threat to public health than hot days (2020, August 24) retrieved 19 April 2024 from <https://phys.org/news/2020-08-hot-nights-pose-greater-threat.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.