

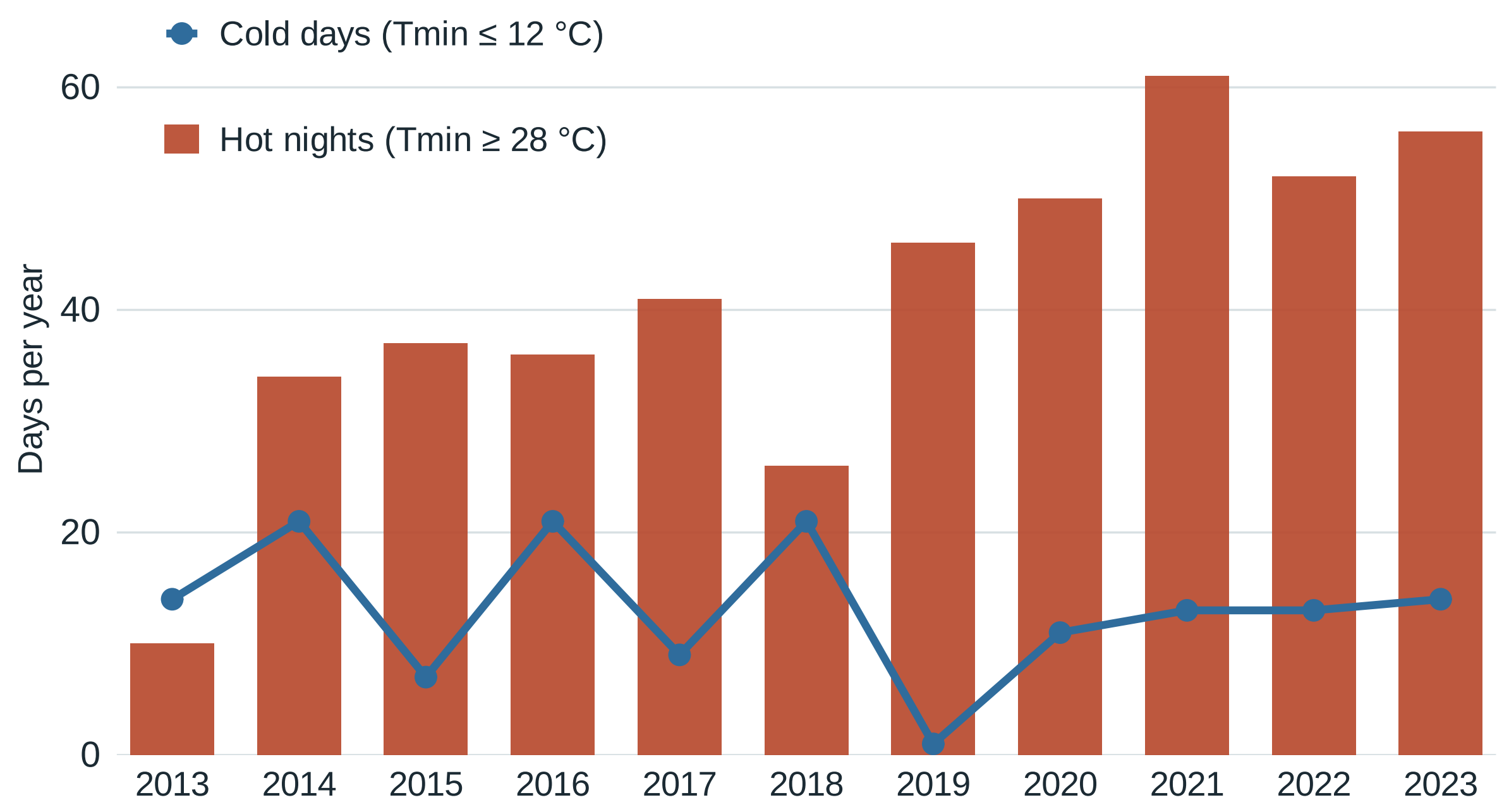
Heat, cold and first hospitalisation after cardiovascular diagnosis in Hong Kong

An exploratory monthly study, 2013–2023

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INTRODUCTION

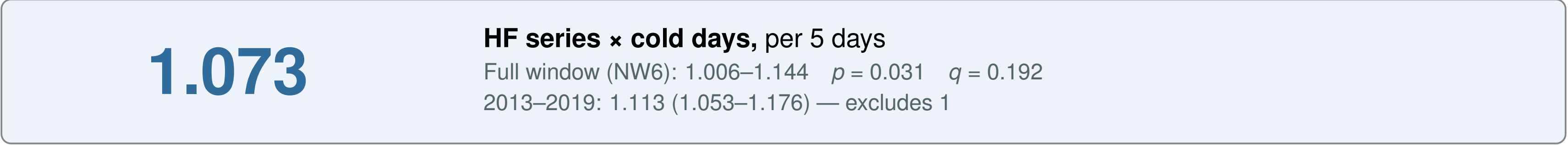
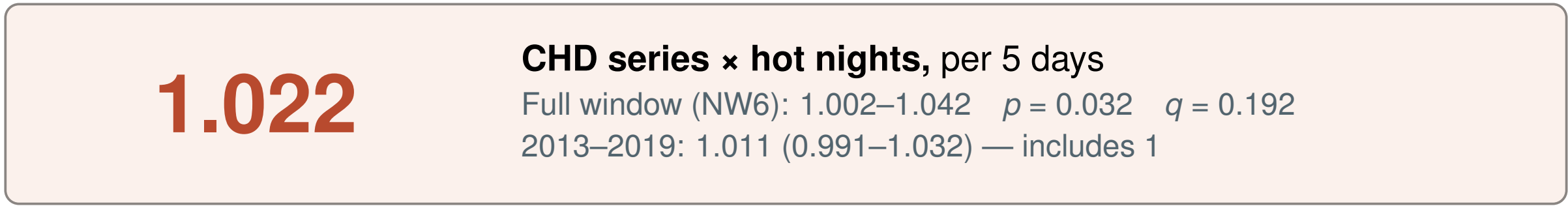
Hong Kong’s hot nights became more frequent over the past decade: at the Hong Kong Observatory they rose from 10 days in 2013 to a peak of 61 in 2021^[1], while winter cold days have not disappeared. For the growing number of people living with type 2 diabetes or hypertension — a group at high cardiovascular risk — hospital burden^[2,3] complements the better-studied mortality burden^[4,5]. This study examines the monthly association between temperature, extreme-day burdens and first hospitalisation after cardiovascular diagnosis in that group.



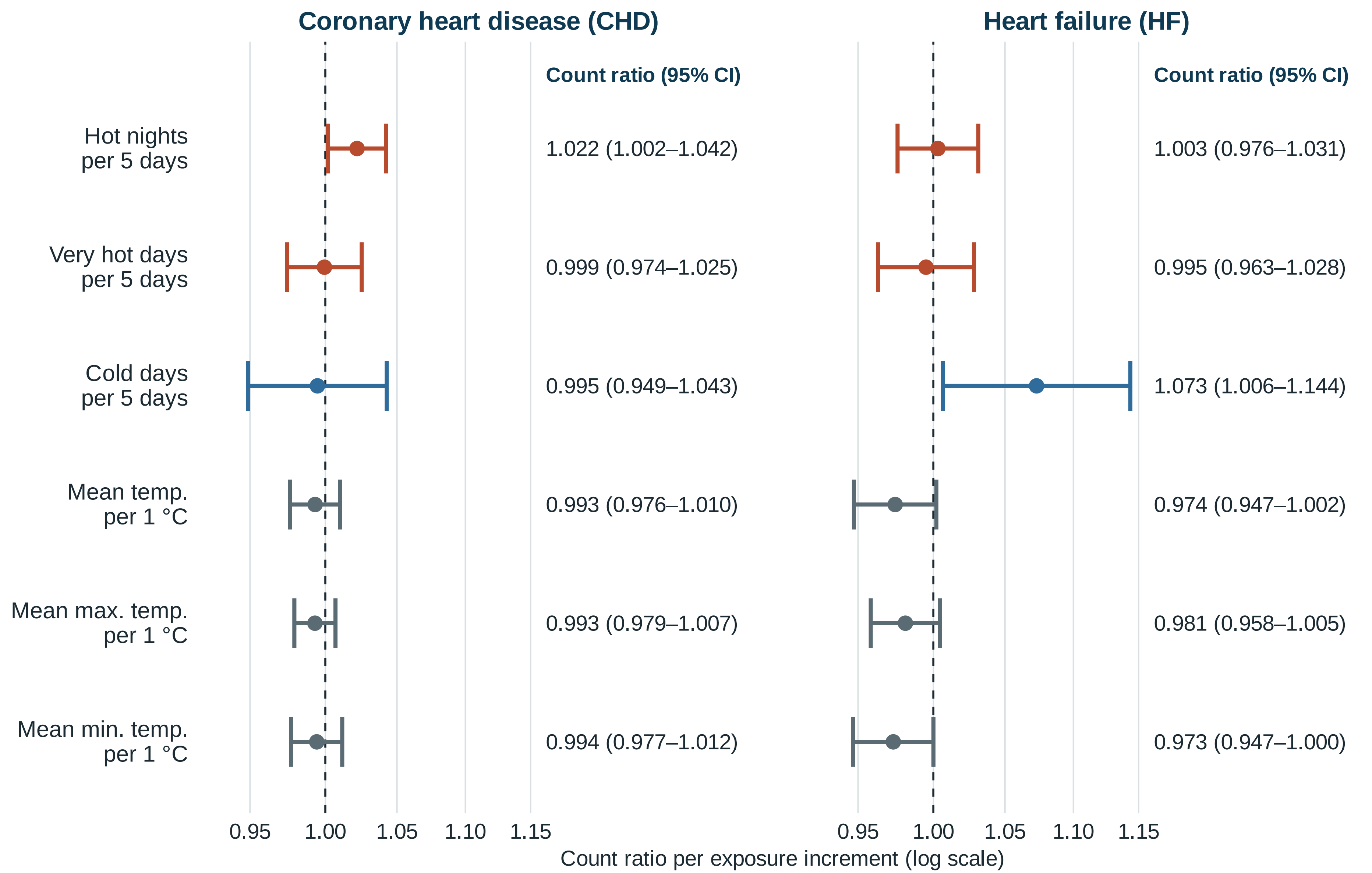
Official Hong Kong Observatory extremes at Headquarters. Hot nights rose about fivefold over the decade; cold days recurred every winter — the exposure setting for this study.

RESULTS

An exploratory panel of twelve models, specified after the outcome series was available — two residual signals, with unequal robustness.

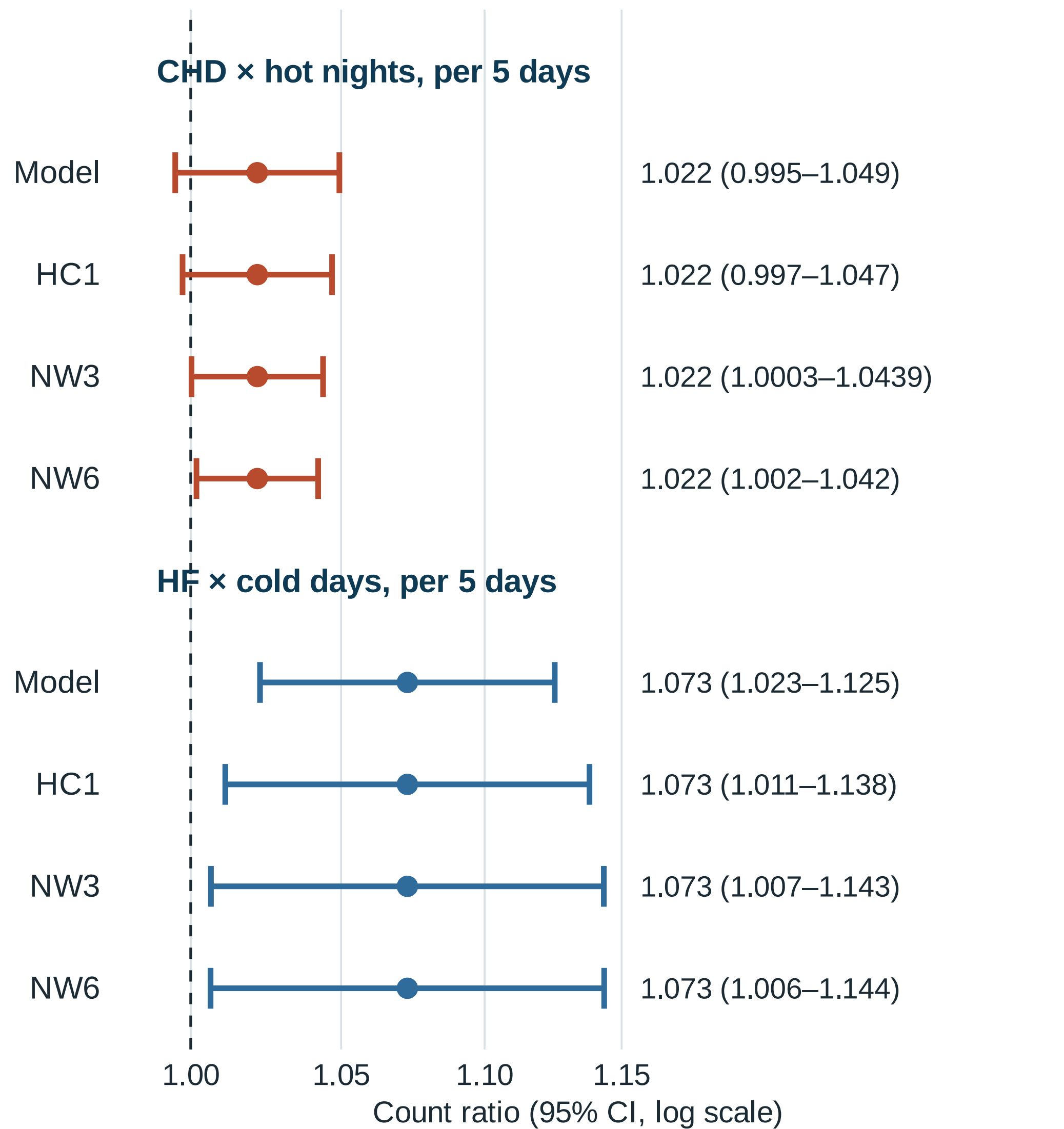


- **Unequal coherence:** the HF cold-day interval excludes 1 under all four standard-error methods and before 2020; the CHD hot-night interval includes 1 under two methods and in 2013–2019.
- The other ten contrasts sit near 1. **All 12 Benjamini–Hochberg q -values exceed 0.19:** after correction for 12 comparisons, both signals remain exploratory.



The twelve-model exploratory panel: count ratios from single-exposure negative-binomial models (days-in-month offset); 95% intervals with Newey–West lag-6 standard errors. Values right of 1 mean more first hospitalisations following recorded diagnosis in months with higher exposure. All 12 Benjamini–Hochberg $q > 0.19$.

How robust are the two signals?



The two leading contrasts under four standard-error methods. For CHD × hot nights: Model and HC1 intervals include 1; NW3 excludes it only on the unrounded scale (1.0003–1.0439); NW6 excludes it. The HF cold-day interval excludes 1 under all four. The main display uses NW6; methods were not chosen by interval position.

INTERPRETATION / LIMITATIONS

- All 12 q -values exceed 0.19 — these are **exploratory signals**, not confirmed effects.
- The CHD hot-night estimate is **window-dependent and uncertainty-sensitive**; the HF cold-day estimate is more coherent across methods and before 2020, but not confirmed.
- Monthly, territory-level data with no recorded admission cause support **no causal or principal-diagnosis claim**^[6].

CONCLUSION

Monthly data suggest **different thermal patterns** in the CHD and HF series — hot nights for CHD, cold days for HF — but the evidence is **exploratory, not confirmatory**: no contrast survived correction for twelve comparisons. The project leaves a **reproducible monthly framework** and a clear next requirement: **daily or cohort data with recorded admission cause**.

What would strengthen this: linked daily weather and admission records with cause of admission, so the monthly burden patterns seen here can be tested at the resolution at which heat and cold act.

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