

Heat-Related Mortality in BC: Surprising Numbers

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Semiahmoo
2010

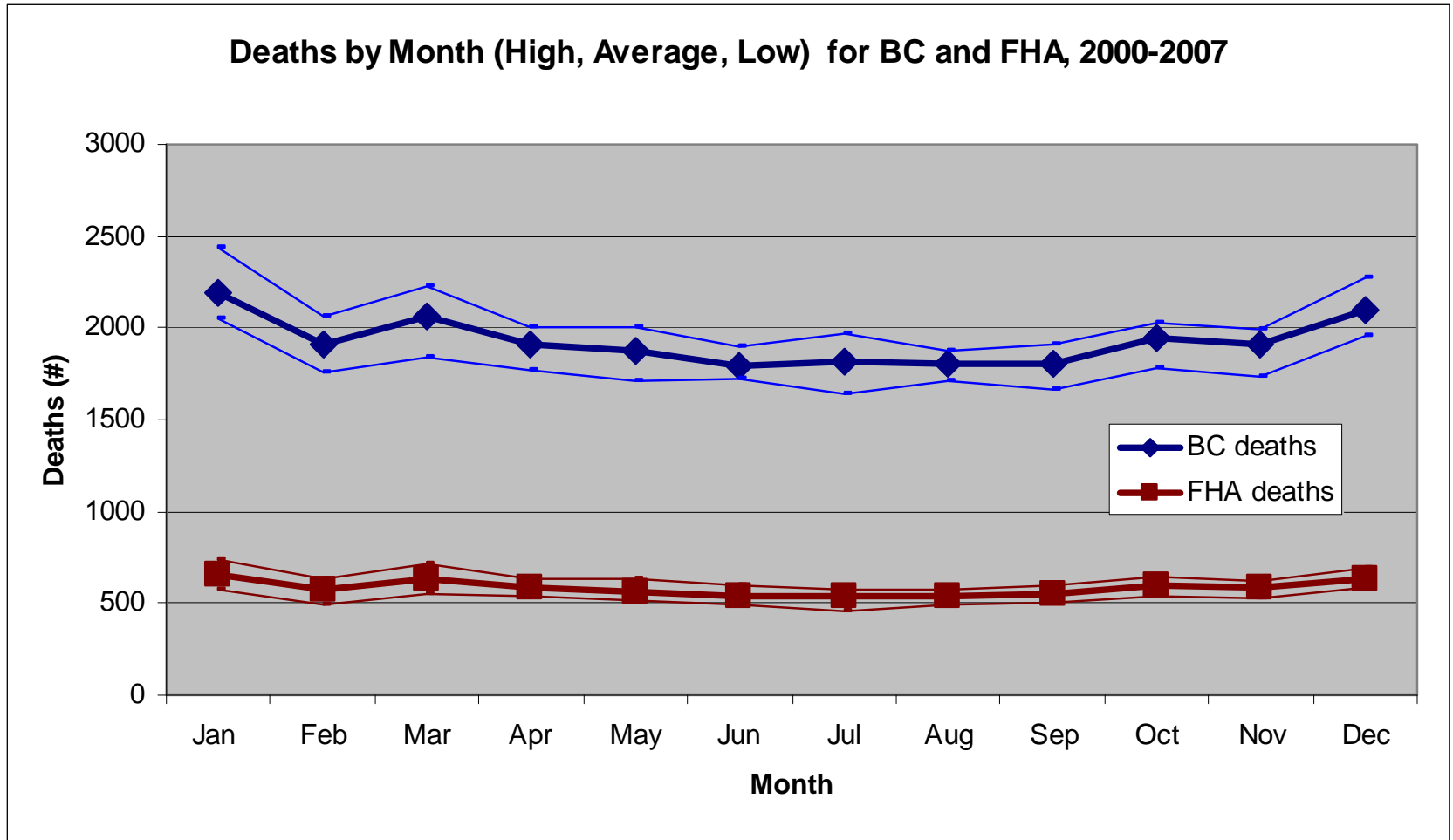
Heat wave, Chicago, 1995: refrigerator trucks outside city morgue



So, does summertime **Heat** cause excess **mortality** in **BC**?

At first glance:

1. Deaths increase during *winter* months



2. Hyperthermia, and other deaths ***directly*** related to heat (ICD-9 992) are a ***rare*** cause of death in BC





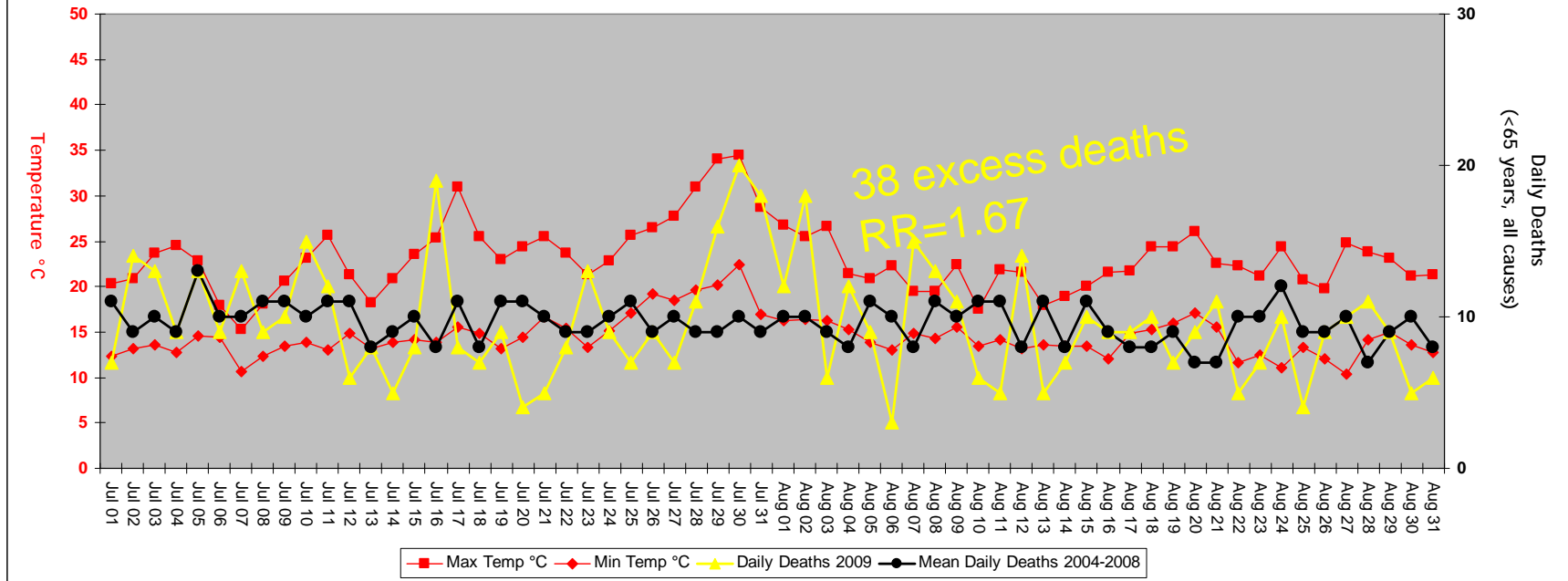
3. BC is not like back East. In summer, the temperature rises gradually. It cools off at night. We don't have prolonged hot spells.



If heat is not a BC problem...

.....**What about last summer?**

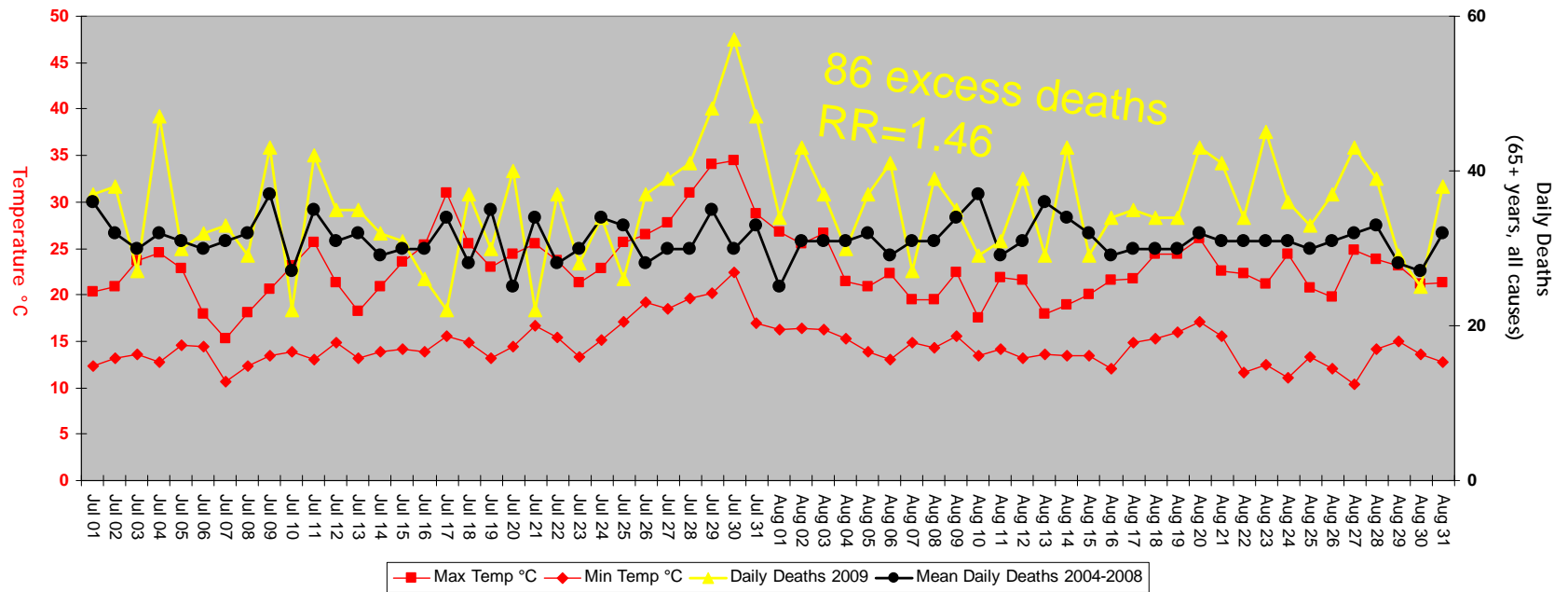
**Temperature at Vancouver Airport
Deaths by Day (< 65 years, all causes)
Vancouver Coastal Health and Fraser Health Authorities
July 1 - August 31, 2009**



**Impact of the late July heat episode on
Vancouver and the lower Fraser Valley among persons <65**

Impact of the late July heat episode on Vancouver and the lower Fraser Valley among persons 65+

Temperature at Vancouver Airport
Deaths by Day (65+ years, all causes)
Vancouver Coastal Health and Fraser Health Authorities
July 1 - August 31, 2009



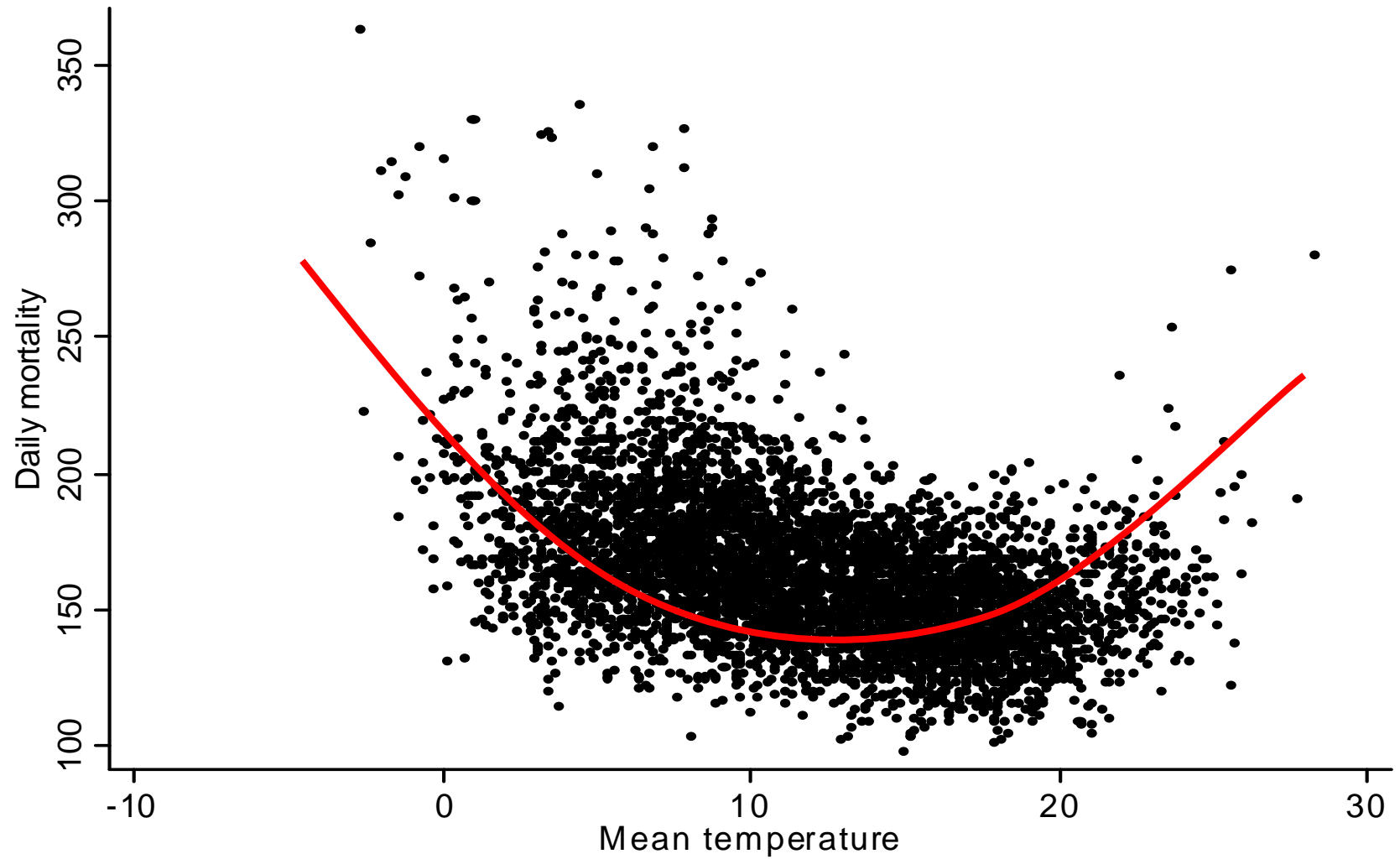
Ongoing research

- Case-only assessment of summer 2009 heat (events) for the interaction of gender, age, geography, cause, and place of death on risk of dying on a hot versus a typical summer day.

What about “typical summers?”

Time series (semi-ecological) methods to assess the (general) relationship between weather and daily mortality

Daily mortality in London: 1993-2006

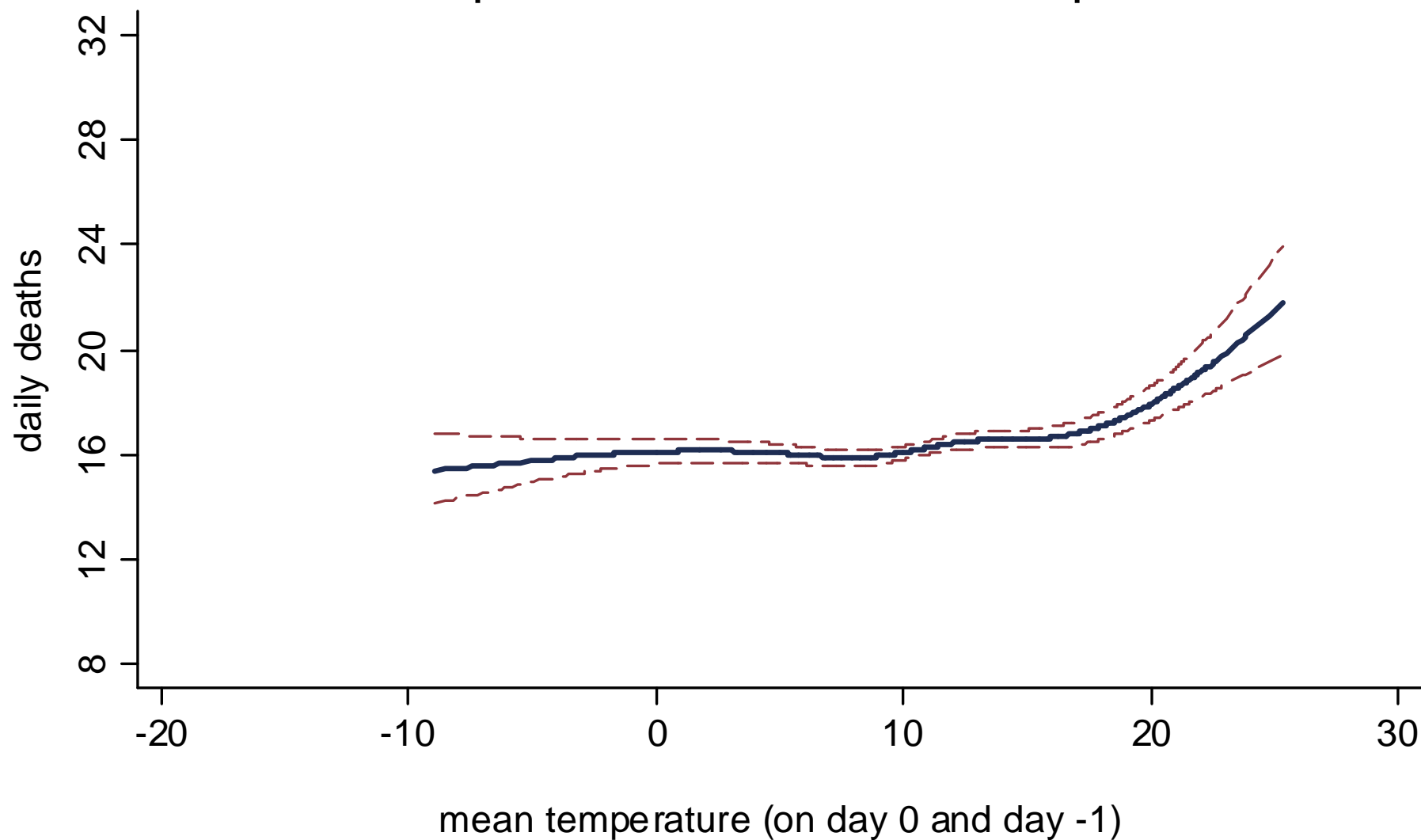


Time series (semi-ecological) methods to assess the relationship between weather and daily mortality: **select BC regions**

Daily Deaths (all ages, all cause)

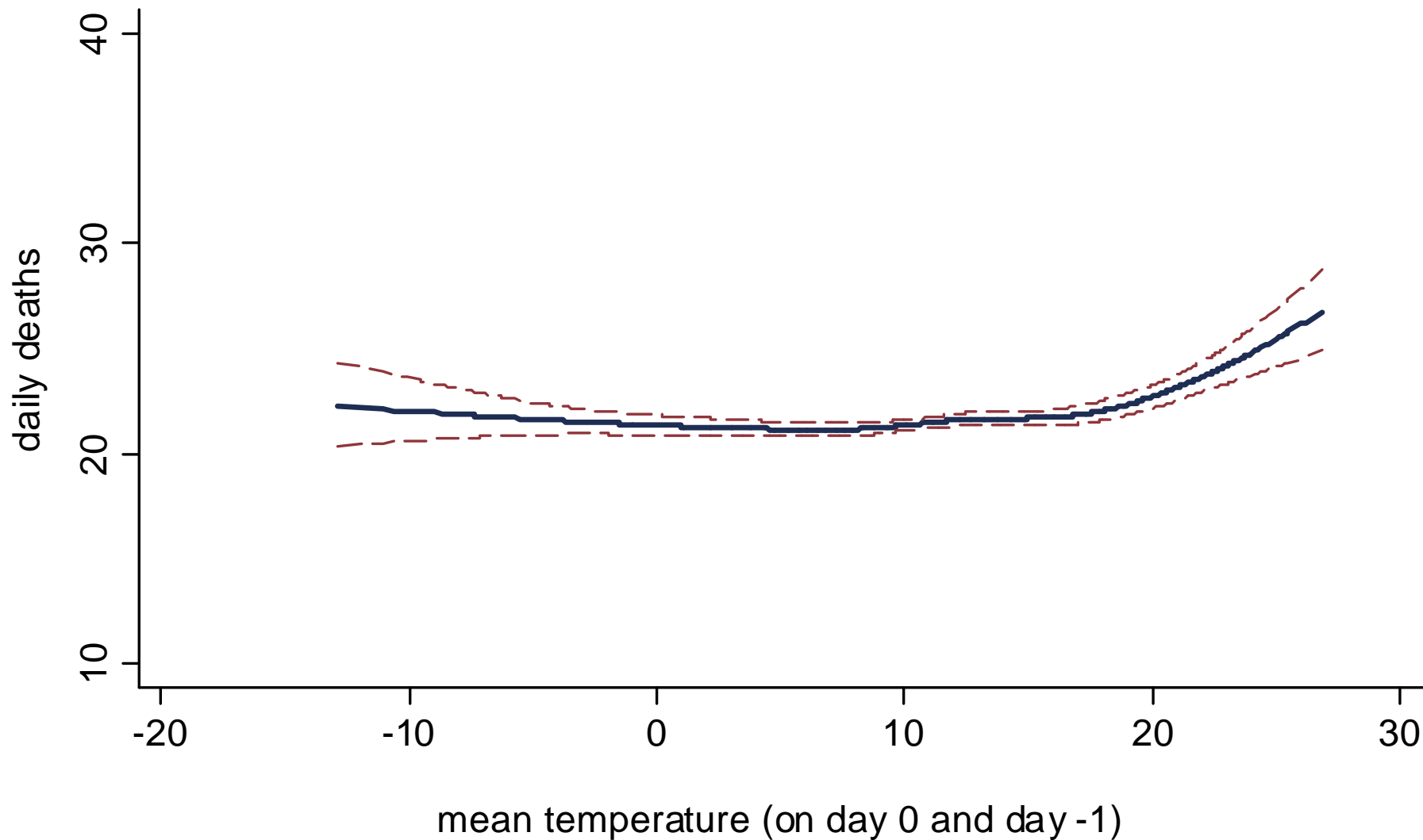
Vancouver North Metropolitan Area (LHAs: 38, 44, 45, 161-166)

Associated with Temperature at Vancouver Airport, 1986-2008

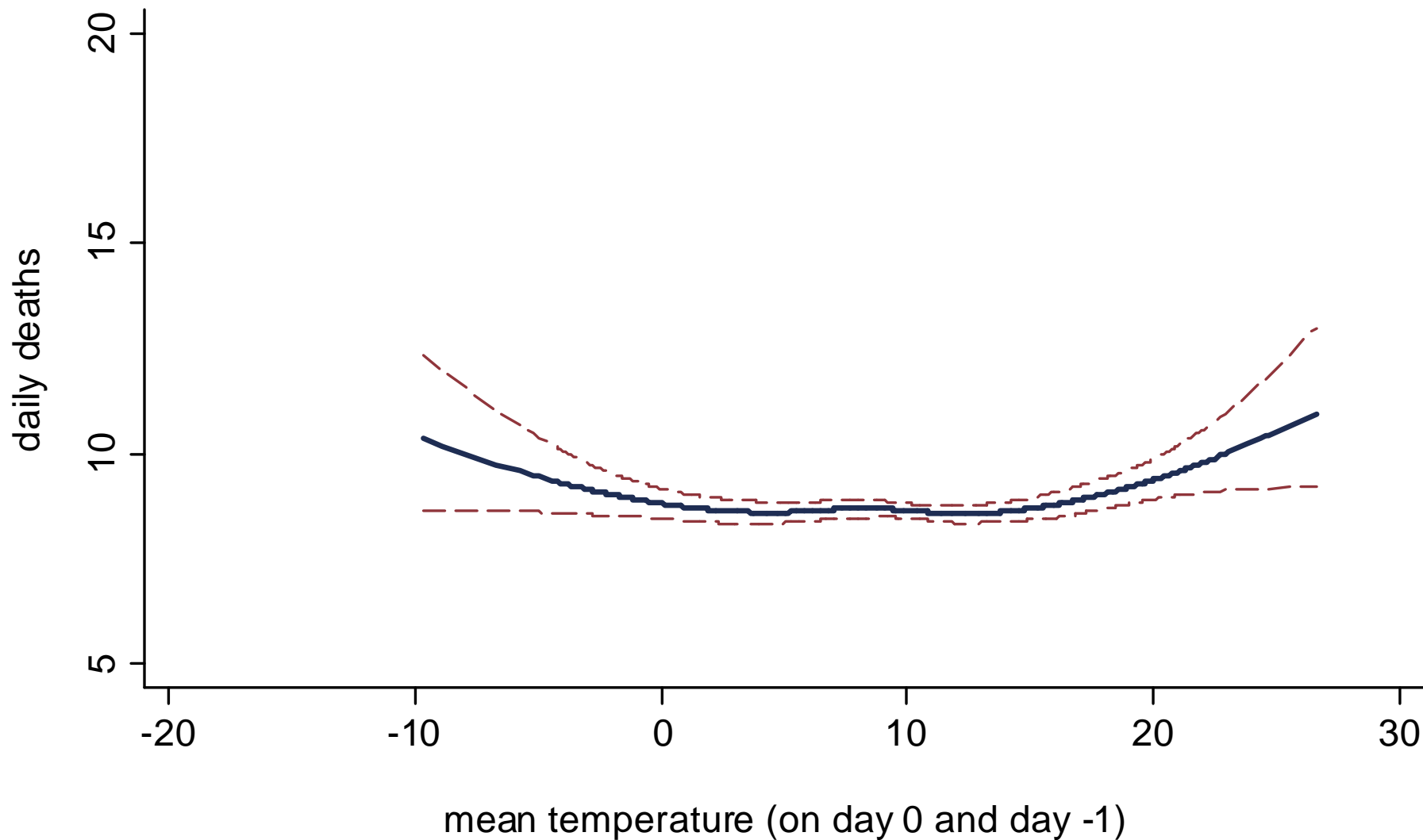


Daily Deaths (all ages, all cause) Fraser Health Authority

Associated with Temperature at Abbotsford Airport, 1986-2008

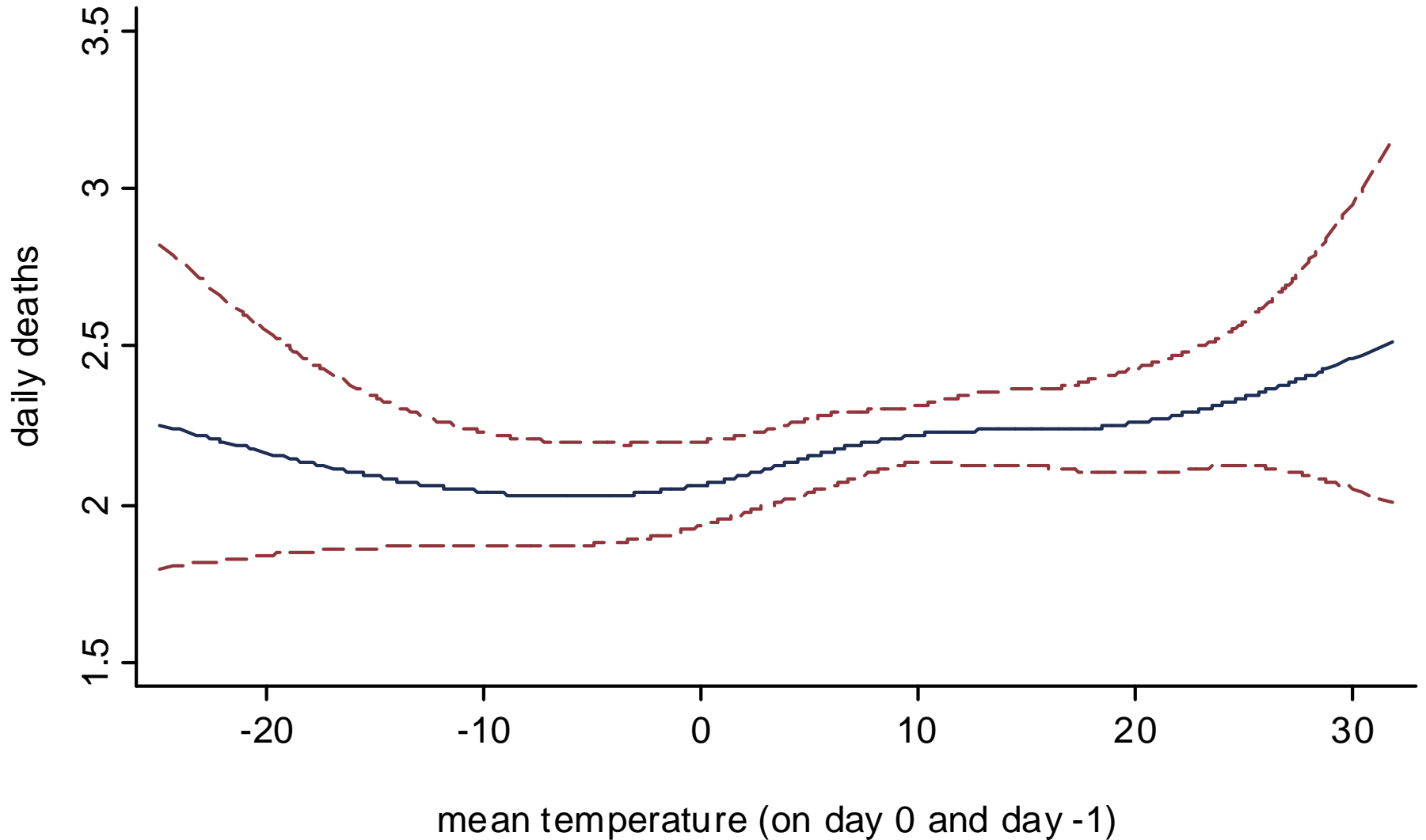


Daily Deaths (all ages, all cause) for Victoria and Region (LHAs: 61, 63, 64, 65) Associated with Temperature at Victoria Airport, 1986-2008



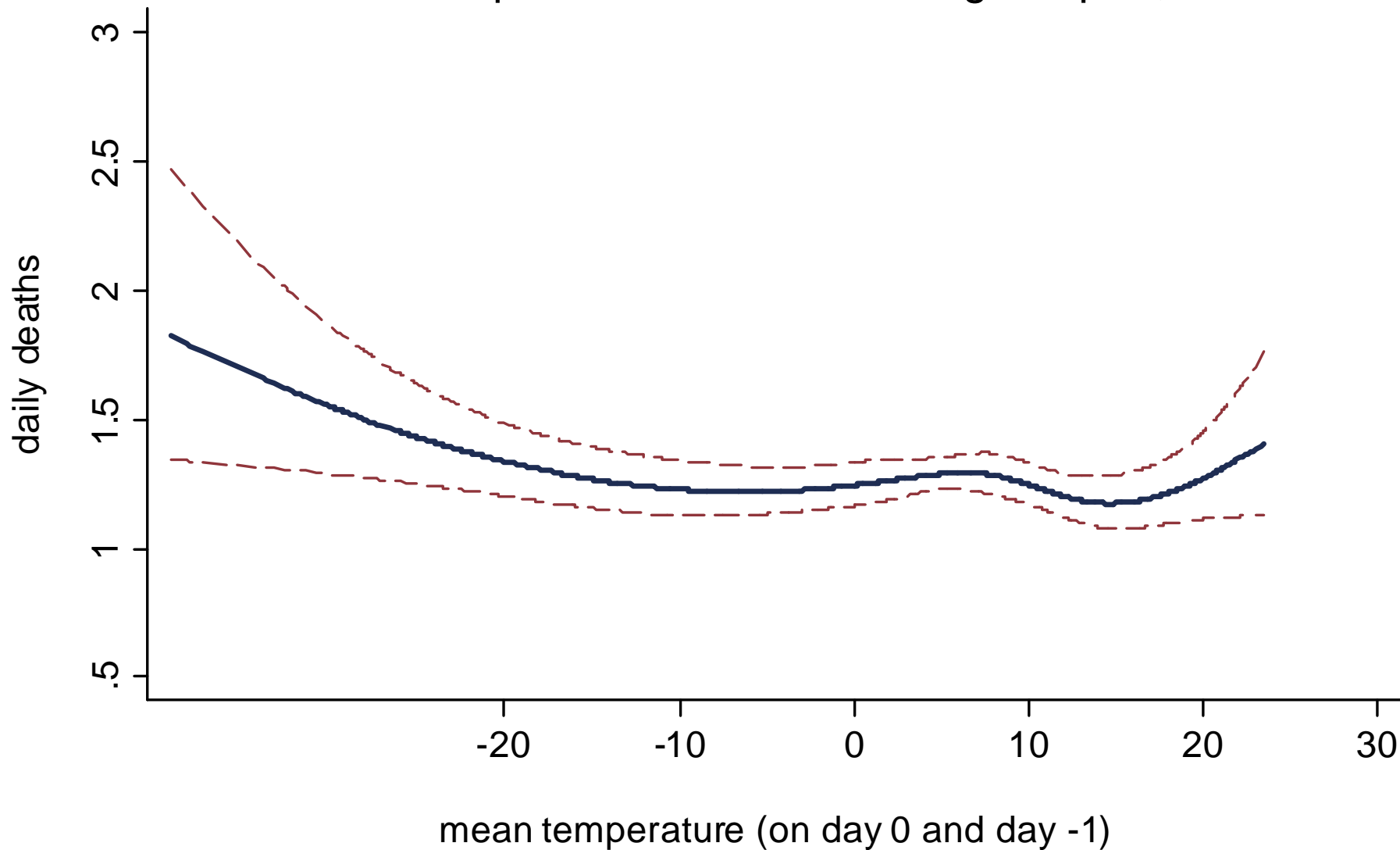
Daily Deaths (all ages, all cause) for Kamloops Region (LHAs: 24, 30, 31)

Associated with Temperature at Kamloops Airport, 1986-2008



Daily Deaths (all ages, all cause) for Prince George (LHA: 57)

Associated with Temperature at Prince George Airport, 1986-2008



Relative Risk of Death with Temperatures above the 90th percentile in British Columbia, 1986-2008

Region	LHA	Mean temperature (June to Sept 15th)	90th percentile annual temperature threshold	% change in mortality per degree increase in temperature over threshold	Lower 95% CI	Upper 95% CI	Percent attributable fraction	Above threshold attributable deaths / year
Vancouver North Metropolitan Area	38, 44, 45, 161-168	17.09	18.00	3.75	2.53	4.99	0.51	31.74
Sunshine Coast	46, 47, 48	17.09	18.00	5.3320	1.16	9.68	0.72	3.45
Fraser Health Authority	32-35, 37, 40-43, 75-76, 201-202	17.30	18.40	2.45	1.67	3.24	0.43	33.37
Kamloops	24, 30, 31	19.86	21.45	1.07	-1.02	3.21	0.24	1.91
Okanagan	14-17, 21-23, 77-78	18.79	20.50	1.10	-0.20	2.43	0.22	5.59
Victoria and region	61, 63, 64, 65	16.07	16.90	2.90	1.48	4.35	0.42	13.36
Prince George	57	14.40	15.80	1.40	-1.50	4.37	0.27	1.23

Ongoing research

- Meta-analysis of the influence of climate, geography and demography on the threshold for heat-related mortality and on post-threshold slope for BC's 50 largest local health areas (95% of provincial population).

Elements of a public health response



Levels of heat-health prevention

- **Rapid treatment**
- **Hot day messaging / protective responses**
- **Identification of susceptibilities / pre-hot days adaptation**
- **Increase personal and social resilience**
- **Urban adaptation**
- **Greenhouse gas reduction**

Hot day messaging: essentials



- Find a cool space
- Drink extra water
- Avoid strenuous activity
- If you feel “off”, cool off, and hydrate
- Heat affects health quickly: look in on others; have others look in on you

Increasing resiliency: *among programs adopted elsewhere*

- Fan provision programs
- Prohibition of power cuts
- Opening pools and water parks
- Buddy systems: community mobilization
- Cooling shelters
- Day care and eldercare facility licenses require cooling rooms
- Adding extreme heat to municipal response plans

Towards cooler cities



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