

Urban Heat Islands and Health

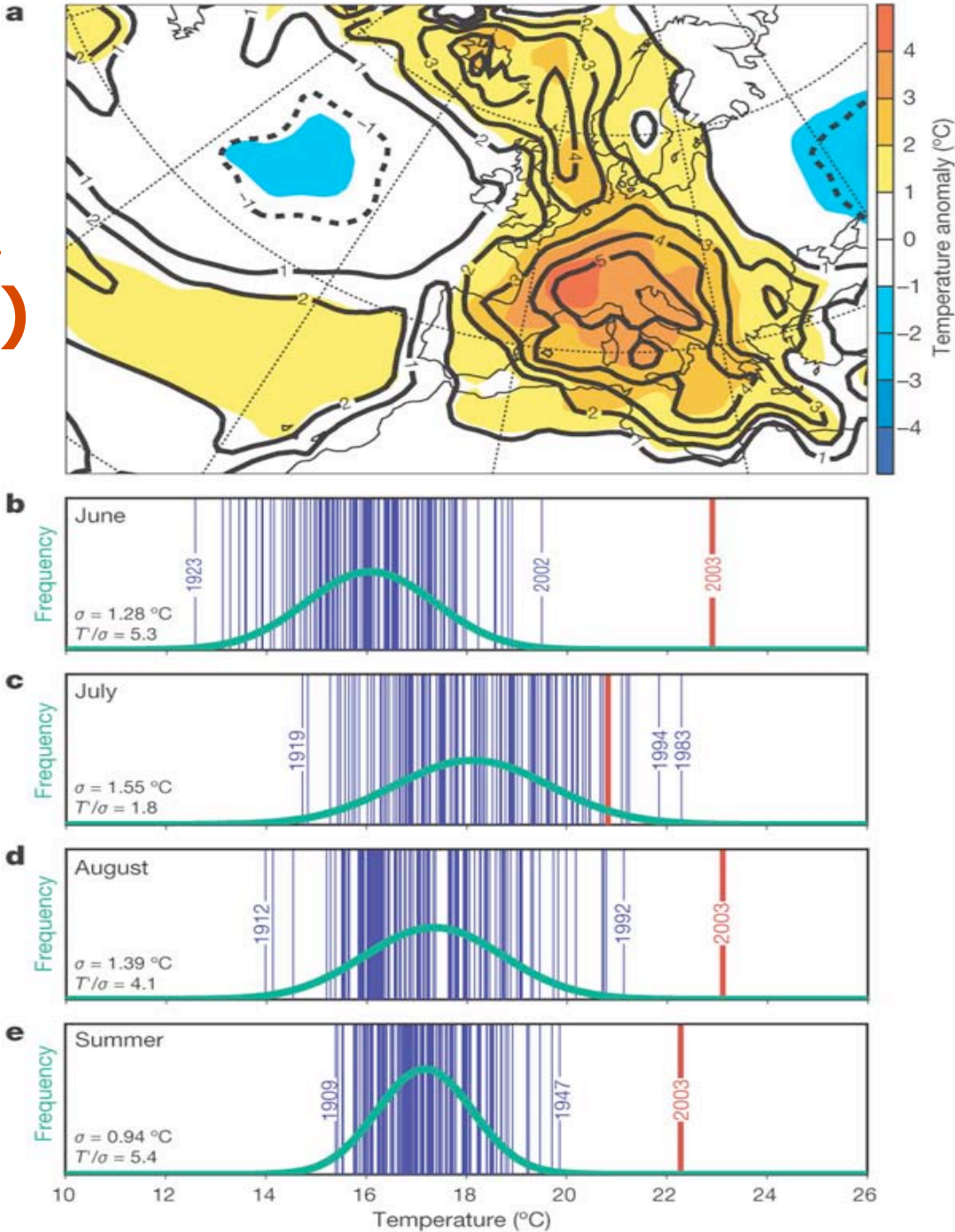


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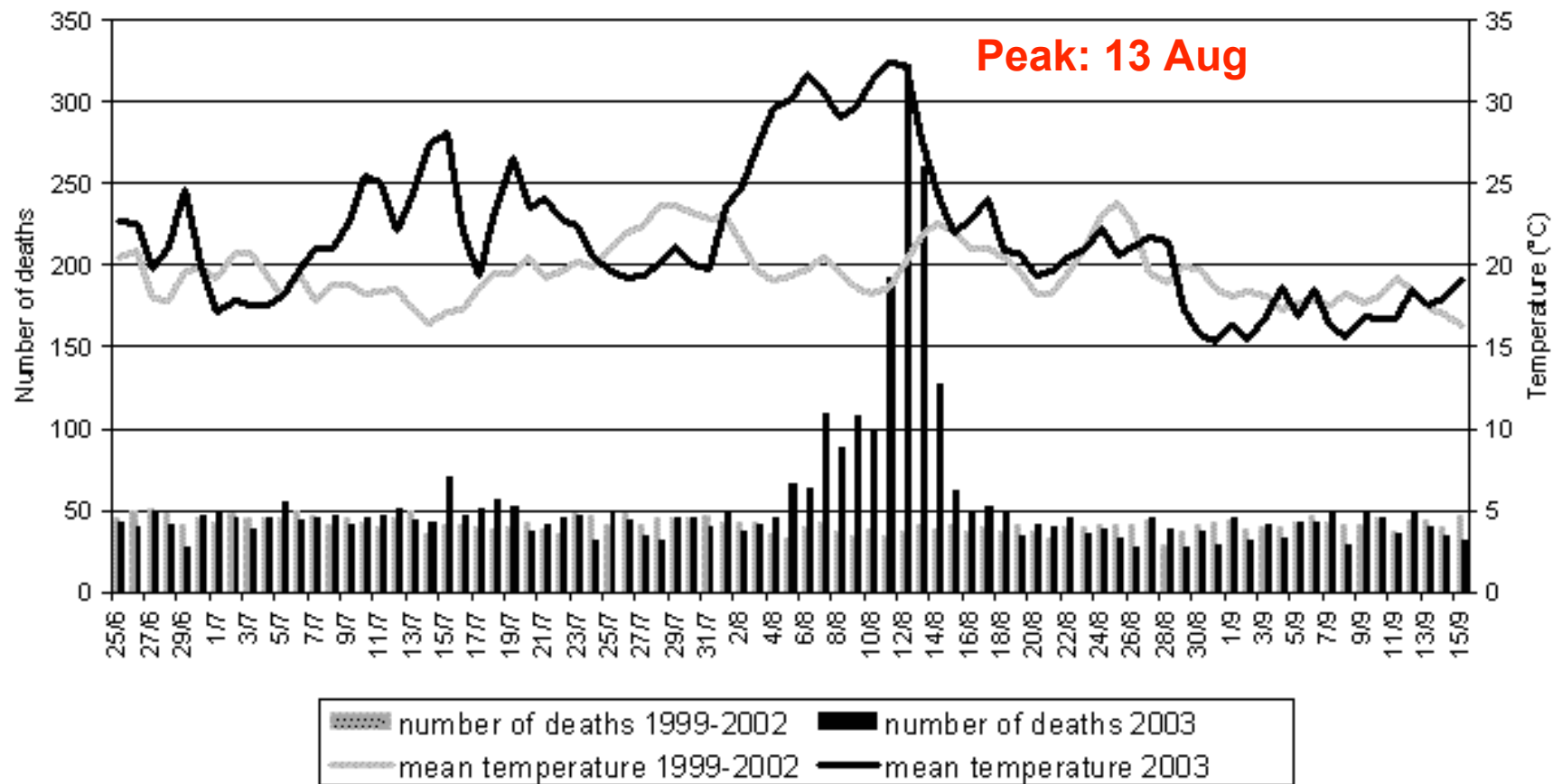
Heat Can Kill

- Over period 1979-1999, 8,015 deaths in the US were heat-related
 - 3,829 due to weather conditions
 - Large underestimate
- Excess heat causes
 - Heat cramps
 - Fainting due to the heat
 - Heat exhaustion
 - Intense thirst, heavy sweating, dizziness, fatigue, fainting, nausea or vomiting, and headache
 - Heatstroke
 - Death

Schar et al (2004)




Mortality in Paris, 2003 vs 1999-2002



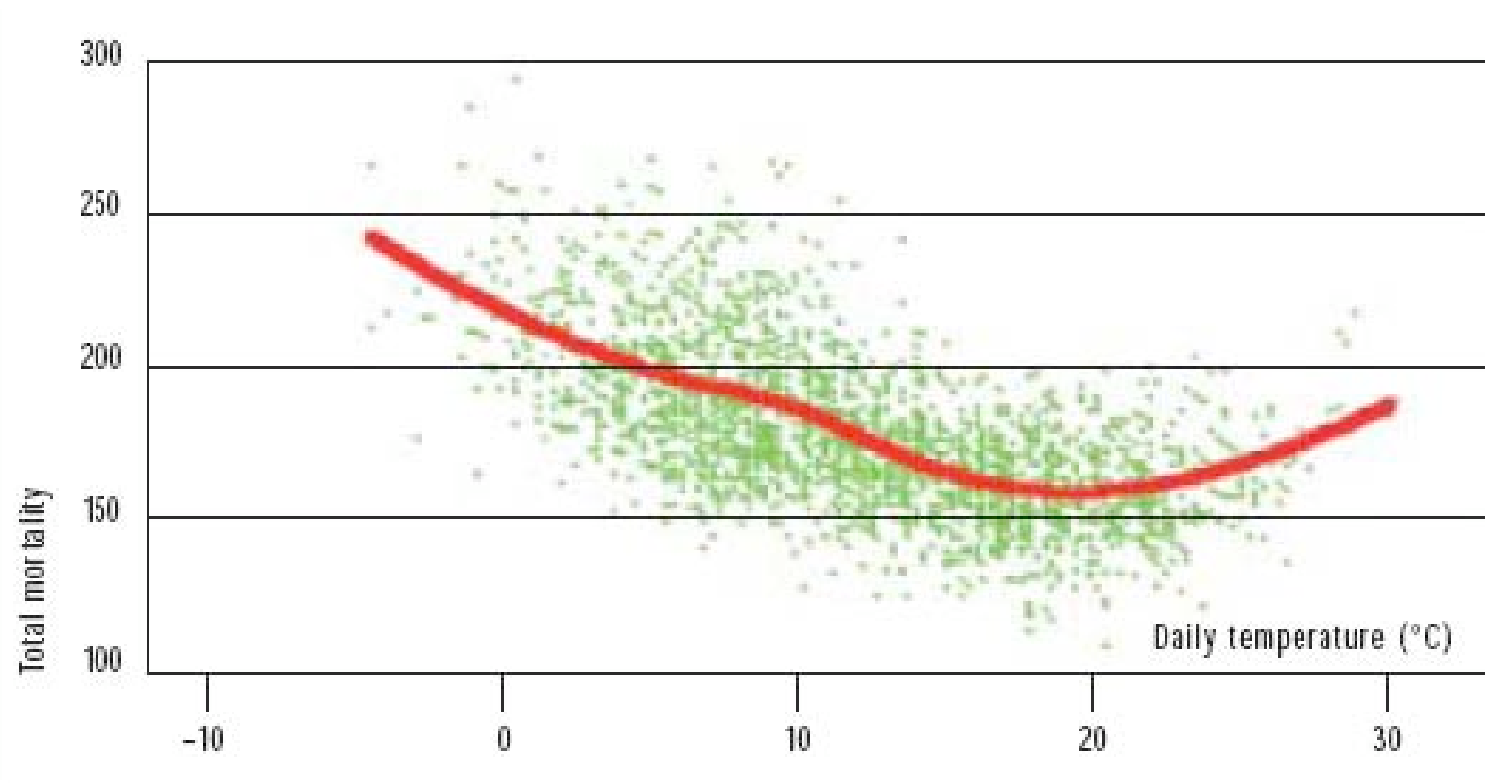


McGeehin

Relationship Between Daily Temperature and Mortality

 The fitted values of the predictive model (unadjusted)

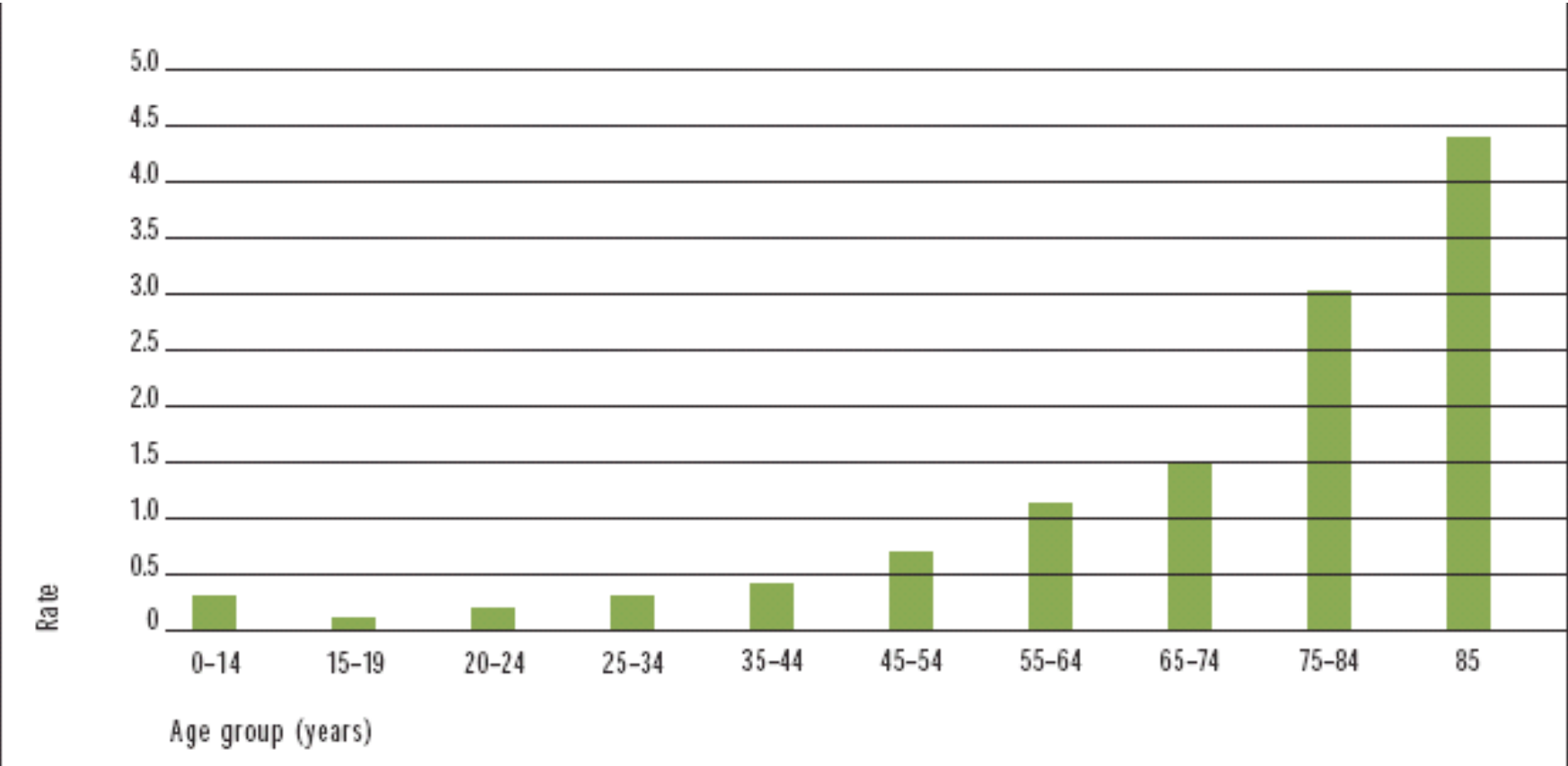
 The crude mortality counts



Populations Vulnerable to Heatwaves and High Temperatures









Average Annual Heat-Related Deaths/Million Population, US, 1970-1997



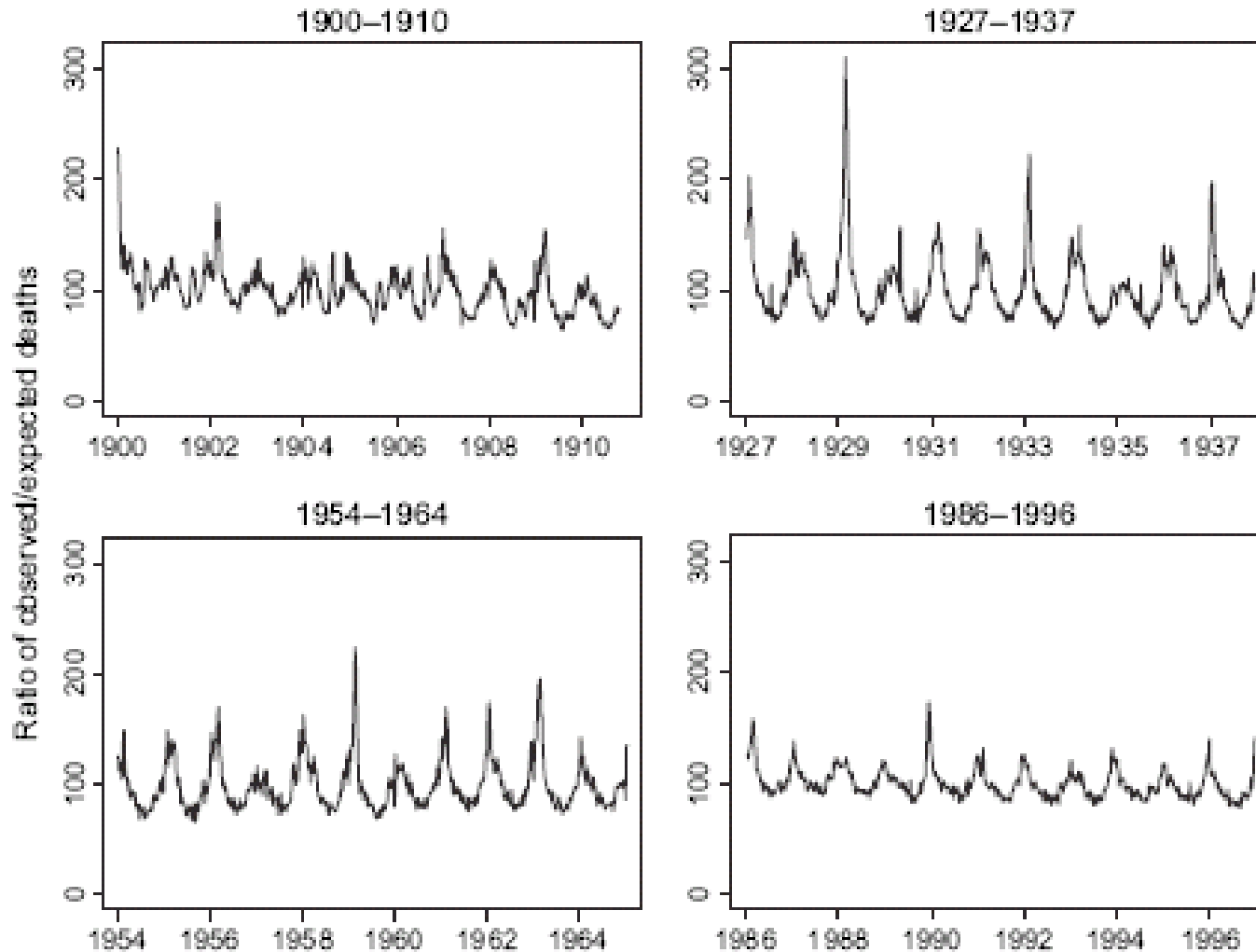
Populations Vulnerable to Heatwaves and High Temperatures

- **Younger children**
- **Those with certain chronic conditions**
 - **Diabetes**
 - **Overweight**
- **Those with low levels of fitness**
- **Those taking certain drugs**
- **Lower socioeconomic status**
- **Those living alone**

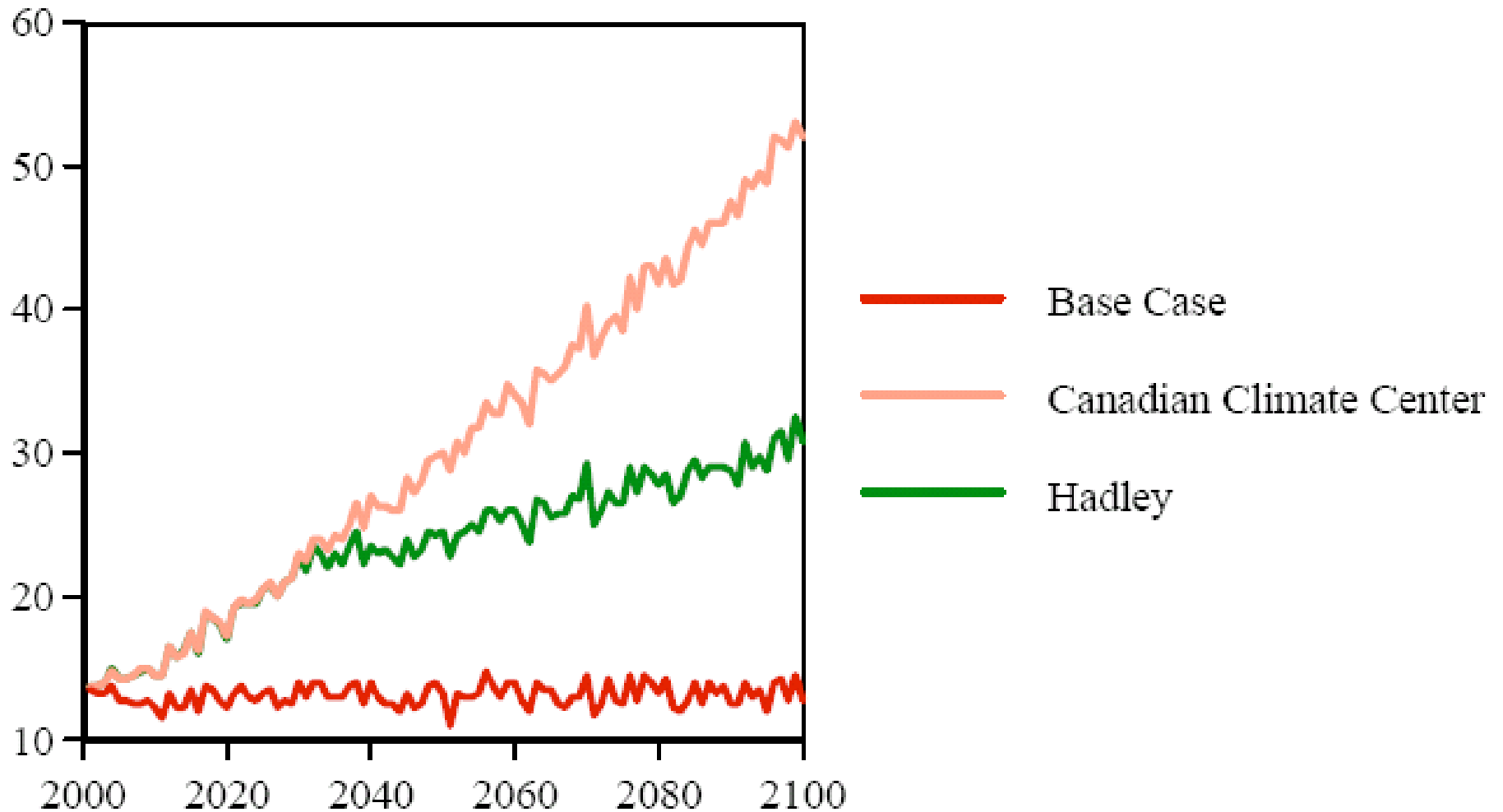
Emission Pathways, Climate Change, and Impacts on California

Scenario	B1	A1fi
Heatwave days (Los Angeles)	 4X	 6-8X
Length of heatwave season	 5-7 weeks	 9-13 weeks
Heat-related mortality (Los Angeles)	 2-3X	 5-7X

Weekly All-Cause Mortality, London, Various Time Periods

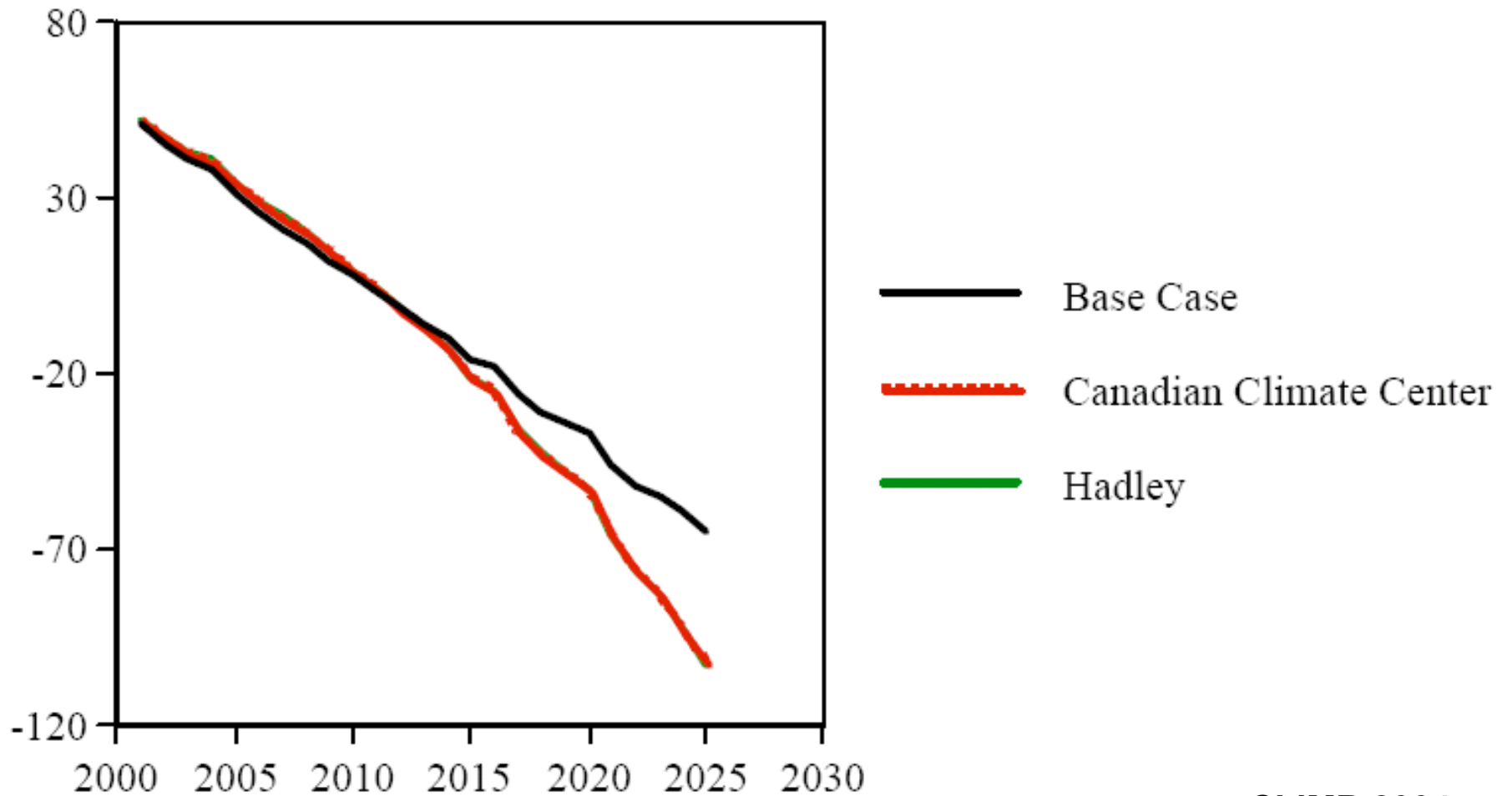


Average Number of Days Above 90°F, Boston



CLIMB 2004

Projected Annual Heat-Related Deaths, CLIMB Region



CLIMB 2004

Urban Design Important

- Increasing urbanization
 - Increasing population density
- Increasing size of population at risk
 - Age
 - Chronic diseases
 - Etc.
- Increasing climate variability and change

Thank-you

