



Health impacts of urban heatwaves

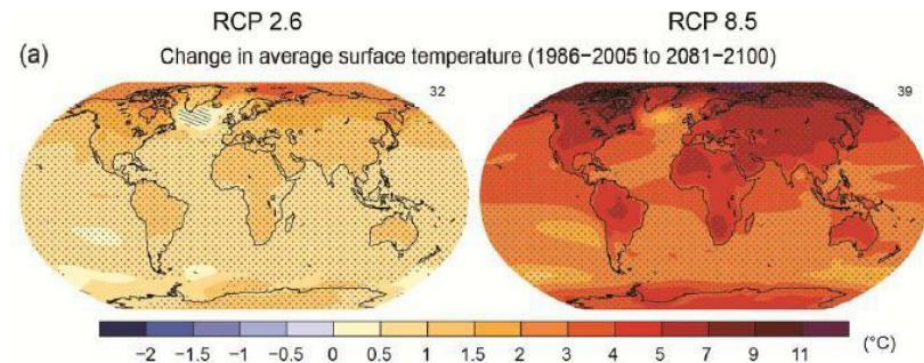
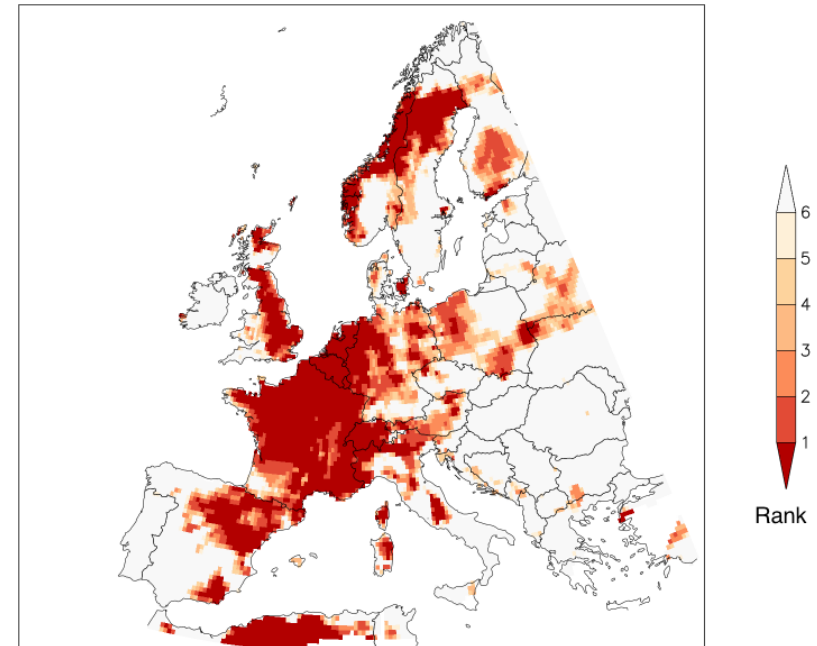
Is prevention working in Europe?

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Why are we talking about this again?

- 2019 European heat waves broke records (again)
- All-time high temperatures recorded in several European countries, including the UK, Belgium, Germany, Luxembourg and the Netherlands.
- As usual, large urban areas have been worst hit
- France has done due diligence, published number of attributable deaths; others are taking their time
- More of this is coming
- We think that prevention is helping, but we *really* don't know for sure

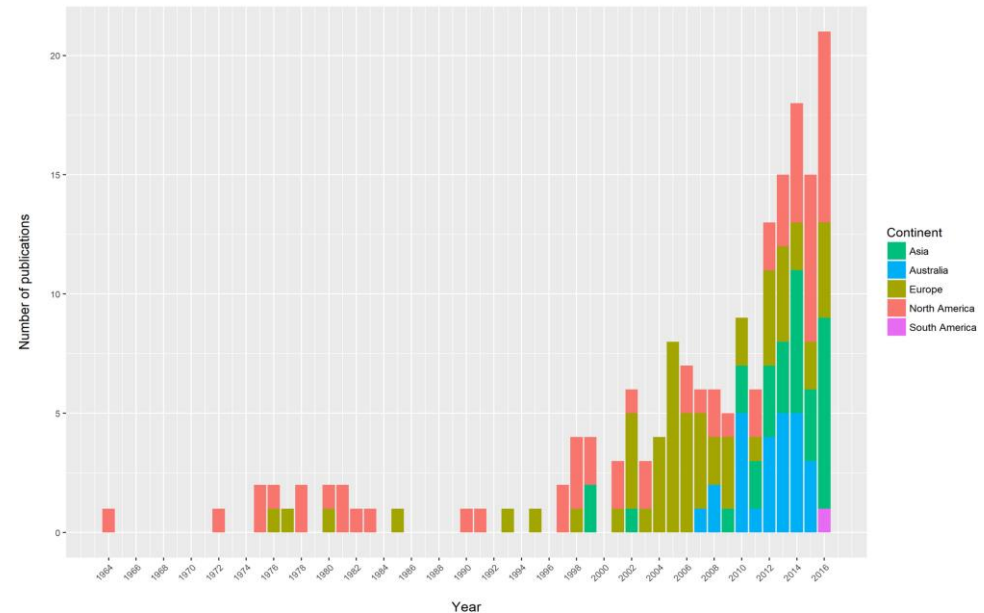
Source: Vautard et al. 2018 <https://www.worldweatherattribution.org/wp-content/uploads/July2019heatwave.pdf>



Source: EURO-CORDEX (Jacob et al., 2014)

- A significant amount of new research
- Some of the earlier HHAPs have accumulated a lot of operational experience (some have completed full evaluations; France's a great example)
- Relevant secular trends continue: ageing, urbanisation
 - Ageing: median age in the EU-28 increased by 4.2 years between 2002 and 2017, share of persons aged 65 or over increased by 2.4% in the last decade (EUROSTAT, 2018).
 - Urbanisation: the overwhelmingly urban WHO European Region is still becoming more urbanized (UNDESA, 2014)
- Better understanding of climate change influence on health risks

Heatwave and health impact publications by continent, 1964-2016



S. Campbell et al.

Health and Place 53 (2018) 210-218

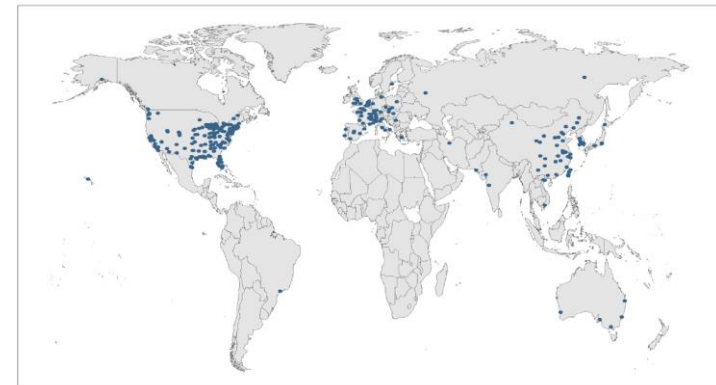
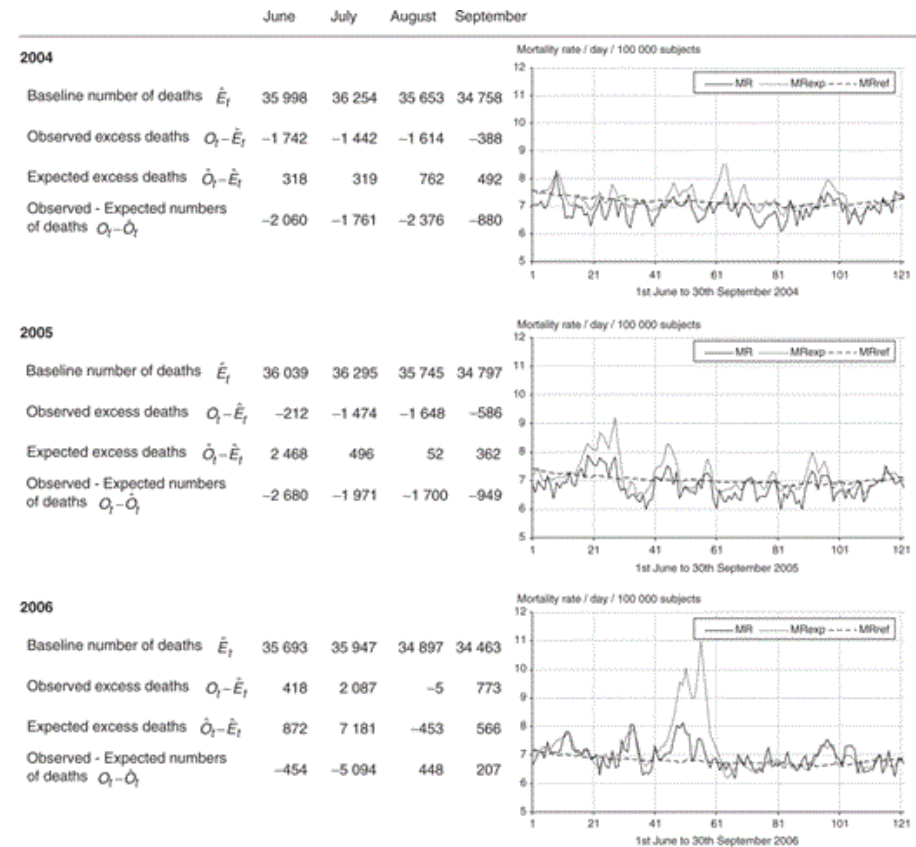


Fig. 2. Locations of heatwave and health impact research, 1964-2017.

- Are HHAPs effective at reducing health impacts from heat? So far reviews (Boeckmann & Rohn 2014; Toloo et al., 2013) show mixed results. We need a lot more evidence
- If so, why; if not, why not? We need more post mortems (e.g. Benmarhnia et al. 2016 in Quebec)
- Can their effectiveness be fairly compared, given differences in scope, etc?
- How can we identify the crucial factors hindering effectiveness or enabling it?
- How can we know if the changes we observe are due to the HHAPs?



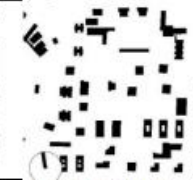

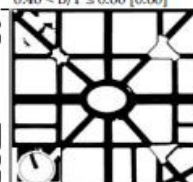






Source: Fouillet et al. 2008
(we have a coauthor today)

Is the protective effect of urban management interventions overestimated?

- Need for reviewing the actual evidence of protective effect of urban greening, albedo reduction, etc
- Strategic deployment of urban green infrastructure juts one in a portfolio of strategies to reduce underlying vulnerability.
- We need a deeper discussion about the role of building insulation and building envelope in general, as well as access to air conditioning

Table 1. Analysis of the current situation of the selected urban case study areas.

Data	Compact Low-Rise	Compact Mid-Rise	Open-Set High-Rise
a)			
Selected urban areas	Casco Viejo	Abando/Indautxu	Txurdinaga/Miribilla
Type of area	Historic, residential and commercial	Business center, residential and commercial	Residential and service
T—Total area [m ²]	175,000	890,000	180,000
B—Built area [m ²]	140,000	360,000	72,000
Urban density [B/T]	B/T > 0.60 [0.8]	0.40 < B/T ≤ 0.60 [0.60]	B/T ≤ 0.40 [0.40]
b)			
H—Buildings' heights [m]	16 (4/6 floors—attached)	24 (7/10 floors—attached)	40 (>9 floors—single high rise buildings)
W—Streets' width [m]	4.5 (narrow street)	16 (wider avenues of four traffic lanes)	30 (large avenues of two or more traffic lanes)
Aspect ratio [H/W]	H/W > 1.5 [3.5]	1.3 < H/W ≤ 1.5 [1.5]	H/W ≤ 1.3 [1.3]
c)			
Total green areas [m ²]	0 (None)	7500 (None-Low)	50,000 (None-Low)
Incidence green areas *	0.00 %	0.85 %	20.0 %
Squares/void spaces [m ²]	3500	40,000	2400
Incidence squares * [%]	2.0	4.5	1.3
Percentage occurrence ^b	4.8 %	17.1 %	23.8 %
Façade materials	concrete/brick/stone	concrete/brick/stone	concrete/brick
Roof materials	terracotta	terracotta	terracotta
Type of soil	red brick stone	asphalt	asphalt

¹ Source: [78]. * Ratio related to total area of the selected district in Bilbao and green spaces/squares presented in those areas. ^b Ratio of total land use category area to total urban area in Bilbao.

Are populations adapting and/or acclimatising? The published evidence on the physiology and epidemiology of acclimatisation in average (i.e. not military, not in industrial settings, not only young, etc.) populations is VERY scarce

"It is possible that the avoidance of outdoor temperatures ... deprive seniors of the opportunity to achieve some degree of acclimatization." National Collaborating Centre for Environmental Health, Canada

What is the role of A/C and how will it change under the Kigali Amendment?



The Economist

THANKS

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