Planning for heat resilience & green infrastructure

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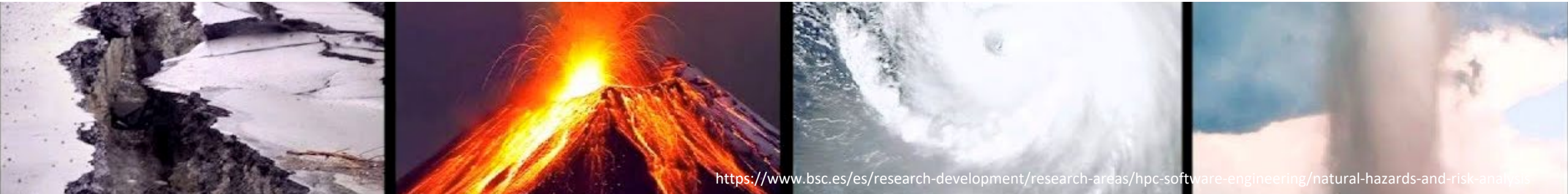
Heat planning

- APA study (2018) showed 70% of US planners worried about extreme heat
- Heat ranked 4th out of 14 hazards (APA 2018)

- Assessment of 3500 online climate adaptation resources found only 4% focused on heat (Nordgren et al. 2016)



Institutional challenges & opportunities

- Breaking down heat planning siloes
- Mainstreaming and finding appropriate planning scales
  - Need to integrate heat into existing plans
  - Heat often not top priority
- Legal structures lacking for heat planning
- Acknowledging complexities, different priorities, & limited resources

Keith, Ladd, Sara Meerow, Tess Wagner. In review. "Planning for extreme heat: A review."

Strategies for addressing extreme heat

- Many strategies, 2 categories:

Risk Management

Design of the built environment

- More research focused on design of the built environment
- Need to combine these approaches

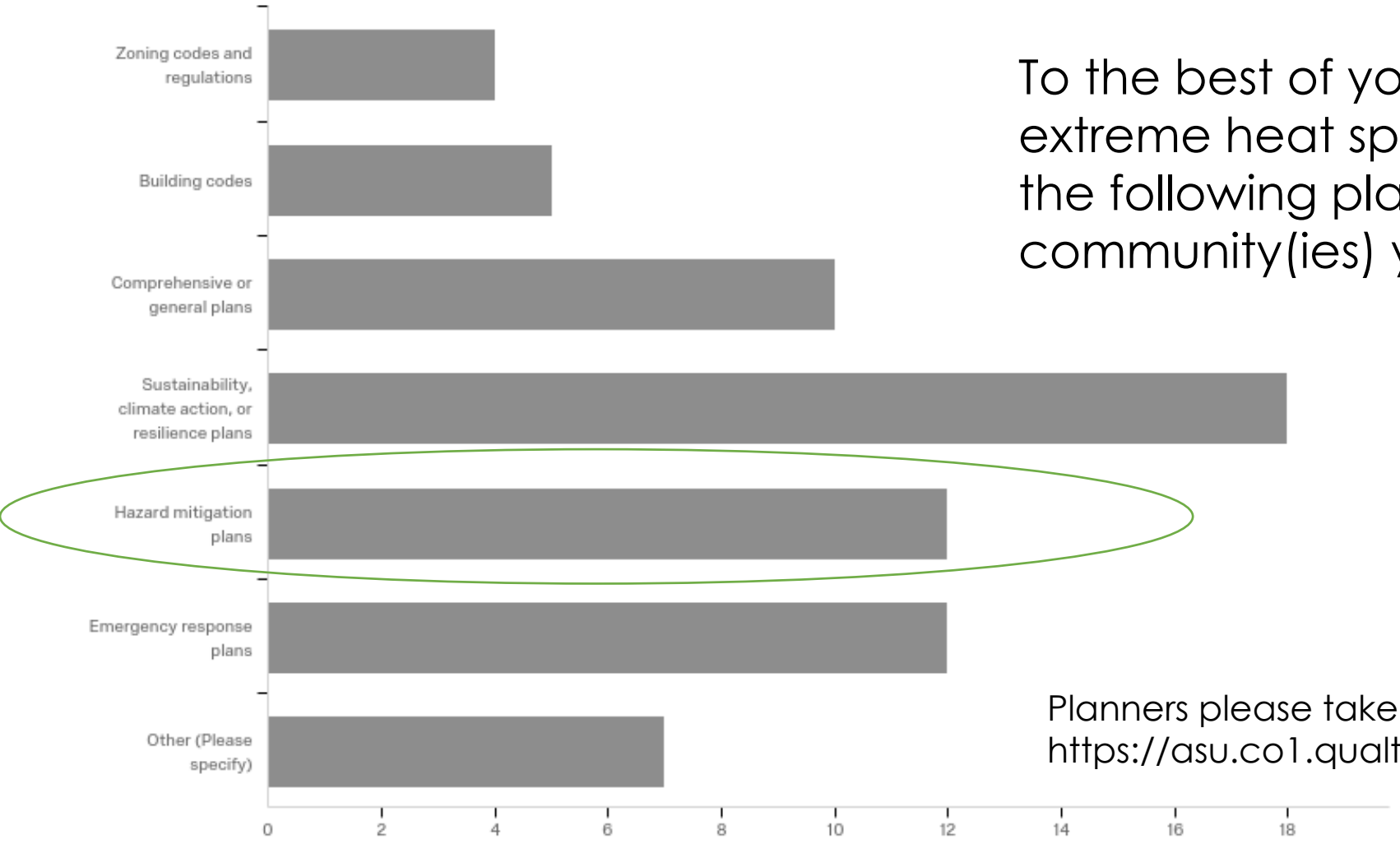
Design of the built environment strategies

- Vegetation
  - Increase urban canopy
  - Importance of long-term maintenance
- Buildings and infrastructure
  - Risks of energy-efficient buildings, need passive cooling
  - Reflective materials
  - Water features
- Land use and urban form
  - Open spaces, reducing automobile use
- Complexities, trade-offs, and risk of maladaptation
  - Context-specific: climate, geography, urban form, & scales of the built environment critical

https://science.howstuffworks.com/environmental/green-science/green-rooftop.htm

https://www.curbed.com/2016/8/25/12613140/summer-swimming-pool-fountains-splash-pads-cities

Heat planning survey



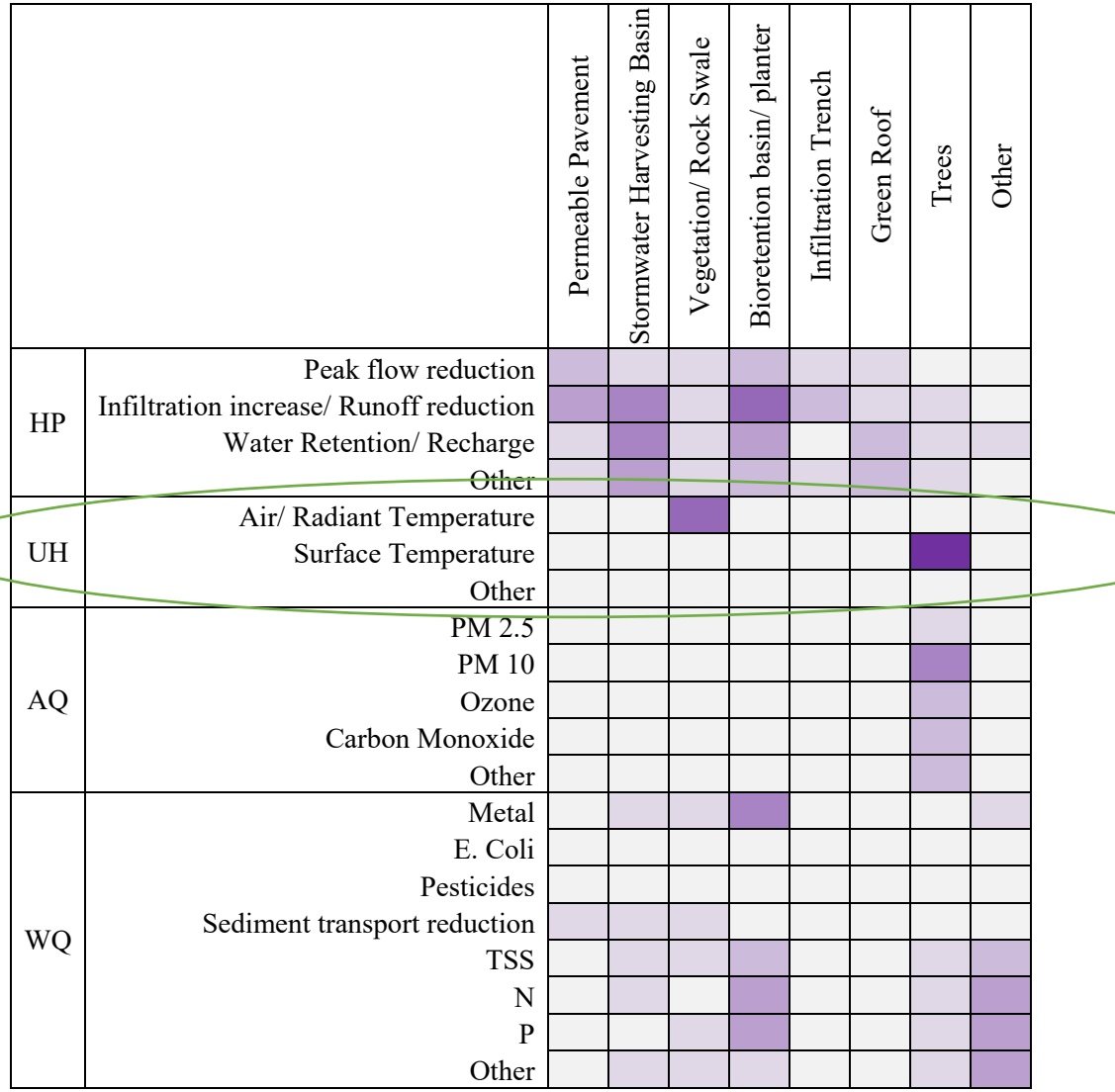
To the best of your knowledge, is extreme heat specifically addressed in the following plans anywhere in the community(ies) you work with?

Planners please take the survey:
https://asu.co1.qualtrics.com/jfe/form/SV_cBXOoRYIC7eR33T

Meerow & Keith 2019

GI performance in arid environments: Literature review

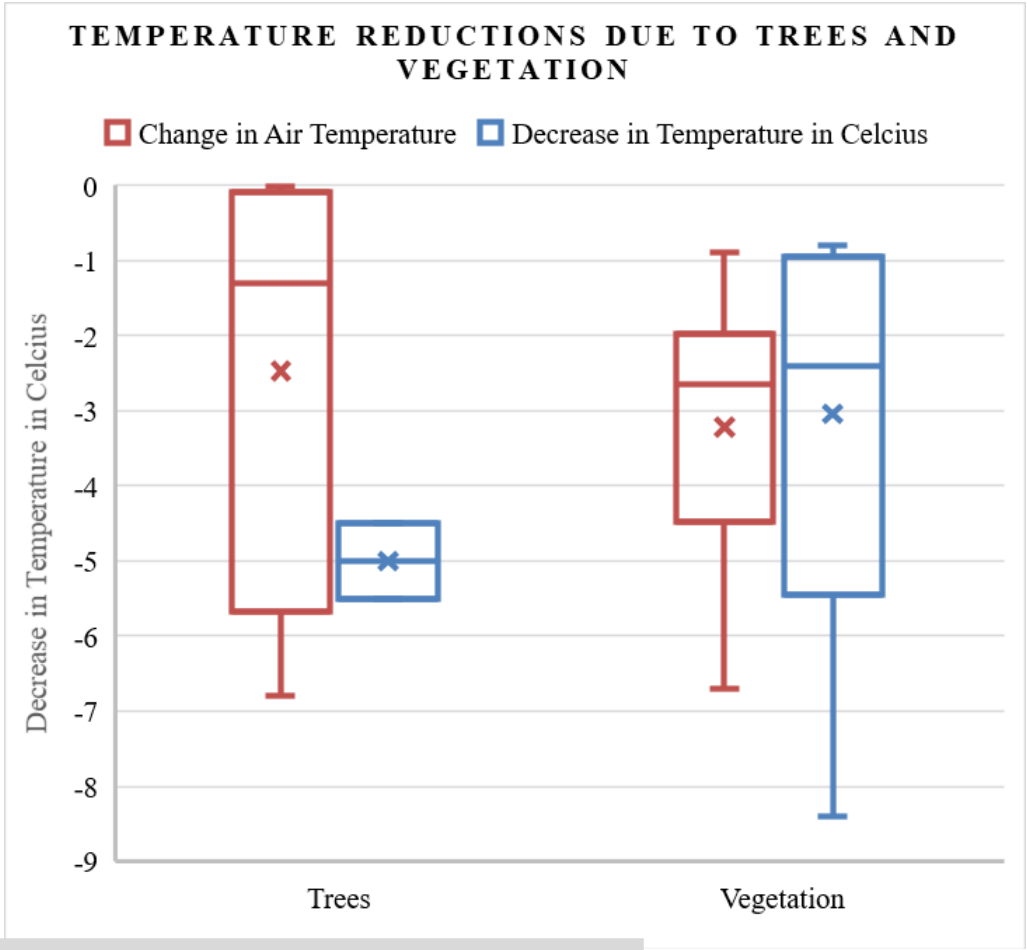
- Water quality, flooding, **heat**, & air quality benefits
- 219 studies reviewed
- 14 focused on urban heat



Meerow, Natarajan, & Krantz. In Prep. "A review of green infrastructure performance in arid environments."

GI heat performance in arid environments

- Vegetation: 1-10 °C surface temperature cooling
- Trees cool more than grass
- Xeriscaping: 1- 2.5 °C cooler
- Pervious concrete possibly cooler than concrete in sun, may lead to higher nighttime surface temperatures



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