The Covid-Heat Nexus

Initial Results from the 'Cool-Infrastructures' Survey

Funded by:

Scottish Funding Council
Comhairle Maoineachaidh na h-Alba

GCRF
Global Challenges Research Fund
UKRI Economic and Social Research Council

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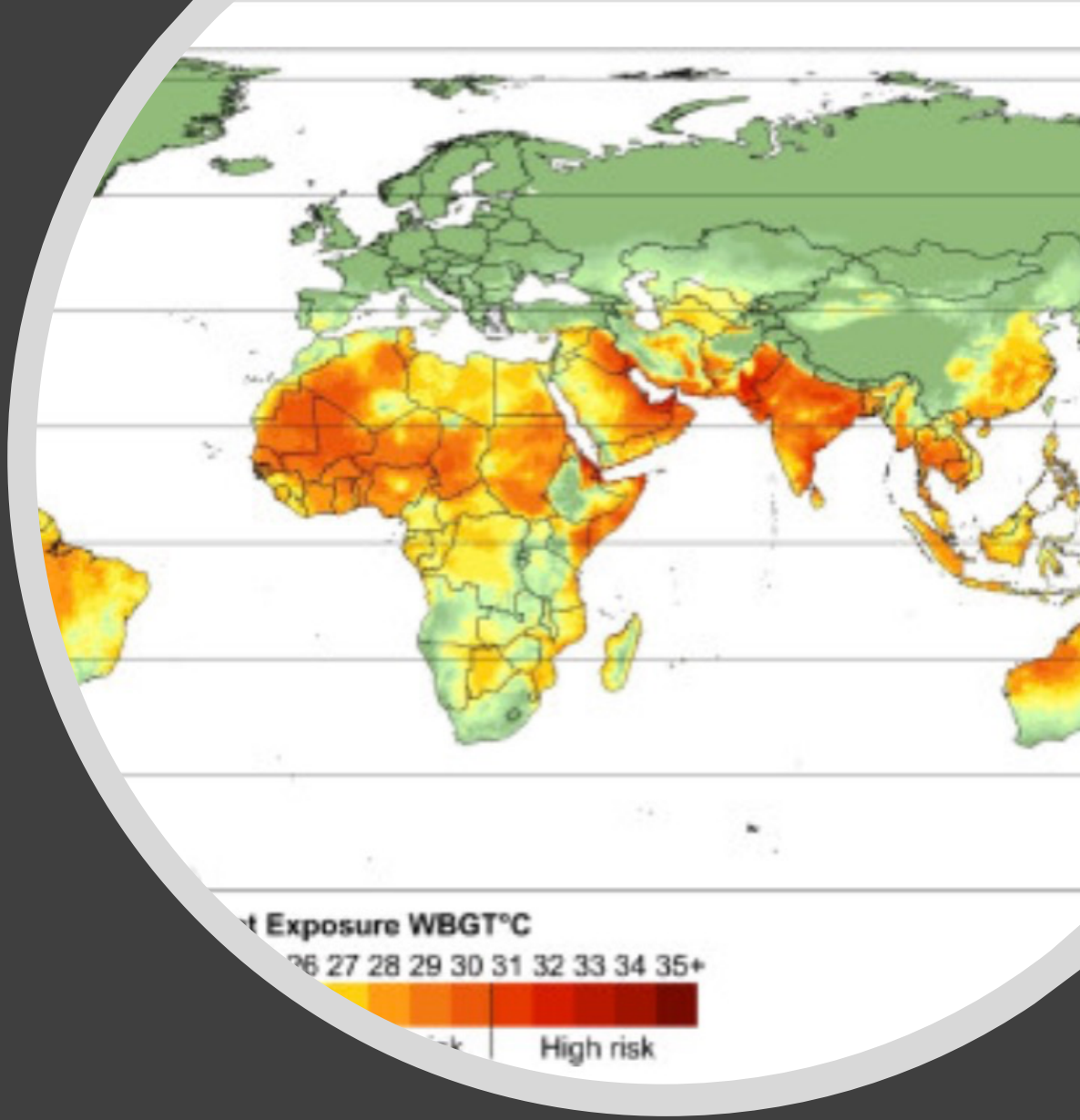
Extreme Heat is an Everyday Problem

- Beyond heatwaves: chronic exposure to extreme heat
- Global Tropics most exposed to these conditions; already close to physiological limits
- Small shifts can have dramatic effects
  - Hazard (e.g. Temperature OR humidity)
  - Exposure (e.g. time indoors, outdoor work duration)
  - Vulnerability (e.g. loss of income/resources, services)
- Large populations exposed and vulnerable:
    - outdoor workers
    - people in informal, poor quality housing

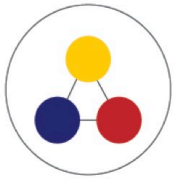


"Thirty-year average (1980–2009) of monthly average wet bulb globe temperature (WBGT)." Source: Hyatt et al., (Unpublished) in Lucas et al., 2014)

Heat Management is an Everyday Practice

- In ‘off-grid’ communities
  - PRACTICES → highly nuanced and novel use of communal and publicly available resources
  - – what happens when these social and material connections are disrupted by a major event?
- How is heat-management shaped by Covid-19 pandemic measures?
- How are Covid-19 pandemic measures shaped by heat management?

Figure 2: The elements of practice



Social practices are made of three types of element: material, competence and meaning (Shove et al., 2012: 23).

materials	Objects, tools, infrastructures
competence	Knowledge and embodied skills
meanings	Cultural conventions, expectations and socially shared meanings

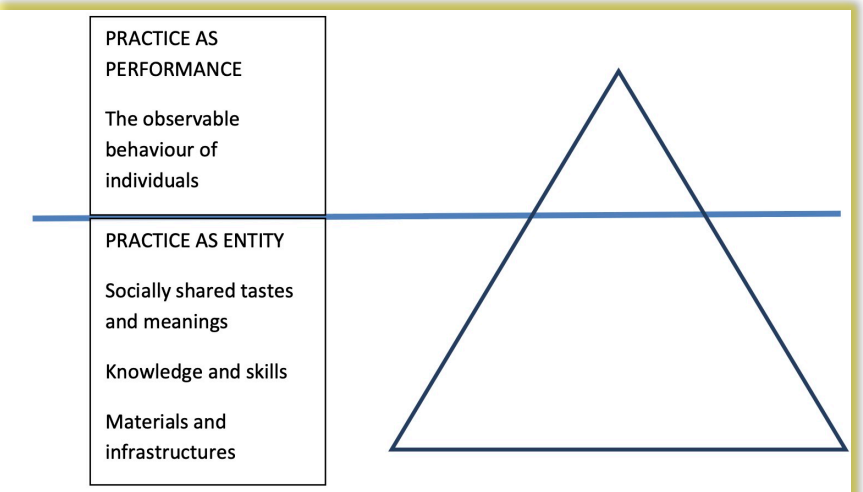


Figure 1: Observable behaviour is just the tip of the iceberg.

Figures from: Spurling et al., 2013. pp. 8-9

The Covid-Heat Nexus Survey

- Mobile Phone survey (Geopoll)
- 4,400+ residents in:
  - *Hyderabad (India)*
  - *Sindh Province: Karachi + Hyderabad (Pakistan)*
  - *Jakarta (Indonesia)*
  - *Douala (Cameroon)*
- Climate Centre and IRFC national society input
- Replicated in Vietnam by VNRC and GRC
- Open data sets available for download:

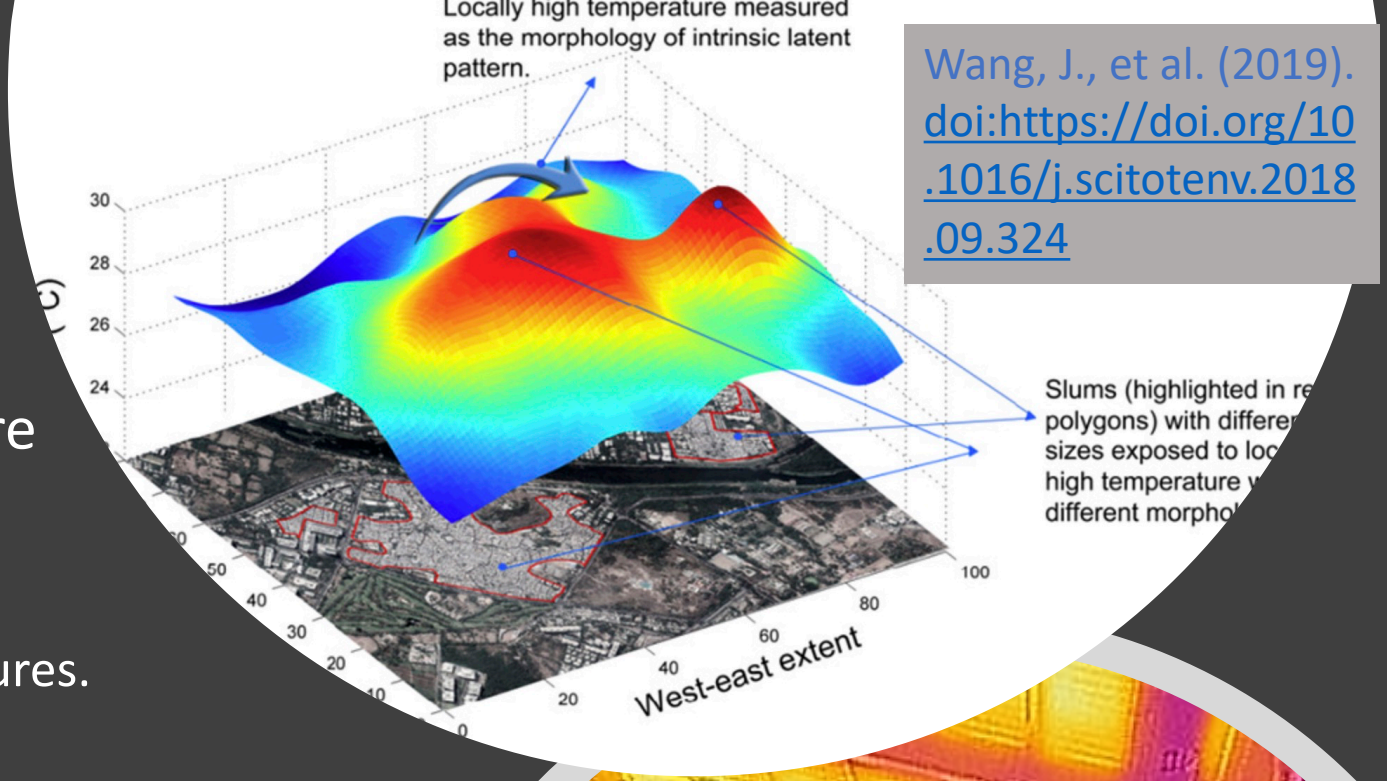
https://datashare.is.ed.ac.uk/handle/10283/3804

Data Collected

- Demographic information
- Socio-economic status (occupation, tenure/ownership)
- Building characteristics (windows, rooms, construction materials)
- Water and electricity *+ change from the pandemic*
- Food and income *+ pandemic change*
- Time at home *+ pandemic change*
- Heat management practices *+ pandemic change*
- Thermal perception, indoor and outdoor
- Heat illness symptoms
- Wellbeing and domestic violence
- *Temperature, Relative Humidity, and Heat Index added*

Exposure *Inside*

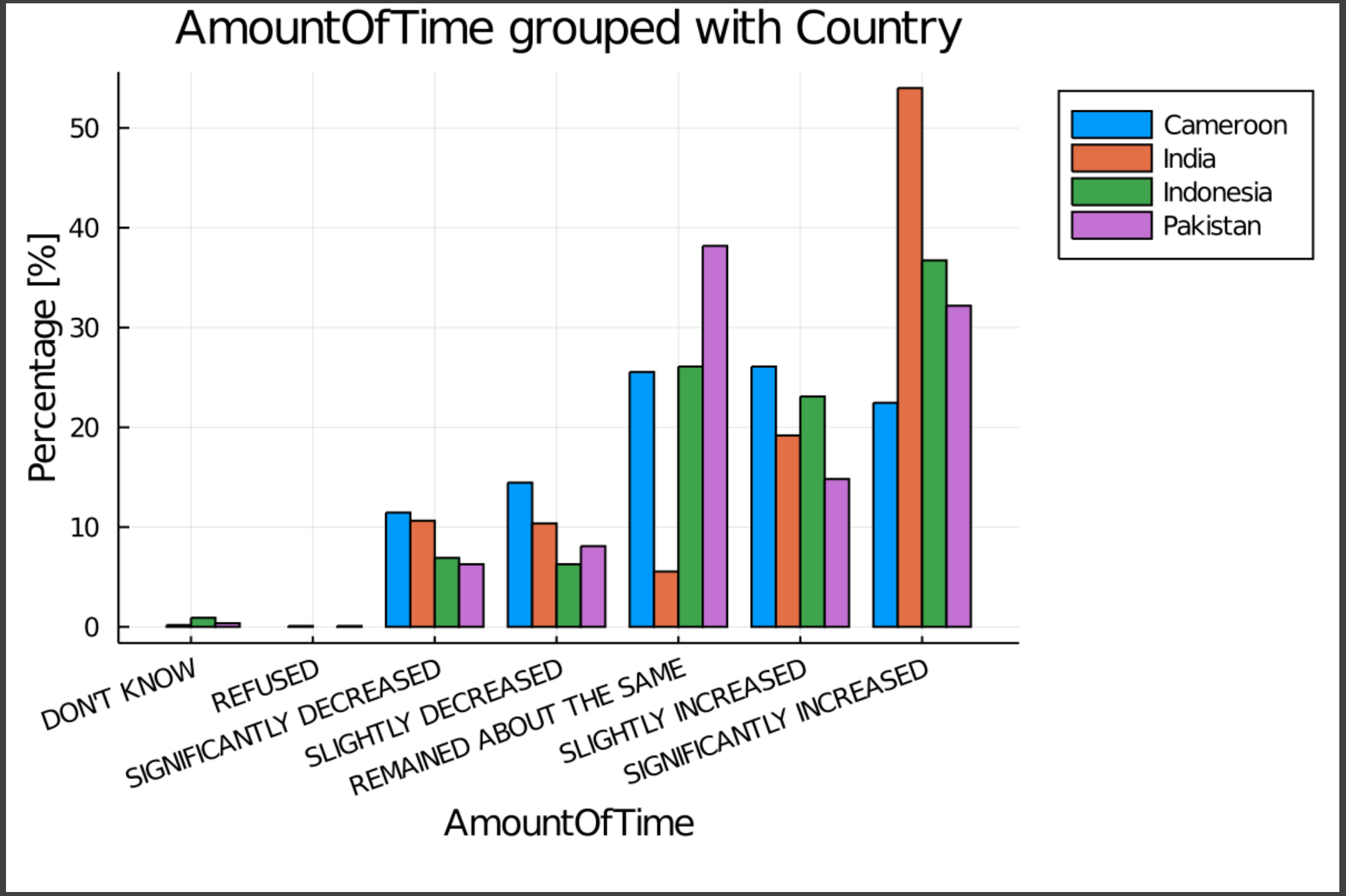
- Slums often have a higher temperature than surrounding areas
- Construction materials matter –
  - e.g. zinc roofing raising indoor temperatures.
- Sindh Province
  - 63% of people more affected by heat than usual for the time of year
  - 20% the same
  - 15% less
- Partly accounted for by increased time spent at home.



Wang, J., et al. (2019). doi:https://doi.org/10.1016/j.scitotenv.2018.09.324

Multiple-choice Answers to:

As a result of the Coronavirus pandemic, has the amount of time you spend inside your home…



Not going outside… …or letting the outside in.

- Forgoing visits to parks, trees in public areas

  “we used to sit outdoors with neighbours – not now”

- Avoiding *own* verandah or outside front door
- Closing doors and windows
- Increased heat stress
- Sense of lack of options?

  “Keep sitting helplessly”

Images courtesy of: Karachi Urban Lab, 2020

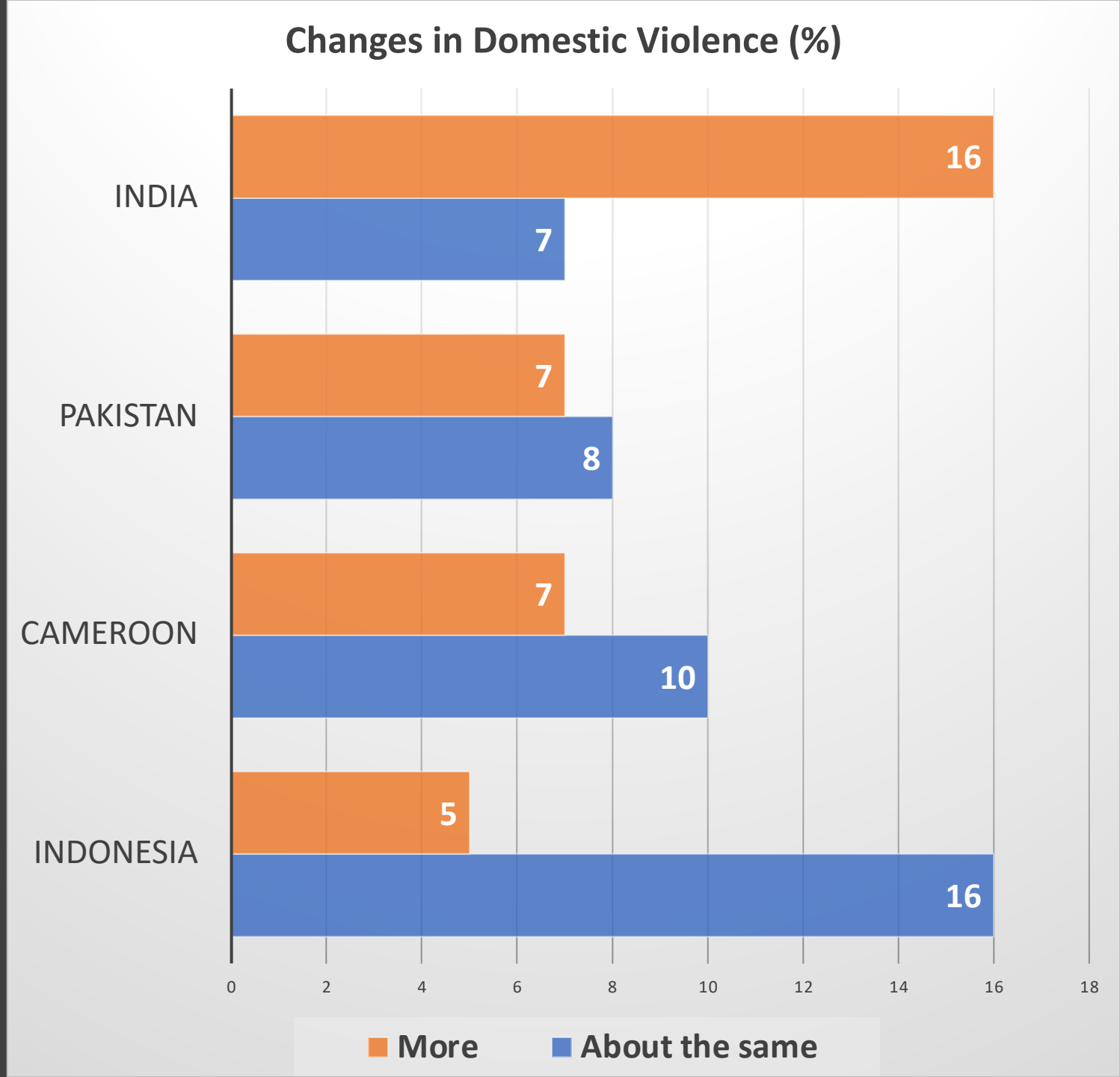
Electricity, Food and Water

- **Lots of fans – not enough electricity**
  - *e.g. Jakarta*
    - *appox. 70% fans-as-key-strategy,*
    - *but 40% reduced use, and 50% had supply for less than 10 hours a day.*
- **Income and food intake reductions**
  - *shared symptoms with heat illness*
    - *fainting, fatigue, irritability + domestic violence*
- **Water use change?**
  - *4% (Sindh); 10% in Jakarta; 23% (Hyderabad) of households reduced their water use.*

Family using neighbourhood washing facilities in Jakarta.
Photo courtesy of Dr. Anindrya Nastiti, ITB

Domestic Violence

- **Majority in all countries reported '*none*'**
- **Stayed *'the same'* for 7 - 16%**
- ***Increased* in every country by between 5% and 16%.**



Thank You!

Access the survey data and find out more at:
https://coolinfrastructures.com

Or email: elspeth.oppermann@lmu.de