



Funding: Wellcome Trust (224709/Z/21/Z)

Problem

Australia's climate has warmed up

- 2023 was **third hottest year** recorded.
- 2024-25 summer is forecasted to continue this trend - likelihood of unusually high day and nighttime temperatures.
- This **trend is predicted to continue**.

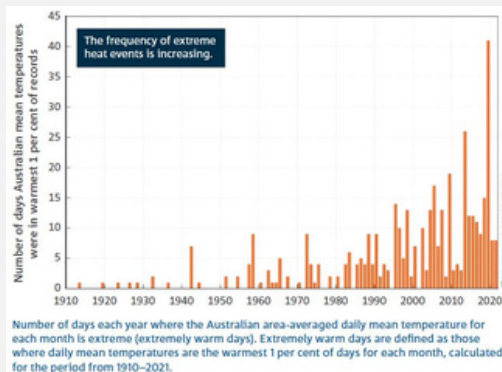


Figure 1. Observed change in extreme heat events
Source: State of the Climate Report 2022, CSIRO/BoM

Heat - major preventable health risk

- **Direct health** impacts- heatstroke, exacerbates pre-existing health conditions.
- **Indirect health** impacts- impacts on healthcare services and facilities, etc.
- There is a need to enhance **preparedness, prevention, and response action** to extreme heat.



Solution

What is the Ethos digital system?

- An **in-home monitoring device** that acts as an individualised early warning system (EWS).
- Provides **tailored heat management suggestions** for older adults.
- **Utilises direct environmental monitoring** within an individual's home (through 3 indoor and 1 outdoor sensors).
- Accounts for **individual factors** that influence heat susceptibility (height, age, weight).
- Generate **individualised heat alert warnings**.



Figure 2. Ethos system schematic

Ethos phase 1 trials: What did we do?

- Piloted from **Dec 2023 to Feb 2024** across 78 households in Southeast Queensland.
- Developed through **consumer engagement** involving project reference group and steering committee.
- Collected data via **pre-trial survey, near real-time pop-up surveys on days of heat alerts, and post-trial survey**.

Findings



Participants were **4.3 times** more likely to be **well informed** about heatwaves and there consequences to their health post the trial.



Better awareness of spatial and temporal environment and more efficient ways of cooling- meaning **increased response capacity**



Heat preparedness **increased by 3.4 times** (70% vs. 85%; $p < 0.001$, marginal homogeneity test) after the trial.



System Usability score (SUS) was 78- comparable to that of an iPhone- importance of consumer engagement.

