L22

FreezeRay

How might we help elderly people who live alone on fixed incomes cool themselves to avoid heat-related health issues?

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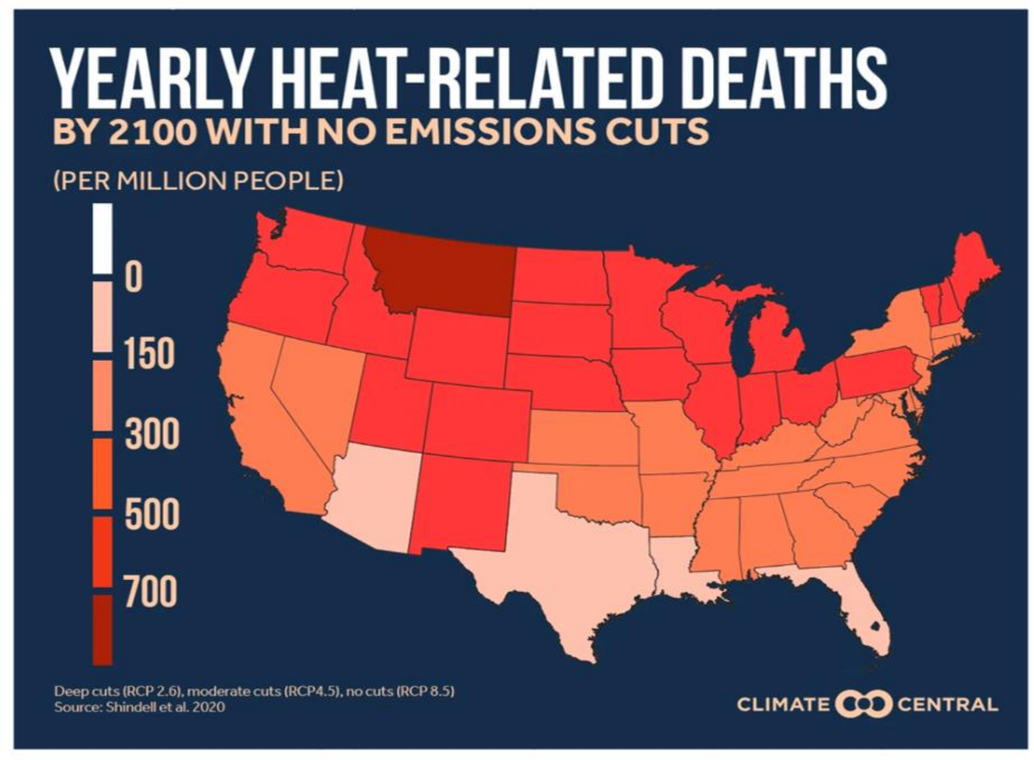
The Problem

Extreme heat causes **4,000+ deaths** each year, and 50% of these deaths occur in homes. The number of heat-related deaths **increased by 50%** from 2010 to 2020.



Most at Risk:
Older adults living alone

User Group

- As of 2022, 28% of adults age 65+ live alone
- About 40% have **age-associated memory impairment**
- Nearly 2/3 rely on Social Security for **over half their income**
- Many live in **older homes** with dated or **no cooling** technology and/or poor insulation

Current Solutions

- **AC variations**: high energy cost and slow
- **Fans**: ineffective in extreme heat
- **Swamp coolers**: increase humidity, limited effectiveness

Our Solution

Personal fan with built-in cooling

- FreezeRay is a **localized tracking fan** with a **condenser module**
- Radar tracks users and fan rotates to direct cool air towards them
- Fan automatically turns on when dangerous temperatures (90°F+) are detected (uses energy only when needed)

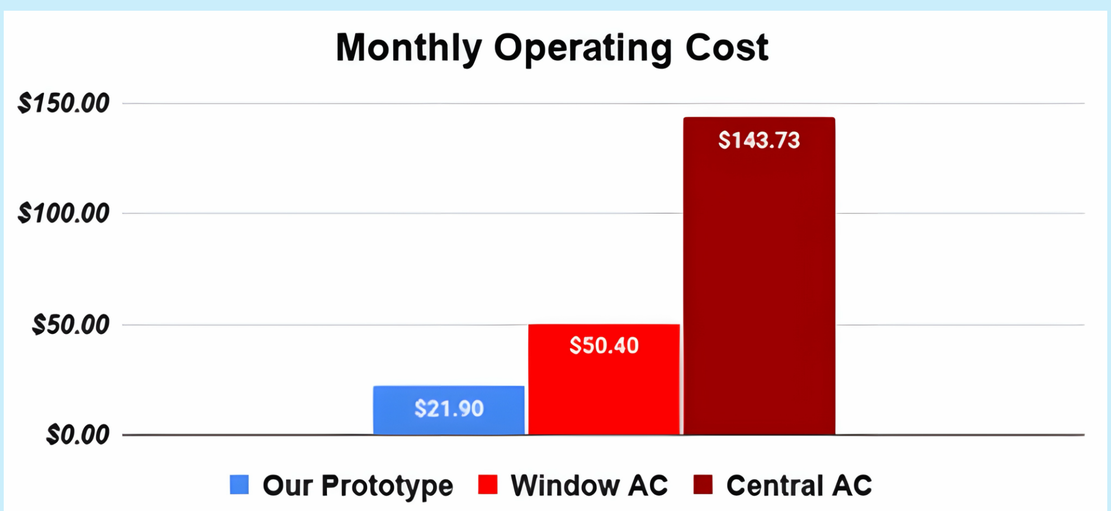
3 Minutes to cool

UP TO 50% cheaper per hour

11° Temperature reduction

Experiment

- Tested a small-scale prototype using Peltier units to cool air
- Provides up to **11 °F** of cooling
- Tracker successfully detects people within a **120-degree** range



Future Improvements

- Replace Peltier units with AC condenser system
- Partner with community organizations to distribute and build trust with target user group
- Work with healthcare providers to bring to market