Chilling Irony?

The relationship between temperature change and electricity use in Singapore

GA-DSI39-Project 1
By Eugenia Chuah
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Case Scenario

You are an analyst with **Cooling Singapore**[1], working on understanding and developing solutions for urban heat issues.

You are presenting prelim findings based on **temperature** and **household electricity usage** data from **Jan 2005-Jun 2022**.

[1] https://sec.ethz.ch/research/cs.html
[2] Logo from https://www.yp.sg/if-were-lucky-singapore-is-about-to-get-a-lot-more-cooler/

Problem: Use of air-conditioning to cope with heat leads to a vicious cycle

[2] Air-conditioning is a major contributor (24%) to household electricity usage

[1] Increased demand for installation of air-conditioning units due to rising temps.

[1] *https://www.channelnewsasia.com/singapore/aircon-sales-servicing-companies-retailers-strong-demand-2709076*
[2] *https://www.nea.gov.sg/our-services/climate-change-energy-efficiency/energy-efficiency/household-sector/household-electricity-consumption-profile*

Key Questions: Temperatures and Electricity Usage

Q1.

Identify Historical Trends

How have temperatures and household electricity usage changed **over time**?

Q2.

Identify Recurring Patterns

How do high temperatures affect household electricity usage **within the year**?

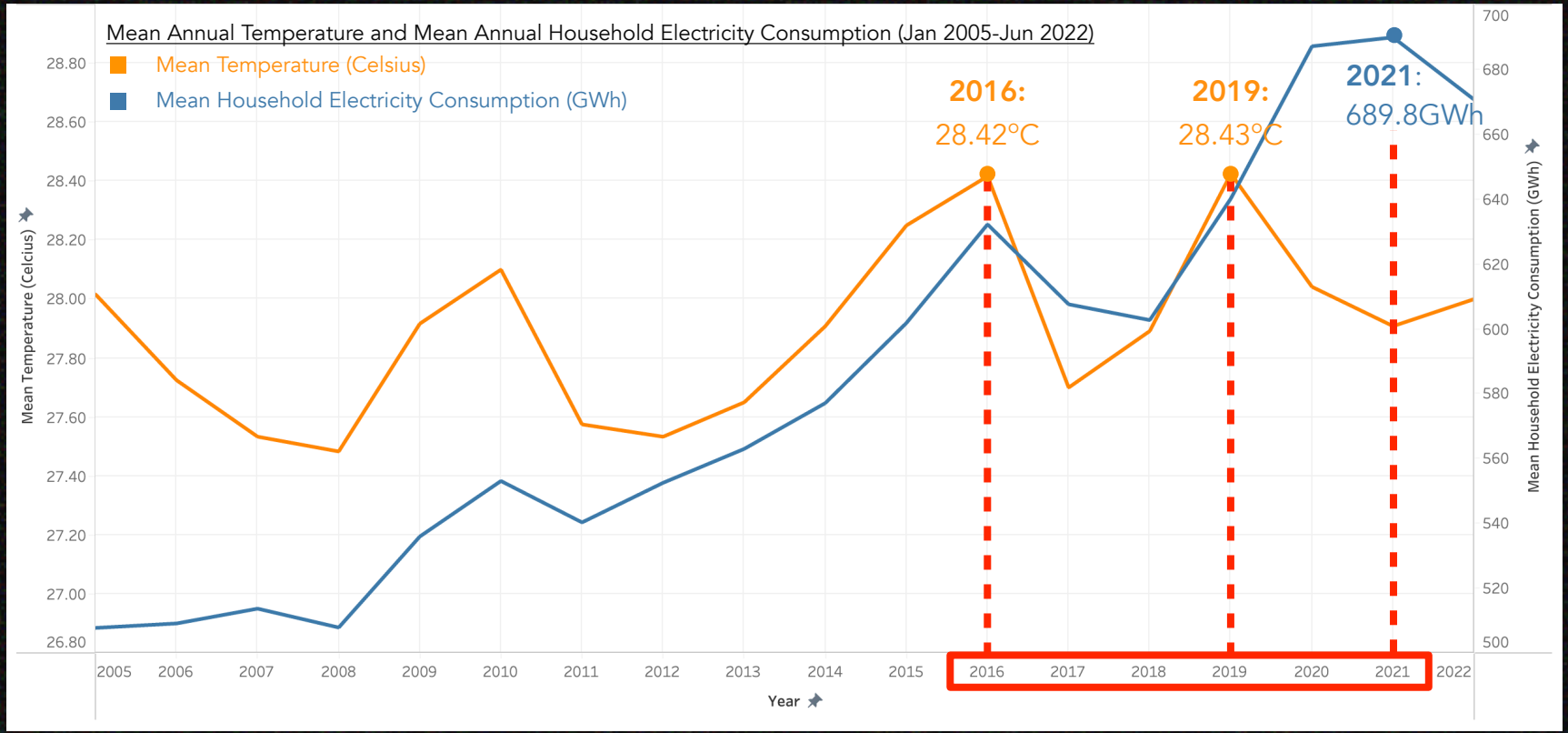
Findings #1: Overall increase in temperature and household electricity usage in past 20 years

Correlation score of **0.45**

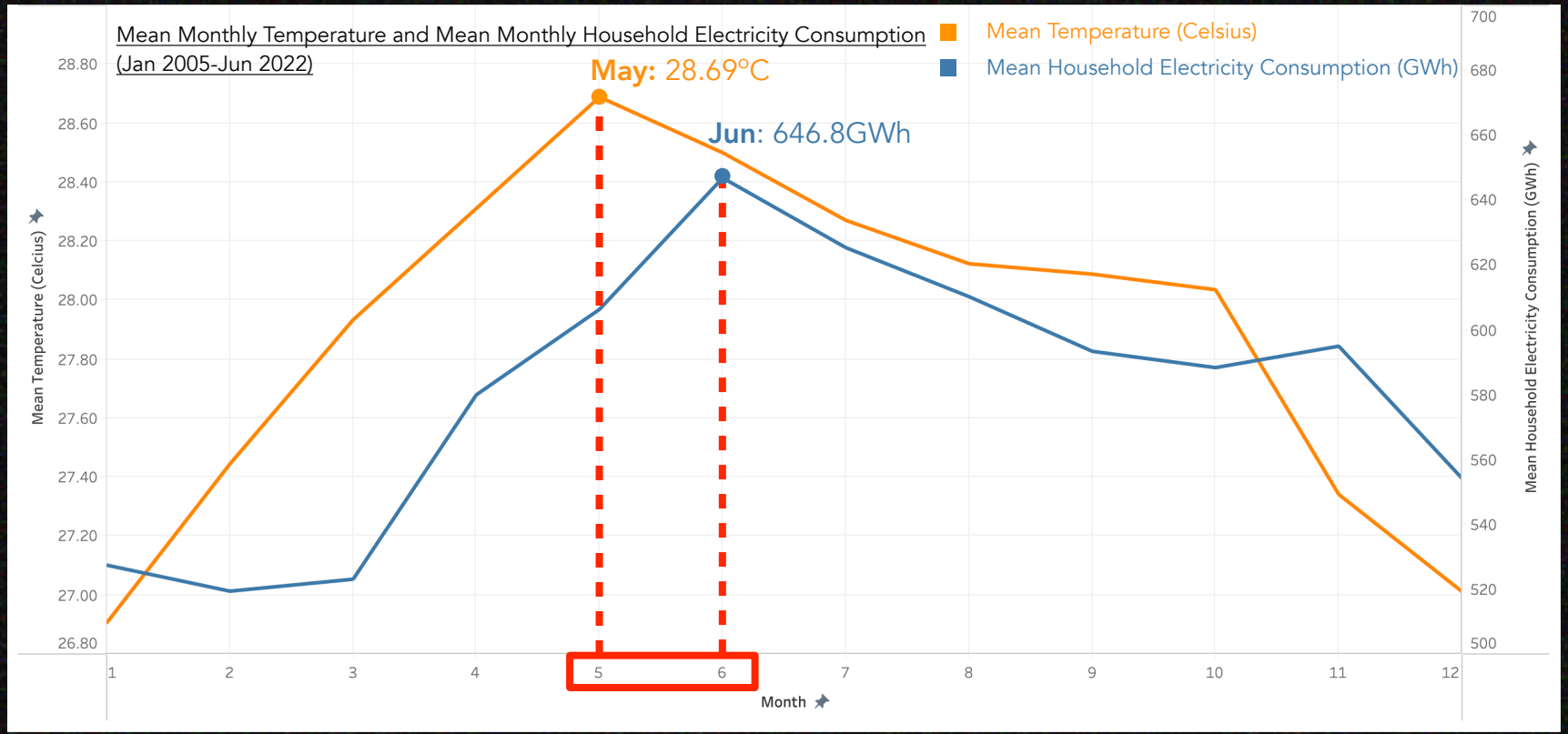
1°C increase in temperature from 27.5°C to 28.4°C

36% increase in household electricity consumption from 507.7 GWh to 689.8 GWh

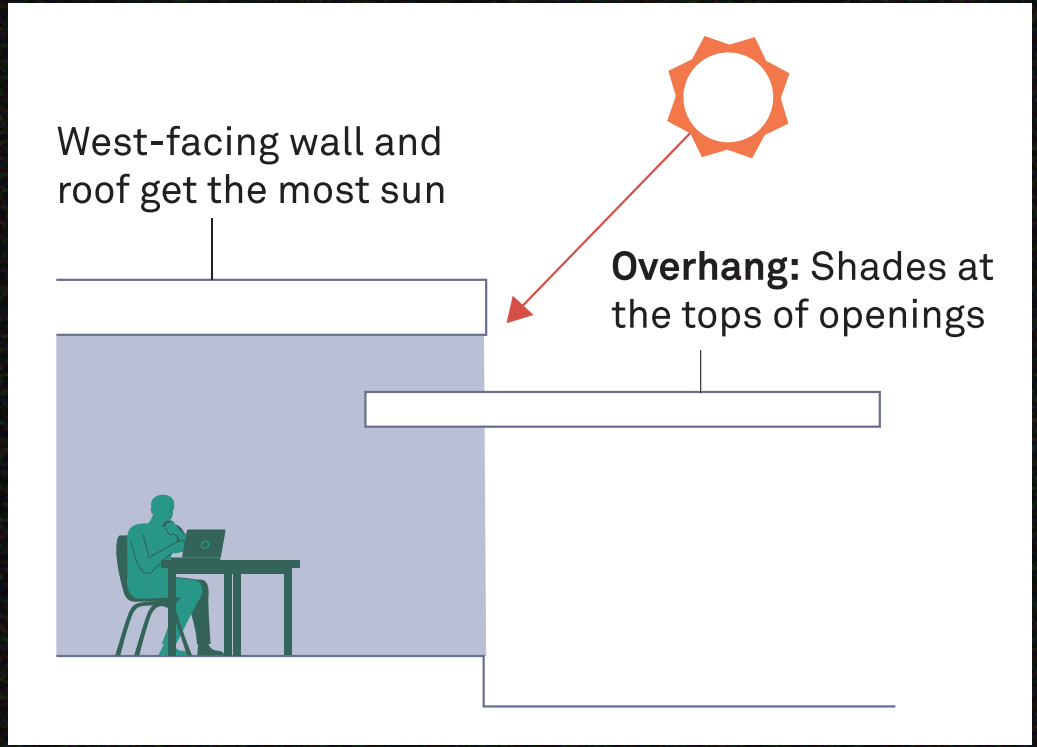
Findings #2: Highest mean temp. and household electricity usage recorded within the past 6 years



Findings #3: Increased household electricity usage corresponds to high temps. within the year

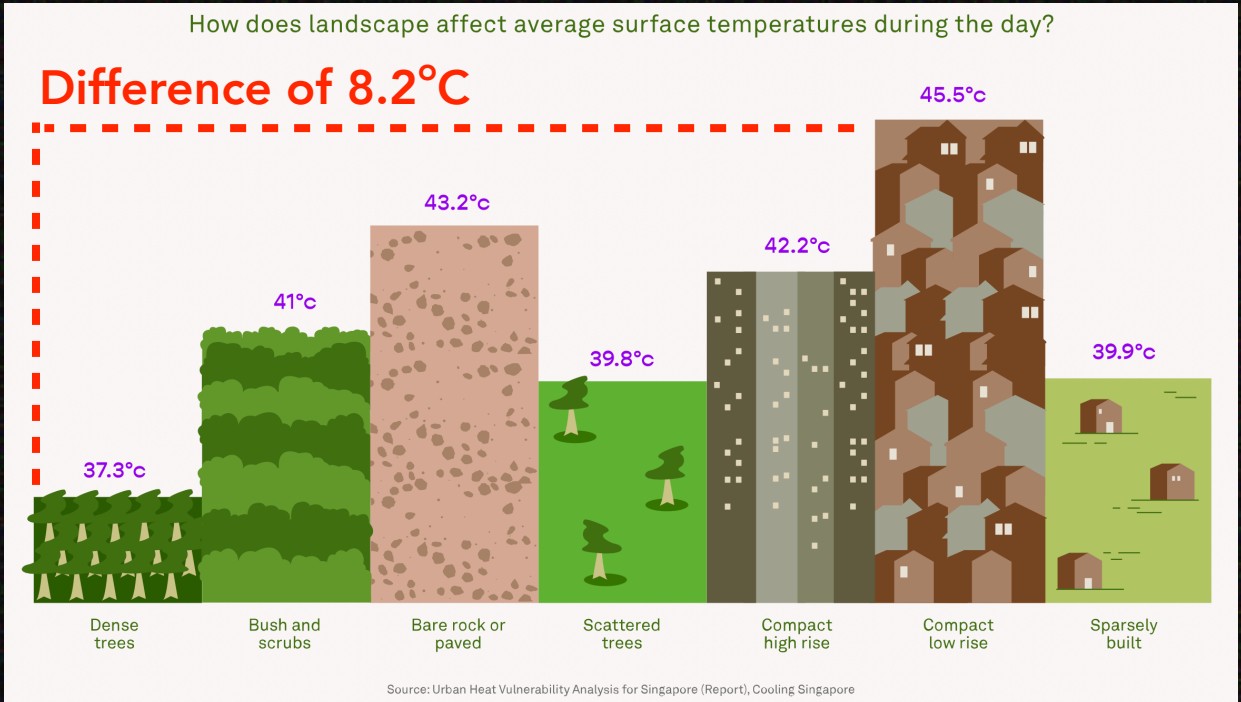


Recommendation #1: Build natural shading structures to block sun's heat



https://kontinentalist.com/stories/air-conditioning-in-southeast-asia-is-worsening-climate-change

Recommendation #2: Plant trees to naturally reduce surface temperatures



Source: https://kontinentalist.com/stories/who-trees-dont-shield-from-the-urban-heat-island-effect

Recap: Use of air-conditioning to cope with heat leads to a vicious cycle

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Recommendations: Breaking the vicious cycle through low-energy solutions:

1. Natural shading

2. Tree planting

Thank you.