GOLDEN COLONY

SUMMARY OF RESULTS

FROM THE RESEARCH PROJECT

CLIMATE-RESILIENT SLUMS:
A SYSTEMS APPROACH FOR INCLUSIVE CLIMATE IMPACT ASSESSMENT
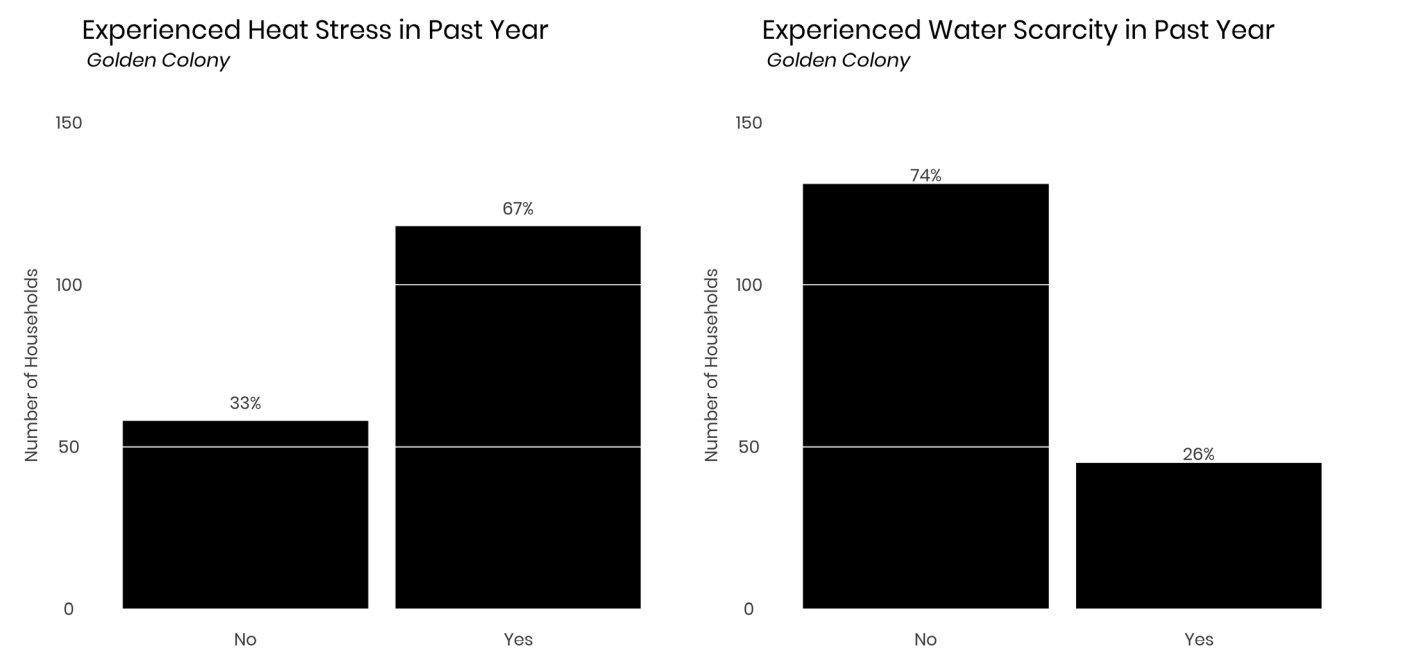
For further information see the online dashboard here:
https://waterresilientcities.shinyapps.io/RAEng/

Or contact: m.bedinger@hw.ac.uk

PROFILE

Golden Colony is the second largest area in the study. There were **176** respondents representing **1176** people. For every household, there are **6.7** residents, making this the densest area. All areas had a median age of ~37 years and mean age of ~39 years, roughly consistent with the overall means. In Golden Colony, respondents' ages ranged from 21-74.
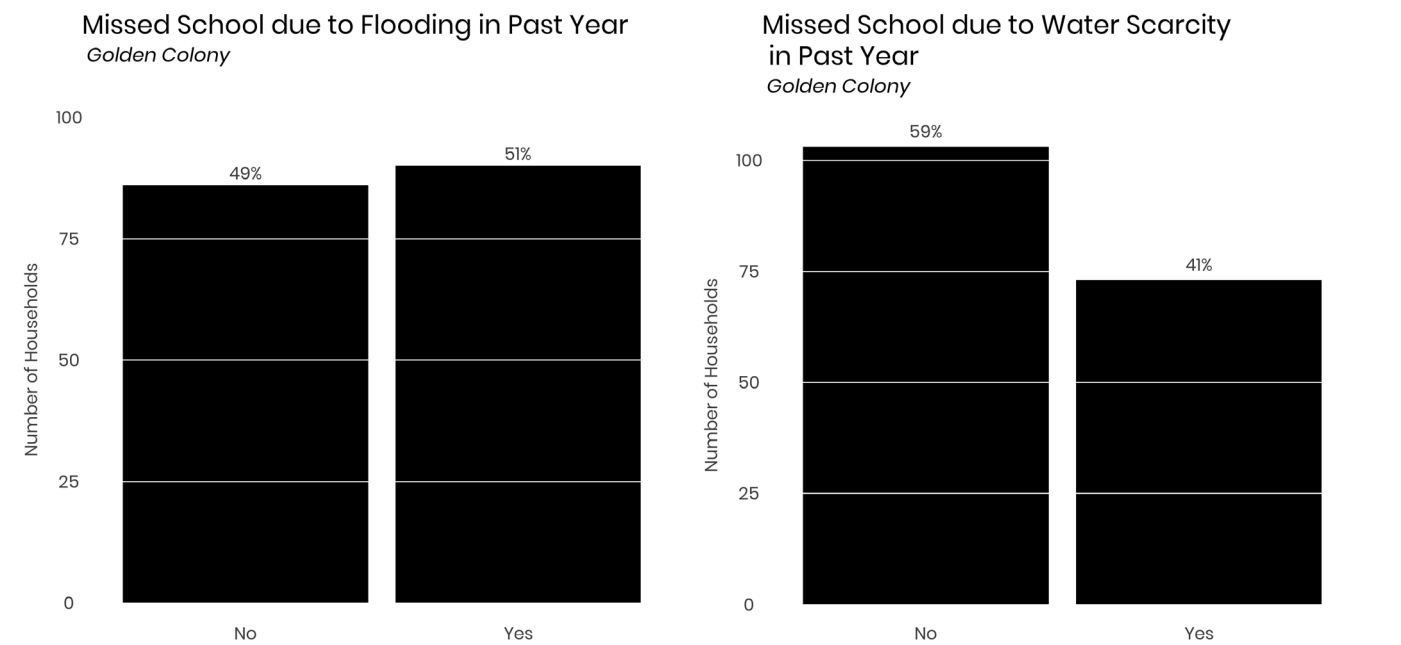
In the past year, **almost all (> 98%)** households experienced flooding. **67%** of households experienced heat stress, the highest rate of any area. **26%** of households experienced water scarcity, the lowest rate of any area. Thus the most widespread hazard was flooding, followed by heat stress, then water scarcity.

Experienced Heat Stress in Past Year
Golden Colony

Experienced Water Scarcity in Past Year
Golden Colony

Collectively, Golden Colony experienced **2,955 days** of water scarcity and **584 days** of heat stress. On average in the past year, each household experienced **16.8 days** of water scarcity (the lowest rate of any area) and **3.3 days** of heat stress. No information was gathered about number of days flooding was experienced. Thus the most severe hazard was water scarcity, followed by heat stress, though it should be noted no data around flooding was gathered for a comparison.

EDUCATION

In the past year, **51%** had a child miss school due to flooding, **~44%** had a child miss school due to heat stress (the highest rate of any area), and **41%** of households had a child miss school at least once due to water scarcity. Thus the most widespread threats to missing school were flooding, followed by heat stress, then water scarcity.

Missed School due to Flooding in Past Year
Golden Colony

Missed School due to Water Scarcity in Past Year
Golden Colony

Collectively, households in Golden Colony experienced **472 days** of missed school due to flooding, **426 days** of missed school heat stress, and **390 days** of missed school due to water scarcity. On average in the past year, each household had a child miss school due to flooding for **2.7 days**, heat stress for **2.4 days** (the highest rate of any area), and water scarcity for **2.2 days**. Thus the most severe threat to missing school was flooding, followed by heat stress, then water scarcity.

EMPLOYMENT

The most common job types in Golden Colony were *Driver (including rickshaws), Embroiderer or handicraft worker, Construction labourer,* or *Tailor or seamstress.*
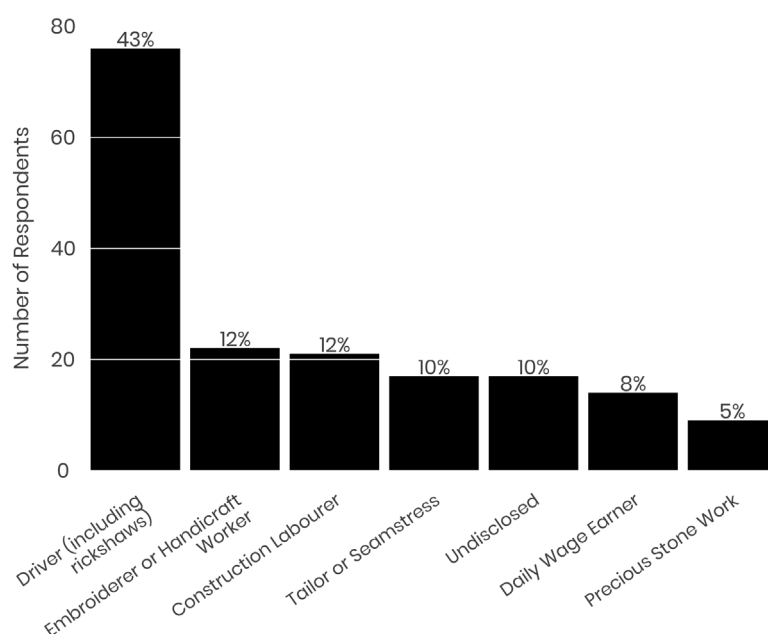
In general, **24%** of respondents were informally employed, the lowest rate of all areas. **84%** of respondents performed at least some of their work outside the slum, the highest rate of all areas.

In the past year, **73%** of households also lost work due to flooding, the highest rate of any area. **58%** of households lost work due to heat stress, and **27%** lost work due to water scarcity. Thus the most widespread threat to losing work was flooding, followed by heat stress, then water scarcity. The impact of flooding on lost work was the most widespread in Golden Colony, compared to other areas.

Most Common Job Types
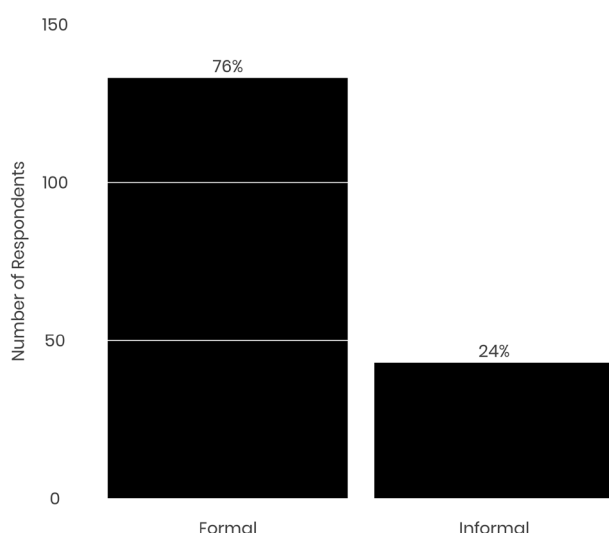*by Questionnaire Response, Golden Colony*

Collectively, households in Golden Colony experienced **852 days** of lost work due to flooding, **~550 days** of lost work due to heat stress, and **377 days** of lost work due to water scarcity. On average in the past year, each household lost work due to flooding for **4.8 days** (the highest rate of any area), heat stress for **~3.1 days** (the highest rate of any area), and water scarcity for **2.1 days**. Thus the most severe threat to losing work was flooding, followed by heat stress, then water scarcity. The impact of flooding and heat stress was the most severe in Golden Colony, compared to other areas.
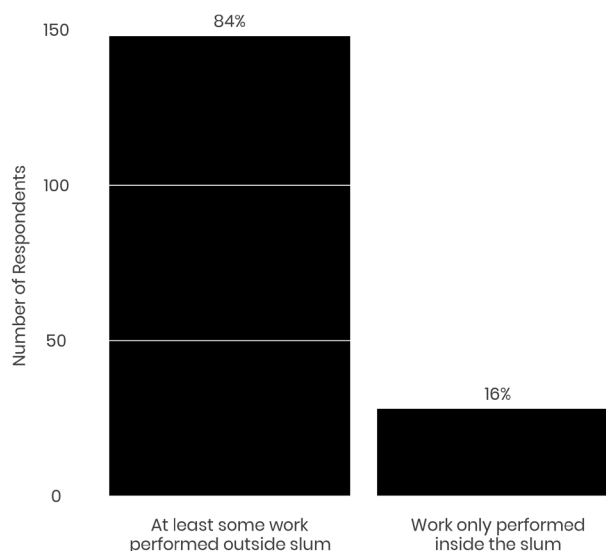
Formal vs. Informal Employment
Golden Colony

Typical Work Location
Golden Colony

INFRASTRUCTURE

The main sources of drinking water and domestic water by far was *Tanker supplied privately.*

 The main point of access to a toilet was *Own toilet within dwelling* or *Own toilet near dwelling.*

The main point of access to bathing facilities was a *Permanent bathroom (with wall and roof) within the house premises.* The main type of electricity connection was *Legal, metered.*

The most commonly reported set of impacts (24% of responses in Golden Colony) were for all four uses *Cooking, Drinking, Household sanitation, Personal sanitation.*
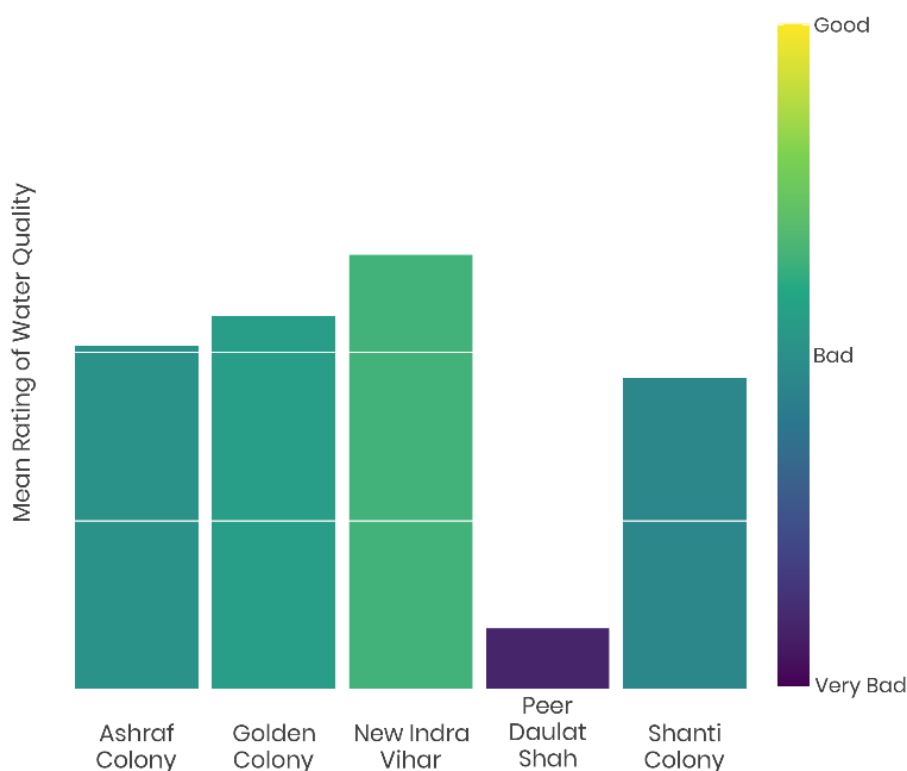
The majority of households (≥ 97% of responses in Golden Colony) needed to purchase water *Daily, for drinking and domestic purposes.*

The most common coping measures taken to adapt to water scarcity were *Less domestic use, Less personal use, Less appliance use, More storage,* and *Used conservation tool.* This suggests uptake could be particularly improved for *Used rainwater harvesting.*

90% of households experienced property damage because of flooding, the highest proportion of any area.

On average, residents rated their water quality as ***Bad***.

Perception of Water Quality in Past Year
By Area

URBAN SYSTEMS

Outcomes are goals for making cities and communities resilient to change. When outcomes are strained, it means the current situation has put these prerequisites for future resilience at risk. For all three types of hazard (flooding, heat stress, and water scarcity) *Minimal vulnerability* was impacted with a **+1%**/**+1%**/**+1%** strain. This is about the extent to which everyone's basic needs are met (e.g. food, water, clothing, housing). Additionally, for heat stress, *Diverse livelihoods and employment* was impacted with a **+1%** strain. This is about residents' access to finance, the ability to accrue savings, skills training, business support, and social welfare.

Tasks are the activities needed for a city to function. When tasks are impacted, it means those activities have been prevented from being performed to their normal level. All three types of hazard had the same top three most impacted tasks, but with varying severity. These were:

- *Clothing provision* (**+25%**/**+20%**/**+20%** more vulnerable than normal). This includes tasks that provide clothing through manufacturing, the supply chain, and maintenance services.
- *Animal welfare* (**+13%**/**+9%**/**+9%** more vulnerable than normal). This includes tasks that contribute to the welfare of domesticated animals, livestock and wildlife.
- *Goods and services provision* (**+6%**/**+5%**/**+5%** more vulnerable than normal). This includes business activity that provides goods and services.

For Golden Colony, all three types of hazard had similar impacts on activities in the 'urban system', with flooding having the biggest impact. All three types of hazard had similar impacts on resilience outcomes, with heat stress having a slightly larger influence.

Impacted Tasks
Scenario: Flooding