Opinion

Environment

Scorched by Inequality: Who Can Afford to Combat “Heat Stress” in Your State?

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The Heat Vulnerability Index (HVI) combines information on cooling devices, roof material, and water access.The HVI scores for upper caste groups are lower than those for marginalised caste groups in all 17 heat-prone states, indicating that marginalised castes are more prone to thermal discomfort.

Representational image: A pedestrian uses an umbrella to beat the searing heat wave. Photo: Atul Ashok Howale

The ongoing discourse on heatwaves in India has highlighted their disproportionate impact on marginalised social groups and how it affects them both economically and physically.The Indian Meteorological Department (IMD) recently reported that 536 heatwave days were recorded this summer, the highest in 14 years, with 40% of the country experiencing double the normal number of heatwave days.

Most people in the country do not have the luxury of working from air-conditioned homes as many jobs require workers to work outdoors. Using the latest Household Consumer Expenditure Survey (HCES, 2022) and Periodic Labour Force Survey (PLFS, 2022), we take a look at regional and social disparities in exposure to outdoor heat.

We construct two indices: Representation Index and Heat Vulnerability Index to show which caste groups are more exposed to outside heat and less resilient to protect themselves from it inside their homes. Our analysis, explained below, found that it is the marginalised castes and classes who suffer the worst consequences of heat despite having contributed the least to climate change.

Who is prone to outdoor heat?

The Periodic Labour Force Survey (PLFS) asks respondents about the location of their workplace — with separate questions for rural and urban dwelling respondents. Based on this data, we have categorised employment as outdoor or indoor for a particular respondent. Workplaces like construction sites, open areas etc are classified as outdoor employment whereas workplaces like dwelling units, attached structures etc are classified as indoor employment.

According to the data, 2.5% of regular salaried jobs, 62% of casual wage work and 35.4% self employment work in India is outdoors. Among those who work outside, around 72% of these jobs are done by people from marginalised castes (OBCs, SCs, and STs).

To understand the representativeness across state-wise demography of those primarily engaged in outdoor work, we created the Representation Index (RI). The index is the ratio of the share of a particular caste group (Marginalised Castes and Upper Castes) in outdoor work relative to their share in the working-age population.

An RI score greater than one indicates over-representation, which means that if marginalised castes form 85% of a particular state's working-age population, the share of marginalised castes engaged in outdoor work is more than 85%. Similarly, a score less than one indicates under-representation in outdoor work, which means that if upper castes form 15% of a state's working-age population, the share of upper castes engaged in outdoor work is less than 15%.

Unsurprisingly, RI values for marginalised castes in each of the 17 heat-prone states as classified by IMD exceed one in outdoor working activities. Although this is a yearly estimate and there can be fluctuations due to seasonality, the overall numbers indicate that the burden of heat disproportionately falls on marginalised castes in every heat-prone state.

Haryana, Punjab, West Bengal, Delhi, and Gujarat are the top five states with higher RI for marginalised castes. These states also recorded higher heat turmoil this year. These estimates, however, are at best conservative as indoor heat has been reported to be a huge issue for workers working in places without proper ventilation or cooling.

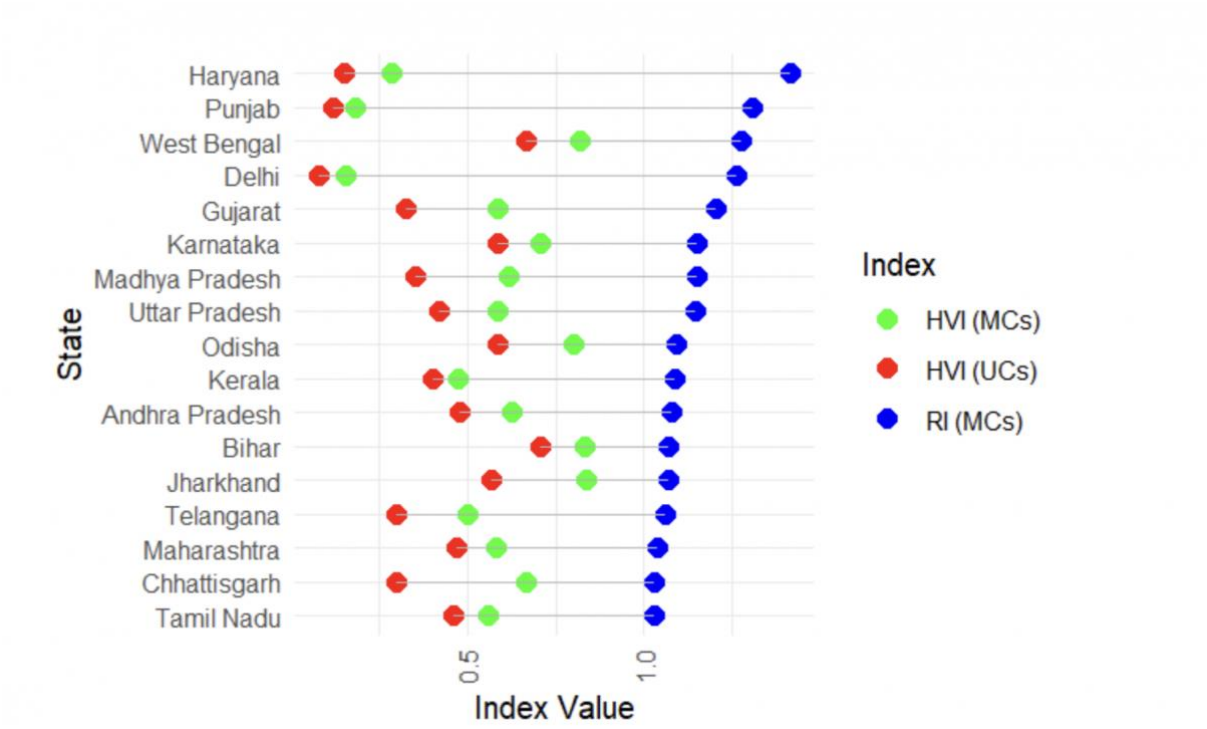
Who can afford to keep cool homes and drink sufficient water?

We also need to look into how people combat heat indoors. The Household Consumer Expenditure Survey (HCES) asks questions about household ownership of cooling devices like air coolers, ACs, refrigerators, the type of material roof of the house is made from, and the amount of time (in minutes) needed to fetch drinking water in a single trip.

According to the HCES data, almost 74% households don't have an AC or cooler in their homes, over 40% households don't have a fridge, and about 66% do not have readily available drinking water. This type of extreme deprivation and stark inequality faced by the majority of Indians is not surprising given the fact that inequality in India is today higher than British Rule with the share of India's top 1% in terms of wealth being one of the highest in the world according to a recently released report by World Inequality Lab.

To measure a typical household's heat vulnerability, we created the Heat Vulnerability Index (HVI), which combines information on cooling devices, roof material, and water access. A high HVI score indicates higher deprivation or vulnerability, while a low score shows better resilience. The index is calculated for each heat-prone state for upper caste and marginalised castes.

The HVI scores for upper caste groups are lower than those for marginalised caste groups in all 17 heat-prone states, indicating that marginalised castes are more prone to thermal discomfort.



Source and notes: Calculation based on PLFS 2022 & HCES 2022. UCs refers to Upper Castes and MCs refers to Marginalised Castes. The HVI index is calculated based on PCA analysis and values are bounded between 0 and1.

As visible in the dotted bar plot, the green dots representing the HVI for marginalised castes are always higher than the red dots representing upper castes. States like Jharkhand, Bihar, West Bengal, Odisha, and Karnataka show higher levels of HVI exposure. Furthermore, the gap in HVI scores between upper and marginalised caste groups is larger in Jharkhand, Gujarat, Madhya Pradesh and Chattisgarh, indicating higher levels of inter-caste income inequality in these states.

With the data, it is abundantly clear that climate justice is an issue of caste, as well as class justice as socioeconomically disadvantaged groups bear the brunt of climate change while contributing the least. The problem of heat is multidimensional, and India faces significant challenges in addressing it within the climate context. The RI and HVI show that among the 17 heat-prone states we analysed the data for, northern states are more vulnerable to heat stress compared to southern states. Thus, it is quite disappointing that the recently presented Budget had no special allocations for combating heat stress in the country.

Establishing a district-level database for rural and urban areas can help strengthen Heat Action Plans (HAPs) and prepare for heat waves. Only a few states like Odisha and Maharashtra have HAPs at district level, in most other states they exist only at state levels. The lack of data on how often power cuts occur can hinder in formulating

effective policies to assess household heat resilience, despite nearly every home having electricity.

Other major steps include providing heat shelters/cooling centres and ensuring access to clean drinking water to avoid dehydration and conditions like heat hyperpyrexia. Since outdoor employment is mainly precarious, including casual salaried jobs and self-employment, where proper social security benefits are lacking, the enhancement of heat-related free health benefits needs broader coverage.

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