DATA FOR DEVELOPMENT

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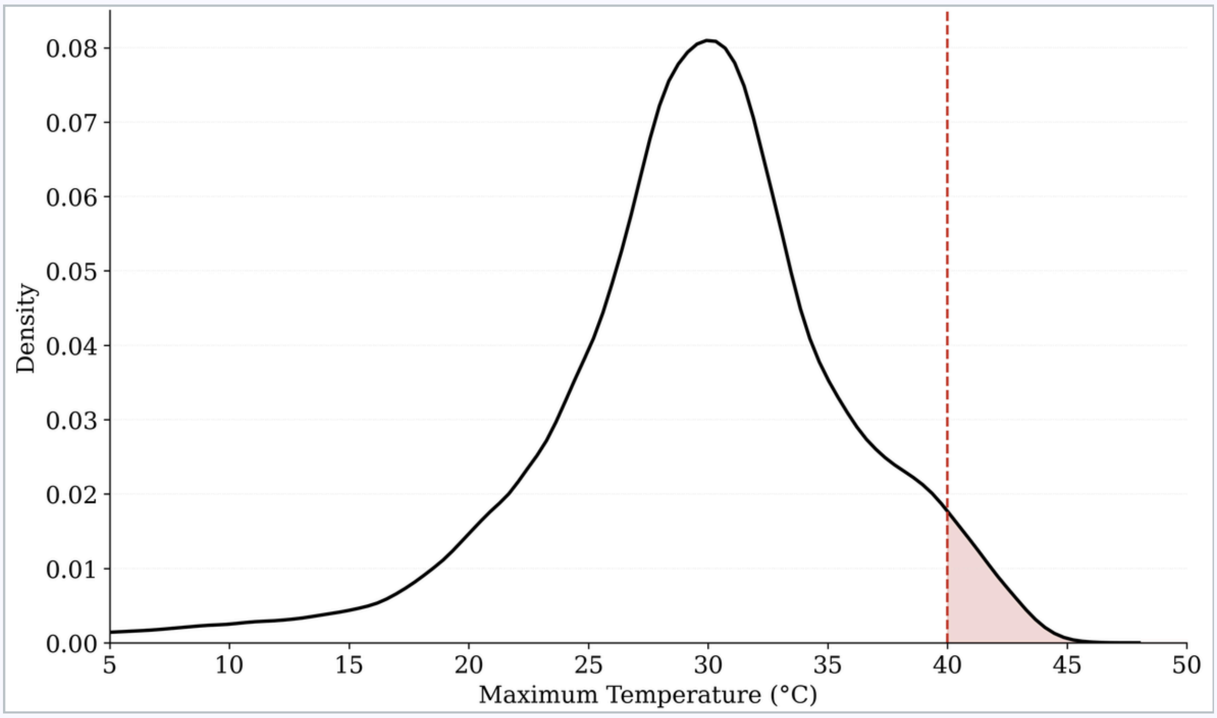
Scorched Beginnings: Early-Life Heat Exposure and Learning Achievement in India

Sourish Mustafi & Punarjit Roychowdhury

Using data from the India Human Development Survey Round II (2011-12), the paper examines the effects of early-life exposure to extreme heat on children's learning achievement in India. Exploiting within-district, across-cohort variation in early-life temperature exposure, the authors find that greater exposure to extreme heat significantly reduces reading, writing, and mathematics achievement in later childhood. These findings remain robust across a range of robustness checks. The authors further show that early-life heat exposure adversely affects children's physical development, particularly among those from households with limited coping capacity and those exposed to poorer disease environments, suggesting that these channels play an important role in shaping later learning achievement. Finally, projections based on future climate scenarios indicate that continued warming is likely to exacerbate human capital losses in India. The findings highlight the persistent influence of early-life climate conditions on human capital formation and underscore the importance of incorporating climate resilience into education and early childhood policies in low- and middle-income countries.

Figure 1: Distribution of daily maximum temperature during early-life



Source: Authors' calculations based on IHDS II (2011-12).
Note: This figure plots the probability density distribution of daily maximum temperature for all districts in India as per census 2001 district boundaries, from 2000 to 2009. Daily maximum temperature on the X-axis is measured in terms of degrees Celsius. The red vertical dashed line represents the 40◦C threshold.

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About the Authors

Sourish Mustafi is a Ph.D. candidate in Economics at Shiv Nadar University and holds an MPhil from Visva-Bharati University. He previously worked as a Research Associate at Sambodhi. His research focuses on development economics, with an emphasis on using microeconometric methods to study how environmental shocks, conflict, and structural inequalities shape human capital formation.

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Influence of Social Networks on Risky Financial Asset Demand

Devendra Kumar & Devendra Awasthi

Drawing on nationally representative data from the India Human Development Survey Round II (2011–12), the study examines how social networks shape household participation in risky financial assets in India. The findings show that households with stronger social networks are significantly more likely to participate in risky financial markets. Given the low overall participation in these assets, the estimated effect represents a meaningful increase in the likelihood of participation among households with stronger networks. The analysis further demonstrates that information transmission is an important channel through which social networks influence financial decisions. This effect is particularly pronounced among high-caste Hindus and other minorities, as well as households engaged in organized business, salaried, and professional occupations, suggesting that the benefits of social capital are unevenly distributed across households. Instrumental-variable analysis further supports the robustness of the relationship. Overall, the findings highlight the role of informal social institutions in shaping household participation in formal financial markets.

Table 1: Indian Households Investment in Last 5 Years by Social Networks (in%)

Social Networks	MPCY (in Rs.)	House	Gold	Financial Assets	Risky Financial Assets
All India	2022	17.3	9.9	61.7	1.5
High Network in Caste	2668	22.8	13.2	69.9	2.7
High Network Outside Caste	1676	17.4	9.2	63.7	1.0
Low Network in Caste	1796	15.9	10.0	58.6	0.7
Low Network Outside Caste	1384	13.9	5.7	55.7	0.3
No Network	1361	9.3	6.0	48.0	0.4

Source: Authors' calculations based on IHDS II (2011-12).

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About the Authors

Devendra Kumar is Associate Professor and Head of the Research Centre and Business Programme at British International University (BIU). He holds a Ph.D. in Theoretical Economics from Beijing Normal University. His research interests include retirement planning and labour markets, and his work has been published in indexed journals. He also writes on economic and development issues for international media.

Devendra Awasthi is a senior economist and former faculty member at VSSD College, Kanpur. He has over four decades of teaching and academic experience and has supervised doctoral research. He has held several academic and professional positions and currently serves as Vice-President of the Indian Economic Association.

Recent Publications Using IHDS Data

Ganguly, D., (2026, August 5). Neet's Digital Transition must be Matched by Equal Access to Technology. Business Standard.

Kim, H. (2026). Unintended Consequences: Maternal Health Programs and the Continuation of Unintended Pregnancies. [Working Paper]. SSRN.

Kulkarni, K., & Raghavendra, S. (2026). Who Bears the Nutritional Costs of Climatic Water Stress? Evidence from India. 2026 Agricultural and Applied Economics Association (AAEA) Annual Meeting on July 26-28, 2026., Kansas City, MO.

Munda, J., Saha, A., & Mandal, B. (2026). Climatic Disaster-Driven Economic Losses and Migration Dynamics: Evidence from Indian Households. In: Ghosh, P., Chatterjee, U., Alam, D.E. (eds), Climate Crisis and Changing Population Dynamics. Springer Climate. Springer, Cham.

About IHDS

The India Human Development Survey (IHDS) began as a nationally representative, multi-topic survey of 41,554 households in 1,503 villages and 971 urban neighbourhoods across India. The first round of interviews were completed in 2004-05; the Data is publicly available via ICPSR. The second round re-interviewed most of these households in 2011-12 (N = 42,152), and data for the same are available via ICPSR. Fieldwork for IHDS-III was undertaken in 2022-24, and data is currently being cleaned and processed.

The IHDS-III has been jointly conducted by researchers from the University of Maryland, the National Council of Applied Economic Research, Indiana University and the University of Michigan.

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Thank you for your support.