Infant Mortality and Open Defecation in the Eastern Indo-Gangetic Plains: A Comparative Analysis across Bangladesh, India, and Nepal

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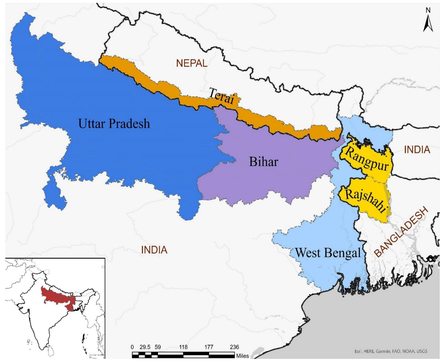
Context

- The Eastern Indo Gangetic Plains (E-IGP) spans across parts of Bangladesh, India, and Nepal.
- Infant mortality rate (IMR) across this region has been high and reduction in it has been the target of many development initiatives.
- Open defecation, common in the region, has been associated with higher IMR.



Research Question

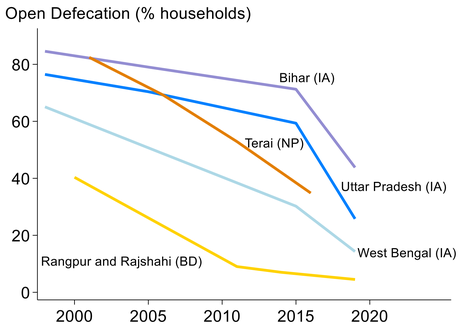
We study agro-climatically and socio-economically similar, but regions with different policies and institutions, to understand how IMR is associated with open defecation across these regions.

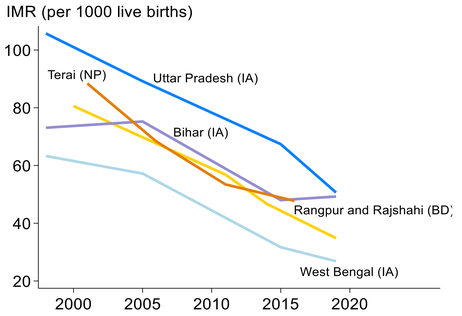
Data

Harmonized data from IPUMS DHS and IPUMS MICS for Bangladesh, India and Nepal.

4 rounds of data per country spanning 2 decades (1998-2019).

Open Defecation and Infant Mortality Rate (IMR) have been declining





BD = Bangladesh, IA = India, NP = Nepal

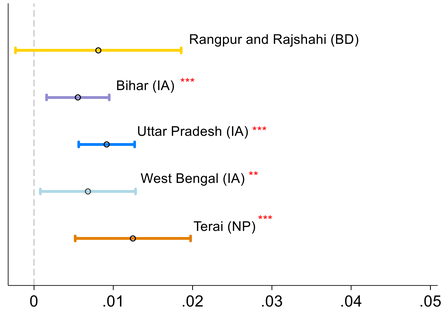
Analysis

We use women's birth history data (restricted to 15 years) to look at **how the probability of death in a child's first year is associated with open defecation** across the study regions.

Regression w/ Pooled samples
Probability of death in the first year

Open Defecation	0.020***	0.008***	0.008***
	(0.001)	(0.001)	(0.001)
Controls	No	Yes	Yes
Subregion FE	No	No	Yes
N	564,287	564,287	564,287

Coefficients for sub-region wise analysis



Robust standard errors clustered at cluster level in parentheses. *** p<0.01, ** p<0.05, * p<0.1
Controls include women's religion, age, education; indicator for urban area; sex of child born; and a control for time trend.

Summary

- Open defecation has declined across the E-IGP.
- On average, open defecation leads to 0.8 pp increase in probability of death in a child's first year.
- Sub-region wise analysis finds significant associations between open defecation and IMR for all regions in India and Nepal Terai.
- With open defecation in Bangladesh being low, it's contribution to IMR has likely lessened.
- Open defecation emerges as a significant factor for IMR even in West Bengal with low open defecation.
- These findings are largely robust to different birth recall periods of 10 and 5 years.
- *Similar contexts but different outcomes:* Bangladesh offers lessons for public health in India and Nepal.

Next Steps

- Understand the mechanisms: Does open defecation lead to high diarrhea incidence?
- Explore country specific policies to evaluate policy and institutional impacts wrt IMR and sanitation.
- Following Geruso and Spears (2018), explore the role of neighborhood sanitation on IMR.

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