Title: Barriers to safe drinking water: exploring current monitoring strategies

Sustainable Development Goal 6 was set with the intent to holistically address issues around inequities in water and sanitation by 2030. However, current monitoring strategies may fail to identify important disparities in access and, if not comprehensively addressed, may result in a failure to ensure access to marginalized populations. Alibag is a small town in western India with an intermittently-supplied, treated, piped drinking water system; the city tests for fecal indicator bacteria every 7-15 days. On the SDG ladder for drinking water, the majority of the households in this town would be classified as receiving “Safely Managed” water based on current criteria. However, upon a more comprehensive look at water quality and access, barriers to actual safely managed water become readily apparent. Over 8 weeks, we surveyed 60 households and tested bacterial water quality from treatment plant to point of use in six political wards (classified by average income and access to water) and created heat maps to identify hotspots of contamination. We found that all drinking water contamination occurred during distribution within Alibag, suggesting that barriers to clean water in Alibag may be a suitable proxy for sanitation and environmental contamination within the town itself. We also found that disparities in drinking water contamination followed social disparities, a fact not adequately addressed by Alibag's current monitoring strategies which rely on local institutions and regulators.

First, these findings are significant because they call in to question our reliance on “official” data when evaluating progress toward the SDGs. In this small town, our findings suggest a lack of an enabling environment to incentivize proper monitoring compliance as well as an incomplete monitoring strategy that overlooks important disparities. Second, these patterns of contamination suggest further research may be beneficial to link sanitation conditions, piped water contamination, and social disparities on a more granular spatial scale.

This research calls for a more comprehensive monitoring and evaluation strategy for drinking water and sanitation that will highlight disparities and ensure that no one is left without access to safe water and sanitation, a fundamental objective of the Sustainable Development Goals.