

# Incentivizing quality of public infrastructure excludes users and worsens public health

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Existing public infrastructure continues to deteriorate, induced by a ‘poor maintenance trap’, which generates dangerous threats to public health, low levels of human capital and persistent poverty. In our recent paper, we ask whether externally incentivizing maintenance – both on the supply and the demand side – can improve coordination between users and providers, improve infrastructure quality, increasing private valuations, further incentivize investment, and thereby break out of the bad-quality public infrastructure state of affairs. The context is one of community toilets (CTs) in densely populated informal settlements, or *slums*. We show that in this context, supply incentives can indeed improve infrastructure quality in a sustainable manner, however at the cost of user selection, which threatens public health: with caretakers becoming more stringent, almost one fifth of users that previously used the facilities revert to open defecation and, in line, the share of slum residents reporting positive health expenditures increased in response to the intervention.

700 million urban residents worldwide lack access to private sanitation facilities. For these populations, CTs are considered the most appropriate medium-term solution. Nevertheless, CTs remain a typical example of the ‘poor maintenance trap’: facilities are degraded, dirty and with a widespread presence of bacteria harmful to health. Upgrading facilities is challenging given the low willingness to pay among potential users and a high prevalence of free riding.

To incentivize improvements in infrastructure quality, we analysed two different interventions. First, the ‘maintenance’ intervention offered a one-off grant at the facility-level, followed by a significant bimonthly financial reward to the facility’s caretaker (equivalent to 40% of caretakers’ monthly salary) if facilities are kept clean. Second, the ‘maintenance plus sensitization’ supplemented the ‘maintenance’ intervention with an intensive sensitization campaign to raise awareness among potential users about the importance of a well-kept facility and of avoiding free riding to support good services.

The effectiveness of each intervention was evaluated in a field experiment that randomly allocated interventions across 110 catchment areas of CTs in slums of Uttar Pradesh, India. From April 2018, over a period of 18 months, responses from both sides of the market were recorded using survey data, objective measurements of infrastructure quality and free riding, laboratory tests, and behavioural measurements.

The maintenance intervention generated sustained improvements in the observed quality of facilities, accompanied by a significant reduction in freeriding among users by 18 percentage points. These effects emerged only after the period in which the maintenance grant was offered: Once incentivized financially to deliver higher quality, caretakers spent more time on collecting fees and supervising cleaners, leading to 18 percent of residents reverting to open defecation. At the same time, while the improvements were perceived by residents, their valuation of facilities did not change, nor did their attitudes towards maintenance and cooperation. Rather – and in line with a (temporary) crowding-out effect of external funding - slum residents responded by asking local politicians for public intervention in the operation and maintenance of CTs. The increase is large, at 50% over the control mean.

The findings provide support for the notion of fully subsidizing the delivery of basic services in the poorest and more marginalized areas, rather than requiring private contributions. At the same time, providing CTs for free to all residents can disincentivize its adoption, lead to overcrowd and degraded facilities. Therefore, a model with fully subsidized public sanitation infrastructure should consider imposing restrictions on the number of users per facility and/or enacting monitoring mechanisms to ensure that facilities are preserved by users.