**“I built it with my own hands:” A method to assess heterogeneity of housing quality in consolidated informal settlements.**

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**Abstract** Because housing quality varies significantly in informal settlements, participatory slum upgrading must be based on fine-grained empirical analysis of design, structural quality, and materials used in self-help housing. Slum severity indices drawing on indicators defined by UN-Habitat have served to map precarious communities in large Global South cities. However, these assessments cannot capture the heterogeneity of self-built homes within consolidated informal settlements. Building on a case study of a consolidated informal settlement in Mexico City, this research presents a replicable model to measure the range of variability of housing quality by combining qualitative and quantitative methods. We used architectural observations and household surveys to construct a qualitative database of housing quality indicators identified by self-help builders. This fine-grained database allowed us to develop a housing quality index that revealed the heterogeneity of housing quality. We then conducted in-depth interviews that illuminated factors beyond household income that shape the consolidation of self-help buildings, including participation in community-based self-help efforts, apprenticeships, incorporation in social networks, and government assistance. By providing fine-grained documentation of self-help housing heterogeneity based on local knowledge, we contribute a globally applicable model to inform more empirically informed and locally appropriate approaches to participatory slum upgrading in informal settlements