

Seroprevalence and COVID-19 deaths in Indian Cities

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Abstract

Population-based sero-epidemiological studies are widely used to estimate the proportion of a population infected (infection attack rate, IAR) with SARS-CoV-2. However, the accuracy of the estimates relies on the design of the study (e.g. sample size) and the sensitivity (e.g. decay of sensitivity) of the assay used. This study aims to resolve these issues with the seroprevalence of COVID-19 and infection attack rates in 12 Indian cities as examples. We examine serological data that used Abbott to reconstruct a sensitivity decay function and use it to infer attack rates and seroprevalence based on reported COVID-19 death in these cities. We find that the reconstructed seroprevalence matched with the reported scenario reasonably well in most cities, where Abbott or similar assay was likely used, but failed in two cities, where non-Abbott assay was likely used. We propose an approach to connect the serological data and the reported COVID-19 deaths with the testing sensitive decay function to increase the confidence in estimating the size of the epidemic.

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