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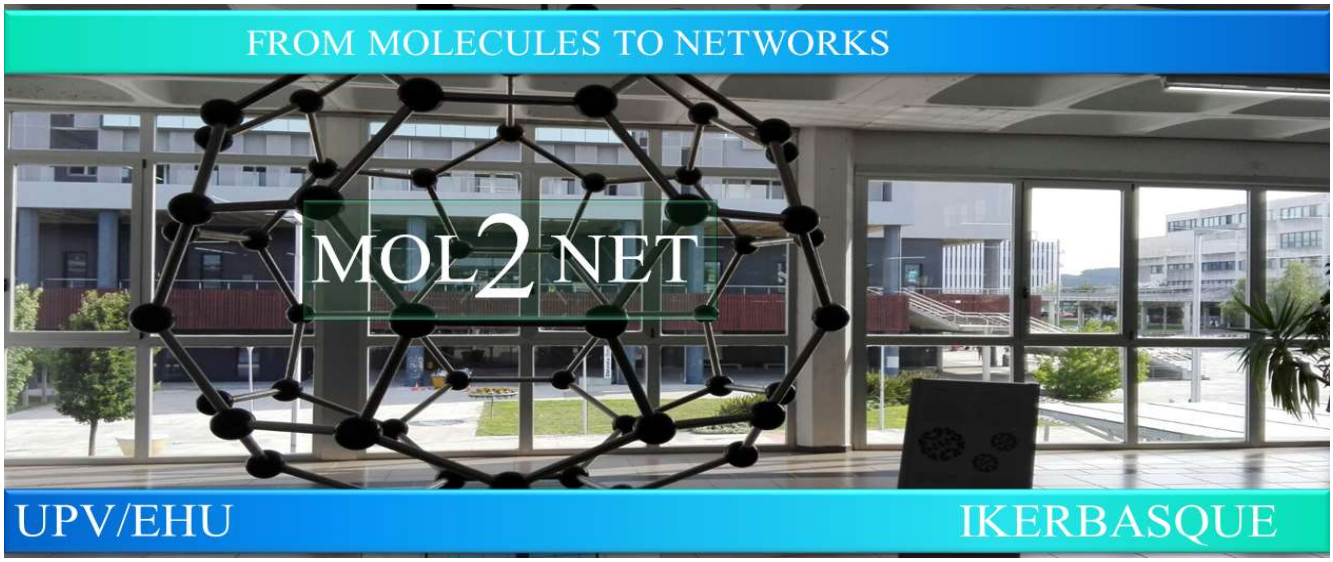

Estimation of real-infection and immunity against SARS-CoV-2 in Indian populations

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Abstract. Infection borne by Coronavirus SARS-CoV-2 has swept the world within a time of a few months. It has created a devastating effect on humanity with social and economic depressions. Europe and America were the hardest hit continents. India has also lost several lives, making the country fourth most deadly worldwide. However, the infection and death rate per million and the case fatality ratio in India were substantially lower than many of the developed nations. Several factors have been proposed including the genetics. One of the important facts is that a large chunk of Indian population is asymptomatic to the SARS-CoV-2 infection. Thus, the real infection in India is much higher than the reported number of cases. Therefore, the majority of people are already immune in the country. To understand the dynamics of real infection as well as level of immunity against SARS-CoV-2, we have performed antibody testing (serosurveillance) in the urban region of fourteen Indian districts encompassing six states. In our survey, the seroprevalence frequency varied between 0.01-0.48, suggesting high variability of viral transmission among states. We also found out that the cases reported by the Government were several fold lower than the real infection. This discrepancy is majorly driven by a higher number of asymptomatic cases. Overall, we suggest that with the high level of immunity developed against SARS-CoV-2 in the majority of the districts, it is less likely to have a second wave in India.

Keywords: SARS-CoV-2; Public health; Antibody testing; Epidemiology