

Description of the contact matrix extrapolation

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0.1 Contact matrices calculation

For each location L (home, school, work, other locations) the age-specific contact matrix $\mathbf{C}^L = (c_{i,j}^L) \in \mathbb{R}_+^{16 \times 16}$ is defined such that $c_{i,j}^L$ is the average number of contacts that a typical individual aged i has with individuals aged j . As there is no contact survey available for the Philippines, the matrices \mathbf{C}^L were obtained by extrapolating contact matrices from China, where a contact survey was conducted in 2017 [?]. The original matrices from China are denoted $\mathbf{Q}^L = (q_{i,j}^L) \in \mathbb{R}_+^{16 \times 16}$, where $q_{i,j}^L$ is defined using the same convention as for $c_{i,j}^L$. The matrices \mathbf{Q}^L were extracted using the R package “socialmixr” (v 0.1.8) and the next paragraph describes how these contact matrices were then adjusted to account for age distribution differences between the Philippines and China.

Let π_j denote the proportion of people aged j in the Philippines, and ρ_j the proportion of people aged j in China. The contact matrices \mathbf{C}^L were obtained from:

$$c_{i,j}^L = q_{i,j}^L \times \frac{\pi_j}{\rho_j}.$$