
CONNELL MCCLUSKEY, Wilfrid Laurier University

The effect of heterogeneity in social distancing

A compartmental model for COVID-19 with multiple subgroups that differ only in the level of contacts that members have with others was studied. Numerical simulations were performed for the case of two subgroups: one group that does social distancing and one that doesn't. The number of contacts for the social distancing group was varied, while keeping \mathcal{R}_0 fixed (by changing the relative sizes of the two groups). The peak number of infections changed dramatically, dropping by as much as 70%, while the initial growth rate and timing of the peak remained constant. This suggests that heterogeneity in social distancing is fundamentally important.

In particular, if \mathcal{R}_0 is determined from a period of exponential growth without accounting for this heterogeneity, then the projections of future cases will be correspondingly affected.