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65897. *Stability Analysis of a Multipatch Model of COVID-19 Dynamics*. Preliminary report.

A model of COVID-19 in an interconnected network of communities is studied. The model considers the dynamics of susceptible, asymptomatic and symptomatic individuals, deceased but not yet buried people, as well as the dynamics of the virus or pathogen at connected nodes or communities. People can move between communities carrying the disease to any node in a region of n communities (or patches). The model considers both virus direct (person to person) and indirect (contaminated environment to person) transmission. Using either matrix and graph-theoretic methods and some combinatorial identities, appropriate Lyapunov functions are constructed to study global stability properties of both the disease-free and the endemic equilibrium of the corresponding system of $5n$ differential equations. (Received July 15, 2020)