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Opinion Article

Granular Lockdown through Network Modularity Analysis

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Abstract

As COVID-19 outbreak continues, network analysis is playing a crucial role as a basis for sound policy decisions. Considering that COVID-19 is transmitted mainly through person-to-person contact, undeniably, it can be controlled by strategies that limit the convergence of people. This risk-based study aims to provide an objective basis to reduce infectious disease transmission from one community to another by visualizing and describing the interactions between the different communities in Cebu City Philippines during the COVID-19 pandemic using gephi network analysis. The network consists of two components: (1) a list of the actors composing the network (nodes) was the 80 communities, and (2) a list of the interactions between actors (edges) was mainly based on the presence of common establishments as the point of convergence of people. Findings showed that network analysis is a good approximation technique to predict hotspot communities in terms of disease incidence since the modularity of the community is consistent with the high incidence of COVID-19 cases**.** Further, it is apparent that most of the communities that are grouped in one cluster are also proximate. Policymakers can then design a sufficient win-win strategy on how to reduce transmission of COVID-19 within and between communities utilizing these findings, yet also taking into consideration the socio-economic-political dimensions. A purposive granular lockdown scheme is proposed wherein instead of the usual practice of putting the whole city or a certain barangay on lockdown at once, this scheme can be implemented so that transmission is prevented, and the economy is sustained.

Dotted and dashed lines on maps constitute

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Preliminary reports indicate that the neutralizing activity of plasma from individuals who had received the Pfizer–BioNTech BNT162b2 vaccine is reduced against the Omicron variant, documenting a substantial albeit not complete escape from mRNA-vaccine-elicited neutralizing antibodies. Another report also shows that vaccine effectiveness against symptomatic disease induced by the Omicron variant is significantly lower than for the Delta variant. The potential for booster doses to ameliorate this decline in neutralization is being investigated. In addition, the neutralizing activity of several therapeutic monoclonal antibodies appears to be decreased or abolished against Omicron