

Random-Walk-Based Segregation Measures

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Abstract

We propose an intuitive way of how to measure residential segregation in networks. Individuals are located in different nodes on a network that are interconnected through links. In this setting, we consider the process according to which, every period, an individual either moves to an adjacent node or she stops walking over the network, and define the segregation index as the probability that a randomly chosen individual meets an individual from the same social group when this random-walk terminates. It is shown that the segregation index is a natural generalization of the well-known isolation index to networks, that it has a closed-form relation to the PageRank index applied by Google, and that it is a generalization of the homophily index introduced by Currarini et al. (2009). We then rationalize the segregation index as the equilibrium outcome of a game in which individuals have to decide how much time to invest in different cultures. We also show that the Spectral Segregation Index proposed by Echenique and Fryer (2007) is not continuous with respect to the network structure. Finally, the segregation index is applied to Spanish census tract data and to citation data from Economics journals.