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Does fast migration imply well-mixing? MICHAEL KHASIN, University of Michigan, EVGENIY KHAIN, Oakland University, LEONARD SANDER, University of Michigan — A popular assumption in population dynamics is that the population is well mixed, i.e., a spatial character of the interactions between the individuals can be neglected. A common justification of this assumption is that the rate of migration between the local possibly well-mixed population-dynamics domains is much larger than the rates of interactions within a domain. We consider a system of local well-mixed domains of varying carrying capacity. In the limit of infinite migration rate we calculate the stationary probability distribution of the total population and find that generally it is not equivalent to the stationary probability distribution of a single well-mixed domain with a large carrying capacity. This proves that fast migration does not generally justify the well-mixed population assumption.

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