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Body mass variation in a two-dimensional regular network

In this work we study the mass variation of the human body using the model of Chow and Hall[1]. We implement the equations that provide a framework to consider a model for the single person mass dynamics, as well as a network in which agents can interact among them. We use as a components of the model the total energy expenditure per day (E) and the daily energy intake (I). We feed our model with data obtained from the FAO and other references[2]. We compare our results with data from mexican tables for persons with different ages. In the case of the network we took a two-dimensional regular lattice with 400 agents, each agent have a initial mass (Mo), initial intake (Io), and an initial total energy expenditure (Eo).In order to fit our model we proposed that the intake equation changes like I(t)=Io(deltaM)gamma, where deltaM=M(t)/Mo. We consider ages for the agents between 19 and 65 years.We could see how the change of the initial energy conditions produced large changes in the average mass of the network and in some cases the agent's mass can big very large and also can have low values, ie, there is a large spread in the mass values. Also we studied how the average mass changes when the agents have different numbers of links. We have implemnted the model to cover ages between 0 and 18 years old, as well.