



Prioritizing the Components of Vulnerability: A Genetic Algorithm Minimization of Flood Risk

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We define a flood resistant city as an optimal arrangement of communities according to their traits, with the goal of minimizing the flooding vulnerability via a genetic algorithm. We prioritize the different components of flooding vulnerability, giving each component a weight, thus expressing vulnerability as a weighted sum. This serves as the fitness function for the genetic algorithm. We also allowed non-linear interactions among related but independent components, viz, poverty and mortality rate, and literacy and radio/ tv penetration. The designs produced reflect the relative importance of the components, and we observed a synchronicity between the interacting components, giving us a more consistent design.