



A probabilistic risk assessment for dengue fever by a threshold based-quantile regression

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This article introduces an important concept “return period” to analyze potential incident rate of dengue fever by bringing together two models: the quantile regression model and the threshold-based method. The return period provided the frequency of incidence of dengue fever, and established the risk maps for potential incidence of dengue fever to point out highest risk in certain areas. A threshold-based linear quantile regression model was constructed to find significantly main effects and interactions based on collinearity test and stepwise selection, and also showed the performance of our model via pseudo R². Finally, the spatial risk maps of the specified return periods and average incident rates were given, and indicated that high population density place (e.g., residential area), water conservancy facilities, and corresponding interactions could lead to a positive influence on dengue fever. These factors would be the key point to disease protection in a given study area.