



## **The role of transnational mobility in the local spread of mosquito-borne disease: Measuring the determinants of spatial-temporal lags of imported dengue cases initiating indigenous epidemics in Taiwan**

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Dengue fever is one of the world's most widely spread mosquito-borne diseases. International travelers who acquire dengue infection are important routes for virus transmission from one country to another one. Previous studies have shown that imported dengue cases are able to initiate indigenous epidemics when appropriate weather conditions are present. However, the spatial-temporal associations between imported cases and indigenous epidemics in areas with different social-economic conditions are still unclear. This study investigated determinants of spatial-temporal lags of imported dengue cases who initiated indigenous epidemics from 2003 to 2012 in Taiwan. The quantile regression is used to explore the associations between spatial-temporal lags of imported cases and social-economic indicators with geographic heterogeneity. Our results indicated that imported cases in April and May have statistically significant contribution to initiate indigenous epidemics. Areas with high population density and low average income have significant risk of being imported virus from other areas. However, the areas with imported cases are not significant transmission risk. The results imply that imported cases reported in early summer may be an early-warning indicator of indigenous epidemics. Local demographic and economic conditions, rather than imported cases, may determine the areas with the risk of indigenous epidemics.