## ACADEMIC WEEKLY DIGEST

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## CAPTURING SPATIAL INTERACTIONS IN TOURISM DEMAND FORECASTING

Tourism demand in a destination is well connected to its neighbouring countries or regions given the supply interactions among destinations and tourists' multi-destination travel behaviour. <u>Eden Xiaoying Jiao</u>, PhD student supervised by <u>Prof Gang Li</u> and <u>Dr</u> <u>Jason Chen</u>, investigates whether tourism forecasting accuracy can be improved by incorporating the above spatial interactions into a tourism demand system.



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## **IMPROVING TOURISM DEMAND FORECASTING ACCURACY: A LOCAL SPATIOTEMPORAL MODEL**

## XIAOYING (EDEN) JIAO, PROF GANG LI, & DR JASON CHEN

This study develops an advanced spatiotemporal econometric model to forecast tourist arrivals in 37 European countries. The newly developed system model takes account of two types of spatial effects among destinations: the spatial spillover effect and spatial heterogeneity. The spatial spillover effect represents the dependencies of the tourism industry among neighbouring destinations, whereas spatial heterogeneity reflects the uniqueness of each destination. The use of the spatiotemporal model accounts for the spatial

dependence in tourism demand across destinations, and the use of local estimations reflects spatial heterogeneity by allowing for different levels of the spatial effect for different destinations. Furthermore, the model developed in this study takes account the spatial dependence of unobserved fluctuations among tourist arrivals in neighbouring countries. This model represents the most general form of a spatiotemporal autoregressive model in the forecasting literature.



Forecasts of tourist arrivals were generated using global and local spatiotemporal autoregressive models and their forecasting performance was compared with that of three non-spatial benchmark models. The superior forecasting performance of the local spatiotemporal model (overall up to 26% more accurate than the benchmark models) suggests that the full reflection of spatial heterogeneity can improve the accuracy of tourism forecasting. Practically, this study implies that a single destination should not be isolated from its neighbours when predicting future tourism demand, and a systematic approach should be taken.