Your extended abstract should be 1500 words maximum

Estimating the spatial and time decay impacts of a local event

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Extended abstract

This paper studies the spatial and temporal decay impacts of a local event on tourism accommodation in a region. The results show that the day of the event, the number of occupied rooms, average daily rate (ADR) and revenue reach a marked peak. Moreover, it shows the presence of a time decay impact on revenue, which is asymmetric in favour of the days before the event. A spatial panel data regression method has been employed. The case study concerns Ironman Triathlon event and its impact on the Airbnb listings in the Spanish region of Vitoria-Gasteiz in 2019.

The organization of local events are a common tourism policy especially during off-peak seasons when the tourism demand is low. Hosting a local event attracts tourists and generates additional income to the local economy, especially to tourism and hospitality sector. Determining the impact of the event for the local economy also needs to take into account the temporal dimension, i.e., the changes in the length of stay. It is also relevant to consider the spatial dimension, i.e., determine the changes in spatial tourism behaviour, for instance, the tourists can choose an accommodation close to the event or they may prefer a farther accommodation generating a spillover effect.

This paper analyses the impact of a sport event on the Airbnb market which serves as a proxy of the tourism accommodation market. The event considered is the Ironman of Vitoria-Gasteiz in 2019. This paper applies descriptive spatial analysis and a spatial panel data regression to understand the direct and indirect spatial effects. The results show different effects over time and space. As far as we know, a local event has not been analysed previously applying this kind of methodology.

The quantitative methodology applied is spatial panel data regressions. To apply this methodology, it is needed to define the spatial and temporal units, as well as the spatial

relationship between units. Regarding the spatial units, a lattice approach is applied. The region is split up into a grid of 2,426 cells with a size of 300 by 300 meters, each one of these cells represents a spatial unit which may contain Airbnb listings. So that each unit has its own values in terms of occupied rooms, ADR and revenues, and all of them are calculated as the total or average values of the Airbnb contained in the cell.

The data is daily. It is considered a window of 13 days, i.e. the day of the event and six days before and after the event. In order to avoid week seasonality, the values in level are considered as differences with respect to a previous basis week. It is expected to have a spatial correlation among the variables. Two alternative ways that are considered in the literature to handle this issue, are employing endogenous spatially lagged variables or spatial lagged error variable, or a combination of both. To apply this solution, it is needed to define a spatial weight for each unit. These weights are stored in a spatial weight matrix. This paper applies a spatial lagged error which covers the relationship among the spatial units. The spatial weight matrix is defined using a contiguity approach. The order of the contiguity is defined according to the Moran's *I*.

The model applied is a panel data regression with a spatially lagged error term and random effects estimator. The model is employed to make simulations, so that the results can be generalized to similar events. The results are shown using heatmaps to reflect the spatial-temporal effects. The results shown the maximum level of spatial correlation according to Moran's *I* for occupied rooms, ADR and revenue. The spatial panel data regression shows the temporal and spatial boundaries of the event in terms of occupied rooms, ADR and revenues. The regression also shows the spatial-temporal decay effect, and the asymmetric temporal effect.

This paper has policy implications in terms of understanding how to deal with the spill-over effect in the temporal and spatial dimension. The policymakers need to understand the temporal and spatial boundaries of the event to adapts their strategies regarding the promotion of the event itself and the tourism policy strategies. This paper has proved the utility of spatial panel data regressions to the analysis of tourism events. The simulations after the modelling are useful to generalize the results. They are provided in percentages, so that they can be employed as ex-ante benchmark for future events.