Received 22 July 2020
Revised 24 September 2020
4 November 2020
Accepted 4 November 2020

# Identifying and measuring the impact of cultural events on hotels' performance

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## Abstract

**Purpose** – Focusing on two beer festivals held in Nottingham, England, this study aims to evaluate their indirect impact on the performance of city hotels. This study builds on theoretical insights from the revenue management literature to shed empirical light on the potentially beneficial effects of events on the hotels' performance. This study investigates the impact of the differential support offered by the destination management organisation (DMO) over two years.

**Design/methodology/approach** – Using online prices posted in advance of the events on an online travel agent, the authors assess hotel performance for each day of the events relative to the same day of the week in a week with no event. A similar comparison is made to assess the impact across two different years. In both cases, an ordinary least squares methodology was used.

**Findings** – Both events appear not to have had a strong impact on hotel prices and occupancy in 2016, i.e. when the DMO's promotional effort was more proactive. Instead, in 2017, one event registered higher hotel prices and occupancy both relative to the year before and to the "business as usual" week.

**Practical implications** – The study identifies the existence of an indirect positive economic impact of the events on the hospitality sector.

**Originality/value** – The investigation adopts a more naturalistic experimental design to collect the data, which allows the authors to control for both the impact on prices and occupancy at the level of the single hotel. The evidence is therefore micro-founded. Moreover, results shed light on the role played by the DMO.

**Keywords** Revenue management, Destination management organisation, Event tourism

**Paper type** Research paper

## 1. Introduction

The study of the economic impact of cultural events represents a significant body of research for the service sector in general, and the tourism and hospitality industries in particular (Getz, 2008; Getz and Page, 2016a; Backman, 2018). Events can boost demand and attract tourists to a destination, especially during low-season periods (Connell *et al.*, 2015; Sainaghi *et al.*, 2018; Sainaghi *et al.*, 2019). On the supply side, they may induce urban renewal interventions both at the infrastructure and service levels, promoting a positive image of the destination and contributing to an improvement of living standards of residents (Getz, 2008; Getz and Page, 2016b). Destination management organisations (DMOs) are therefore often involved to support the events, whose attractiveness is one of the more significant measures of destination competitive attributes (Crouch, 2011), as they

Authors are extremely grateful to Andrea Mantovani, Scott McCabe and Carlo Reggiani for helpful comments and suggestions. The usual disclaimer applies.

International Journal of Contemporary Hospitality Management
Vol. 33 No. 4, 2021
pp. 1194-1209

0959-6119
DOI 10.1108/IJCHM-07-2020-0749

represent "key marketing propositions in the promotion of places" (Getz and Page, 2016b, p. 593).

Although there is consensus in the literature that events have wide-ranging impacts, involving not only the economic but also the social, cultural, environmental and political dimension, the monetary quantification of such impacts meets with considerable difficulties (Law, 1992; Jones, 2005). According to Getz and Page (2016b), it is therefore useful to pursue research projects that deepen our understanding of the impact of events in specific geographical contexts and dimensions. In line with this recommendation, this study analyses the impact of similar small, cultural events repeated over two years on a specific set of stakeholders, the hotels in the city hosting the event, taking into account the mediating role played by the DMO, which varied in the two years.

Traditionally, the literature on the economic impact of events has used input–output analysis and its general equilibrium extension to quantify the costs and benefits at the regional level (Dwyer *et al.*, 2010). Because of its aggregate structure, this analytical approach offers valuable insights on the gross value added that is activated locally, and the related multiplier associated with public investment (Dwyer *et al.*, 2010), but, especially for small events, it is not suitable to account for the benefits obtained by specific stakeholders. Some studies, however, analyse the impact of events on one prominent stakeholder, the hotel sector, by focusing on exclusively one aspect, either the impact on the number of arrivals (Chirieleison *et al.*, 2013) or on the room rates (Herrmann and Herrmann, 2014). Evidence on both dimensions is reported in Sainaghi and Mauri (2018), Sainaghi *et al.* (2019) and Heller *et al.* (2018), which however deal with large events decoupling from the active choices of other stakeholders, such as the local DMO (Getz *et al.*, 2007; Crouch, 2011).

Using a methodological approach that builds on theoretical insights from the revenue management literature (Abrate *et al.*, 2019; Alderighi *et al.*, 2015), we evaluate whether hotels' occupancy rates and prices are positively affected by the events. Furthermore, we focus on two different years to further investigate the impact of the differential support offered by the local DMO, whose coordination role may prove beneficial to all stakeholders, including hospitality firms (Sainaghi, 2006). Specifically, this study considers the case of the English City of Nottingham, whose council operated as DMO to organise the October programme of events under the shared brand of "UK's Festival city" in 2016, but not in 2017. The paper compares hotel prices and occupancy levels with a focus on two local beer festivals: the CAMRA Beer and Cider Festival and the Nottingham Octoberfest. Although the events had identical features across the two years, the role of the DMO differed. Whereas in 2016, the festivals were part of a larger portfolio of events actively promoted under the shared brand of the local DMO; in 2017, the latter took a less proactive role, thus offering an opportunity to test whether this change indirectly affected the performance of the hotels in the centre of Nottingham. On the one hand, the thesis according to which a coordinated strategy produces better results than those obtained by independent initiatives is consolidated in literature. On the other, the primary process used by the DMO to manage its events portfolio may not be enough if it is not adequately combined with a support process aimed at coordinating the efforts of all stakeholders (Sainaghi, 2006).

This study offers several innovative findings. Firstly, methodologically it adopts an experiment design to collect the data, which allows us to control for both the impact on prices and occupancy at the level of the single hotel. Thus, the article contributes to the theory of the evaluation of events' economic impact on relevant stakeholders. Secondly, it provides estimates based on microeconomic data to distinguish different effects for each day of each event. Thirdly, these are contrasted between years (2017 relative to 2016) to shed some light on the impact of the role played by the DMO. Finally, it provides a comparison

across consecutive weeks, to assess hotel performance for each day of the events in relation to the same day of the week in a "business as usual" situation, i.e. in a week with no event.

The article is organised as follows. Section 2 describes the main characteristics of the two events under study and explains the DMO's changing role over the two years of analysis. The literature review in Section 3 discusses methods for assessing events' economic impact and their relationship with revenue management theories that allow to discern the events' impact on hotels: these are used to develop the central hypotheses of the study. Section 4 describes the data collection strategy. The empirical approach and the main results are reported in Section 5. Their critical discussion, with managerial, strategic and theoretical implications, is provided in the concluding Section 6.

## 2. Research context: Nottingham UK's festival city

Every year in October, the city of Nottingham (UK) boasts a series of festivals. These events have a regional or indeed local characterisation; some of them have been a long-established occurrence of the life of the city. For example, the first ever recorded Goose Fair dates back to 1284. Other events such as the Robin Hood Beer and Cider Festival and Game City have become established recurrences. The former has reached its 42nd edition in 2017, with the latter completing its 11th edition. Finally, other events are more recent; for example, the Octoberfest Beer Festival was first launched in 2015.

In 2016 the municipality, consistently with the "Dynamic Destination Management Model" developed in Sainaghi (2006), acted as the local DMO and took charge of the development of the primary processes necessary to combine all the October events under a portfolio approach (Prentice and Andersen, 2003). The DMO also organised the support processes to enhance collaboration among the various stakeholders and to promote not only the social and cultural activities among residents, but also to extend the promotion of tourism to the area (Sainaghi, 2006). This approach generated a visible promotional campaign under the "UK's City of Festivals" banner, a dedicated effort to attract visitors and a coordinated scheduling of the calendar to avoid potential overlaps among the events. However, in 2017, the different events returned to the traditional decentralised approach, with each event being mainly responsible for individual promotion. The DMO maintained a similar level of support but did not replicate the campaign "UK's City of Festivals" resulting in a considerably toned-down promotion of the city as a tourist destination during the month of festivals.

## 3. Literature review

The measurement of the economic impact of events remains a key issue of debate in the literature (Dwyer *et al.*, 2010; Getz and Page, 2016a). It hinges around a simple question: "If the event had not taken place, what would the loss of net revenues to the area have been?" The answer primarily entails the identification of the additional expenditure ("new money") generated by the event, which in turn is expected to spur three effects: direct (the net expenditure generated by the event itself), indirect (the net expenditure for consumption related but different from the event) and induced, i.e. the spillover of the above expenditures on the local and regional economic activities not directly involved in the event (Dwyer *et al.*, 2010).

The difficulty in identifying the amount of additional expenditures generated by the event, especially for the case of indirect effects, has prompted the use of surveys to measure the expenditure of tourists during an event (Aguilò and Juaneda, 2000; Della Lucia, 2013; Marrocu *et al.*, 2015; Sanchez *et al.*, 2016). Overall, the evaluation of the economic impact of tourism events presents considerable challenges (Ivanov and Webster, 2007). This is

especially relevant when attempting to evaluate the overall economic impact of a single large or mega event (Ritchie and Smith, 1991; Dwyer *et al.*, 2005, 2006). A macro-level approach becomes even more challenging when observing cities that are generally established tourist destinations (Sainaghi and Mauri, 2018).

In the case of smaller scale events, another challenge is the widespread belief that cultural events generate limited economic impact (Gursoy *et al.*, 2004). Mehmetoglu (2001), using a case study of a community-run festival in Norway, reported that many small-scale events have little direct economic impact on their territory because they cater mostly to residents, not tourists. However, Sanchez *et al.* (2016) reached opposite conclusions regarding the impact of the Holy Week events in a Spanish small town.

The decision of a DMO to support an event meets with similar difficulties, although concerns for the economic viability of cultural event can be allayed by the intangible benefits and well-being effects accruing to local communities (Quinn, 2005). This implies a call for DMOs to invest in the promotion of festivals as a specific form of tourism attraction (Felsenstein and Fleischer, 2003). Some DMOs have therefore begun to proactively support festival tourism; although the benefits from a purely economic perspective are unclear (McKercher *et al.*, 2006; Sainaghi, 2006). DMOs have an interest in understanding the impact of events with reference to specific categories of stakeholders (Hillebrand *et al.*, 2015). Consistently with the idea that a wide set of key indicators is more effective to deeply understand a complex phenomenon, the literature has begun to complement its focus on consumer spending with a micro-economic approach based on single measures on which to assess specific economic impacts of discrete changes in DMOs strategies. With this objective in mind, the literature has focused the attention on such specific economic variables as tax benefits (Süssmuth and Woitek, 2013), visitor spending (Marrocu *et al.*, 2015), arrivals and hotel occupancy rates (Brännäs and Nordström, 2006; Chirieleison *et al.*, 2013).

This approach appears to be more appropriate particularly in the case of regional and urban events, as a wider economic impact seems to be less relevant than the benefits accruing to specific stakeholders, both on the demand and supply side. Surprisingly, regarding the latter, few studies have dealt with the implications of events for hotel prices, on which this study mainly focuses. One exception is Herrmann and Herrmann (2014), which investigated hotel prices in Munich during the 2012 Oktoberfest and found that prices were higher during Fridays and Saturdays, and that differences across hotels were mainly because of the star classification and the proximity to the event venue. It is noteworthy that the data in Herrmann and Herrmann (2014) were limited in that they only identified the dynamics of prices during the days of the event but not relative to a control set of dates in the absence of the event. Nicolini and Piga (2019) for example, used online scraped data to investigate hotel pricing in Paris before, during and after a mega event, namely, the 2016 Football UEFA European Cup. They found that price increases during the event period were applied mostly for stays on the day and the day before a match, and that prices returned to pre-tournament levels on the other days. Sainaghi and Mauri (2018) used secondary data to compare the performance of hotels in Milan during the 2015 World Expo event, relative to previous years. Overall, the impact on the industry was noticeable, leading to a significant reduction in the seasonality effect on hotel occupancy levels, as well as to higher operating performance in terms of both average daily rates and average revenue per available room. This study addresses some of the limitations highlighted in Sainaghi and Mauri (2018). Firstly, by restricting the period of analysis to only three weeks, and by focussing on a relatively small English city, we rule out possible confounding effects induced by the overlapping of events that likely took place during Expo in such a large and active city tourism destination as Milan. Secondly, we can thus consider the full universe of hotels operating in Nottingham's city centre and differentiate the outcomes in terms of price and occupancy by star category.

Insights from the literature on revenue management in both the airline and the hotel sector may explain why prices should be higher during the event (Alderighi *et al.*, 2015; Cho *et al.*, 2018; Abrate *et al.*, 2019). Firstly, hotel managers may apply standard price discrimination strategy, assuming that event goers have a higher willingness to pay. Secondly, capacity pricing may play a crucial role. Alderighi *et al.* (2015) report evidence that ticket prices go up as the place fills up; Cho *et al.* (2018) discuss how a similar mechanism is applied by the hotel in their study, especially when a sell-out is more likely. Abrate *et al.* (2019) find evidence of capacity pricing in a wider sample of hotels. So, higher prices should be correlated with higher occupancy, and therefore a higher probability to stop observing the hotel online during the booking period preceding the actual stay. A hotel may do so for various reasons. Firstly, the hotel is sold-out; secondly, it may withdraw its rooms from the OTA and sell them using alternative channels (its own website, via telephone or to passer-byes); and thirdly, it may have sold-out the number of rooms it allocated on Booking.com and chose to rely on alternative channels. All cases imply the presence of an unusually high demand, which would be reflected in a higher occupancy rate.

Although conscious that performance measurement is a multi-dimensional task (Altin *et al.*, 2018), following Herrmann and Herrmann (2014) and Sainaghi and Mauri (2018), we consider higher hotel prices and higher occupancy rates as an indirect measure of success of an event. To this aim, the study compares the pricing strategies of the hotel industry in Nottingham during event weeks in both October 2016 and 2017. In particular, the paper compares the established "Beer and Cider Festival" with the newly launched "Octoberfest Festival". As the nature of such festivals did not change over time, it is fair to assume that the symbolic, cultural and social impacts of the events remained the same. However, the change in the DMOs' strategic stance offers the opportunity to assess the economic impact of the DMO's decision to adopt one approach over the other.

*H1*. If a portfolio approach to the management of local events is used, then hotel prices should be higher in 2016 relative to the year 2017, when the DMO did not apply a portfolio approach.

Furthermore, building on the revenue management principles previously highlighted, we formulate the following:

*H2a*. Relative to a control week without event, hotel prices should be higher for every day of the event's week, in each year.

*H2b*. Relative to a control week without event, if the event is successful in attracting new visitors, we should observe a larger proportion of hotels stopping their posting activity online a few days before the actual event day.

## 4. Data collection

Data collection through the Web is one of the main sources of big data in tourism (Li *et al.*, 2018). Hence, we collected primary data using an "electronic web-crawler", which connected directly to the website of Booking.com. The crawler retrieved, for each establishment, the posted prices and information on whether the offered rooms included breakfast and/or free cancellation. Separately, the programme also retrieved other establishment's characteristics, including its type (hotel, bed and breakfast, etc.), geographical coordinates and star classification. In this work, to simplify the comparisons and provide a more direct link with the existing literature, the analysis uses data only from establishments classified as hotels, if they state a star classification on their Booking.com website.

The data cover identical events taking place in Nottingham throughout October in the years 2016 and 2017. We focus the analysis on four consecutive weeks. In the first, the "Robin Hood Beer and Cider Festival" took place from Wednesday 11th (12th) October until Saturday 14th (15th) October 2017 (2016); the second week, which we denote as "Intermediate Week", had no events in both years, but it provides a useful terms of comparison relative to the events' week; the "Nottingham Octoberfest" is the second event, which was held in the third week, from Wednesday 25th (26th) until Sunday 29th (30) 2017 (2016); the fourth week, which considers the same days in the week after the Octoberfest (1–5 Nov 2017 and 2–6 Nov 2016), also provides a term of comparison. On these weeks, we checked that no other big event overlapped; for instance, although Nottingham has two universities, one of which is located centrally, no graduation ceremony, which tends to boost hotel demand, occurred during the four weeks.

For each of these nights, the crawler obtained the price of a double or twin room in the hotels included in the sample (until they post a price for that night). The crawler was operated daily, so we can track the posted price until the day of actual stay, in line with similar studies in the airline industry (Alderighi *et al.*, 2015; Bilotkach *et al.*, 2010). All prices were in British sterling (GBP).

Using the geographical coordinates, we could establish each hotel's distance from the city centre, identified by the Google Map landmark; because the beer festivals in Nottingham took place in the city centre, and are thus more likely to affect only hotels therein located, we restrict the analysis only to hotels located within a 2.5-km radius from the city centre. Note, however, that our data include the totality of hotels in the Nottingham city centre.

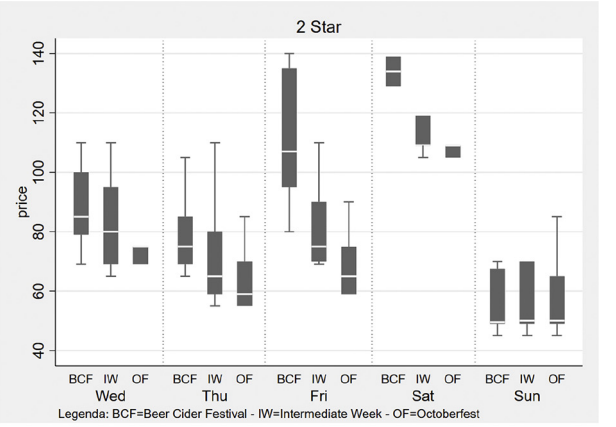
Figure 1 shows the box plots detailing the daily distribution of 2017 prices posted during, respectively, the Beer and Cider Festival, the intermediate week and the Octoberfest. Each whisker reports, respectively, the min, the 25th, 50th and 75th percentile, and the max for each day of week of the events, broken down by star classification. Notably, the prices during the Beer and Cider Festival's week tend to be highest, especially on Friday and Saturday, but also on Wednesday. This effect is stronger for 3* and 4* hotels. On the contrary, the prices during the Octoberfest do not seem to be higher, and indeed, are generally lower than those posted during the intermediate week, especially during the Friday and the Saturday nights. Interestingly, the level of Sunday's prices, when no event took place, is generally lower for all stars, suggesting that each hotel tends to apply similar pricing scheme on quiet days.

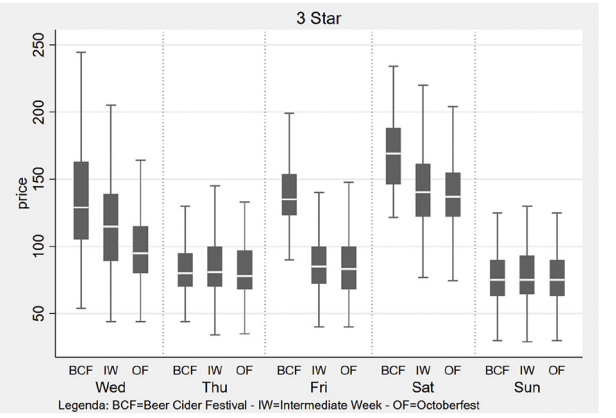
## 5. Econometric design and results

Two different types of impacts are used to assess the relative performance of hotel in relation to the events. First, because of the more active role played by the Nottingham City Council in 2016, for each event, we compare the 2017 prices with the 2016 ones, during the days in which each event took place. This provides a direct test for *H1*. Formally, the year-on-year impact is $I_1(S,D) = \overline{P_E^{2017}\hat{(}S,D) - P_E^{2016}\hat{(}S,D)}$, that is, the mean difference of the mean expected room rates in each year during event $E$, over clusters of firms based on stars classification (S) and day of the week (D).

Secondly, to test *H2a* we assess the extent by which room prices during the events' days differed from those in non-event (NE) weeks, and thus evaluate the incremental benefits that the expected increase in demand for hotel services engenders for hotels. Formally.

$I_2(S,D,Y) = \overline{P_E(\hat{S,D},Y) - P_{NE}(\hat{S,D},Y)}$, denoting the mean difference of the mean expected price during $E$ and NE, over clusters of firms based on stars classification (S), day of the week (D) and year.



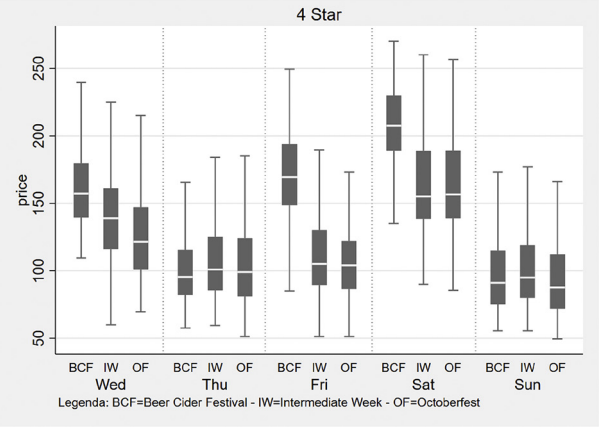




**Figure 1.**
Comparison of 2017 means of hotel prices for a double room, in the weeks of the (1) Beer and Cider Festival, (2) the intermediate week and (3) Octoberfest, by day of week and star classification

The identification strategy hinges on a standard ordinary least squares method based on the following two regression models:

$$P = \beta_1 + \gamma_1 \sum \left(H^*Y^*D\right) + \quad \theta_1 \quad \sum \left(F_1{}^*F_2\right) + \varepsilon_1 B + v_1, \tag{1}$$

and

$$P = \beta_2 + \gamma_2 \sum \left(H^*Y^*D^*E\right) + \theta_2 \quad \sum \left(F_1{}^*F_2\right) + \varepsilon_2 \sum \left(B^*E\right) + v_2, \tag{2}$$

where $H$ denotes a set of dummies for each hotel, $Y$ denotes a dummy for the year, $D$ denotes the days of the week, $F_1$ and $F_2$ denote two offer features (booking cancellation and breakfast included), $B$ is a continuous variable measuring the number of days separating the dates of the query from the dates of stay and $E$ is a dummy for each event, when compared to either the intermediate week or the first week in November. The residuals $v$ captures unobserved factors that affect the hotel's decision to set a room price $P$. As indicated in Wooldridge (2002), the unbiasedness of the estimated values is ensured by the fact that the treatments, i.e. the events $E$, are independent of all the factors that affect $P$ and, most importantly, they are not systematically related to $v$. The standard errors are robust to non-spherical disturbances and clustered for each hotel.

For equation (1), we use only the observations for the dates of each event in both years, while for equation (2), we add the observations of either the intermediate week, or the first week in November. Finally, note that the sign "*" denotes interactions among all these terms, and that therefore both specifications (1) and (2) produce a very large number of coefficients, thus making their interpretation in terms of $I_1$ and $I_2$ very difficult to gauge. Therefore, we follow a procedure used in Melis and Piga (2017). To estimate $I_1$ (S, D), after running equation (1), we first calculated the predicted values and then considered the distribution of their difference, in each year, along the clusters of stars (2, 3 and 4) and days of the week. A similar procedure was used for the estimation of $I_2$ (S, D, Y) based on specification (2).

*5.1 Results*

Table 1 reports the estimated values, and related standard errors, of $I_1$ (S, D). A positive coefficient indicates higher prices in 2017. Relative to the 2016 edition of the Beer and Cider Festival, hotels in 2017 managed to raise prices significantly for most week days (with the exception of the Thursday); conspicuous increases are recorded for Friday and Saturday, with average nominal growth of about £48–50, £38–45 and £18–26 in, respectively, 4, 3 and 2 stars hotels. In terms of values reported in Figure 1, these correspond to rises of 20–25%. Interestingly, the Beer and Cider Festival event did not run on the Sunday; the fact that the difference in average prices is not economically noticeable (about £2 or less) suggests that the hotels did not change their price setting behaviour during the year, and thus lends support to the validity of the year-on-year comparison.

Hotel prices in relation to the Octoberfest did not in general change as conspicuously as in the Beer and Cider Festival case. Although 4* hotels prices were marginally higher in 2017, they were lower on the Saturday for 2* and 3* hotels. Overall, Table 1 suggests that, relative to the 2016 edition, a year later the Beer and Cider Festival, unlike the Octoberfest, had an economically relevant impact in terms of the prices charged by hotels.

We can rule out that the improvement in hotel performance in 2017 can be attributed to a stronger trend of inbound and domestic tourism demand relative to 2016, because in this case, we should have observed significantly positive values in all cells of Table 1. Instead,

for both events, average rates were higher in 2016 on some days, and differences were of relevant magnitude only on weekend days during the 2017 Beer and Cider Festival. The absence of significant difference on Sundays also lends support to the idea that, during October, both years exhibited similar patterns of inbound and domestic tourism demand for the Nottingham area. Overall, the evidence does not support *H1*, as it points to higher hotel prices for events in 2017, when the role of the DMO was less pro-active.

Tables 2 and 3 report the values of $I_2$ (S, D, Y), that is, the average difference of prices during the events relative to the intermediate week. For each star classification, the tables report estimates for both years' editions. As far as the Beer and Cider Festival is concerned (Table 2), hotels prices for event days in 2017 were noticeably higher on Friday and Saturday for all stars classification, relative to the same days in the following week; increases range between £24 and £47, depending on day and star classification. Wednesday prices were also somewhat higher, but less than £10, with the exception of 4 star hotels, while Thursday ones do not suggest a clear-cut trend; no significant difference appear for a Sunday stay, with prices remaining quite stable, again with the exception of 4 star hotels,

**Table 1.**
Estimated $I_1$ (S, D), the year-on-year difference of estimated hotel prices during the events' week

| Day week | Beer and Cider Festival | | | Octoberfest | | |
|---|---|---|---|---|---|---|
| | 2* | 3* | 4* | 2* | 3* | 4* |
| Wednesday | 4.44[a] | 5.17[a] | 12.97[a] | 6.27[a] | −0.87 | 8.30[a] |
| | −0.33 | −0.87 | −0.31 | −0.52 | −0.85 | −0.69 |
| Thursday | 5.46[a] | −7.65[a] | −19.22[a] | 8.39[a] | 0.36 | 3.00[a] |
| | −0.36 | −0.79 | −0.57 | −0.5 | −0.88 | −0.72 |
| Friday | 26.52[a] | 45.69[a] | 50.01[a] | 4.14[a] | 4.05[a] | 2.53[a] |
| | −0.59 | −0.79 | −0.63 | −0.52 | −0.84 | −0.64 |
| Saturday | 18.26[a] | 38.31[a] | 47.99[a] | −5.05[a] | −8.62[a] | 4.83[a] |
| | −1.76 | −0.86 | −0.6 | −0.78 | −0.7 | −0.59 |
| Sunday | 1.59[a] | 0.83 | 2.44[a] | 0.01 | −1.84[b] | −2.90[a] |
| | −0.36 | −0.8 | −0.72 | −0.5 | −0.92 | −0.81 |
| $R^2$ | | 0.96 | | | 0.95 | |
| No. of obs. | | 3,123 | | | 14,524 | |
| No. of hotels | 2 | 5 | 7 | 2 | 5 | 7 |
| Room capacity | 155 | 710 | 750 | 155 | 710 | 750 |

**Table 2.**
Estimated $I_2$ (S, D, Y), the mean difference of estimated hotel prices in the Beer and Cider Festival week relative to the intermediate week, in 2016 and 2017

| | 2* | | 3* | | 4* | |
|---|---|---|---|---|---|---|
| Day week | 2017 | 2016 | 2017 | 2016 | 2017 | 2016 |
| Wednesday | 6.32[a] (0.36) | 7.84[a] (0.33) | 8.38[a] (0.40) | 2.83[a] (0.41) | 40.74[a] (0.56) | 9.29[a] (0.43) |
| Thursday | 7.59[a] (0.43) | 3.39[a] (0.40) | −4.38[a] (0.39) | 9.27[a] (0.34) | −0.14 (0.37) | 18.39[a] (0.45) |
| Friday | 23.75[a] (0.16) | 1.86[a] (0.34) | 46.33[a] (0.38) | 4.49[a] (0.34) | 47.46[a] (0.21) | 2.85[a] (0.33) |
| Saturday | 26.30[a] (0.71) | −13.71[a] (0.59) | 29.37[a] (0.35) | −15.55[a] (0.30) | 25.24[a] (0.27) | −16.43[a] (0.43) |
| Sunday | −1.42[a] (0.35) | −2.14[a] (0.38) | −2.87[a] (0.32) | −4.47[a] (0.37) | −10.85[a] (0.34) | −16.99[a] (0.36) |
| $R^2$ | | | 0.94 | | | |
| $N$ | | | 9,391 | | | |
| No. of hotels | 2 | | 5 | | 7 | |
| Room capacity | 155 | | 710 | | 750 | |

**Notes:** Robust standard errors are in parenthesis; [a] and [b] statistically significant at the 1% and 5% level, respectively

which record larger drops in the Sunday of the event week. The estimates concerning 2016 reveal a negligible impact on most days, and even a negative performance for the Saturday night. Overall, the combined analysis of Tables 1 and 2 support the view that the 2017 edition of the Beer and Cider Festival generated a positive financial benefit on the hotels located in the centre of Nottingham.

The comparison of hotel prices during the Octoberfest, relative to the intermediate week, is reported in Table 3. Most coefficients are negative, indicating that hotels tended to post lower prices for stays during the Octoberfest, relative to a stay on the same weekday a week before. Their magnitude for the 2017 is, however, generally below £10, except for the Saturday-night stay in a 4-star hotel or a Wednesday-night stay in a 3-star one. The estimates for 2016 depict a similar scenario. Overall, the Octoberfest does not seem to have generated extra demand for hotels, relative to the one they faced a week before. Therefore, in Table 4, we compare the Octoberfest prices with those posted a week after (the first week of November). The estimates report no economically relevant difference for most days and types of hotels, except for the Saturday night, when prices tended to be £10 and £16 higher for both editions of the Octoberfest event.

To test *H2b*, which implies that higher prices also reflect higher occupancy rates, Table 5 reports the percentage of hotels that stopped posting fares on Booking.com at least one day before the check-in date. The values in Table 5 are perfectly consistent with the estimates reported in the previous tables. Indeed, apart from Thursday and Sunday nights during the 2017 Beer and Cider Festival week, 79, 64 and 86% of hotels appear to have been full on, respectively, Wednesday, Friday and Saturday. Considering our sample includes 14 hotels, these correspond to 11, 9 and 12 hotels overall. Numbers are considerably lower for the 2016 Beer and Cider Festival, and even lower for the other weeks, including the Octoberfest one.

Figure 2 shows plots data reported in Google Trends regarding queries for:

- Nottingham hotels;
- Nottingham Beer Festival; and
- Nottingham Octoberfest over the 2015–2018 years (Botta *et al.*, 2020).

The figure supports our main conclusion that the Beer Festival has attracted more interest than the Octoberfest, especially in 2017; furthermore, a peak in queries for hotels in

| | 2* | | 3* | | 4* | |
|---|---|---|---|---|---|---|
| Day week | 2017 | 2016 | 2017 | 2016 | 2017 | 2016 |
| Wednesday | −1.73[a] (0.22) | −2.15[a] (0.30) | −15.25[a] (0.23) | −22.56[a] (0.28) | 0.66[b] (0.33) | −18.48[a] (0.25) |
| Thursday | −0.66[b] (0.32) | −8.21[a] (0.26) | −6.54[a] (0.17) | −2.10[a] (0.26) | −4.16[a] (0.22) | −7.10[a] (0.29) |
| Friday | −9.45[a] (0.32) | −6.12[a] (0.34) | −2.33[a] (0.30) | −4.02[a] (0.28) | −10.12[a] (0.31) | −6.82[a] (0.32) |
| Saturday | −3.68[a] (0.66) | −17.21[a] (0.32) | 0.75[a] (0.20) | −1.99[a] (0.18) | −18.42[a] (0.29) | −14.28[a] (0.25) |
| Sunday | −1.15[a] (0.26) | −0.70[a] (0.20) | −2.02[a] (0.30) | −2.54[a] (0.20) | −11.62[a] (0.26) | −4.09[a] (0.29) |
| $R^2$ | 0.95 | | | | | |
| No. of obs. | 15,367 | | | | | |
| No. of hotels | 2 | | 5 | | 7 | |
| Room capacity | 155 | | 710 | | 750 | |

**Notes:** Robust standard errors are in parenthesis; [a] and [b] statistically significant at the 1% and 5% level, respectively

**Table 3.** Estimated $I_2$ (S, D, Y), the mean difference of estimated hotel prices in the Octoberfest week relative to the intermediate week, in 2016 and 2017

Nottingham is shown the week before the Beer Festival is scheduled, consistent with the notion that visitors book in advance.

## 6. Discussion and conclusions

This study pursued various objectives. Firstly, it investigated the possible impact of two different approaches that the local DMO used to support the events. Second, it provided a contribution to the literature on the assessment of the economic impact of events, by analysing whether hotels' performance improved during the events' days, relative to a control week with no event. In sum, the statistical analysis provides the following empirical contributions:

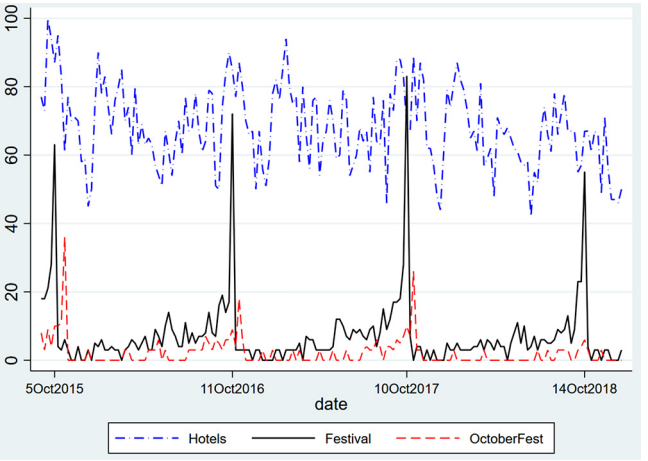
- During the 2017 edition of the Beer and Cider Festival, the hotels posted higher prices than in the previous year; no noticeable difference characterises the Octoberfest. Therefore, *H1* is clearly not supported by the evidence, as both events in 2016 underperformed relative to the following year. The evidence is robust to possible differences in inbound and domestic tourism over the two years.
- Using the same comparison week, the 2017 Beer and Cider Festival seems to have generated increases in demand that led to higher prices, whereas the Octoberfest did not. The Octoberfest did not have a noticeable impact also if compared relative to the week after. The 2016 edition of both events was less effective in stimulating demand, relative to the comparison week. Thus, *H2a* is supported only in the case of the 2017 Beer and Cider Festival.
- On the days where we record higher prices, we also find a higher probability to observe hotels stopping posting prices online, which we consider a proxy for higher

**Table 4.** Estimated $I_2$ (S, D, Y), the mean difference of average hotel prices in the Octoberfest week relative to the following week, in 2016 and 2017

| | 2* | | 3* | | 4* | |
|---|---|---|---|---|---|---|
| Day week | 2017 | 2016 | 2017 | 2016 | 2017 | 2016 |
| Wednesday | 3.68[a] (0.22) | 0.45 (0.48) | −18.52[a] (0.31) | −12.50[a] (0.42) | −0.53[b] (0.20) | 1.90[a] (0.37) |
| Thursday | 0.66[a] (0.18) | 1.23[a] (0.41) | −1.71[a] (0.26) | 0.52 (0.37) | −7.03[a] (0.23) | −0.60 (0.44) |
| Friday | 0.42 (0.23) | 1.07[b] (0.48) | 1.41[a] (0.22) | 5.31[a] (0.38) | 3.58[a] (0.30) | 4.80[a] (0.49) |
| Saturday | 5.39[a] (0.05) | −14.16[a] (0.49) | 11.61[a] (0.28) | 10.49[a] (0.52) | 16.03[a] (0.23) | 14.49[a] (0.42) |
| Sunday | −1.34[a] (0.24) | −2.17[a] (0.50) | −0.93[a] (0.31) | 0.01 (0.43) | −6.68[a] (0.28) | −2.17[a] (0.44) |
| $R^2$ | | | 0.94 | | | |
| $N$ | | | 20,048 | | | |
| No. of hotels | 2 | | 5 | | 7 | |
| Room capacity | 155 | | 710 | | 750 | |

**Table 5.** Percentage of hotels which stopped posting fares on booking at least one day before the check-in date, by event and year

| | Beer and Cider Festival | | Intermediate week | | Octoberfest | |
|---|---|---|---|---|---|---|
| Day week | 2017 (%) | 2016 (%) | 2017 (%) | 2016 (%) | 2017 (%) | 2016 (%) |
| Wednesday | 78.6 | 85.7 | 21.4 | 64.3 | 0.0 | 14.3 |
| Thursday | 14.3 | 21.4 | 0.0 | 0.0 | 7.1 | 0.0 |
| Friday | 64.3 | 7.1 | 21.4 | 7.1 | 7.1 | 14.3 |
| Saturday | 85.7 | 35.7 | 21.4 | 21.4 | 21.4 | 42.9 |
| Sunday | 7.1 | 7.1 | 14.3 | 7.1 | 21.4 | 0.0 |




**Note:** Queries for (a) Nottingham hotels; (b) Nottingham Beer Festival; (c) Nottingham Octoberfest

**Figure 2.**
Google Trends results

occupancy rate. Thus, *H2b* is also supported, at least as far as the 2017 Beer and Cider Festival is concerned.

*6.1 Theoretical implications*

The differing results in terms of hotels' performance between the two beer festivals thus contributes to the enhancement of the theoretical framework on the economic impact of events by bringing to the fore the need to consider the events' characteristics in terms of both:

(1) positioning (Getz and Page, 2016a); and

(2) organisational coordination (Sainaghi, 2006).

Indeed, despite the similarity of the two events in terms of "object" (two beer festivals), the performances in terms of new demand for the local economy were different. In the specific case, the Beer and Cider Festival has a consolidated history and therefore it can be assumed that it benefits from both a better event awareness and a well-defined brand image with respect to the Octoberfest. Thus, the former event could attract visitors from nearby areas, who needed to book overnight accommodation, whereas the latter event mostly catered to residents. The Google Trends' data further support this conclusion.

With regard to the theoretical contributions related to the role of the DMO, these results show that the coordinated management of promotional activities alone is not in itself sufficient to generate an increase in demand large enough to trigger the hotels' revenue management response (Beritelli *et al.*, 2014). Therefore, the well-established theoretical assumption that coordinated event management brings about better systemic effects for different categories of stakeholders (Prentice and Andersen, 2003), is not confirmed for the cases in question. This result, of course, does not in itself deny the validity of the assumption but requires an investigation into the reasons for such a result. In this regard, following the indications of Sainaghi (2006), it would be useful to obtain data on the primary and support

processes that the DMO put into place. Although such data are not available to us, an email interview with the management of one event indicated that "whilst Nottingham City Council have always been very supportive of the festival, their marketing input has usually been limited, apart from posters and tickets sales at their Tourism Centre". This implies that the organisational capabilities of each events' private stakeholder, together with a cautious management of human resources (Kloutiniotis and Mihail, 2020), may play a crucial role in complementing the DMO's narrowly defined contributions. In our case, the more successful Beer and Cider Festival can indeed enjoy the benefits of umbrella branding, as similar festivals are also held nation-wide under the coordination of CAMRA, the Campaign for Real Ale organisation (camra.org.uk), which represents nearly 200,000 pubs, breweries and other members in UK.

### *6.2 Managerial and practical implications*

Therefore, from a managerial and strategic perspective, the decision of the DMO to scale down its promotional efforts in 2017 appears to be well motivated. Indeed, in the presence of such a national coordinator as CAMRA, the promotional role of the local DMO is less paramount; this appears to be the case of all October events in Nottingham, most of which pull demand most exclusively from residents. Nonetheless, the DMO can offer support on other dimensions: for instance, the 2017 and subsequent editions of the Beer and Cider Festival all took place in a venue owned and managed by Nottingham City Council. The continuing involvement of the DMO also facilitates the systematic gathering of on-site data to monitor the performance across events and over time. The study complements this data gathering process by providing evidence pertaining to a specific group of stakeholders, the hotels in the city where the DMO operates. This may lead to other managerial initiatives, such as the adoption of such tools as the Balance Score Card which would allow to take into consideration the complexity of each phenomenon along different dimensions, including the coordination and involvement of the actors of a destination (Sainaghi, 2019).

On an analytical level, the study's findings suggest that to enhance our understanding of the impact of event tourism, the approach should combine both a multi-event and a multi-temporal approach. The former is called for by the uniqueness of each event even when the object appears to coincide; indeed, as we show that two beer festivals appear to have different impact on the local economy, it might be interesting to investigate whether a similar effect holds in the case of, for instance, music or gastronomical festivals. The latter emphasises that the impact may change over different event editions and needs to be compared against a control period when the local economy is operating under "business as usual" conditions.

### *6.3 Limitations and future research*

In terms of the study's limitations, we acknowledge that restricting the analysis to hotels may not fully capture the impact of events on the accommodation sector, as some visitors may have booked an apartment online. There are at least two reasons why this may not be a compelling problem here. Firstly, accommodation in an apartment has larger fixed costs (cleaning expenses and booking fees) that are offset by a longer visit duration, which does not seem to fit the profile of a typical beer festival goer, who is likely to patronise the event only on one day. Second, given the peculiarities of the urban design of English cities, most apartments are located outside of the city centre, thus making the choice of a hotel more convenient in terms of distance from the event. Relatedly, a second limitation relates to the relatively small number of hotels located in the city centre. Nottingham is a middle-sized British city, and in this sense, its hotel sector replicates characteristics shared among other

similar sized cities (e.g. Sheffield, Leeds, Bristol, Coventry and Newcastle). So, our experimental approach could prove to be usefully extended to other cities in future research.

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