

# The impact of hosting International Ice Hockey Federation (IIHF) World Championship on hotel market performance

## El impacto de celebrar el Campeonato Mundial de la Federación Internacional de Hockey sobre Hielo en el rendimiento del mercado hotelero

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### Abstract

The main purpose of this study is investigating the impact of hosting the IIHF World Championship on hotel market performance on the case of Prague. This study uses daily operations data of 512 Prague hotels within the period of hosting the 2015 IIHF World Championship. The key hotel performance indicators like occupancy rate, average daily rate (ADR) and revenue per available room (RevPAR) were used. The results show that the event brought an increase in room sales. Detailed data analysis shows different impact during group, and final stage.

**Keywords:** sports events, hotel performance evaluation, event tourism, hotel KPIS

### Resumen

El objetivo principal de este estudio es investigar el impacto de ser el anfitrión del Campeonato Mundial de la IIHF en el rendimiento del mercado hotelero en el caso de Praga. Este estudio utiliza datos de las operaciones diarias de 512 hoteles durante el período de celebración del Campeonato Mundial de Hockey sobre Hielo de 2015. Se utilizaron los indicadores clave de rendimiento del hotel como la ocupación, la tarifa media de alojamiento (ADR) y el cociente entre la producción en concepto de alojamiento dividido por el número de habitaciones disponibles (RevPAR). Los resultados muestran que el evento aumentó las ventas de habitaciones. El análisis detallado de los datos muestra un impacto diferente en la primera fase y en la fase final del torneo.

**Palabras clave:** eventos deportivos, evaluación del desempeño del hotel, turismo de eventos, KPIS hotel

## 1. Introduction

The effects of hosting international sport and cultural mega-events are commonly perceived from the destination perspective, with a primary focus on destination marketing and its performance (Wang and Xin 2019; Wan and Song 2019), destination infrastructure development or renovation (Flyvbjerg and Stewart 2013; Gold and Gold 2016) or demand seasonality management (Connell, Page and Meyer 2015; Hinch and Jackson 2010; Jang 2004). Demand seasonality, the temporal imbalance in tourism, can be described by using several metrics like the

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number of visitors, visitor expenditure, traffic, employment of expenditures on specific sites, hotels or other places (Butler 2001).

With a focus on event management and destination marketing, researchers utilise qualitative measures to describe individual aspects of the event impact. Dewar, Mayer and Li (2001) investigate the motivation of visitors of cultural events, Baum (1999) comes with the concept of seasonality extension on the markets with perishable products, Higham and Ritchie (2011) use rural festivals and events as catalysts of regional development. International events are creating an intercultural environment which can lead to cultural development or preservation (Müller and Petterson 2006), life quality improvement (Foley and Mcpherson 2007) or social impact evaluation and research (Kim et al. 2015).

Getz (2008) is proposing a more complex view on event tourism and its impact, not only on destination level. Hospitality can be perceived as one of the essential service providers within destinations, where the performance of hotels and other accommodation facilities can be highly influenced by the performance of the destination (Evans 2015). Events play a pivotal role in revenue generation and management in hotels during low seasons (Getz and Page 2016). The importance of events is caused by the main characteristics of the hospitality industry, high fixed cost and limited (rigid) capacity (Koenig-Lewis and Bischoff 2010), where keeping the capacity unused means lost business (Higham and Hinch 2002).

This study focuses on the hotel performance change in Prague during hosting the International Ice Hockey Federation (IIHF) World Championship in 2015 in comparison to previous and upcoming years (2014 and 2016). The uniqueness of this study lay within the use of daily performance data of Prague hotels during the event and focus on Ice Hockey, where more studies were carried out with a focus on football or Olympic games.

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## 2. Literature review

The identification of the legacy of a hallmark of mega-events is connected with a precise specification of these events. According to Müller (2015), these events attract a large number of visitors, are fixed within the time, and are connected to substantial costs with the impact on the environment and population. These hallmark events were commonly connected with long-run effects (positive and negative) (Preuss 2019). To investigate the long-run effects, several meta-search studies we carried out (Koenigstorfer et al. 2019). Thomson et al. (2019) investigate 305 peer-reviewed articles to identify 12 legacies and nine different focus areas. Gaudette et al. (2017) describe mainly urban-related effects (planning and post-event outcomes) and tourism-related effects (venue development, location attractiveness). Weeds et al. (2015) and Li and Jago (2013) are focusing on a broader range of effects, trying to capture society-wide benefits and detriments. Other researchers tried to capture the positive effects in empirical studies. Mahtani et al. (2013) shows no positive effect on physical activity or sport participation in population when (and after) hosting the mega sports event, McCartney et al. (2010) shows the fractional effect on health and socioeconomic determinants, Kasimati et al. (2003) shows ex-ante and ex-post assessments results with mixed positive and negative impacts and Weeds et al. (2009) describes inadequate evidence of positive impacts (only minor increase in leveraging processes like volunteering).

When focusing strictly on hospitality, hosting international events can lead to an increase in general hotel key performance indicators (KPIs) (while considering both, positive and negative, long and short-run effect) like occupancy average rate (ADR) or revenue per available room (RevPAR). Vives, Jacob and Pyeres (2018) described the importance of events through market segmentation and revenue management, where events can be used to stimulate the demand and increase hotel efficiency. As mentioned previously by Getz and Page (2016) hoteliers can use events to manage the seasonality of demand directly within their hotel, or support local destination management organisation (DMO) to help attract event organisers to host their events within the selected destination.

The seasonality of demand is one of the determinants of hotel price variation, where low demand is commonly connected to low selling rates and high demand to high selling rates (Aquiló, Alegre and Riera 2001; Narangajavana, Garrigos-Simon and Sanchez 2014; Coenders, Espinet and Saez 2003). Pricing and revenue management, in general, are primary areas of interest in current hospitality research (Abrate, Nicolau and Viglia 2019; Vives, Jacob and Pyeres 2018). Events are perceived as demand drivers and the use of revenue management techniques can lead to efficiency increase. The following studies show the impact of destination-wide events on hotel performance.

Pavlov (2016) shows that EURO 2012, hosted by Poland, brought the high possibility to local hoteliers to increase their rates. During the tournament, the average daily rate has grown close to 200 % with keeping occupancy level of 75 %. As the study focused not only on hotel performance, it is highly unusual to mention, that nearly 87 % of small and medium-sized companies took no action to improve their business and fit better the needs of tournament participants. Contrary to Pavlov (2016), Lamla, Straub and Girsberger (2014) examine the impact of EURO 2008 held in Switzerland on local business through the survey on the whole market level. Nearly half (47 %) of the respondents (hoteliers) stated no effect of the tournament on sales and total performance. Examining data deeply, researchers found that the average growth of sales was 2,5 % mainly driven by city hotels. Another part of the study focused on the long-term effect of the tournament where hoteliers confirmed the negative outlook for market development due to EURO 2008. The same facts are being declared by other others (Matheson 2009; Spilling 1996).

The positive output of football tournaments can be perceived not only from the scope of hosting country (city) but as well from the participant's point of view. Nicolau (2012) tries to declare the positive impact of winning the FIFA World Cup. In 2010, when Spain won the tournament and based on the data presented in the study, it boosted Spain's tourism with an increase in arrivals. The lack of evidence to prove this direct impact led Vieira (2012) to more rational expectations based on neoclassical finance approach. In a further study, Nicolau and Sharma (2018) tried to generalise the impact of the FIFA World Cup. No significant effect was an observer except for 2010. As the 2010 FIFA World Cup was held in the Republic of South Africa, one of the developing countries of BRICS (Brasil, India, China and South Africa), the research was also focused on the impact of the tournament on the tourism and its infrastructure. Peeters, Matheson and Szymanski (2014) concluded that the tournament brought nearly 220,000 new tourists from non-SADC (South African Developing Countries) during the event and 300,000 during the whole year. Authors also found out that the average costs per incoming tourist were 13,000 USD; thus, the development of tourism through hosting hallmark sport event can be risky and highly costly.

In the study of Kim, Gursoy and Lee (2006) direct social impact has been carried out. Researchers identified seven social factors and tried to quantify them using a survey of 371 pre-event (FIFA World Cup 2012 in South Korea) and 448 post-event inhabitants in areas, where the World Cup took place. Results shows, based on F-testing, positive opinion shift in benefits of cultural exchange, economic benefits, natural resources and cultural development. On the other hand, price increase, traffic congestions and pollution, social problems, construction costs were reevaluated negatively.

In previously mentioned studies, mainly the overall impact of the hallmark sport event was identified. Only Pavlov (2016) shows a direct impact on the lodging industry in short terms (as these events were held in developing countries with free accommodation capacity). Lack of a positive impact on local businesses was confirmed in other studies (Coates and Humphreys, 2008).

Depken and Stephenson (2018) examined the impact of NFL (National Football League) and NBA (National Basketball Association) games and college basketball tournaments on occupancy and revenue in Charlotte (USA). During the game, revenue in city center hotels increased. In the suburbs, the decrease in occupancy and revenue was identified. Lavoie and Rodríguez (2005) analysed NFL, NBA and MLB games from 1990 to 1999 found the

negative impact of the absence of these games (due to the relocation of the team, leagues expansion or reduction) on hotel performance. Dermody, Taylor and Lomanno (2003) analysed occupancy rates, average daily rates and revenue per available room changes for NFL home games where the significant positive effect was observed only in few cities.

Previously mentioned FIFA World Cup and EURO are mobile sports events (its location is based on election). Rishe (2014) examines the impact of Super Bowls on hosting city hotels performance. Key findings show that there is no room for generalisation (as stated by Nicolau and Sharma (2018)) of high positive results, where 2012 Super Bowl in Indianapolis brought 250% increase in hotel occupancy contrary to 2010 and 2014 Super Bowls in Miami and New York City where the increase was only 19 %.

Previously mentioned studies discussed the positive and negative effect of sports events (hallmark events like FIFA Worlds Cups, Olympic Games, UEFA EUROs, and smaller sports events like Super Bowl or home games of NFL or NBA) with no possibility of generalisation of high positive effect on the local hospitality market.

### 3. Methodology

Used data are provided by STR Share Center, which is an Academic-oriented and Research-focused part of STR (Smith Travel Research), global benchmarking company. The same approach of using STR data on different levels of granularity is being used by several researchers like Enz et al. (2009), Makki et al. (2016), Pan and Yang (2017) or Viglia et al. (2016). Some of them used these data to measure the effect of cultural events (Litvin and Fetter 2006; Sainaghi et al. 2018) or economic crisis and terrorist attacks (Kosová and Enz, 2012).

To understand the data correctly, several notes should be mentioned, including general Data Reporting Guidelines. Participation in STR is paid service providing market data to participating hotels. In Prague, the participation ratio is 35 % with minor monthly/yearly differences. Hoteliers are reporting several indicators daily.

- Rooms Revenue (only quest rooms generated revenue adjusted for fees, taxes, commissions, refunds, gratuities and other departments revenues).
- Additional Rooms Revenue Allocation (revenue generated by quests, excluding revenue for accommodation).
- Rooms Sold (adjusted for no-shows, complimentary rooms and owner-occupied rooms).
- Rooms Available (adjusted for reconstructions, renovations, and other room not sufficient for sale).
- Segmentation (performance of Transient, Group and Contract segments).

This article considers three main operating measures derived from submitted data: occupancy rate, average daily rate and revenue per available room. These KPIs are widely used in hospitality and previous researches of Pan (2017), Oses et al. (2016), Sainaghi et al. (2019). The quotation is listed below and used within to study to understand the market performance and possible comparison in time.

- Occupancy Rate (in %),

$$\text{Occupancy rate} = \frac{\text{Rooms Sold}}{\text{Rooms Available}} * 100$$

- ADR (Average Daily Rate),

$$\text{ADR} = \frac{\text{Rooms Revenue}}{\text{Rooms Sold}}$$

- RevPAR (Revenue per Available Room).

$$\text{RevPAR} = \frac{\text{Rooms Revenue}}{\text{Rooms Available}}$$

The use of listed KPIs is similar to previous studies, where Rishe (2014) uses a comparison of the observed period with previous and upcoming years daily. The approach was used by Sainaghi et al. (2019), Lavoie & Rodríguez (2005), Depken and Stephenson (2018) or Dermody, Taylor and Lomanno (2003). Allmers and Meaning (2009) are using monthly data comparison which does not consider the isolation of other factors affecting hotel market performance.

## 4. Results

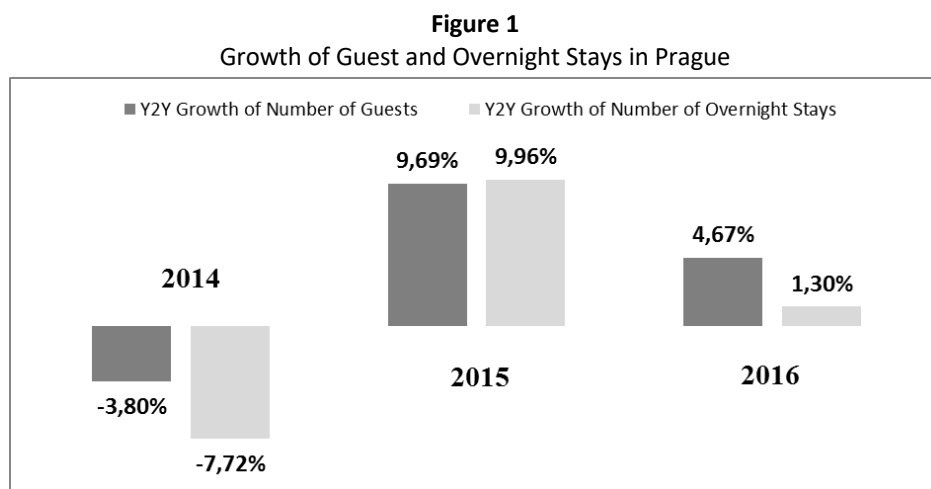
Based on the previously mentioned studies and their results following hypothesis were identified and later tested.

H1: IIHF World Championship 2015 had no immediate effect on Prague hotel performance.

H2: IIHF World Championship 2015 had no long-run effect on Prague hotel performance.

To identify the effect of IIHF World Championship 2015 on hotel performance, unique daily benchmarking data from STR (Smith Travel Research) were used accompanied by data of the Czech Statistical Office. The whole tournament was held in Prague and Ostrava (the group stage) from 1st May to 17th May. In the play-off stage, all matches were played only in Prague (O2 Arena). In total, the whole tournament attracted 741 690 visitors (11 589 average on the match) which is still the highest attendance in history. Tickets were sold in two waves with price ranging from 190 CZK (approximately 7,52 EUR) to 8990 CZK (approximately 355, 93 EUR).

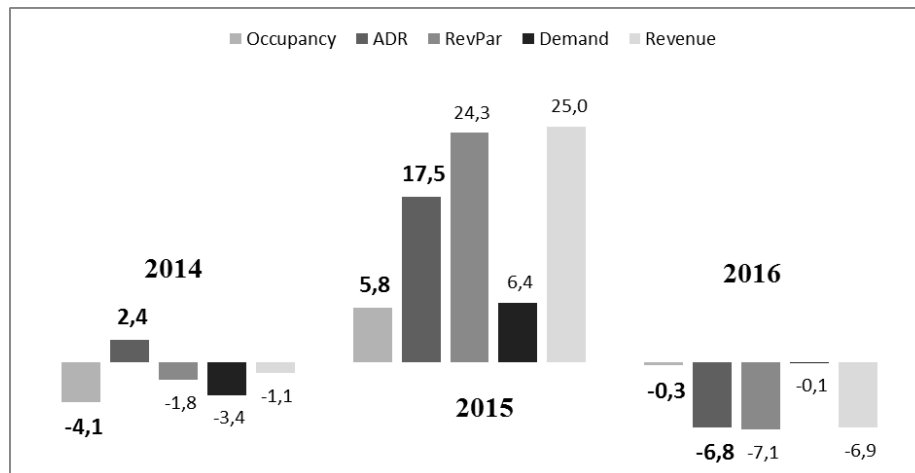
Figure 1 shows the year-to-year change in the total number of guests and overnight stays in Prague during May (2014-2016). Several factors influenced significant growth in 2015. The year-to-year decrease in 2014, IHM Championship or several international events.



Source: Own elaboration of authors

Presented data are focusing only on the total performance of Prague, as a tourist destination. More details are presented in Figure 2, which focuses on selected hospitality industry KPIs and their year-to-year changes. In terms of total efficiency, 25 % growth of total revenue shows significant increase dragged mainly by growing room rates (ADR growth of 17, 5 %). Figure 2 shows as well a minor decrease in 2016.

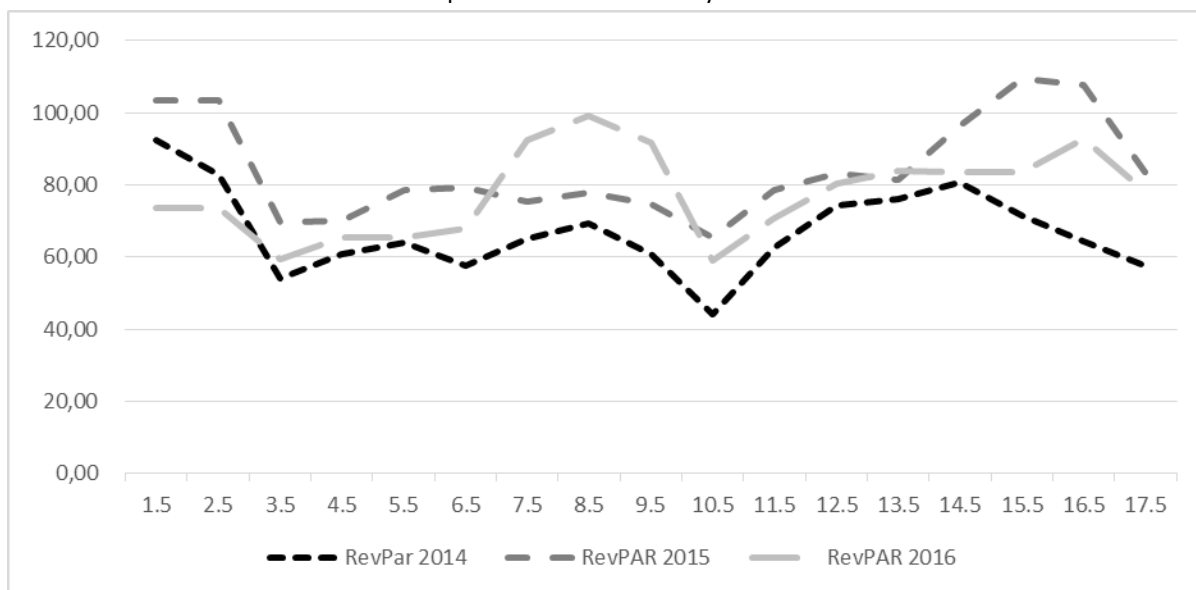
**Figure 2**  
Evolution of selected hotel KPIs in 2014 - 2016



Source: Own elaboration of authors

For better comparison and difference identification, RevPAR was used to show the efficiency of the hospitality industry as an indicator consisting of occupancy rate and ADR. Detailed data were used to identify that the primary growth of RevPAR was supported by the significant growth of ADR (Average Daily Rate). They exclude other factors like events in the second part of May, as May is perceived as an essential month for MICE (Meetings, Incentives, Conventions and Exhibitions) tourism in Prague, the only period of IIHF Championship was used. Figure 3 shows three years comparison of RevPAR. For 2015, an only significant difference can be identified during the final stage of the tournament.

**Figure 3**  
Development of RevPAR in May 2014-2016



Source: Own elaboration of authors

To support the results, T-Test was used, and the null hypothesis was tested. The pairs were identified (2014-2015 and 2015-2016) to test not only immediate effect of the Championship but as well long terms effect. Table 1 shows the basic descriptive statistics of identified pairs where the mean difference in pair 1 is significant (-17,6661).

**Table 1**  
T-Test pair statistics

Pair	Mean	N	Std. Deviation	Std. Error Mean
RevPAR2014	66,9381	17	11,79328	2,86029
RevPAR2015	84,6042	17	13,98766	3,39250
RevPAR2015	84,6042	17	13,98766	3,39250
RevPAR2016	77,6807	17	12,18172	2,95450

Source: Own elaboration of authors

Table 2 shows the results of paired T-Test. With the focus of the significant results and the used significance level of 5% (0, 05) we reject the null hypothesis that there is no statistically significant effect of the IHM World Championship on hospitality industry performance.

**Table 2**  
Paired T-Test results

Pair	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
RevPAR2014 - RevPAR2015	17,66611	10,33800	2,50733	-7,046	16	0,000
RevPAR2015 - RevPAR2016	6,92351	14,99047	3,63572	1,904	16	0,075

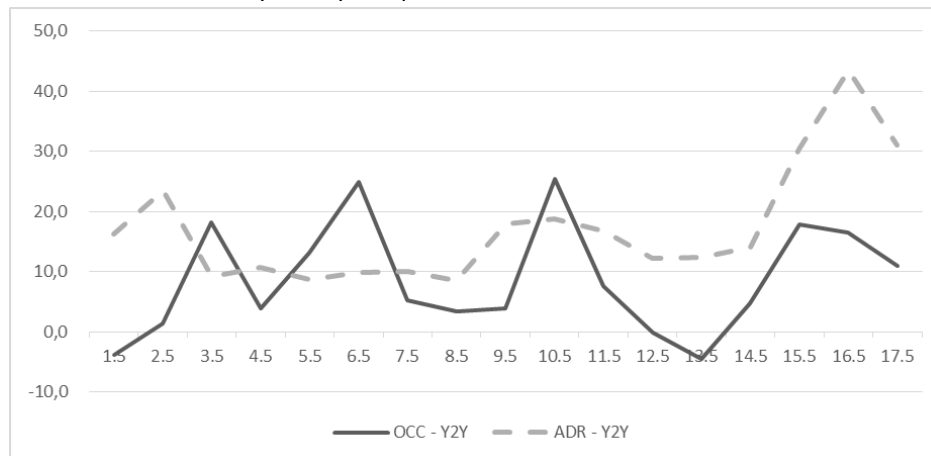
Source: Own elaboration of author

Another test was concluded after excluding the final stage of the tournament where no statistically significant effect was identified. To test as well ex-post effect, RevPAR for 2015 and 2016 were compared resulting no statistically significant difference over the years (excluding event during May 2016 adjusted dated from 7th to 9th May) as well no statistically significant difference of RevPAR in 2014 and 2016.

## 5. Conclusion

Contrary to previously mentioned studies of Lamla, Straub & Girsberger (2014), Matheson (2009) and Spilling (1996) this study shows immediate effect of hosting IIHF World Championship on the local hospitality market. Based on the data and T-Test results presented in the previous section, we can state that there is statistically significant difference (increase) in Prague hospitality industry performance caused by IIHF Championship 2015, mainly by the final stage of the tournament. The whole tournament brought more than 740 000 new visitors to hosting cities of Prague and Ostrava. Figure 3 described the comparison of RevPAR from 2014 to 2015 with a focus on the period of the IIHF Championship. As RevPAR is reflecting occupancy and rates, is it essential to identify the main factor for this significant increase.

**Figure 4**  
Day-to-day comparison of RevPAR 2014-2015



Source: Ownelaboration of authors¶

Figure 4 shows the day-to-day comparison of occupancy rate and ADR for a period of the IIHF Championship. The growth of the performance of the hospitality industry in Prague is mainly caused by growing selling rates which caused as well the decrease in occupancy on the 13th of May. The development of occupancy changes is profoundly affected by two main factors. For 3rd and 10th of May, the Sunday, Prague hospitality show of the lowest performance in comparison to other days of the week. For 6th of May, the steep increase was caused mainly by Sweden – Canada (the winner of IIHF Championship 2015) match attractivity and connected matches on Thursday and Friday. These factors boosted hotel occupancy while keeping the nearly the same growth level for the first part of the tournament.

Preliminary and final stages were analysed separately. For preliminary stage, there was no significant difference identified in Prague hospitality industry performance, average occupancy rate increased from 76, 3 % to 81, 1 % and average ADR from 86, 84 EUR to 98, 43 EUR (by 13, 3%) in comparison to final stage where the average occupancy rate grown from 80, 8 % to 90, 7 % and average ADR from 84, 47 EUR to 109, 33 EUR.

The presented study declares the direct impact of IIHF Championship hosting on Prague hospitality industry performance but not providing enough data to support the general hypothesis that hallmark sports events are having a direct impact on hospitality industry performance. Using STR and Czech Statistical Office data, several factors affecting study reliability were identified. For STR data, only approximately 35 % of hotels in Prague are sharing their operations data (as mentioned in the Methodology section). These data are not directly extracted from hotel management systems but reported manually by hotel employees, where there is still room for data manipulation and bias. The same problem can be identified as well for data of the Czech Statistical Office. To increase the confidentiality level of input data, data should be received directly from hotel operators on a larger scale.

To increase external validity, more destinations (hosting cities) should be included, and more factors should be considered (hosting the tournament in low and high season can have a different impact on the hotel industry). Compared to study of Pavlov (2016), Matheson (2009), Spilling, (1996), Nicolau (2012) or Kim, Gursoy& Lee (2006), this study focuses on lower scale event (based on the total and average number of match visitors) where the effect may not be directly identified.

Further studies should focus on the more comprehensive view on the IIHF World Championships impact on hotel industry performance by considering more event venues and their performance a-priori and ex-post event.



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