

Article

# Impact of Geographic Distribution of COVID-19 Cases on Hotels' Performances: Case of Polish Cities

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**Abstract:** The main goal of the article is to describe the short-term impacts of reported new cases and deaths of the COVID-19 disease on hotels' performances in the nine major Polish urban hotel markets: Kraków, Warszawa, Poznań, Wrocław, Gdańsk, Lublin, Łódź, Katowice, and Sopot. Time range of the analysis covers the period from January 5, 2020 (the beginning of the very first week when the COVID-19 cases were evidenced) to March 14, 2020 (the initial phase of lockdown was introduced by the Polish government). Various geographical contexts of the COVID-19 impacts are considered: national, European, and global. Generalized method of moments was applied to investigate the influence of reported COVID-19 cases (deaths) on both occupancy and revenue per available room. The results show that the most significant, negative impact of the pandemic on hotel performances is confirmed at the European level of the COVID-19 outbreak. Moreover, the negative influence of national cases of COVID-19 is more significant in less internationalized (or less-populated) urban destinations. Thus, the hotel industry (especially in the most internationalized, biggest Polish cities) might be recovered only when issues of the COVID-19 epidemic will be solved at the European level.

**Keywords:** COVID-19; hotel; occupancy; RevPAR; city; Poland

## 1. Introduction

The COVID-19 epidemic started in China in January 2020 and, in next two months, spread to other countries all over the world. This started a major global crisis affecting various human activities, including travel and tourism [1]. The outbreak of COVID-19 poses a major public health challenge for years. Due to the rapid increase of infections and deaths, in many regions all over the world, a state of emergency has been declared [2–4]. As Di Gennaro et al. [5], Haushofer and Metcalf [6], Amodio et al. [7], and McKibbin and Fernando [8] emphasized, the COVID-19 outbreak affects mostly aspects such as health, social or economic, especially in the most affected regions like China, Europe, or the U.S. The medical and psychological aspects of the COVID-19 cases [9], worldwide spread of the pandemic [4,5,10], or the impact of the COVID-19 pandemic on public health or quality of life [11–13] have been already widely investigated. Moreover, the influences of the COVID-19 cases' distributions on travel restrictions [14–17] or education on different levels [18,19] have been discussed in scientific literature as well.

Each crisis that might reduce the COVID-19 outbreak has already significantly changed the tourism industry through mass trip cancellations, suspension of national and international flights, or events postponing [20–22]. These changes affect hotels, which performance is the main focus of this paper: a decreased tourism demand results in decreased occupancy and revenues in the hotel

industry and, in consequence, the reduction of employment and deterioration of living conditions of local communities [23]. Changing conditions cause a revision of the booking cancellation policy at global hotel chains, which evolve from very restrictive to nonrestrictive. The booking window also becomes shorter in most market segments, even for leisure travelers with specific long booking windows currently looking for flexibility [24]. The hotel industry has been widely acknowledged as an important element of the world tourism economy. It plays a contributing role as an employer as well [25].

The ambition of the authors is to understand the geographical relations between the pandemic and hotel performances. Fulfilling this research niche is expected to be useful for policy-makers, practitioners, and researchers to understand and forecast possible COVID-19 implications. The main goal of the paper is to identify the short-term impacts of reported new cases (deaths) of the COVID-19 disease on hotels' performances in the major Polish urban hotel market. The generalized method of moments (GMM) is applied, while the aim is related to spatiotemporal data. Various levels of geographical contexts are considered: national, European, and global. The mentioned influence is investigated in the period between the first globally reported cases and introducing the first phase of lockdown related to COVID-19 in Poland. Hotel performances refer to the two most popular, traditional, operational indicators: occupancy and revenue per available room [26,27].

As Matczak [28] noticed, the hotel market in Poland has been developing dynamically since 1989, when processes of economic transition started—first, in Poland and, then, in other Central and Eastern European countries. After 1989, many private investors entered the Polish market, both foreign and domestic companies. The accession of Poland to the European Union and its market in 2004 boosted the growth of the hotel industry. The increase in the number and capacity of hotels in Poland was accompanied by structural changes covering their category. Mostly an increase was noted in the upscale segment, but midscale hotels continued to dominate in the hotel structure, at the country level, and, in particular, investigated urban markets as well. The tendency was barely different in those of major urban markets, which were monopolized by demand generated by MICE (meetings, incentives, conferences, and exhibitions) tourism. The share of upscale, large size hotels became slightly higher, mainly in Warszawa and Poznań [29]. The increase in the number and capacity of hotels between 1995–2015 revealed relatively large regional differences in Poland. The number and capacity of hotels in regions attractive for tourists, but so-far less equipped with a hotel base, grew relatively faster. After 1989, economic growth has favored the growth of the hotel infrastructure at a similar level as tourist attractions [28].

This research is focused on the major urban hotel markets in Poland. According to the data of Statistics Poland, there were 2635 hotels in Poland offering 141,383 rooms before the COVID-19 outbreak. Seventy-four point one percent of the enterprises (80.6% of hotel rooms) operated in urban markets. Nine major urban hotel markets were considered in this research: Kraków, Warszawa, Poznań, Wrocław, Gdańsk, Lublin, Łódź, Katowice, and Sopot. MICE tourism is the main target of the hotel industry in the cities like Warszawa, Poznań, or Łódź. Cities like Gdańsk, Sopot, Katowice, or Kraków benefit from the proximity of areas attractive to mass forms of leisure tourism, while taking advantage of the opportunities to develop typical forms of urban travels. The reduced impact of seasonality on hotel performances is evidenced. Poznań and Wrocław represent the cities characterized by very high intensities of competition in the hotel sector. Finally, Lublin is recognized as a peripheral, low-cost urban market, where any deficiencies are compensated by lower room rates [30]. According to Statistics Poland, in all nine mentioned cities, there were 541 hotel entities (48,592 hotel rooms) before the COVID-19 outbreak. On the other hand, the hotel sample evidenced by the STR SHARE Center (This is the name of the company and its program. See: <https://str.com/training/academic-resources/share-center>) included 581 entities (52,445 hotel rooms). However, hotel enterprises reporting for the STR SHARE Center (main data source) were considered in this enquiry only.

This paper is organized as follows. First, the literature review is presented, and the hypotheses are stated. Second, the methods used in the empirical research and the sources of collected data are

presented. Next, the results are described in detail. Finally, the conclusions are presented and followed by a discussion focused on the managerial implications mainly.

## 2. Literature Review and Hypotheses

### 2.1. General Effects of the COVID-19 Pandemic on Tourism and Travel

The COVID-19 outbreak is often compared by analogy with the SARS epidemic between 2002 and 2003 [31]; however, it is already known that the scale of the problem is much more serious and will affect many more regions and industries. As Cooper [32] noticed, the tourism industry is not well-prepared for disaster situations even in high-risk areas. After the SARS outbreak, tourists tried to avoid the destinations labeled as infected areas. This was due to two reasons: (1) governments imposed obstacles to those traveling to the regions in question or (2) tourists themselves begin to avoid those sites. Cooper [32] revealed, based on a Japanese case after the SARS outbreak, that the recovery of overall traveler numbers in those infected areas is generally quite rapid in cases when threats are reduced. Lloyd-Jones [33] confirmed that, after the SARS outbreak in 2003, the Canadian lodging market was able to recover the lost ground within a year [33], mainly because of the promotion and marketing using the message that Canada is safe for tourists [34]. However, the real impact of the COVID-19 outbreak on tourism will depend mainly on the duration of travel restrictions in different regions [33].

Many economic forecasts show that the GDP of many countries will retard, perhaps very significantly in the near future [8,20,35]. Smeral [36] confirmed that consumer behavior and tourism demand are symmetrical; a fall in the incomes of consumers will result in similar or deeper falls in the consumption of tourist services, identified as higher-order services and characterized by a relatively higher income elasticity of demand [37]. Moreover, the recovery of tourism markets lasts usually longer compared to the period of demand decrease [36,38]. Following a GDP slowdown, the forecast of the Organisation for Economic Cooperation and Development (OECD) decline is between 45–70% in the international tourism arrivals for 2020, taking into consideration two scenarios based on the duration of the pandemic. The first scenario is with the assumption for a July recovery (−45%) and second scenario with the assumption for a September recovery (−70%) (OECD, 2020). Due to a downturn, it is expected until 2025 a change in global city rankings in international visitor arrivals, with a negative trend for destinations like Rome or Barcelona, while some cities will move up in the rankings, e.g., Kuala Lumpur and Singapore. It is estimated that global recovery will take relatively more time for international visitor arrivals, while domestics should be recovered much earlier [39]. Any actions undertaken to recover the tourism industry after the crisis must concentrate not only on tourism promotion and marketing but, also, on fiscal and monetary policies enabling tourism enterprises to increase their liquidity and, in consequence, to sustain operations [38,40].

### 2.2. Consequences of the COVID-19 Pandemic for the Hotel Industry

Wang and Ritchie [41] argued that the hotel industry particularly demands effective crisis management, as the sector is one of the most sensitive to the crises like terrorists attacks, SARS epidemic, bird flu, and global financial crisis of the years 2008–2009 investigated by the mentioned authors or the COVID-19 pandemic considered in this paper. The mentioned events not only decreased the hotel revenues but increased the perceived risk of investments in the hotel industry as well [42]. The hotel industry was often significantly affected by different crisis events, but it usually started to recover relatively quickly, within a few months [43]. The nature of the terrorist attacks causes rapid changes of the hotel industry, e.g., results in reducing hotels' occupancy. However, the time needed for returning to the enterprise standard turnover is relatively short. The impact of epidemics or financial crises took longer. Therefore, the hotels' performance indicators dropped much slower [43]. Chen [42] revealed that the poor performances of hotels after the crisis was caused not only by the events but also by the increase of the discount rates.

Each hotel may experience the negative consequences of COVID-19 in a different way; therefore, the strategy to cope with the difficulties depends on how the hotel is affected by the crisis [44,45]. The impact depends mainly on the size and category of the hotel. Moreover, small, family-run enterprises characterized by a lack of professional knowledge usually fail to foresee the crisis and its impact on the hotel [46]. Hoteliers focused on high quality and a brand image can handle the crisis much easier [47]. Interestingly, hotels operating in destinations providing a relatively cheap holiday option for domestic visitors are relatively less affected by the crisis than entities located in other destinations [48]. Leung and Lam [49] noticed that the hotel industry is not equipped with tools to deal with the crisis; therefore, managers play a key role. They are responsible for strategy, new procedures and guidelines for staff or communication [49], and for stimulating creativity and innovation, looking for new ideas of promotion [50]. Interestingly, the crisis might reveal a turning point for hotel enterprises looking for new competitive advantages [41,51].

Dzhandzhugazova et al. [52], Erulin [53], Kimes and Anderson [54], Lund [55], and Ritchie [56] emphasized that the hotel industry under the crisis should improve effectiveness by (a) communicating, understanding, and collaborating with key internal and external stakeholders; (b) restructuring or reducing overall costs, including canceling or renegotiating agreements with vendors and suppliers—special attention should be given to online travel agencies recognized as the most powerful element of a tourism supply chain [57]; (c) developing new revenue sources and new market segments; (d) the integration of all departments; (e) restructuring all departmental schedules according to new tasks related to the crisis; (f) supporting the staff to challenge the crisis' reality; (g) applying a more flexible cancellation policy; (h) adapting procedures, standards, and facilities to operate under the crisis effectively; and finally, (i) reconsidering operational and financial data collection, analysis, and forecasting to deal with the crisis—usually abandoned by hotel enterprises [46]. Moreover, Kim et al. [58], who discussed the impact of the SARS outbreak on the hotel industry, noticed that the best way to survive the crisis was the implementation of prevention plans that were made earlier by the management. Proactive management strategies are requested [59]. The employees need special procedures, education programs concerning health awareness, and new hygiene equipment that are in use in times after the COVID-19 outbreak [58]. This results from the fact that the hotel industry (as well as all other sectors related to mass traveling) is significantly influenced by implementing social distancing as the suggested response to epidemics [60]. Karakas and Tatar [61] argued that, nowadays, changes in the hotel industry occur very quickly because of globalization, technological development, or increasing competition; therefore, hotel managers need to adapt their business plans regularly.

Dolnicar and Zare [62] emphasized that, in some countries, the coronavirus outbreak has caused a temporary new niche market for peer-to-peer accommodation, and some Airbnb properties are available for the self-isolation of residents who returned to their countries. According to Henry and Nazier [63], many similar initiatives are observed in the hotel industry around the world; both hotel operators and hotel technology providers are involved in or are building an ecommerce platform or connecting properties directly, offering healthcare services, e.g., beds or laundry services for medical workers and hospitals. These initiatives help to offer free rooms but, sometimes, help hotels cover fixed costs. The U.S. hotel market, with initiatives such as "Hospitalityhelps" (Cloudbeds) and "Hospitality for Hope" (American Hotel & Lodging Association), appears to be a leader. However, Intercontinental Hotel Group in the UK and Accor in France and, finally, Apalleo as a technology supplier in Germany from their operation under the name "Hotelheroes" confirms that European efforts are also valuable. The major domestic hotel operator in Poland, state-owned Polski Holding Hotelowy (English, Polish Hotel Holding) (PHH) plays a contributing role as a pioneer in the Polish market, with their earliest initiative to support medical workers and hospitals by offering complimentary meals and accommodations. Amongst all properties operated by PHH, some are targeted as quarantine centers. PHH activity reaches, during the early stage, Warszawa, Krakow, Szczecin, Poznań, Rzeszów, Łódź, and Katowice, with the further opportunity to extend help and cover the domestic market. Finally, by creating the foundation "Hotele dla Medyków" (English, Hotels for Medics) PHH covers all regions in

Poland, offering at least a few-hundred-rooms inventory to struggle with the pandemic [64]. Positive consequences of the crisis like mentioned above are usually lower and not much valued compared to negative ones [59].

### *2.3. Geographic Context of the COVID-19 Impact on the Hotel Industry*

Tobler's first law of geography says that all elements within a geographical space are related to each other, but near things are more related than distant ones [65,66]. This rule was tested in the tourism context by McKercher et al. [67], who examined the impact of distance on international tourism movements. The results showed that 80% of international travel occurs to countries within one-thousand km of the source market. What is more, the distant destinations are significantly challenged to attract tourists. Thus, based on the above arguments, it is hypothesized that the closer to the hotel market COVID-19 new cases or deaths reported are, the more significant and the more negative impact of the disease on the dynamics of investigated hotel performance indicators occurs (H1). Thus, reported new cases (or deaths) in Poland are expected to be more influential and more statistically significant predictors of hotel performances than reported new cases (or deaths) in Europe, and these should be more influential and more statistically significant predictors compared to the variables describing the global context of COVID-19. Moreover, cities are recognized as the main markets attracting international tourism exchange, e.g., by their economic potential, developed infrastructure, international significance, or size [68]. What is more, international urban tourism destinations are confirmed as particularly sensitive to the global situation [48]. Thus, it is hypothesized that the mentioned impact of the COVID-19 outbreak on hotel performances might be higher in hotel urban markets characterized by larger supply sizes (H2a), in markets with higher internationalization indices (H2b), and in more populated destinations (H2c).

## **3. Methods and Data Sources**

### *3.1. Research Design*

In this quantitative research, the main focus is on a sample of 225 hotels operating in nine major biggest urban hotel markets in Poland and reporting for the STR SHARE Center. The reason for using this data source refers to the fact that Statistics Poland does not collect any information about investigated hotel performance indicators. It must be underlined that the sample of hotels evidenced by Statistics Poland and the sample of enterprises reporting for the STR SHARE Center might be different. The sample of hotels investigated by Statistics Poland included only entities officially categorized as hotels by authorized regional authorities. Detailed data is collected once a year in July. Sample evidenced by the STR SHARE Center might include other hotel entities. On the other hand, not every hotel officially categorized by the mentioned regional authorities reports for the STR SHARE Center. Differences between samples are presented in Table 1.

### *3.2. Data Collection*

All data describing both dependent and independent variables were received from three sources: the STR SHARE Center, Statistics Poland, and EU agency European Centre for Disease Prevention and Control. All indicators of hotel performances related to supply, demand, and revenue were enabled by the STR SHARE Center. The Statistics Poland database was used to collect the data on populations of investigated cities and annual shares of international tourist nights. The last available data that were considered: 2019 for populations and 2018 for shares of international tourist nights. Finally, the European Centre for Disease Prevention and Control was used as a source of daily data on new cases and deaths of the COVID-19 disease in investigated geographical contexts: Polish, European, and global. In Table 2, descriptive statistics of investigated independent and dependent variables are presented: year-to-year dynamics of daily occupancy and revenue per available room (RevPAR); daily reported new cases and deaths of the COVID-19 disease in Poland, Europe (excluding Poland), and

the world (excluding Europe); number of hotel rooms offered in a city; shares of international tourist nights in a city; and city population.

**Table 1.** Sample of hotels operating in nine major hotel urban markets in Poland.

City	STR SHARE Center (January 2020)		Statistics Poland (July 2019)	
	Hotels	Hotel Rooms	Hotels	Hotel Rooms
Total	225	34,355	541	48,592
Midscale Class (%)	50.7%	45.2%	46.8%	35.2%
Upscale and Luxury Class (%)	37.3%	44.9%	33.1%	47.5%
Kraków	41	5,812	167	11,932
Midscale Class (%)	43.9%	46.1%	48.5%	35.5%
Upscale and Luxury Class (%)	48.8%	46.7%	37.1%	46.4%
Warszawa	60	13,510	98	14,775
Midscale Class (%)	50.0%	43.2%	37.8%	29.2%
Upscale and Luxury Class (%)	40.0%	48.5%	33.7%	54.9%
Poznań	19	2,572	59	3,903
Midscale Class (%)	63.2%	55.5%	54.2%	44.4%
Upscale and Luxury Class (%)	36.8%	44.5%	30.5%	42.8%
Wrocław	35	3,872	58	5,126
Midscale Class (%)	45.7%	40.6%	46.6%	37.7%
Upscale and Luxury Class (%)	40.0%	46.3%	34.5%	43.7%
Gdańsk	26	3,674	56	4,615
Midscale Class (%)	57.7%	53.6%	50.0%	44.7%
Upscale and Luxury Class (%)	30.8%	38.6%	32.1%	42.9%
Lublin	11	1,744	33	1,764
Midscale Class (%)	81.8%	81.9%	60.6%	62.2%
Upscale and Luxury Class (%)	9.1%	1.6%	18.2%	19.0%
Łódź	14	1,854	31	2,919
Midscale Class (%)	35.7%	34.8%	45.2%	33.4%
Upscale and Luxury Class (%)	21.4%	34.5%	22.6%	38.4%
Katowice	9	1,334	20	2,295
Midscale Class (%)	44.4%	37.0%	25.0%	15.1%
Upscale and Luxury Class (%)	22.2%	33.8%	40.0%	55.9%
Sopot	10	924	19	1,263
Midscale Class (%)	50.0%	25.3%	47.4%	31.5%
Upscale and Luxury Class (%)	50.0%	74.7%	36.8%	61.4%

Source: own elaboration based on data collected from the STR SHARE Center and Statistics Poland. **STR SHARE Center** is the name of the company and its program See: <https://str.com/training/academic-resources/share-center>.

**Table 2.** Descriptive statistics of investigated variables for nine major hotel urban markets in Poland between January 5, and March 14, 2020.

Variable	Abbreviation	Average	Standard Deviation	Minimum	Maximum
Year-to-year Dynamics of Occupancy (daily, 100% equals corresponding day in 2019)	Occ <sub>2020/2019</sub>	95.24	28.45	13.28	308.26
Year-to-year Dynamics of Revenue Per Available Room (daily, 100% equals corresponding day in 2019)	RevPAR <sub>2020/2019</sub>	96.96	33.21	10.04	323.41
COVID-19 New Cases in Poland (daily)	C19CasesPol	0.97	3.39	0.00	19.00
COVID-19 New Cases in Europe (except Poland, daily)	C19CasesEur	516.36	1358.70	0.00	6808.00
COVID-19 New Cases in the World (except Europe, daily)	C19CasesWrld	1529.06	1988.44	0.00	15,150.00
COVID-19 Deaths in Poland (daily)	C19DeathsPol	0.03	0.17	0.00	1.00
COVID-19 Deaths in Europe (except Poland, daily)	C19DeathsEur	21.59	61.25	0.00	311.00

Table 2. Cont.

Variable	Abbreviation	Average	Standard Deviation	Minimum	Maximum
COVID-19 Deaths in the World (except Europe, daily)	C19DeathsWrld	55.66	50.35	0.00	255.00
Supply of Hotel Rooms in a City (daily)	Supply	5892	5114	1235	18,162
Share of International Tourist Nights in a City (2018)	InternToAllNights	33.26	10.05	18.23	53.45
City Population (20419)	Popul	617,293	464,048	35,827	1,783,321

Source: own elaboration based on data collected from the STR SHARE Center, European Centre for Disease Prevention and Control, and Statistics Poland.

### 3.3. Data Analysis

The main focus of this research is on key hotels' performance indicators: occupancy (Occ) and revenue per available room (RevPAR). Occupancy is equal to the percentage ratio of the number of rooms sold during a specific time period and the number of all rooms available to sell during that same period [51,69]:

$$\text{Occupancy} = \frac{\text{Total rooms sold}}{\text{Total rooms available for sale}} \quad (1)$$

RevPAR is expressed as the total amount of sales achieved in a specific time period, generated by each available room during that same period [51,69]:

$$\text{RevPAR} = \frac{\text{Total rooms revenue}}{\text{Total rooms available for sale}} \quad (2)$$

Finally, the average daily rate (ADR) has been considered as well when discussing the results. ADR is the indicator calculated as the ratio of RevPAR and occupancy, representing an average revenue per occupied room in a specific time period [51,69]:

$$\text{ADR} = \frac{\text{RevPAR}}{\text{Occ}} = \frac{\text{Total rooms revenue}}{\text{Total rooms sold}} \quad (3)$$

Various methods were considered by authors investigating the determinants of hotel performances. Internetization and social media development are focal phenomena recently shaping the hotel industry [70–72]. Thus, Kim et al. [73] discussed various measures of effectiveness of managing online reviews as the predictors of hotel performances. They applied ordinary least square regression to describe the mentioned polynomial dependence. Dąbrowski et al. [74] applied structural equation modeling to confirm the mediating influence of customer orientation through the meaningfulness and novelty of a marketing strategy on hotel performances. The impact of different distribution strategies on budget hotel RevPAR was investigated by applying semi-logarithmic linear regression [75]. Dogru et al. [76] discussed the role of Airbnb supply as the factor shaping hotel performances in selected global cities: Tokyo, Sydney, Paris, and London. They considered hotel RevPAR, ADR, and occupancy as dependent variables in models estimated by panel data ordinary least square regression. Rienda et al. [77] applied a component-based structural equation model to confirm the internationalization as a crucial determinant of hotel performances. They considered the operating profit, return on assets, and sales as dependent variables. However, their understanding of internationalization referred to managerial experience and capital commitment, and it was different than in this research focused on the demand context of the internationalization of urban hotel markets.

In this research, the main goal is related to panel (spatiotemporal) data analysis. One of the most suitable econometric techniques for panel data estimation is GMM [78]. This method is focused on data panels consisting of cross-sections of individuals observed for time periods. It must be emphasized that these data might provide exogenous variations (independent of particular individuals and time) in

the investigated phenomenon [79]. The general linear equation describing the impact of the predictor varying across spatial units (e.g., cities) and time might be formulated as follows:

$$y_{it} = \beta_0 + \beta \cdot x_{it} + \mu_i + \varepsilon_{it} \quad (4)$$

where index  $i$  (from 1 to  $n$ ) refers to individual spatial units, index  $t$  (from 1 to  $T$ ) refers to the following time periods. Moreover, GMM bases on the estimation of two error components: individual-specific  $\mu_i$ , which is specific to the individual spatial unit and constant over time, and idiosyncratic  $\varepsilon_{it}$  [80]. It is confirmed that parameters estimated by GMM are robust to issues resulting from autocorrelation or heteroscedasticity [78].

The GMM was applied to investigate the impact of COVID-19 outbreak in various geographical contexts on the year-to-year dynamics of performance of hotels operating in nine major Polish urban hotel markets: Kraków, Warszawa, Poznań, Wrocław, Gdańsk, Lublin, Łódź, Katowice, and Sopot. Time range of the analysis begins on Sunday, January 5, 2020. This is the beginning of the very first week when the COVID-19 cases were evidenced. Time range of the research lasts till Saturday, March 14, 2020 when the initial phase of lockdown was introduced by Polish government. Twelve following linear dynamic panel models were estimated to describe the daily ( $t$ ) influence of reported new cases and separately considered deaths of COVID-19 disease on year-to-year dynamics of occupancy ( $Occ$ ) and separately considered revenue per available room ( $RevPAR$ ) in nine major Polish hotel urban markets ( $i$ ). The analytical form of estimated equations is as follows:

$$\begin{aligned} & \ln Occ[RevPAR]_{\frac{2020}{2019}it} \\ &= \beta_0 + \beta_1 \cdot \ln Occ[RevPAR]_{\frac{2020}{2019}it-1} + \beta_2 \cdot C19Cases[Deaths]Poland_{it-1} + \\ &+ \beta_3 \cdot C19Cases[Deaths]Europe_{it-1} + \beta_4 \cdot C19Cases[Deaths]World_{it-1} + \\ &+ \beta_5 \cdot C19Cases[Deaths]Poland_{it-1} \cdot Supply[InternToAllNights][Popul]_{it} + \\ &+ \beta_6 \cdot C19Cases[Deaths]Europe_{it-1} \cdot Supply[InternToAllNights][Popul]_{it} + \\ &+ \beta_7 \cdot C19Cases[Deaths]World_{it-1} \cdot Supply[InternToAllNights][Popul]_{it} + \mu_{it} + \varepsilon_{it} \end{aligned} \quad (5)$$

All abbreviations used in the equations above are explained in detail in Table 2.

Logged daily values of the percentage relation between occupancy (or RevPAR) in a particular day in 2020 and the corresponding day in 2019 were considered as dependent variables. It needs to be clarified that weekdays mismatched between particular dates of different years were taken into account when defining the corresponding day [51]. Moreover, it must be underlined that, typically, year-to-year dynamics of hotel performance indicators were measured in a different way, as the percentage difference between values for the present and past years divided by the value identified for the past year. Thus, negative values of year-to-year dynamics might occur. While variables potentially described by negative values cannot be considered as regressors due to the method of analysis applied. One-day lags of dependent variables were applied as the predictors. This is in-line with the suggestion of Bellemare et al. [80] to solve the problem of endogeneity. New cases (or deaths) of the COVID-19 disease were considered as independent variables separately for each considered geographical context: Poland, Europe (excluding Poland), and the world (excluding Europe).

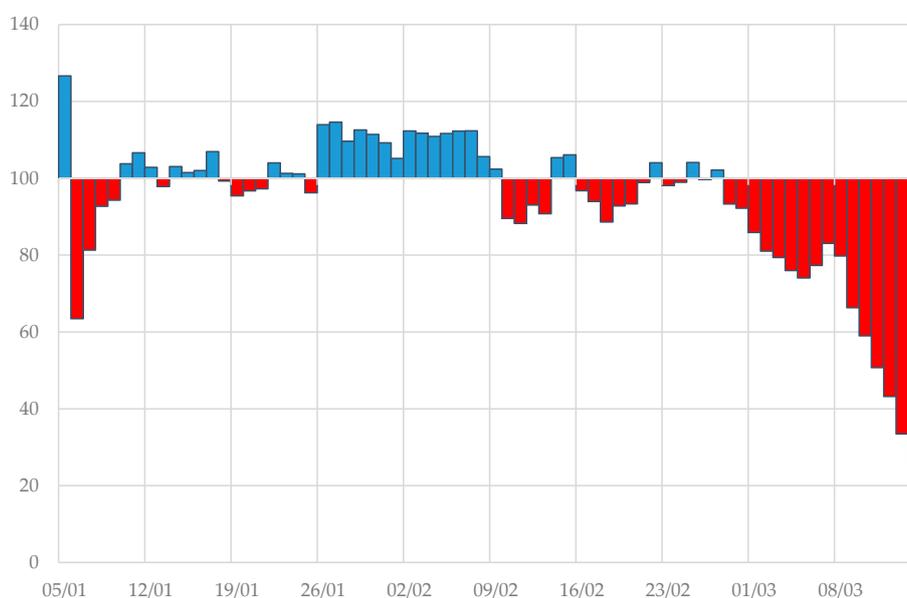
It is assumed that short-term impacts of COVID-19 new cases (deaths) should be identified within a one-day lag ( $t-1$ ) to describe the immediate impacts of the pandemic outbreak on the hotel market. Regarding hypothesis H1, it is expected that coefficients estimated for all geographical contexts should be negative. Moreover, the coefficients for Poland are expected to be higher in absolute values and more significant than for Europe and, for Europe, higher in absolute values and more significant than for the world. Regarding hypotheses H2(a-c), multiplied impacts of the COVID-19 disease and supply sizes of the investigated hotel urban markets (Supply) or internationalization of the investigated urban destinations (InternToAllNights) or the population of the investigated cities (Popul) should be identified as significant. The results were obtained by applying the “plm” package in R software [81].

## 4. Results

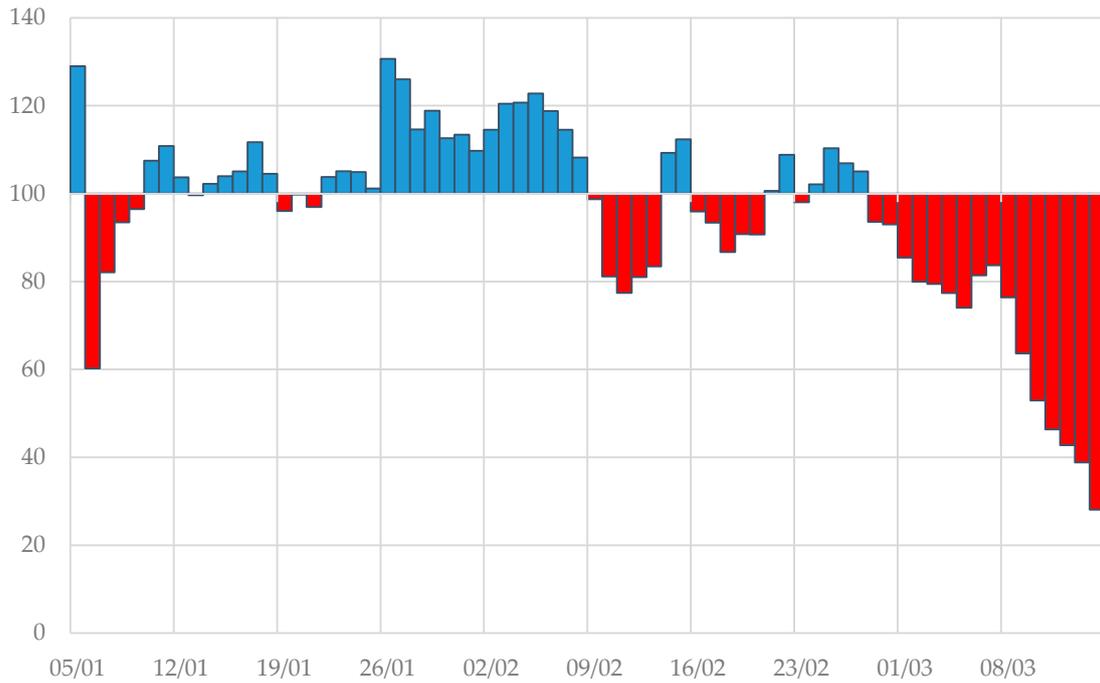
### 4.1. Changes of Hotel Performance Indicators during the COVID-19 Outbreak

A significant decrease of the year-to-year dynamics of both occupancy (see Figure 1) and RevPAR (see Figure 2) in hotels operating in Polish major urban markets was evidenced. The mentioned collapse of hotel performances is explained by the pandemic of COVID-19. Interestingly, until the beginning of February 2020, the hotel industry in investigated urban markets might be characterized as business as usual. However, a dramatic decrease of year-to-year dynamics of hotel performance indicators started at the beginning of March 2020 when the COVID-19 outbreak was evidenced in Europe. Both the occupancy and RevPAR in Polish major urban hotel markets decreased up to respectively 25% and 28% of the value of the corresponding day a year before. The lowest values of occupancy (18% of the value of the corresponding day in 2019) were noticed in Lublin, Łódź, and Sopot, when the first deaths caused by COVID-19 were reported in Poland. The minimum values of the year-to-year dynamics of RevPAR (18%) were reported in the same time in Lublin and Łódź. It is worth mentioning that Lublin represented the most peripheral urban destination compared to the other investigated ones. Moreover, both Lublin and Sopot were confirmed as the most domestic-oriented hotel urban markets. On the contrary, the hotel market of Łódź was recognized as a much stronger dependent on the international MICE tourism compared to other more differentiated urban hotel markets in Poland [82,83].

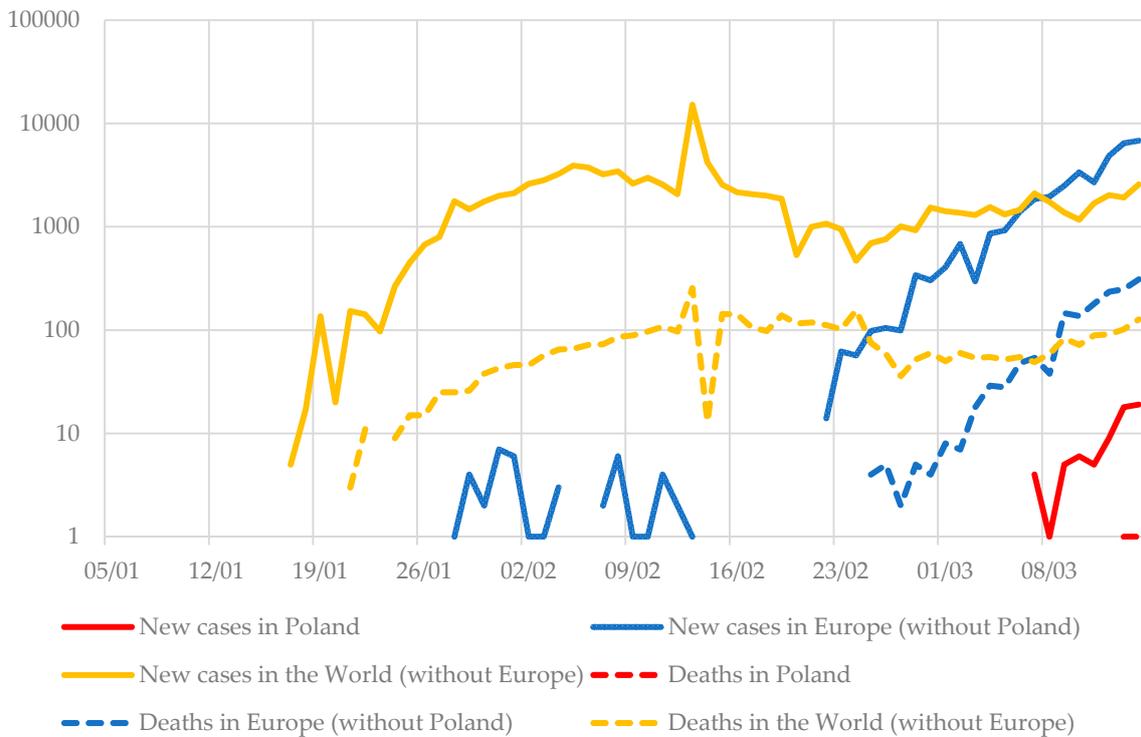
Since the beginning of the year 2020, new cases and deaths of the COVID-19 disease have been reported in various countries (see Figure 3, which presents the number of reported new cases and deaths of the investigated disease on the logarithmic scale). From the perspective of influence of the pandemic on hotel performances in Poland, the following geographical contexts of the disease are considered: Poland, Europe (excluding Poland), and the world (excluding Europe). Lags between global, European, and Polish outbreaks of COVID-19 need to be emphasized. It needs to be explained that the curve describing global new cases and deaths is significantly distorted by the fact that China did not officially report the COVID-19 disease until the middle of February.



**Figure 1.** Year-to-year daily dynamics of occupancy in hotels operating in all nine major urban markets in Poland between January 5, and March 14, 2020. Source: own elaboration based on data collected from the STR SHARE Center (This is the name of the company and its program. See: <https://str.com/training/academic-resources/share-center>) 100% means that the occupancy equals the corresponding day in 2019.



**Figure 2.** Year-to-year daily dynamics of revenue per available room in hotels operating in all nine major urban markets in Poland between January 5, and March 14, 2020. Source: own elaboration based on data collected from the STR SHARE Center. 100% means that the revenue per available room equals the corresponding day in 2019.



**Figure 3.** Number of new cases and deaths of the COVID-19 disease reported between January 5, and March 14, 2020. Source: own elaboration based on data collected from the European Centre for Disease Prevention and Control.

#### 4.2. The Impact of COVID-19 on Hotel Performance Indicators

The influence of cases (or deaths) on the dynamics of investigated hotel performances is higher (in absolute values) for Poland compared to Europe and, then, to the world see Tables 3 and 4. Interestingly, the discussed impact on both the occupancy and RevPAR is similar. Thus, the ADR was not influenced by the pandemic. This confirms that hoteliers managing entities in major Polish urban markets were eager to keep the ADR on an approximately constant level and did not decide to sell out rooms at discounted prices.

**Table 3.** The impact of reported new cases of the COVID-19 disease on the year-to-year dynamics of occupancy or revenue per available room in hotels operating in major urban markets in Poland between January 5, and March 14, 2020.

Coefficients (Standard Errors) of Independent Variables	Impact Multiplied by					
	... × Supply		... × InternToAllNights		... × Popul	
	On					
	Occ <sub>2020</sub> 2019	RevPAR <sub>2020</sub> 2019	Occ <sub>2020</sub> 2019	RevPAR <sub>2020</sub> 2019	Occ <sub>2020</sub> 2019	RevPAR <sub>2020</sub> 2019
Intercept	**** 1.909 × 10 <sup>0</sup> (1.432 × 10 <sup>-1</sup> )	**** 1.717 × 10 <sup>0</sup> (1.409 × 10 <sup>-1</sup> )	**** 1.918 × 10 <sup>0</sup> (1.460 × 10 <sup>-1</sup> )	**** 1.720 × 10 <sup>0</sup> (1.407 × 10 <sup>-1</sup> )	**** 1.914 × 10 <sup>0</sup> (1.465 × 10 <sup>-1</sup> )	**** 1.725 × 10 <sup>0</sup> (1.412 × 10 <sup>-1</sup> )
ln Occ <sub>2020</sub> 2019 <sub>t-1</sub>	**** 5.813 × 10 <sup>-1</sup> (3.171 × 10 <sup>-2</sup> )	-	**** 5.794 × 10 <sup>-1</sup> (3.167 × 10 <sup>-2</sup> )	-	**** 5.802 × 10 <sup>-1</sup> (3.178 × 10 <sup>-2</sup> )	-
ln RevPAR <sub>2020</sub> 2019 <sub>t-1</sub>	-	**** 6.224 × 10 <sup>-1</sup> (3.044 × 10 <sup>-2</sup> )	-	**** 6.216 × 10 <sup>-1</sup> (3.039 × 10 <sup>-2</sup> )	-	**** 6.205 × 10 <sup>-1</sup> (3.051 × 10 <sup>-2</sup> )
C19CasesPol <sub>t-1</sub>	-1.948 × 10 <sup>-2</sup> (1.365 × 10 <sup>-2</sup> )	-5.914 × 10 <sup>-3</sup> (1.599 × 10 <sup>-2</sup> )	-5.054 × 10 <sup>-2</sup> (3.080 × 10 <sup>-2</sup> )	-1.800 × 10 <sup>-2</sup> (3.610 × 10 <sup>-2</sup> )	* -2.730 × 10 <sup>-2</sup> (1.493 × 10 <sup>-2</sup> )	-1.586 × 10 <sup>-2</sup> (1.750 × 10 <sup>-2</sup> )
C19CasesEur <sub>t-1</sub>	*** -9.086 × 10 <sup>-5</sup> (3.146 × 10 <sup>-5</sup> )	*** -1.078 × 10 <sup>-4</sup> (3.678 × 10 <sup>-5</sup> )	-4.815 × 10 <sup>-5</sup> (6.979 × 10 <sup>-5</sup> )	-1.076 × 10 <sup>-4</sup> (8.188 × 10 <sup>-5</sup> )	** -7.021 × 10 <sup>-5</sup> (3.422 × 10 <sup>-5</sup> )	** -8.062 × 10 <sup>-5</sup> (4.005 × 10 <sup>-5</sup> )
C19CasesWrld <sub>t-1</sub>	8.247 × 10 <sup>-6</sup> (5.194 × 10 <sup>-6</sup> )	* 1.178 × 10 <sup>-5</sup> (6.086 × 10 <sup>-6</sup> )	1.402 × 10 <sup>-5</sup> (1.094 × 10 <sup>-5</sup> )	2.034 × 10 <sup>-5</sup> (1.283 × 10 <sup>-5</sup> )	* 1.008 × 10 <sup>-5</sup> (5.589 × 10 <sup>-6</sup> )	** 1.470 × 10 <sup>-5</sup> (6.548 × 10 <sup>-6</sup> )
C19CasesPol <sub>t-1</sub> × ...	1.730 × 10 <sup>-6</sup> (1.692 × 10 <sup>-6</sup> )	3.791 × 10 <sup>-7</sup> (1.985 × 10 <sup>-6</sup> )	1.247 × 10 <sup>-3</sup> (8.847 × 10 <sup>-4</sup> )	4.324 × 10 <sup>-4</sup> (1.037 × 10 <sup>-3</sup> )	2.951 × 10 <sup>-8</sup> (1.918 × 10 <sup>-8</sup> )	1.983 × 10 <sup>-8</sup> (2.249 × 10 <sup>-8</sup> )
C19CasesEur <sub>t-1</sub> × ...	-2.579 × 10 <sup>-9</sup> (3.833 × 10 <sup>-9</sup> )	4.161 × 10 <sup>-10</sup> (4.495 × 10 <sup>-9</sup> )	-1.760 × 10 <sup>-6</sup> (2.001 × 10 <sup>-6</sup> )	6.483 × 10 <sup>-8</sup> (2.347 × 10 <sup>-6</sup> )	-5.888 × 10 <sup>-11</sup> (4.344 × 10 <sup>-11</sup> )	-4.058 × 10 <sup>-11</sup> (5.095 × 10 <sup>-11</sup> )
C19CasesWrld <sub>t-1</sub> × ...	-1.010 × 10 <sup>-11</sup> (6.228 × 10 <sup>-10</sup> )	-8.527 × 10 <sup>-11</sup> (7.300 × 10 <sup>-10</sup> )	-1.753 × 10 <sup>-7</sup> (3.091 × 10 <sup>-7</sup> )	-2.720 × 10 <sup>-7</sup> (3.624 × 10 <sup>-7</sup> )	-3.075 × 10 <sup>-12</sup> (6.705 × 10 <sup>-12</sup> )	-5.530 × 10 <sup>-12</sup> (7.860 × 10 <sup>-12</sup> )
Coefficient of determination (R <sup>2</sup> )	0.713	0.669	0.714	0.670	0.713	0.670
Adjusted R <sup>2</sup>	0.710	0.666	0.711	0.666	0.710	0.666

Source: own elaboration based on data collected from the STR SHARE Center, European Centre for Disease Prevention and Control, and Statistics Poland. Significant codes: 0, \*\*\*\* 0.001, \*\*\* 0.01, \*\* 0.05, and \* 0.1.

The most significant impacts on both the occupancy and RevPAR are evidenced for European new cases (or deaths) of COVID-19. As it was hypothesized, the influence of national and European contexts of the investigated disease on hotel performance indicators were negative. However, the influences of the global contexts were positive but not significant in the case of most estimated models. Thus, this mentioned interesting correlation might occur by coincidence. It must be clarified that a significant decrease of hotel performance indicators was evidenced in the period when the COVID-19 disease hit Europe mainly. In the same time, before COVID-19 hit the U.S., the number of new cases reported for other parts of the world was decreasing. To summarize, it can be stated that hypothesis H1 is only partially confirmed.

Interestingly, the negative impact of COVID-19 cases reported in Poland on the dynamics of occupancy in hotels is evidenced (but just barely). On the contrary, this effect multiplied by the internationalization (or population) of urban tourism destinations is positive. This means that both the internationalization (or population) and impact of COVID-19 negatively influences the investigated phenomena. The negative influence of Polish cases of COVID-19 is more significant in less internationalized (or less populated) destinations like Lublin and Sopot. However, it must be emphasized that the mentioned multiplied effects of both the COVID-19 outbreak and internationalization (or population) of investigated cities is merely significant. Thus, hypothesis

H2a related to the multiplied effect of the hotel supply should be rejected, while hypotheses H2b (internationalization) and H2c (population) might be slightly confirmed.

**Table 4.** The impact of reported deaths of the COVID-19 disease on the year-to-year dynamics of occupancy or revenue per available room in hotels operating in major urban markets in Poland between January 5, and March 14, 2020.

Coefficients (Standard Errors) of Independent Variables	Impact Multiplied by					
	... × Supply		... × InternToAllNights		... × Popul	
	On					
	Occ <sub>2020</sub> 2019	RevPAR <sub>2020</sub> 2019	Occ <sub>2020</sub> 2019	RevPAR <sub>2020</sub> 2019	Occ <sub>2020</sub> 2019	RevPAR <sub>2020</sub> 2019
Intercept	**** 1.902 × 10 <sup>0</sup> (1.464 × 10 <sup>-1</sup> )	**** 1.705 × 10 <sup>0</sup> (1.421 × 10 <sup>-1</sup> )	**** 1.911 × 10 <sup>0</sup> (1.462 × 10 <sup>-1</sup> )	**** 1.713 × 10 <sup>0</sup> (1.418 × 10 <sup>-1</sup> )	**** 1.911 × 10 <sup>0</sup> (1.468 × 10 <sup>-1</sup> )	**** 1.721 × 10 <sup>0</sup> (1.425 × 10 <sup>-1</sup> )
ln Occ <sub>2020</sub> 2019 <sub>t-1</sub>	**** 5.827 × 10 <sup>-1</sup> (3.173 × 10 <sup>-2</sup> )	-	**** 5.807 × 10 <sup>-1</sup> (3.168 × 10 <sup>-2</sup> )	-	**** 5.806 × 10 <sup>-1</sup> (3.180 × 10 <sup>-2</sup> )	-
ln RevPAR <sub>2020</sub> 2019 <sub>t-1</sub>	-	**** 6.248 × 10 <sup>-1</sup> (3.066 × 10 <sup>-2</sup> )	-	**** 6.231 × 10 <sup>-1</sup> (3.061 × 10 <sup>-2</sup> )	-	**** 6.213 × 10 <sup>-1</sup> (3.076 × 10 <sup>-2</sup> )
C19DeathsPol <sub>t-1</sub>	-1.889 × 10 <sup>-1</sup> (1.155 × 10 <sup>-1</sup> )	-9.013 × 10 <sup>-2</sup> (1.354 × 10 <sup>-1</sup> )	-3.780 × 10 <sup>-1</sup> (2.611 × 10 <sup>-1</sup> )	-2.309 × 10 <sup>-1</sup> (3.074 × 10 <sup>-1</sup> )	** -2.940 × 10 <sup>-1</sup> (1.263 × 10 <sup>-1</sup> )	-2.219 × 10 <sup>-1</sup> (1.482 × 10 <sup>-1</sup> )
C19DeathsEur <sub>t-1</sub>	**** -2.795 × 10 <sup>-3</sup> (2.930 × 10 <sup>-4</sup> )	**** -2.629 × 10 <sup>-3</sup> (3.400 × 10 <sup>-4</sup> )	**** -3.195 × 10 <sup>-3</sup> (6.298 × 10 <sup>-4</sup> )	**** -3.038 × 10 <sup>-3</sup> (7.403 × 10 <sup>-4</sup> )	**** -2.581 × 10 <sup>-3</sup> (3.149 × 10 <sup>-4</sup> )	**** -2.340 × 10 <sup>-3</sup> (3.663 × 10 <sup>-4</sup> )
C19DeathsWrld <sub>t-1</sub>	2.199 × 10 <sup>-4</sup> (1.974 × 10 <sup>-4</sup> )	2.979 × 10 <sup>-4</sup> (2.325 × 10 <sup>-4</sup> )	4.696 × 10 <sup>-4</sup> (3.915 × 10 <sup>-4</sup> )	4.789 × 10 <sup>-4</sup> (4.612 × 10 <sup>-4</sup> )	3.173 × 10 <sup>-4</sup> (2.103 × 10 <sup>-4</sup> )	* 4.327 × 10 <sup>-4</sup> (2.477 × 10 <sup>-4</sup> )
C19DeathsPol <sub>t-1</sub> × ...	4.787 × 10 <sup>-6</sup> (1.434 × 10 <sup>-5</sup> )	-4.952 × 10 <sup>-6</sup> (1.689 × 10 <sup>-5</sup> )	6.535 × 10 <sup>-3</sup> (7.503 × 10 <sup>-3</sup> )	3.329 × 10 <sup>-3</sup> (8.841 × 10 <sup>-3</sup> )	2.159 × 10 <sup>-7</sup> (1.626 × 10 <sup>-7</sup> )	1.644 × 10 <sup>-7</sup> (1.916 × 10 <sup>-7</sup> )
C19DeathsEur <sub>t-1</sub> × ...	2.667 × 10 <sup>-8</sup> (3.419 × 10 <sup>-8</sup> )	4.133 × 10 <sup>-8</sup> (4.024 × 10 <sup>-8</sup> )	1.662 × 10 <sup>-5</sup> (1.779 × 10 <sup>-5</sup> )	1.955 × 10 <sup>-5</sup> (2.097 × 10 <sup>-5</sup> )	-9.951 × 10 <sup>-11</sup> (3.861 × 10 <sup>-10</sup> )	-8.877 × 10 <sup>-11</sup> (4.547 × 10 <sup>-10</sup> )
C19DeathsWrld <sub>t-1</sub> × ...	-6.570 × 10 <sup>-9</sup> (2.182 × 10 <sup>-8</sup> )	-7.489 × 10 <sup>-9</sup> (2.569 × 10 <sup>-8</sup> )	-8.650 × 10 <sup>-6</sup> (1.085 × 10 <sup>-5</sup> )	-6.751 × 10 <sup>-6</sup> (1.278 × 10 <sup>-5</sup> )	-2.194 × 10 <sup>-10</sup> (2.355 × 10 <sup>-10</sup> )	-2.894 × 10 <sup>-10</sup> (2.776 × 10 <sup>-10</sup> )
Coefficient of determination (R <sup>2</sup> )	0.713	0.666	0.714	0.666	0.713	0.666
Adjusted R <sup>2</sup>	0.709	0.662	0.710	0.663	0.710	0.663

Source: own elaboration based on data collected from the STR SHARE Center, European Centre for Disease Prevention and Control, and Statistics Poland. Significant codes: 0, \*\*\*\* 0.001, \*\*\* 0.01, \*\* 0.05, and \* 0.1.

## 5. Conclusions and Discussion

Hypothesis H1 about the negative and geographically differentiated impact of COVID-19 on hotel performances was only partially confirmed. First, the influence of the national and European contexts were negative, while the global impact was positive but not significant. This is generally in-line with findings from Kim et al. [84], who confirmed the negative effects of food-related epidemic disease outbreaks on the financial performances of the restaurants in the U.S. Second, the most significant impact is evidenced for Europe. Thus, it was indirectly confirmed that Polish major urban hotel markets are dependent on factors affecting European tourism. Thus, a more sustainable development of the hotels located in the biggest cities is recommended. This remark relates to all marketing contexts of hotel operating, starting from products and towards pricing, promotion, and distribution. Especially in urban destinations monopolized by demand related to MICE tourism, e.g., Warszawa, Poznań, or Łódź, the development of hotel services offered to customers representing other segments than MICE tourism is recommended. In particular, the following hotel services might be introduced or developed in urban entities: organizing events and delivering food and beverage services for nontourist guests and offering conference facilities and catering services for local enterprises, institutions, or organizations. It must be emphasized that this kind of market target changes are already experienced by rural hotels [85]. Ideas like “staycation” [86] should become the new consideration of urban hotel managers. It is argued that the initial phase of the recovery will be characterized by demands from local residents [87]. However, the mentioned response should be aware of policies reflecting selfish nationalisms or xenophobia, on the one hand, and should require a global approach on the other one [88]. As a result, urban hotel performances should become more proofed for crises, including pandemics like the investigated COVID-19 disease, and more sustainable and just considering relations between the industry and locality. The investigated impact of new COVID-19 cases (or deaths) on both

the occupancy and RevPAR is similar. This means that the ADR was not influenced by the pandemic in Poland. Hoteliers were aware not to use discounted prices to increase occupancy negatively affected by the COVID-19 outbreak. They know the process of recovering the ADR is lengthy and challenging.

Hypotheses H2b (about the indirect effects of internationalization) and H2c (population) were slightly confirmed. It was diagnosed that the negative influence of Polish cases of COVID-19 were more significant in less internationalized (or less populated) destinations. This is in-line with findings from Maxwell and Albano [89] describing differences between impacts of the pandemic on the biggest and peripheral U.S. hotel markets. Thus, in the short-term perspective, the recovery of hotel industry performances in the mentioned destinations would be much easier, reflecting only an epidemic in the national context. This is in-line with Song et al. [48], who found that hotels located in destinations targeting domestic tourism mainly are less influenced by international crises. On the contrary, recovery of the investigated industry in more internationalized (or more populated) destinations will be much more complicated and affected by health strategies applied not only in Poland but, also, in tourist-generating countries: (a) social distancing implemented to reduce the potential for COVID-19 to be spread by contact and proximity, (b) restrictions on travel, and (c) quarantine requirements [88]. In the long-term perspective, potential and probable reopening borders should boost both the occupancy and RevPAR in most internationalized (and more populated) cities, mainly Warszawa but, also, Gdańsk, Kraków, and Wrocław. This is similar to the effects of the crisis in the hotel industry noticed in Poland after the events of 9/11 [43,90]. Thus, the geographical segmentation of hotel markets should become the focus of hotel managers and revenue managers when considering the most effective business mix.

As Chien and Law [91] noticed, without any state support, the possibility of a massive closure of the hotel industry will happen. Government involvement is required for destination recovery and development in the future [92]. Moreover, hoteliers should take part in the ongoing development of business solutions. As Ivanov and Stavrinoudis [93] argued, the crisis significantly affects the hotel industry by the negative impact on tourism destinations. In this case, the hoteliers are forced to work together with local authorities and destination management organizations. On the other hand, the state authorities should understand the role of both tourism and the hotel industry in the destinations [92] and reconsider state tourism policies towards sustainability to face the crisis in the future in a more efficient way [59].

## 6. Limitations and Future Studies

The most substantial limitation of this study is that data on hotel performances was collected for all hotels operating in investigated urban markets, without distinction as to star rank or size. However, collecting data for separately considered subsegments of mentioned markets was not possible, according to the minimum sample size requested by data provider—the STR SHARE Center. Fortunately, the structures of the hotels' sizes and star rank were quite similar, as midsized and midscale hotels were the most numerous in every investigated city. However, it must be stressed out that, in urban destinations oriented exclusively on MICE tourism, the number of upscale and large-sized hotels was higher compared to other urban markets. Thus, the focus on more similar markets in future studies is an option. On the other hand, research on hotels operating in large enough markets where the data for subsegments is available should be considered as well.

The results of this study provide valuable information for hotel managers. However, the limited geographic area covered by the research can provide that the recommendations might not be applicable in other locations. The increase of the geographical coverage in further studies is needed, because it can offer valuable remarks. Moreover, advanced (utilizing big-data applications) real-time monitoring and dynamic mapping of COVID-19 impacts on the hotel industry on a global scale is recommended [94,95]. Additionally, hotel performances might be considered much wider, and the impact of COVID-19 on intangible assets utilized by the hotel industry should be investigated [96,97]. Implementing all mentioned recommendations might increase the quality of policies of collaborative international organizations, national governments, and destination management organizations, as well as the

effectiveness of decisions of hoteliers during crises. Hoteliers should be not only prepared to respond to the crisis and recover their enterprises but, also, able to manage future crisis events in a sustainable manner [41].

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