

THE IMPACT OF BORDER RESTRICTIONS RELATED TO THE COVID-19 PANDEMIC ON THE INTENSITY OF INTERNATIONAL TOURIST TRAFFIC IN EUROPEAN RECEPTION COUNTRIES

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Abstract: The aim of the article is to show the impact of the introduction of border restrictions related to the COVID-19 pandemic on the intensity of tourist traffic in European reception countries. The article uses two indicators of the intensity of tourism - Defert's index and Schneider's index. The analysis of the indicators was based on the division of countries due to border control (A countries - partial border closure, B countries - PCR test or quarantine, and C countries - complete border closure for foreign tourists). Based on the research results, it was found that the changes in border crossing were important only in the initial period of the pandemic, later they were not of great importance and the values of both Defert and Schneider indicators did not differ from those in the pre-pandemic period (i.e. the same period in 2019). The study also indicated that the largest drops in the values of the Defert and Schneider indexes were recorded in Austria and the Czech Republic, i.e. countries with different responses to the COVID-19 pandemic. The largest drops in tourist traffic intensity indicators were recorded in countries where the obligatory PCR test and quarantine were introduced. The article fills the research gap and is intended to help the governments of various countries in the future to find the most optimal solution in the context of fighting future epidemic waves.

Key words: pandemic, COVID-19, Europe, borders, international tourism

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INTRODUCTION

The economic crisis of the 21st century caused by the COVID-19 pandemic significantly influenced the purchasing behavior of tourists - they changed the methods and forms of satisfying tourist needs. Foreign tourism is a business that brings relatively quick profits, but is also heavily dependent on social, economic and political determinant (Tosun, 1998). This is demonstrated by the revenues from international tourism, which have broken new records each year - USD 1.350 billion in 2017, USD 1.462 billion in 2018 and USD 1.494 billion in 2019 (UNWTO, 2021). These influences also translated into the still growing occupancy of tourist accommodation facilities, where Europe was the region with the highest occupancy rate every year (Țițu et al., 2016). Analyzing every year the growing revenues from international tourism and the dynamic development of the accommodation base, further development of tourism in the world was expected. However, these prospects were in ruins as a result of the COVID-19 pandemic. The tourism industry has become one of the economic sectors most affected by the pandemic, both nationally and internationally (Bailey et al., 2020; Škare et al., 2021). It was not only influenced by political decisions related to, inter alia, restrictions on travel, which was to be one of the forms of fighting the coronavirus (Oum and Wang, 2020). The result of political decisions was changes in the occupancy of tourist accommodation facilities, which in Central Europe itself was characterized by a decrease of approx. 85% in the first half of 2020 compared to the same period last year (Korinth, 2021). It is indicated that, for example, in Poland in March 2020, when the pandemic began, international passenger air traffic decreased by approximately 80-90% compared to the previous year (Korinth and Ranasinghe, 2020).

The spread of the SARS-CoV-2 coronavirus has completely changed the face of the modern world. Nowadays, it has become a phenomenon in the scientific community and issues related to it have appeared in foreign literature all over the world. The most numerous group of articles focuses on the implications of the pandemic on the global economy, pointing to its recession (Barua, 2020), deglobalization and destabilization (Guan et al., 2020), especially in the case of the mining industry (Laing, 2020) and services (Nicola, 2020). A global trend is the creation of a large number of articles analyzing the impact of the pandemic on the tourism sector. In the early stages of the pandemic, scientists paid special attention to the area of Asia, where it began (Guerche-Seblain et al., 2021). Even then, the negative effects of the spread of the COVID-19 pandemic were predicted, which were to affect, inter alia, a change in consumption of travel in China (Wen et al., 2020) and the perception of China as a tourist destination (Zheng et al., 2020). In the case of Europe, Italy was subjected to a special analysis in terms of tourism, where the pandemic was relatively drastic (Onder et al., 2020). The problem of tourism from a broader perspective was analyzed by Link with others (2020), who in their publication indicate the correlation of tourism mobility of the society with the increase in the number of COVID-19 cases, especially in countries such as Spain and France. The problem of mobility and international tourism transport later became the subject of numerous scientific considerations, especially in the context of the effects of the pandemic. Więckowski (2021) pointed out that the global situation has resulted in

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a reorientation of tourists towards sustainable transport, i.e. one that is close and low-energy. The mental condition and motivation of travelers are also of great importance for cross-border transport, which was researched by Wut et al. (2022).

A relatively large part of the articles focuses on the analysis of the impact of the COVID-19 pandemic on accommodation. In the literature on the subject, you can find articles analyzing such countries as Italy (Aiello et al., 2020) or Greece (Pappas and Glyptou, 2021). In both cases, it was found that the decrease in the number of tourists was mainly related to the lack of a sense of security during the trip. Many publications analyze the impact of a pandemic on the functioning of hotel facilities and their economic consequences. It is explicitly stated that the problems resulting from the lack of cash have halted the expansion of domestic hotel groups in China until 2020 and led to the ruin of the entire hotel industry in that country (Hao et al., 2020). Noteworthy is the increase in publications glorifying agritourism as the type of accommodation that gained (or will gain in the future) the most as a result of the pandemic. As Kazlouski (2020) stated, agritourism has the greatest potential for stability and development on the market in the context of the global tourism crisis caused by the COVID-19 pandemic. The questionnaire surveys (e.g. in Poland) also spoke in favor of agritourism, which stated directly that in the era of a pandemic, agritourism farms would be a frequent choice (Wojcieszak-Zbierska et al., 2020) which will fit in with the trend for ecological and sustainable tourism (Dmitriyev et al., 2022). A study by Roman and Grudzień (2021) positively confirmed that owning agritourism during the COVID-19 pandemic was profitable.

In the literature on the subject, much attention is paid to the reaction of countries to the pandemic, which, in order to curb the incidence of coronavirus, began to introduce restrictions when crossing borders. Following the UNWTO (2021), it is necessary to divide those countries into those that have closed their borders completely or partially to foreign tourists, have completely lifted the restrictions or limited themselves to the PCR test and quarantine. Issues related to the situation on the border and foreign traffic are reflected in the literature on the subject, especially when taking into account the destination countries to which the flows of tourists are directed. Such analyzes were carried out, among others, on the basis of Spain, which has been in the forefront in the world in recent years in terms of international tourist arrivals (Rodríguez-Anton and Alonso-Almeida, 2020; Donaire et al., 2021). An interesting study on the validity of international travel restrictions was carried out by Moosa and Chatatbeh (2020). The authors, examining the correlation between the number of international arrivals and the incidence of COVID-19, indicated that the imposition of foreign travel bans is justified in order to contain the virus. Thus, this confirms the legitimacy of at least partial closing of borders or the introduction of increased controls in their area. The study by Seyfi et al. (2020), who discussed the degree of selectivity of border restrictions applied by major tourist destinations in the world, is important from the point of view of this work. They indicated that although there are health reasons for closing borders to tourists, the process is much more complex and partly dependent on geopolitics in a given country. At the end of the article, the authors point out that sanctions related to the mobility of tourists have recently become the subject of interest for tourism researchers - this is a research gap, and this article may fill this gap.

The aim of this study is to analyze the impact of introducing border restrictions related to the pandemic on the intensity of tourist traffic in selected European countries. The main research hypothesis, in turn, is the statement that the intensity of international tourist traffic in a pandemic era depends on restrictions on crossing the border in a given country. Two indicators showing this intensity were used for the analysis - the Defert index, which determines the number of tourists staying overnight per 1 km² of the area, and the Schneider index, which is expressed as the number of tourists staying overnight per 100 inhabitants. It is worth noting that so far the use of tourist traffic intensity indicators in the context of border restrictions has not occurred in the literature on the subject. Based on the analysis of the research results, it was found that the initial duration of the pandemic was a breakthrough for border restrictions. The most restrictions were recorded in February 2021, when a large part of countries closed their borders to foreign tourists completely. During the entire pandemic, most countries opted for partial border closure or introduced the requirement to perform a PCR test for the presence of coronavirus. All these activities had an impact on the intensity of foreign tourist traffic, which was examined using two indicators - the Defert index and the Schneider index. The study of both of them indicated that the study indicated that the introduction of the obligatory PCR test and quarantine (which was proved on the example of Austria) had the greatest drops in tourist traffic intensity indicators. It was also shown that border crossing restrictions only played a large role in the initial period of the pandemic, and that they were not of great importance thereafter. A study of the intensity of international tourism has shown that the values of both indicators have almost returned to their pre-pandemic levels in June 2021.

MATERIALS AND METHODS

The research method in this work consisted of several elements as shown in the figure number 1. Initially, a table was created that presents the position of selected European countries in terms of the number of tourists, the number of foreign tourists in 2019, the area and population in 2019 (Table 1), which allowed for the identification of countries with the highest intensity of tourist traffic in Europe. Then, based on the information on the border situation obtained from the UNWTO (2021), the countries were classified into 3 groups: a group of countries where a partial border closure was introduced (group A, orange colour), a group of countries where only the PCR test or quarantine was introduced (group B) and a group of countries where complete border closure for foreign tourists was introduced (group C).

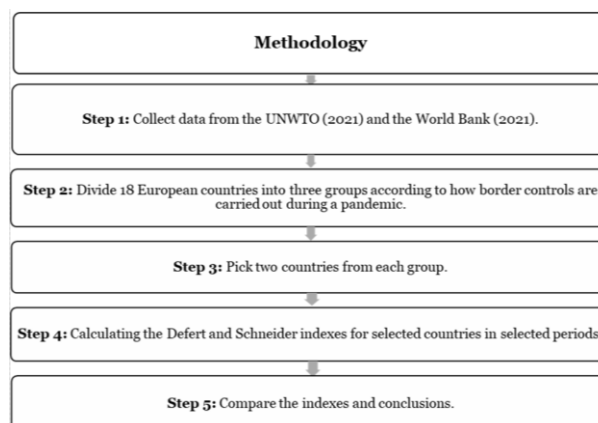


Figure 1. Research methodology (Source: Own study)

It is worth noting that the selected countries also changed their approach in the analyzed periods. In order to simplify the understanding of the analyzed period, it was decided to present in orange the time when it was decided to partially close the borders, in blue the time of introducing the PCR test, and in red - the complete closing of the borders.

It was decided to select two countries from each group. Group A was represented by Spain and Greece, group B was represented by Austria and Croatia, and group C was represented by Hungary and the Czech Republic.

Table 1. Characteristics of European countries based on selected variables
(Source: Own study based on UNWTO (2021) and the World Bank, (2021))

| The position of the country in terms of the number of foreign tourists | Country name | The number of foreign tourists in 2019 | Population in 2019 (million) | Area of the country (km ²) |
|--|----------------|--|------------------------------|--|
| 1 | France | 89.4 | 67,39 | 543 940 |
| 2 | Spain | 82.8 | 47,35 | 505 990 |
| 5 | Italy | 61.6 | 59,55 | 301 340 |
| 9 | Germany | 38.9 | 83,24 | 357 386 |
| 10 | United Kingdom | 38.7 | 67,22 | 242 495 |
| 12 | Austria | 30.8 | 8,917 | 83 879 |
| 13 | Greece | 30.1 | 10,72 | 131 957 |
| 15 | Portugal | 22.8 | 10,31 | 92 212 |
| 19 | Poland | 19.6 | 37,95 | 312 679 |
| 20 | Netherlands | 18.8 | 17,74 | 41 543 |
| 26 | Croatia | 16.6 | 4,047 | 56 594 |
| 27 | Hungary | 17.2 | 9,75 | 93 030 |
| 31 | Czechia | 14.3 | 10,7 | 78 871 |
| 32 | Ukraine | 14.2 | 44,13 | 603 628 |
| 33 | Denmark | 12.7 | 5,831 | 42 933 |
| 37 | Switzerland | 11.7 | 8,637 | 41 285 |
| 42 | Belgium | 9.1 | 11,56 | 30 689 |
| 46 | Sweden | 7.4 | 10,35 | 450 295 |

The choice of countries was random. For the countries divided in this way, two tourist traffic intensity indicators were calculated for three periods - November 2019, February 2020 and June 2020. The selection of three periods was dictated by the availability of data. Two indicators of the intensity of tourist traffic were selected for the analysis - the Defert index (Baretje and Defert, 1972) and the Schneider index (Defert, 1967). The first of them was calculated on the basis of the formula:

$$Wd = \frac{\text{number of foreign tourists using accommodation}}{\text{country area (km}^2\text{)}}$$

The second index used in this study was the Schneider index, which was calculated on the basis of the formula:

$$Ws = \frac{\text{number of foreign tourists using accommodation}}{\text{number of people}} \times 100$$

In the case of the above-mentioned indicators, a modification was applied consisting in selecting only foreign tourists from the total number of tourists. The original formula takes into account the total number of tourists, including domestic tourists. Such a procedure was necessary to show the scale of the phenomenon of closing borders to international traffic. The Defert index was also used after reworking in the article on the development of rural tourism in Lithuania in the years 2003-2010, therefore such modifications are also justified in this article (Baležentis et al., 2012). It should be noted that the Defert index is a popular index used for various types of analyzes in tourism. It was used, inter alia, to analyze the intensity of tourism in Slovakia (Štefko et al., 2018) or to analyze the spatial differentiation of the development of the tourism function in the north-western part of Poland (Borzyszkowski et al., 2016). The Schneider index is also a popular index used in many research studies in the field of tourism. It has been used, inter alia, to analyze the functions of Polish macroregions in the light of the economic crisis in the 21st century (Niemczyk and Załona, 2015) or to analyze the Polish coast of the Baltic Sea as a tourist area (Parzych, 2020). Importantly, the analysis of these two indicators often occurs together. So this confirms the legitimacy of using both of them in this work.

RESULTS

Figure 2 shows the borderline situation in selected European countries broken down into groups and time ranges.

Based on the analysis of the data presented in Figure 2, it should be noted that most European countries introduced partial border closure during the pandemic. Examples of such countries were mainly those located in the Mediterranean basin - Italy, Spain, France, Greece and Portugal. There were also countries where the main requirement for crossing the border was quarantine and the PCR test, but this requirement dominated mainly in the initial period of the pandemic - in November 2020 and February 2020. It should also be noted that in the analyzed period there were countries in which it was decided to completely close the borders, and tourism was based only on the national scale. The largest number of

countries that introduced a complete border closure to foreign tourist traffic was noticed in February 2021. These were Denmark, Poland, Germany, Hungary, the Czech Republic and Belgium.

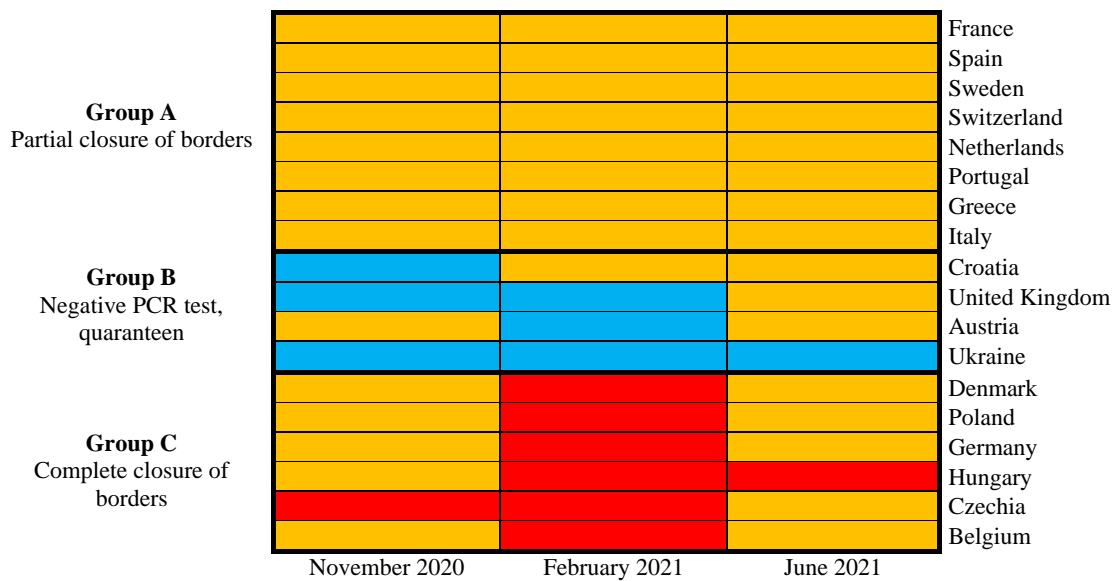


Figure 2. Border situation in selected European countries broken down into groups (Source: Own study based on UNWTO, 2021)

The study of changes in the intensity of tourist traffic presented in Figure 3 shows a certain correlation between border restrictions and the values of the Defert index. In countries from group A (partial border closure), such as Spain and Sweden, slight decreases of the variable were noticed in each of the analyzed periods, although in the case of Sweden these decreases were much smaller. In countries from group B (PCR test, quarantine), the drops in the indicator were much greater, which was especially noticeable in February 2021. An example of a country in this group is Austria, for which the Defert index value, compared to the same period in 2019, dropped significantly in November 2020 by almost 68% and in February 2021 by 82%. The Defert index behaved completely differently in the case of Croatia, where the declines were even smaller than in the A-group countries. It is also worth noting that Croatia was the only country that in June 2021 recorded a Defert index higher than in the year preceding the pandemic.

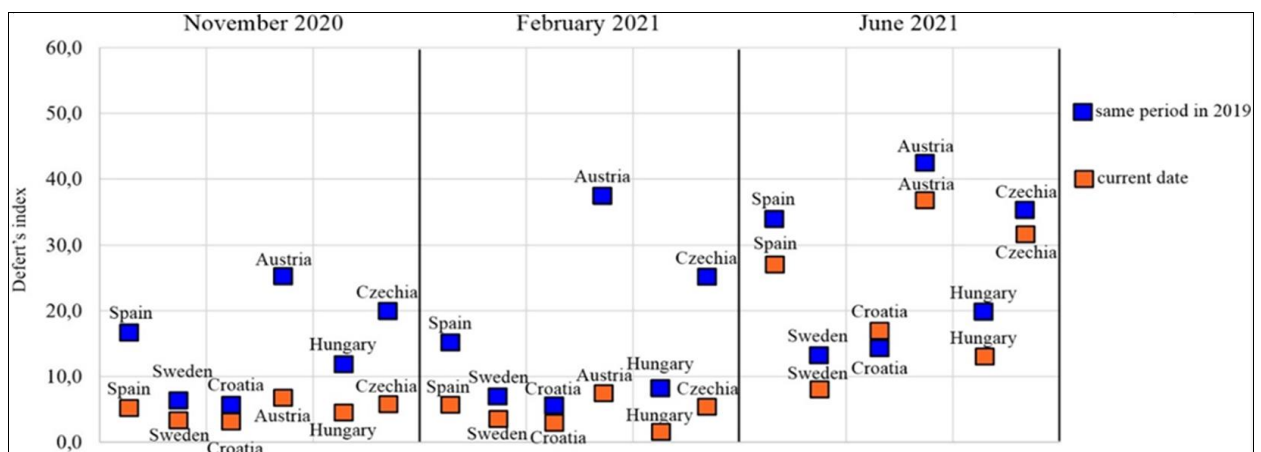


Figure 3. Defert index for selected European countries in selected periods (Source: Own study based on table 1)

Large drops in the indicator were also noticed in the C countries (complete border closure), such as the Czech Republic. In this country, foreign tourist traffic was blocked in two analyzed periods - in February and June 2021. The decreases in the Defert index were comparable for the above-mentioned Austria and amounted to 76% in November 2020 and 83% in February 2021, respectively. The analysis of the chart on the time scale shows that after the reduction of border restrictions in Austria and the Czech Republic (in June 2021), the differences in the value of the Defert index decreased significantly. For all countries included in the analysis, a general upward trend in the index from November 2020 to June 2021 was also noted. The differences in the decline of the variable, especially in the last analyzed period, were not so large. The time analysis also shows that some countries have changed their approach to border crossing throughout the pandemic. For example, in Austria, the control of the abbot on checking the PCR test and quarantine occurred only in February 2021 - then this country recorded the largest decrease in the analyzed indicator.

In the case of Hungary, however, it was not completely closed to the pandemic only in the initial period under analysis, and yet there was no significant difference between the declines in the rate later.

The study of changes in tourist traffic intensity with the use of the Schneider index is shown in Figure 4. When analyzing the data, it should be noted that the changes in the index value are very similar to the Defret index presented in the earlier part of the study. As previously noted, the drops in the value of the Schneider index are smaller in countries that have not introduced such serious restrictions as complete border closure or requirements for PCR and quarantine testing (including in Sweden, although here relatively better values were noted in the case of the Defert index). The largest decreases were again recorded in countries that introduced mandatory PCR testing and quarantine (group B) and in countries that decided to close their borders completely (group C). As before, however, relatively large drops in the Schneider index in the case of Austria were noted. Similarly, to the Defert index, the changes in the Schneider index behaved in the time range. Here, too, smaller declines were noticed at the end of this study.

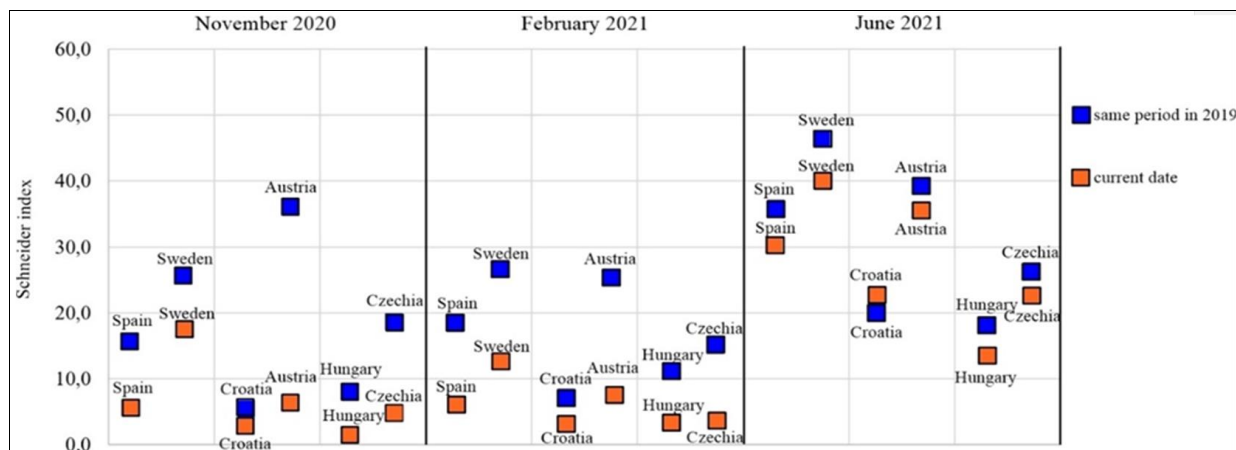


Figure 4. Schneider index for selected European countries in selected periods (Source: Own study based on Table 1)

DISCUSSION

Since the outbreak of the pandemic, there have been many scientific publications dealing with the impact of the COVID-19 pandemic on international tourism. Some of them analyze issues related to tourist traffic and the occupancy of tourist accommodation facilities. Widomski (2020) indicates that for international tourism, the period with the greatest losses was March and April 2020, where the tourism market collapsed and the tourist traffic dropped significantly. These months have not been analyzed in this study due to the lack of data availability. It should be noted, however, that in fact March 2020 was a particularly difficult period for foreign tourism, which was confirmed by the research of Korinth and Ranasinghe (2020). Nevertheless, in this work a different, much larger period of time is explored.

Additionally, it should be noted that the countries changed the entry rules during the analyzed period. For example, in this study, the countries in red did not have their borders fully closed (e.g. Poland in February 2021 allowed entry under certain conditions). In this study, the rules of entry are based on data from the UNWTO reports, which describe the rules of crossing the borders very generally. It should be noted that countries very often introduced additional requirements to generally accepted rules, and information about the possibility of entering the country had to be found on the government websites of each of them. There were even discrepancies in the coronavirus testing itself. It is also worth noting here that border crossing was conditioned before the pandemic and the lack of an appropriate number of cross-border transport was indicated as a barrier. Medeiros (2019) in his work points out that in 2019 cross-border transport was not sufficiently developed in relation to the growing needs of citizens of the European Union.

It is worth noting that the indicators used in this study are not the only ones used in research on the impact of introducing border restrictions on international tourism. A very important supplement to this study is the Tourism Restrictiveness Index, which was run by the University of Oxford (2021). It is on a scale from 0 to 100 and it takes into account as many as 17 variables, which have been divided into 4 groups. These included the overall government response rate (stronger or weaker), health index (related to testing policy and vaccine investment), economic support index (income support), and the original policy restrictiveness index. The analysis of this indicator shows that in terms of time, as in the case of the indicators of tourist traffic intensity used in the study, a positive trend has been noticed.

In three selected countries (Austria, the Czech Republic and Sweden), it was noticed that in the period from November 2020 to June 2021, the tourism restrictiveness indicator decreased. For example, in the Czech Republic it dropped from the value of 69.44 in November to 37.96 in June 2021. This is therefore confirmed by the research carried out in the study. This research is also complemented by the research conducted by Korinth and Wendt (2021).

The authors, using the Perkal index, found that the pandemic crisis hit the countries around the Mediterranean Sea the most, and the Scandinavian countries, the Baltic countries and those in the central part of the European continent the least. We can notice here some differences in comparison to this study, which are probably due to the fact that the aforementioned Perkal index was based on more indicators (including the number of people employed in tourism) and not, as in the case of this work, only on the number of foreign tourists. However, the assumption of this work was not a detailed assessment of the condition of the tourism economy, but finding a relationship between tourism and the situation at the borders of selected countries.

CONCLUSIONS

On the basis of the conducted research, it should be indicated that the largest drops in the values of the Defert and Schneider indexes were recorded by Austria and the Czech Republic, i.e. countries with different responses to the COVID-19 pandemic, being in group C (complete border closure) and in group B (PCR test required, quarantine), which showed that it is impossible to clearly divide countries according to the way of fighting the pandemic. The study also indicated that the greatest drops in tourist traffic intensity indicators were caused by the introduction of the obligatory PCR test and quarantine, which was shown by the indicators characterizing Austria. Her Schneider intensity index declining records occurred in February, which was the result of bans on ski-related tourism, when the country was most profitable in previous years.

Changes in border crossing were important only in the initial period of the pandemic, later they were not of great importance and the values of both Defert and Schneider indicators did not differ from those in the pre-pandemic period (i.e. in 2019), which indicates a gradual improvement in the situation in the receiving countries. The introduction of various entry rules for foreign tourists had a fragmentary impact on the intensity of tourist traffic. The smallest decreases in the case of the Defert and Schneider index in the entire analyzed period were recorded in Sweden and Croatia.

In the case of Sweden, the reason for this is a more liberal approach. From the very beginning of the epidemic threat, the Swedish government issued no orders and bans, only recommendations. It is worth noting that the requirement to show a negative COVID test was introduced by the government in December 2021, i.e. in the period not covered by this study. Therefore, it is worth considering this issue based on the latest data in future research.

The use of research methods in the study proved to be successful in verifying the hypothesis put forward in the study. This verification showed that the intensity of international tourist traffic in the pandemic era depends on the restrictions on crossing the border in a given country. However, due to the similarity of the obtained results, it can be concluded that the use of two indicators (Schneider and Defert) was not necessary because the results were similar. Therefore, they can be treated as complementary methods.

REFERENCES

- Aiello, F., Bonanno, G., & Foglia, F. (2020). On the choice of accommodation type at the time of Covid-19. Some evidence from the Italian tourism sector. *Current Issues in Tourism*, 25 (1), 41-45. <https://doi.org/10.1080/13683500.2020.1846504>
- Bailey, D., Clark, J., Colombelli, A., Corradini, C., De Propriis, L., Derudder, B., Fratesi, U., Fritsch, M., Harrison, J., Hatfield, M., Kemeny, T., Kogler, D.F., Lagendijk, A., Lawton, P., Ortega-Argilés, R., Otero, C.I., & Usai, S. (2020). Regions in a time of pandemic. *Regional Studies*, 54(9), 1163-1174. <https://doi.org/10.1080/00343404.2020.1798611>
- Baretje, R., & Defert, P. (1972). *Aspects économiques du tourisme*. Paris.
- Barua, S. (2020). Understanding Coronanomics: The economic implications of the coronavirus (COVID-19) pandemic". *SSRN Electronic Journal*, 1-45. Online at <https://mp.ra.ub.uni-muenchen.de/99693/>
- Borzyszkowski, J., Marczak, M., & Zarębski, P. (2016). Spatial diversity of tourist function development: The municipalities of Poland's West Pomerania Province. *Acta geographica Slovenica*, 56(2), 267-276.
- Baležentis, T., Kriščiukaitienė, I., Baležentis, A., & Garland, R. (2012). Rural tourism development in Lithuania (2003–2010) — A quantitative analysis. *Tourism Management Perspectives*, 2, 1-6. <https://doi.org/10.3986/AGS.769>
- Defert, P. (1967). Le Taut de Fonction Touristique: mise au point et critique (The Tourism Function Rate: review and criticism). *Les Cahiers du Tourisme. Aux-en-provence. Centre des Hautes Etudes Touristiques*, Switzerland.
- Dmitriyev, P.S., Fomin, I.A., Wendt, J.A., Ismagulova, S.M., & Shmyreva, O.S. (2022). Regional aspects of creation complex routes ecological tourism on the territory of North Kazakhstan region. *GeoJournal of Tourism and Geosites*, 41(2), 485-492. <https://doi.org/10.30892/gtg.41220-854>
- Donaire, J.A., Galí, N., & Camprubi, R. (2021). Empty Summer: International Tourist Behavior in Spain during COVID-19. *Sustainability*, 13(8), 4356. <https://doi.org/10.3390/su13084356>
- Guan, D., Wang, D., & Hallegatte, S. (2020). Global supply-chain effects of COVID-19 control measures. *Nature Human Behaviour*, 4, 577-587. <https://doi.org/10.1038/s41562-020-0896-8>
- Guerche-Seblain, C., Chakir, L., Nageshwaran, G., Harris, R.C., Sevoz-Couche, C., Vitoux, O., & Vanhems, P. (2021). Experience from five Asia-Pacific countries during the first wave of the COVID-19 pandemic: mitigation strategies and epidemiology outcomes. *Travel medicine and infectious disease*, 44, 102171. <https://doi.org/10.1016/j.tmaid.2021.102171>
- Hao, F., Xiao, Q., & Chon, K. (2020). COVID-19 and China's hotel industry: Impacts, a disaster management framework, and post-pandemic agenda. *International journal of hospitality management*, 90, 102636. <https://dx.doi.org/10.1016%2Fijhm.2020.102636>
- Kazlouski, V., Ganski, U., Platonenka, A., Vitun, S., & Sabalenka, I. (2020). Sustainable development modeling of agritourism clusters. *Management Theory and Studies for Rural Business and Infrastructure Development*, 42(2), 118-127. <https://doi.org/10.15544/mts.2020.12>
- Korinth, B., & Ranasinghe, R. (2020). COVID-19 pandemic's impact on tourism in Poland in March 2020. *GeoJournal of Tourism and Geosites*, 31(3), 987-990. <https://doi.org/10.30892/gtg.31308-531>
- Korinth, B., & Wendt, J.A. (2021). The impact of COVID-19 pandemic on foreign tourism in European countries. *Studies of the Industrial Geography Commission of the Polish Geographical Society*, 35(3), 186-204. <https://doi.org/10.24917/20801653.353.11>
- Korinth, B. (2021). The impact of political decisions on the tourist accommodation occupancy—Central Europe in the time of the COVID-19 pandemic. *Geographia Cassoviensis*, 15(1): 27-36. <http://dx.doi.org/10.33542/GC2021-1-02>
- Laing, T. (2020). The economic impact of the Coronavirus 2019 (Covid-2019): Implications for the mining industry". *The extractive industries and society*, 7(2), 580-582. <https://doi.org/10.1016/j.exis.2020.04.003>
- Medeiros, E. (2019). Cross-border transports and cross-border mobility in EU border regions. *Case Studies on Transport Policy*, 7(1), 1-12. <https://doi.org/10.1016/j.cstp.2018.11.001>
- Moosa, I.A., & Khatatbeh, I.N. (2021). International tourist arrivals as a determinant of the severity of COVID-19: International cross-sectional evidence. *Journal of Policy Research in Tourism, Leisure and Events*, 13(3), 419-434. <https://doi.org/10.1080/19407963.2020.1859519>
- Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C., Agha, M., & Agha, R. (2020). The socio-economic implications of the coronavirus pandemic (COVID-19): A review. *International journal of surgery*, 78, 185-193. <https://doi.org/10.1016/j.ijsu.2020.04.018>

- Niemczyk, A., & Załona, T. (2015). *Funkcja turystyczna polskich makroregionów w aspekcie społeczno-ekonomicznym pierwszej dekady członkostwa w UE [Tourist function of Polish macro-regions in the socio-economic terms of the first decade of Polish membership in the EU]*. Research Papers of Wrocław University of Economics, 379, 13-22. (in polish). <https://doi.org/10.15611/pn.2015.379.01>
- Onder, G., Rezza, G., & Brusaferro, S. (2020). Case-fatality rate and characteristics of patients dying in relation to COVID-19 in Italy. *Jama*, 323 (13), 1775-1776. <https://doi.org/10.1001/jama.2020.4683>
- Oum, T.H., & Wang, K. (2020). Socially optimal lockdown and travel restrictions for fighting communicable virus including COVID-19. *Transport Policy*, 96, 94-100. <https://dx.doi.org/10.1016%2Fj.tranpol.2020.07.003>
- Pappas, N., & Glyptou, K. (2021). Accommodation decision-making during the COVID-19 pandemic: Complexity insights from Greece. *International Journal of Hospitality Management*, 93, 102767. <https://doi.org/10.1016/j.ijhm.2020.102767>
- Parzych, K. (2020). The Polish Baltic coast as a tourist area in the light of tourism indicators. *Studia Periegetica*, 32, 71-87. <http://dx.doi.org/10.5604/01.3001.0014.6595>
- Ritchie, H., Mathieu, E., Rodés-Guirao, L., Appel, C., Giattino, C., Ortiz-Ospina, E., Hasell, L., Macdonald, B., Dattani, S., & Max Roser. Coronavirus (COVID-19) Testing. <https://ourworldindata.org/coronavirus-testing#our-checklist-for-covid-19-testingdata>
- Rodríguez-Antón, J.M., & Alonso-Almeida, M.D.M. (2020). COVID-19 impacts and recovery strategies: The case of the hospitality industry in Spain. *Sustainability*, 12(20), 8599. <https://doi.org/10.3390/su12208599>
- Roman, M., & Grudzień, P. (2021). The essence of agritourism and its profitability during the coronavirus (COVID-19) pandemic. *Agriculture*, 11(5), 458. <https://doi.org/10.3390/agriculture11050458>
- Seyfi, S., Hall, C.M., & Shabani, B. (2020). COVID-19 and international travel restrictions: The geopolitics of health and tourism. *Tourism Geographies*, 1-17. <https://doi.org/10.1080/14616688.2020.1833972>
- Škare, M., Soriano, D.R., & Porada-Rochoń, M. (2021). Impact of COVID-19 on the travel and tourism industry. *Technological Forecasting and Social Change*, 163, 120469. <https://doi.org/10.1016/j.techfore.2020.120469>
- Štefko, R., Vašaničová, P., Litavcová, E., & Jenčová, S. (2018). Tourism Intensity in the NUTS III Regions of Slovakia: Štefko, R., Vašaničová, P., Litavcová, E. & Jenčová, S. (2018). Tourism Intensity in the NUTS III Regions of Slovakia. *Journal of Tourism and Services*, 9(16), 45-59. <https://doi.org/10.29036/jots.v9i16.43>
- Tosun, C. (1998). Roots of unsustainable tourism development at the local level: The case of Urgup in Turkey. *Tourism management*, 19(6), 595-610. [https://doi.org/10.1016/S0261-5177\(98\)00068-5](https://doi.org/10.1016/S0261-5177(98)00068-5)
- Țițu, M.A., Răulea, A.S., & Țițu, Ș. (2016). Measuring service quality in tourism industry. *Procedia-Social and Behavioral Sciences*, 221, 294-301. <https://doi.org/10.1016/j.sbspro.2016.05.118>
- Wen, J., Kozak, M., Yang, S., & Liu, F. (2020). COVID-19: potential effects on Chinese citizens' lifestyle and travel. *Tourism Review*, 76(1), 74-87. <http://dx.doi.org/10.1108/TR-03-2020-0110>
- Widomski, M. (2020). Turystyka krajowa a pandemia. [Domestic tourism and the pandemic], *Poszerzamy Horyzonty*, 21 (1), 771-779, (in polish)..
- Więckowski, M. (2021). Will the Consequences of Covid-19 Trigger a Redefining of the Role of Transport in the Development of Sustainable Tourism? *Sustainability*, 13, 1887. <https://doi.org/10.3390/su13041887>
- Wojcieszak-Zbierska, M.M., Jęczmyk, A., Zawadka, J., & Uglis, J. (2020). Agritourism in the Era of the Coronavirus (COVID-19): A Rapid Assessment from Poland. *Agriculture*, 10(9), 397. <http://dx.doi.org/10.3390/agriculture10090397>
- Wut, T.M., Ng, M.L.P., Lee, S.W., & Xu, J.B. (2022). Tourists' travel behaviour after COVID-19. *GeoJournal of Tourism and Geosites*, 41(2), 387-392. <https://doi.org/10.30892/gtg.41207-841>
- Zheng, Y., Goh, E., & Wen, J. (2020). The effects of misleading media reports about COVID-19 on Chinese tourists' mental health: a perspective article. *Anatolia*, 31(2), 337-340. <https://doi.org/10.1080/13032917.2020.1747208>
- *** Oxford COVID-19 Government Response Tracker Regional report - Europe and Central Asia. <https://covidtracker.bsg.ox.ac.uk/stringency-map>
- *** UNWTO. (2021). World Tourism Barometer, 19(1). <https://doi.org/10.18111/wtobarometereng>