sustainability

MDPI

Article

Impact of the COVID-19 on the Destination Choices of Hungarian Tourists: A Comparative Analysis

Marcell Kupi [1,2] and Eszter Szemerédi [1,*]

[1] Centre for Economic and Regional Studies, Institute for Regional Studies, West Hungarian Research Department, Liszt Ferenc u. 10, 9022 Győr, Hungary; kupi.marcell@krtk.hu
[2] Doctoral School of Regional and Business Administration Sciences, Széchenyi István University, Egyetem tér 1, 9022 Győr, Hungary
* Correspondence: szemeredi.eszter@krtk.hu

Abstract: The pandemic caused by the SARS-CoV-2 virus (COVID-19) has transformed the tourism sector to an unprecedented extent, creating new challenges and new development paths. Although the recovery of tourism is fraught with uncertainties, the changes in tourists' travel habits offer a unique opportunity for tourism to recover in a way that respects the principles of sustainable development. Several international studies suggest that the pandemic has significantly transformed tourists' travel habits and destination choices, making them more environmentally conscious and shifting their preferences towards inland destinations close to nature. To test these claims, we examined tourists' destination choices and the factors influencing them in a sample of 500 respondents in Hungary before the pandemic and after the restrictions on travel, businesses, gatherings, and mask requirements were lifted in the summer of 2021. Our results show that there was no significant change in the destination choices of the tourists surveyed. The main influences were the aspects of safety and comfort; the consideration of environmental concerns, despite our assumptions, did not play a significant role.

Keywords: COVID-19; travel behavior change; destination choice decisions

check for updates

Citation: Kupi, M.; Szemerédi, E. Impact of the COVID-19 on the Destination Choices of Hungarian Tourists: A Comparative Analysis. *Sustainability* **2021**, *13*, 13785. https://doi.org/10.3390/su132413785

Academic Editors: Peter Szende, Martin Balázs Zsarnóczky and Lóránt Dénes Dávid

Received: 11 November 2021
Accepted: 12 December 2021
Published: 14 December 2021

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

The world is experiencing an unprecedented global health, social and economic emergency due to the pandemic caused by COVID-19. According to the World Health Organization's report on the Coronavirus disease situation, the pandemic has caused more than 61 million illnesses and more than 1.5 million deaths worldwide. The pandemic has had an impact on real economic output, trade, unemployment, and financial flows [1] (WHO, Geneva, Switzerland, 2021), and has also exposed weaknesses in tourism. Travel restrictions imposed in response to the public health emergency have led to an unprecedented downturn in the tourism sector. According to the latest figures from the World Tourism Organization [2] (UNWTO, Madrid, Spain, 2021a), the number of international tourists fell by 74% to 1 billion in 2020. This compares to a 4% decline during the global economic crisis in 2009. In Europe, the most recent data show that COVID-19 has caused more than 58 million illnesses and nearly 115 million deaths [1]. According to 2019 statistics from the World Tourism Organization, the number of international tourists arriving in Europe was over 700 million per year, a figure that has fallen by 70% to over 500 million, despite a rebound in summer 2020. This has led the World Tourism Organization to describe 2020 as "the worst year in the history of tourism" [2] (p. 9).

The Hungarian tourism and hospitality industries have been significantly affected as well by the pandemic. Thanks to the country's natural and cultural heritage along with the continuous development of destinations, infrastructure and catering establishments, the tourism sector in Hungary has seen an upward trend between 2010 and 2020. During this period, almost a continuous outperformance of the previous years was recorded for

the main tourism indicators, such as the growth of tourist arrivals, number of overnight stays, turnover of commercial accommodations, average daily expenditure, etc. This was confirmed by the World Travel and Tourism Council's [3] announcement that the direct contribution of tourism to the Hungarian economy exceeded HUF 930 billion in 2019 [4]. Tourism accounted for 6.8% of domestic GDP in 2018 and 7% in 2019. As a consequence of the pandemic, commercial accommodation experienced a 54% decline compared to the same period in 2019. The number of overnight stays by foreign tourists and the revenue from accommodation fees in the capital's hotels fell by 78%. As a result, the number of people employed in tourism has fallen from nearly 120,000 to 70,000 [4].

The 2021 summer season has mainly boosted domestic tourism, due to varying levels of vaccination coverage, acceptance of vaccine types, mandatory testing and uncertainty in long-distance travel. Domestic travel volumes are forecast to reach 2019 levels in 2022, intra-regional travel volumes are expected to reach 2019 levels in 2023, and international travel volumes are forecast to reach pre-pandemic levels in 2025 [5]. Nearly 90% of experts surveyed in a global survey by UNWTO [6] estimate that international tourism will return to pre-pandemic levels by 2024 or later. The World Council for Travel and Tourism [3] also forecasts an increase in the popularity of domestic and regional travel, holidays in nature, outdoors or at the seaside. Statistics also show that in most destinations, domestic tourism generates more revenue than international tourism. In OECD countries, domestic tourism accounts for 75% of total tourism receipts, while in the European Union, domestic tourism receipts are 1.8 times higher than international tourism receipts [7]. This trend is also evident in Hungary, where the Hungarian Tourism Agency reports that in the summer of 2021, there were 25 percent more overnight stays than in the previous year, with nearly 5 million visitors, of which 4 million were Hungarian domestic tourists. The amount spent in tourist accommodation increased by 25 percent compared to 2020 [8].

Based on the above-mentioned surveys and forecasts, the demand for nature and outdoor activities is expected to increase in the coming years, with a pick-up in domestic tourism in particular, and a clear shift in tourist behavior towards familiar, predictable, low-risk travel modes. In addition, the results of international surveys point towards a shift in travelers' preferences towards safer and more sustainable tourism as a result of the pandemic e.g., [9–11].

To test these claims, we examined changes in tourists' destination choices in a sample of 500 people living in Hungary and traveling at least once a year for holidays. The questionnaire was designed using LimeSurvey and the target group was reached through the Hungarian National Panel, which is an online panel for market and sociological research providing panel members the opportunity to participate in its clients' research on various topics. It mainly transmits participation in online questionnaires, such as the case of our study. The questionnaire ran from 1 May 2021 to 31 July 2021 in which, restrictions on travel, businesses, gatherings and mask requirements were lifted and travel possibilities were available. Similarly to the study by Hodbod et al. [12], it allowed us to identify the effects of the pandemic on future travel choices after the lockdown.

After the introduction and literature review, the paper presents the methodological background of the research, followed by a description of the general characteristics of the sample and the results relevant to the topic of the study. The paper concludes with a summary.

2. Literature Background

Summary of the Results of International Research on New Trends

Several international organizations and tourism service providers conducted research in an attempt to explore the impact of COVID-19 on the travel and tourism industry and to predict future travel trends. The report "Insight Series—COVID-19 and Tourism" published by UNWTO [13] identified a number of trends that are emerging or intensifying as a result of the pandemic. Among these, the rise in popularity of "staycations" is noteworthy. A staycation is a home stay, a low-budget holiday in the tourist's own home area. It became

an increasingly popular alternative after the 2008 international crisis "when more and more people, mostly for financial reasons, discovered the natural and cultural attractions of their home and holidayed in or near their home. From the point of view of tourism theory, the power of novelty comes from the fact that it raises the question: is physical distance necessary to obtain and experience tourism or is it enough to switch the brain into tourist mode?" (Pécsek, 2019, p. 5). Linked with this is the growing popularity of nature-based, rural tourism, as well as the increase in tourists' awareness and efforts to create a positive impact on local communities [13].

According to a study published by Airbnb, in 2021, "the great escape to rural" was the most popular trend. In 2015, rural trips accounted for less than 10 percent of nights booked through Airbnb globally, while in 2021, this has doubled [14]. A survey by Booking.com [15] found similar results, with 53% of travelers planning a shorter holiday in 2021 than in 2019 and preferring locations closer to their home. According to the latest Miles and Longwood's [16] Travel Sentiment Study in October, 27% of respondents will choose a domestic destination in the next 6 months, and 16% a destination close to nature. The European Travel Commission's [17] latest "Monitoring Sentiment for Domestic and Intra-European Travel" survey for October found similar results, with 12.2% of respondents preferring rural destinations close to nature and a further 30.2% preferring coastal destinations. Although the proportion of people planning to travel exclusively inland has fallen by 10%, there has been a clear shift in tourists' behavior towards familiar, predictable, low-risk travel.

The new patterns of travel have been researched by the scientific community as well. Large-scale multi-country, multidimensional research has been done e.g., by Pan and Yue [18] and Hodbod et al. [12]. Hodbod et al. [12] conducted a representative consumer survey in five European countries, focusing on the underlying reasons for households' reduction in consumption of tourism, hospitality, services, retail and public transport. Similarly to our study, it was conducted in a period after the release of lockdown restrictions, but following the first wave of the pandemic. Their representative sample consists of 7500 households, but they focused mainly on the households' self-reported reasoning for the changes in consumption in the five examined sectors. The self-reported nature of some of the answers may distort the results, but their conclusion is that the pandemic has altered consumer behavior and that long-term sectoral consumption shifts may occur. The authors also used probit estimation to examine households' characteristics that could explain the reported consumption changes. A similar study by Pan and Yue [18] analyzed the multidimensional effects of COVID-19 on the economy by considering individuals and multi-sectors, amongst them the tourism sector. The descriptive and graphical analysis, pre- and post-COVID-19 comparison confirmed that COVID-19 had a negative impact on individuals/households and respondents considered tourism to be the most affected sector. While these are mainly descriptive studies, the collected data would have allowed forecasts on macro and micro levels as well. Roman et al. [19] conducted research involving 697 people in Poland and the US, which concluded that respondents are more likely to spend their holiday in their own country (especially more affluent people), and people with a higher education level are choosing to travel abroad. The research findings also indicate that relaxation was the main reason for traveling. Reitano et al. [20] conducted a survey between March and May 2020, during the first lockdown, and between October and December of the same year, during the second lockdown in Italy, Greece and Great Britain, involving 1346 respondents. The authors analyzed their feelings and expectations of their desire to take a vacation. In particular, the question of how long it would take to decide on a holiday, the type and duration, after the period of constriction due to the coronavirus was over, was asked. Their descriptive and comparative study showed that Italians and Greeks preferred not to move away from their country of origin, while in the UK, residents preferred to leave the country. The results of the second study showed that, after restrictions were lifted, respondents wanted to wait longer before traveling again

because of safety concerns and uncertainty. Their study is similar in nature to our survey, so the methodology applied in our study could be used to refine their results.

In relation to the new trends identified by the international organizations and tourism service providers mentioned above, several authors conducted research on travel risk perception. The study by Villacé-Molinero et al. [21] reports the findings of a quantitative and qualitative study involving 1075 travelers residing in 46 countries and 28 international hospitality experts. It focuses on travel risk perception during the pandemic and on measures to improve traveler confidence based on the issue-attention cycle. As the two data collections were conducted in two different periods, a second survey of travel risk perception during the de-escalation stage would have yielded clearer results, but their results confirm the relation between travel decision and the traveler's perception of the risk related to travel. An interesting result worth noting for future research was that their research revealed no connection between traveler type, travel experience, gender and travel decision. Singh Bhati et al. [22] similarly focused on perceived risk and emphasized perceived health risk as an important aspect of travel behavior and a key element in the decision-making process when choosing destinations. Using Protection Motivation Theory (PMT) their model suggests that tourists' perception of health risk factors and their self-efficacy jointly influence the perceived destination's image, and consequently the destination choice. A survey of 305 people carried out by Han et al. [23] came to the conclusion that the psychological risk connected with travel affects consumers' attitudes and travel choices, and makes tourists more likely to travel to domestic, safer destinations. Carballo et al. [24] also showed that gender moderates the relationship between risk perception and travel, and that risk perception is higher for women, who are more likely to reduce their visits to destinations perceived to be less safe, although Liu-Lastres et al. [25] emphasized the importance of situational factors in their study of female business travelers.

A study worth noting was carried out by Terziyska and Dogramadjieva [26]; it is an online study covering 645 respondents on the influence of the COVID-19 pandemic on travel intentions of Bulgarian citizens. It indicates a less significant influence of the pandemic on the respondents' travel intentions for the future. While it is a descriptive analysis and was conducted in the early stages of the crisis, it "challenged existing anticipations of a complete change in tourist demand and behavior, but confirmed the expectations of localism and social connection (demonstrated by VFR) to be the primary factors in the early stages of tourism recovery" [26] (p. 9).

There have been a few studies focusing on changes in travel behavior in Hungary e.g., an online non-representative study, covering 220 respondents, by Huszka and Huszka [27], but it contains only descriptive analysis. Because of its sampling and data collection method, it does not allow general conclusions, but supports the generally expected consequences of the COVID-19 crisis: the growing importance of safety and reduction in travel due to the negative economic effects of the pandemic. A report analyzing secondary information by Raffay [28] synthetizes the economic and social consequences of the crisis, the new trends in tourist behavior and business practices, which served as a good starting point during the formulation of hypotheses. Similarly to Raffay [28], the literature review of Persson-Fischer and Liu [29] provides a synthesis of six leading research themes in COVID-19 and tourism; amongst them, tourist perception and decision-making is the second, and sustainability is the fourth leading theme.

According to the literature, the preference for destinations close to nature has grown not only due to the avoidance of overcrowded destinations, but also the increasing role of sustainability and appreciation of the value of nature among tourists. According to the Sustainable Travel Report 2021 of Booking.com [10], more and more people are looking for eco-friendly tourism and accommodation options. The survey of more than 29,000 respondents from 30 countries shows that awareness of green tourism is at an all-time high. The study by Eichelberger et al. [9], while based only on 19 semi-structured interviews, showed that tourists affected by the pandemic attempt to behave responsibly during travel and on site, focusing on contributing to the economy of visited sites and avoiding mass tourism destina-

tions or destinations which discriminate against local communities. The scientific community emphasizes that the pandemic offers new ways to rebuild tourism. Niewiadomski [30] argues that transitional deglobalization offers an unprecedented opportunity for tourism to evolve while respecting the principles of sustainable development. Similarly, Higgins-Desbiolles [31] argues that the lessons of the crisis can put tourism on a more sustainable footing and focus attention on issues such as over-tourism, climate change and systems approaches to development models [32].

Building on the findings of the international research presented, our research aims to assess these trends among the Hungarian tourists surveyed, to investigate their destination choice decisions and assess how they are changing. It is important to note that most of the studies listed use descriptive, comparative analytics and SPSS analytics, but a few studies used novel methods to understand the changes in tourist behavior. Sung et al. [11] used social media data mining, centrality analysis, CONCOR (CONvergent CORrelation) analysis, and semantic system network analysis to analyze preferences. Their results showed that Korean tourists have increased their preference for domestic travel, eco-trips and gourmet trips. Godovykh et al. [33] examined attitudes toward tourism through social media sentiment analysis and demonstrated that COVID-19 statistics and media coverage have significant effects on interest in tourism, as well as positive and negative sentiment toward tourism. The methodology applied in our study, similarly to these approaches, does not stop at correlation studies; our aim was to explore the question in more depth and to uncover the underlying motivations of changes in destination choice. The main method applied is artificial neural network analysis, which has been used, e.g., in forecasting erosion changes by Peponi et al. [34], thermal performance by Bhattacharyya et al. [35] and in tourism studies as well, mostly for forecasting tourism demand, e.g., by Claveria et al. [36], and Adil et al. [37]. In the next section, we present the research methodology and then discuss the evaluation of the results.

3. Research Methodology

Through the survey, we sought to answer the research question: how did the impacts of the pandemic change the destination choices of the Hungarian tourists surveyed and did it influence their preferences in a positive way towards a more nature-based tourism? In our research, we formulated two hypotheses and used artificial neural networks to analyze the factors involved in destination choice. Our hypotheses:

Hypothesis 1 (H1). *As a consequence of the COVID-19 pandemic, the surveyed Hungarian tourists have a significantly higher preference for domestic destinations.*

Hypothesis 2 (H2). *In the wake of the COVID-19 pandemic, the surveyed Hungarian tourists will have a significantly higher preference for nature-based tourism in the future.*

Descriptive statistics were used to present a non-representative sample of our questionnaire, which was distributed voluntarily and anonymously to 500 people through the Hungarian National Panel. The target group of the survey were people living in Hungary and traveling at least once a year for holidays. Due to the lack of statistical data on the general composition and demographic characteristics of the population of interest, Hungarian tourists, in this study, the survey could not meet the criterion of representativeness.

The questionnaire was designed using LimeSurvey and the survey was tested and conducted using the Hungarian National Panel, which is an online panel owned by Nielsen Admosphere, NMS Market Research and STEM/MARK for market and sociological research, providing its panel members the opportunity to participate in research on various topics. It mainly enables participation in online questionnaires provided by its clients, such as the survey in our study. The Hungarian National Panel sent out our questionnaire to its panel members belonging to the target group of people living in Hungary and traveling at least once a year, who had the opportunity to complete the questionnaire in exchange for a reward. After that, in line with the Panel's privacy statement, the anonymized data has

been transferred to us in a database. Members of the Panel must be over the age of 15 and be permanent residents of Hungary; use of the service requires no educational qualification. It is important to note that, after testing the questionnaire through the Hungarian National Panel involving 25 people, we added a statement to the introduction of the survey informing the respondents that, if they are not the one organizing the holidays, they can make an informed statement for the person responsible for the organization of their travel.

Our questionnaire was divided into two sections; Section 1 was designed to measure habits/attitudes before 1 January 2020 (we chose the name "before COVID" for this period). Section 2 (which we named during the analysis of data "post COVID") included the period after the restrictions on travel, businesses, gatherings and mask requirements were completely lifted. The questionnaire ran from 1 May 2021 to 31 July 2021 in which restrictions on travel, businesses, gatherings and mask requirements were lifted and all travel possibilities were available. Combined with a low health risk (On average, the number of new infections has fallen below 1000 in May, below 200 in June and below 60 in July after a peak above 11,000 in March 2021 (Source: koronavirus.gov.hu (accessed on 9 December 2021))) and with the general political narrative of 'we overcame the pandemic', it allowed us, similarly to the study by Hodbod et al. [12], to identify the effects of the pandemic on future travel choices.

Although we divided the questionnaire into two sections under the names "before and post COVID" in order to avoid bias, these were not visible in the survey; respondents encountered these during the completion of the questionnaire as Sections 1 and 2. In the introduction, we asked the respondents to refrain from referring to COVID-19 in Section 1, as we wanted to look at "general" habits and attitudes at first. This was followed by Section 2, where we directly addressed the pandemic, the resulting restrictions and the impact on their travel plans. The set of questions in Section 1 was divided into 13 closed questions, 5 Likert-type ranking scales and 1 open-ended question in which respondents could express their thoughts on sustainability. The set of questions in Section 2 consisted of five closed questions, a Likert-type ranking scale and eight demographic questions. The information was measured on a 5-point Likert scale, with a score of 1 indicating minimal importance and a score of 5 indicating a high importance. For the basic analysis of the data, we used the SPSS22 program. Firstly, we looked for correlations between the variables and analyzed the foreign-domestic orientation, analyzing whether the pandemic caused a change in preferences based on these two factors alone. While the various demographic variables might be of specific research interest and would allow for a more in-depth analysis of the correlations, these were kept to gender differences; other aspects, due to the paper restriction, present a topic to be explored separately.

Artificial neural networks are a form of supervised machine-learning techniques that identify relationships and their existence between known observations (e.g., past consumer decisions) and various external environmental variables in order to classify new, unknown data [38]. The rationale behind the application of this method is that these networks are suitable for handling large datasets [39], nonlinear relationships [40], and generalization from relatively imprecise input data [41]. They are also resistant to noise, outliers and overfitting [39,40]. The application of AI as a method involves two phases: case representation and classification. The architecture of the neural networks used comprises three interconnected layers. The first is an input layer, which consists of several nodes (i.e., one for each dependent variable tested). The second is a hidden layer, which comprises different artificial neurons—perceptrons. The third is an output layer, which contains four artificial neurons (i.e., one for each predicted change in travel behavior) for transmitting the predicted output values. The range of output parameters is an interval representing probability values between 0 and 1 (i.e., the minimum and maximum probability of belonging to a group with a given travel preference). "During training, the network first obtains different input variables corresponding to known observations (i.e., learning points representing different decision classes) through the input layer. Then, these input variables are transmitted to the neurons in the hidden layer, which compute and extract the relevant

information to predict the output values" [42] (p. 3). The weights for each connection are determined by an initialization function, which can be written parametrically in the following form:

$$Y_{net} = \sum_{i=1}^{N} Y_i w_i + w_0$$

where N is the number of perceptrons in the input unit Y_i data quality of the i-th neuron calculated from the input layer, w_i the weight of the i-th contact and w_0 is the neural limit. The neural threshold ensures that the $\sum_{i=1}^{N} Y_i w_i$ should always be within the acceptance range.

During the training, "the network iteratively adjusts these weights using a learning function [43] so that the expected output value is as close as possible to the known target value for each training point" [39,42]. Finally, the output meals are obtained using the following formula:

$$Y_{out} = f(Y_{net}) = f(\sum_{i=1}^{N} Y_i w_i + w_0)$$

where $f(Y_{net})$ represents the specific perceptron transfer function.

During classification, the network uses the unknown point data for the entire study area and classifies them based on the calibrated weights [42]. Therefore, the network predicts the output values for each case in the study area, allowing the creation of a predictive preference map. We also applied this procedure to the so-called decision tree procedure as a background function. Decision Tree Classification (DTC) is also an artificial machine learning technique that works by recursively partitioning the dataset to achieve a homogeneous classification of the target variable. "The algorithm aims to reduce the entropy of the target variable in the resulting dataset at each split by selecting the optimal split from a number of independent variables" [42] (p. 4).

The main advantages of this method are that it is computationally inefficient compared to traditional artificial neural networks, insensitive to the pattern of the distribution, and robust to missing data and redundant environmental variables [44]. The decision tree is thus a supervised expressive classification algorithm consisting of a set of nodes, where the inner layers test the nodes. The main challenge in implementing the decision tree is to identify which attributes should be selected at each layer. To handle this selection of attributes, different attributes can be chosen that perform best at each level for optimal calibration. Some popular traditional algorithms such as CART, ID3 and C4.5 are used to generate accurate and robust decision trees. These methods are relatively simple to generate and easily interpret the outputs produced. All these algorithms use a top-down simplified approach to build the decision tree. These methods provide a clearer choice of which attributes to test in the decision tree and how to define the allocations. Besides the best expressive, easy-to-understand attributes, decision trees have the following main limitations [45]:

- since decision trees are unstable, small variations in training data can significantly change the structure of the decision tree;
- each decision depends on the data available at each node, so it does not exploit the characteristics of all data points, which can lead to poor classification performance;
- induction tree computations can become very complex and lengthy, especially when many values are uncertain or when multiple outputs are linked.

Windeatt and Ardeshir [46] recommend the so-called pruning method to deal with overgrown trees that become too complicated. This procedure prunes out paths in the decision tree that are only subgraphs of the overall network structure, or replaces the subtree with a "leaf". In the case of the present research, such a restrictive pruning procedure was not necessary, as no such subtrees were created due to the number of combinations.

4. Presentation of the Results

4.1. Demographic Characteristics of the Sample

Table 1 reports the main characteristics of the respondents. Half of respondents were women and half were men, which is different from the average composition of the population. Nearly 40% of respondents were under 18 years old, due to the survey method; people aged 51 to 65 comprised 22% of the sample. Households with a small average household size—less than three persons per household—accounted for 58% of the sample. In terms of occupation, the largest proportion of the sample was made up of pensioners/disabled pensioners (28.4%), followed by trade and service occupations (12.2%) and office and administrative occupations (9.8%). The highest educational qualification of 30.4% of the respondents was a vocational or technical school qualification, while 27.2% had a vocational or secondary school qualification. In addition, 14.6% of the sample had a college degree and 6.2% had a university degree.

Table 1. Main characteristics of the respondents (N = 500).

Age	Number of Persons	% of Respondents
15–18 years	184	37%
19–35 years	30	6%
36–50 years	90	18%
51–65 years	110	22%
≥66 years	86	17%
Household Size	**Number of Persons**	**% of Respondents**
1	67	13%
2	223	45%
3	96	19%
4	77	15%
≥5	37	7%
Education	**Number of Persons**	**% of Respondents**
Secondary education	348	70%
Primary education	34	7%
Tertiary education	104	21%
PhD	14	3%

Taking into account all these characteristics, 36.2% of the respondents did not consider their income situation to be good, answering that they just manage to get by on their income. A further 35.8% thought that they were getting by well on their income but were unable to save, and only 18.2% considered their situation satisfactory in this respect.

4.2. Changes in Respondents' Destination Choices

The most common motivation for respondents to travel (Figure 1) in the pre-pandemic period was sun lust/relaxation, with 77.8% of the sample traveling at least once a year. Importantly for our research, the second most common motivation for tourism was the nature/escape/outdoors category, which motivated 73.8% of the sample to travel.

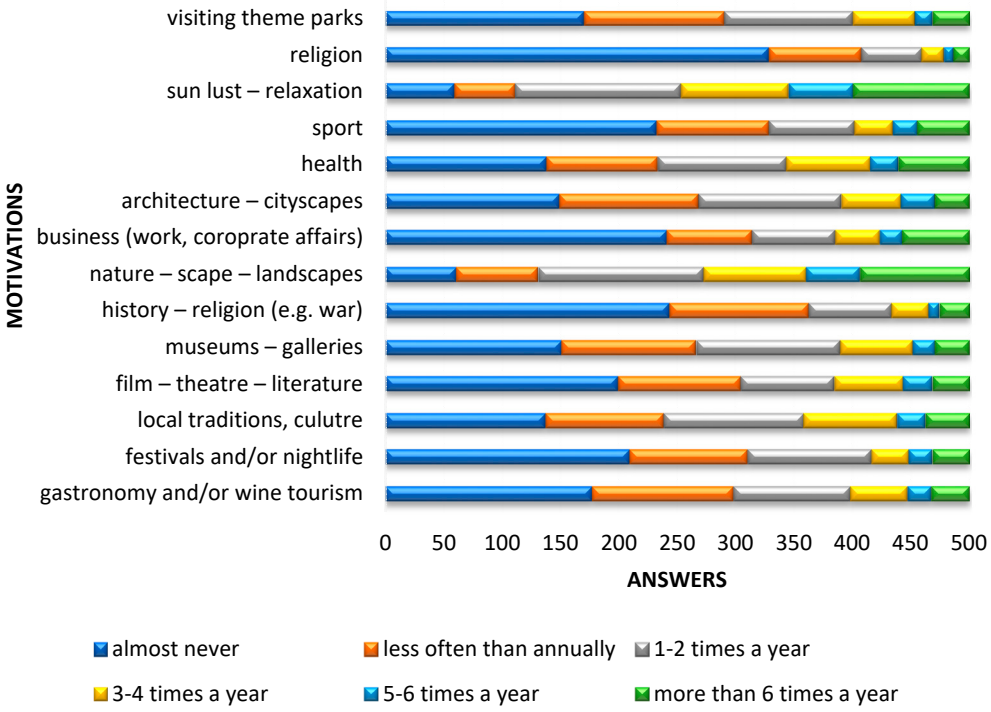

Figure 1. Travel motivations in the period before the pandemic.

In addition to travel motivations, foreign orientation was also surveyed, as this is a highly important factor that may change as a result of COVID, based on the results of international surveys (e.g., Eichelberger et al. [9]. Based on the answers to the research question "If you like to travel abroad, which country do you prefer?" 23.01% of the average respondent's trips were directed abroad before the pandemic. This data includes responses from those who marked 0, hence it was appropriate to filter out domestic tourists only. The average now shows that 29.8% of respondents who are not committed to domestic travel only choose to travel abroad. Narrowing the segment further, the most popular foreign destinations (Figure 2) are Austria (97 mentions), Italy (85 mentions) and Croatia (82 mentions).

Figure 2. Word cloud for destinations abroad.

Our research focused on the impact of the pandemic on travel patterns. We also sought to answer whether the pandemic restrictions had a positive impact on consumers' preferences to travel to more inland, natural destinations as opposed to crowded ones. As a first step, we analyzed their out-of-country orientation, seeking to answer whether the pandemic caused by COVID-19 has led to a change in preferences based on these two factors alone. When comparing the answers to the question "What percentage of your trips are abroad?" with the answers to the question "Where are you planning to go after the pandemic is over?" our Khi2 statistic resulted in a correlation of <0.0001, suggesting that the foreign-mainland preference was not reshaped by the pandemic, which is also reflected in the sample distribution (Figure 3). Of the 500 respondents, 55% plan to travel following the pandemic, while 71% of them would prefer a domestic destination as their travel destination. However, looking at the sample average, similar proportions were obtained for the pre-pandemic period, with 23.01% of the average respondent's travels being abroad before the pandemic.

Figure 3. Distribution of the sample before and after COVID for the foreign and domestic questionnaire.

In examining their destination choice decisions, we were interested to see how the restrictions imposed by the coronavirus epidemic have affected consumers' travel decisions. In our decision tree analysis, we classified the distribution of responses according to whether their decision changed as a result of COVID-19, and then how the proportions within that changed. Figure 4 shows a so-called simplified structure of the DTC, showing the frequency of each question and the responses to each question. The questions providing the base for the structure were "How will COVID-19 affect your future trips?", "Has COVID-19 affected your financial situation?", and "Do you feel safer traveling domestically in the future?". If the pandemic had a negative impact on the economic situation of the respondent, they were less likely to travel in the future (48%). Conversely, if the situation had no or a neutral impact on the tourist, 64.8% would not change their travel habits. Reading further down the tree, it is also clear that respondents who believe that domestic

travel is safer than foreign travel are more likely to reduce the number of trips they take in the future (60.7%). This is also due to the negative impact that the restrictions imposed in the past have had on respondents' economic situation. Of the respondents, 78% who have not been negatively affected economically by the epidemic situation and were not afraid of traveling abroad would not change their travel habits. The proportion of those who feared traveling abroad is only 46.3%.

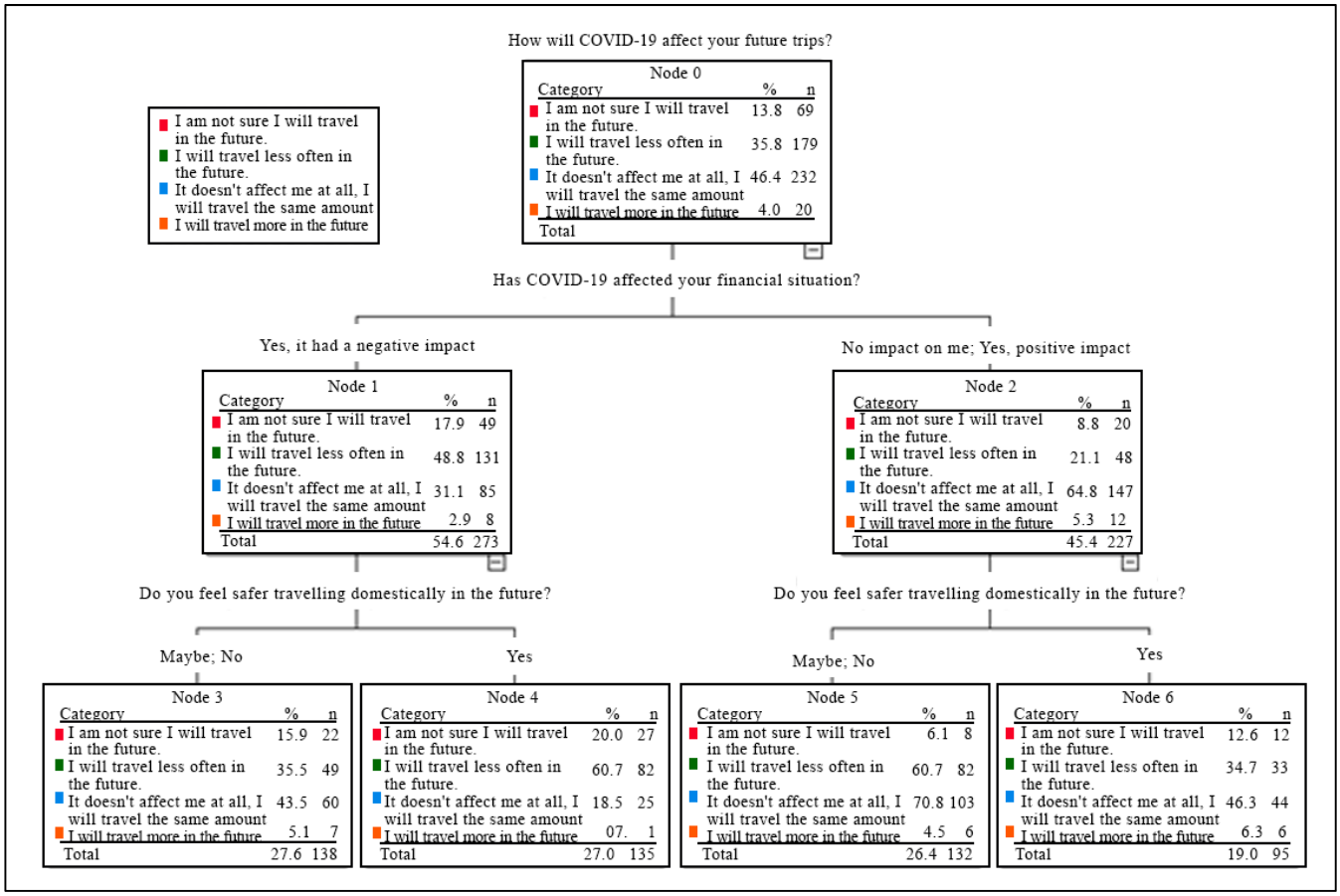

Figure 4. Impact of COVID-19 on travel decisions.

The correlations between the above questions (dependent: Q18, independent Q15,16,7,19) were also examined using a correlation-based network, subdivided into women and men (Q18: How will COVID-19 affect your future trips?, Q15: Did you have to cancel your trip because of COVID-19?, Q16: Did you choose to travel domestically rather than abroad because of COVID-19?, Q17: Has COVID-19 affected your economic situation?, Q19: Do you feel safer traveling domestically in the future?). From the first case (network on the left side of Figure 5), we can conclude that decisions to travel domestically are more related to the perception of safety. This is typically the case for female respondents. This suggests that women are more likely to perceive domestic travel as safer, with the motivation for the decision being more pronounced when safety is prioritized, rather than the destination. The second case for men suggests that future travel decisions change if they had to cancel a trip or change destination because of the epidemic.

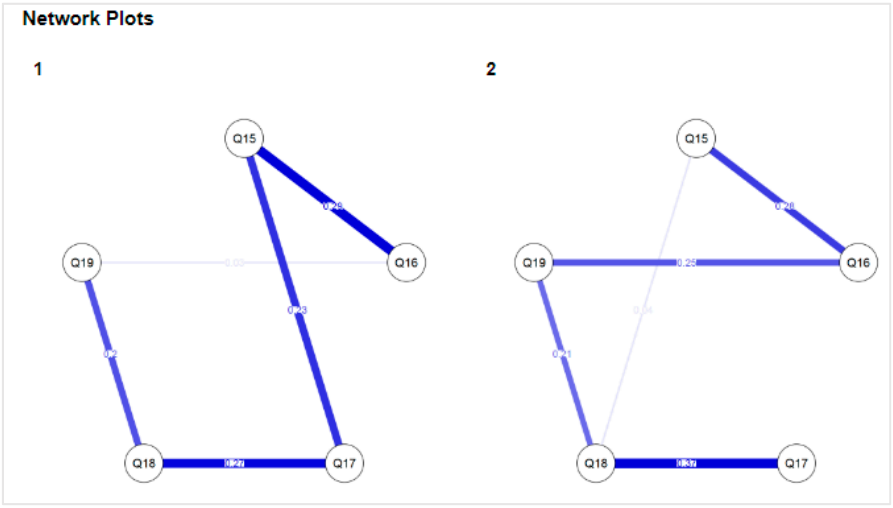

Figure 5. Correlation network of factors influencing domestic travel decisions for women (**left**) and men (**right**).

Our research also examined whether epidemiological restrictions have had a positive effect on consumers' preferences for destinations closer to nature as opposed to overcrowded destinations. First, we used a trip analysis that explains changes in the destination variable using regression estimator functions. In the model, we investigated how consumers' destination choice changed in response to pandemic-related constraints. Since the route analysis did not yield results, a complex system was designed to solve the problem. To do this, we again returned to the neural network and integrated the artificially generated perceptrons into a decision tree model.

"A decision tree is a decision support tool that uses a tree model of decisions and their possible consequences, including random event outcomes, resource costs and utility" [47]. It is one way to visualize an algorithm that contains only conditional control statements. Decision rules are created by linking association rules to the target variable. These can denote temporal or causal relationships; in our case, the latter played a role. Thus, we created a non-parametric supervised learning method using a classifier algorithm. It predicts the value of the target variable by learning simple decision rules inferred from the data features. The tree can thus be considered as a unit constant approximation. After running the procedure, it could not be proven that pandemic restrictions alone would result in a consumer changing his/her travel preferences. In such cases, we attempted to reduce the complex tree structure.

"If there is no correlation between the outputs, a very simple way to solve this type of problem is to build 'n' independent models, i.e., one for each output, and then use these models to independently predict each outcome. However, since it is likely that the outputs associated with the same input are themselves correlated, it is often a better method to build a model that can predict all n outputs simultaneously. It also has the advantage of requiring less training time as only a single estimator function is produced" [48]. In addition, the generalization accuracy of the resulting model can often be increased.

As a consequence, our model showed a small difference in the distribution rates between subsets, i.e., a very small percentage of consumers who are not negatively affected by the epidemic situation would change their destination or travel preference. However, target groups whose economic situation was negatively affected by the restrictions or who had to change their previous travel patterns due to the pandemic would change their travel patterns in higher proportions than in the past. However, this could not be confirmed by statistically significant results, and could therefore be due to an anomaly in the non-representative sample composition. In addition, the estimators of the neural model could not distinguish the impact of the pandemic from other demographic factors on travel

behavior, so it is impossible to estimate the extent to which pandemic restrictions alone modified consumer decision making, or whether these factors had any effect on the final outcome at all.

Although the level of significance does not confirm a real correlation, based on the question "Taking into account the pandemic, which of the following factors played a major role in your choice of future travel destination?" the following decision factors have strong explanatory power:

- Intended trips to a domestic destination (within 150 km of home): the most dominant influencing factor is previous experiences related to the destination (G2 = 719.18), but also the experience of a new culture (G2 = 570.50), safety (G2 = 423.46) and proximity to nature (G2 = 413.97). Lower explanatory power is attributed to the distance traveled (G2 = 377.36), support for the recovery of domestic tourism (G2 = 282.35) and finally the cost of the trip (G2 = 200.55). Health risks, epidemiological standards, the expected number of tourists and active recreation have a lower explanatory power and are not considered to be a factor in the decision for this planned distance.
- Intended trips to the home country (more than 150 km from the place of residence): the factors of active recreation (e.g., nature walk, sports activity) (G2 = 1390.60) and travel distance (G2 = 1081.19) have a high explanatory power. Health risks (G2 = 698.26), previous experiences related to the destination (G2 = 361.45) and, to a much lesser extent, exposure to a new culture (G2 = 84.83) are factors that are significantly lower in importance but still influence the decision, based on the responses from the sample. The explanatory power of the other factors assessed is 0.
- To a neighboring country (within 150 km of home): the explanatory power of this category, which can also be described as short trips abroad, is significantly lower, although the number of mentions was also lower in the sample. Nevertheless, the factors that influenced the decision were found. The main factors were closeness to nature (G2 = 251.83), epidemiological regulations (G2 = 121.45), experience of a new culture (G2 = 99.41), safety (G2 = 85.05), expected number of tourists (G2 = 71.94), active recreation (e.g., nature walks, sports activities) (G2 = 64.35), previous experiences related to travel (G2 = 46.61) and travel distance (G2 = 35.73).
- To a neighboring country (more than 150 km from the place of residence): learning about a new culture (G2 = 709.344), health risks (G2 = 533.14), expected number of tourists (G2 = 245.39), proximity to nature (G2 = 89.42) and to a lesser extent the cost of the trip (G2 = 6.91) were considered as important decision factors for longer trips.
- To a non-neighboring European country: the decision factors for traveling further afield include the opportunity to experience a new culture (G2 = 961.622), health risks (G2 = 234.76), the cost of traveling (G2 = 132.71) and proximity to nature (G2 = 103.80).
- To a non-European country: this factor also had a lower mention rate, but it is clear that, despite the value levels, the proportion of people who mentioned experiencing a new culture is higher than the other influencing factors (G2 = 236.71). Other influencing factors include previous experiences related to travel (G2 = 67.59), safety (G2 = 65.21), proximity to nature (G2 = 43.4), distance traveled (G2 = 29.20) and active recreation (e.g., nature walks, sports activities) (G2 = 23.29).

It can therefore be seen that proximity to nature plays an important role for domestic destinations and short trips abroad, as does active recreation. Nature and active tourism are intertwined in Hungary not only in the public consciousness, but also, because of the complementary nature of the two tourism products, the Hungarian Tourism Agency treats them together in its marketing communication both in Hungary and abroad [49].

5. Conclusions

The pandemic that broke out in 2020 led to the introduction of travel and distance restrictions, which led to a reduction in tourism demand; the tourism model has shifted towards smaller groups, longer stays and a preference for domestic, nature-based tourism. In order to assess these trends in Hungary, a sample of 500 tourists was used to examine

tourists' destination choices before and after the pandemic. Our first hypothesis that the impact of the COVID-19 pandemic would lead to a significantly higher preference for domestic destinations among Hungarian tourists was rejected. In the contingency analysis, our Khi2 statistic resulted in a correlation of <0.0001, which suggests that the pandemic did not change the preference for inland-foreign countries among the respondents, which means that after the pandemic, domestic tourism in Hungary will not have the same exponential growth as during the travel restrictions and will likely return to pre-pandemic levels. Our second hypothesis, that nature proximity plays a significant role in the travel destination choice of the Hungarian tourists surveyed as a result of the COVID-19 pandemic, was also not supported. Only 20.8% of the respondents considered proximity to nature as a significant factor in their choice of destination.

In terms of the validity of the conclusions drawn, it is important to highlight the factors that were limitations for the analysis and, consequently, for the verification of the hypotheses. While a representative sample with a large number of items can provide reliable data to validate the methodology developed, since statistical data on the general composition and demographic characteristics of Hungarian tourists are not available, the survey could not meet the criterion for representativeness. In addition, the sample size only allows for findings concerning respondents, which makes it impossible to draw general conclusions. The questions on post-pandemic travel patterns also include future perceptions, not only factual data, and actual behavior may therefore differ. A future research direction is therefore to conduct a control survey on the same sample, aiming to investigate travel patterns after the pandemic has ended or in different stages of the pandemic.

Although the survey is not representative and contains anomalies which do not allow generalization and only permit tentative conclusions regarding the sample, the results of the research could serve as a base for broader, more representative research in the future and provide some information worth taking into account for policy makers, tourism organizations and destination managers. After analyzing the factors that influence the choice of destination, the main influences in the sample were the aspects of safety and comfort in line with the previous research results of Villacé-Molinero et al. [21], Singh Bhati et al. [22] and Han et al. [23]. Our results could also add to the study results of Carballo et al. [24] that women are more likely to perceive domestic travel to be a safer option, with the motivation for the decision being more pronounced when safety is prioritized, rather than the destination. The results for men suggest that future travel decisions change if they had to cancel a trip or change destination because of the epidemic. The research, although it does not allow general conclusions, may point to a trend that domestic tourism will likely return to pre-pandemic levels, but as Villacé-Molinero et al. [21] concluded, those who prioritize safety will likely wait a few months until they travel abroad again.

Based on our results and the studies mentioned above that focus on this aspect, preconceptions about the safety of a destination strongly influence tourists' decisions; in order to positively influence their travel choices, besides uniform international measures suggested by Villacé-Molinero et al. [21], countries, their tourism organizations, destination managers, etc. need to proactively communicate to reassure their visitors of their safety. In relation to the aforementioned, responsible travel and thorough planning will also become more prominent aspects of travel. Our results indicate that those people, especially men who had to cancel a trip or change destination because of the pandemic, will change their future destinations and opt for safer, closer domestic options. The increased uncertainty could result in shorter booking times and a higher demand for more comprehensive insurance packages. Our data, in line with the results of Reitano et al. [20], indicate the need for guarantees and for a more detailed proactive communication about the terms and conditions in relation to the possible cancellation of a trip to which travel agencies, destination managers and operators of accommodation need to respond accordingly. More cautious tourists will become a significant tourist group, for whom travel needs to be geared along the lines of safety and comfort. The importance of safety and comfort could manifest in several aspects of their travel from the means of transport and the type of

accommodation to the visited sites as concluded by Ceccato et al. [50], which highlights the importance of the cooperation of all sectors in the revival of tourism. Our results show that those who were negatively affected economically by the pandemic will likely change their travel habits and destinations. This could manifest in a higher demand for cheap, last-minute options and domestic trips within a short distance. In the case of intended trips to a domestic destination (within 150 km of home) the most dominant influencing factor amongst the respondents was previous experience related to the destination. High satisfaction with and previous good experience of the destination play a major role in the retention of tourists for which, in the future, a safe environment and a high level of comfort are essential.

Although the level of significance does not prove a real correlation, active recreation and proximity to nature are strong explanatory factors in the choice of domestic and short-haul foreign destinations. It is important to note that Hungary offers a very wide range of opportunities for nature and active tourism due to its favorable natural conditions. One tenth of its territory is composed of protected natural areas, which include 10 national parks, 39 landscape protection areas and numerous nature reserves [49,51]. The Hungarian National Tourism Agency [52] also places great emphasis on the value of nature in the post-epidemic strengthening of domestic tourism in its "Tourism 2.0" strategy document for the development of tourism in Hungary until 2030. It also places particular emphasis on responsible tourism management to protect natural assets.

In this context, the definition of the ideal number of visitors to a natural destination plays an important role, in order to ensure that the activities taking place there are sustainable in the future without having a negative impact on the quality of the destination's environment. It is also important to raise awareness of the need for tourists and tourism businesses to take responsibility for their behavior, and for all stakeholders to be involved in the decision-making process. In the marketing and management of the destination, attention should be paid to providing the information needed to protect the destination's environment before the tourist arrives. In addition, information aimed at supporting the local community can also lead to more responsible behavior among tourists.

Author Contributions: Conceptualization, M.K. and E.S.; data creation, M.K. and E.S.; formal analysis, M.K. and E.S.; methodology, M.K.; visualization, M.K.; writing—original draft, M.K. and E.S.; writing—review and editing, M.K. and E.S. All authors contributed equally to this paper. All authors have read and agreed to the published version of the manuscript.

Funding: Research-work for this paper and APC was funded by the "Small research grants" framework programme of the Centre for Economic and Regional Studies, Institute for Regional Studies, Hungary.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data sharing not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. WHO. WHO Coronavirus (COVID-19) Dashboard. Available online: https://covid19.who.int/ (accessed on 5 October 2021).
2. UNWTO. Inclusive Recovery Guide—Sociocultural Impacts of COVID-Issue 2: Cultural Tourism. Available online: https://www.e-unwto.org/doi/pdf/10.18111/9789284422579 (accessed on 15 September 2021).
3. World Travel and Tourism Council. Consumer Survey Finds 70% of Travelers Plan to Holiday in. Available online: https://wttc.org/News-Article/Consumer-Survey-Finds-70-Percent-of-Travelers-Plan-to-Holiday-in-2021 (accessed on 28 September 2021).
4. State Audit Office. Elemzés: A Turizmus Helyzete—A Járvány Előtt És Alatt. (Analysis: The State of Tourism—Before and During the Epidemic). Available online: https://www.asz.hu/storage/files/files/elemzesek/2021/turizmus_jarvany20210325.pdf?ctid=1259 (accessed on 14 August 2021).
5. European Travel Commission. European Tourism: Trends & Prospects. Quarterly Report (Q2/2021). Available online: https://etc-corporate.org/uploads/2021/07/ETC_Quarterly_Report-Q2_2021.pdf (accessed on 27 September 2021).

6. UNWTO. Vaccines and Reopen Borders Driving Tourism's Recovery. Available online: https://www.unwto.org/taxonomy/term/347 (accessed on 10 October 2021).
7. UNWTO. UNWTO Highlights Potential of Domestic Tourism to Help Drive Economic Recovery in Destinations Worldwide. Available online: https://www.unwto.org/news/unwto-highlights-potential-of-domestic-tourism-to-help-drive-economic-recovery-in-destinations-worldwide (accessed on 20 August 2021).
8. Tourism Online. Minden Idők Legjobb Nyara a Belföldi Turizmusban. (Best Summer Ever for Domestic Tourism). Available online: http://turizmusonline.hu/belfold/cikk/minden_idok_legjobb_nyara_a_belfoldi_turizmusban (accessed on 15 September 2021).
9. Eichelberger, S.; Heigl, M.; Peters, M.; Pikkemaat, B. Exploring the Role of Tourists: Responsible Behavior Triggered by the COVID-19 Pandemic. *Sustainability* **2021**, *13*, 5774. [CrossRef]
10. Booking.com. Sustainable Travel Report. Available online: https://news.booking.com/download/1038851/booking.comsustainabletravelreport2021.pdf (accessed on 15 September 2021).
11. Sung, Y.-A.; Kim, K.-W.; Kwon, H.-J. Big Data Analysis of Korean Travelers' Behavior in the Post-COVID-19 Era. *Sustainability* **2021**, *13*, 310. [CrossRef]
12. Hodbod, A.; Hommes, C.; Huber, S.J.; Salle, I. The COVID-19 consumption game-changer: Evidence from a large-scale multi-country survey. *Eur. Econ. Rev.* **2021**, *140*, 103953. [CrossRef]
13. UNWTO. Insight Series—COVID-19 and Tourism. Available online: https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2021-03/UNWTO%20Insights%20Series_UNWTO%20presentation.pdf?CMpUEdkrHiVf2xuIzZGxWUIBDK7I9UPb (accessed on 12 October 2021).
14. AirBnB. Airbnb Report on Travel & Living. Available online: https://news.airbnb.com/wp-content/uploads/sites/4/2021/05/Airbnb-Report-on-Travel-Living.pdf (accessed on 30 September 2021).
15. Booking.com. The Five Emerging Trip Types of. Available online: https://globalnews.booking.com/the-five-emerging-trip-types-of-2021/ (accessed on 15 September 2021).
16. Miles Partnership, Longwoods International. Travel Sentiment Study Wave. Available online: https://ss-usa.s3.amazonaws.com/c/308483931/media/1561618020d6097b345671883383636/Coronavirus%20Survey%20Wave%2049.pdf (accessed on 5 November 2021).
17. European Travel Commission. Monitoring Sentiment for Domestic and Intra-European Travel—Wave. Available online: https://etc-corporate.org/reports/monitoring-sentiment-for-domestic-and-intra-european-travel-wave-9/ (accessed on 6 November 2021).
18. Pan, K.; Yue, X.-G. Multidimensional effect of Covid-19 on the economy: Evidence from survey data. *Econ. Res. Ekon. Istraživanja* **2021**, 1–28. [CrossRef]
19. Roman, M.; Niedziółka, A.; Krasnodębski, A. Respondents' Involvement in Tourist Activities at the Time of the COVID-19 Pandemic. *Sustainability* **2020**, *12*, 9610. [CrossRef]
20. Reitano, A.; Fazio, M.; Schirripa Spagnolo, F.; Karanasios, N. COVID-19 Impact on the Tourism Industry: Short Holidays within National Borders. *Symph. Emerg. Issues Manag.* **2021**, *2*, 85–98. [CrossRef]
21. Villacé-Molinero, T.; Fernández-Muñoz, J.-J.; Orea-Giner, A.; Fuentes-Moraleda, L. Understanding the new post-COVID-19 risk scenario: Outlooks and challenges for a new era of tourism. *Tour. Manag.* **2021**, *86*, 104324. [CrossRef]
22. Singh Bhati, A.; Mohammadi, Z.; Agarwal, M.; Kamble, Z.; Donough-Tan, G. Motivating or manipulating: The influence of health-protective behaviour and media engagement on post-COVID-19 travel. *Curr. Issues Tour.* **2021**, *24*, 2088–2092. [CrossRef]
23. Han, H.; Al-Ansi, A.; Chua, B.-L.; Tariq, B.; Radic, A.; Park, S.-H. The Post-Coronavirus World in the International Tourism Industry: Application of the Theory of Planned Behavior to Safer Destination Choices in the Case of US Outbound Tourism. *Int. J. Environ. Res. Public Health* **2020**, *17*, 6485. [CrossRef]
24. Carballo, R.R.; León, C.J.; Carballo, M.M. Gender as moderator of the influence of tourists' risk perception on destination image and visit intentions. *Tour. Rev.* **2021**. ahead-of-print. [CrossRef]
25. Liu-Lastres, B.; Mirehie, M.; Cecil, A. Are female business travelers willing to travel during COVID-19? An exploratory study. *J. Vacat. Mark.* **2021**, *27*, 252–266. [CrossRef]
26. Terziyska, I.; Dogramadjieva, E. Should I stay or should I go? Global COVID-19 pandemic influence on travel intentions of Bulgarian residents. *SHS Web Conf.* **2021**, *92*, 11. [CrossRef]
27. Huszka, P.; Huszka, P.B. Vásárlási-utazási motivációk változása a COVID járvány idején. In *"Változó Világ, Változó Turizmus" XI. Nemzetközi Turizmus Konferencia*; Alberth-Tóth, A., Happ, É., Printz-Markó, E., Eds.; Széchenyi István University: Győr, Hungary, 2021; pp. 137–146.
28. Raffay, Z.A. COVID-19 Járvány Hatása a Turisták Fogyasztói Magatartásának Változására. In *The Impact of the COVID-19 Pandemic on the Change of Consumer Behaviour of Tourists*; University of Pécs, Faculty of Economics, Institute of Marketing and Tourism: Pécs, Hungary, 2021. Available online: https://ktk.pte.hu/sites/ktk.pte.hu/files/images/008_A%20COVID-19%20jarvany%20hatasa%20a%20turistak%20fogyasztoi%20magatartasanak%20valtozasara.pdf (accessed on 9 December 2021).
29. Persson-Fischer, U.; Liu, S. The Impact of a Global Crisis on Areas and Topics of Tourism Research. *Sustainability* **2021**, *13*, 906. [CrossRef]
30. Niewiadomski, P. COVID-19: From temporary de-globalisation to a re-discovery of tourism? *Tour. Geogr.* **2020**, *22*, 651–656. [CrossRef]

31. Higgins-Desbiolles, F. The End of Global Travel as We Know It: An Opportunity for Sustainable Tourism. The Conversation. Available online: https://theconversation.com/the-end-of-global-travel-as-we-know-it-an-opportunity-for-sustainable-tourism-133783 (accessed on 7 October 2021).
32. Vărzaru, A.A.; Bocean, C.G.; Cazacu, M. Rethinking Tourism Industry in Pandemic COVID-19 Period. *Sustainability* **2021**, *13*, 6956. [CrossRef]
33. Godovykh, M.; Ridderstaat, J.; Baker, C.; Fyall, A. COVID-19 and Tourism: Analyzing the Effects of COVID-19 Statistics and Media Coverage on Attitudes toward Tourism. *Forecasting* **2021**, *3*, 870–883. [CrossRef]
34. Peponi, A.; Morgado, P.; Trindade, J. Combining Artificial Neural Networks and GIS Fundamentals for Coastal Erosion Prediction Modeling. *Sustainability* **2019**, *11*, 975. [CrossRef]
35. Bhattacharyya, S.; Sarkar, D.; Roy, R.; Chakraborty, S.; Goel, V.; Almatrafi, E. Application of New Artificial Neural Network to Predict Heat Transfer and Thermal Performance of a Solar Air-Heater Tube. *Sustainability* **2021**, *13*, 7477. [CrossRef]
36. Claveria, O.; Monte, E.; Torra, S. Tourism demand forecasting with neural network models: Different ways of treating information. *Int. J. Tour. Res.* **2015**, *17*, 492–500. [CrossRef]
37. Adil, M.; Wu, J.-Z.; Chakrabortty, R.K.; Alahmadi, A.; Ansari, M.F.; Ryan, M.J. Attention-Based STL-BiLSTM Network to Forecast Tourist Arrival. *Processes* **2021**, *9*, 1759. [CrossRef]
38. Zell, G.; Mamier, M.; Vogt, N.; Mache, R.; Huebner, S.; Doering, K.-U.; Hermann, T.; Soyez, M.; Schmalzl, T.; Sommer, A.; et al. *SNNS Stuttgart Neural Network Simulator User Manual, Version 4.2 IPVR*; University of Stuttgart and WSI, University of Tübingen: Tübingen, Germany, 1998.
39. Gershenfeld, N. *The Nature of Mathematical Modelling*; Cambridge University Press: Cambridge, UK, 1999.
40. Rossel, R.A.V.; Behrens, T. Using data mining to model and interpret soil diffuse reflectance spectra. *Geoderma* **2010**, *158*, 46–54. [CrossRef]
41. Porwal, A.; Carranza, E.J.M.; Hale, M. Artificial neural networks for mineral-potential mapping: A case study from Aravalli Province, Western India. *Nat. Resour. Res.* **2003**, *12*, 155–171. [CrossRef]
42. Beucher, A.; Møller, A.B.; Greve, M. Artificial neural networks and decision tree classification for predicting soil drainage classes in Denmark. *Geoderma* **2017**, 352. [CrossRef]
43. Bergmeir, C.N.; Benítez Sánchez, J.M. Neural Networks in R Using the Stuttgart Neural Network Simulator: RSNNS. *J. Stat. Softw.* **2012**, *7*, 1–26.
44. Tan, P.N.; Steinbach, M.; Kumar, V. Classification: Basic concepts, decision trees, and model evaluation. *Introd. Data Min.* **2006**, *1*, 145–205.
45. Bertsimas, D.; Dunn, J. Optimal classification trees. *Mach. Learn.* **2017**, *106*, 1039–1082. [CrossRef]
46. Windeatt, T.; Ardeshir, G. An empirical comparison of pruning methods for ensemble classifiers. In *International Symposium on Intelligent Data Analysis*; Springer: Berlin/Heidelberg, Germany, 2001; pp. 208–217.
47. Boundless. Quantitative and Analytical Management Tools. Available online: http://kolibri.teacherinabox.org.au/modules/en-boundless/www.boundless.com/management/textbooks/boundless-management-textbook/organizational-theory-3/modern-thinking-31/quantitative-and-analytical-management-tools-175-8291/index.html (accessed on 10 September 2021).
48. Scikit. Scikit Learn. Available online: https://scikit-learn.org/stable/_downloads/scikit-learn-docs.pdf (accessed on 15 September 2021).
49. Magyar, Z.; Sulyok, K. Az ökoturizmus helyzete Magyarországon. (The state of ecotourism in Hungary). *Tur. Bull.* **2014**, *16*, 14–23.
50. Ceccato, R.; Rossi, R.; Gastaldi, M. Travel Demand Prediction during COVID-19 Pandemic: Educational and Working Trips at the University of Padova. *Sustainability* **2021**, *13*, 6596. [CrossRef]
51. Hungarian National Parks. Márkanév Erősíti a Nemzeti Parkok Ökoturisztikai Kínálatát. (Branding Strengthens the Ecotourism Offer of National Parks). Available online: http://magyarnemzetiparkok.hu/okoturisztikai-kinalat-kampany/ (accessed on 30 October 2021).
52. The Hungarian Tourism Agency. Turizmus 2. Available online: https://mtu.gov.hu/documents/prod/NTS2030_Turizmus2.0-Strategia.pdf (accessed on 28 October 2021).