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The Measurable Predominance of Weekend Trips in Established Tourism Regions—The Case of Visitors from Budapest at Waterside Destinations

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Abstract: Short trips to weekend destinations are less researched than more conventional forms of tourism involving longer trips and overnight stays, because quantitative data are hard to procure on the behavior of such weekend tourists. As a result, the effects of these day trips on secondary destinations cannot be measured, yet weekend tourism does contribute to the economic sustainability of many tourism regions. In this study, we analyzed geotagged photography uploaded to Flickr.com in the Budapest metropolitan area, the Danube Bend north of the Hungarian capital, and the Northern Balaton Region. Analysis of the spatio-temporal activity of photographers revealed Flickr users who live in the analyzed regions or in foreign countries, identifying the locals, weekend visitors from Budapest, those from other Hungarian regions, and foreign tourists. The predominance of visitors from Budapest was measured in both of the water-side destinations, and the spatial patterns of such visitors were more dispersed than the more concentrated spatial patterns of foreign tourists. These results show how day-trippers spread out the economic effects of tourism to much wider geographic areas than conventional tourists. Therefore, more focus should be directed toward these previously invisible forms of visits among the scientific community, policy makers, and the tourism industry.

Keywords: visitor behavior; tracking tourists; Flickr; day trips; weekend destination

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1. Introduction

Since the Grand Tours of the 18th century, discourse on tourism has focused mainly on faraway trips and long vacations, where the differences between ordinary and outstanding experiences were evident [1]. This focus was needed in scientific research to formulate clear theories, but at the same time, it was also essential for the tourism industry in order to develop its offers and infrastructures. However, parallel with the development of conventional tourism, society also developed less visible forms of leisure travel: excursions and short weekend trips to nearby natural areas, waterfronts, or cultural destinations. Most of these trips do not use any form of paid accommodation. Some visitors make only day trips, others have their own holiday houses or family properties to use for a weekend. Still, these nonconventional tourists do participate in the visitor economy, eating out, visiting cultural destinations and national parks, and using local recreational services and transport. Their contribution is especially important in places out of the reach of mass tourism, where restaurants and services make a visible turnover without being accessible for international tourists [2,3]. Many businesses offering tourism-related services or any services building on the experience economy outside the large urban and tourism centers are fundamentally sustained by such short-term visitors, not having a large local consumer base. These businesses must build their services on local authenticity [4] and offer experiences competitive with those in mainstream destinations using innovative methods [5,6]. Successful strategies

are mostly based on the transformation of local values into experiences, including local food and specific rural landscapes [7,8]. However, the sustainability of this segment of the experience economy in rural tourism regions relies on consumers whose activity cannot be measured with traditional methods in tourism statistics.

New methods must be developed in order to quantify the contribution of day-trippers and weekend visitors to rural tourism regions, as these groups do not use transport types (air travel and organized tours) and accommodation from where the main statistical data for tourism come from [9]. In the past few decades, tourism researchers and the operators and developers of the tourism industry started to realize how nonconventional tourism with short visits is an important factor, and therefore, destination marketing is focusing more and more on such visitors nowadays. New trends in tourism—especially the changes imposed by the COVID-19 crisis [10–12]—direct much more attention to local travel and short weekend visits, and new data sources are needed in order to establish solid research methods in this field [13–15].

The biggest social changes in the past decade have been linked to the spread of social media. Tourism systems are also deeply affected since the main platforms of destination branding became those where users share their experiences and influence other users in their travel choices. Millions of selfies, perpetually re-composed landscapes and cityscapes, food photos, and detail photos of attractive subjects have flooded the popular photo sharing services. Using photo sharing services has become an integral part of tourism, having a major impact on shaping the destination systems. While in the twentieth century, "Kodak Moments" were the highlights of once-in-a-lifetime vacation trips [16], today, an "Instagram moment" can be found anywhere [17], so proximity tourists do not even have to travel far to post about any leisure activity that can be popular on social media. The motivation for sharing anything on social media is very much the same as the motivation for travel photography since the beginning: tourism consumption (as social media presence) can only be fulfilled if evidence is produced of the experience and shared with others [1]. Since Kodak introduced its interchangeable film camera in 1888, photography has become the main accompaniment to travel [18]—a real holiday produced pictural memories in family albums [19,20]. The development of technology has expanded the activities of photography to even more areas. Digital photography, GPS positioning, internet access, and through it, social content generated by individuals (and companies) have become the mediums that have completely transformed the consumption and processing of tourist experiences in a few years. In addition, unlike family photo albums, these mediums can be accessed and researched from anywhere; there is currently no other accessible method for mapping the statistically "invisible" tourism of weekend trips.

Urry formulated the role of photography in tourism [1], also building on the works of Hall [21] and MacCannell [22]. The circle of representation for tourist destination images described by Jenkins [23] is more relevant than ever: according to this model, a desired image of a destination is formed by the tourist before the visit from pictures conveyed to him/her by marketing or other means, and when finding this image, the tourist also takes a photo of it during the trip and shares it on the (social) media used, thus strengthening the already-formed image of the destination for others. However, through the digital and social media revolution, imaging and sharing have become so widespread that there is a competition to publish new, unique, and attractive images, which have brought previously undiscovered sites into the public consciousness, but because of the functioning of the above circle, they have also become known and desired destinations [17,24]. Today, significant research focuses on how social media affects the perception and development of tourist destinations [25–28]. Such research confirms that UGC (user-generated content) on social media fundamentally influences the perception of a destination, and has a great marketing value especially for smaller, specialized businesses, mainly serving short visits [29]. Thus, these media and the short messages and visual content circulating on them promote the fragmentation of large tourism infrastructures and the viability of smaller-scale services at the local level.

Some social media platforms partially manage their service on the geographical position of photography uploaded. The "geotags" of images uploaded to sites such as Flickr.com (https://flickr.com/, accessed on 8 February 2022) allow for a new kind of research on the spatial behavior of tourists [30–32]. On Flickr, there are more than 1,000,000 photographs uploaded with a geotag only from the area of Hungary. This quantity of specific spatio-temporal data enabled the research of unconventional tourism in the two most popular rural tourism regions in Hungary, where the majority of visits comprise weekend and one-day trips, and also the activities of holiday home owners.

In this study, the spatial patterns of different tourist types are mapped for the rural tourism regions of the Hungarian Danube Bend and the Northern Balaton Region, revealing the activities of the previously invisible day-trippers and holiday home owners. Special attention was paid to the residents of the Budapest Metropolitan Area, as according to our hypothesis, most of the visitors to the two analyzed regions come from Budapest. Budapest is the main tourist hub of Hungary for international tourism; most international visitors to the two analyzed areas arrive to Budapest first, and they possibly spend time in the capital, too. Budapest had 4,578,000 tourist arrivals in 2019 [33], the last full year prior to the COVID-19 crisis, and 86.1% of these were international arrivals, with only 13.8% being Hungarians. Such detailed statistics do not exist for the two analyzed regions, because international tourists usually stay in hotels in the capital city of Budapest, taking day trips to the Danube Bend, or go for a lakeside holiday to the shores of Lake Balaton. Residents of Budapest also take day trips to the Danube Bend, and most Hungarians have had vacations on the shores of Balaton Lake, from where day trips to the villages and destinations in the Balaton Uplands National Park are popular. The proportion of weekend houses and holiday homes in these areas is extremely high; therefore, many Hungarians make short visits from their own or rented vacation house.

In the following section, we present a methodology to collect data on the tourism activities of day-trippers and weekend visitors from Flickr.com, comparing the different data analysis methods to separate the space usage patterns of different user groups. In the results section, we present previously unmeasurable findings on the origin and space usage of visitors to the two regions. We demonstrate the predominance of visitors from the capital city, the role of weekend visits, and the seasonality of tourism in such waterside rural destinations, summarizing the contribution of such findings to the field in the discussion and conclusion section.

2. Materials and Methods

The patterns of the tourist space use of the Danube Bend and the Balaton Uplands in the Northern Balaton Region have been mapped using the database of Flickr, which is still operating with an open API. Among the available social media databases, the one of Flickr.com is most commonly used by researchers [34–36]. Flickr research is beneficial not only because of its quantification, but this social media has users from the most diverse age and social groups, and this portal is most aimed at sharing images taken during tourist visits [37,38]. While only a quarter of Flickr images are geotagged with precise geographical coordinates, it was still possible to analyze more than half a million photos, using almost 100,000 for the study of the two regions. In fact, all photos with geotags in the Budapest agglomeration (including the Danube Bend) and around Lake Balaton were downloaded. This large dataset can combine the quantitative advantages of the huge number of social media users [37] with the geographical accuracy of GNSS technology [39,40]. Based on the work of Kádár and Gede [30,41], the method used analyzes spatial and temporal data obtained from the API of Flickr.com, grouping users who create the images into various categories based on spatio-temporal behavior patterns and the user data provided. The subject, quantity, and frequency of geotagged photos uploaded by users on Flickr reveals whether the person is a tourist or a local resident in the given area, retrieving the frequency of visits to determine whether someone lives locally or has only arrived for a short time. Based on the categorization of users, it is also possible to map which ones are

the main tourist attractions in a given city and which places are mainly visited by local residents [30,42].

First, users who could be residents of the Budapest area were identified. For each user, the time tags for their geotagged images were examined in the Budapest agglomeration area. The Budapest agglomeration data (together with the data of the Danube Bend) were downloaded on 31 March 2020, resulting in 682,312 geotagged photos of 19,284 Flickr users. The photos of each user were grouped into time intervals in a way that the longest time gaps between photos in the same interval are less than 60 days. Users were called 'local' if they have an interval at least 30 days long or have at least 4 intervals. Locals in this case were residents from the Budapest Metropolitan region, and such users kept this attribute also in the analysis of the Northern Balaton Region (where another group of 'locals' was identified). It is possible to accurately identify the visiting patterns of the above user groups at various points of a given tourist region even with an accuracy of up to 10 m, due to the accuracy of the geotags provided by GNSS. After analyzing the Budapest agglomeration database, the samples of the Danube Bend were also analyzed based on data from 37,720 photos. The 'local' group was kept intact for this area, as determining who is 'local' from the Danube Bend area and who is from Budapest proved to be inaccurate as most of the residents of the towns of the Danube Bend commute for work to Budapest, and therefore, the photographing patterns of Budapest visitors and locals visiting Budapest showed very similar patterns. Keeping 'locals' as every user from the larger Budapest area, 'tourists' were further broken down into sub-groups. If all their photos were in one interval, the tourist was on his/her first visit to Budapest and the Danube Bend. If this interval was less than 5 days, then the user was placed in the group of tourists who made a short visit, and if it was longer, in the group of long-visit tourists. Some tourists' photos fall into two or three intervals; they were placed in the group of returning visitors. The 7 most popular clusters, which are the most touristy communities in the Danube Bend area, were highlighted, quantifying visitor numbers in each of the following sub-groups:

- Users living in the Budapest area.
- First-time tourists on a short trip.
- First-time tourists on a longer trip.
- Returning visitors to the area.

Further analysis of Flickr data could identify additional categories of visitors. In addition to visit space–time patterns, user data and profile analysis gave more information about the origin of visitors, but due to the manual inspection of all user profiles, this was a much slower process. In this study, we developed a methodology to check each user profile for affiliation information on a smaller sample in the Danube Bend; therefore, we selected the data from Szentendre and the Skanzen (open air ethnographic museum) nearby. Flickr has a tag for the nationality and the hometown of the user, but not every user fills out this information. Therefore, a manual check of users had to be performed, discarding those from the dataset whose affiliation to a country could not be verified. Out of the 809 users found in this area, 396 users had user profiles with enough data about their town of origin. A total of 8343 photos were analyzed after discarding those where the origin of the user was not possible to determinate. Four groups could be separated for the users of such photos:

- Locals who live in Szentendre.
- Foreign tourists with a foreign profile.
- Domestic first-time visitors.
- Returning domestic visitors who returned to Szentendre in different time intervals.

For patterns of the Balaton Uplands, the two previous methodologies were combined. Flickr metadata of the entire Balaton region were downloaded on 31 March 2020, resulting in a total of 60,535 photos. After separating 'locals' who most probably live in the area from 'tourists' using the methodology described above, a relevant 'tourist' sub-group was instantly formed by comparing the dataset of the Budapest agglomeration area with the Balaton dataset. This resulted in the tag 'tourist from Budapest', but for the next sub-groups

of other Hungarian visitors and foreign tourists, a second step of analysis was needed with the verification of the nationality. After taking out the images of users without a secure affiliation, as well as all users who uploaded fewer than 5 images in the Balaton region, 57,974 geo-positioned photos were examined from 1432 users. In this way, the following groups could be isolated in the Balaton region:

- Visitors from Budapest (and its agglomeration).
- International tourists.
- Hungarian tourists (outside the capital).
- Locals from the Balaton region.

The focus of the study was the Balaton Uplands area, so the geotags were separated into 20 clusters which are the main communities in this region, measuring the visitor numbers in these clusters.

In the Balaton region, we also identified Flickr users staying in non-paying accommodation, typically holiday homes. This was achieved by separately analyzing the activity patterns of users who uploaded photos taken in at least two different time periods within a 50-m radius in a recreational area around Balaton—these are built-up areas where there are no residential buildings, only holiday homes. It was therefore necessary to qualitatively analyze all repeating photographs in such recreational areas: the content of these images typically depict a home environment, i.e., family, interior, private gardens, and related subjects. Only if such attributes were true users were assigned the 'holiday home owner' tag, and their activities outside their accommodation could be separately analyzed in both the northern and southern shore of Lake Balaton for comparison.

3. Results

3.1. Weekend Tourism in the Danube Bend

Analyzing all photos from the Budapest Metropolitan Area and using this database to narrow down the geographical territory to the towns of the Danube Bend made it possible to determinate the role of this region inside the tourism system of Budapest and also in relation to the residents of the larger region itself. Only 13.6% of the 19,284 users uploading geotagged photography in the area of the Budapest Metropolitan Area were locals; the rest of the users were in one of the groups of tourists (Table 1). The largest group was the first-time short trip visitors, with 57.9% of all users being in this category, and most of these are international tourists, according to official statistics [33].

A total of 1648 users (8.5% of all in the Budapest Metropolitan Area) left digital traces in the Danube Bend region. The majority of these users are not international tourists, but visitors from the Budapest region itself (55.5%). The residents of the seven analyzed areas of the Danube Bend are also represented among the 914 users from the greater Budapest area, but it was not methodologically possible to separate them, as their movement patterns are also intensive in the capital city, where many of these residents work. However, the results of the next section in this paper further analyzing the Flickr users in Szentendre clearly show how locals are outnumbered by visitors from Budapest.

Table 1. Flickr users taking photos in the Budapest Metropolitan Area and in the communities of the Danube Bend sorted into different user groups of locals and tourists.

	Locals from the Budapest Metro. Area			**Tourists**											**Sum**	
				All			**First Time on Short Visit**			**Returning More Times**			**First Time on Long Visit**				
	photos	***users***	photos /user	photos	***users***	photos /user	photos	***users***	photos /user	photos	***users***	photos /user	photos	***users***	photos /user	photos	***users***
Budapest Metropolitan	326,356	***2628***	124	355,963	***16,656***	21	194,410	***11,170***	17	45,512	***2871***	16	116,041	***2615***	44	682,319	***19,284***
%in Budapest		***13.6%***			***86.4%***			***57.9%***			***14.9%***			***13.6%***			***100.0%***
Danube Bend count	12,150	***914***	13	5952	***734***	8	2467	***422***	6	975	***180***	5	2510	***132***	19	18,102	***1648***
%in Danube Bend	67.1%	***55.5%***		32.9%	***44.5%***		13.6%	***25.6%***		5.4%	***10.9%***		13.9%	***8.0%***		100.0%	***100.0%***
%in Budapest	3.7%	***34.8%***		1.7%	***4.4%***		1.3%	***3.8%***		2.1%	***6.3%***		2.2%	***5.0%***		2.7%	***8.5%***
Visegrád count	4572	***262***	17	1391	***213***	7	668	***114***	6	334	***63***	5	389	***36***	11	5963	***475***
%in Visegrád	76.7%	***55.2%***		23.3%	***44.8%***		11.2%	***24.0%***		5.6%	***13.3%***		6.5%	***7.6%***		100.0%	***100.0%***
%in Budapest		***10.0%***			***1.3%***			***1.0%***			***2.2%***			***1.4%***		0.9%	***2.5%***
Szentendre count	4048	***341***	12	3582	***383***	9	1413	***234***	6	443	***76***	6	1726	***73***	24	7630	***724***
%in Szentendre	53.1%	***47.1%***		46.9%	***52.9%***		18.5%	***32.3%***		5.8%	***10.5%***		22.6%	***10.1%***		100.0%	***100.0%***
%in Budapest		***13.0%***			***2.3%***			***2.1%***			***2.6%***			***2.8%***		1.1%	***3.8%***
Skanzen count	1319	***55***	24	466	***30***	16	111	***16***	7	31	***7***	4	324	***7***	46	1785	***85***
%in Skanzen	73.9%	***64.7%***		26.1%	***35.3%***		6.2%	***18.8%***		1.7%	***8.2%***		18.2%	***8.2%***		100.0%	***100.0%***
%in Budapest		***2.1%***			***0.2%***			***0.1%***			***0.2%***			***0.3%***		0.3%	***0.4%***
Nagymaros count	922	***90***	10	197	***41***	5	131	***23***	6	44	***12***	4	22	***6***	4	1119	***131***
%in Nagymaros	82.4%	***68.7%***		17.6%	***31.3%***		11.7%	***17.6%***		3.9%	***9.2%***		2.0%	***4.6%***		100.0%	***100.0%***
%in Budapest		***3.4%***			***0.2%***			***0.2%***			***0.4%***			***0.2%***		0.2%	***0.7%***
Dunabogdány-Kisoroszi	656	***88***	7	156	***34***	5	60	***18***	3	87	***12***	7	9	***4***	2	812	***122***
%in Dunabogdány-Kiso.	80.8%	***72.1%***		19.2%	***27.9%***		7.4%	***14.8%***		10.7%	***9.8%***		1.1%	***3.3%***		100.0%	***100.0%***
%in Budapest		***3.3%***			***0.2%***			***0.2%***			***0.4%***			***0.2%***		0.1%	***0.6%***
Leányfalu count	347	***35***	10	86	***22***	4	47	***8***	6	29	***9***	3	10	***5***	2	433	***57***
%in Leányfalu	80.1%	***61.4%***		19.9%	***38.6%***		10.9%	***14.0%***		6.7%	***15.8%***		2.3%	***8.8%***		100.0%	***100.0%***
%in Budapest		***1.3%***			***0.1%***			***0.1%***			***0.3%***			***0.2%***		0.1%	***0.3%***
Tahitótfalu count	286	***43***	7	74	***11***	7	37	***9***	4	7	***1***	7	30	***1***	30	360	***54***
%in Tahitótfalu	79.4%	***79.6%***		20.6%	***20.4%***		10.3%	***16.7%***		1.9%	***1.9%***		8.3%	***1.9%***		100.0%	***100.0%***
%in Budapest		***1.6%***			***0.1%***			***0.1%***			***0.0%***			***0.0%***		0.1%	***0.3%***

Seven separate areas grouped around the settlements of the Danube Bend were visualized on diagrams juxtaposed on the map of the exact location of photos uploaded by first-time visitors and by locals from Budapest Metropolitan Area (Figure 1). It is evident from the spatial patterns of these user groups that first-time visitors (mainly foreign tourists) visit only the most important destinations and never explore the region for minor attractions. Visitors from the Budapest areas (including locals) take a lot more photographs in this tourism region than any tourist groups (double, on average), except long-term tourists staying for more than 5 days. The most tourists outside Budapest visit Szentendre, where 52.9% of users are tourists, but only 2.3% of all tourists visiting Budapest area go to Szentendre. Accepting the correlation between the number of Flickr users in the 'tourist' category group and the actual annual arrivals of tourists, Szentendre should have to 105,000 visitors from outside Budapest in 2019. The second most visited town is Visegrád, and 44.8% of users are tourists from outside Budapest, accounting for 1.3% of all tourists to Budapest (approx. 58,500 arrivals). The smaller destinations along the Danube have many more local users from Budapest and the region; on average, only 30% are 'tourists' from elsewhere. Moreover, 79.6% of photographers in Tahitótfalu are either locals or from Budapest.

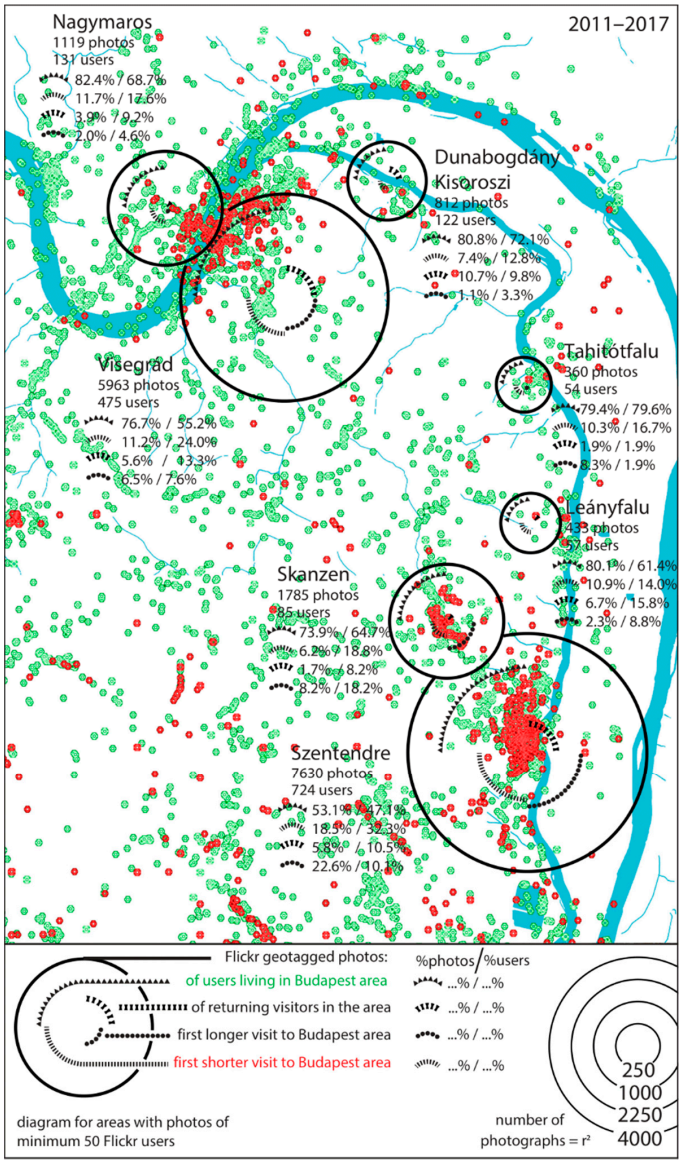


Figure 1. Visitors to the Danube Bend and Szentendre based on geotagged photos uploaded to Flickr (red dots represent photos from mostly foreign tourists who come to the Budapest region only once for a short time, green dots represent the photos from users living in Budapest or its agglomeration).

Some 34.8% of Flickr users living in the Budapest Metropolitan Area did visit the Danube Bend; 13% went to Szentendre and 10% to Visegrád. Those visiting the Budapest area for at least the second time went more frequently to the Danube Bend than those on a first visit to this metropolitan area. Approximately 3.8% of first-time visitors went to the Danube Bend area, 5.0% of longer-staying tourists and 6.3% of returning tourists.

It is possible to examine the temporal distribution of these groups of photographers in the Danube Bend area, both for the different months of the year (Figure 2) and the different days of the week (Figure 3). The figures display the percentage of total users of the groups taking photos in the given time periods. Although the general trend is that fewer users took photos during the winter months, locals and visitors from Budapest also visited the region in this season. For most of the groups, the months of May, August, and October were the most popular. The exception is the group of returning tourists, whose number constantly increases until September and then decreases until the February minimum. First-time visitors (also those on longer trips) follow similar patterns, and their sum of percentages through the 12 months is exactly 100%, showing how every first-time tourist visited the area just once. This is 108% for returning tourists, meaning that very few of these returning tourists also return to the Danube Bend. The sum is 239% for locals and visitors from Budapest, showing how users from this group took photos in two or three different seasons during their activity. This number is probably much higher for locals and stays around two for those from Budapest, but it is still safe to state that an average visitor from Budapest returned to the region at least twice during the past decade.

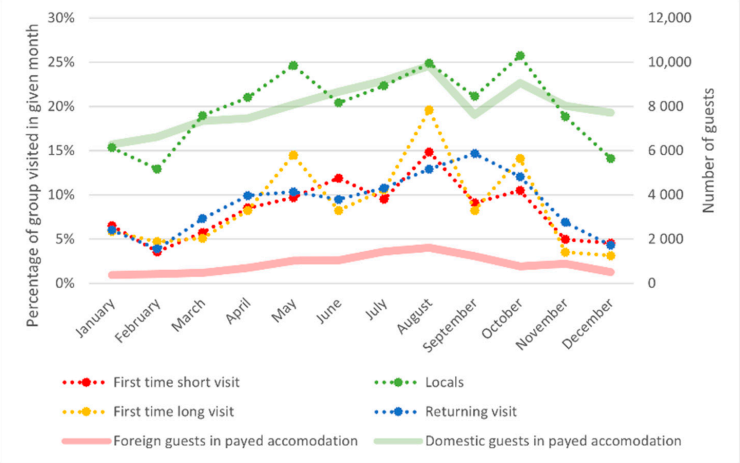


Figure 2. Temporal distribution of photographers in the Danube Bend region through the months of the year compared with official statistics of yearly average tourists in paid accommodation (Visegrád and Szentendre) between 2008 and 2019 [43].

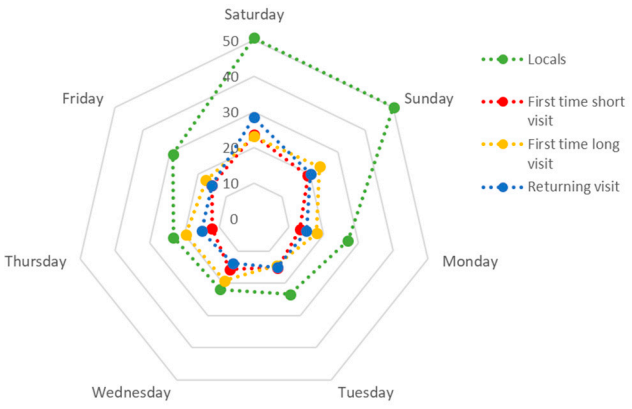


Figure 3. Temporal distribution of photographers in the Danube Bend region through the days of the week (% of users from the user groups who visited the area on the days of the week).

It is possible to compare the number of users with the official statistics of tourists in paid forms of accommodation in this region. The distribution along seasons correlates well in the case of domestic tourists. However, foreigners stay much less often in hotels here than domestic visitors, as most of these foreign visitors come to Budapest, stay there, and visit the Danube Bend only for a day trip.

Examining the number of users over the days of the week, the peaks are on Saturdays and Sundays. These peaks are especially outstanding in the case of visitors from Budapest, while tourists outside the capital area tend to visit in a more balanced distribution. Those visiting the capital city area on a longer trip were present in larger numbers also on Monday, Wednesday, and Thursday apart from the weekend. The average number of visits is much higher for locals and visitors from Budapest—a user from this group visited the Danube Bend for an average of 4.92 days, either living there or returning more times from Budapest during the past decade. Returning tourists spent 1.28 days, while first-time tourists on trips longer than 5 days spent an average of 1.41 days; therefore, more users from this group stayed overnight. In contrast, first-time visitors on short trips spent only 1.14 days here, meaning that very few of these visitors spent a night in the area. As stated before, most of the international tourists arriving to the region are in this group, taking only day trips to the region.

3.2. More Detailed Territorial Analysis around the Town of Szentendre

In this analysis, the verification of the behavior of foreign tourists and locals living in Szentendre was the focus, and the following users were identified:

- 10 locals who live in Szentendre;
- 175 international tourists with a foreign profile;
- 113 domestic first-time visitors; and
- 98 returning domestic visitors who returned to Szentendre in different time intervals.

In Szentendre, five spatial clusters were identified, all of which had more than 200 photos taken (Figure 4). The most visited cluster was the historical city and its riverbank, where 5290 photos were taken, of which 8.1% were taken by locals, the majority of the photos of this user group (54.7%). Most of the photos in the center were taken by foreigners (58.4%), and 83.3% of their photographing activities were concentrated here. Moreover, 53.1% of the photos by first-time Hungarian visitors and 38.9% of the photos by returning Hungarian visitors were taken in the center, making this area the tourism center of Szentendre. The second most visited cluster was the area of Szentendre Skanzen with 1182 photos, 13.6% of which were taken by foreigners, 28.3% by Hungarian tourists, and only 5.9% by returning visitors. Szentendre has a holiday area on the Danube, the Papp Island campsite, where 90.5% of the photos were taken by returning Hungarian visitors. Returning visitors were also the majority taking part in Pilis Park Forest excursions. In the Sztaravoda creek valley, the proportion of their photos was 91%, and in the Bükkös creek valley, it was 60.4%. The few local users were understandably significant in numbers (31.1%) at the mostly residential and holiday home areas around the center of Szentendre, where 39% of photos belonged to returning Hungarian visitors who were on holiday in Szentendre's holiday area or visiting the more out-of-town parts of the Danube (e.g., Postás beach). This detailed visitor analysis of Szentendre shows that foreign tourists mostly visited the historical city center only, with few of them reaching the Skanzen. Hungarian visitors had similar visit patterns, except for returning tourists, who visited Szentendre more regularly. They are hikers who followed the hiking trails of the Pilis Park Forest, holiday home owners who spent time in their weekend house in Szentendre, and returning visitors who were regularly on vacation on Papp Island or other sections of the Danube. All of the user groups spent at least a third of their time in the city center, so restaurants and services here were also used by weekend tourists not registered in the official statistics.

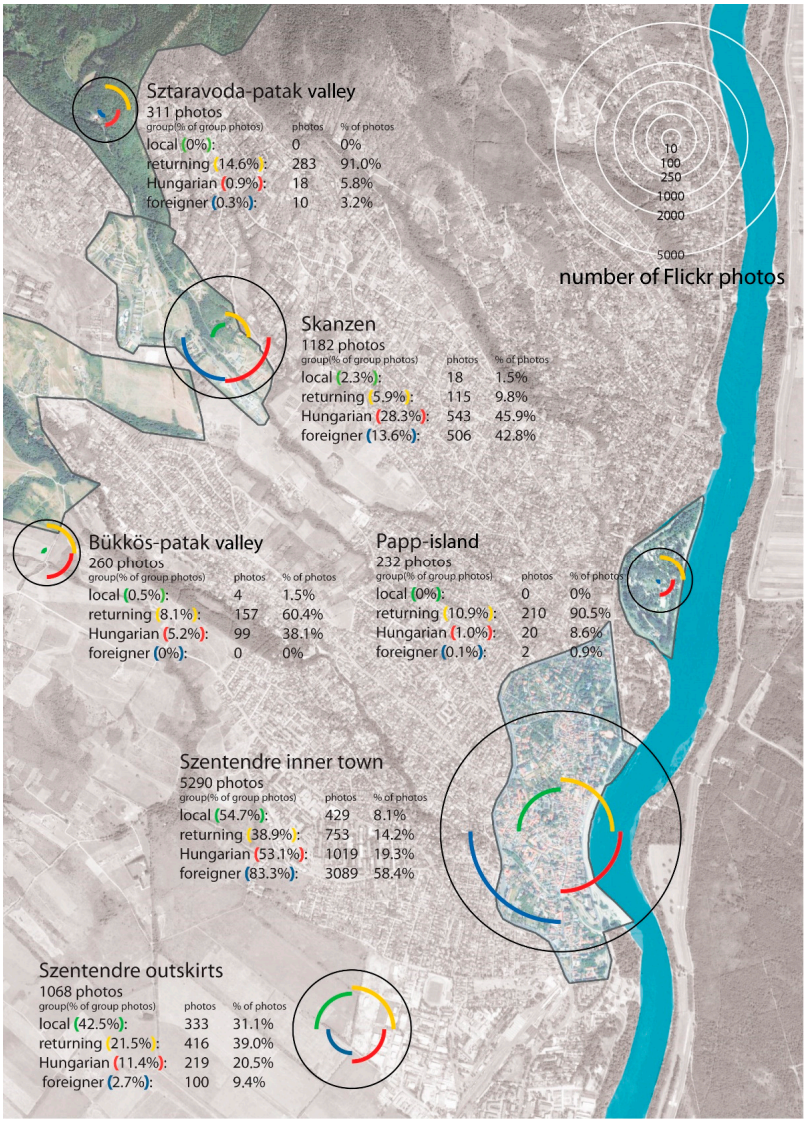


Figure 4. Number of photographs taken by different Flickr user groups in Szentendre, indicating the space usage of users living in Szentendre in green, regularly returning domestic tourists in yellow, first-time visiting domestic tourists in red, and international tourists in blue.

3.3. Visitors of the Northern Balaton Region and Their Movements Based on Flickr Images

The Balaton region is a much larger area than the Danube Bend, but due to the rigorous methodology discarding all users without a defined nationality, almost the same number of users was analyzed in the two regions. For the Balaton region, we found:

- 385 users (with 11,692 photos) clearly identified as foreigners who do not live in the country, as opposed to the 1046 Hungarian users;
- 106 users who could clearly be identified by their profile as inhabitants of the wider Balaton area, taking 5288 photos;
- 646 users active in this area classed as locals in the Budapest Metropolitan Area study, who took 32,297 photos; and
- 294 Hungarian users who were not from around Balaton or from Budapest, who took 8651 photos.

In addition, among the users from Budapest, 30 holiday home owners were identified who took more than five photos and stayed in non-commercial holiday homes around Lake Balaton, taking many more photos than other user groups, a total of 4055.

At first, it was surprising that only 7.4% of Flickr users who take photos around the Balaton Uplands are locals, while 45% are from Budapest. According to the data of the Hungarian Central Statistical Office [43], 262,293 people lived in the settlements of the Balaton recreation area in 2013. The Budapest Metropolitan Area had 2,541,835 inhabitants, while the rest of Hungary had 7,104,670 inhabitants. Therefore, correlated to the local inhabitants (106 users, 1/2474 inhabitants have Flickr activities = 100%), all users of Budapest have an activity level of 62.9% around Balaton (646), while other Hungarians (294) have an activity level of only 10.2%. In fact, if all domestic user groups had the same activity levels as locals, 1027 users from Budapest and 2871 Hungarian users outside Budapest should have been present in this area. The number of visitors from Budapest is very high, suggesting that more than half of all inhabitants from Budapest visited the Balaton region in a decade (given the timeframe of the Flickr dataset), while in the meantime, only 10% of other Hungarians did so. The data proved that Lake Balaton is primarily a recreation area of the capital city, even though it is located 100 to 200 km away from Budapest. International tourism was present in the region, but only 26.9% of users were foreigners. In addition, while the average foreign visitor took 30 photos, almost the same as the average Hungarian visitor (29 photos), guests from Budapest took almost 50 pictures, just as many per person as locals. This suggests that while a Hungarian tourist visiting Lake Balaton only visited once on average during the investigated period, visitors from Budapest spent much more time there, or reached Lake Balaton several times. The spatio-temporal patterns of visitors from Budapest are almost identical to those of locals in this region.

The temporal distribution of visitors in the Balaton region is observable in Figures 5 and 6. Instead of the absolute numbers, the percentage of the total number of users belonging to the different groups is shown because it reveals more clearly the different behavior of these groups. The highest numbers are during the two months of the beach season (July and August). The exception was the group of locals, whose numbers had two maximums in May and in October and were much more distributed around the year. The changes during the days of the week were similar to the ones in the Danube Bend region. Locals and foreigners were more balanced throughout the week: locals were in place all year around, while international tourists visited the lake once a year for a complete holiday week, as opposed to visitors from Budapest coming more times during the weekends. It is interesting again to compare the yearly distribution with official statistics. Flickr data of foreigners correlate well with international tourists staying in paid accommodation around Balaton Lake, and the same is true for domestic tourism. One interesting fact is that the statistical numbers correlate well in the summer season, while in all other months of the year, Flickr data show a great surplus of Hungarian visitors compared to domestic tourists in paid forms of accommodation. In fact, day trips and weekend visits to the area are frequent in autumn and spring, while in the summer, domestic tourists come for more time, using more hotels and campsites.

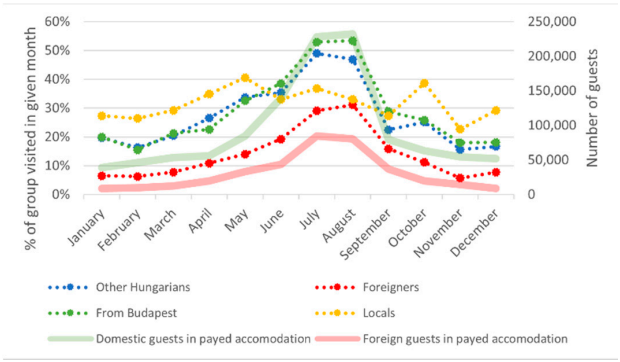


Figure 5. Monthly change in the number of Flickr users in the Balaton region compared with official statistics of yearly average tourists in paid accommodation between 2008 and 2019 [43].

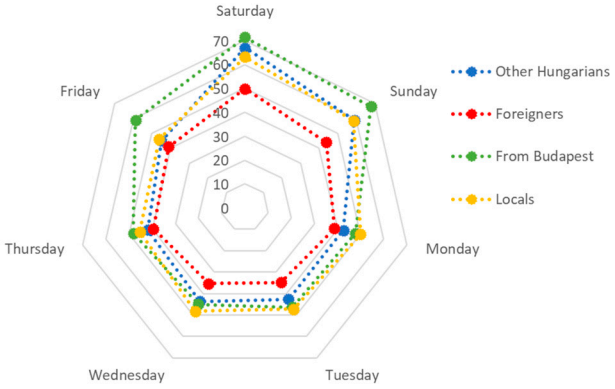


Figure 6. Change in the number of Flickr users through the days of the week in the Balaton region.

Part of the dataset in the Northern Balaton Region was aggregated into 20 microregions, as shown in Figure 7, highlighting the places photographed by Budapest users.

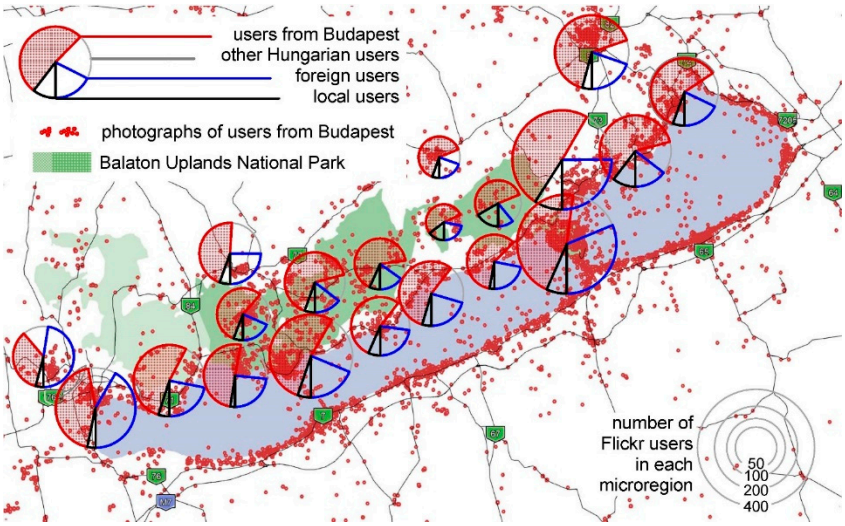


Figure 7. Map of the distribution of the photos by users from Budapest in the Northern Balaton Region, with diagrams showing the number and proportion of photographers in all the user groups identified.

Based on their Flickr photos, foreigners usually visit the settlements of the shores of Lake Balaton, where the beaches and ports can be found. In the Balaton Uplands, they visit the famous tourist destinations Veszprém (19.32% of all users), Balatonfüred (25.03%), Tihany (31.27%), Badacsony (18.78%), Szigliget (23.28%), and especially Keszthely (41.12%) and Hévíz (49.18%). Hévíz is the only settlement in the Balaton region where there are more international tourists than domestic tourists (46.7%). The place most neglected by foreign users is the most 'local' one: in the Pécsely Basin, 16.7% of Flickr users are locals, 51.7% are from Budapest, and only 11.67% are international tourists. Budapest users took photos in almost every settlement in the Balaton Uplands, with their share being between 50% and 60%, except where there are more foreigners, such as Keszthely (43.15%) and around Hévíz (39.34%), Tapolca (46.15%), Tihany (47.17%), and Balatonfüred (49.70%). Visitors from Budapest are highest in proportion in the Káli Basin: 66.27% of the users in Köveskál and Kővágóörs (international: 15.7%), and 65.09% in Szentbékkálla and Káptalantóti (international: 14.2%). The results show how the Northern Balaton region is prevalently the holiday area of the residents of the Budapest Metropolitan Area.

3.4. Tourist Consumption of Holiday Home Owners in Lake Balaton Based on Their Photos

The methodology identifying returning photographers in holiday home areas made it possible to analyze the tourist space usage of 20 residents of Budapest staying in private holiday homes on the northern shores of the lake, and 10 such users on the southern shores. The 4055 photos of these 30 users (135 on average) show that holiday home owners as a group use the region for tourism purposes most intensively (Figure 8). Every Flickr user staying in a holiday home in the Balaton area took photos in the shore strip of Lake Balaton: on beaches, piers, ferries, or promenades close to the water (53.93% of all photos). At the same time, 30.28% of the users also took photos in parts of the Balaton Uplands farther from the shore (at least 500 m from the water). Among the pictures of those staying in holiday homes on the north shore, 35% were taken in the Balaton Uplands, while half of these users did not take any photos on the south coast. In contrast, 90% of those staying on the south shore took photos in the north: 43.31% of their pictures were taken there (compared to 63.07% of those from the north) and 22% of the photos were taken in parts of the Balaton Uplands farther from the lake. Most of the holiday home owners travel all around the lake and the Balaton Uplands, visiting many secondary destinations where international tourists rarely arrive. Based on this dataset, it can be stated that a great number of holiday home owners around Lake Balaton travel around the region and the Uplands frequently instead of just staying in their holiday homes close to the beach. Even though this group is not included in the statistics, they have a much stronger presence and, presumably, consumption than many registered tourists.

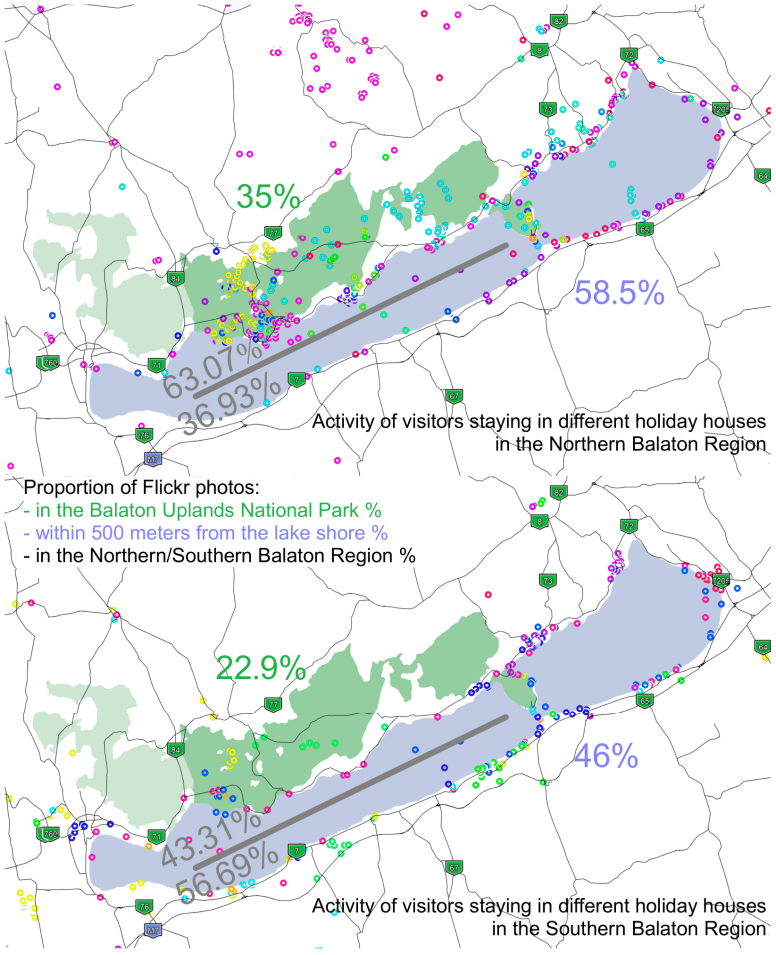


Figure 8. The movement of visitors (holidaymakers) staying in holiday homes around Lake Balaton, separately breaking down those who use holiday homes on the north shore and on the south coast.

4. Discussion and Conclusions

Geotagged photography retrieved from a social media site provided new data enabling us to have a more precise measurement of unconventional forms of tourism: day trips and weekend visits not using paid forms of accommodation. No other datasets equally available in multiple regions can describe the pattern of day trips and domestic tourism with such accuracy, but the selection of social media available for research is becoming more difficult [44]. Due to the protection of personal data, only data that are anonymized or that have been made freely available to users can be used for research, closing out large portions of social media usage. Moreover, even anonymized data are of value in the digital economy, so unlike the first services, having an open API (Application Programming Interface), today's social media data are kept in a closed system by the large service providers (Google, Facebook...) and cannot be researched [45]. For this reason, Twitter, which is not widespread in Hungary, and Flickr, which is used in Hungary, are used by most researchers for geo-positioned datasets [34,38,46]. Using Flickr has its limitations, not delivering statistically accurate data for all age and social groups. Kádár and Gede showed how Flickr is the most inclusive social media site for all age groups, meaning that older age groups are still under-represented but more active than on other photo sharing sites [30]. The higher photo sharing activity of tourists compared to locals in their domestic environments must also be taken into consideration. The experience of visiting a new environment is the main motivation for photo sharing [1], and therefore, visitors are always over-represented in such datasets. This study used Flickr data from before the outbreak of the COVID-19 pandemic, and the same datasets likely could not be used to measure the changing patterns in tourism consumption after the current crisis, as the declining userbase of this data source will provide less representative data.

However, we could deliver evidence on the predominance of domestic visitors in secondary tourism regions from before the COVID-19 crisis, when international tourism was still at its peak in Hungary and worldwide. The results partially explain why these rural destinations did not experience almost any decline in popularity during COVID-19 [47], unlike in Budapest, where most of the tourism facilities had serious difficulties [48,49].

The study bought evidence from tourism regions near watersides (Danube and Balaton), where beach tourism, nature tourism, and cultural tourism are all available, and some small- and medium-sized cities are the main tourist hubs. In the analyzed period, the main attractions and most branded destinations in these regions had a high proportion of international tourists (58.4% of all photography in the city center of Szentendre and 49.2% in Hévíz). However, at a regional level, only less than a quarter of all photography in both the Danube Bend and the Northern Balaton Region were taken by foreigners, and more than 80% only visited the primary attractions. The secondary attractions—sites farther away from important attractions, but with valuable landscapes, cultural attractions, and hospitality services—were mostly visited only by photographers from Hungary. Official statistics of paid accommodation also show the predominance of domestic tourists, and data from Flickr clearly showed correlation with such statistics (Figures 2 and 5). There is a great difference between the Danube Bend in the agglomeration area of Budapest and the Balaton region. Around the Balaton region, international tourists use paid forms of accommodation, and their numbers around the year correlate well with statistical data from these accommodation facilities. In fact, these statistics show that domestic tourists are underrepresented in the autumn, winter, and spring months, the times of year when many domestic tourists take day trips to the Balaton Uplands without using accommodation, or stay only for a night on the weekend. The Danube Bend shows reversed tendencies. Foreign tourists are almost completely missing from official statistics, as they book hotels in Budapest and only make day trips to this part of the Danube. Domestic tourists prefer not to go to Budapest, but stay in hotels in Visegrád or another town of the Danube Bend, but many visitors from Budapest also enjoy the thermal hotels of Visegrád. While in the Balaton region, the day trips and weekend visits invisible for statistics were taken mostly by residents of Budapest, in the Danube Bend, foreigners were also active day-trippers.

The most important finding from this dataset is that even if only one-fourth of the Hungarian population lives in the metropolitan area of the capital, well above 50% of all Flickr users active in both areas came from Budapest (in Nagymaros 68.7%, in the Kali Basin 65.5%). The visitors from Budapest—unlike international tourists—took photos of all primary and secondary destinations, and the least accessible ones in the two regions. The most active tourists in the Balaton region were the holiday home owners. The analysis of the spatial behavior of 30 such Flickr users reinforced previous findings about the role of this form of tourism [14]. Holiday home owners took 135 photos on average compared to the 50 of normal visitors from Budapest and 30 of other tourists; therefore, it can be assumed that this group extensively uses the paid services of the Balaton region such as restaurants, wine bars, and leisure services, and even more intensively in the Balaton Uplands, where even those based south of the lake prefer to take day trips. The exact proportion of holiday home owners compared to those staying in paying accommodation cannot be estimated from this analysis, but it can be stated with certainty that those staying in their own holiday homes contribute to the tourism economy much more than was measurable. The same is true for all day-trippers and weekend visitors—the present study reinforced similar studies with alternative methods on their tourism consumption [2,15].

The analysis of the photo sharing activities of Flickr users did not only reveal which domestic visitor groups visited the two waterside tourism regions the most, but also highlighted the role of social media and online image sharing in the function and sustainability of the economies and tourism systems in such destinations. Image taking and sharing became a main driving force in the experience economy, and local destinations can be competitive with global attractions if they offer authentic experiences users want to capture and share on social media. Studies of this phenomenon are important to understand the basis of economic sustainability of local tourism-related businesses outside of large destinations. The success of these local tourism regions contributes to the environmental sustainability of tourism as well; if local destinations can give memorable tourism experiences to domestic visitors, such visitors will have less motivation to seek out long-distance travel destinations, thereby reducing the environmental footprint of travel.

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References

1. Urry, J. *The Tourist Gaze*, 2nd ed.; SAGE Publications Ltd.: London, UK, 2002.
2. Wynen, J. An Estimation of the Determinants of Same-Day Visit Expenditures in Belgium. *Tour. Econ.* **2013**, *19*, 161–172. [CrossRef]
3. Murillo, J.; Vayà, E.; Romaní, J.; Suriñach, J. How important to a city are tourists and day-trippers? The economic impact of tourism on the city of Barcelona. *Tour. Econ.* **2013**, *19*, 897–917. [CrossRef]
4. Pine, B.J.; Gilmore, J.H. *Authenticity: What Consumers Really Want*; Harvard Business Review Press: Brighton, MA, USA, 2007.
5. Pine, B.J.; Gilmore, J.H. A leader's guide to innovation in the experience economy. *Strategy Leadersh.* **2014**, *42*, 24–29. [CrossRef]
6. Tung, V.W.S.; Ritchie, J.R.B. Exploring the essence of memorable tourism experiences. *Ann. Tour. Res.* **2011**, *38*, 1367–1386. [CrossRef]
7. Basile, G.; Cavallo, A. Rural identity, authenticity, and sustainability in Italian inner areas. *Sustainability* **2020**, *12*, 1272. [CrossRef]
8. Sidali, K.L.; Kastenholz, E.; Bianchi, R. Food tourism, niche markets and products in rural tourism: Combining the intimacy model and the experience economy as a rural development strategy. *J. Sustain. Tour.* **2015**, *23*, 1179–1197. [CrossRef]
9. Nyns, S.; Schmitz, S. Using mobile data to evaluate unobserved tourist overnight stays. *Tour. Manag.* **2022**, *89*, 104453. [CrossRef]
10. Tomassini, L.; Cavagnaro, E. The novel spaces and power-geometries in tourism and hospitality after 2020 will belong to the 'local'. *Tour. Geogr.* **2020**, *22*, 713–719. [CrossRef]
11. Kumar, V.; Alshazly, H.; Idris, S.A.; Bourouis, S. Evaluating the Impact of COVID-19 on Society, Environment, Economy, and Education. *Sustainability* **2021**, *13*, 13642. [CrossRef]

12. Jeon, C.Y.; Yang, H.W. The structural changes of a local tourism network: Comparison of before and after COVID-19. *Curr. Issues Tour.* **2021**, *24*, 3324–3338. [CrossRef]
13. Lohmann, M. Evolution of shortbreak holidays. *Tour. Rev.* **1991**, *46*, 14–23. [CrossRef]
14. Back, A.; Marjavaara, R. Mapping an invisible population: The uneven geography of second-home tourism. *Tour. Geogr.* **2017**, *19*, 595–611. [CrossRef]
15. Wynen, J. Explaining travel distance during same-day visits. *Tour. Manag.* **2013**, *36*, 133–140. [CrossRef]
16. Munir, K.A.; Phillips, N. The Birth of the 'Kodak Moment': Institutional Entrepreneurship and the Adoption of New Technologies. *Organ. Stud.* **2005**, *26*, 1665–1687. [CrossRef]
17. Fatanti, M.N.; Suyadnya, I.W. Beyond User Gaze: How Instagram Creates Tourism Destination Brand? *Procedia—Soc. Behav. Sci.* **2015**, *211*, 1089–1095. [CrossRef]
18. Sontag, S. *On Photography*; Penguin Books: London, UK, 1977.
19. Chalfen, R.M. Photography's Role in Tourism Some Unexplored Relationships. *Ann. Tour. Res.* **1979**, *6*, 435–447. [CrossRef]
20. Urry, J.; Larsen, J. *The Tourist Gaze 3.0*; SAGE Publications Ltd.: London, UK, 2011.
21. Stuart, H. *Representation: Cultural Representations and Signifying Practices*; SAGE Publications Ltd.: London, UK, 1997.
22. MacCannell, D. *The Tourist: A New Theory of the Leisure Class*, 3rd ed.; University of California Press: Berkeley, CA, USA; Los Angeles, CA, USA; London, UK, 1999.
23. Jenkins, O.H. Photography and travel brochures: The circle of representation. *Tour. Geogr.* **2003**, *5*, 305–328. [CrossRef]
24. Hanan, H.; Putit, N. Express marketing of tourism destinations using Instagram in social media networking. In *Hospitality and Tourism*; Taylor and Francis Group: London, UK, 2014; pp. 471–474. ISBN 978-1-138-00151-0.
25. Narangajavana, Y.; Fiol, L.J.C.; Tena, M.Á.M.; Artola, R.M.R.; García, J.S. The influence of social media in creating expectations. An empirical study for a tourist destination. *Ann. Tour. Res.* **2017**, *65*, 60–70. [CrossRef]
26. Chung, N.; Koo, C. The use of social media in travel information search. *Telemat. Inform.* **2015**, *32*, 215–229. [CrossRef]
27. Sotiriadis, M.D. Sharing tourism experiences in social media. *Int. J. Contemp. Hosp. Manag.* **2017**, *29*, 179–225. [CrossRef]
28. Jabreel, M.; Moreno, A.; Huertas, A. Semantic comparison of the emotional values communicated by destinations and tourists on social media. *J. Destin. Mark. Manag.* **2017**, *6*, 170–183. [CrossRef]
29. Jones, N.; Borgman, R.; Ulusoy, E. Impact of social media on small businesses. *J. Small Bus. Enterp. Dev.* **2015**, *22*, 611–632. [CrossRef]
30. Kádár, B.; Gede, M. Where Do Tourists Go? Visualizing and Analysing the Spatial Distribution of Geotagged Photography. *Cartogr. Int. J. Geogr. Inf. Geovis.* **2013**, *48*, 78–88. [CrossRef]
31. Marine-Roig, E.; Clavé, S.A. Tourism analytics with massive user-generated content: A case study of Barcelona. *J. Destin. Mark. Manag.* **2015**, *4*, 162–172. [CrossRef]
32. Donaire, J.A.; Camprubí, R.; Galí, N. Tourist clusters from Flickr travel photography. *Tour. Manag. Perspect.* **2014**, *11*, 26–33. [CrossRef]
33. TourMIS. City Tourism in Europe. 2021. Available online: http://www.tourmis.info (accessed on 8 February 2022).
34. Girardin, F.; Fiore, F.D.; Blat, J.; Ratti, C.; Dal Fiore, F. Understanding of Tourist Dynamics from Explicitly Disclosed Location Information. *J. Locat. Based Serv.* **2008**, *2*. [CrossRef]
35. Wood, S.A.; Guerry, A.D.; Silver, J.M.; Lacayo, M. Using social media to quantify nature-based tourism and recreation. *Sci. Rep.* **2013**, *3*, 2976. [CrossRef] [PubMed]
36. Straumann, R.K.; Çöltekin, A.; Andrienko, G. Towards (Re)Constructing Narratives from Georeferenced Photographs through Visual Analytics. *Cartogr. J.* **2014**, *51*, 152–165. [CrossRef]
37. Lo, I.S.; McKercher, B.; Lo, A.; Cheung, C.; Law, R. Tourism and online photography. *Tour. Manag.* **2011**, *32*, 725–731. [CrossRef]
38. Önder, I.; Koerbitz, W.; Hubmann-Haidvogel, A. Tracing Tourists by Their Digital Footprints: The Case of Austria. *J. Travel Res.* **2014**, *55*, 566–573. [CrossRef]
39. Shoval, N.; Isaacson, M. Tracking tourists in the digital age. *Ann. Tour. Res.* **2007**, *34*, 141–159. [CrossRef]
40. Shoval, N.; Isaacson, M. *Tourist Mobility and Advanced Tracking Technologies*; Routledge: New York, NY, USA, 2010.
41. Kádár, B.; Gede, M. Tourism flows in large-scale destination systems. *Ann. Tour. Res.* **2021**, *87*, 103113. [CrossRef]
42. Kádár, B. Measuring tourist activities in cities using geotagged photography. *Tour. Geogr.* **2014**, *16*, 88–104. [CrossRef]
43. Central Statistical Office. Hungarian Central Statistical Office Dissemination Database. 2020. Available online: https://statinfo.ksh.hu/Statinfo/themeSelector.jsp?&lang=en (accessed on 8 February 2022).
44. Perriam, J.; Birkbak, A.; Freeman, A.; Birkbak, A.; Freeman, A. Digital methods in a post-API environment. *Int. J. Soc. Res. Methodol.* **2019**, *23*, 277–290. [CrossRef]
45. Smith, M.; Szongott, C.; Henne, B.; von Voigt, G. Big Data Privacy Issues in Public Social Media. In Proceedings of the 2012 6th IEEE International Conference on Digital Ecosystems and Technologies (DEST), Campione d'Italia, Italy, 18–20 June 2012; pp. 1–6.
46. Zhang, W.; Tan, G. Detecting tourist attractions using geo-tagged photo clustering. *Chin. Sociol. Dialogue* **2018**, *3*, 3–16. [CrossRef]
47. Kupi, M.; Szemer, E. Impact of the COVID-19 on the Destination Choices of Hungarian Tourists: A Comparative Analysis. *Sustainability* **2021**, *13*, 13785. [CrossRef]
48. Boros, L.; Kovalcsik, T. A COVID-19-járvány hatása a budapesti Airbnb-piacra. *Terul. Stat.* **2021**, *61*, 380–402. [CrossRef]
49. Simonovits, B.; Kondorosy, C. Participation, trust, and risks associated with peer-to-peer accommodation platforms: How did the COVID-19 crisis affect Airbnb Budapest in 2020? *Intersect. East Eur. J. Soc. Polit.* **2021**, *7*, 178–200. [CrossRef]