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Archaeological Sites as Peripheral Destinations. Exploring Big Data on Fieldtrips for an Upcoming Response to the Tourism Crisis after the Pandemic

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Abstract: Archaeological heritage sites constitute the most recent addition to the tourism supply of Madrid, one of the most visited regions of Spain. In 2003, the Plan de Yacimientos Visitables (Plan of Archaeological Visitable Sites) was implemented, museumising 21 sites. However, the peripheral nature of these sites and the lack of personnel prevent strict control being carried out of who visits them, the practices of these visitors and how they rate the sites. This study proposes a systematic procedure to analyse the data gathered from Twitter and Flickr, in order to determine the most shared archaeological spaces in the years immediately preceding the pandemic, and to assess the perception that the visitors had of them. The information provided is useful for learning about the real weight that these sites have in leisure experiences (school trips, guided tours, recreation, etc.). Now that travel has been restricted due to the pandemic, we should ask whether Spain's minor heritage is able to structure new proximity tourism routes. This is based on the hypothesis that, until now, these types of heritage have had a very limited role in recreational practices, but offer potential as "outdoor museums" in the present climate.

Keywords: archaeological heritage; social networks; fieldtrips; leisure; proximity tourism; visitable sites plan; community of Madrid; Spain

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1. Introduction

1.1. Approach

The situation prior to the tourism crisis caused by the Covid-19 pandemic was already problematic due to saturation and overtourism in certain places, particularly in large cities, with other spaces lying empty or experiencing undertourism, especially in the periphery areas. During the years before the pandemic, territorial rebalancing strategies were proposed, promoting peripheral areas in order to de-congest global tourism centres [1]. Thus, in some contexts, it has been noted how this "decentralisation" process contributes to spreading the negative impacts of tourism to areas that had, until then, ignored tourism, and does not solve the problems in the areas previously suffering from overtourism [2]. During the pandemic, many of the empty spaces close to the large cities have met the requirements in order to receive visitors. This is because, in Spain, the management of movement during the pandemic has been conducted on administrative scales ranging from the district and municipal level to the regional or national level. This moment in our history offers us a new opportunity to reassess the potential of the tourism resources of the peripheries located on the outskirts of the cities as drivers of tourism development in the coming years [3]. However, to date, these types of peripheries have been only partially explored on a European level, contrary to the tourism peripheries located in remote areas, [4] even though they account for 50% of the rural tourism supply in Europe [5].

In the rural peripheries on the edges of the cities, the archaeological and paleontological sites constitute resources of great interest for public visits, whether within the

framework of a tourist trip or a proximity leisure activity. Therefore, it is appropriate to conduct a detailed study of the tourism demand that these sites had in the years preceding the pandemic, in order to guide future actions related to them. The context of change in rural tourism practices would place these spaces at the head of the tourism transition [6,7] and the opportunities of proximity tourism [8].

Although these types of heritage have a limited role in the practices of recreational uses, in the present circumstances they have high potential as "outdoor museums". This study uses big data gathered from social networks as a proven source of information to analyse, through georeferenced data, the level of demand of the archaeological sites of the Region of Madrid. It proposes a systematic procedure of exploiting the data gathered from Twitter (what do people say about the sites?) and Flickr (what is projected about the sites?), in order to determine not only the most shared archaeological spaces in the years immediately preceding the pandemic, but also the perception that the visitors had of them.

The information provided freely by the users presents many limitations [9], such as the fact that not all users have social media accounts nor will they all deem the activity they just conducted as worthy of being posted on these social media apps. Even so, it is useful for learning about the real weight that these sites have in leisure experiences and also their potential to be included in routes of proximity tourism. This study is also useful for the tourism management of cultural heritage, given that, through innovative techniques, it proposes a methodology to determine the demand for sites that do not usually have their own management system due to the lack of resources, their inaccessibility and the low demand. This is the case of Madrid, a region that has been implementing the Plan de Yacimientos Visitables (mostly archaeological sites) since 2003, seeking to foster the tourism development of certain sites with naming strategies (such as the "Valle de los Neandertales" (Valley of the Neanderthals) or "Frente del Agua" (Water Front), but has hardly any tourism data on which to base its development strategy. This study seeks to highlight the importance of proximity tourism, understood as being intraregional, and the current potential of uniting heritage and leisure.

The starting hypothesis is that the visitable sites in the Region of Madrid have a limited role in the recreational use practices of the region. To confirm this, we need to learn more about how the visit is conducted. First, we have to ask, as research questions:

Q1: To what extent are these places attractive for tourists?

Q2: Where and how the visit of heritage sites is conducted?

Due to the lack of means to undertake an in situ monitoring of the affluence of visitors to these sites and a shortage of staff in them, an analysis approach based on social networks has been used. This study proposes a systematic procedure to exploit the data gathered from Twitter and Flickr, in order to map the archaeological spaces that are shared in these user communities so as to assess the perception that the visitors have of them.

We will describe the situation before the pandemic in order to show that the archaeological sites that were barely visited at that time, when Spain was immersed in a tourism boom, now, in different times characterised by restrictions to mobility, could have a great potential, with proximity tourism gaining new significance.

1.2. Archaeological Heritage and Leisure Activities

Tourism, leisure and recreation are three related concepts, which have been the focus of social science research in different countries since the end of the twentieth century. This research has analysed and assessed, separately, the effects that these activities have on society (for example, motivations and types) [10–13], in different types of space (coastal, natural environments, periurban . . .) and in relation to their adaptation and planning [14–17]. In 1987, Jansen-Verbeke and Dietvorst claimed that there was a growing search for leisure in recreational activities and also in tourist activities, which requires a comprehensive approach that goes beyond an economic outlook and includes recreation and tourism [18]. Since then, studies on these topics have proliferated, with an enormous scientific production that maintains the separation and which rarely combines tourism,

recreation and leisure, despite the fact that they coexist in many spaces [19–21]. Among them, we can highlight the metropolitan regions which are currently large leisure areas in which activities related to tourism and recreation are combined.

Two types of visitors can be identified: domestic and foreign tourists and residents who, particularly on weekends, move within the municipalities of their regions to partake in recreational activities. According to the application, undertaken by Calle Vaquero et al. (2015), of Hall's model for the structure and functioning of metropolitan tourist regions [22], two types of space are also differentiated: one in which the tourism practices coincide with the recreational ones which, therefore, receive both tourists and residents, and another visited almost exclusively by the latter. The first of the spaces corresponds to the central areas of the cities, the so-called tourist cities, where the main attractions and broad leisure supply can be found; also, the historical and heritage cities close to the large cities, often recognised by UNESCO, such as Versailles, El Escorial or Postdam, among many others. The second corresponds to periurban spaces in which the residents of the large cities enjoy leisure and recreational activities and where a large number of second homes are located [4,23,24].

Within this context, it is clear that culture and heritage play an important role in tourism, as they increase the attractiveness [25,26] and competitiveness of the destinations [27,28]; so much so that their location helps to delimit and establish a hierarchy of the tourist and recreation spaces.

This can be seen in the abundant research that has contributed to advancing the studies on tourism and, specifically, those that analyse its relationship with cultural heritage and even with archaeological heritage, understood as a specific type of cultural tourism [29]. These analyses, based on case studies, essentially address questions related to: the guarantee of conservation [30]; the adaptation to public visits; in relation to the two previous points, the establishment of measures such as their carrying capacity [31,32]; as well as the difficulties in their interpretation [33]. However, there are very few studies that examine the role of heritage, and more specifically archaeological heritage, in recreational activities or what some authors call tourism leisure [22]. Similarly, there are very few studies that analyse metropolitan regions in terms of their recreational spaces or that focus on short distance trips, considered as proximity tourism [34].

This type of tourism, defined by the concept of "proximity," is controversial, given that it can refer to the physical distance, but also the emotional and even organisational distance [35]. As the idea of proximity is dependent on many subjectivities, there are not many studies and those that exist relate it with how it affects the construction of otherness [36–38] or the development of the receiving communities [8] and their organisation for tourism management [39]. Short distance trips are difficult to measure, given that there are no statistical sources that adapt to their criteria [40]. This deficit is supplemented with new sources of information, with a growing number of studies using social networks [41,42] and particularly sports communities such as Wikiloc, to identify these spaces, learn about their users and the use that they make of the space, particularly in natural environments [43–45].

In this respect, and in view of the lack of previous studies, this article contributes to the development of a body of research, taking a step further within a topic that requires more methodological analyses and case studies so that we can learn about the demand.

2. Materials and Methods

2.1. The Case Study Area

The Region of Madrid has a rich cultural heritage spanning from the Lower Paleolithic period to the present day and which is recognised and protected by several sections of the heritage law. In the list of property assets, the archaeological and paleontological heritage stand out in numerical terms, within which there are currently 44 assets that are considered as assets of cultural interest (42 Areas of Archaeological Interest and 2 Areas of Paleontological Interest).

This large volume of assets is due to the huge number of archaeological interventions carried out in recent years as a result of the need to make explorations and excavations in response to the environmental impact studies and urban regulations. This has given rise to the identification of an abundance of heritage assets that are not well known or valued by the citizens. Furthermore, due to their aesthetics, which are very unlike monuments under the tourist gaze, their state of conservation and difficult interpretation, this type of heritage is difficult to promote and enhance and was therefore incorporated into the region's tourism supply belatedly. Only a few of the archaeological sites which were declared Assets of Cultural Interest, such as Complutum in Alcalá de Henares (World Heritage Site since 1998), attracted visitors.

In 2003, the Region of Madrid designed and approved the Plan de Yacimientos Visitables. The project was developed by the Directorate General for Historical Heritage with clearly scientific objectives, but which also sought to promote the protection and dissemination of archaeological heritage. The Plan was created as an administrative document with the objective of restoring the archaeological and palenotological heritage of the region so it could be visited by the public and thereby foster the creation of connections with the population who could identify with its past and its territory. Since the outset, and until the present day, 39 sites have been identified and researched, of which 21 have been adapted in order to receive public visits and 18 are under study (Figure 1). In short, this action constitutes an institutional patrimonialisation of the archaeological assets on a regional scale (NUTS 2) and in line with the projects undertaken by other regional governments in Spain, such as Galicia [46] or Andalusia [47]. However, that of Madrid has a greater scope compared to these experiences that contain overall guidelines for their conservation and recreational use.

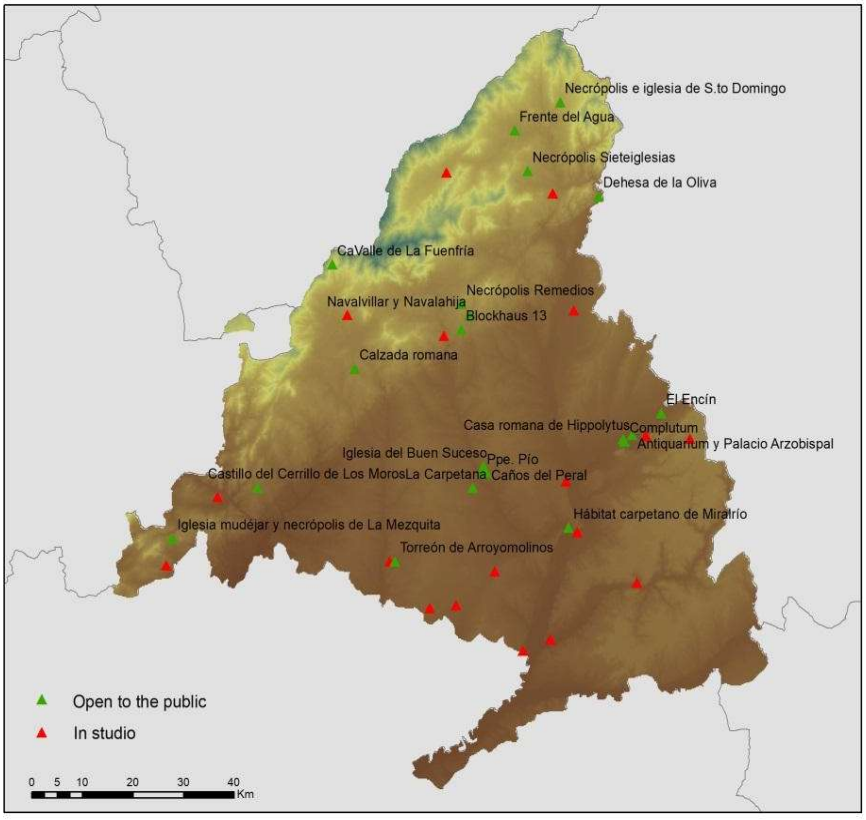

Figure 1. Distribution of the visitable sites and those under study. Source: Plan de Yacimientos Visitables. Own elaboration.

A project made up of four phases was created: 1. Selection of the sites, based on their uniqueness, location, the quality of the environment, legal protection, documentation

and prior research, ownership of the land and accessibility; 2. Creation of a brand image related to the Plan; 3. Design and development of a museumalisation project, which implies physical and intellectual accessibility; 4. Execution of the project itself, including the processing of an archaeological area, the consolidation and restoration of the structures, the adaptation of the environment for the visit and the incorporation of museographical elements [48].

The final result is the enhancement of the value of a series of sites distributed across 13 municipalities of the region, which constitute a representative sample of different geological and historical types and ages (from the Tertiary period to the Contemporary Age) and for which the regional government has collaborated with other public institutions, particularly local governments as well as the private sector [49].

Today, the Region of Madrid seeks the territorial rebalance of tourist flows and this Plan partly contributes to attracting tourists and day trippers to peripheral areas [50]. However, although the official discourse of the Region of Madrid highlights the great interest and success of the Plan, its validity can be questioned. Although all of the sites have been equipped with the infrastructures to enable their physical and intellectual accessibility, their repercussions are not as remarkable as presented, according to prior research, due to the following reasons: 1. The plan is limited to promotion; 2. The sites are presented in an isolated way, independent of each other and are very different in terms of their type and location (Figure 2); 3. It is not a proposal for a network; 4. There is inter-institutional collaboration, however, sometimes this is lacking with the local communities; 5. There is a lack of sustainable activity that is permeable to the territory; 6. There is a lack of knowledge among the general public [51].

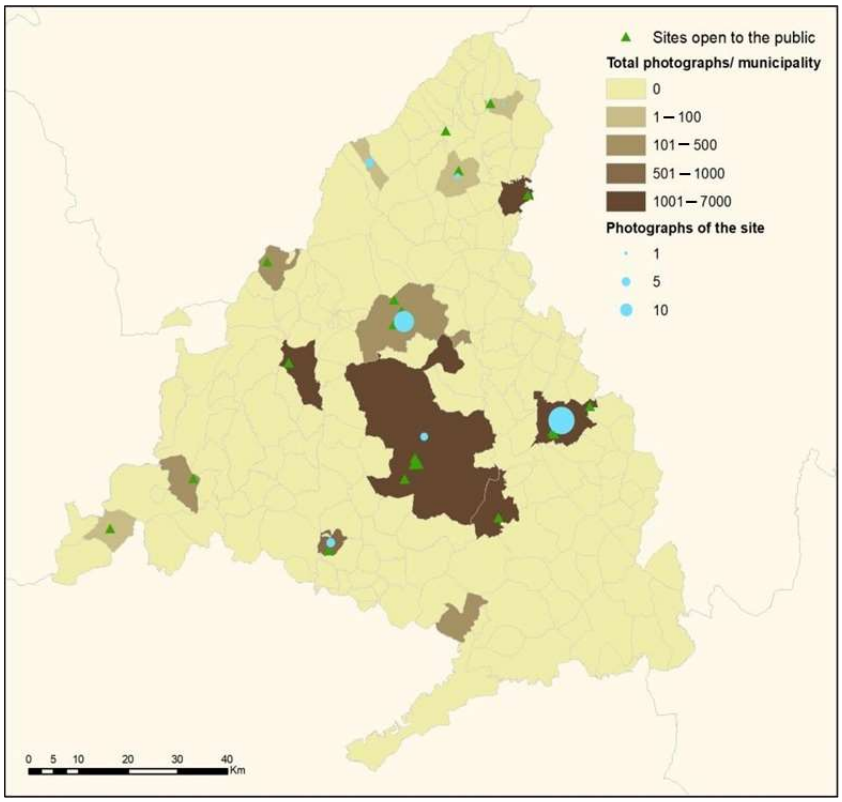

Figure 2. Some of the locations of visitable sites of the Plan on different scales. Left: Hábitat Carpetano de Miralrío in Rivas-Vaciamadrid. Centre: archaeological site of the Remedios in Colmenar Viejo. Right: the Caños del Peral square, Opera metro station in Madrid. Source: Google Maps.

2.2. Data Collection

Being aware of the limitations of the sources taken into consideration, previously specified, the information provided is useful for learning about the real weight that these sites have in leisure experiences and, on a practical level, for the governing authorities which are currently immersed in a phase of redesigning the Plan. To do this, we have taken 21 visitable sites and three others that are under study (Valle de los Neandertales, Yacimiento carpetano-romano de Titulcia and Salinas de Espartinas).

Twitter provides a significant proportion of its data free of charge and in real time. The geolocalised data can be recorded in the user's public profile and the text that he or she writes in the form of a "tweet". It enables us, therefore, to obtain spatial–temporal information of each tweet gathered and of each user. Twitter also collects information from other social networks such as Instagram or Four Square. Flickr, meanwhile, shows a more visual aspect. In fact, until now, it has been used in studies on the role of images in social interaction and multimodal communication [52], in order to learn about the distribution of the popularity of the images and the propagation of information [53], aspects linked to the visit [54] or to identify the tourism image of specific places [55,56].

The downloading and analysis of 13,263 Flickr images created between 1 January 2015 and 30 April 2017 has been conducted manually. However, the Twitter downloads have been conducted through its API in real time and the enhanced script provided by the t-GIS (UCM) research group. This has been conditioned by certain limitations intrinsic to the format of the data provided by this social network, such as the fact that only 1% of the data from 2013 are georeferenced or specific to the free nature of the service and the downloading is reduced to 1% of the tweets available in the specified area. The difficulties inherent in large volume downloads (more than one tweet per second) and the obligation of carrying out the download in real time have been overcome due to the use of Amazon Web Services, with a high storage power and a guarantee of stability. Approximately 200,000 tweets geolocalised in the Region of Madrid were downloaded and the text, the moment they were sent, the language and the user profiles were recorded.

We decided to conduct differentiated monitoring; the first was performed from 9 February to 6 April 2017, gathering information from eight weekends, and the second from 7 to 17 April in the same year, coinciding with the school Easter holidays in the Region of Madrid. Furthermore, the analysis procedure conducted had three phases for each monitoring period: the first consisted in quantifying the tweets sent within 100, 250 and 500 m from each visitable site, the second in identifying the content of the tweets at a distance of 100 and 200 m and the third in studying the keywords of each of the texts in the total area of the region. In this way, were able to establish a hierarchy of the sites with the highest number of tweets, and analyse their contents (keywords and photographs) and the profile of the twitter users (where, what and who).

3. Results

3.1. TWITTER Analysis

The first line of the Twitter analysis consisted in quantifying and georeferencing the number of tweets made in the surroundings of the visitable sites (Figure 3). Of the total tweets gathered in the municipalities with at least one site, approximately half of them were sent within a distance of 500 m (55.4% during the Easter period and 49% at weekends). If we examine the tweets analysed that were sent within a distance of less than 100 m, this proportion accounts for around 5% (5.9% and 4.6% respectively).

This first analysis has enabled us to obtain a list of the archaeological sites from which most tweets were sent. As we would expect, the first positions are held by those located in an urban environment, for example in the case of the remains of the Buen Suceso church in Caños del Peral, the site of Príncipe Pío or that of the Carpathian site in the centre of Madrid, the Archaeological Avenue and the Antiquarium of the Archbishop's Palace in Santiago street of Alcalá de Henares or even in the case of the tower-townhall of Arroyomolinos, the Miralrío site close to the southern residential areas of Rivas-Vaciamadrid or

the "La Mezquita" Mudejar church and burial ground at the entrance to Cadalso de los Vidrios. However, tweets have also been sent, although to a much lesser extent, from the surroundings of the sites in the Valle de la Fuenfría of Cercedilla, Remedios burial site on the outskirts of Colmenar Viejo or the Calveros or Valle de los Neandertales in Pinilla del Valle and the Carpathian-Roman site of Titulcia.

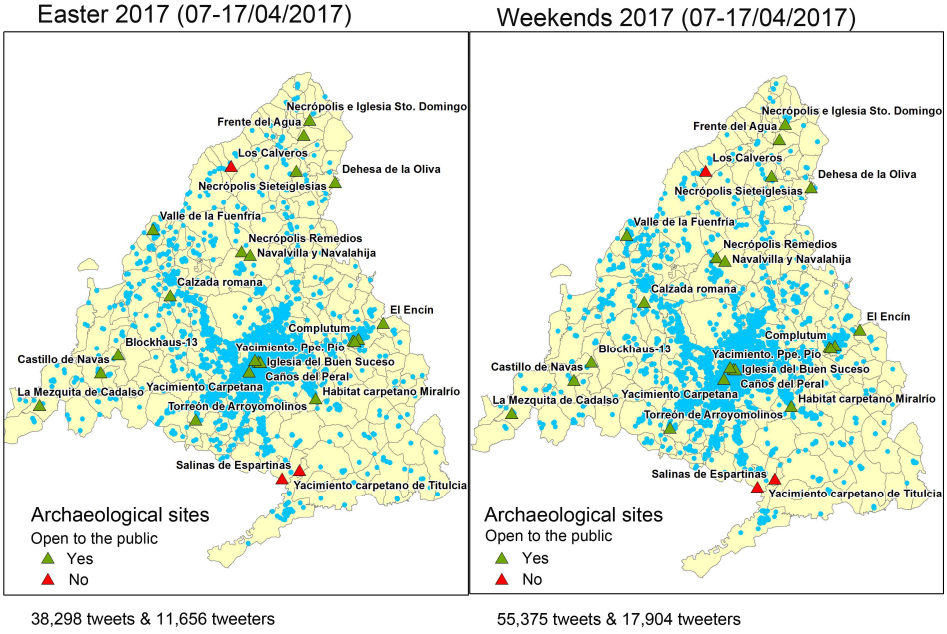

Figure 3. Archaeological sites of the Plan de Yacimientos Visitables of the Region of Madrid and distribution of the tweets collected during eight weekends in February, March and April and Easter 2017. Source: own elaboration.

The location (in the municipality of Madrid, municipalities of the metropolitan area or of mountain range or the plains) and the surroundings in which they are found (more or less close to the historical quarters or new extensive residential areas) influence the number of tweets found. The opening hours of the sites also influence the tweets. They can be unlimited, with no type of closure (such as the case of the Historical Roads of the Valle de la Fuenfría); have long opening hours (for example, the sites located in the metro stations or the Remedios Visigothic burial ground); have opening hours limited to certain times, usually at weekends (as in the case of the Antiquarium). In the case of the sites studied, the majority of them have unlimited or intensive opening hours.

The question that the second line of analysis seeks to answer is whether the content of the tweets located closest to the population nuclei indicate any type of visit made. With this objective, we identified the content of the tweets directly related to the site close to where they were sent. In this way, based on a remarkable lack of data, certain overall patterns of recreational and tourist use of these archaeological sites were identified. During the Easter period, only two cases were obtained, both related to the Ermita de Nuestra Señora de los Remedios in Colmenar Viejo, while on weekends we obtained 16 cases: the same hermitage, the Torreón de Arroyomolinos, the Mosque site of Cadalso de los Vidrios and the Valle de la Fuenfría. The majority indicate a visit as a family outing or excursion with friends both in Colmenar Viejo and Cadalso and, particularly, in the Valle, where we can observe a bicycle trip, two walking excursions and a camping trip.

The third and last line of analysis consisted of searching for the content of the texts included in the tweets of the whole of the Region of Madrid. Only two tweets were obtained with the text "archeo" and "site" which are related with the Visitable Archaeological Sites. Both of them were sent during the weekends, the first on Four Square notifying "I'm at Yacimientos Arqueol2gicos De Pinilla Del Valle" and the second on Twitter promoting the

"Rutas Arqueológicas 2017" for Secondary Education, Baccalaureate and CEPAS on the Russian channel of news in Spanish RT-Madrid, active since 2009.

Despite the scarcity of data, we can affirm that the use shown by Twitter exclusively relates to local leisure or proximity tourism. However, examining the times of the visits, there is a distinctly low use of unlimited access sites such as Blockhaus-13 in Colmenar del Arroyo, the Roman road in Galapagar, the archaeological site of the Dehesa de la Oliva and the Castle in Navas del Rey or the Frente del Agua, with the latter being particularly promoted.

3.2. FLICKR Analysis

The selection of the images analysed in Flickr used two search criteria: first, the name of the plan itself and the sites. A total of 76 photos were identified referring to the Plan, of which the majority are institutional and refer to the Roman House of Hypolitus (54), Complutum (3), Navalahija (2), the Mosque of Cadalso (2) and the Dehesa de la Oliva (2). Very few photos are labelled with the name of the site: Blockhaus-13 (there are 2 in the period analysed and 52 if the dates are not limited); the Caños del Peral (5); the Valle de los Neandertales (5); Navalahija (3) and Dehesa de la Oliva (1). In these cases, there are institutional photos that show official visits of the two last presidents of the Region or of the General Director of Heritage.

Second, the search has been carried out according to the name of the municipality, identifying those images that voluntarily or by chance reflect the elements included in the Plan. The search in the second case was more complicated due to the volume of photographs. Nevertheless, we can observe that a very small percentage of the total photographs for each municipality refer to the sites (0.61).

From the two analyses, we have determined that the volume of images is highly unequal between the sites. Those with an architectural structure are more photographed and have been declared Assets of Cultural Interest such as Blockhaus-13, Complutum and the Casa de Hipolitus. Navalvillar is also one of the most depicted and the comments of the authors of the images indicate that this place is of interest as it has been a film set. The majority of these photographs belong to institutional albums (Regional Government of Madrid and local governments), such as those of Calvario or Valle de los Neandertales in Pinilla or tourist promotional material, as in the case of Alcalá de Henares with "Promoturalcala" or even artists. On the contrary, there are few photographs that allude to a leisure practice and, in many cases, there is no intention to include the heritage assets, they merely form part of a scenario, as in the case of Arroyomolinos. Only those located in Alcalá de Henares have labels and comments in English and this is an exception.

3.3. A Combined Synthesis of the Two Social Networks

The following table (Table 1) shows the above-mentioned results in a combined way. The sites which have photographs taken of them and posted on Flickr or those from which activity has been recorded on Twitter, due to proximity or content of the message, have been obtained. The number of photographs referring to the site with the total number of photographs referring to the municipality are compared. Similarly, the number of tweets sent from the surrounding areas of the sites are compared with the total number of tweets in the municipality. This table shows that there are three sites that are not adapted for public visits, but, however, have a presence on the social networks.

Table 1. Twitter and Flickr data mining results.

Name	Public Visit	Municipality	Number of Tweets from the Municipality	Number of Tweets from Close to the Site			Number of Photographs of the Municipality	Number of Photographs of the Site
				100 m	250 m	500 m		
Antiquarium y Paseo Arqueológico	Yes	Alcalá de Henares	1282	3	23	113	6844	20
Casa romana de Hypolitus	Yes			0	2	3		5
Complutum Yac. Romano	Yes			1	2	3		20
El Encín	Yes			0	0	0		0
Torreón	Yes	Arroyomolinos	206	3	28	30	608	5
La Mezquita	Yes	Cadalso de los Vidrios	42	0	26	29	46	0
Valle de la Fuenfría	Yes	Cercedilla	283	0	15	15	366	0
Salinas	No	Ciempozuelos	86	0	0	0	322	0
Blockhaus-13	Yes	Colmenar del Arroyo	19	0	0	0	129	28
Necrópolis Remedios	Yes	Colmenar Viejo	230	5	5	5	1916	0
Navalvilla y Navalahija	Yes			0	0	0		11
Calzada romana	Yes	Galapagar	163	0	0	0	1191	0
Necrópolis Sieteiglesias	Yes	Lozoyuela Las Navas Sieteiglesias	17	0	0	0	30	2
Caños del Peral	Yes	Madrid	70,287	148	580	16,322	Searched directly by tags	4
Iglesia del Buen Suceso	Yes			3576	4087	20,761		0
Yacimiento Carpetana	Yes			0	6	47		0
Yacimiento. Ppe. Pío	Yes			57	259	738		0
Castillo de Navas	Yes	Navas del Rey	23	0	0	0	136	0
Dehesa de la Oliva	Yes	Patones	59	0	0	0	2614	0
Frente del Agua	Yes	Paredes de Buitrago (Puentes Viejas)	7	0	0	0	6	1
Los Calveros-Valle de los Neandertales	No	Pinilla del Valle	8	0	0	1	27	5
Necrópolis e Iglesia Sto. Domingo	Yes	Prádena del Rincón	2	0	0	0	3	0
Miralrío	Yes	Rivas-Vaciamadrid	1007	0	0	18	2324	0
Yacimiento carpetano-romano	No	Titulcia	11	0	0	6	0	0
TOTAL		**All municipalities**	**73,732**	**3793**	**5033**	**38,091**	**16,562**	**101**

3.4. Perspectives for the Post-Pandemic Era

Although there are still no official data available regarding the tourism activity of the Region of Madrid in 2021, the information obtained from the Tourist Information Offices of the different municipalities indicates that the number of consultations has reduced considerably with respect to 2019. The lack of tourism activity (congresses, events, cultural activities, school trips …) has contributed to this trend. However, the opposite has occurred in the restaurant sector, revealing a significant increase in day trips and leisure activities. The increase has been so large that the call for help made by the mayors of the towns of the Sierra of Madrid to the Government Delegation with respect to the saturation

of tourists in the spring of 2021 was reported in the national newspapers. The residents of the region also called for a reduction in the number of day-trippers.

In relation to these sources of secondary information and the observations made in many municipalities, we believe that the pandemic offers very interesting perspectives and that the archaeological sites included in the Plan de Yacimientos Visitables have great potential. Therefore, when analysing the data provided by Flickr, one of the social networks consulted, we can observe that, during the period between 1 May 2019 and 1 September 2021, there was still an interest in these types of resources, with 7778 new images and 29 new users. The interest is uneven and is reinforced in the less-known spaces. We should take into account that the length of the period of reference had the same number of months as the first analysis, bearing in mind that this period included the lockdown.

4. Discussion and Conclusions

The results reveal that the elements included in the Plan de Yacimientos Visitables are spaces that receive very few visits from tourists or day trippers and that these visits are almost exclusively related to the leisure practices of proximity tourism of the population of Madrid.

This heritage is, on the whole, marginal to the tourist flows and has a very limited role in recreational use practices, despite their historical richness. It seems that archaeological heritage sites are not very attractive for visitors, due to their difficult interpretation, derived from, among other factors, their state of conservation, which requires large investments [32–57], and their difficult physical accessibility. In the case of the Region of Madrid, some of these remains are located in the embedded peripheries [1] and, despite being contemplated in the Plan de Yacimientos Visitables, they are sometimes closed and require the collaboration of a person who shows them to visitors voluntarily. None of these factors foster the transformation of these sites into tourist attractions and significantly reduce their capacity to become destinations, even for day trips.

Nevertheless, often, many of the environmental characteristics of the spaces where they are located, as shown by the environmental protection figures corresponding to their areas (for example, the site of Miralrío is located in the Parque Regional del Suereste (Southeast Regional Park) and the site of Los Calveros in the Parque Regional de la Cuenca Alta del Río Manzanares (Upper Manzanares River Basin)), bestow them with high potential as places of leisure and recreation [22]. Consequently, the sites included in the Plan of the Region of Madrid have enormous potential to become "outdoor museums" and even "museum territories". In other words, they could constitute a type of outdoor museum with a strategy that enables a creative management model to be defined and developed, which, by enhancing the value of its elements in a comprehensive way, will enable the museumalisation of a territory in order to foster its sustainable development [58]. The museum territories are connected to the legacy of the French ecomuseums and the tradition of interpretation centres in English-speaking countries [59], and within them archaeological heritage can play a fundamental role.

Currently, the Covid-19 pandemic is having a strong impact on tourism, which, at least temporarily, is affecting mobility and consumption patterns [2]. Therefore, over the last year, proximity tourism has been reinforced, particularly intrarregional trips, as a result of the regional border closures. Visits to natural areas have also increased as they are open, uncrowded spaces that enable the restrictions imposed to be easily observed [60,61]. Except for the sites located within the municipality of Madrid, the rest of the sites included in the Plan adapt to these two conditions of proximity and are located within an environment of great natural value. In fact, they fulfil the requirements and, therefore, have a high potential to become resources, especially in those environments that are popular as traditional leisure spaces. This is the case for the Sierra, where a large part of the supply is located: Valle de la Fuenfría, the Sieteiglesias burial ground, the strongholds of Paredes de Buitrago and the sites of the Calveros.

Covid-19 has not only reinforced the potential and attractiveness of these heritage assets but has also aroused their economic interest within a context of crisis and economic

and social emergency [62]. As indicated by Licata et al., the enhancement of the value of these archaeological sites on the fringes of the large destinations enables new tourist sites to be activated and favours the local economy of the places in which they are located [57].

Therefore, conducting this evaluation of the Plan de Yacimientos Visitables has enabled us to obtain four categories of archaeological sites in the Region of Madrid.

1. The sites which have solid tourism and leisure dynamics (the case of the Roman city of Complutum in Alcalá de Henares);
2. The sites located in the city of Madrid, integrated in everyday transit environments, such as the metro stations. Their museumalisation could have didactic objectives (the case of the Buen Suceso church and the Caños del Peral);
3. The sites that have potential to generate interest if they are correctly renovated and promoted (the case of the bunkers, due to their high attractiveness for historical proximity tourism and their easy interpretation, thanks to their physical characteristics and state of conservation);
4. Those that are not very attractive to visitors due to their location in embedded peripheries, their difficult accessibility and poor state of conservation.

It seems clear that the scale of the projection of these types of assets is regional, which significantly hinders their analysis as there are no documentary sources that reflect these types of internal movements. In addition, the scarcity of own resources makes it difficult to control who visits them or implement mass surveys. Social networks are useful for filling these research gaps. Although the number of studies that use geolocalised data from social networks as sources of information for studying principal points of interest or preferred sites for visiting is growing exponentially, particularly those linked to the study of tourism, we can observe that they still have significant limitations. This means that other sources of information have to be used [63], such as field studies; in this case, to conduct data triangulation. These limitations are due to different causes: 1. Social networks are still used by only a small part of the population; 2. The way in which the data is facilitated; the majority are private property; 3. The difficulties to process the information and, in this specific case, to exploit the content of the messages. These problems are more acute in spaces such as the ones in this study, which do not receive mass visits. In these cases, for which there is more literature, social networks are highly interesting [9].

Some of the limitations of using Twitter data is that not everyone is on social media, not all these places might be perceived as attractive enough to be shared on social media and even those visitors who share a post about a site might be posting about a place that they visited and enjoyed, forgetting other places which they also visited but were not the highlight of their day trip. Also, some proximity visitors might perceive these places as everyday places and go to or use them for different leisure reasons (sport, walking the dog, passing through, strolling, etc.) and do not post about them on social media. It is not easy to interpret these data, therefore the research should consider these limitations. To conduct a complete study of the demand for these sites, in future research this analysis should be combined with field work, observation and other data from local public bodies.

The limitations found in this research of the recreational use of the archaeological sites of the Region of Madrid require the consideration of new study strategies, for example, the use of other data sources such as sport platforms that register landmarks and more extensive routes, such as Wikiloc, Endomondo or Runtastic, with the objective of determining the relative weight of the visit to the sights within a wider framework of the visit for leisure or proximity tourism of the resident population of the region to natural spaces.

Possible development strategies that the Plan de Yacimientos Visitables could contemplate are facilitating the physical accessibility through signs, favouring intellectual accessibility through recreations and digital technologies and promoting their integration with the rest of the resources in the area through routes. In short, the principal question that the heritage professionals initially sought to answer (how to conserve?) should be replaced with a new question that makes more sense for the immediate future: what role should cultural heritage play in a changing society such as ours? Leisure and tourism

practices offer an opportunity for development based on heritage resources. This study is highly useful for the managers of the archaeological heritage of Madrid, providing them with unique information to establish possible development strategies that could be contemplated in the Plan de Yacimientos Visitables. These data will enable them to learn about the overall perception that visitors have of the sites and to establish comparisons. The differences will be based on the type of site, the promotion carried out and the characteristics of the immediate surroundings. In this respect, it enables a joint tourism strategy to be established, including them as attractions in the local tourist offices and linking them with one or several tourism products that they already promote.

Furthermore, this study provides information that cannot be obtained through other sources, on an individual level, and which is highly useful for establishing visiting rules in terms of the carrying capacity thresholds, in accordance with the new regulations imposed in musealised spaces throughout the world as a result of Covid-19. Therefore, heritage and tourism managers must prioritise the most visited sites (Valle de la Fuenfría in Cercedilla, Roman road in Galapagar).

The Plan de Yacimientos Visitables could incorporate strategic initiatives to facilitate physical accessibility through signs, foster intellectual accessibility through re-creations and digital technologies and promote their integration with the rest of the resources in the area through routes. In short, the main question that the heritage professionals initially sought to answer (how to conserve?) should be replaced with a new question that makes more sense for the immediate future: what role should cultural heritage play in a changing society such as ours? Leisure and tourism practices offer an opportunity for development based on heritage resources. Furthermore, it opens new research lines and possibilities, such as the development of a longitudinal study that allows the comparison of the data on an annual level, pre and post pandemic, in order to investigate new hypotheses about the potential of archaeological sites for proximity tourism during pandemics.

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Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki. Data was anonymized either by social networks companies or by the authors.

Informed Consent Statement: Informed consent was considered for all subjects involved in the study as consenting users of social networks which were analyzed.

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