

Social Media as a Management Tool: Opportunities for Sustainable Heritage Destinations

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The popularity of certain tourist spots on social media triggers unexpected trends leading to unsustainable tourism development, commodification, cultural dissonance, and other negative impacts on the territory. The popularity is gained mainly due to the amplified dissemination of data through social media. Dealing with these impacts is especially challenging in heritage destinations where nature and culture are essential elements. In this paper a quantitative content analysis of posts and reviews on Instagram, TripAdvisor, and Airbnb is conducted for five World Heritage Sites, 13 Regional Nature Parks, and two UNESCO Biosphere Reserves in Switzerland. The results provide insight into the distribution of visitors within a larger heritage area during and after the COVID-19 pandemic. This will help management agencies develop strategies for a more balanced flow of visitors within the heritage area. The similarities between the heritage destinations allow for comparison, while the differences provide opportunities to apply the methodology to different contexts and heritage sites. Social media analysis of large protected areas opens the field for other applications, mainly with regard to adopting new site governance and visitor management systems.

Keywords: tourism management tool, social media, visitor flows, heritage destinations, sustainable development



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Introduction

Understanding Visitor Flows in Heritage Destinations
The importance of displaying and sharing information about visited places and about the impact of such behaviour was discussed in *The Economist* ('For some in China, the aim of travel is to create 15-second videos,' 2019). The article explains that 'it's not about where you've been, it's about where you're seen to have been.' As we become embedded within cultures of sharing and co-creation, travellers become even more active agents in the visual production and consumption of

destinations (Kang & Schuett, 2013; Leung et al., 2013; Munar & Jacobsen, 2014; Urry, 1990; Xiang & Gretzel, 2010). Anyone who owns a mobile phone with a camera is now a photographer, and more photos are being taken today than ever before (Bonnington, 2011), with an intension to share them on social media (Siegel et al., 2022).

Photos not only document the tourist experience but may also shape it (Haldrup & Larsen, 2003; Larsen, 2008). The so-called 'Instagram Effect' implies that a point-of-interest becomes increasingly popular by

highlighting it on social media (Miller, 2017), regardless of its capacity to absorb visitors (Falk & Hagsten, 2020).

The popularity of certain tourist spots on social media triggers unexpected trends leading to unsustainable tourism development, commodification, cultural dissonance, and other negative impacts on the territory. The popularity is gained mainly due to the amplified dissemination of data through social media. Dealing with these impacts is especially challenging in heritage destinations where nature and culture are essential elements.

Even in times when spatial movement of people is, to a certain extent, limited – e.g. during a pandemic – issues related to visitor flows are relevant (Sormaz, 2020). Due to their popularity among visitors, certain areas or spots inside destinations are more visited than others, which consequently leads to surpassing the carrying capacity (Ruoss & Sormaz, 2022a) and impacting cultural, social, environmental, and economic components of a heritage destination. This creates a disbalance in flows of visitors and pressures to the above-mentioned components.

Factors that contribute to the increase in the number of visitors and to the complexity of their flows are (Sormaz, 2020):

- historical facts (i.e. some areas have longer tourism history than others),
- availability of tourism infrastructure (e.g. accommodation facilities, attractions),
- spatial position of hotspots (i.e. concentration or distribution of main points of interest in geographical space),
- quality and authenticity of experiences,
- access (e.g. availability of transportation services and paths),
- seasonality,
- communication (e.g. through social media),
- presentation and interpretation of heritage values both tangible and intangible (Van Loggerenberg et al., 2015),
- destination attributes, image and attractiveness,

- cultural, demographic, and psychographic characteristics of visitors,
- perceived value and satisfaction (Chui Teo et al., 2014), etc.

New Opportunities for Tourism Management

Tourism statistics merely rely on accessible aggregate data such as arrival and overnight while relevant space- and time-related data on how visitors move spatially and what they do are missing (Beritelli et al., 2020). Big data data-sources are disparate, and encompass the internet and webpages (internet searches, social network activities, reviews), mobile phone data, bank card transactions, city-sensors (cameras, weather and air conditions) as well as user-generated content from reviewers, bloggers (Li et al., 2018) and other types of social media users. Collecting and analysing these kinds of big data offers new opportunities in tourism research, which provides contextual information (e.g. about traffic, weather) but also spatial and temporal data that is able to describe the behaviour and mobility of visitors (Bertocchi et al., 2021).

Content analysis is an explorative and systematic way to analyse images and data and is noted as especially appropriate for addressing phenomena in mass media (Rose, 2016). This type of analysis can be both qualitative and quantitative. Quantitative content analysis allows for features of textual and visual material to be systematically categorized and recorded so that it can be analysed. It involves following a set of instructions about what features to look for in a text and then making the designated notation when that feature appears (Coe & Scacco, 2017). The present study focuses on the user-generated contents (UGCs), that is, monitoring of the contributions produced by other users. This type of content is produced and published on social media that allow users to easily create and upload contents such as texts, videos, and photos (Marchiori, 2012).

The discussion on over- and undertourism in relation to social media has increased dramatically in the last decade, which put exposed heritage destinations especially – being more vulnerable – to external human impacts. Therefore, the investigations began with exploring the interactions of media – particularly dig-

ital media – and tourism development in UNESCO-designated sites, which coincided with the elaboration of a methodology to analyse visitor flows with social media.

The results led to the conclusion that areas with a special focus on conservation and nature protection are particularly endangered by such fast and intrinsic changes of visitor flows and that social media reflect tourism development as well as the reasons for unbalanced visitor flows (Ruoss & Somaz, 2020a, 2022b; Sormaz & Ruoss, 2020; Sormaz, 2020). The importance of social media has even increased during the COVID-19 pandemic and lockdowns. At that point the research mentioned above was extended to selected World Heritage Sites and Regional Nature Parks in Switzerland in cooperation with World Heritage Experience Switzerland and Forum Landscape, Alps and Parks of the Swiss Academy of Sciences (SCNAT). The aim of the study was to have a clear view of the state of the art of the influence of social media in relation to visitor flows, which will be the basis for assessments of tourism development in the post-COVID-19 period (Ruoss & Sormaz, 2022b, 2022c). The existing methodology was adapted so that more differentiated insights could be collected (Sormaz, 2020).

The study shows the methodology to analyse the content related to tourism destinations and published on social media, which then allows for monitoring, planning and controlling visitor flows and overall destination development in space and time, which is especially important in periods of uncertainty (e.g. COVID-19 and post-COVID-19). The analysis delivers tangible results on potential over- and undertourism spots within large heritage areas and provides a basis for monitoring during and after the COVID-19 pandemic.

Methods

The research method chosen for the study is a quantitative content analysis to find patterns, generalize results to wider populations, and suggest further development of strategies and plans.

Since the volume of data – i.e. number of posts and reviews – on social media is changing constantly, it is important to collect data within a short period to

ensure reliability and comparability (Ruoss & Sormaz, 2022a).

Social media platforms considered for the study are Instagram, TripAdvisor, and Airbnb since the content that they contain is shared publicly, and is highly user-generated, travel-related, and experience-driven. Instagram is an open source for visual experience, communicating places one has visited, and collecting travel-related information and inspiration shared by travellers, locals, and tourism organizations. TripAdvisor and Airbnb are commercial providers that offer travel-related information, products and services by private or public businesses (Ruoss & Sormaz, 2022a). These differ from other social media – e.g. Facebook or Twitter – that are used rather as a large information or market place.

Functional differences among the three platforms chosen for the study require different approaches to their examination, as described below (Sormaz, 2020):

- The analysis of Instagram examines the number of posts within the most used hashtag related to an analysed tourist spot or area – particularly, the last 100 posts were examined as the most recent posts made by users of the analysed hashtags. Then the extraction of posts with the multiple-meaning is done by selecting those that do not relate to the analysed spot. The result is applied to the whole population and represents the total number of spot-related posts. For example, some of the hashtags that are monitored for WH Lavaux Wineyard Terraces are #corseaux (place), #terrassesdelavaux (wine terraces, natural and cultural area and attraction), #villalelac (cultural attraction).
- The analysis of TripAdvisor aims at providing insights into the number of reviews related to tourism facilities – e.g. attractions (sights and landmarks, nature and parks, museums) and businesses (restaurants, hotels, vacation rentals) – and generated by visitors, as well as the number of facilities offered by hosts in a heritage destination. The focus is on the number of reviews, which is data to be visually presented on a map. For example, the total number of TripAdvisor re-

views is collected for each of the localities within the site area of WH Lavaux Wineyard Terraces – e.g. Corseaux, Lutry, Grandvaux.

- The Airbnb analysis examines the number of reviews generated by visitors as well as the number of lodging rentals offered by locals and businesses. Also, it aims at providing insights into the relation between the frequency of rentals and reviews per lodging. For example, the total number of Airbnb reviews is collected for each of the localities within the site area of WH Lavaux Wineyard Terraces – e.g. Corseaux, Lutry, Grandvaux.

Prior to the examination of posts on Instagram and reviews on TripAdvisor and Airbnb, lists of key tourist spots need to be compiled for each heritage destination, which is done in collaboration with managing authorities of chosen World Heritage Sites (WHSS), parks, and Biosphere Reserves (BRS).

Data on posts and reviews were collected manually since there is not yet existing software that would be suitable for such analysis.

The visualization of the outcome allows presentation of the distribution of the posts and reviews in a spatial context and consequently, the presence and distribution of visitors in studied heritage areas in a given period in time. For the purpose of visualization, the ArcGIS® geographic information system software developed by Esri is used. It helps to create maps, perform spatial analysis and manage data by transferring data previously collected into the supported file. It uses contextual tools to visualize and analyse data and helps to spot spatial patterns in data for a better decision-making process (Esri, n.d.).

Case Studies: Swiss World Heritage Sites and Regional Nature Parks

In total, 13 Swiss sites have been designated a UNESCO status, becoming WHSS, while the Swiss Parks Network included 18 Parks and two BRS in 2021. The study by Ruoss and Sormaz (2022b, 2022c) focuses on seven WHSS, 13 Regional Nature Parks, and two BRS that cover a territory relevant for tourism development and conservation and are examined along timeframes presented in Table 1. For the present paper, ten Swiss

WHSS, Regional Nature Parks, and BRS have been selected to present and discuss the role of social media in visitor flow management.

For the analysis of WHSS (with an exception of the Castles of Bellinzona), perimeters as well as entire WH regions including the municipalities are considered. The tourist spots within perimeters are often photographed from the outside or mentioned in the hashtag without visiting. By including the surrounding touristic areas, insights into the potential impact of visitors on the perimeter is also collected. In the case of WH regions of Monte San Giorgio and Swiss Tectonic Arena Sardona, the spots inside and outside WH perimeters were recorded separately.

Selected World Heritage Sites

Rhaetian Railway in the Albula/Bernina Landscapes (RhB). Situated in the Canton of Graubünden (eastern Switzerland) and in the Province of Sondrio (northern Italy), the railway line – the Rhaetian Railway – runs from Thusis through the Albula and Bernina landscapes to Tirano with a total length of around 130 km. It was given cultural UNESCO World Heritage status in 2008 as an impressive example of engineering achievements intertwined with history, culture and nature, and a harmonious relationship between human action and a natural Alpine environment of great beauty and human development.

It encompasses 19 Swiss and one Italian municipality. The Albula and Bernina railway lines with its structures, installations and systems are defined as the core zone of the WHS while the buffer zone is comprised of the surrounding landscape.

Tourism started to develop within the area of Engadin in the early 19th century and was 'limited to the summer months until 1864, when St. Moritz invited some regular summer guests for a winter stay' (World Tourism Organization, 2018). The construction of the railway provided a better access and interconnectedness among the Alpine localities and greater development of the mountain area (International Council on Monuments and Sites, 2008; Sormaz, 2020).

Swiss Tectonic Arena Sardona. In July 2008, UNESCO listed the Swiss Tectonic Arena Sardona as a natural

Table 1 List of studied Swiss UNESCO WHSS, Regional Nature Parks, and BRS

UNESCO WHSS	Benedictine Convent of St. John at Münstair	8.-10.6.2021
	Three Castles, Defensive Wall and Ramparts of the Market Town of Bellinzona	8.-11.5.2021
	Swiss Alps Jungfrau-Aletsch	19.3.-4.4.2019
	Monte San Giorgio*	15.-20.4.2021
	Lavaux Vineyard Terraces*	16.-18.7.2021
	Rhaetian Railway in the Albula/Bernina Landscapes*	23.-30.1.2020
	Swiss Tectonic Arena Sardona*	23.-30.9.2021
Swiss Parks	Naturpark Beverin	3.-8.6.2021
	Landschaftspark Binntal	8.-11.8.2021
	Park régional Chasseral	10.-13.9.2021
	Naturpark Diemtigtal	15.-17.7.2021
	Parc du Doubs*	5.-11.10.2021
	Parc Ela	12.-20.6.2021
	Naturpark Gantrisch	11.-18.8.2021
	Parc naturel régional Gruyère Pays-d'Enhaut*	28.9.-3.10.2021
	Jurapark Aargau*	23.9.2021-15.1.2022
	Parc Jura vaudois	22.-25.10.2021
	Naturpark Pfyn-Finges*	25.-30.6.2021
	Swiss National Park	30.9.2021
	Parco Val Calanca	8.-11.5.2021
Biosphere Reserves	UNESCO Biosphäre Entlebuch*	3.-9.9.2021
	UNESCO Biosfera Engiadina Val Müstair*	8.-10.6.2021

Notes * Areas emphasized in this paper.

whs for its 'worldwide unique visibility of mountain building, the exemplary scientific history and the ongoing importance for geological research' (UNESCO Sardona, n.d.).

Thirteen municipalities of the cantons Glarus, St. Gallen, and Grisons share the area of the almost uninhabited wh perimeter. At the periphery of the property, popular touristic destinations such as Heidiland, Elm Sernftal, and Flims – Laax – Falera are part of the wh region, encompassing popular winter resorts such as Elm, Pizol – Bad Ragaz, Flims, and Laax (International Union for Conservation of Nature, 2008).

Lavaux Vineyard Terraces. The whs Lavaux Vineyard Terraces was listed as a cultural landscape in 2007, covering the territory of ten municipalities, demon-

strating evolution and development over almost a millennium, and a continuation and evolution of long-standing cultural traditions specific to its locality (Region du Lemman, n.d.).

The core zone is home to nearly 180 families that still grow its native grape variety, the 'Chasselas,' make some of the best wines in Switzerland, and conserve 450 km of heritage walls and more than 10,000 terraces. The buffer zone surrounds and protects the core zone and is home to vineyards, woodlands and pastures.

Numerous initiatives aim to increase sustainable tourism related to local products within the perimeter of the whs. The Winegrowers' Festival in Vevey – inscribed on the Representative List of the Intangible Cultural Heritage of Humanity in 2016 – has addition-

Table 2 Selected Swiss Regional Nature Parks

Park	(1)	(2)	(3)	(4)	(5)
Engiadina Val Müstair Nationalpark	1914	170	1,380–3,174	0	4
Engiadina Val Müstair BR Engiadina	2017	88	1,500–3,166	*	1
Engiadina Val Müstair Regionaler Naturpark BR Val Müstair	2011	199	1,246–3,180	1,400	1
UNESCO Biosphäre Entlebuch	2001/2008**	394	600–2,348	17,600	7
Parc naturel régional Gruyère Pays d'Enhaut	2012	632	375–2,042	18,300	17
Naturpark Pfyn-Finges	2012	277	533–3,697	11,300	12
Jurapark Aargau	2012	299	320–866	55,200	32
Parc du Doubs	2013	294	435–982	14,300	15

Notes * No permanent. ** BR since 2001 Park since 2008. Column headings are as follows: (1) since, (2) surface (km²), (3) altitude (m.a.s.l.), (4) population, (5) municipalities.

ally been an important step to give even more visibility to the protected vineyard landscape (International Council on Monuments and Sites, 2007; Lavaux UNESCO, n.d.; UNESCO, n.d.).

Monte San Giorgio. The pyramid-shaped mountain of Monte San Giorgio is surrounded by Lake Lugano in Canton Ticino (Switzerland) and in the Province of Varese (Italy). The mountain is the single best-known fossil deposit of marine life in the world from the middle Triassic period – a geological period which took place between 247 and 237 millions of years ago.

The mountain is almost completely wooded and thus difficult to access. The core zone is protected, without significant tourism or other anthropogenic impact. Around Monte San Giorgio, important settlements are Riva San Vitale with the oldest Swiss baptistry, the centre of the Mendrisiotto destination – Mendrisio – with its Holy Week Procession inscribed in the Representative List of the Intangible Cultural Heritage of Humanity, and also, Arsizio-Brusino, Porto Ceresio and Besano with its Museum of Fossils from Monte San Giorgio. Across the lake are the historic centre of Morcote and other touristic areas (International Council on Monuments and Sites, 2010; Monte San Giorgio, n.d.; UNESCO, n.d.).

Selected Swiss Regional Nature Parks

Swiss National Park Biosphere Reserve Engiadina Val Müstair. The Swiss National Park forms, together with

Val Müstair and parts of the municipality of Scuol, the UNESCO Biosphere Reserve Engiadina Val Müstair. The Swiss National Park received the BR label in 1979, and Val Müstair was added in 2010 and extended in 2017. Scuol and Val Müstair encompass the buffer and transition zones, while the Swiss National Park forms the core zone.

The Monastery St. John in Müstair is listed as a WHS and therefore analysed separately. The Regional Nature Park Biosphere Reserve Val Müstair is located mainly within the buffer zone and thus inhabited, with agriculture and tourism as the main economic activities. The Swiss National Park and the Engiadina (Scuol) part of the Biosphere Reserve are not, or not permanently, inhabited. The major tourism destinations Scuol and Zernez are situated at the border of the perimeter, and St. Maria and the winter resort Minschuns Tschier in the Val Müstair (Nationalpark, n.d.).

UNESCO Biosphere Reserve Entlebuch. The Entlebuch Biosphere Reserve is a pre-alpine moorland landscape where the core and buffer zones are composed predominantly of peat bogs and wetlands of national importance and cover around 50% of the whole territory. With sustainable use of local resources and a sustainable tourism strategy, managing authorities aim at balancing the number of visitors within the perimeter. Nevertheless, the main summer and winter destination is Sörenberg/Brienzer Rothorn, where the strik-

ing karst landscape is a major attraction for visitors (UNESCO Biosphère Entlebuch, n.d.).

Jurapark Aargau. Jurapark Aargau, a recreational area close to Basel and Zurich, situated in the cantons of Aargau and Solothurn, is a hilly landscape of the folded Jura and the tabular Jura between Aarau, Brugg, Laufenburg and Rheinfelden. The Jurapark is dominated by agriculture. The residents are predominantly commuting to the adjacent urban areas. Tourism services and infrastructure are less common due to the dominating day tourism (Jurapark Aargau, n.d.).

Naturpark Pfyn-Finges. The Naturpark Pfyn-Finges in Valais is characterized by rocky steppes and biotopes, idyllic mountain villages, and charming small towns, hillside vineyards and one of the largest Scotch pine forests in the Alps. The major tourist place within the park is Leukerbad. The municipality of Crans-Montana, a popular tourism destination and ski resort, shares the territory with the park (*Pfyn-Finges*, n.d.).

Gruyère Pays-d'Enhaut Regional Nature Park. In the Gruyère Pays-d'Enhaut Regional Nature Park situated in the cantons of Fribourg, Vaud, and Bern, nature and culture form a combination of centuries-old culture, lush mountain meadows with wood shingle alpine huts, historical villages and old bridges over the river Saane, and the nature reserves Pierreuse and Vanil Noir that are part of a pre-Alpine landscape. Small tourism destinations – Chateau-d'Oex or Gruyère – and day-tourism spots are distributed all over the territory with well-known destinations such as Saanen/Gstaad, Les Diablerets, Aigle, and Bulle. Towards Lake Geneva, the park perimeter reaches Montreux and Vevey, with its intangible cultural heritage Winegrowers' Festival, and edges to the WHS Lavaux Vineyard Terraces (Gruyère Pays-d'Enhaut Regional Nature Park, n.d.).

Parc du Doubs. Parc du Doubs, characterized by extensive pastured woodlands and forests, is the typical regional cultural landscape situated in the cantons of Jura, Neuchatel, and Bern. The landscape has been formed over the centuries through cattle farming and horse breeding. Le Locle and La Chaux-de-Fonds are

major centres of watch production and situated at the border of the park. They form the core of the WHS La Chaux-de-Fonds/Le Locle, Watchmaking Town Planning and are therefore attractive to visitors (International Council on Monuments and Sites, 2009; *Parc du Doubs*, n.d.; Swiss Parks, n.d.).

Results

The results – especially those of the analysis of Instagram – support the statement made in previous studies by Sormaz and Ruoss (2020) that social media can be used as a tool to assess, analyse, manage, and monitor visitor flows in heritage destinations.

The results show that posts generated from tourism organizations and managing authorities, whose overall commitment is to communicate importance, distinctiveness, and values of a heritage destination, have been modest when it comes to social media (Ruoss & Sormaz, 2022a, 2022b).

World Heritage Sites

The results of the WHSS analysis are visualized comparatively in Figure 1. The dataset includes in total 679 hashtags with over 3,278,402 posts on Instagram, 982 listings (254 attractions and 728 businesses) with 141,401 reviews on TripAdvisor, and 3,446 lodging rentals with 80,392 reviews on Airbnb (Table 3).

In addition to heritage properties, the whole WH regions, including the involved municipalities, are considered in the analysis. This gives not only a broader picture of parts of a site that are more or less visited but also shows potential for tourism clusters that can support sustainable tourism development and better-balanced visitor flows in studied heritage destinations. The results show where anthropogenic impact and possible pressure from the developed surroundings is higher or lower.

On Instagram, the WHS with the highest presence (i.e. highest number of posts) is the SAJA (1,208,616 posts; Table 3). The posts related to the area of the SAJA make around 1/3 of all generated posts for the analysed WHSS. The presence of the SAJA on Instagram is almost two times higher than that of the Rhaetian Railway in the Albula/Bernina Landscapes (668,847 posts). Around 68% of the total number of

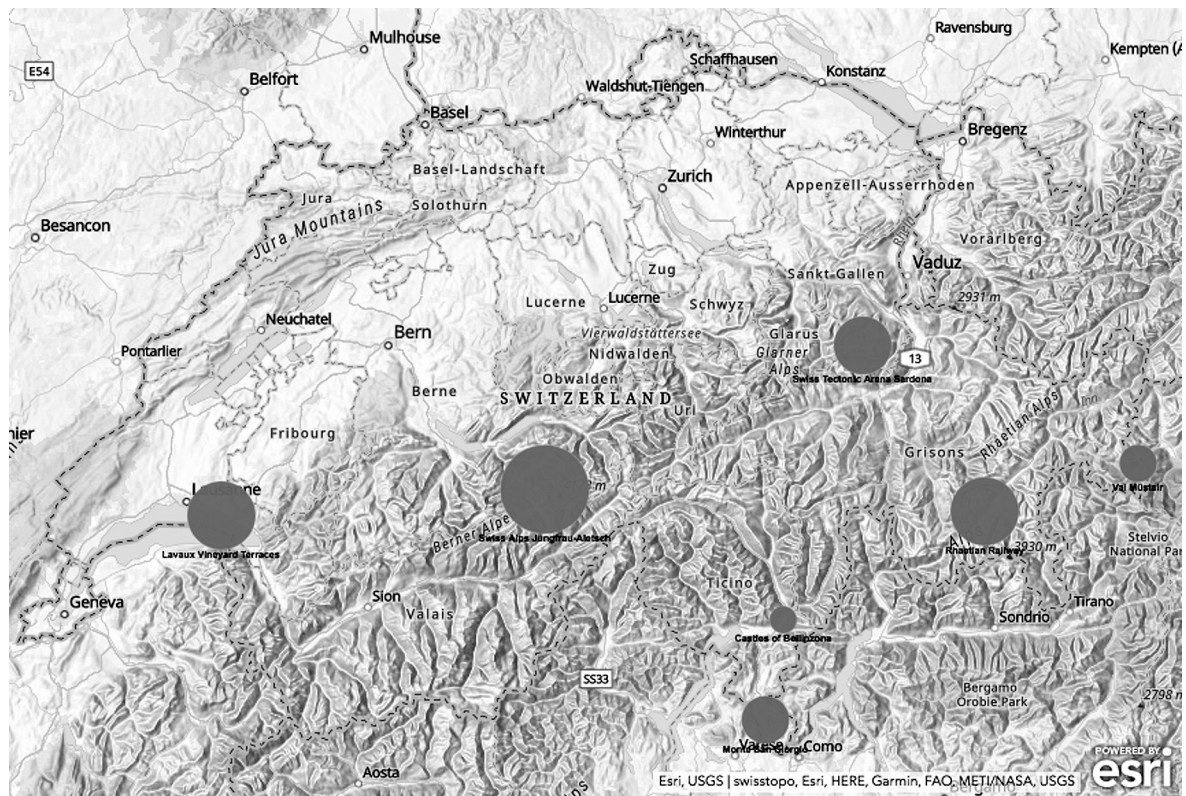


Figure 1 Presence of Analysed WHSS on Instagram

Table 3 Presence of WHSS on Instagram, TripAdvisor, and Airbnb

World Heritage Site	Instagram		TripAdvisor			Airbnb		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lavaux Vineyard Terraces	79	628,564	64	167	25,980	240	4,433	18
Swiss Alps Jungfrau-Aletsch	148	1,208,616	*	*	20,662	1,682	54,102	32
Monte San Giorgio	91	237,553	108	176	11,822	166	2,640	16
Castles of Bellinzona	3	10,226	3	*	807	*	*	*
RhB in the Albula/Bernina Landscapes	93	668,847	*	*	63,354	688	7,407	11
Swiss Tectonic Arena Sardona	253	521,227	78	377	18,413	650	11,635	18
Benedictine Convent of St. John at Müstair**	12	3,369	1	8	363	20	175	9
Total	679	3,278,402	254	728	141,401	3,446	80,392	17

Notes * Data are not available. ** Data taken from the analysis of Müstair since visitors to the Convent visit other attractions and businesses in Müstair. Column headings are as follows: (1) analysed hashtags, (2) posts, (3) attraction, (4) business, (5) reviews, (6) lodging rentals, (7) reviews, (8) reviews per lodging.

posts related to the SAJA, relate to the North of the region (i.e. Jungfrau, Lauterbrunnen and Grindelwald).

On TripAdvisor, the Rhaetian Railway has the high-

est presence on TripAdvisor with 63,354 reviews, 42% of which relate to the area of St. Moritz. The second WHS with the highest presence is Lavaux Vine-

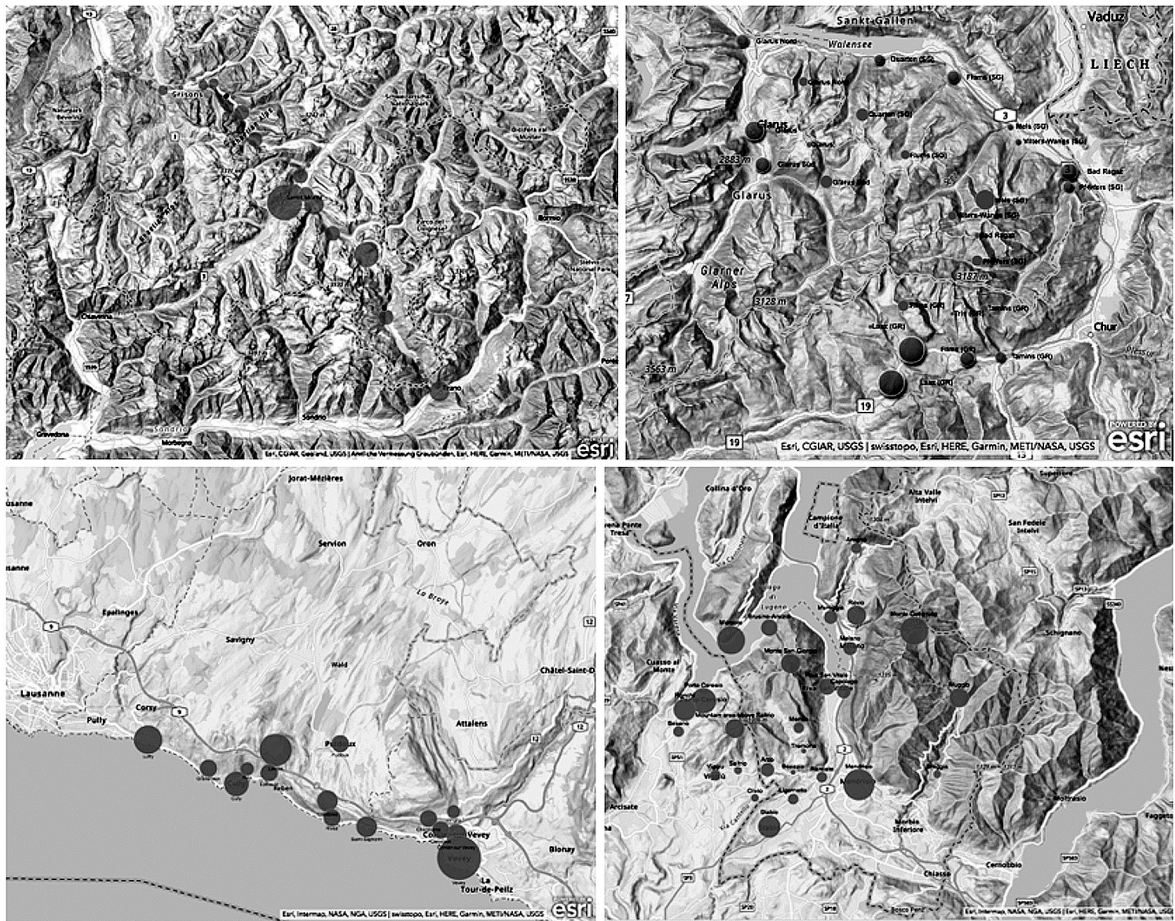


Figure 2 Presence of Localities of WHS Rhaetian Railway, Swiss Tectonic Arena Sardona, Lavaux Vineyard Terraces, and Monte San Giorgio on Instagram

yard Terraces (25,980). On the other hand, the Swiss Tectonic Arena Sardona contains the highest number of listings on TripAdvisor (377 business- and 78 attraction-related) and is among the four most reviewed WHS considered in the study.

On Airbnb, the SAJA has the highest presence with 54,102 reviews for 1,682 lodging rentals, followed by the Swiss Tectonic Arena Sardona with 11,635 reviews. The SAJA also contains the highest number of reviews per lodging. Reviews per lodging show the frequency of rentals.

Cultural landscape WHS (e.g. Lavaux Vineyard Terraces, Monte San Giorgio) are inhabited and characterized by a specific land use and thus tourism spots are distributed all over the perimeter.

The area within the Rhaetian Railway with the highest presence across the three analysed social media platforms is the Upper Engadin – in particular, St. Moritz (Figure 2). It is followed by the Bernina area on Instagram and Pontresina and Tirano across all three platforms. The least present are Thusis, Alvaschein and Stuls located in the northern part of the heritage site. Visitors experience the cultural heritage mainly while on the train, which therefore increases the presence of certain spots along the railway on social media and potentially provides unrealistic insight into the distribution of visitors across the area.

Laax and Flims, localities and popular tourism resorts, are the most present localities of the Swiss Tectonic Arena Sardona on Instagram with more than

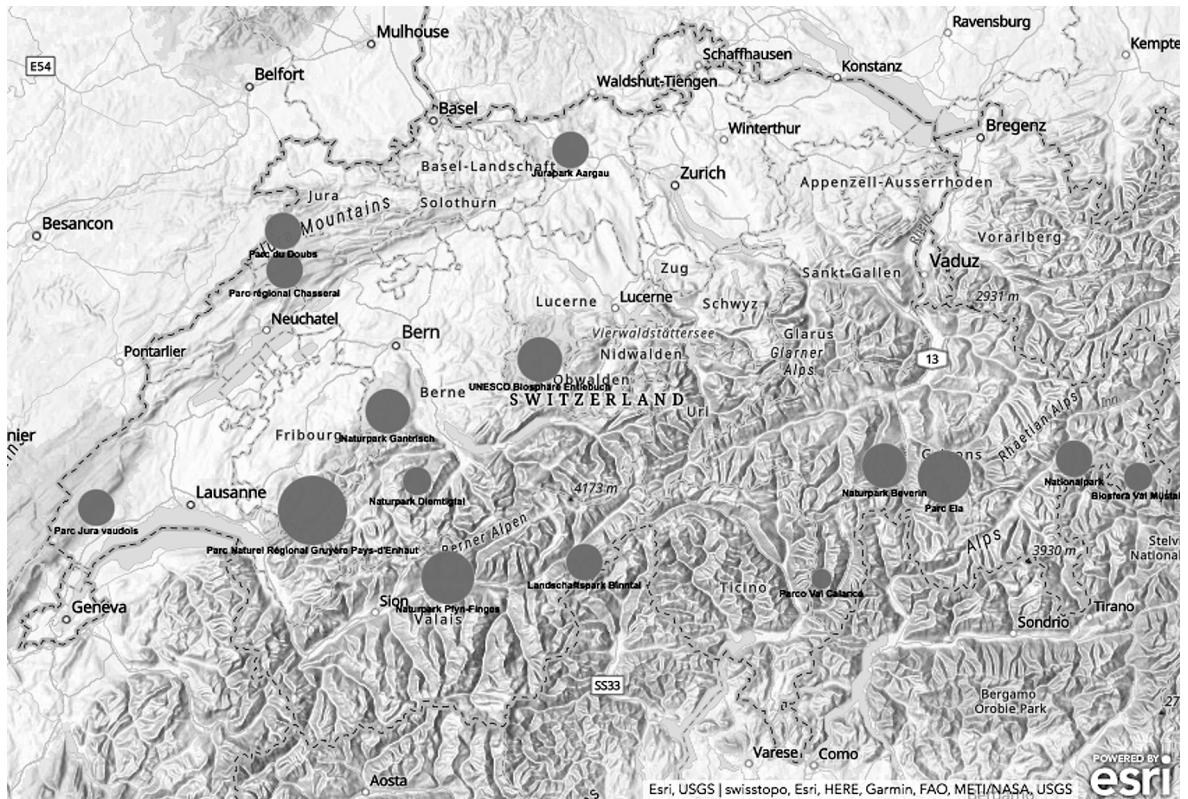


Figure 3 Presence of Analysed Parks on Instagram

twice as many posts as Glarus and Mels. The core area of the wHS is significantly less present on the three social media platforms – e.g. Pfäfers, Tamins, and Vilters-Wangs.

The municipality of Vevey along the shore of Lake Geneva is at the triangle of three designations and has approximately 2.5 times more posts than the hashtag of the Lavaux region on Instagram. Vevey is the most popular tourism destination in the region and therefore results in the highest presence of all municipalities within the wH Lavaux Vineyard Terraces. The least present are Riex, Jongny, and Villette.

The results of the analysis of Monte San Giorgio include its core and buffer zones and the surrounding area of Mendrisiotto – Monte Generoso and Morcote. The most present locality is Mendrisio (a tourism destination and commercial centre), followed by Morcote (a historic centre of national importance), while the least present are Tremona and Bresazio.

Swiss Regional Nature Parks and Biosphere Reserves
The results of the parks and BRS are visualized comparatively in Figure 3. The dataset includes in total 1,833 hashtags with 2,446,798 posts on Instagram, 2,108 listings (366 attractions and 1,742 businesses) with 127,985 reviews on TripAdvisor, and 3,100 lodging rentals with 55,087 reviews on Airbnb (Table 4).

Despite the fact that the number of analysed park-related hashtags is more than double that of the wHSS, the analysis shows that wHSS have a higher presence across the three social media platforms (i.e. up to 1.3 times higher).

For the interpretation of the results, it is important to distinguish whether a park is primarily oriented towards tourism (e.g. Parc Naturel Régional Gruyère Pays-d'Enhaut and Naturpark Pfyn-Finges) or whether it is an agricultural region and local recreation area visited by day tourists (e.g. Jurapark Aargau). Parc Naturel Régional Gruyère Pays-d'Enhaut,

Table 4 Presence of the Parks and Biosphere Reserves on Instagram, TripAdvisor, and Airbnb

Park	Instagram		TripAdvisor			Airbnb		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Naturpark Beverin	130	101,638	16	67	2,341	64	2,194	34
Landschaftspark Binntal	74	52,329	7	29	991	83	1,012	12
Parc régional Chasseral	79	93,174	32	101	3,908	62	2,064	33
Naturpark Diemtigtal	41	33,117	9	25	1,005	75	2,431	32
Parc du Doubs	108	80,987	73	205	9,211	143	2,719	19
Parc Ela	208	282,189	31	199	10,815	476	4,712	10
UNESCO Biosphäre Entlebuch	269	112,894	3	47	875	53	1,662	31
Naturpark Gantrisch	136	144,279	21	77	1,777	73	3,227	44
Parc naturel régional Gruyère Pays-d'Enhaut	120	922,161	13	356	58,141	869	14,880	17
Jurapark Aargau	52	65,662	19	80	987	60	1,180	20
Parc Jura vaudois	79	79,775	33	128	5,687	99	2,735	28
Naturpark Pfyn-Finges	254	367,643	66	277	24,920	647	8,940	14
Nationalpark	107	62,064	22	97	5,776	313	5,769	18
Parco Val Calanca	71	9,389	11	23	493	28	467	17
Biosfera Val Müstair	105	39,497	10	31	1,058	55	1,095	20
Total	1,833	2,446,798	366	1,742	127,985	3,100	55,087	18

Notes Column headings are as follows: (1) analysed hashtags, (2) posts, (3) attraction, (4) business, (5) reviews, (6) lodging rentals, (7) reviews, (8) reviews per lodging.

Pfyn-Finges Nature Park and Parc Ela are the most present parks on the three platforms compared to other analysed parks (Table 4). Pays-d'Enhaut has over two times more Instagram posts (922,161) than Pfyn-Finges (367,643). Other parks count fewer than 150,000 posts for each.

Val Calanca, Diemtigtal, Val Müstair and Binntal have the lowest presence on Instagram and TripAdvisor, while the Jurapark Aargau has the lowest presence only on TripAdvisor. Pays-d'Enhaut counts the highest number of reviews (14,880) and lodging rentals (869) on Airbnb. At the same time, it is one of the parks with the lowest number of reviews per lodging (17). Diemtigtal – with two municipalities – has a low presence on the three platforms compared to other parks.

Compared to Val Müstair, Entlebuch has more than a twice-higher presence on Instagram (Table 4). Also, it has a higher number of listings but lower number of reviews on TripAdvisor. Flühli-Sörenberg (tourism destination) and Entlebuch (name of the lo-

cality, municipality, and region) are the localities of the BR Entlebuch that are the most present on Instagram while Hasle and Doppleschwand are the least present (Figure 4). The localities of Biosphere Val Müstair that are the most present on Instagram are Tschierv and Santa Maria Val Müstair while the least present are Valchava, Fuldera, and Lü.

The results of the Pays d'Enhaut analysis show that Montreux, a famous festival and tourism destination at Lake Geneva, is the most present locality on Instagram with over ten times more posts compared to Veytaux. Localities such as Châtel-sur-Montsalvens, Crésuz, Bas-Intyamon, and Rougemont are among the least present on the three platforms (Figure 5). The tourism resort and municipality Mollens/Crans Montana is the most present of all municipalities of Naturpark Pfyn-Finges on Instagram with more than twice as many posts as the destination Leukerbad and the urban area outside the park of Sierre. The mountainside and areas under higher protection (e.g. Varen, Guttet-

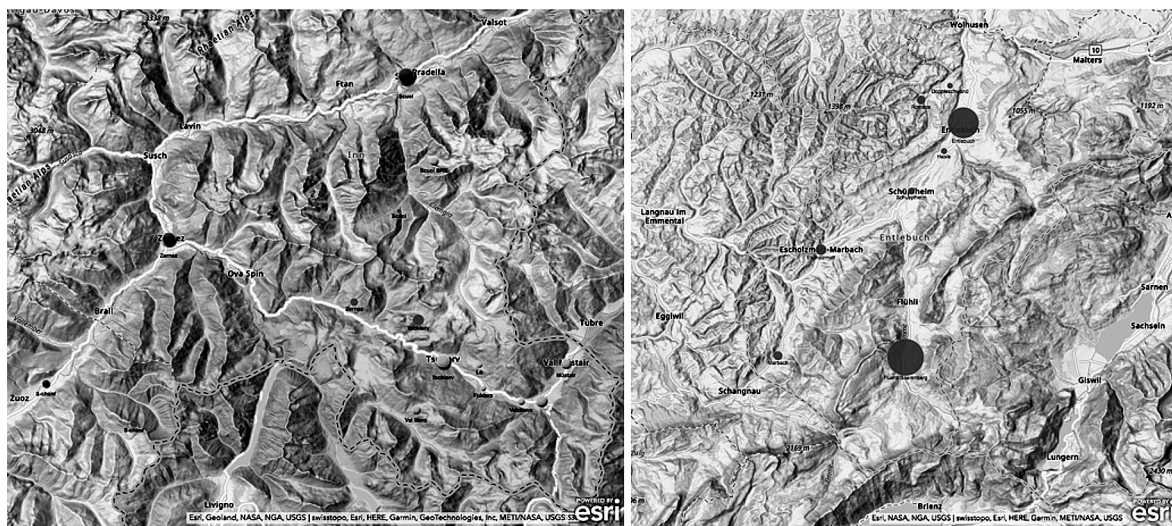


Figure 4 Presence of Localities within the Area of Biosphere Reserves – National Park Biosphere Reserve Engiadina Val Müstair (Left) and Entlebuch (right) on Instagram

Feschel, and Unterems) are significantly less present on the three platforms since they are less visited compared to other areas within the heritage destination.

As for the municipalities of Parc du Doubs, the municipalities of the WHS ‘Watchmaking Town’ have the highest social media presence – Le Locle with almost twice as many Instagram posts as La Chaux-de-Fonds. La Chaux-de-Fonds generates the highest number of TripAdvisor reviews mainly related to business. On the other hand, La Chaux-des-Breuleux and La Ferrière are little- or not present on Airbnb.

Municipalities within the Jurapark Aargau with the highest presence are Laufenburg and Schinznach, the most popular tourism places in the region, while the least present are the predominantly agricultural municipalities – Oberhof and Ueken. Tourist spots within the area of Jurapark Aargau attract day visitors and therefore the park’s presence on the three platforms is homogeneous.

Discussion

The study shows that the three social media platforms are suitable monitoring and management tools for tourism development in heritage destinations such as WHS and parks. Even though social media – in heritage and other tourism destinations – have been mainly focused on tourism marketing and communi-

cation activities, their role as a managing instrument has been largely underestimated. Due to the peculiarities of heritage destinations, their strategies and plans regarding social media need to consider the local evidence.

Differences of the results among WHSs and parks are manifold. Possible reasons are related to:

- tourism history (i.e. some areas have longer tourism history than others),
- access and seasonality,
- vicinity of larger places and urban areas,
- attractiveness of natural and cultural assets and heritage clusters,
- marketing and communication activities of tourism organizations and other tourism stakeholders,
- media presence (especially new media – e.g. social media),
- demographic, psychographic and behavioural characteristics of visitors, etc.

The results provide the WHSs and Swiss Regional Nature Parks insight into the distribution of visitors within a larger heritage area by identifying patterns in flows of visitors. This helps managing authorities to create strategies and plans to monitor and manage vis-

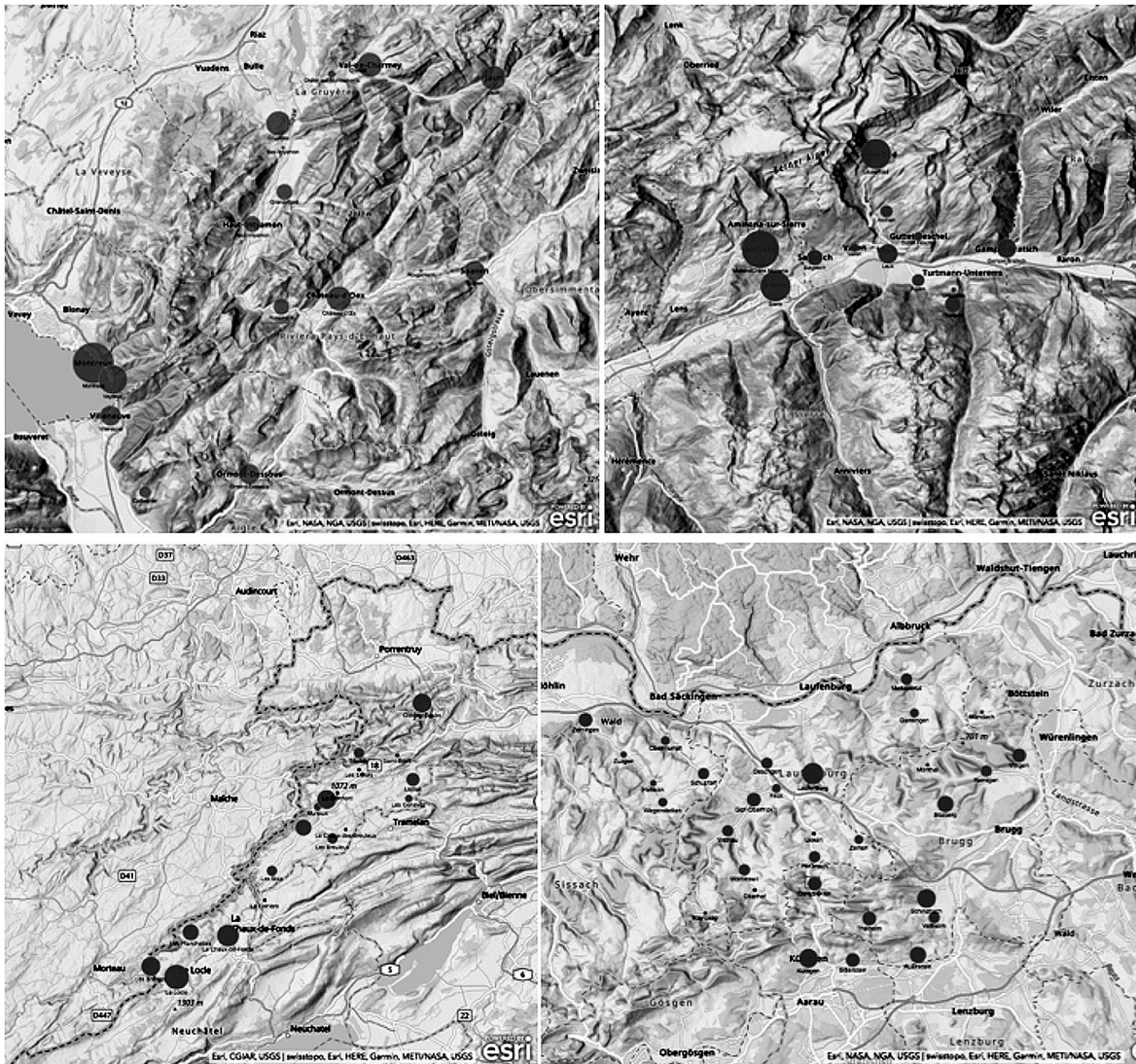


Figure 5 Presence of Localities within the Areas of Pays d'Enhaut, Pfyng-Finges, Parc du Doubs, and Jurapark Aargau

itor flows (e.g. to create a narrative of a heritage destination that will lead visitors to a less visited area), and achieve a better-balanced share of benefits as well as a more effective use of local resources.

The example of the Swiss National Park emphasizes that the differences of the social media presence are more significant outside than inside the perimeter. Possible reasons for the low presence of the Swiss National Park in comparison to other parks is that it offers alternative spots (e.g. wildlife observation points), as well as spots within the perimeter that are difficult

to access – e.g. only by walking (apart from the Pass dal Fuorn) – or the visitor segment is not particularly active on social media platforms considered in the study.

Therefore, the use of social media for visitor flow management within the perimeter is less suitable in such cases. These observations correspond to natural WHSS with little inhabited perimeter areas (e.g. SAJA, Swiss Tectonic Arena Sardona). However, as soon as the surrounding areas or regions (e.g. in the buffer zone) are included in the study, the observations differ significantly. Since the perimeters of the natural WHSS

are largely uninhabited, views from the outside (e.g. to Aletsch Glacier in case of the SAJA, Martinsloch in the case of the Tectonic Arena, or Monte San Giorgio) dominate.

An example of a natural WHS where significant differences between social media presence in the northern and the southern part are observed and therefore highlight a disbalance in flows of visitors, is SAJA (Sormaz & Ruoss, 2020; Sormaz, 2020). The area with the highest presence is Jungfrau in the northern part while the least present is Raron-Niedergesteln in the southern part of the WH region. The northern area, especially the area of Jungfrau, is historically well-known for its tourism offerings. It is somewhat inhabited and is home to the High Alpine observatory – Jungfraujoch. Due to the easy access, international visitors are more present in the North compared to the other parts of the WH region. In the southern part, the presence of the spots overlooking the Aletsch Glacier and those around Bettmeralp overshadow other spots.

In contrast, cultural WHSS (the Castles of Bellinzona, RhB or Benedictine Convent at Müstair) are tourist spots themselves, which may have an impact on their social media presence. The visitors as well as the local population use the cultural heritage during their visit (core zone) or living in the area (mainly in the buffer zone). They are equally ambassadors and communicators of their activities, experiences, and perceptions towards heritage through social media. These can be insights into the outside or inside views of heritage (e.g. museum, interior of a castle, wine cellar, train, landscape).

As for the WH Three Castles, Defensive Wall and Ramparts of the Market-Town of Bellinzona, only the three castles were analysed in order to collect reference values for observation of the tourism development and visitor flows. Castelgrande is the most present on Instagram and TripAdvisor. However, the two upper castles, Montebello and Sasso Corbaro, are located outside the city centre and are more difficult to access, are less communicated and less present on social media compared to Castelgrande (Sasso Corbaro is not listed on TripAdvisor; Table 3; Ruoss & Sormaz, 2022b).

The Benedictine Convent of St. John at Müstair is a small WHS with one analysed hashtag on Instagram.

However, visitors to the Convent visit other spots in Müstair and for the purpose of the analysis, the Convent is included in the Biosphere Reserve Engiadina Val Müstair (Table 3; Ruoss & Sormaz, 2022b).

In the WHS Lavaux Vineyard Terraces and Monte San Giorgio, the high number of posts is also due to the intangible cultural heritage – the Winegrowers' Festival in Vevey and, respectively, Holy Week Processions in Mendrisio.

The results thus show that social media support taking preventive measures on potential negative impacts on the Outstanding Universal Value of the WH properties from outside the perimeter. The overlapping of tangible and intangible heritage can significantly improve the presence on social media. Social media are also a suitable monitoring tool for tourism development in parks.

Similarities among studied heritage destinations allow for a comparison, while the differences (e.g. type of heritage site, its tourism, offerings, and visitors' segment) outline the particularity of transferring the methods to various contexts and opportunities to study other heritage areas.

Tourism Management and Monitoring Opportunities with Social Media

As previously stated in the study, social media can be used as a tool for strategic management and monitoring in all studied WHSS and parks. Management strategies and action plans must consider the differences and specificities of the individual heritage destination.

Less inhabited perimeters of the WHSS have consequently few posts from the local population, but are particularly noticed by visitors and communicated through social media. Since the perimeters are frequently photographed from outside, social media can provide insights on tourism trends, patterns, and potential impacts from the outside. In the tourist areas surrounding the protected areas, the role of social media can be to balance over- and undertourism or to promote less-known areas. The imbalance, with high differences in the visitors' distribution, is most obvious in the SAJA WHS where a high potential for over- and undertourism can be observed. In cultural landscapes

or WHSS that are attractive to tourists (e.g. Lavaux Vineyard Terraces), social media are particularly suitable as interactive visitor management tools.

Lavaux Vineyard Terraces and the Rhaetian Railway in the Albula/Bernina Landscapes are cultural WHSS founded on territorial land use. Interactions of the local population with the heritage is an essential part of their life. The results of the analysis of these sites are comparable to the results of the parks and their visitor flow management with social media can be applied to the whole perimeter.

Little-inhabited parks are of major interest to visitors communicating, taking pictures and sharing them on social media. Because of the low social media presence, visitor flow management with social media is less suitable in these parks. However, social media can provide information about tourism trends and can therefore be important as a management tool.

The study strengthens the statement made in the previous studies (Sormaz & Ruoss, 2020; Ruoss & Sormaz 2022a) that social media are a tool for the whole tourism management cycle. In other words, for a successful visitor flow management, it is crucial to have integrated communication and management strategies that will use social media as an intermediary. Through social media, the meaning and values of heritage destinations and tourist areas and spots within them will be communicated, while the same means – i.e. social media – will also serve to direct flows of visitors and adapt them to local circumstances.

By sharing their experiences, the visitors become multipliers or marketers of heritage destinations and reviewers of the quality of the services within them. Further, social media are an added value for all WHSS and parks as a tool for interacting, information-exchange, and communication inside the locals-visitors-tourism stakeholders' chain, as well as in participatory decision-making processes.

Conclusions and the Way Forward

Social media analysis of large protected areas opens the field for other applications mainly with regard to adopting new site governance and management systems and visitor flow concepts. The social media data provide sites and parks management with meaningful

insights into mobility and distribution of visitors and support application of more specific action planning with social media in heritage destinations and their use for visitor management.

This study presents the current situation (zero monitoring). Further analysis (e.g. every 2–3 years) supports observing, planning, and controlling the development of tourism. Social media analysis also serves as a permanent monitoring tool. The so-called Social Media Action Planning (SMAP) (Sormaz, 2020) helps to observe and monitor development in a tourist destination and to understand the distribution of visitors. Between evaluation and monitoring, the SMAP comprises eight stages (Figure 6). Its strategies and planning combine online and offline solutions, and enable success to be monitored during the observation period. The implementation of a SMAP allows for balanced visitor flows as well as other components of the tourism management cycle, two-way communication between local people and businesses and visitors, and a well-informed decision-making process.

The added value of social media data was summarized by Sormaz (2020). Methodology used to analyse social media supports managing authorities of natural and cultural heritage destinations in:

- understanding distribution of visitors within an area and distinguishing between overcrowded and less-visited areas or spots,
- understanding management and marketing activities in the area,
- analysing, controlling and directing visitor flows,
- understanding the processes of impact and change (e.g. retreating glaciers, decay and rebuilding of ruins, changes in the quality of hospitality services), since the user-generated content is witness to a development.

According to these, social media strategies and action plans are established which then support:

- enabling interactions and deepening relationships between the local population, visitors, management and other stakeholders,
- communicating values of a heritage destination,
- communicating alternative spots in periods of high pressure of visitors,

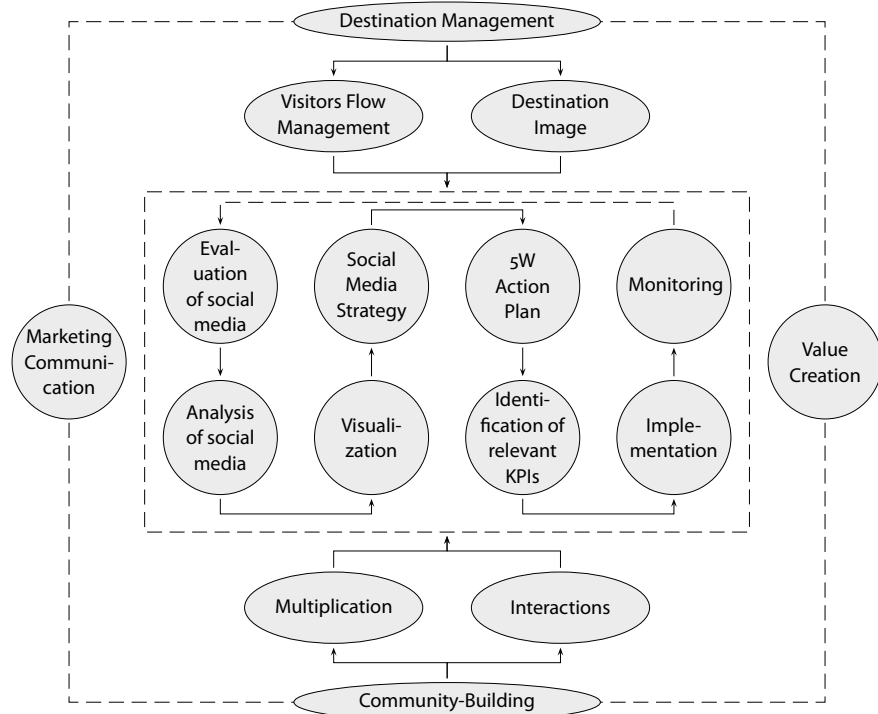


Figure 6
Social Media as Management
Tool in Heritage Destinations
and the Social Media Action
Planning (SMAP)

- raising awareness and respect for heritage values and local communities,
- accompanying visitors in all phases of their journey.

Social media supports communication, sensitization and mediation as well as the active participation of actors in a heritage destination. With the SMAP, new opportunities for strategic orientation in tourism management as well as communication – which is one of the strategic goals of managing authorities – are opened. The strategic orientation is also necessary for the future use of other information and communication technologies in destination development and the concept of *heritage stewardship destinations*. For these reasons, there is a need for heritage destinations to anchor social media in the communication strategy and define a binding SMAP.

Further studies on visitors' perception would help in understanding the elements of travel experience and destination itself that drive the motivation and visit decisions. These can be evaluated through a qual-

itative content analysis. Data collected will enrich the existing dataset of the quantitative analysis and support better-informed decision-making processes.

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