

*Su Barcelona: A website proposal
encouraging sustainable tourism in
Barcelona*

Author: Stephen Taylor

Supervisor: Rafael Pedraza Jiménez

Academic Year: 2023/24

Final Project of the MA in Digital Culture and Emerging Media

Department of Communication

Universitat Pompeu Fabra

Modality B: Applied/practice-based research

Abstract

Though a major global industry, tourism's negative impact on the environment frequently comes under scrutiny. In Barcelona, large proportions of the resident population have grown frustrated by what they consider overtourism throughout the city. Within the 2030 Sustainable Development Goals, the UN address the environmental, economic and sociocultural issues that increased tourism has on tourist destinations. This paper adopts a framework grounded in behavioural theories to propose a novel approach to tackle the sustainability challenges that tourists often create. Applying behavioural interventions into the digital sphere, a website proposal is developed to provide a multifaceted communications platform with a user-centred approach to encourage an increase in sustainable and environmentally friendly behaviours by tourists whilst visiting Barcelona.

Keywords: Sustainable tourism, Sustainable behaviour, Sustainability, Website, Web design, Web development, User experience, Prototype, Environmental issues, Tourist, Tourism, Barcelona

Table of Contents

Block I: General foundations, theory and research	3
Introduction.....	3
Theoretical foundations.....	4
Literature review	11
Objectives	13
Methodology	14
<i>Expert analysis of sustainable tourism reference websites</i>	14
<i>Personas and Scenarios</i>	15
<i>Content planning</i>	16
<i>Website mapping</i>	18
Results	18
<i>Expert analysis of sustainable tourism reference websites</i>	18
<i>Personas and scenarios</i>	21
<i>Content planning</i>	27
<i>Website mapping</i>	31
Discussion.....	32
Conclusion	34
Block II: Creative production: script and design	35
Wireframes.....	35
Homepage Mockup	45
Prototype.....	45
References	46
Appendices	51
<i>Appendix 1</i>	51
<i>Appendix 2</i>	63
<i>Appendix 3</i>	66

Block I: General foundations, theory and research

Introduction

Tourism's significant global economic contributions, alongside the increasingly accessible means of travel, has helped facilitate an industry which appears to be exponentially growing, returning to pre-pandemic levels, and expecting to exceed them in the coming years.

While the tourism industry provides many advantages to nations across the globe, such as through job creation and sociocultural diversity, its continual growth has also created a necessity to address the substantial environmental problems exacerbated by tourism (Demeter et al., 2023).

As one of the most polluting global industries (Dolnicar, 2020), the negative environmental impacts of tourism can be identified through the emission-heavy modes of transport frequently utilised by tourists, with aeroplanes and cruise ships proving particularly damaging. Tourists' individual and collective decisions and actions also prove a significant factor in contributing to the vast sustainability issues facing the industry.

Indeed, the hedonistic nature of travelling can be seen to influence tourists' behaviours, with even people who consider themselves environmentally committed demonstrating a blasé attitude towards sustainability whilst on holiday (MacInnes et al., 2022).

To address sustainability issues caused by tourists, this proposal aims to develop an initial website design to act as an influential platform which encourages tourists to behave in a more environmentally friendly way whilst they are visiting Barcelona.

Websites are widely considered one of the most important platforms for distributing information online (Morales-Vargas et al., 2023) leading to the author's decision to select a website as the proposed platform to develop this project.

The purpose of this proposal, therefore, is to contribute to the field of sustainable tourist behaviours in a novel way, addressing a gap in the practical implementation of behavioural interventions to shift their attention away from the frequently researched hotels and tourist agencies and instead focus on the influential possibilities provided by the internet to interact with tourists directly.

The proposed website is entitled *Su Barcelona*, with the etymology of the name revealing a play on the word 'su'. To Spanish speakers, 'su' can refer to the possessive pronoun, meaning 'his', 'her', 'its', 'their', or 'your'. 'Su Barcelona' is therefore likely to evoke a personal link towards the city, with Barcelona proving a place where everyone can feel a sense of belonging. On the other hand, 'su' offers an abbreviation of sustainable, the key concept behind the proposed website and the desired

end goal of all ecologically-driven projects, an increasingly sustainable environment, in this case, a sustainable Barcelona.

Throughout the paper, the terms ‘sustainable’, ‘environmental’ and ‘ecological’ are used interchangeably when discussing the environmental, economic and sociocultural matters connected to sustainable development in tourism.

Theoretical foundations

Various studies have been conducted into the use of digital marketing services, including destination websites, as strategic processes for promoting goods and services online (Khan et al., 2022). It is considered that most travel decisions today are influenced by information viewed online through social media platforms and digital marketing resources (Arantes et al., 2022).

With tourism information surging in recent years, largely influenced by the evolution of social media platforms (Narangajavana Kaosiri et al., 2022), many previous studies explore the impact digital marketing platforms have upon tourist behaviours (see Armutcu et al., 2023; Khan et al., 2022). Commonly, the theory of planned behaviour (Ajzen, 1991) has been applied as a theoretical framework in the investigation of such studies.

As the primary focus of this proposal is to develop an initial website prototype which can encourage an increase in sustainable tourist behaviours in Barcelona, significant attention has been placed upon behavioural theories and their application to change tourist behaviours, facilitating towards an increasingly environmentally aware tourism industry.

Ajzen’s theory outlines three key components which significantly shape an individual’s intentions: *attitude*, *subjective norms*, and *perceived behavioural control* (Ajzen, 1991). These behavioural intentions refer to an individual’s motivation to perform a particular action, noting that an individual’s intended behaviour is more likely to be performed if the intention, and motivation, is higher (Conner & Armitage, 1998).

Within this field, Sara Dolnicar has been particularly prevalent in applying behavioural theories to address sustainability issues through tourist-focused interventions which encourage an increase in sustainable tourist behaviours when on vacation. Before developing potential interventions to increase sustainable tourist behaviours in Barcelona, it is vital to recognise that “different kinds of environmentally significant behaviour have different causes.” (Stern, 2000; 421)

A wide-ranging review of behavioural theories has, therefore, been conducted to provide a sound theoretical framework to form the basis of interventions which will be developed and applied as content on the *Su Barcelona* website.

Dolnicar (2020) categorises a variety of behavioural theories and possible pro-environmental interventions into four main categories: *leveraging beliefs*; *leveraging social norms*; *increasing pleasure*; and *designing choice architecture*. These will form the basis of this proposal's theoretical foundation. It is, however, important to note that these interventions do not always fall into clearly defined categories and may often overlap (Demeter et al., 2023).

Leveraging beliefs

One of the key theories discussed within the *leveraging beliefs* classification is that of cognitive dissonance theory (Festinger, 1957). Cognitive dissonance considers that people intrinsically intend for their behaviours to align with their beliefs and are faced with internal conflict (cognitive dissonance) when these do not align. A practical example relating to tourism behaviours includes hotel receptionists informing guests that their hotel is actively trying to reduce environmental harm by committing to a towel reuse programme, saving on energy and water consumption through daily cleaning (Dolnicar, 2020). If an environmentally conscious guest had previously intended to have their towel cleaned every day, news of its environmental harm causes cognitive dissonance, which may lead to a change in the guest's intended behaviour.

Stern's theory of environmentally significant behaviour (2000) and Ajzen's theory of planned behaviour (Ajzen, 1991) also consider beliefs to be a vital factor in determining behavioural choices, considering people's values and beliefs to be key drivers in their pro-environmental choices (MacInnes et al., 2022). Dolnicar (2020), however, notes that *leveraging beliefs* theories have not proven a particularly successful method for causing pro-environmental behavioural change, with interventions centred around changing beliefs resulting in a relatively low success rate of 58% (Demeter et al., 2023).

In contrast to other behavioural theories, *leveraging beliefs* have been widely studied, opening the field to further investigations utilising alternative theories.

Leveraging social norms

One such alternative theoretical framework centres around social norms which concerns the societal factor impacting human behaviour, stating that people are influenced by those surrounding them, particularly if another's opinion is one they value (Juvan & Dolnicar, 2017). Alongside valuing beliefs, Stern similarly considers social norms important in influencing pro-environmental behaviours, defining pro-environmental norms as "the belief that the individual and other social actors have an obligation to alleviate environmental problems" (Stern et al., 1999; 91).

Stern's theory builds on norm activation theory (Schwartz, 1977) and, though not the primary factor, considers identity an important aspect of pro-environmental behaviours (Stern et al., 1999). Identity's importance towards behaviour can be explained through social identity theory; the study of human behaviour in social contexts, recognising humans' desires to achieve a positive social identity which aligns to the social group they are, or hope to be, a member of (Tajfel, 1979).

Practical examples leveraging norms and utilising identity theory can be found in Baca-Motes et al.'s study (2012), which presented a pin for hotel guests to wear if they volunteered to participate in a towel reuse scheme (Baca-Motes et al., 2012). Though the pro-environmental action taken by the hotel matches that of Dolnicar's study (2020), the introduction of a wearable pin signals the guests' pro-environmental commitment to the rest of the hotel community, demonstrating their identity as an eco-conscious guest. Those who received a pin were proven to participate more frequently in the scheme (Dolnicar, 2020).

Another example encouraging environmentally sustainable behaviours by leveraging social norms can be seen in Kallbekken and Sælen's (2013) study into reducing food waste in hotels. Globally food waste produces a staggering environmental footprint, placing it just behind the USA and China in terms of carbon emissions (United Nations, 2013). To combat this, hotels encouraged guests to return to the buffet as often as they liked rather than take too much food in one initial serving. This addressed the social norm of greed. Where guests would have previously taken more food in their initial serving so not be seen repeatedly returning to the buffet, they were instead made to feel comfortable, indeed encouraged, to return as many times as they liked, resulting in less food being plated during each visit, causing a reduction in plate waste by 21% (Kallbekken & Sælen, 2013).

Leveraging social norms have emerged as a reasonably effective tool, though the intervention methods analysed in Demeter et al.'s (2023) study resulted in a relatively low success rate of 50%.

Increasing pleasure

An intervention area which Demeter et al. (2023) identified as proving particularly successful concerns *increasing pleasure*. This can be defined as the encouragement of sustainable tourism behaviours by means which increase the enjoyment of tourists. Kahneman's (1999) hedonic psychology states that humans experience good, bad or neutral instant utility at any given time and want to engage in behaviours which make them happy, providing good instant utility.

As tourism is, by nature, a pleasure-driven activity, designing interventions which increase the happiness of tourists is considered a powerful opportunity to encourage pro-environmental behaviours. Indeed its capabilities are evidenced in the 100% success rate of five intervention studies previously examined (Demeter et al., 2023; Dolnicar, 2020).

While undeniably successful, the low number of intervention studies conducted into hedonic factors influencing pro-environmental tourist behaviours reflects that this remains an uncommon approach which provides an exciting opportunity for further research and its practical implementation, steering away from the traditional attempts of tourism companies to evoke guilt amongst tourists to persuade more sustainably conscious actions (Bolderdijk et al., 2012; Dolnicar, 2020).

Examples in practice include a stamp collection game, whereby families receive a stamp if they, collectively, leave no food waste during their meals. If the family managed to collect a stamp for each day of their holiday, they would receive a small prize from the hotel (Dolnicar, Juvan & Grün, 2020).

Similarly, Dolnicar (2020) discusses the implementation of drinks vouchers to further encourage guests to opt out of daily room cleaning. The results of this research experiment showed that rewarding the guests, and therefore increasing their pleasure, proved the greatest condition for reducing room cleaning, leading to a 42% reduction (Dolnicar, 2020).

Increasing the enjoyment of tourists is considered one of the most promising behavioural approaches to creating more sustainable behaviours and will be given significant attention during the development of *Su Barcelona*. Further examples include refunds, rewards, prizes, gifts, access to special spaces, services and offers (Dolnicar, 2020).

Designing choice architecture

The final category of Dolnicar's pro-environmental behavioural interventions is *designing choice architecture*. This refers to the information and options provided which may guide a person's choice in a particular direction. Frequently referred to as 'nudging'. Sunstein defines nudges as "interventions that steer people in particular directions but that also allow them to go their own way." (Sunstein, 2015; 417)

The possibility for people to choose their own path is vital for an intervention to be considered a 'nudge', therefore laws and regulations cannot be considered nudges as these create imposing rules on human behaviour. Similarly rewards and significant material incentives are

differentiated as they influence freedom of choice, which must be fully preserved for an intervention to be regarded as a nudge (Sunstein, 2015).

An example of this can be identified in the pre-booking phase of a holiday, where potential customers were shown videos containing emotive environmental content, triggering sadness and empathy for future generations (Araña & León, 2016). Guests who witnessed these videos tended to opt for travel packages with lower CO2 emissions (Dolnicar, 2020).

Replacing cotton serviettes with recycled paper ones at breakfast tables proved a further successful example. Guests were not prohibited from using cotton serviettes, though these were only available to collect from the buffet cart rather than placed on each table. Guests were also informed why using the recycled serviettes is more eco-friendly. This led to a reduction of 95% for usage of cotton serviettes (Dolnicar, Cvelbar, & Grün, 2019).

Though only a small number of studies into nudging or changing defaults in a tourism sense have been conducted, this approach provides one of the most promising opportunities for changing tourist behaviours, with the possibility to create a tourist environment where pro-environmental options become the norm (Dolnicar, 2020). Furthermore, in an examination of eleven nudging intervention experiments, 82% proved successful, with a combined nudging and changing beliefs approach achieving a 100% success rate, though from an extremely small test sample (Demeter et al., 2023).

The purpose of defining these behavioural categories is to act as a theoretical framework where specific environmental behaviours are targeted, and intervention mechanisms developed as content for the *Su Barcelona* website proposal. Figure 1 provides a visual demonstration of Dolnicar's (2020) framework in action.

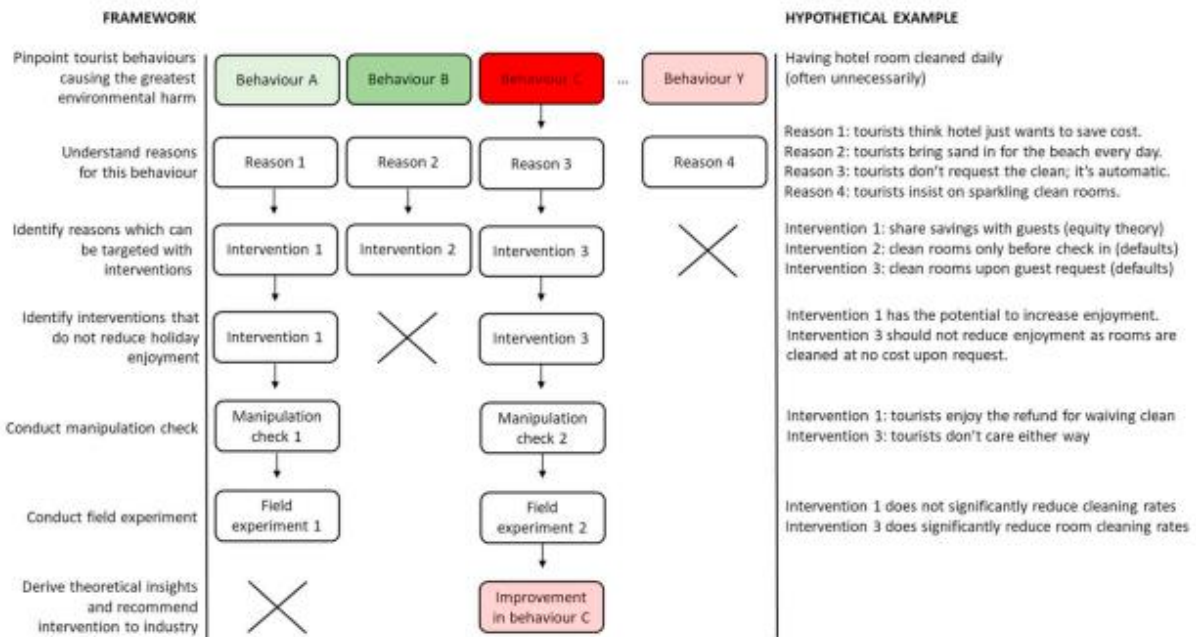


Figure 1. Framework for designing interventions aimed at reducing the harm caused by tourists at the destination (Dolnicar 2020)

Leveraging beliefs, leveraging social norms, increasing pleasure, and designing choice architecture will therefore form the basis of this project’s theoretical framework. However, one additional factor which influences sustainable tourist behaviour will also be implemented into the framework: habit.

Habit is explained as behaviour which can be performed with minimal thought and is said to be a driving factor in tourist behaviour (MacInnes et al., 2022). Habits are expressed through actions themselves as opposed to reflecting people’s intentions. Individual’s may not consciously choose to perform a habitual behaviour, instead, it may be enacted with a level of automaticity (Wood et al., 2002; Wood & Rünger, 2016; MacInnes et al., 2022). The development of such habitual behaviour is reflected in “the routine repetition of past acts that is cued by stable features of the environment” (Wood et al., 2002; 1281). Indeed, up to 43% of daily behaviour is said to be driven by habit (Wood et al., 2002).

Though the automatic nature of habitual behaviour presents a challenging area to encourage behavioural change, positive recall of previous sustainable behaviours can increase sustainable purchasing intentions (Rowe et al., 2019). Habitual interventions must, therefore, be “specifically designed to either disrupt negative or promote positive habits” (MacInnes et al., 2022; 3). Examples include signs encouraging tourists to feel at home in a hotel environment, reminding them to recycle as they would do at home.

Habit cannot be placed within one of the previously outlined categories of behavioural theories. Instead, it forms an additional consideration which coincides with each of the previously discussed classifications. For example, again addressing food waste, a reduction of plate sizes offered at hotel buffets acts as both a nudging intervention as well as tapping into habitual behaviour as it encourages tourists to behave as they do at home, i.e. not overfilling their plates simply because the buffet has already been paid for (MacInnes et al., 2022).

Though the above behavioural theories will provide a fundamental framework to the conceptualisation and development of the *Su Barcelona* website, it would be remiss to not also consider information architecture as a vital framework for the development of this project.

Developing a user-focused website

Any product or service in development can be realised through a variety of design approaches. Particularly pertinent to web design is user experience (UX). Throughout the developmental process it is fundamental for website design architects to develop a product through holistic, human-centred thinking, in order to successfully connect with their audience (Stanton & Smith, 2019).

Websites, by nature function as self-service products. There are no manuals or user guides provided, the user is simply expected to navigate through the site on their own accord. Because of this, usability is central to the successful performance of a website (Garrett, 2002). If a website performs in an intuitive way, not requiring the user to think about how to use and navigate its web pages, the user is able to focus on the content itself rather than become distracted or frustrated by a lack of understanding of the platform. Krug succinctly summarises the usability necessity, “as far as is humanly possible, when I look at a Web page it should be self-evident. Obvious. Self-explanatory.” (Krug, 2006; 11)

One innate factor which highlights websites’ requirement to focus on usability relates to the nature of the online world compared to physical products and designs. In the physical world, a user often purchases a product before truly understanding all its intricacies. Online, however, a website is openly accessible for its user, with the usability of a site experienced before the user has committed to the service or spending any money on the site (Nielsen, 2000). A poorly functioning website will therefore deter its potential customer.

A key area both within usability, and as a stand-alone element of web design, relates to the accessibility of a website. For a website to be considered usable, it must prove usable for all of its potential users (Krug, 2006). Features such as the possibility to increase text size on a webpage facilitate a more accessible website for the reader (Krug, 2006; Nielsen, 2000).

To ensure a usable and accessible website is designed for the *Su Barcelona* proposal, the discipline of information architecture (IA) will be implemented throughout the design and execution phases of this proposal, establishing a website design that makes information easily discoverable, navigable and understandable. Rosenfeld et al. (2021; 24) define IA as:

- 1) The structural design of shared information environments
- 2) The synthesis of organisation, labelling, search, and navigation systems within digital, physical, and cross-channel ecosystems
- 3) The art and science of shaping information products and experiences to support usability, findability, and understanding
- 4) An emerging discipline and community of practice focused on bringing principles of design and architecture to the digital landscape

These principals of IA, including usability and accessibility, will act as a central framework to the design process of the *Su Barcelona* website, with further IA elements outlined within the methodology section of this proposal.

Literature review

A thorough literature review was conducted into sustainable tourism in Barcelona, identifying how the continual rise in tourism since the 1992 Barcelona Olympic Games has created an, at times, tense atmosphere within the city, with local residents becoming increasingly frustrated at what they have seen as the disintegration of the local way of life (Elorrieta et al., 2022; Hughes, 2018).

Overcrowding, increased rental prices, inflation of daily living costs and environmental damage are just some of a number of issues which many locals feel have been caused by the high volume of tourists visiting Barcelona, particularly in recent years. Throughout 2014, a series of anti-tourism protests in the Barceloneta neighbourhood became a trigger moment, with resident discontent towards tourists growing more vocal throughout the city (Elorietta et al., 2022).

This study proposal hopes to address real sustainability issues in Barcelona caused, or exacerbated, by the tourism industry. To successfully address sustainability tourism issues, Lopez et al. (2018) and Nunkoo & Ramkissoon (2011) explain that any sustainability assessment must include a study of residents' perceptions of tourism.

In its report into overtourism, the UN World Tourism Organization analysed residents' perceptions upon the negative impact tourism has, classifying the most prominent issues into three

main categories: social impacts and the pressure on infrastructure and services; economic impacts; and cultural and environmental impacts (UNWTO, 2018). These factors all significantly affect the lives of local people leading to an often-vocal displeasure towards tourists. Indeed, Mihalic's (2020) study conceptualises overtourism as the expression of discontent that can be seen in protests and demonstrations towards unsustainable tourist development.

Throughout the last decade, the anti-tourism movement in Barcelona has mobilised, with activists, organisations and political bodies unified in their rejection of the 'touristification' of their neighbourhoods, perceiving an unsustainable level of tourism to be the main issue in the city, with 48.9% of the population citing tourism as Barcelona's most significant problem (Hughes, 2018). To address issues surrounding unsustainable tourism, development strategies must be designed towards the local context and the perception of the residents (Elorrieta et al., 2022).

The Observatori del Turisme a Barcelona have developed a Sustainable Tourism Indicator System identifying twenty-one issues which fall into three categories: *Environmental*, *Economic*, and *Sociocultural*, aligning with the previously mentioned categorisation performed by the UNWTO. From the twenty-one issues identified, thirty indicators are presented which represent the most important sustainability issues in Barcelona. Examples include water consumption per capita, euros received from the tax on stays in tourist establishments per inhabitant, and percentage of the tourist population compared to residents (Observatori del Turisme a Barcelona, n.d.). Each indicator responds to the United Nations' 17 Sustainable Development Goals (United Nations, n.d.).

In their study into the pressure of tourism, the Ajuntament de Barcelona created four maps which focused on a variety of factors including high intensity tourist locations throughout the city and the percentage of tourist accommodation in local neighbourhoods. Utilising these maps, data was then analysed to identify how tourist activities affect the resident population in the following aspects: *effects on the resident population; effects on green spaces; effects on public transport and effects on housing*. (Ajuntament de Barcelona, 2020)

It is also noted that the areas of Barcelona facing the most severe pressure from increasing tourism overwhelmingly correlates to the areas where residents hold the most negative perceptions towards tourists, these include the old quarter neighbourhoods, Barceloneta, El Gotic and Sagrada Familia (Ajuntament de Barcelona, 2020).

Local governments, councils and a variety of organisations within Barcelona and Catalunya have long been developing plans to address the issues concerning overtourism, with the collective strategy, Barcelona for Tourism 2020, seeking to better produce management tools which foster a

more sustainable environment between tourists, the local population and the geographical area of Barcelona (Ajuntament de Barcelona, 2020).

These strategies align with the goals of this project's proposal, however, there appears to be a gap in actionable targets towards tourists themselves. In the paper, *Achieving Sustainable Tourism*, tourists' behaviour is recognised as one of the biggest factors contributing to the negative ecological impact of tourism, stating "most tourists have very poor self-control and environmental awareness, which leads to unwanted behaviour." (Wang et al., 2024; 1)

In this regard, and recognising the sustainable tourism issues faced in Barcelona, this proposal seeks to contribute towards a more environmentally, economically and socioeconomically sustainable future for Barcelona by developing an initial prototype of the *Su Barcelona* website which could potentially provide an important resource, fostering a more unified relationship between the resident population and tourists.

Objectives

This project's objectives serve as the foundation of its proposal and development of the *Su Barcelona* website.

General objective

- To develop an actionable plan for the proposal of *Su Barcelona*, a user-centred tourism website which encourages an increase in sustainable tourist behaviours whilst visiting Barcelona.

Specific objectives

To fulfil the the objective of this project, specific objectives have been outlined to serve as guiding principles in the development of each stage of the *Su Barcelona* proposal.

1. To identify a set of reference websites to discover quality features, functionalities and services that could be incorporated in the *Su Barcelona* website
2. To determine the contents of the website, accounting for both the needs of the website owner (the author) and the needs of its potential users
3. As far as is possible, to organise the contents of the website in accordance with the preferences of potential users of *Su Barcelona*
4. To propose a set of wireframes to be used in a later implementation phase of the website

Methodology

To fulfil the objectives outlined above, the methodology is divided into four main sections consisting of an *expert analysis of sustainable tourism reference websites*, the creation of *personas and scenarios*, *content planning*, and *website mapping*. The design and development process of wireframes will feature in 'Block II' of this proposal.

Expert analysis of sustainable tourism reference websites

The initial phase of this research focused on an analysis of similar websites in order to identify key design and content elements which enable a positive user experience.

A heuristic analysis was conducted into five existing destination websites encouraging sustainable tourism practices in their location. A thorough analysis of each site was conducted as a benchmarking exercise, outlining the good practices present on similarly themed websites (Sanabre Vives, 2015).

To understand the key criteria and indicators required in successful website design, a number of IA tools were utilised to form a guide during the analysis stage (Hassan Montero & Martín Fernández, 2003; Rodríguez-Martínez et al., 2012; Sanabre Vives, 2015). This led to the completion of a thorough analysis considering design, functionality, accessibility and interactivity components of the selected competitor sites.

The selection process began with the following keyword Google search to identify popular websites aimed at tourists and related to the promotion of sustainable tourism practices: (Sustainable Or Sustainability Or Eco Or Environmental) AND (Tourism OR Tourist)

The initial search resulted in the identification of a list of twenty sustainable tourism websites including those of destinations, governmental and non-governmental organisations, personal blogs and social media accounts. As tourists frequently utilise official destination websites whilst planning and during their trip (Fernández-Cavia et al., 2020) this selection was narrowed down to include only websites specific to a certain destination location. Concentrating on destination locations also focused the selection criteria upon possible competitor websites, a key consideration when conducting benchmarking analysis (Fernandez-Cavia et al., 2014).

The final refinement made to the selection was to consider only those destinations which are generally considered as competitors to Barcelona within the tourism industry. To do so, the top-10 ranked European cities of the 2023 Euromonitor International - Travel City Index 2023 (Euromonitor, 2023) were considered.

Barcelona's official website was selected to provide an analysis of the most direct competitor to *Su Barcelona*. Following this, the top ranked cities were considered, with Madrid discounted to

encourage variation by country (having previously chosen Barcelona). The official sustainable tourism websites of the following cities were selected for the final analysis list: Paris, Amsterdam, Rome and London. These were selected based on their numerical ranking apart from Berlin which was discounted as the official sustainable tourism website targets businesses as opposed to tourists themselves.

Personas and Scenarios

To understand the specific user needs of the *Su Barcelona* website and achieve specific objective 2., personas and scenarios were created to represent potential users and their requirements when visiting the website.

Personas refer to the development of profiles which bring the user to life. By utilising real data and identifying shared characteristics of the target audience, designers can understand the nuances their users have (Onel et al., 2018; Cooper, 1999). By creating a detailed personification of the user, based on statistical information, designers are able to better empathise with and understand the personal requirements of these individuals (Lee et al., 2024).

To create realistic personas for the *Su Barcelona* website, data from the Observatori del Barcelona's 2023 Tourism Activity Report was analysed, identifying key demographics including age, sex, travel purpose and arrival transportation. The compiled data can be found in figure 2 below.

Country of origin	Spain (19.3%)	U.S.A (12.6%)	U.K. (7.4%)	France (7.3%)	Italy (6.1%)	Germany (5.6%)
Age	<24 (20.3%)	25-34 (36.9%)	35-44 (21.2%)	45-54 (13.4%)	55-64 (6.3%)	>65 (1.9%)
Sex	Men (65.4%)	Women (34.6%)				
Accompanying person	Partner (37.6%)	Alone (30.5%)	Friends (15.6%)	Other fam. (10.2%)	Colleagues (8.3%)	With children (8.3%)
Travel purpose	Leisure (69.1%)	Prof. (18.9%)	Personal (12%)			
Arrival transport	Plane (82.4%)	Train (9.9%)	Own vehicle (4.2%)	Bus (2.8%)		
Repeatability	1st visit (51.5%)	Prev. visited (47.9%)				

Figure 2. Barcelona tourist profile data (Observatori del Barcelona's 2023 Tourism Activity Report)

Alongside personas, scenarios are required to provide a more compelling story (Onel et al., 2018). They refer to the narrative which elaborates upon a persona's needs, serving two main functions: 1) to make the persona as realistic as possible; 2) to create vivid user needs within the context of the product being designed (Cooper, 1999; Grudin & Pruitt, 2002).

Five personas were created to reflect the variety of the key demographics visiting Barcelona, including nationality and age. Each persona was then enhanced to include goals, motivations and scenarios specifically designed towards their trip to Barcelona. Through their scenarios, each persona was attributed at least two specific information necessities from the *Su Barcelona* website.

Content planning

Tourists use different information sources at different stages of their travel experience (Fernández-Cavia et al., 2020). Because of this, the information which tourists seek at each stage was considered during the initial content planning for *Su Barcelona*. Planning the trip and during the trip were considered the most important stages where potential users would obtain information from a destination website and therefore the initial content ideas centred around these two stages.

By considering Barcelona's sustainability issues through the lens of the behavioural theories outlined in the literature review, a content list was created from the owner's perspective, with each potential content element acting as an intervention to enhance the sustainable behaviour of the target audience.

However, as it is also fundamental to place the users' needs and expectations at the core when designing website content, a second content list was drawn up to address the information necessities that each user presented during the creation of personas and scenarios.

A comparative analysis was conducted to determine which user-centred content could be incorporated into or aligned with one of the pre-existing content options. Where no natural match was identified the user-centred content was added to the content list in its own regard.

15 keywords/phrases (additional to 'homepage' and 'about' page) were then outlined to describe the initial content plan for *Su Barcelona*. To ensure usability was central to the design and to fulfil specific objective 3., card sorting techniques were then tested amongst participants selected by the author. A total of 20 participants took part in the card testing procedure, complying with usability research best practices (Becker and Yannotta, 2013; Denton et al., 2016).

The 20 participants were selected to best reflect the demographics of tourists visiting Barcelona, with age, nationality and educational background considered during the selection. 10 participants completed an initial open card test and were advised to group the 15 cards into categories that they felt were natural. Participants were not advised on a required number of categories, only to group cards as they best saw fit and asked to provide a category name for each group that they created.

These groupings were then analysed, with four group headings defined by the author. The remaining 10 participants were then requested to complete a closed test, separating the 15 cards into four predefined categories provided to them. The closed testing process further facilitates the previously collected information architecture during the open test (Guay et al., 2019).

Optimal Workshop was used as an online tool to conduct the card testing procedures with each participant receiving the same instructions through the platform directly. Tests were completed in private, and participants were allowed as much time as required to complete them, though advised it would take approximately 10-15 minutes. Optimal Workshop was selected as it provides easy access for participants in different countries and allows the test to be completed at a time convenient for them. Optimal Workshop also benefits from built-in tools, such as similarity matrices, which were utilised during the test analyses.

Website mapping

Following the card sorting tests, the next stage in the content design process concerned the production of a sitemap. Sitemaps allow the architect to design the layout in a way that caters to the user, ensuring they can find and access the information that they need (Manhas, 2014).

The online platform Mindomo was used to create a visualisation of the planned *Su Barcelona* structure through an organigram. This mapping provided a representation of how the user will navigate through the site.

Results

Each section of the results are presented in accordance with their corresponding methodology section.

Expert analysis of sustainable tourism reference websites

The five reference websites selected for analysis were:

1. Sustainable Barcelona (Turisme Barcelona)
<https://www.barcelonaturisme.com/wv3/en/page/3437/sustainable-barcelona.html>
2. Sustainable Tourism in Paris (Paris je t'aime) <https://parisjetaime.com/eng/discover-paris/paris-by-theme/sustainable-tourism-paris-i040>
3. Sustainable London (Visit London) <https://www.visitlondon.com/things-to-do/sustainability>
4. Responsible and sustainable tourism (Turismo Roma)
<https://www.turismoroma.it/en/node/40319>
5. Sustainable travel tips in Amsterdam (I amsterdam) <https://www.iamsterdam.com/en/see-and-do/sustainable-travel-tips-in-amsterdam>

A thorough heuristic evaluation of these reference websites was conducted through a benchmarking analysis, with a summation of the main features presented in figure 3 below (relative images of each website can be found in appendix 1). Where similar features were identified on more than one website, the website with the premier element has been included in the analysis.

General accessibility and usability features consistent across all of the websites were noted during analysis. These recommendations are presented separately below to avoid repetition throughout the analysis table and will be taken into consideration during each stage of design of the *Su Barcelona* website.

Accessibility

- Selection of font style and size that is easily readable for the user. Possibility to increase font size for visually impaired.
- Ensure significant contrast between font colour and background.
- Print friendly versions available, especially for maps
- Clickable links are clearly identifiable
- User can contact website manager/host
- Language is understandable for the user
- Options in navigation menus do not cause memory overload (exceeding 7+2)

Usability

- Navigation of website is logical and intuitive
- All important pages can be accessed from homepage
- Most important information features at top and centre of page
- User is not overloaded with textual information
- User can create an account on website
- Search option is easily accessible and identifiable

Website	Design Elements	Content
Sustainable Barcelona (Barcelona Turisme)	<p><i>Primary navigation menu:</i> hover over text to display drop down menu</p> <p><i>Images:</i> 5 sliding/rotating images</p> <p><i>Mission statement:</i> prominent placing under image (no border)</p> <p><i>Breadcrumbs:</i> displayed at top of page underneath primary navigation menu</p> <p><i>Call to Action:</i> small boxed link to water emergency advice features at top of page</p> <p><i>Keywords:</i> listed at bottom of page, clickable links to related topics</p> <p><i>Footer:</i> Full navigation map outlined plus legal and practical information</p>	<p><i>Mission statement:</i> focus on Barcelona's commitment to sustainability, promoting eco-friendly activities</p> <p><i>Category headlines:</i> short in length (3.5 word average)</p> <p><i>Page specific content:</i> short intro paragraph; address audience (2nd person); include hyperlinks to internal pages</p>
Sustainable Tourism in Paris (Paris je t'aime)	<p><i>Heading:</i> placed inside main image in clear typography</p> <p><i>Logo:</i> features centrally, circular shape, stands out</p> <p><i>User account log in:</i> clickable icon in navigation bar</p> <p><i>Mission statement:</i> centrally aligned</p> <p><i>Content categories:</i> boxes featuring image and internal headings; entire box is clickable link; asymmetrical layout on page</p> <p><i>Category text:</i> placed underneath category box</p> <p><i>Menu icon:</i> appears as you scroll vertically through page</p>	<p><i>Logo:</i> stylish typography represents user expectation of Paris; 'A' in Paris represents Eiffel Tower</p> <p><i>Mission statement:</i> short in length</p> <p><i>Category text:</i> relatively short (max 25 words)</p> <p><i>Page specific content:</i> statement sentence as intro reinforcing message</p>
Sustainable London (Visit London)	<p><i>Searchbar:</i> clearly discovered in top right-hand corner</p> <p><i>Sidebar:</i> Links to alternative content ("Best London Parks")</p> <p><i>Sub-categories on homepage:</i> 6 subheading features after most important information enabling clear navigation</p>	<p><i>Main image:</i> features appealing nature setting</p> <p><i>Page specific content:</i> internal links easily identified by bold font and different coloured text</p>
Responsible and sustainable tourism (Turismo Roma)	<p><i>Secondary navigation bar:</i> social media links feature (circular icons)</p> <p><i>Home page:</i> 'Your Utilities' section features central at bottom of page featuring practical internal links</p>	
Sustainable travel tips in Amsterdam (I amsterdam)	<p><i>Home page:</i> 'Related articles' feature at bottom of page. These are horizontally scrollable links to internal articles (image, date and heading)</p> <p><i>Footer:</i> features further links to social media pages</p>	

Figure 3. Expert analysis

Personas and scenarios

The following figures (4-8) present the five personas and scenarios created with consideration of data from Observatori del Barcelona's 2023 Tourism Activity Report. As images are considered an important factor facilitating the personification of each persona, these have been included, resourced from Pixabay.

Persona 1


	<p align="center">Profile</p> <p><u>Name</u>: Martín García Pérez <u>Age</u>: 42 <u>Nationality</u>: Spanish <u>Location</u>: Madrid <u>Profession</u>: CEO of SME <u>Work Experience</u>: 18 years <u>Education</u>: Degree in Business Management <u>Relationship</u>: Girlfriend <u>Children</u>: None</p>
<p>"I work to live but am fortunate enough to live for my work too. I do everything with passion, which has led to my early success. I love to travel and the thrill of pitching to new clients."</p>	
<p align="center">User description</p>	
<p>Travelling:</p> <p>Needs, interests and goals:</p> <p>Information sources:</p> <p>Device:</p>	<p>With Girlfriend</p> <p>Interested in technology and latest business developments. Likes to feel he is being looked after and enjoys fine dining and luxury accommodation. Wants to keep up-to-date with the latest trends. Enjoys exercising.</p> <p>Business traveller, Forbes, Google maps</p> <p>iPhone, iPad, Laptop</p>
<p align="center">User motivation</p>	
<p>Motivation:</p> <p>Looking for:</p>	<p>Ensuring his business stays ahead of the curve and discovering events and places to take clients out</p> <p>Quick access to information regarding accommodation, bars/restaurants and events in the city</p>
<p align="center">Scenario</p>	
<p>Martín is arriving into Barcelona by AVE from Madrid. He has booked a hotel for two nights and intends on taking a taxi from the airport. He is visiting Barcelona for work and will meet with potential new international clients. He has visited before however is looking for new bars and restaurants to frequent, as well as any events which may charm his potential new clients.</p>	
<p align="center">Information necessity</p>	
<p align="center">Needs</p>	<p align="center">What Su Barcelona must offer</p>
<ol style="list-style-type: none"> To know about any interesting and trendy events taking place in Barcelona during his visit to take potential new clients To know the latest about Barcelona's bar and restaurant scene, and to find authentic restaurants serving local cuisine, to visit with either his girlfriend or clients 	<ol style="list-style-type: none"> Easily accessible information about interesting events taking place at a specified time Information about bars and dining in the city. Advice on what is traditional in the city. Locations and opening hours

Figure 4. Persona 1

Persona 2


	<p style="text-align: center;">Profile</p> <p><u>Name</u>: Mia Johnson <u>Age</u>: 25 <u>Nationality</u>: U.S.A <u>Location</u>: San Francisco <u>Profession</u>: Graduate <u>Work Experience</u>: 2 years <u>Education</u>: Degree in Marketing <u>Relationship</u>: Single <u>Children</u>: None</p>
<p>"The world is there to be explored. Only by expanding one's horizons can one truly discover oneself."</p>	
<p style="text-align: center;">User description</p>	
<p>Travelling:</p> <p>Needs, interests and goals:</p> <p>Information sources:</p> <p>Device:</p>	<p>Alone</p> <p>Interested in learning about new cultures and discovering new places. She has recently created a TikTok and Instagram account for her travels and hopes to become a travel influencer.</p> <p>Instagram, TikTok, Travel Blogs, LonelyPlanet</p> <p>iPhone, iPad</p>
<p style="text-align: center;">User motivation</p>	
<p>Motivation:</p> <p>Looking for:</p>	<p>Learning how to create engaging travel content and building an audience online. Becoming more at one with herself</p> <p>Lesser known highlights of Barcelona and information about the local culture</p>
<p style="text-align: center;">Scenario</p>	
<p>Mia is arriving by plane, she is in the middle of a 2 month trip around Europe and will book a hostel to stay in. It is her first time in Barcelona and she is hoping to discover the true essence of the city and find the best places to visit away from the crowds.</p>	
<p style="text-align: center;">Information necessity</p>	
<p style="text-align: center;">Needs</p>	<p style="text-align: center;">What Su Barcelona must offer</p>
<ol style="list-style-type: none"> To discover Barcelona's secret spots away from the usual tourist locations To learn about and explore Barcelona's more local neighbourhoods and the characteristics of each of these 	<ol style="list-style-type: none"> Guides to lesser-known attractions and interesting locations away from the crowds Neighbourhood guides including unique qualities of each and information about what can be found there including accommodation, attractions, bars, restaurants etc

Figure 5. Persona 2

Persona 3


Persona 3	
	Profile
<p><u>Name</u>: Sarah Atkins <u>Age</u>: 29 <u>Nationality</u>: U.K. <u>Location</u>: Brighton <u>Profession</u>: Human Resources <u>Work Experience</u>: 6 years <u>Education</u>: Degree in English Literature <u>Relationship</u>: Boyfriend <u>Children</u>: None</p>	
"Life is for living."	
User description	
Travelling:	With friends
Needs, interests and goals:	Interested in food, literature and film. Likes to socialise and disconnect from work at the weekend. Loves to travel when she can
Information sources:	Instagram, Google
Device:	Android
User motivation	
Motivation:	Finding the perfect work-life balance and enjoy time with friends and family
Looking for:	Fun activities to do around the city and places to go out to eat and drink in the evenings
Scenario	
Sarah is arriving by plane with 5 friends to celebrate one of their 30th birthdays. It is her first time in Barcelona and they are staying in an AirBnB. The group want to find some fun nightlife, but she also hopes to learn something about Catalan literature and film, as well as seeing the sights around the city.	
Information necessity	
Needs	What Su Barcelona must offer
<ol style="list-style-type: none"> To learn about the main attractions and nightlife options in Barcelona Cultural information about Catalan arts. Information about museums and exhibitions as well as possible events related to arts, literature and film 	<ol style="list-style-type: none"> City guide covering attractions and information about variety of nightlife options Provide cultural information about Catalan arts including up-and-coming local artists, and promote cultural arts-based events within Barcelona

Figure 6. Persona 3

Persona 4


	<p style="text-align: center;">Profile</p> <p><u>Name</u>: Allain Fillon <u>Age</u>: 55 <u>Nationality</u>: French <u>Location</u>: Montpellier <u>Profession</u>: Vineyard owner <u>Work Experience</u>: 20 years <u>Education</u>: Secondary school <u>Relationship</u>: Married <u>Children</u>: 3</p>
<p style="text-align: center;">"Love and care is what creates beauty in this world. Raising my children to appreciate their amazing surroundings is what fills my heart with happiness."</p>	
<p style="text-align: center;">User description</p>	
<p style="text-align: right;">Travelling:</p> <p style="text-align: right;">Needs, interests and goals:</p> <p style="text-align: right;">Information sources:</p> <p style="text-align: right;">Device:</p>	<p>With family</p> <p>Interested in wine, arts and nature. Cherishes spending time with family and exploring new places together</p> <p>Google, Tripadvisor</p> <p>Android</p>
<p style="text-align: center;">User motivation</p>	
<p style="text-align: right;">Motivation:</p> <p style="text-align: right;">Looking for:</p>	<p>Providing the best upbringing for his children and creating a happy home. Finding time to be outdoors with family and friends</p> <p>Child friendly activities and restaurants with diverse menus to cater for large family</p>
<p style="text-align: center;">Scenario</p>	
<p>Allain is arriving in Barcelona by car with his wife and three children (aged 10, 14 and 16). They will explore various parts of Catalunya camping with the family but have booked a hotel for 3 nights to start their trip in Barcelona. Allain wants to find active things to do with the family and to know about child-friendly restaurants to suit his childrens' different tastes.</p>	
<p style="text-align: center;">Information necessity</p>	
<p style="text-align: center;">Needs</p>	<p style="text-align: center;">What Su Barcelona must offer</p>
<ol style="list-style-type: none"> 1. To find practical information about transport in the city, including family ticketing on public transport and any restrictions related to driving within the city 2. To learn about family oriented daytime activities in and around Barcelona 3. Information about Barcelona's bars and restaurants that are child-friendly 	<ol style="list-style-type: none"> 1. A guide for travelling to and around Barcelona, including practical information and pricing for public transport 2. A section offering information about things to do in the city catering for different needs including families 3. Information about bars and dining in the city, including best options for families

Figure 7. Persona 4

Persona 5


	<p style="text-align: center;">Profile</p> <p><u>Name</u>: Luca Moretti <u>Age</u>: 20 <u>Nationality</u>: Italian <u>Location</u>: Bologna <u>Profession</u>: Student <u>Work Experience</u>: None <u>Education</u>: Design student <u>Relationship</u>: Single <u>Children</u>: None</p>
<p style="text-align: center;">"Your youth is the time to live and experience everything that you can. The time to have fun and learn about yourself as well as the world."</p>	
<p style="text-align: center;">User description</p>	
<p style="text-align: right;">Travelling:</p> <p style="text-align: right;">Needs, interests and goals:</p> <p style="text-align: right;">Information sources:</p> <p style="text-align: right;">Device:</p>	<p>With a friend</p> <p>Interested in graphic design, fashion, food. Wants to study abroad, with Barcelona a possible destination</p> <p>TikTok, Google, Instagram</p> <p>iPhone, iPad, MacBook Air</p>
<p style="text-align: center;">User motivation</p>	
<p style="text-align: right;">Motivation:</p> <p style="text-align: right;">Looking for:</p>	<p>Understanding what he wants to do after finishing his studies. Deciding where to apply for his Erasmus year abroad</p> <p>Information about living in Barcelona (neighbourhoods, prices etc), and to learn about the local way of life</p>
<p style="text-align: center;">Scenario</p>	
<p>Luca is arriving with a friend by plane. He will stay in a hostel but hasn't booked it yet as he wants to choose a neighbourhood that suits his interests which could potentially be somewhere to live in the future. He wants to learn what it's like to live in Barcelona as well as have fun visiting some interesting places.</p>	
<p style="text-align: center;">Information necessity</p>	
<p style="text-align: center;">Needs</p>	<p style="text-align: center;">What Su Barcelona must offer</p>
<ol style="list-style-type: none"> 1. To learn about day to day life in Barcelona and how to live like a local, including typical routines, working hours, opening times of shops and restaurants etc 2. To learn about Barcelona's neighbourhoods and the characteristics of each of these to help decide where to stay and possibly live in the future 	<ol style="list-style-type: none"> 1. Information about the lifestyle of local people, including typical meal times, daily routines, cultural information etc 2. Neighbourhood guides including the unique qualities and characteristics of each of these and practical information including cost of living in each neighbourhood

Figure 8. Persona 5

Content planning

An initial content list was developed in response to the research conducted during this paper's literature review. That is, sustainability issues in Barcelona, particularly those caused by the city's high volume of tourists, were identified as target areas for content pages; these were established in conjunction with the OTB Sustainable Tourism Indicators System (n.d.). Behavioural theories were then considered for the development of intervention mechanisms within these content pages. The author's initial proposed content list can be found in the appendix 2.

Content List

A second content list was then created aligning with the information necessities identified during the personas and scenarios development. To avoid unnecessary repetition, a comparative analysis was conducted between the first and second content lists, and, where appropriate, these content ideas were consolidated (see appendix 2) to provide a final succinct content list, as below:

1. Homepage
2. About Su Barcelona
3. Beyond the crowd
4. Barris of Barcelona
5. Live like a Barceloní
6. Getting around
7. Share
8. Map
9. Sustainable activities
10. Discover Catalan culture
11. The true taste of Barcelona
12. What to bring
13. Where to stay
14. Shop local
15. What's on?
16. Things to see
17. Entertainment

The final content list was then presented to participants through an open card-sorting procedure as outlined in the methodology section. ‘Homepage’ and ‘About Su Barcelona’ were removed from the card testing process as these were recognised as important stand-alone pages within the website’s navigation.

Open card test

The key findings of the open card test relate to the groupings of the cards presented to participants. Optimal Workshop’s analytical tools were utilised, firstly considering the Best Merge Method Dendrogram (see figure 9).

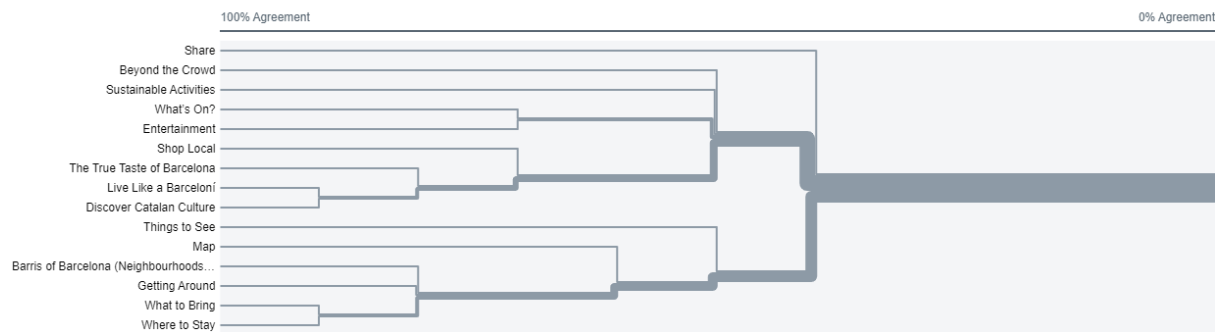


Figure 9. Open card test Best Merge Method Dendrogram

The open card test indicated four main categorisations were selected by participants, with the ‘Share’ card providing an additional solitary fifth group. To further validate these results, Optimal Workshop’s similarity matrix (figure 10) was considered in conjunction with the above dendrogram.

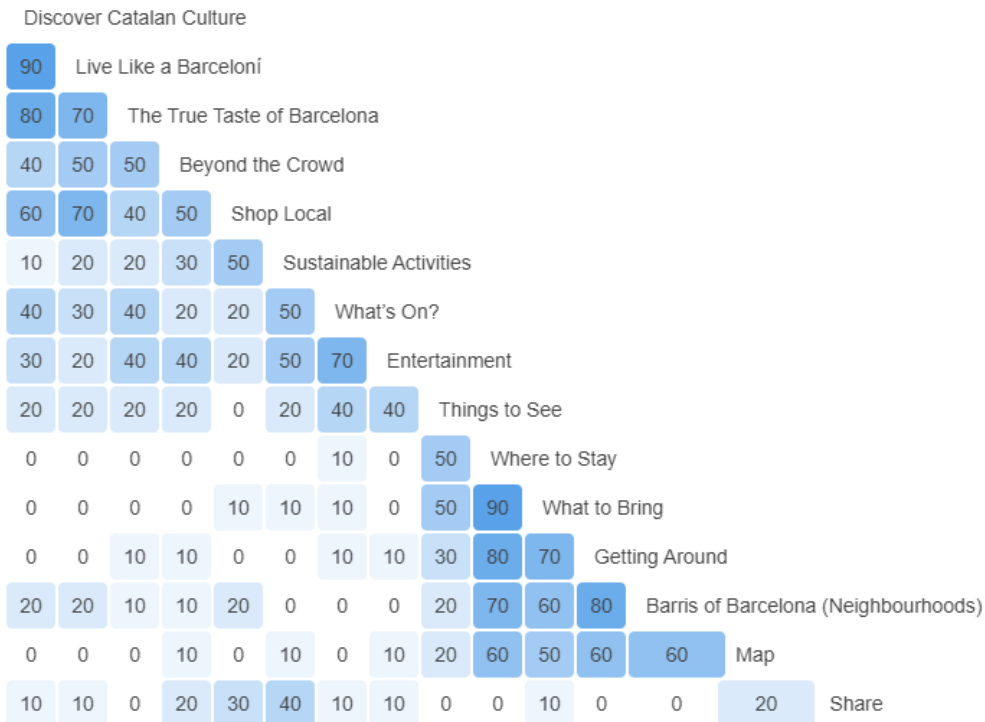


Figure 10. Open card test similarity matrix

The data was then consolidated into five groups to reflect the results of the open card test:

Group 1	Group 2	Group 3	Group 4	Group 5
Discover Catalan Culture	Where to Stay	What's On	Beyond the Crowd	Share
Live Like a Barceloní	What to Bring	Entertainment	Sustainable Activities	
The True Taste of Barcelona	Barris of Barcelona (Neighbourhoods)	Things to See		
Shop Local	Getting Around			
	Map			

Labels provided by participants were considered by the author as potential menu headings for each group, however a lack of clear patterns emerging led to an executive decision to be made regarding the final group names.

Closed card test

Before beginning the closed card test some adjustments were made to the card list to better clarify the purpose of these pages: ‘Beyond the crowd’ was renamed ‘Away from the crowd’, and ‘Share’ was renamed ‘Join in’ and was removed from the card list to instead feature as its own navigation option.

A ‘Your rewards’ page was introduced to maintain the consistency of 15 cards presented as in the open test. ‘Your rewards’ presents a significant content option highlighting the possible benefits users could achieve through their sustainable behaviours, increasing the pleasure of the user.

The category names provided to participants were: *Experience authentic Barcelona; Plan your trip; Things to do; Sustainable BCN.*

The results were analysed using Optimal Workshop’s popular placing matrix (see figure 11):

	Experience Auth...	Plan Your ...	Things to Do	Sustainable B...	unsorted
Live Like a Barceloní	90%			10%	
The True Taste of Barcelona	90%	10%			
Discover Catalan Culture	80%	10%		10%	
Away from the Crowd	70%	10%		20%	
Barris of Barcelona (Neighbourho...	40%	20%	20%	20%	
What to Bring		100%			
Getting Around	10%	80%	10%		
Map	10%	80%	10%		
Where to Stay	10%	80%	10%		
Things to See		50%	50%		
Entertainment			100%		
What's On	10%	20%	70%		
Sustainable Activities			10%	90%	
Shop Local	40%			60%	
Your Rewards	10%	30%	20%	40%	

Figure 11. Closed card popular placing matrix

Analysis of the results displayed significant consistencies in the placement of cards into the predefined categories, with 12 of the 15 cards resulting in a 60% agreement of categorisation. ‘Barris

of Barcelona’ and ‘Your rewards’ received only 40% as their highest agreements, however in comparison to alternative categorisations their placements represented a sufficient outcome.

‘Things to see’ resulted in an exact 50% split between the categories ‘Plan your trip’ and ‘Things to do’. The possibility of placing this content page in both categories was considered, however the author ultimately selected to place this in the ‘Things to do’ grouping.

The final content list within the defined categories can be seen in the table below:

Experience authentic Barcelona	Plan your trip	Sustainable BCN	Things to do
Discover Catalan Culture	Where to Stay	Sustainable Activities	What’s on
Live Like a Barceloní	What to Bring	Shop local	Things to see
The True Taste of Barcelona	Getting Around	Your rewards	Entertainment
Barris of Barcelona	Map		
Away from the Crowd			

Website mapping

Mindomo was used to clearly display the content navigation and information hierarchy of the *Su Barcelona* website following the categorisations identified during the card testing process. A ‘Your account’ page was added to the content list during the sitemap to provide a clearly navigational location for users to register/log in to the website. The website sitemap can be found in figure 12.

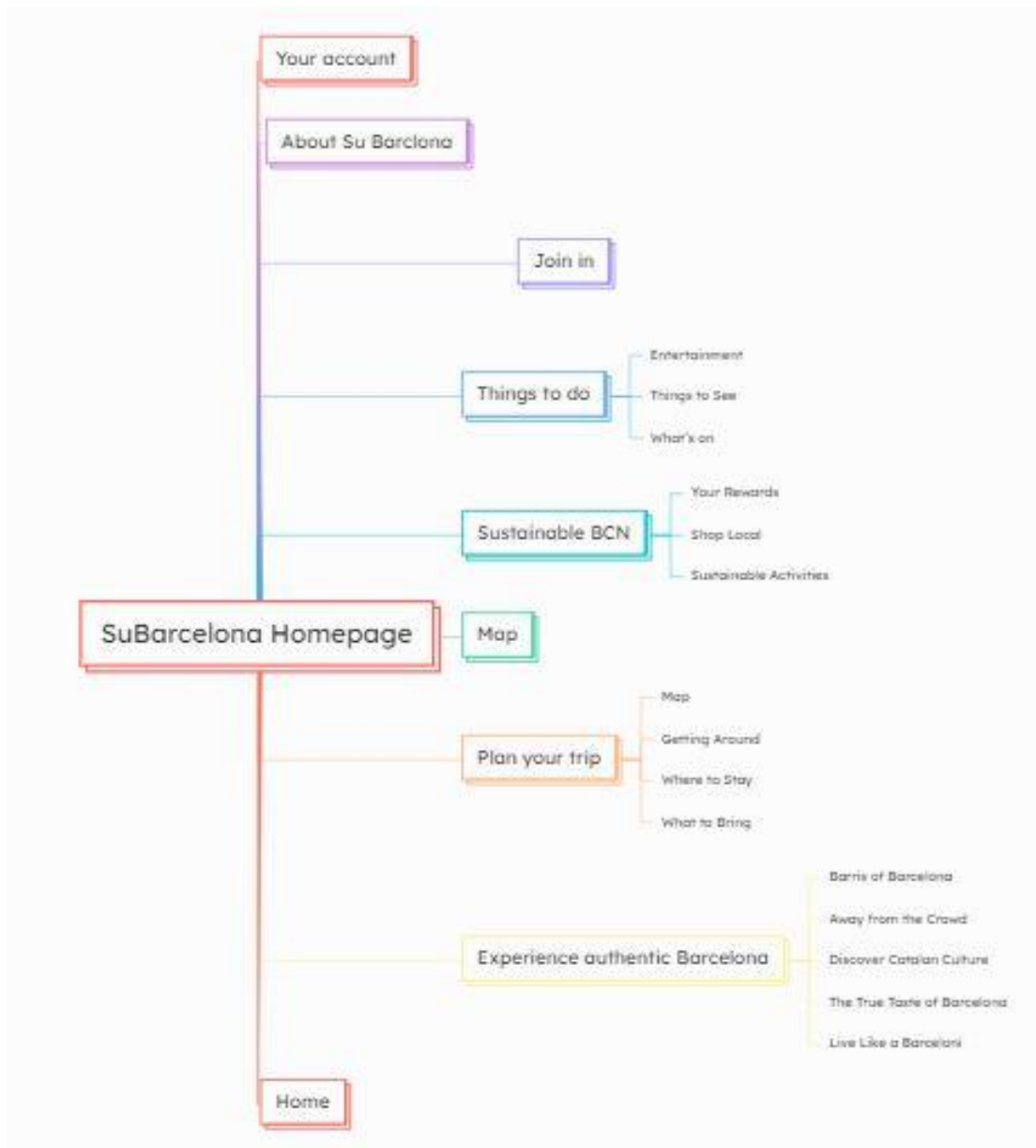


Figure 12. Su Barcelona Sitemap

Following the definition of the sitemap, the next step was the development of wireframes to begin to bring the ideation to life through an initial template and prototype of the *Su Barcelona* website.

Discussion

As holidaying is an innately pleasure-seeking experience, it is natural for tourists to behave in hedonistic ways whilst on holiday (Demeter et al., 2023). Unfortunately, this frequently results in the abandonment of environmentally conscious actions, even amongst individuals who usually behave in environmentally sustainable ways in their everyday lives (MacInnes et al., 2022).

Whilst on holiday, tourists frequently produce a variety of justifications to explain why they do not behave as sustainably as they would at home (Juvan & Dolnicar, 2014), with typical actions

such as saving water, recycling and saving electricity all reduced in the holiday context (MacInnes et al., 2022). To successfully address these negative trends in tourist behaviours, it is vital to understand the reasons for such behaviours. This proposal, therefore, has attempted to utilise a theoretical framework derived from behavioural theories to develop interventions which will encourage tourists to behave in more sustainable ways when they visit Barcelona.

By identifying sustainability issues specifically pertinent within Barcelona, including economic, environmental and sociocultural matters (UNWTO, 2018), the author hopes to develop a novel means to positively influence pro-environmental behaviours, moving beyond traditionally researched contexts (hotels, tourism agencies, governmental organisations) and produce an initial proposal for the development of a web prototype specifically addressed to tourists as its audience.

With online information sources, including destination websites and social media platforms, increasingly influencing tourists' decision making (Arantes et al., 2022; Armutcu et al., 2023), the development of a website was identified as a valuable opportunity to influence tourists' intentions and behaviours, particularly during the planning phase and during a trip (Fernández-Cavia et al., 2020).

Whilst the adoption of the behavioural theories outlined during this paper's theoretical framework provided an important foundation for the development of intervention strategies, forming the content ideation of the *Su Barcelona* website, it also proved vitally important to consider fundamental information architecture elements throughout the design process of this website (Rosenfeld et al., 2021).

A particular focus has been placed upon usability and accessibility features which are indispensable to the creation of a website (Krug, 2006; Nielsen, 2000) even during its early development through wireframe templates and initial prototyping.

Where this proposal attempts to fill a gap in sustainable tourism research is through its conjoined focus on behavioural interventions alongside information architecture elements, presenting a practical outcome with a user-centred approach. Though vast research has previously been conducted in this field, presenting empirical data into the ecological impacts of tourism and discussing the success of intervention mechanisms which have already been implemented throughout the tourism sector (largely through hotels), the author hopes this proposal presents an innovative means to address the environmental, economic and sociocultural damage that increasing levels of tourism has had in Barcelona throughout recent decades.

A clear benefit of providing such a service is in the multifaceted possibilities the internet provides. As a website, *Su Barcelona* possesses extensive multifunctional capabilities as a communication platform: it can present textual information to its audience, as well as images and videos; it has the potential to function as an interactive environment for users, as can be seen through

the design of the 'Join in' wireframe, encouraging users to form an online community to promote their sustainable behaviours; and, gamified services can be implemented to increase the pleasure of the user. These examples all feature within the proposal of *Su Barcelona*; however its potential is not limited to such a list, booking services could also be implemented into the website, as could real-time data which could provide users live updates identifying the currently overcrowded areas of the city.

The ambition of this proposal, therefore, is not simply in its production as an initial design of the *Su Barcelona* website, but to act as a founding document for the continued development of such a site. The author hopes to further expand on the theoretical foundations introduced during this proposal and further implement key criteria of user-experience website design to produce an extensive prototype of the *Su Barcelona* website and, if successful, launch the website to fulfil its function as an intervention mechanism encouraging sustainable tourism behaviours as has been outlined throughout this proposal.

Conclusion

This proposal provides a concise introduction to the possibilities of the *Su Barcelona* website. The theoretical and literary research of this paper afforded a well-founded basis to begin the development of *Su Barcelona*, enabling the author to identify key sustainability tourism issues prevalent in Barcelona, and, utilising behavioural theories, discover the best means to develop intervention mechanisms serving as persuasive tools to encourage increased sustainable tourist behaviours. Implementing these techniques through a UX lens proved a successful method to ensure a user-centred product was developed.

By adopting core information architecture principles as methodologies, the proposal was able to successfully fulfil its specific objectives, identifying key usability features required for the successful development of a sustainable tourism website and utilising techniques such as personas and scenarios to create an initial content plan which focused on the users' needs alongside those of the website owner (the author).

The creation of wireframes and an early prototype allowed the author to realise the capabilities that a fully developed *Su Barcelona* website could have, and, although one possible limitation of this study concerned the author's lack of experience utilising website design platforms, such as Figma, the successful formation of the initial designs facilitated the development of an actionable plan for *Su Barcelona's* proposal, contributing to the successful fulfilment of the project's general objective.

The author considers compelling future possibilities in the further development of the *Su Barcelona* project, potentially seeking collaborations with local enterprises, including in the

technological and tourism fields, to further elevate the project to a stage where it could be launched to serve as a fully functioning website which encourages sustainable tourist behaviours in Barcelona.

Block II: Creative production: script and design

Wireframes

To evolve the website map into an initial design prototype, wireframes were developed for five pages of the *Su Barcelona* website. Wireframing “is a popular software engineering method to quickly conceive the most important aspects of a software application at the early stages of software development.” (de Lange et al., 2020; 241)

Wireframes were chosen over more conceptual methods due to their ability to provide a closer representation of the final website’s design (de Lange et al., 2020), providing an intuitive and realistic feeling for the user and allowing the author to begin to visualise the proposed result of the *Su Barcelona* website.

Many aspects of *Su Barcelona*’s web pages will remain consistent across the website, such as the navigation bar, logo and headings. In order to present a clear depiction of the website’s capabilities, five pages were chosen for wireframe development, these were selected to highlight the varying functionalities that will be available on *Su Barcelona*.

Initial sketches were produced as low-fidelity wireframes (see appendix 3), adapting the best usability and design features from earlier analysis to produce the first outline of the *Su Barcelona* homepage. Figma was then selected as the online tool to develop online wireframes. Figma was chosen as it enables the production of clear, high-fidelity wireframes allowing a smooth transition into a more interactive prototype during the development phase (Barbosa & Zymła, 2024).

The selected pages to develop wireframes of *Su Barcelona* are:

1. Homepage
2. Primary navigation menus
3. Join in
4. Your rewards
5. What to bring

Usability, accessibility, navigation, content and benchmarking features were considered throughout the design and development of each webpage wireframe. The five selected wireframes are presented below alongside accompanying annotations explaining their features. Where common elements are consistent across more than one page they will only be commented upon once.

Numbers are presented as labels upon each wireframe which correspond to the analytical comments provided below.

As these wireframes represent an initial design stage of the *Su Barcelona* website, it is important to note that the web pages presented below do not provide a complete list, and further changes are likely to occur upon the further development of the *Su Barcelona* website.

Homepage

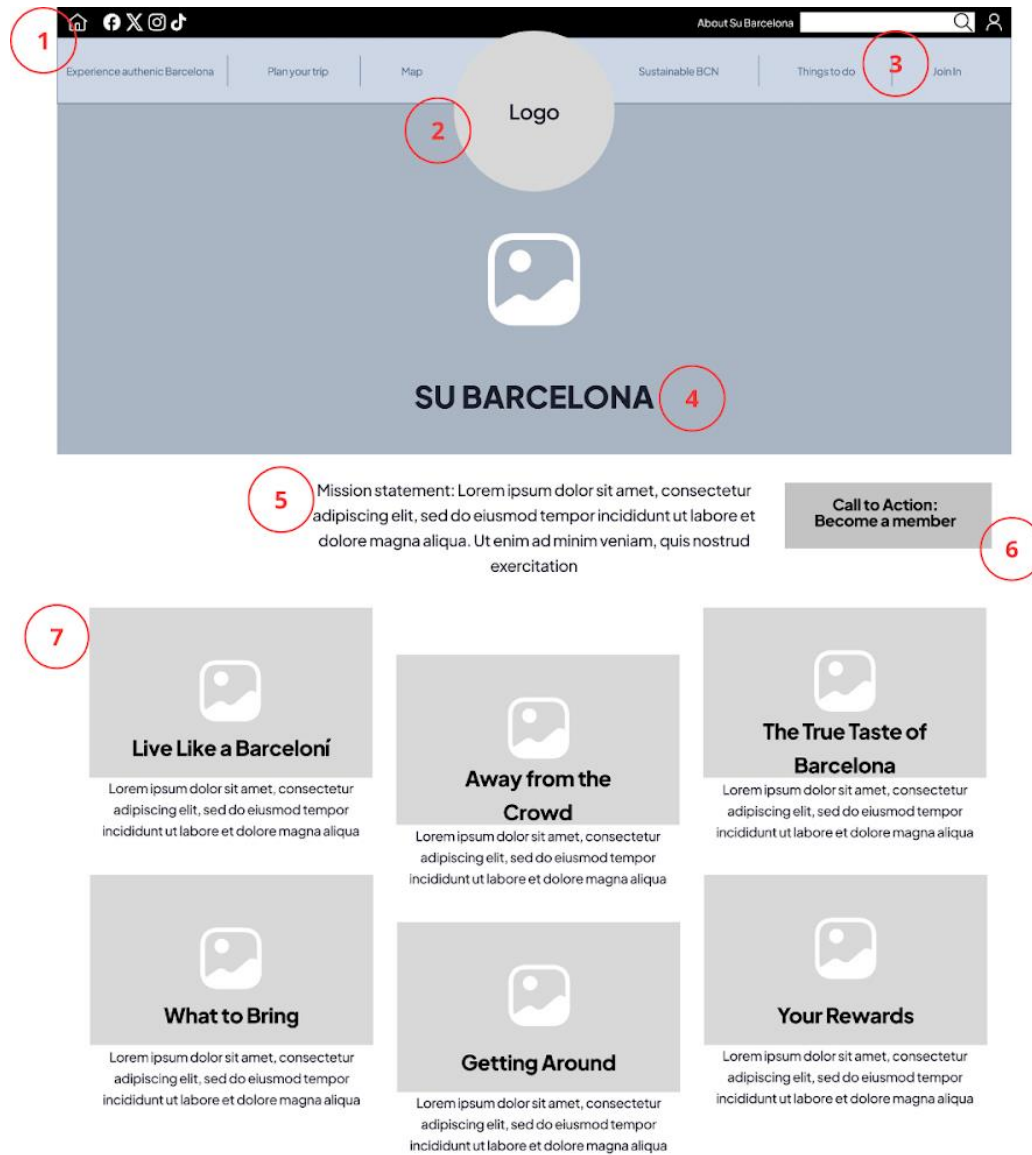


Figure 13. Wireframe of *Su Barcelona* Homepage (top of page)

1. Navigation bar which remains consistent across all of website’s pages. Features easily identifiable links to homepage and *Su Barcelona*’s social media pages.

2. Logo central and top of page to draw attention. Functions as a clickable link to the homepage, consistent across the website. Circular design to stand out and be easily recognisable and accessible.
3. Easily discoverable search bar, naturally placed in the top right-hand corner adhering to usability expectations. Profile icon links to register/log in page for user specific content. Link to 'About Su Barcelona' so user can find out more information about the organisation. All feature in the navigation bar and remain consistent across the website.
4. Website name placed within a large main image, central placing and bold font to increase visibility. Page headings will feature in the same style across the website.
5. Mission statement appears as the first textual content, placed top and centre of page to highlight importance and attract an audience. Across the website this will feature as an introductory text to each page.
6. Call to action added as a clickable link to draw greater significance towards registration as a member of the website. Importance placed on becoming a member as the user can utilise personal functions for greater benefits.
7. Initial links featured at the top of the page will change depending on the six most popular/visited pages. Each link features an image with a heading inside the image in bold font and a brief descriptive text underneath the image. The image box, heading and text all function as clickable links to the specific pages.



Figure 14. Wireframe of Su Barcelona Homepage (bottom scroll)

1. The four main categories feature as subheadings as the user scrolls down the homepage, underneath the six most visited pages. Subheadings are presented in bold font with left side alignment, each page within each category is presented as a clickable box featuring an image as well as the page heading within the image, consistent with *Su Barcelona* design style.

2. Latest news articles are displayed towards the bottom of the page. Each article is presented through a smaller clickable link with the article title and an image. The heading ‘Latest news’ is centrally aligned to signify this is a different style of content to that found earlier on the page.
3. ‘Your utilities’ included at bottom of the webpage to highlight quick and easy access to practical information. This is displayed with a different layout to previous content links to draw attention to the user. Icons, headings and descriptive texts all feature as clickable links, consistent with *Su Barcelona* design.
4. Footer remains consistent across every page of the website. Important information is included here including a sitemap detailing each page location, these are also clickable links. The website logo, mission statement and social media links are also included in the footer, remaining consistent with reference websites analysed. Privacy policies and terms and conditions are also found here to meet users’ expectations.

Primary navigation menus

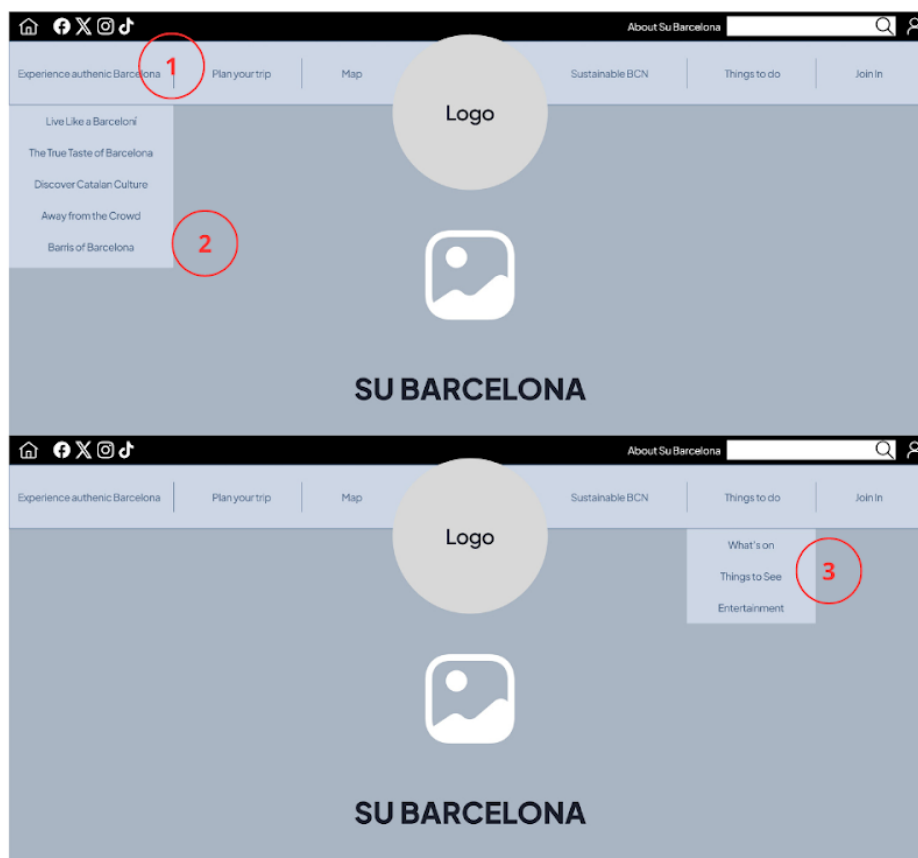


Figure 15. Wireframe of *Su Barcelona* dropdown navigation menus

1. Navigation menus feature as a primary navigation bar at the top of the page. This remains consistent across the website. *Experience authentic Barcelona*, *Plan your trip*, *Sustainable BCN* and *Things to do* all feature drop down menus which appear by hovering over the category headings.
2. Each drop down menu is presented with clearly defined web pages as grouped according to prior card sorting research. Menus do not exceed 7+2 to avoid memory overload. Spacing and font style remains consistent across the navigation menu and drop-down options enabling the user to navigate the website easily.
3. Example of the hover feature; when the cursor hovers over a menu the other drop downs will disappear, displaying only one list at a time to present an accessible, clear and visible organisation.

Your rewards

The 'Your rewards' page builds on the theoretical foundations outlined earlier by providing rewards-based intervention mechanisms, *increasing pleasure*, to encourage users to behave more sustainably while visiting Barcelona. The page will be open for all users, however, to benefit from the functions, offers and personalised interactions, users will need to become a member of *Su Barcelona* by registering with the website.

Becoming a member will not only provide special benefits to the user, it will also enable them to become a part of the collective user identity, building on social norm theories by providing a sustainably conscious social identity for those who register. Registered users will also be able to contribute to the website through reviews and other member-only features as will be outlined in the *Join in* wireframe example.

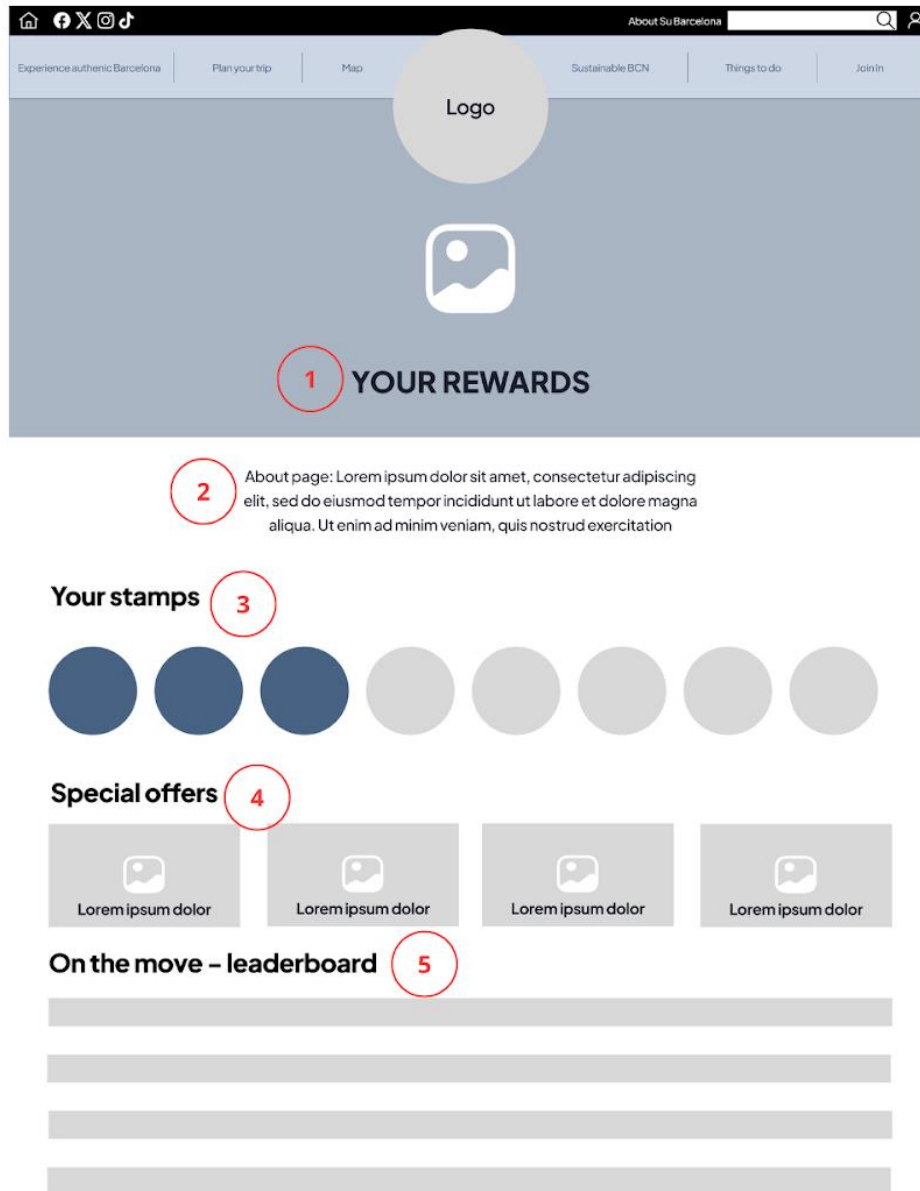


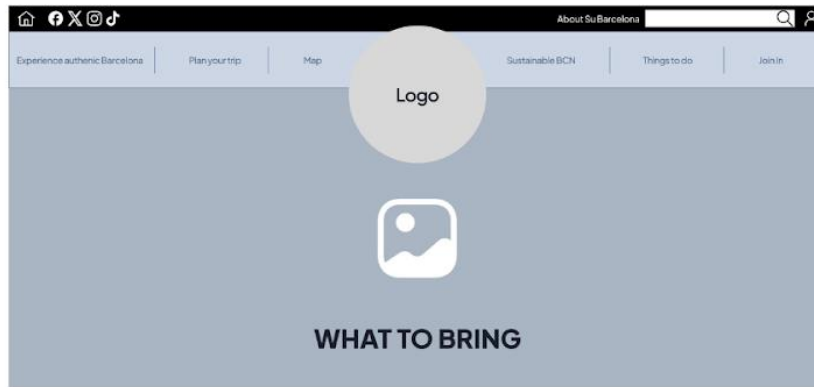
Figure 16. Wireframe of *Su Barcelona Your Rewards*

1. The design of the page specific heading is consistent across all website pages.
2. Introductory text describing purpose and function of the webpage, this will feature consistently with text relevant to specific pages.
3. ‘Your stamps’ provide an interactive stamp collection game for users to participate in. Stamps are collected at participating organisations via a QR code. Examples of these include dining at a restaurant which participates in the scheme, identifying as a sustainable restaurant due to its locally sourced produce. All participatory organisations will be verified by *Su Barcelona* to guarantee their credentials and commitment towards sustainability issues.

4. 'Special offers' will display unlocked offers to the user based on their stamp collections and other bonuses. Each special offer will be displayed through an image and title which function as clickable links to provide further information and present virtual vouchers/QR codes to use in participating organisations. Locked special offers will be semi-visible as these links will be translucent, indicating to the user that these are currently locked, and encouraging further sustainable behaviours to unlock these offers.
5. 'On the move - leaderboard' presents a leaderboard table displaying data from participating users' time spent using sustainable transport means throughout the city, for example riding Barcelona's city bikes. Time spent will be tracked by using the *Su Barcelona* log in whilst travelling with sustainable transport and the users with the longest time spent will feature at the top of the leaderboard. Prizes and offers will be awarded to daily, weekly and monthly leaders, including discounts and *Su Barcelona* branded accessories. The purpose is to use gamification mechanisms to increase the enjoyment and pleasure of travelling around Barcelona, therefore encouraging more sustainable means of transport and, particularly, avoiding public transport usage at peak times to reduce overcrowding.

What to bring

The 'What to bring' page serves as an informative content page. The design of this page replicates the layout of the most popular pages featured at the top of the 'homepage'. The 'What to bring' page functions as a useful tool for users during the planning of their trip to Barcelona, by encouraging users to bring practical products such as refillable water bottles and Tupperware to reduce plastic and food waste while they are in Barcelona. The textual content on this page will utilise behavioural theories through *leveraging beliefs* and *designing choice architecture*. For example, by developing messages which build on cognitive dissonance to convince users that sustainably conscious individuals would take consideration of these environmentally-friendly products when packing their luggage for a holiday.



About page: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation

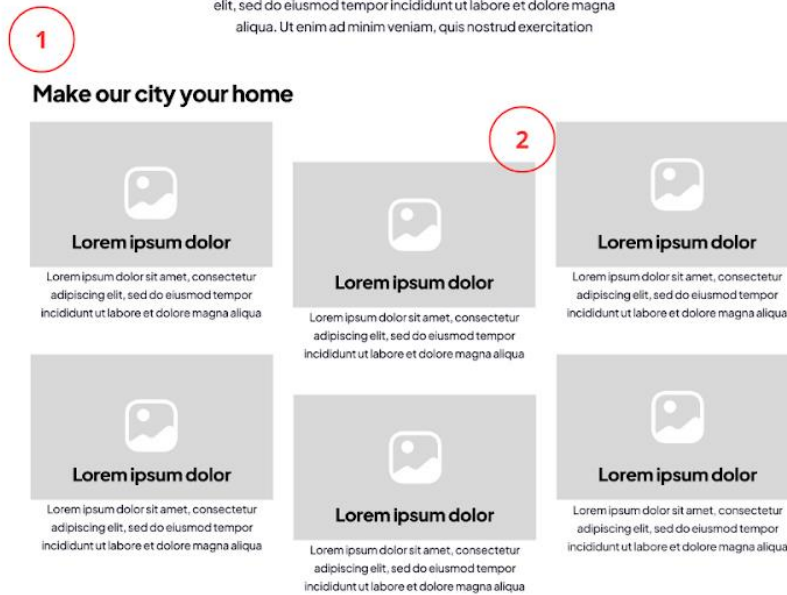


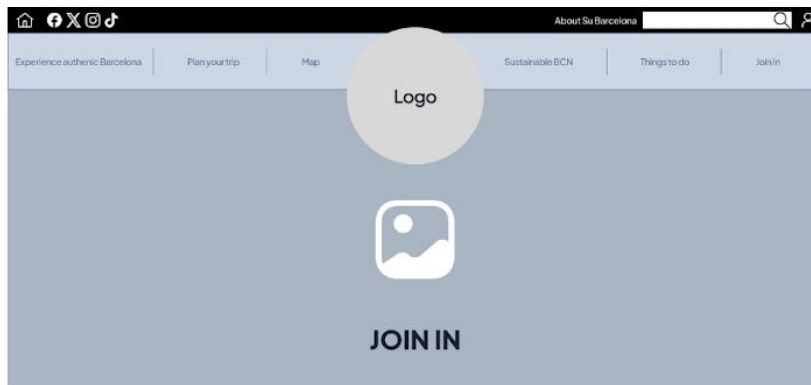
Figure 17. Wireframe of Su Barcelona What to bring

1. The subheading, ‘Make our city your home’ is an example of where habit theory is utilised to persuade the user to continue to replicate sustainable habits that they enact at home whilst they are on holiday.
2. Each image and headline text will represent different advice for tourists to consider whilst they are packing their luggage, these will not function as links as the advice and use of each item is presented as important textual information underneath the image.

Join in

The ‘Join in’ page has also been developed into a wireframe as this page features additional functions not visible across the rest of the site, making it an important page for potential developers to build upon during the creation and advancement of *Su Barcelona* from a wireframe design into a functioning prototype and finally a fully functional website.

The purpose of this page is to enable the user to actively participate on the website, utilising interventions which increase happiness as well as further *leveraging social norms*.



About page: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation

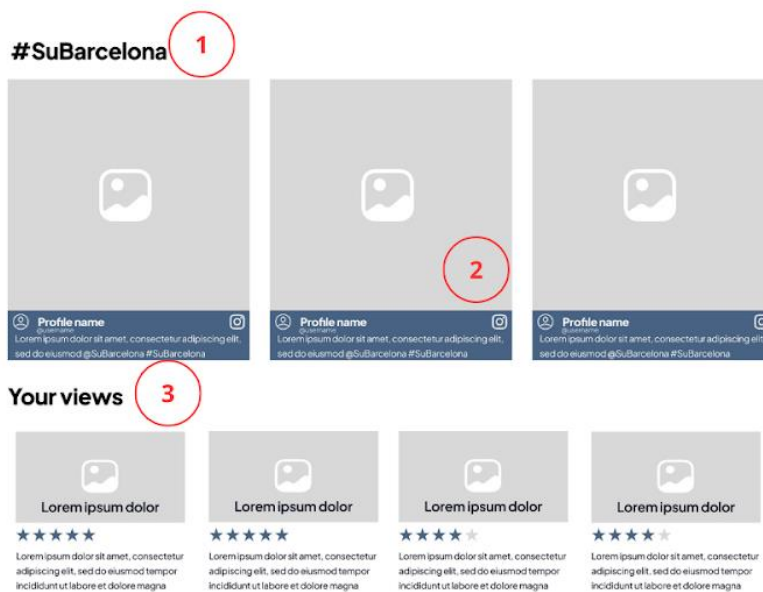


Figure 18. Wireframe of Su Barcelona Join in

1. The initial subheading acts as a hashtag to encourage users to post their own content on social media using the hashtag, allowing visibility and easy access to sustainably rich content. The ‘#SuBarcelona’ title is an initial idea which will act as the founding hashtag for the website, however trending topics may be implemented into future hashtags to further enhance visibility.
2. The visible box is an example of the embedded feed/channel from social media platforms. In the example (2) Instagram has been utilised. In the embedded feed, users’ profile and usernames will be visible, along with their caption text and image itself. This idea has been developed to help create an inclusive social identity which will encourage users to promote their sustainably conscious behaviours whilst on holiday in Barcelona, adhering to theories leveraging social norms.

3. ‘Your views’ allows the user to share their comments and reviews upon any organisation within Barcelona in consideration of their sustainability goals, these may include restaurants, bars and activity/tour guides, amongst others. The purpose of this is to develop trust amongst the *Su Barcelona* community by allowing users to interact with each other’s opinions as user-generated content is often more trusted than private entities.

Homepage Mockup

A static mockup of the homepage (figure 19) has been developed to provide a more vivid representation of the design features utilised in the *Su Barcelona* website.

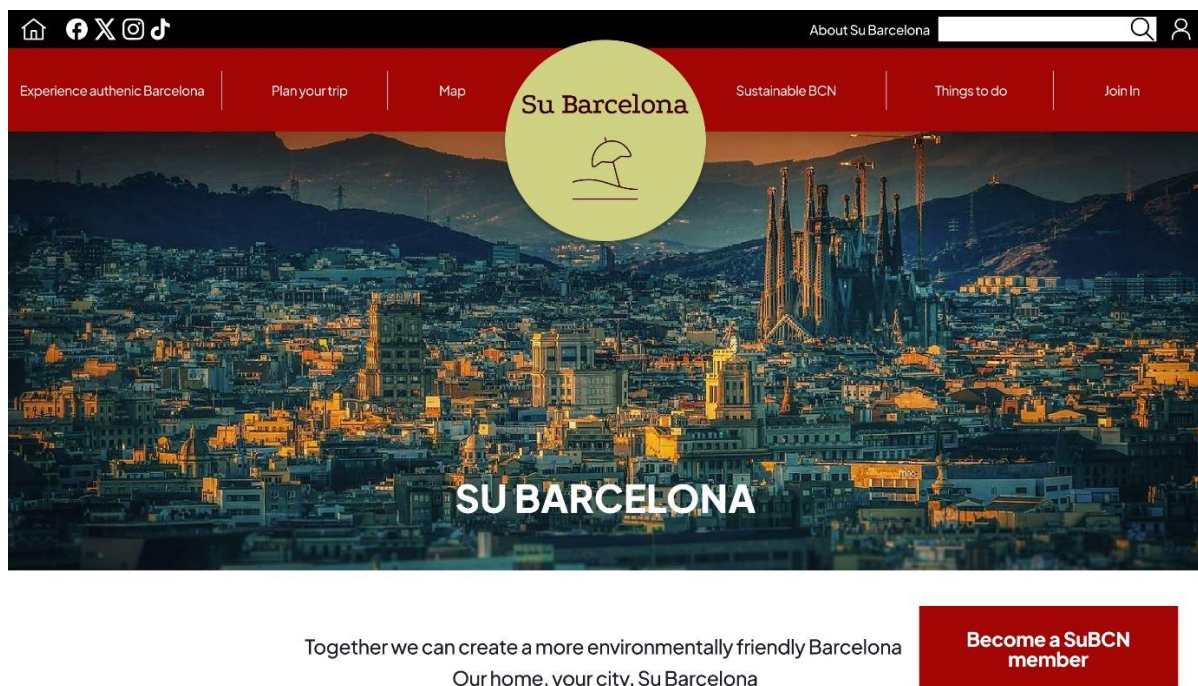


Figure 19. Homepage mockup

Prototype

The initial prototype can be found at this link:

<https://www.figma.com/proto/DSO3z9UN4vxzibG8y2jDfF/Sustainable-Barcelona-Homepage?node-id=0-1&t=WjIbGMzUbTqEwRQv-1>

The prototype presents some initial concepts, including hovering dropdown menus from the navigation bar, however these links are not clickable.

Clickable links can be found at ‘Join in’ (navigation bar), ‘What to bring’ and ‘Your rewards’ (both from content boxes at top of homepage).

From non-homepages, the logo and home icon function as clickable links to return to the homepage.

References

- Ajuntament de Barcelona (2020) *Pressure of Tourism – Resilience Atlas*. https://coneixement-eu.bcn.cat/widget/atles-resiliencia/en_index_pressio_turistica.html
- Ajuntament de Barcelona (2020) *Barcelona Tourism for 2020: A collective strategy for sustainable tourism*. https://ajuntament.barcelona.cat/turisme/sites/default/files/barcelona_tourism_for_2020.pdf
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211
- Araña, J. & León, C. (2016). Are tourists animal spirits? Evidence from a field experiment exploring the use of non-market based interventions advocating sustainable tourism. *Journal of Sustainable Tourism*. 24. 1-16. 10.1080/09669582.2015.1101128
- Arantes, L., Sousa, B., Dias, Á., & Santos, V. (2022). Exploring the outcomes of digital marketing on historic sites' visitor behaviour. *Journal of Cultural Heritage Management and Sustainable Development*. <https://doi.org/10.1108/JCHMSD-11-2021-0202>
- Armutcu, B., Tan, A., Amponsah, M., Parida, S., & Ramkissoon, H. (2023). Tourist behaviour: The role of digital marketing and social media. *Acta Psychologica*, 240, 104025–104025. <https://doi.org/10.1016/j.actpsy.2023.104025>
- Baca-Motes, K., Brown, A., Gneezy, A., Keenan, E. A., & Nelson, L. D. (2013). Commitment and Behavior Change: Evidence from the Field. *The Journal of Consumer Research*, 39(5), 1070–1084. <https://doi.org/10.1086/667226>
- Barbosa, J. C. C., & Zymla, H. G. (2024). “The Spanish Cathedral”, a Prototype of Mobile Application for the Access to the Religious Cultural Heritage of Gothic Hispanic Cathedrals. *Journal on Computing and Cultural Heritage*, 17(2), 1–25. <https://doi.org/10.1145/3640456>
- Becker, D.A. and Yannotta, L. (2013), “Modeling a library website redesign process: developing a usercentered website through usability testing”, *Information Technology and Libraries (Online)*, Vol. 32 No. 1, pp. 6-22
- Bolderdijk, Jan & Lehman, Philip & Geller, E. Scott. (2012). Encouraging Pro-Environmental Behaviour with Rewards and Penalties. <https://doi.org/10.1002/9781119241072.ch27>
- Conner, M., & Armitage, C. J. (1998). Extending the Theory of Planned Behavior: A Review and Avenues for Further Research. *Journal of Applied Social Psychology*, 28(15), 1429–1464. <https://doi.org/10.1111/j.1559-1816.1998.tb01685>
- Cooper, A. (1999). *The Inmates are Running the Asylum. Software-Ergonomie '99: Design von Informationswelten*. Stuttgart: B.G.Teubner. ISBN: 3-519-02694-5. pp. 17

- de Lange, P., Nicolaescu, P., Neumann, A. T., & Klamma, R. (2020). Integrating Web-Based Collaborative Live Editing and Wireframing into a Model-Driven Web Engineering Process. *Data Science and Engineering*, 5(3), 240–260. <https://doi.org/10.1007/s41019-020-00131-3>
- Denton, A.H., Moody, D.A. and Bennett, J.C. (2016), “Usability testing as a method to refine a health sciences library website”, *Medical Reference Services Quarterly*, Vol. 35 No. 1, pp. 1-15
- Demeter, C., Fechner, D., & Dolnicar, S. (2023). Progress in field experimentation for environmentally sustainable tourism – A knowledge map and research agenda. *Tourism Management* (1982), 94, 104633-. <https://doi.org/10.1016/j.tourman.2022.104633>
- Dolnicar, S. (2020). Designing for more environmentally friendly tourism. *Annals of Tourism Research*, 84, 102933-. <https://doi.org/10.1016/j.annals.2020.102933>
- Dolnicar, S., Cvelbar, L. K., & Grün, B. (2019). Changing service settings for the environment: How to reduce negative environmental impacts without sacrificing tourist satisfaction. *Annals of Tourism Research*, 76, 301-. <https://doi.org/10.1016/j.annals.2018.08.003>
- Dolnicar, S., Juvan, E., & Grün, B. (2020). Reducing the plate waste of families at hotel buffets – A quasi-experimental field study. *Tourism Management* (1982), 80, 104103-. <https://doi.org/10.1016/j.tourman.2020.104103>
- Elorrieta, B., Aurélie Cerdan Schwitzguébel, & Torres-Delgado, A. (2022). From success to unrest: the social impacts of tourism in Barcelona. *International Journal of Tourism Cities*, 8(3), 675–702. <https://doi.org/10.1108/IJTC-05-2021-0076>
- Euromonitor (2023) *Euromonitor International's report reveals world's Top 100 City Destinations for 2023*. <https://www.euromonitor.com/press/press-releases/dec-2023/euromonitor-internationals-report-reveals-worlds-top-100-city-destinations-for-2023>
- Fernández-Cavia, J., Rovira, C., Díaz-Luque, P., & Cavaller, V. (2014). Web Quality Index (WQI) for official tourist destination websites. Proposal for an assessment system. *Tourism Management Perspectives*, 9, 5–13. <https://doi.org/10.1016/j.tmp.2013.10.003>
- Fernández-Cavia, J., Vinyals-Mirabent, S., Fernández-Planells, A., Weber, W., & Pedraza-Jiménez, R. (2020). Tourist information sources at different stages of the travel experience. *El Profesional de La Informacion*, 29(2), e290219-. <https://doi.org/10.3145/epi.2020.mar.19>
- Festinger, L. (1957). *A Theory of Cognitive Dissonance*. Stanford University Press, Stanford, CA
- Garrett, J. J. (2002). *The Elements of user experience: user-centered design for the web*. AIGA

- Grudin, J., & Pruitt, J. (2002). Personas, participatory design and product development: An infrastructure for engagement. In T. Binder, J. Gregory, I. Wagner (Eds.), *PDC 02 proceedings of the participatory design conference*, Malmö, Sweden, pp. 144–152.
- Guay, S., Rudin, L., & Reynolds, S. (2019). Testing, testing: a usability case study at University of Toronto Scarborough Library. *Library Management*, 40(1/2), 88–97. <https://doi.org/10.1108/LM-10-2017-0107>
- Hassan Montero, Yusef; Martín Fernández, Francisco J.; (2003). Guía de Evaluación Heurística de Sitios Web. En: No Solo Usabilidad, nº 2, 2003.
- Hughes, N. (2018). “Tourists go home”: anti-tourism industry protest in Barcelona. *Social Movement Studies*, 17(4), 471–477. <https://doi.org/10.1080/14742837.2018.1468244>
- Juvan, E., & Dolnicar, S. (2017). Drivers of pro-environmental tourist behaviours are not universal. *Journal of Cleaner Production*, 166, 879–890. <https://doi.org/10.1016/j.jclepro.2017.08.087>
- Kahneman (1999). Objective happiness. In A. Kahneman (Ed.). *Well-being: The foundations of hedonic psychology*. New York: Russell Sage.
- Kallbekken, S., & Sælen, H. (2013). ‘Nudging’ hotel guests to reduce food waste as a win–win environmental measure. *Economics Letters*, 119(3), 325–327. <https://doi.org/10.1016/j.econlet.2013.03.019>
- Khan, M. M., Siddique, M., Yasir, M., Qureshi, M. I., Khan, N., & Safdar, M. Z. (2022). The Significance of Digital Marketing in Shaping Ecotourism Behaviour through Destination Image. *Sustainability*, 14(12), 7395-. <https://doi.org/10.3390/su14127395>
- Krug, S. (2006). *Don't make me think!: a common sense approach to web usability* (2nd ed.). New Riders.
- Lee, J. H., Lee, E., Huh, J., Kim, M. L., & Kim, J. (2024). Persona/scenario (P/S) toolkit enhancing inclusive fashion design education. *Fashion and Textiles*, 11(1), 5–19. <https://doi.org/10.1186/s40691-024-00373-z>
- Lopez, M.F.B., Virto, N.R., Manzano, J.A. & Miranda, J.G.M. (2018), “Residents’ attitude as determinant of tourism sustainability: the case of Trujillo”, *Journal of Hospitality and Tourism Management*, Vol. 35. 36-45
- MacInnes, S., Grün, B., & Dolnicar, S. (2022). Habit drives sustainable tourist behaviour. *Annals of Tourism Research*, 92, 103329-. <https://doi.org/10.1016/j.annals.2021.103329>

- Manhas, J. (2014). Comparative Study of Website Sitemap Feature as Design Issue in Various Websites. *International Journal of Engineering and Manufacturing*, 4(3), 22–28.
<https://doi.org/10.5815/ijem.2014.03.03>
- Mihalic, T. (2020), “Conceptualising overtourism: a sustainability approach”, *Annals of Tourism Research*, Vol. 84 No. August
- Narangajavana Kaosiri, Y., Callarisa Fiol, L. J., Moliner Tena, M. Á., Rodríguez Artola, R. M., & Sánchez García, J. (2019). User-Generated Content Sources in Social Media: A New Approach to Explore Tourist Satisfaction. *Journal of Travel Research*, 58(2), 253–265.
<https://doi.org/10.1177/0047287517746014>
- Nielsen, J. (2000). *Designing web usability: [the practice of simplicity]*. New Riders.
- Nunkoo, R. and Ramkissoon, H. (2011), “Developing a community support model for tourism”, *Annals of Tourism Research*, Vol. 38 No. 3. 964-988
- Observatori del Turisme a Barcelona (n.d.) *OTB: The OTB Sustainable Tourism Indicators System*. Sustainability - SITS - OTB: The OTB Sustainable Tourism Indicators System.
<https://www.observatoriturisme.barcelona/en/sustainability-sits-otb-otb-sustainable-tourism-indicators-system>
- Onel, N., Mukherjee, A., Kreidler, N. B., Díaz, E. M., Furchheim, P., Gupta, S., Keech, J., Murdock, M. R., & Wang, Q. (2018). Tell me your story and I will tell you who you are: Persona perspective in sustainable consumption. *Psychology & Marketing*, 35(10), 752–765.
<https://doi.org/10.1002/mar.21132>
- Rodríguez-Martínez, R., Codina, L., & Pedraza-Jiménez, R. (2012). Indicadores para la evaluación de la calidad en cibermedios: análisis de la interacción y de la adopción de la Web 2.0. *Revista española de documentación científica*, 35(1), 61-93.
- Rosenfeld, L., O’Brien, T., Morville, P., & Arango, J. (2021). *Information architecture: For the web and beyond*. Ascent Audio.
- Rowe, Z. O., Wilson, H. N., Dimitriu, R., Charnley, F. J., & Lastrucci, G. (2019). Pride in my past: Influencing sustainable choices through behavioral recall. *Psychology & Marketing*, 36(4), 276–286.
<https://doi.org/10.1002/mar.21178>
- Sanabre Vives, C. (2015). A model for website analysis and conception: the Website Canvas Model applied to Eldiario.es. *Hipertext.net*, 13.
- Schwartz, S. H. (1977) In *Advances in Experimental Social Psychology*, vol. 10 (ed. Leonard, B.) 221–279. Academic Press

- Stanton, D., & Smith, C. (2019). Experience-driven Engineering in IoT: The Importance of User Experience for Developing Connected Products People Love. *AIS Transactions on Human-Computer Interactions*, 11(4), 232-243. <https://doi.org/10.17705/1thci.00122>
- Stern, P. C., Dietz, T., Abel, T. D., Guagnano, G. A., & Kalof, L. (1999). A Value-Belief-Norm Theory of support for social movements: the case of environmentalism. *Human Ecology Review*, 6(2), 81–97
- Stern, P.C., (2000). Toward a coherent theory of environmentally significant behavior. *J. Soc. Issues* 56 (3), 407-424
- Sunstein, C. R. (2015). The Ethics of Nudging. *Yale Journal on Regulation*, 32(2), 413–450.
- Tajfel, H. (1979). Individuals and groups in social psychology. *British Journal of Social & Clinical Psychology*, 18(2), 183–190. <https://doi.org/10.1111/j.2044-8260.1979.tb00324.x>
- United Nations. (2013). *Publications of the Food and Agriculture Organization of the United Nations*. Publications of the Food and Agriculture Organization of the United Nations 2013. <https://www.fao.org/4/i3436e/i3436e00.htm>
- United Nations. (n.d.). *The 17 goals | sustainable development*. United Nations. <https://sdgs.un.org/goals>
- UN World Tourism Organization (2018) ‘Overtourism’? – *Understanding and Managing Urban Tourism Growth beyond Perceptions*. UNWTO, Madrid
- Wang, J., Dai, J., Gao, W., Yao, X., Dewancker, B. J., Gao, J., Wang, Y., & Zeng, J. (2024). Achieving Sustainable Tourism: Analysis of the Impact of Environmental Education on Tourists’ Responsible Behavior. *Sustainability*, 16(2), 552-. <https://doi.org/10.3390/su16020552>
- Wood, W., Quinn, J. & Kashy, D. (2002). Habits in everyday life: thought, emotion, and action. *J Pers Soc Psychol*, 83, 1281-1297. *Journal of personality and social psychology*. 83. 1281-97. <https://doi.org/10.1037/0022-3514.83.6.1281>
- Wood, W., & Rünger, D. (2016). Psychology of Habit. *Annual Review of Psychology*, 67(1), 289–314. <https://doi.org/10.1146/annurev-psych-122414-033417>

Appendices

Appendix 1

Sustainable Barcelona (Barcelona Turisme)



What to visit / Sustainable Barcelona

Sustainable Barcelona



The planet can't wait, and for many years now Barcelona has been committed to sustainability and the environment. There are countless activities available to be enjoyed in a way that respects the environment and local traditions. Discover our rich cultural offering and varied gastronomy based on the Mediterranean Diet and fresh, local, seasonal produce, and a lifestyle that puts an emphasis on the quality of life of its citizens.





Biosphere Responsible Tourism destination

Thousands of trees, dozens of parks and gardens, the Mediterranean Sea, an efficient public transport system with a low environmental impact, and a cultural, commercial, hotel and restaurant offering that is committed to respecting the environment all make Barcelona a truly sustainable destination.



Responsible tourism guidelines

Sustainability is one of the watchwords of Barcelona. We must be aware that sustainability is not an option but a commitment, no matter if you are at home or travelling. Small daily actions are also important. Therefore, we encourage you to follow the recommendations of this guideline for a responsible visit to Barcelona.



Moving around Barcelona in a sustainable way

Have you come to discover Barcelona? Then do it on foot! Pedestrians enjoy priority in the city, and more and more spaces have been reclaimed for walking. In addition to walking, you can make use of public transport or bicycles, which offer a safe, fast and sustainable way to visit Barcelona.



Green Barcelona

Nature is also a key element of the city. Parks and gardens are our urban green spaces, and allow you to switch off, breathe in some fresh air, and recharge your batteries. In these outdoor spaces you can play sports, get together with friends, and enjoy family time. In these small oases of vegetation, water and wildlife you can forget the stresses and strains of everyday life and let your soul be soothed by the tranquility.



Blue Barcelona

There is a blue Barcelona too, very, very blue, and it has always been there. The bond between Barcelona and the sea goes back to even before Roman Barchino. The city has lived from the sea and for the sea, and throughout its history it has been a conduit for meeting and sharing cultures. Today, quite naturally, Barcelona is a city open to the sea.



Local commerce

In a globalized, over-replicated world, it is a joy to find that Barcelona still offers an outdoor showcase of emblematic stores and time-honored establishments that maintain all the genuine character of the city. Many of them offer local, artisan, products, unique designs, and sustainable fashions.



Eat a healthy diet

Barcelona is one of the world's culinary hotspots. Tradition and innovation come together at the city's great choice of eateries that serve environmentally responsible, healthy food. Dishes made with locally sourced, zero carbon produce, organic ingredients, vegetarian riches. Find the Barcelona restaurants.

YOU MAY BE ALSO INTERESTED



A SUN &



WINE TOURISM AND CYCLING THROUGH THE PENEDES from **74,00 €**



HOLA BARCELONA TRAVEL CARD, TRANSPORT CARD from **16,62 €**



ARTICKET BARCELONA from **38,00 €**



CASA AMATLLER from **19,00 €**

PRACTICAL GUIDE

- Useful information about Barcelona
- How to get there
- Getting around the city
- Barcelona any time of the year
- Where to sleep
- Tourist information points
- Quizzes

FOOD AND WINE

- 10 reasons to enjoy Barcelona's gastronomic revolution
- Catalan cuisine
- Restaurants
- Barcelona's markets
- Barcelona and wine
- Experiences
- Barcelona, a city with a beer culture

SHOPPING

- Barcelona Shopping City

WHAT TO VISIT

- Religious Cultural Heritage
- Sustainable Barrriada
- Jewish Barcelona
- Barcelona, City of the Literature
- Barcelona, district by district
- Themed routes
- Science trails
- Guided walking tours
- Day itineraries
- Near Barcelona

THINGS TO DO

- Main Events Barcelona 2024
- Agenda
- Culture
- Science and Technology
- With the family
- Sports
- Sea and beaches
- Mountain and Snow
- Barcelona at night
- Christmas in Barcelona

ENJOY BARCELONA

- Workation
- Blog Enjoy Barcelona
- Top Experiences

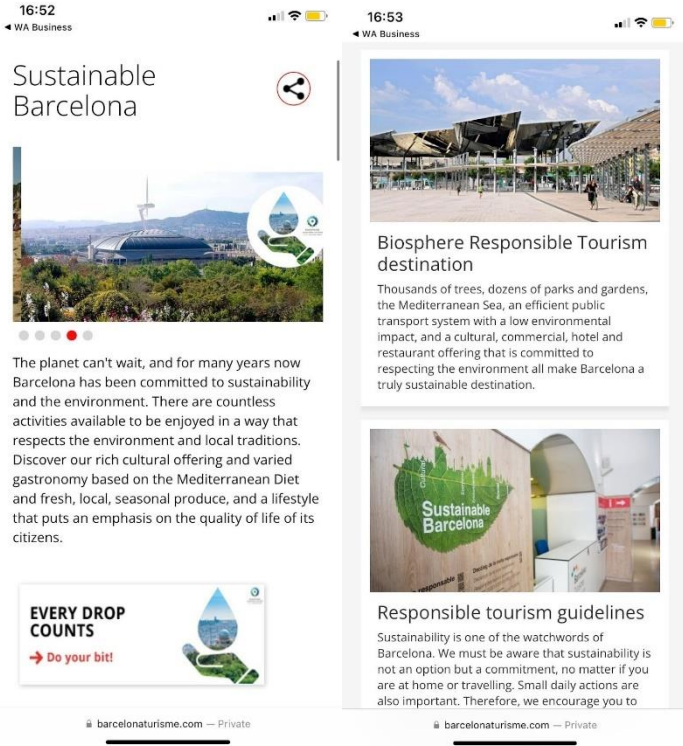


Moving around Barcelona in a sustainable way

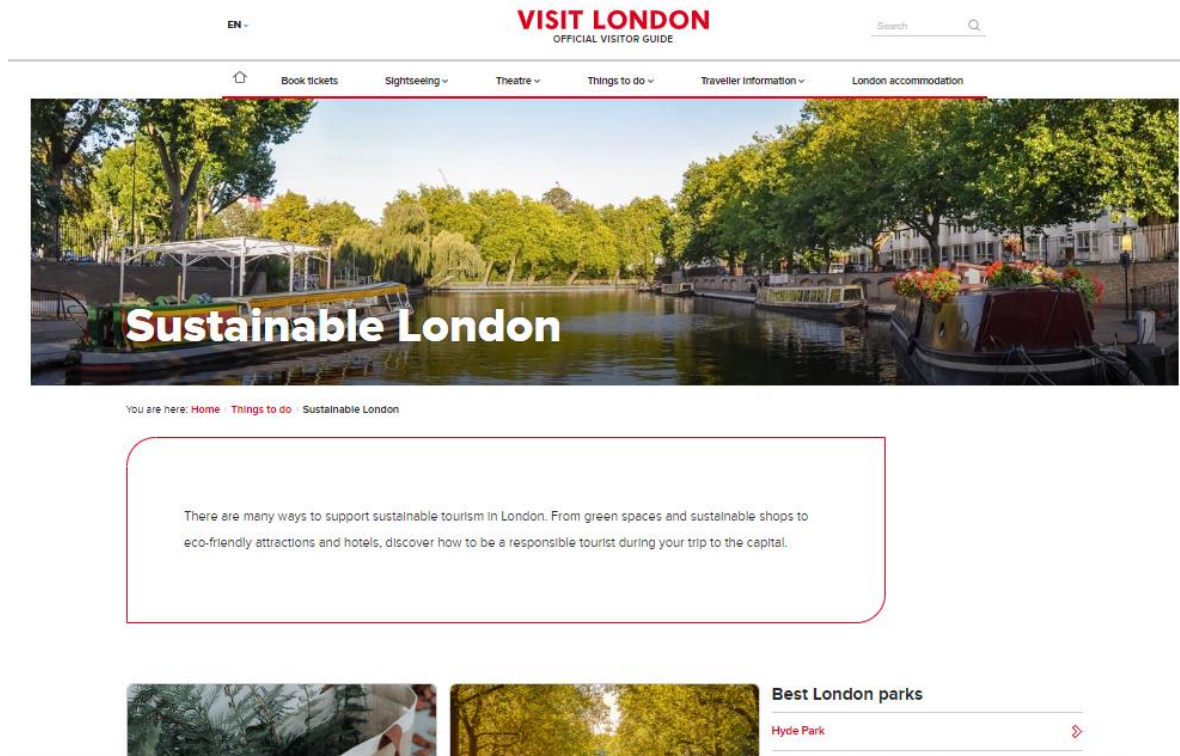
Every day, hundreds of thousands of people move around in safety while having a low impact on the environment thanks to public transport. The technologies that have made Barcelona one of the leading Smart Cities in Europe guarantee increasingly convenient and straightforward journeys around the city. There are a number of options.

GETTING AROUND BY METRO

The **Barcelona Metro system**, with its eight lines, is fast and efficient and can even take you to the airport, and connects with the Ferrocarriles de la Generalitat FGC system that links Barcelona with nearby cities.



Sustainable London (Visit London)





Sustainable shops



Sustainable days out



Sustainable hotels



National Park City

Best London parks

- [Hyde Park](#) >>
- [Regent's Park and Primrose Hill](#) >>
- [Richmond Park](#) >>
- [Bushy Park](#) >>
- [Greenwich Park](#) >>
- [Battersea Park](#) >>

Fun days out in London



Vegan restaurants



Best walking tours



Best markets

Sustainable days out in London

From making the most of the city's spectacular parks to picking up goodies at a vintage shop, there are countless ways to enjoy a sustainable day out in London.



Stroll through gorgeous Hyde Park. Image courtesy of Shutterstock.

Not all venues have been verified by third-party certification, and their inclusion does not indicate endorsement by Visit London. Please check directly with individual venues for more information about their green credentials.

Plan an **eco-friendly day out** in the city, from sustainable shopping to trendy dining and green spaces galore.

Sustainable shopping in London

- Add classic styles to your wardrobe from vintage stores like **Pop Boutique** and **Retromania London**, or spend hours getting lost in the vintage haven that is **Brick Lane**.
- Shop zero waste at a bring-your-own-container store, including **BYO** in **Tooting Market** and **Unpackaged** at Planet Organic.
- Give back and visit **Mary's Living and Giving** shops, where you can pick up hidden gems and trendy pieces, and a portion of what you pay goes to a good cause.
- Find trinkets, handmade crafts and bargain goods at a **London market**.
- Pick up fresh flowers on Sundays at **Columbia Road Flower Market**.

Tickets, hotels and offers



Theatre tickets

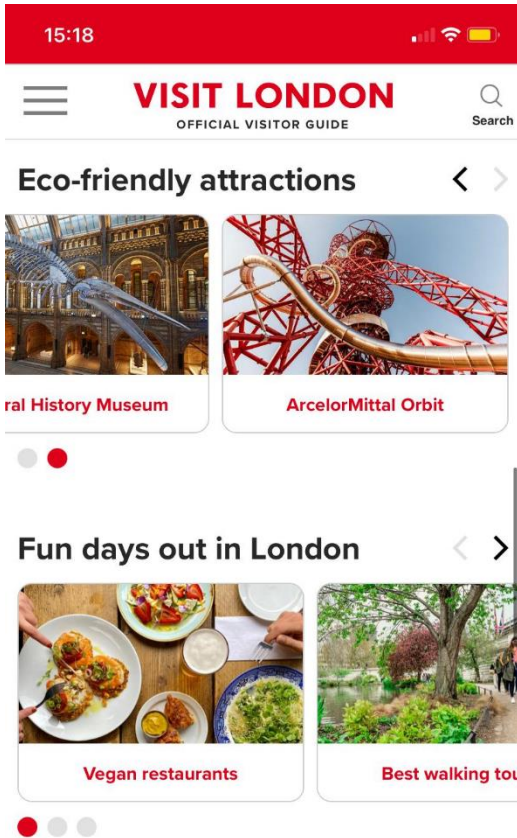


Attraction tickets

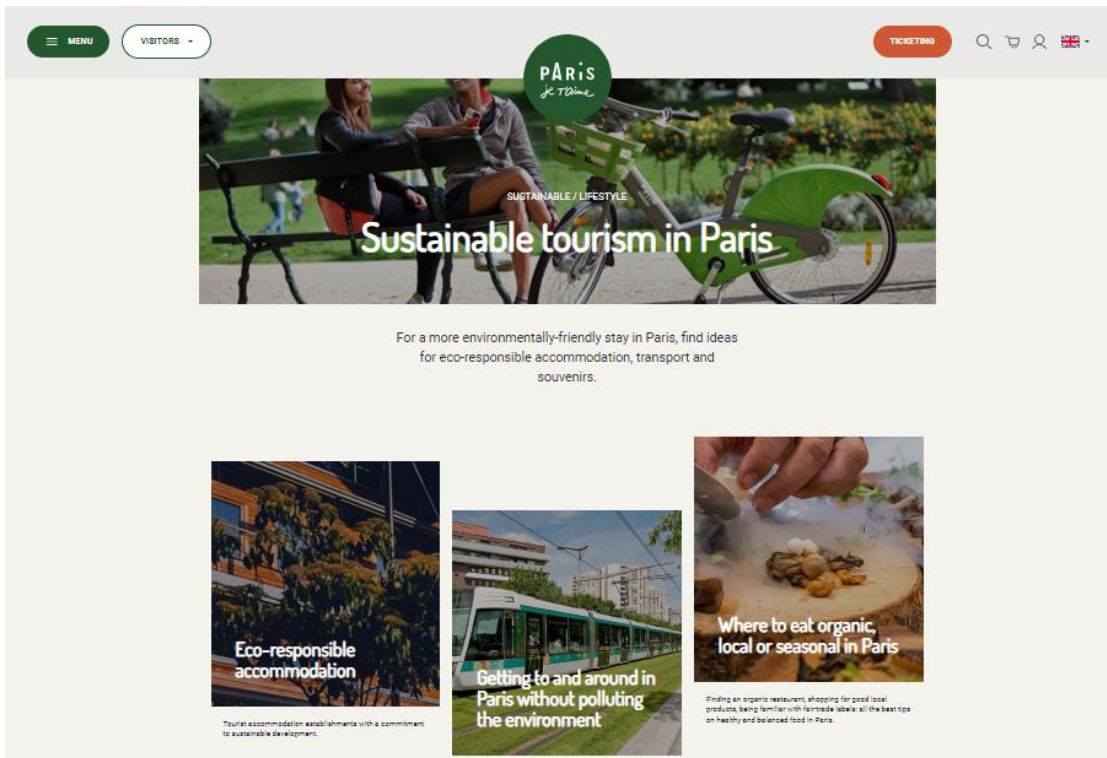


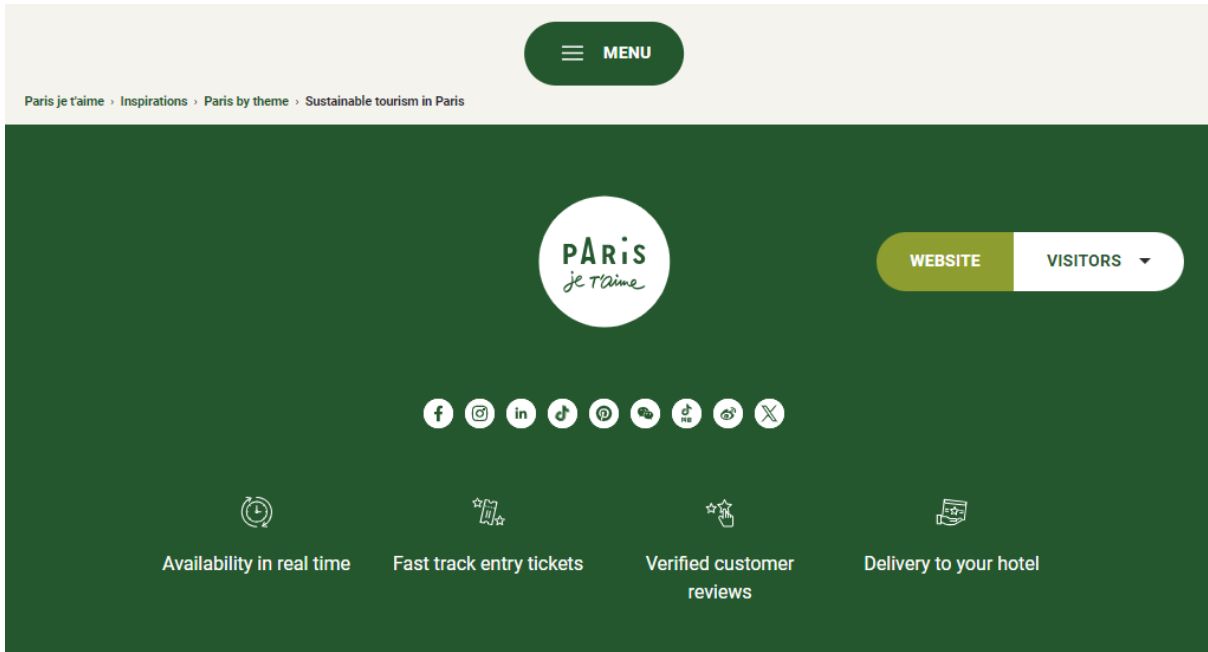
Hilton hotels in London

See more tickets and offers



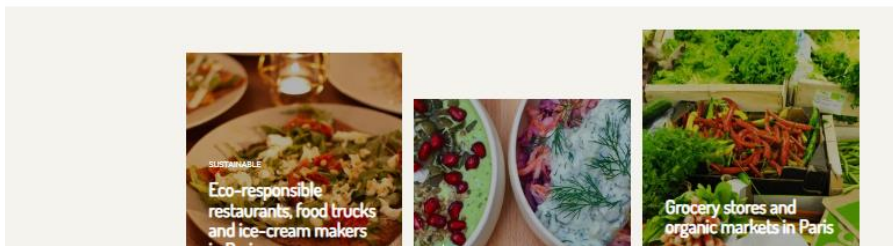
Sustainable tourism in Paris (Paris je t'aime)





Where to eat organic, local or seasonal in Paris

Enjoy good food products whilst supporting the local economy and preserving the planet.



Shopping for pleasure and in the interests of sustainable development in Paris

Fashion, beauty, gourmet gifts, ideas ... Treat yourself in an eco-responsible way for Christmas 2023 at these great addresses.



OUTDOORS | FAMILY
Outdoor Paris for families

The Car Free Day, outdoor activities in gardens... to experience Paris with the family in a different way.



Responsible and sustainable tourism (Turismo Roma)

LIVE ROME, DISCOVER ROME
TOURIST SERVICES AND CULTURAL OFFER

+39060608

SEARCH [] FOLLOW US ON: [in] [ig] [f] [t] [yt] ENGLISH [v] [u]

ROMA ROMA ^{ITALIA} ROME FOR DISCOVER ROME YOUR TRIP USEFUL INFO

Home / Useful info / Responsible and sustainable tourism

Responsible and sustainable tourism



Travelling sustainably means respecting the environment, all the local community and its variety of cultures. It also means enjoying the territory safeguarding the physical heritage as well as the traditions and customs that have stratified during the years. Being a responsible tourist means encouraging the development of the city, involving the residents and creating a welcoming environment as well as a full access to all visitors.

DIVERSITY IS RICHNESS - Please, respect cultural differences, traditions and religion of the Country hosting you.

RESPECT IS MUTUAL - We take care of all your needs, we offer you our support and protect you from all sort of violence. You are always welcome but any sort of unlawful behaviour, environmental damage and criminal act is not.

NO ONE LEFT OUT! - All tourists are important: women, men, children, senior citizens, disabled people and ethnic minorities. We pursue an inclusive politics. There is room for everyone here.

DIFFERENTIATING THE OFFER - Quality tourism means paying attention to families, students, ancient citizens and people with special needs. We aim at developing a welcoming system suiting everybody.

A BEAUTY WITHOUT MAKEOVER - Our artistic, archaeological, and cultural heritage does not like disrespectful arbitrary art making; we say no to graffiti, scars and all sorts of vandalism. Also please, remember that the best way of preserving our priceless heritage forever is to walk or to use the public transport: smog severely damages monuments.

A VISIT WORTH A TREASURE - Maybe you are not aware of the fact that visiting monuments, museums and archaeological areas is a way of maintaining and preserving Italian artistic-cultural heritage.

SAFETY AND HEALTHCARE - Healthcare is a common good. Before leaving please ask information on how to protect both your and others' health. Please, take all health and hygienic measures and travel safely.

GREEN TOURISM - Please, protect the environment and the territory's peculiarities: say yes to energy saving, say no to water wasting. Please, travel consciously: leave your footsteps on your way not your garbage.

BALANCE AND QUALITY - Please, choose carefully travelling period and conditions. Your holiday will benefit from it and the city will thank you.

BEWARE OF IMITATIONS - Please, always prefer original home products. You will bring back home unique flavours and souvenirs. After all, our Country is considered the home of good cooking and "Made in Italy" products.

YOUR UTILITIES

GUIDES AND MAPS

EVENTS
[Cookie Preferences](#)

NEWSLETTER

Responsible and sustainable tourism



Travelling sustainably means respecting the environment, all the local community and

Sustainable travel tips in Amsterdam (I amsterdam)

[Order your City Card](#)




See and do
Sustainable travel tips in Amsterdam



Image from Merijn Koubroeks

Sustainable travel tips in Amsterdam

Updated 25 May 2023 at 11:24

With its tree-lined canals, famous parks and some 400km of cycle lanes, an eco-conscious attitude is deeply ingrained in Amsterdam's way of life. Experience it for yourself by exploring these sustainable highlights that will make your stay as green as can be.

Green transport

Two wheels are better than four



Marie-Stella-Maris

Beauty with soul

This local beauty brand is not only sustainable and paraben-free, but actively supports clean drinking water projects in developing countries. For every product purchased at [Marie-Stella-Maris](#), from luxe skincare to heavenly scented candles, a proportion of the proceeds are donated. Visit the flagship store on Keizersgracht, or retailers such as [Mango](#).

Restaurant De Kas

Gourmet greenhouse



[Image from Ronald Hoeben]

[De Kas](#) offers a dining experience that is so close to nature you will feel positively virtuous (even after three courses and wine pairings!). Step into a beautiful former greenhouse and be treated to the chef's menu based on ingredients fresh from the restaurant's own gardens.

Mobile



Amsterdam parks and forests

Green urban planning



[Image from Pauline Arkesteijn]

Amsterdam's urban developers were ahead of their time in realising the effect that green spaces have on a community's wellbeing. Today the city flourishes with rows of trees, gardens, [extensive parks](#) and its own inner city forest, [Amsterdamse Bos](#), designed in the 1920s.

Appendix 2
Initial content list

Webpage idea	Sustainability issue addressed	Behavioural intervention to be applied
Homepage	General	General
About Su Barcelona	General	General
Neighbourhoods of Barcelona	Sociocultural: sustainable cities and communities	Designing choice architecture and leveraging social norms
Accommodation	Environmental: impact of short-term accommodation	Designing choice architecture and leveraging social norms
Transport (to/from & around city)	Environmental: mobility issues related to environmental impact and volume of tourists	Increasing pleasure and designing choice architecture
Maps (including restaurants/bars/shops, activities/monuments, water fountains, recycling points etc)	General	General
What to bring	Environmental: encouraging waste reduction	Designing choice architecture and leveraging social norms
Tips for Barcelona	Sociocultural: local satisfaction with tourism	Designing choice architecture and leveraging social norms
Handheld tour guide	General	General
Biking leaderboard	Environmental: encourage use of sustainable transport	Increasing pleasure
Parks in/around Barcelona	Environmental: promoting green spaces	
Eco-friendly shops	Economic & environmental: promoting sustainable products	Leveraging beliefs
Traditional Catalan products	Sociocultural: promoting traditional local produce	Leveraging beliefs and increasing pleasure
Sustainable restaurants/local produce	Environmental & sociocultural: highlight sustainable restaurants	Leveraging beliefs
Today's hidden gem	Sociocultural & environmental: identify lesser-known attractions	Increasing pleasure and designing choice architecture
General information	General	General
Share/forum/reviews/recommendations	Sociocultural: increase tourist satisfaction	Leveraging social norms

Content ideation process

Owner/Manager	(Potential) User
<ul style="list-style-type: none"> • Neighbourhoods of Barcelona • Accommodation • Transport (to/from & around) • What to pack/bring • Maps (including restaurants/bars/shops, activities/monuments, water fountains, recycling points etc) • Tips for Barcelona (treat the city like your home) • Handheld tour guide • Biking leaderboard • Parks in/around the city • Locally produced food/sustainable restaurants • Eco-friendly shops • Traditional Catalan stores/products • Treasure hunt/discover today's secret place • General information about the city/recommendations/avoiding the busiest areas & public transport at peak times • Share/tag yourself on social media • Forum/space to share reviews/recommendations/advice 	<ul style="list-style-type: none"> • Information about interesting events • Traditional restaurants serving local cuisine • Barcelona away from the crowds • Local-feeling neighbourhood to stay in • Nightlife and sights of Barcelona • Information about Catalan arts • Driving in the city • Family activities • Child-friendly bars and restaurants • Information about Barcelona's neighbourhoods • Daily life in Barcelona

Content selections

- Information about interesting events
- Traditional restaurants serving local cuisine
- Barcelona away from the crowds
- Local-feeling neighbourhood to stay in
- Nightlife and sights of Barcelona
- Information about Catalan arts
- Driving in the city

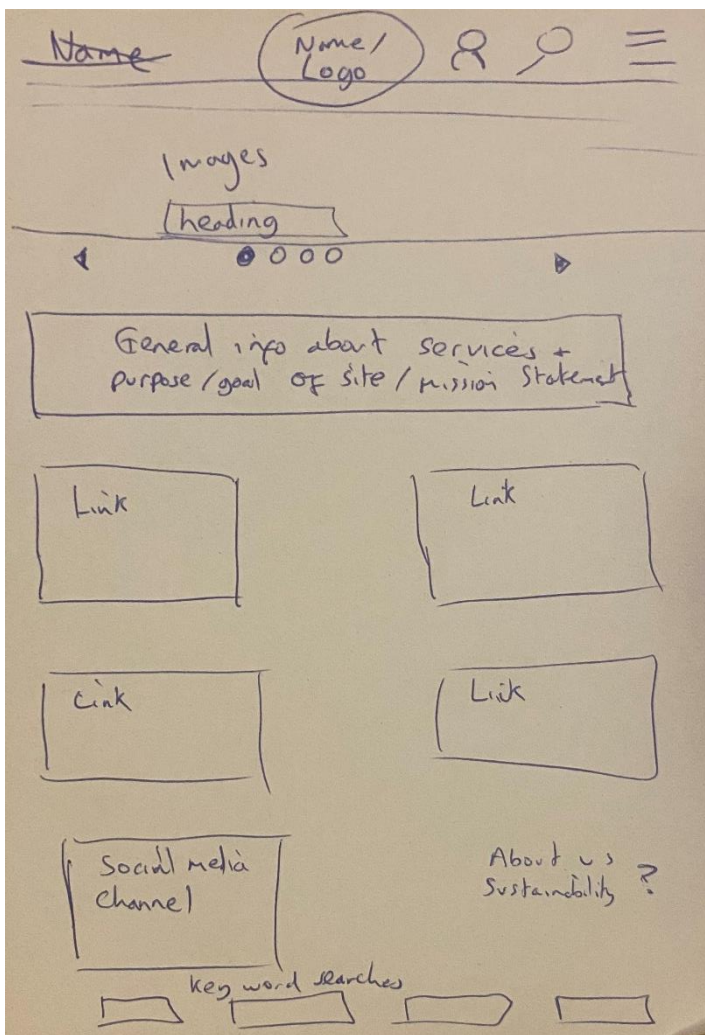
- Family activities
 - Child-friendly bars and restaurants
 - Information about Barcelona's neighbourhoods
 - Daily life in Barcelona
-
- Neighbourhoods of Barcelona
 - Accommodation
 - Transport (to/from & around)
 - What to pack/bring
 - Maps (including restaurants/bars/shops, activities/monuments, water fountains, recycling points etc)
 - Tips for Barcelona (treat the city like your home)
 - Handheld tour guide
 - Biking leaderboard
 - Parks in/around the city
 - Locally produced food/sustainable restaurants
 - Eco-friendly shops
 - Traditional Catalan stores/products
 - Treasure hunt/discover today's secret place
 - General information about the city/recommendations/avoiding the busiest areas & public transport at peak times

1. Barris of Barcelona (Neighbourhoods)
2. Live Like a Barceloní
3. Beyond the Crowd
4. The True Taste of Barcelona
5. Discover Catalan Culture
6. Sustainable Activities
7. Map
8. Getting Around

9. What's On?
10. Things to See
11. Where to Stay
12. Entertainment
13. What to Bring
14. Share
15. Shop Local

Appendix 3

First wireframe sketch



First wireframe sketch

