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Sustainability and Visitor Management in Tourist Historic Cities

Edited by

Rubén Camilo Lois González, Yamilé Pérez Guilarte and
Lucrezia Lopez

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Preface to “Sustainability and Visitor Management in Tourist Historic Cities”

From a cultural point of view, historic cities have a secular legacy that expresses the basis of the community’s identity, while, from an economic perspective, they are linked to the consideration of heritage and culture as drivers of development [1]. In this sense, historic cities are major tourist attractions that lead to an influx of visitors, which threatens their sustainability [2–4]. G. J. Ashworth and J. E. Tunbridge [5] developed the concept of tourist historic cities (THCs) as areas in which urban structure, architecture, and artifacts are used to create heritage assets that are based on place. Historic cities are also “convergent spaces”: They lead to coinciding social behaviors, as various activities take place within their “borders”.

Tourist activity is continually increasing in tourist historic cities. It contributes to local and regional economic development but also creates significant social and environmental problems that are heightened by the increase in the population living in these spaces. Sustainable practices are key factors in reaching balanced economic, social, and environmental development. The concept of sustainable tourism management means regulating and controlling the rate of growth within a destination [6–9]. However, putting sustainability into practice is a complex process, due to the lack of practical tools for measuring the impacts of tourism in all their dimensions. In fact, UNWTO launched the Measuring Sustainable Tourism (MST) project to develop an international statistical framework for measuring the economic, environmental, and social sustainability of tourism. As new sources of data for the analysis of tourism have emerged, this initiative calls for a framework that is based not on the use of traditional data sources but one capable of using and integrating all possible sources to provide the richest picture possible [10]. In this context, Tourist Information Systems or Tourist Observatories must be encouraged as tools for unifying all data sources and establishing a systematic way to monitor tourism indicators that can guide decision-making processes and promote smart cities [11,12].

Challenging and innovative management measures leading to favorable dynamics are required to pave the way for a discourse of socially-sustainable tourism practices [13,14]. Therefore, all public and private territorial actors involved in tourism must work together to integrate cultural, tourism, and urban policies [15–17]. In addition, the participation of local residents in decision-making processes is one of the most widely discussed parameters in debates on the preservation and sustainability of tourism management [16,18,19]. Nevertheless, because the public has not been involved in developing tourism strategies, public administrations are dealing with social conflicts and movements that protest the ‘touristification’ of public spaces, the increased cost of rented housing, the loss of traditional commerce, and other problems. It urges a collective, consensual choice based on the principles of commons creation and governance, care, and conviviality [9].

Taking into account this scenario, the purpose of this Special Issue is to identify new trends and tools in measuring, planning, and managing sustainability and visitor flows in historic cities. It includes seven articles that cover new approaches to studying tourism impacts, historical city management, visitor movement, and tourism sustainability through one literature review and six case studies in the historic cities of Seville and Toledo (Spain), Venice and Matera (Italy), Porto (Portugal), and Popayán (Colombia).

In the first article Carmen Mínguez, María José Piñeira, and Alfonso Fernández-Tabales investigate the impacts of tourism activity by introducing the concepts of physical, environmental, economic, residential, and social vulnerability to which historic cities and their population are exposed when dealing with tourism. They present a practical and applied example of how to measure the degree of vulnerability and how to analyze the social and spatial effects of tourist activity in the historic city of Seville, a consolidated destination in Southern Spain, and also the third-ranking Spanish city in tourism activity after Madrid and Barcelona. For this reason, an urban vulnerability indicator is designed and tested based on a combination of demographic, social, economic, and housing variables, such as population by age, number of unemployed, working-age population, rental prices, and number of rental housing ads. Results show that tourist areas of the historic center of Seville have the highest vulnerability, while less attractive areas for tourists have the lowest vulnerability and do not lose population. This innovative method contributes a quantitative and statistical treatment of a phenomenon that until now had been studied through qualitative or descriptive approach or with less detail at the scale of spatial breakdown.

The second article authored by Inês Gusman, Pedro Chamusca, José Fernandes, and Jorge Pinto addresses the case study of Porto, the second-largest Portuguese city and World Heritage Site, which, in the last 20 years, has experienced significant tourism growth. In this research, the impacts of tourism are also measured through indicators related to tourism, housing, and economic activity, but the main aim is to assess tourist impacts on the cultural value of the city. The contribution of this work is relevant considering the current threats that cultural sustainability is facing because of the growing interest in cultural tourism, which encompasses over 39% of total international tourism arrivals [20]. The results highlight the prevalence of spaces characterized by excessive tourism activity, a loss of the residential function, and overexploitation of cultural values. In this sense, authors noticed an increase of short-term rentals and real state value, as well as a commerce transformation to reinforce services oriented towards visitors, such as the emergence of self-service laundries and souvenirs shops or changes in traditional markets to satisfy tourist needs. The article also advances some policy recommendations to promote strategies oriented towards maintaining cultural values of historic cities, not only as a way to keep a sense of identity and belongingness for the residents, but also because living cultures, value systems, beliefs, and traditions are more and more appreciated by visitors [21].

Dario Bertocchi and Francesco Visentin study the physical and social effects of massive tourism in the historic city of Venice, a very significant case study as it is one of the best examples of overtourism and anti-tourism movements. The authors begin with a description of the current situation of Venice in terms of touristification, especially referring to the social conflicts generated in the society because of the existence of different interests in relation to tourism. A mixed methodology is applied to understand urban transformations that occurred in Venice between 2008 and 2019. A quantitative analysis is developed to study the physical-facility capacity through the application of indicators provided by the UNWTO Measuring the Sustainable Tourism report (MST), such as number and type of tourism facilities, number of residents, and number of tourists. Besides, a qualitative approach is used to collect 6,272 opinions from inhabitants of the historical center of Venice that can assess the social-perceptual capacity. As also noted by I. Gusman et al. in the case study of Porto, commercial and residential structures have significantly changed to adapt to tourist needs. This issue is critical

in Venice where inhabitants are more and more intolerant with uncontrolled mass tourism, leading to social movements that demand the involvement of Venice's residents in tourism planning. D. Bertocchi and F. Visentin conclude with recommendations to policymakers to regulate some issues, for example, in the food and beverage sector, accommodation in Airbnbs, and tourism flows, as well as to reactivate other urban ecosystems, services, and uses beyond tourism.

Knowledge of the opinions of host communities is essential to measure tourism impacts, as D. Bertocchi and F. Visentin address in the case study of Venice. The fourth article of this book provides another experience to understand resident opinions and perceptions of destinations in historic cities. This is the research carried out by Luis Escudero in the historic center of Toledo, which is one of the main cultural tourist destinations in Spain, 75 km south of the capital of the country, Madrid. A quantitative survey is applied to 442 residents and the results are analyzed using descriptive and analytical statistics (factor analysis and non-parametric tests). Findings show an optimistic vision of tourism development, specifically the creation of jobs, although residents also express the feeling of turning the city into a museum, an increase in traffic flow, and pedestrian congestion. They do not consider that tourism affects the cultural heritage or the use of Toledo by the residents. In addition, demographic and socioeconomic characteristics influence the residents' opinions. For example, residents in the historic center have a more negative opinion of tourism than those who live in other residential areas, and homeowners scored tourism development higher than renters. This paper highlights the need for policymakers to understand resident perspectives to get the support of the local community to develop tourism activities while reducing tourism negative impacts.

Information sources to measure tourism impacts have evolved from traditional sources (questionnaires, interviews, and direct observations) to new sources, such as big data technology, which include store cashiers, mobile network operators, social media, web activity, flight reservation systems, financial transactions, traffic loops, satellite images, etc. [22]. In the fifth article, Yamilé Pérez-Guilarte and Daniel Barreiro present a literature review to survey and describe the current main approaches and methodologies to use big data to produce official tourism statistics that support destination management organizations. The research is specially focused on how to measure social, economic, and environmental sustainability. The methodology used is the Systematic Literature Review (SLR) technique. Papers published in Web of Science (WOS) and SCOPUS databases between 1999 and 2019 are examined, together with publications from international and European organizations. The authors highlight that only ten of a potential 180 papers refer to the use of big data in tourist statistics, which demonstrates that research in this field is still relatively new. Wikipedia, Facebook, Twitter, or Instagram and geotagged photos data from Flickr are the most common sources of data. Besides, the traditional separation between academia, public authorities, tourist companies, and technological centers is evident, as half of the initiatives to create tourist information systems using big data came from an academic environment. This paper proves that big data can cover the traditional gap of measuring tourism sustainability by proposing indicators, especially those with geographical and temporal granularity.

In the sixth article, Ana Muñoz-Mazón, Laura Fuentes-Moraleda, Angela Chantre-Astaiza, and Marlon-Felipe Burbano-Fernandez compare the use of traditional information sources (questionnaires) with technological ones, specifically tourist cards, global positioning system (GPS), and near field communication (NFC). The objective of the study is to determine

the most precise method to obtain data on tourist movement in the historic city of Popayán. The city is located in the south of Colombia, 596 km from Bogota D.C with a cultural tourist vocation, but is still in the phase of tourist development. Each tool is applied during the Holy Week of the 2011 (tourist card), 2012 (survey), 2013 (GPS), and 2015 (NFC). A total of 1,346 movements are recorded in the 36 resources identified within the tourist offer. For the research, a combination of tools such as GPS Visualizer tool, Google Maps, and R statistical software, and descriptive analyses are used. The results indicate that questionnaires require a lower technological infrastructure, but, on the contrary, they depend on tourists' willingness to answer the questions, and in their ability to remember visited sites at the destination. The tourist card can collect tourist profiles and the exact date and hour of their visit to the different tourist attractions. GPS technology provides the most accurate results. However, NFC technology offers more extensive information, thus allowing the extraction of data about the visited sites. The paper contributes to a better understanding of the different tools to study tourist movements and encourages destination management organizations to make the most of these tools to improve tourism planning and management.

Finally, in the seventh and last article Antonietta Ivona, Antonella Rinella, and Francesca Rinella adopt a historical perspective based on a qualitative and interpretative methodology and the use of information and communication technologies. The research addresses the "virtual" territorial reconfiguration developed in the Italian Southern city of Matera, also so-called "Città dei Sassi" (The City of the Stones) due to its morphology and peculiar urban landscape. Specifically, the authors analyze the territorial impacts that an important cultural event, such as the appointment as the European Capital of Culture 2019, has on the city. In this case, the main focus of interest is the tourist historic city proper, highlighting that, despite its troubled history, the city of Matera was able to transform "The Sassi" (The Stones), originally considered as a "national shame", into the international urban identification for the 2019 European Capital of Culture. In contrast to the other case studies, such as Seville, Porto, and Venice, Matera is a smaller city whose strength resides in being a proper example of a resilient city that has decided to take advantage of its unique urban-caved landscape to claim its localization on the international map. The inevitable and necessary recovery of the "hard city" that has been taking place since the 1960s, as well as the following tourist and international promotion enhanced by its UNESCO World Heritage since 1993, are being associated with a post-contemporary "soft city". In this last case, local stakeholders and residents cooperate to foster bottom-up territorial planning that finds its virtual space on the world wide web. Apart from highlighting the beginning of the virtual territorial reconfiguration of a historic city, this article underlines how content produced and diffused by stakeholders engenders a renewal of the symbolic, material, and organizational realities of group municipalities, so that they can function as a connected network to promote sustainable tourism.

This book is expected to support tourism destination organizations with practical tools to measure social, environmental, and cultural tourism impacts, thus promoting sustainable management of tourist historic cities. In addition, the authors strongly hope that the methodologies, findings, and discussions presented in their papers and collected in the book encourage further research committed to theoretical and empirical studies.

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Rubén Camilo Lois González, Yamilé Pérez Guilarte, Lucrezia Lopez

Guest Editors

References

1. Castro Fernández, B.; Lois González, R.; Lopez, L. Historic city, tourism performance and development: The balance of social behaviours in the city of Santiago de Compostela (Spain). *Tour. Hosp. Res.* **2015**, *16*, 282–293, doi:10.1177/1467358415578473.
2. Barrera, D.; Arista, L. Castillo; Azevedo, E. M. Tourist use of historic cities: Review of international agreements and literature. *Int. Huma. Stud.* **2014**, *1*, 1–11. Available online: http://ihs-humanities.com/journals/vol1_no2_july2014/1.pdf (accessed on 28 March 2020).
3. Massiani, J.; Santoro, G. The relevance of the concept of capacity for the management of a tourist destination: theory and application to tourism management in Venice. *Rivista Italiana di Economia Demografia e Statistica* **2012** *LXVI*, 141–146. Available online: http://www.sieds.it/listing/RePEc/journal/2012LXVI_N2_10.pdf (Accessed on 28 March 2020).
4. Timothy, D.J. *Cultural Heritage and Tourism: An Introduction*; Channel View Publications: Bristol, UK, 2011.
5. Ashworth, G.J.; Tunbridge, J.E. *The Tourist-Historic City*; Belhaven Press: London, UK, 1990.
6. Canavan, B. J. Sustainable tourism: development, decline and de-growth. Management issues from the Isle of Man. *J. Sustain. Tour.* **2013**, *22*, 127–147.
7. Goodwin, H. The Challenge of Overtourism. Responsible Tourism Partnership Working Paper 4, October 2017. Available online: <https://haroldgoodwin.info/pubs/RTP'WP4Overtourism01'2017.pdf> (accessed on 28 March 2020).
8. Gössling, S.; Hall, M. An Introduction to Tourism and Global Environmental Change. In *Tourism and Global Environmental Change*; Gössling, S., Hall, M., Eds.; Routledge: London, UK, 2006; pp. 1–33.
9. Saarinen, J. Critical Sustainability: Setting the Limits to Growth and Responsibility in Tourism. *Sustainability* **2014**, *6*, 1–17.
10. UNWTO. Measuring Sustainable Tourism: A Call for Action—Report of the 6th International Conference on Tourism Statistics, Manila, Philippines, 21–23 June 2017 | Statistics. Available online: <https://www.e-unwto.org/doi/pdf/10.18111/9789284418954> (accessed on 28 March 2020).
11. Agyeiwaah, E.; McKercher, B.; Suntikul, W. Identifying core indicators of sustainable tourism: A path forward? *Tour. Manag. Perspect.* **2017**, *24*, 26–33, doi:10.16/j.tmp.2017.07.005.

12. Fernández-Tabales, A.; Foronda-Robles, C.; Galindo-Pérez-de-Azpillaga, L.; García-López, A. Developing a system of territorial governance indicators for tourism destinations. *J. Sustain. Tour.* **2017**, *25*, 1275–1305, doi:10.1080/09669582.2016.1260136.
13. Joppe, M. Tourism policy and governance: Quo vadis? *Tour. Manag. Perspect.* **2018**, *25*, 201–204, doi:10.1016/j.tmp.2017.11.011.
14. Saarinen, J. Traditions of sustainability in tourism studies. *Ann. Tour. Res.* **2006**, *33*, 1121–1140, doi:10.1016/j.annals.2006.06.007.
15. Landorf, C. A framework for sustainable heritage management: A study of UK industrial heritage sites. *Int. J. Herit. Stud.* **2009**, *15*, 494–510, doi:10.1080/13527250903210795.
16. Lusetyowati, T. Preservation and conservation through cultural heritage tourism. Case study: Musi riverside Palembang. *Procedia-Soc. Behav. Sci.* **2015**, *184*, 401–406, doi:10.1016/j.sbspro.2015.05.109.
17. Pérez Guilarte, Y.; Lois González, R. C. Sustainability and visitor management in tourist historic cities: the case of Santiago de Compostela, Spain. *J. Herit. Tour.* **2018**, *13*, 489–505, doi:10.1080/1743873X.2018.1435665.
18. Jones, P.; Evans, J. Rescue geography: Place making, affect and regeneration. *Urban Stud.* **2012**, *49*, 2315–2330, doi:10.1177/0042098011428177.
19. Nyseth, T.; Sognnaes, J. Preservation of old towns in Norway: heritage discourses, community processes and the new cultural economy. *Cities* **2013**, *31*, 69–75, doi:10.1016/j.cities.2012.05.014.
20. UNWTO. *Report on Tourism and Culture Synergies*; UNWTO: Madrid, Spain, 2018.
21. Richards, G. Cultural tourism: A review of recent research and trends. *J. Hosp. Tour. Manag.* **2018**, *36*, 12–21.
22. Demunter, C. *Tourism Statistics: Early Adopters of Big Data*; Publications Office of the European Union: Luxemburg, 2017.

Article

Social Vulnerability and Touristification of Historic Centers

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Abstract: Historic centers have suffered different processes of neglect, occupation, segregation, gentrification, and touristification as a result of changes in demand and policies. Currently, they are going through a homogenization process motivated by tourist pressure, which is causing the expulsion of the local population; this is a common topic of interest for media and political agendas, which requires scientific analysis. This research aims at identifying the winning and the losing tourist groups in the historic center of Seville. It is structured in two parts: a conceptual one based on the bibliographic review with which one wants to know how the current society responds to tourist pressure through defining and characterizing the processes of substitution of uses and inhabitants, and another empirical one in which the analysis of statistical indicators (demographic, economic, and residential) treated with Geographic Information System (GIS) allows us to measure the degree of existing vulnerability and analyze social and spatial effects caused by the tourism in Seville.

Keywords: vulnerability; right to the city; tourism rents; Seville

1. Introduction

The traditional city is subject to continuous transformation processes. Its consideration as an item of consumption has resulted in a number of urban transformations meant to attract more consumers/visitors. Administrations have accordingly adjusted to the rationales of the (property and tourism) market, which eventually becomes the driving force for processes of urban regeneration and renewal, while the guidelines for urban planning and residents' social wellbeing and needs remain on the back burner.

The city has shifted to being managed as an enterprise, running the risk that, in some sectors such as historic centers, their multiple functions, complexity, and vital nature are lost until reaching a point in which the neighborhood is not inhabited but rather consumed. As a result, the traditional city becomes a decorative wrap for a standardized social life with an increasingly homogeneous landscape and a supposed urban lifestyle characterized by widespread repetition of standard scenes and products [1]. The urban image has been trivialized, which hides the reality experienced by neighborhood residents, sometimes close to areas heavily frequented by tourists in which the absence of urban improvements, joblessness, social unrest, or evictions have plunged the inhabitants into a situation of vulnerability—a vulnerability that local administrations have kept in the background for decades.

In Spain, it was not until the year 2011 and the 15th of May movement that attention began to be paid to them. At the time, citizens upset about their economic situation, austerity policies, and corruption cases began to claim the right to create the city, to decide, and to participate [2]. They wanted

a new, more transparent and effective urban governance model that would guarantee basic rights (housing, education, and health) that were being undermined by the austerity plans. The attainment of municipal power by new left-wing forces emerging from the citizens' movement in 2015 brought a bit of hope to the social sectors that bore the brunt of the crisis. Cities such as Barcelona, Madrid, Cádiz, A Coruña, or Santiago de Compostela became laboratories where the new format for managing the city and ensuring citizen participation in its projects were tested. However, numerous problems arose—excessive red-tape, the difficulty of changing inherited work synergies, the lack of qualified personnel, the lack of budget funding, tensions within governing political coalitions, etc.

One legislative term later, unemployment and a shortage of jobs and decent housing continue to be problems for Spanish cities. Consequently, in 2018, 26.6% of the Spanish population was still in a situation of vulnerability [3]. A vulnerability in which sectors such as historic city centers have increased due to the appearance of new factors such as tourism, which generates segregation processes (resulting from higher housing prices) and discontent among residents, whose lower income segments end up being expelled.

In this article, we first approach the concept of vulnerability before analyzing how it is impacted by tourism activity. We focus on residential vulnerability, paying close attention to the problem of tourist rentals. To that end, we use the historic center of Seville as a case study to see just how far tourism aggravates the existing situation of vulnerability by means of gentrification and residential filtering processes.

2. Vulnerability: The Concept and Its Determinant Factors

The United Nations indicates that the concept of social vulnerability refers to a situation where the population is exposed to certain risks and uncertainties but has little ability to protect or defend itself against them and deal with their negative consequences [4].

As in other European countries, in Spain, the crisis resulting from the crash of the real estate bubble in 2008 and its prolonged effects over the next decade caused the middle class to see their living conditions worsen. A high percentage of the population saw their income fall because they were in a situation of unemployment or had lost their homes and saw their basic rights (education, health, and housing) shaken due to austerity policies imposed by the government to control spending and rein in public debt [5].

Many researchers have echoed the problem, attempting to measure its intensity and ascertain which cities and districts require more attention by administrations. Particularly noteworthy internationally are the works by the following: Rainer Wehrhahn [6], on the production of urban spaces in crisis contexts or the negotiation of dispossession; Penny Koutrolidou [7], who discusses how crises and the urban intersect and affect citizenship rights and practices in different cities in Southern Europe; Emma Heffernan, John McHale, and Niamh Moore-Cherry [8], who explain how the impact of austerity unfolded and how it has been experienced by different groups within society in Ireland; Michael Janoshka [9], with his studies on the housing problem in cities such as London or others in Greece, as well as the topic of gentrification and resistance in Latin American cities; and Amendola, Rossi, and Vecci [10], who examine the phenomenon of vulnerability and poverty in Italy. Standing out in Spain is the work by R. Méndez and S. Sánchez [11], who studied the deep and long-lasting decline in which Spanish cities are currently immersed; they end up calling them “shrinking cities”. For their part, M. J. Piñeira together with J. M. Trillo, R. Lois, and J. M. González [12,13] analyzed the social segregation processes manifested in those cities and the need to conceive measures that promote a better standard of living and more sustainable urbanism and that encourage more participative democracy. Also interesting is the research conducted by Alaminos, Penalva, and Domenech [14] on community reactions to the economic and the social crisis, such as charity, anonymous donations, food banks, community kitchens, organized occupation of housing, or interchange networks; the work by Parreño and Dominguez in collaboration with other authors [15,16] on vulnerability with respect to affected groups such as immigrants; or that of Carman, Vieira, and Segura [17], who

classified different categories of vulnerability, some already known (socio-demographic, socioeconomic, residential, subjective) and others harder to discern, such as hidden (invisible) segregation or indolence (self-segregation). Finally, O. Nel-lo [18,19] explained the social problem existing in Catalan cities and urban districts in crisis with situations of substandard housing, overcrowding, and problems accessing basic services.

Worthy of special attention are platforms such as the Urban Vulnerability Observatory promoted by the Ministry of Development, which provides an Atlas of Urban Vulnerability in Spain for the years 2001 and 2011 [20], and specific in-depth studies on vulnerability in major Spanish cities for the years 1991, 2001, and 2011 [21], whose most prominent tool is a Catalogue of Vulnerable Neighborhoods. These publications provide an overview of the state of urban vulnerability at national and intra-urban scales, which can be complemented by the Atlas of the Crisis [22].

All of them have two approaches in common: (1) they develop an analysis methodology based on the combination of multiple indicators, among which are the unemployment rate, the aging index, the degree of literacy, the unoccupied buildings, and the percentage of families living in buildings in bad conditions; and (2) they consider that vulnerable neighborhoods are places where those difficulties accumulate determined by the higher presence and the combination of socio-demographic, socioeconomic, residential, and subjective factors.

That is why most researchers classify vulnerability in four major blocks [12,18,20,23–25].

- Environmental vulnerability: linked to excessive water and power consumption, ineffective treatment of pollution and solid waste, and activities that endanger harmonic and environmentally sustainable urban development in which the landscape's identity is preserved and consolidated;
- Economic vulnerability: linked to higher rates of joblessness and the decline of the construction sector that sustained the economic model before the crisis. The most affected groups are young people, who are forced to keep studying (without a vocation or to occupy their time) or emigrate abroad in search of better opportunities, and the long-term jobless and foreigners, above all those who had earned a living with precarious contracts and are now unemployed;
- Social vulnerability and inequality in access to goods and services: this means a lower standard of living in certain sectors of society owing to problems accessing the labor market and appropriate housing, education, health, leisure, consumption, social participation, environmental quality, etc;
- Residential vulnerability: given the impossibility of accessing housing in line with personal economic resources, a shortage of housing to meet needs and the lack of stability and/or security resulting from continual use of a dwelling.

One might think that the slight improvement in macroeconomic terms recorded in Spain since 2013 and the recovery in some indicators means a reduction in vulnerability levels. However, the opposite occurred because the economic recovery was not accompanied by an equivalent residential, social, and environmental improvement. First of all, there has been a worrisome upsurge in pollution levels in 26 Spanish cities, among them Bilbao, Zaragoza, Valencia, San Sebastián, Alicante, and Seville [26]. It is consequently a problem that no longer affects only the largest cities. According to the 8th Report on Poverty in Spain [3], 8% of the population suffers from cold at home (in 2009, it was 7.2%), a quarter of those over 25 years old do not have their own income or earn less than 535 Euros a month, and 10% of workers continue to lose 25% of their income each year due to precarious job conditions. Additionally, regarding the housing problem, it continues to be the second aspect that most concerns the population in cities such as Barcelona, Madrid, and Palma, where rents have shot up. On the other hand, according to judiciary statistics, evictions continue, with a total of 368,591 recorded since 2013, of which 58.9% were for non-payment of rent and 41.1% for non-payment of the mortgage.

We can consequently state that vulnerability is still present in many districts of our cities, including the historic centers, and that the social cohesion policies promoted by municipal governments have generally had less impact than expected.

In this context, some cities have seen tourism as the solution to their problems, because it generates more employment and revitalizes urban sectors such as the historic centers. However, some authors have warned about the social profitability of its benefits, its impacts on the environment, precarious jobs, and higher prices (especially rents), the trivialization and the loss of identity of the area, as well as unaccounted public spending or the opportunity cost of tourist specialization that subtracts resources from productive diversification (Figure 1).

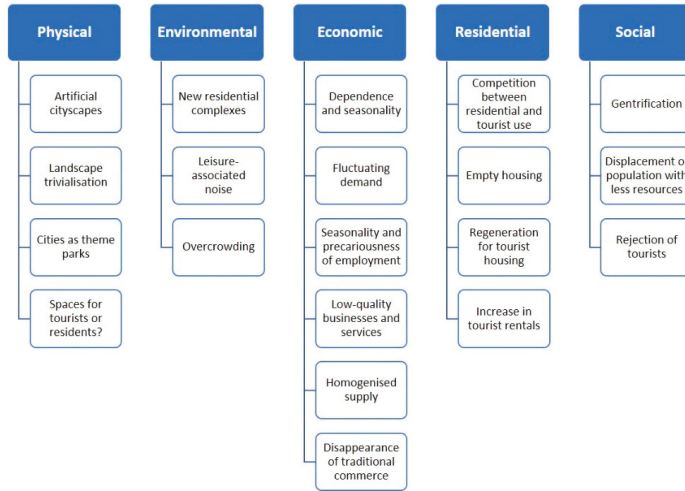


Figure 1. Impacts of tourism activity on historic centers. Source: own production.

The population residing in historic centers has consequently been subject to threats and risks of an activity beyond their control without mechanisms to mitigate them. In a short period of time, they have seen how tourists are shaping their neighborhood and determining the uses and the functions of spaces and infrastructures so that significant budget outlays are destined for them. All this is based on the desires of visitors, which are placed before the needs of the resident population. Tourism activity gradually ends up competing with the day-to-day life of the historic centers with the rights of tourists prevailing over those of residents. The result is the commoditization and the denaturation of local symbols and the appropriation of spaces (public squares, businesses, streets) by tourism activities, short-circuiting the continuity of traditional practices [27] along with some processes of invasion/succession, gentrification, and residential filtering that entail a process of population replacement, the introduction of an outsider group, and the exit of the original inhabitants [28].

In this regard, there is a danger that residents will have a negative perception of tourists, of the neighborhood where they live, and of their own social conditions, which may lead to a feeling of discontent and may or may not correspond to some objective vulnerability indicators. Thus, it is fitting to not only speak of environmental, economic, residential, and social vulnerability but also of psychosocial vulnerability.

In the following section, we specifically approach one of the factors generating more vulnerability for residents in historic centers—tourist rentals. We discuss what the phenomenon consists of, which groups are benefiting from it, and which are suffering its negative effects.

3. Rental of Tourist Housing and Its Impact on Urban Dynamics

The huge impact of the so-called sharing economy on the tourism sector is currently a well-recognized reality [29–32]. Beyond the effect on other activities (such as automobile transport or tourist guide services), the phenomenon with the highest economic, social, and spatial impact doubtless

corresponds to the rapid and massive expansion of housing rentals for use by tourists supplied via online platforms (Airbnb, HomeAway, Housetrip, etc). Indeed, it can be stated that it has become the decisive phenomenon in the functional transformation of central zones of the world's major cities, which have shifted from being residential and commercial to becoming spaces devoted to tourist lodgings with higher intensity depending on the tourist attractions present in each city. The intensity and the speed of those platforms' penetration, especially Airbnb as a hegemonic company in the activity [33], has, from the standpoint of the theory of disruptive innovation [34], led to that company being labeled the best example of such disruptive innovation in contemporary tourism activity [35]. In less than half a decade, it has shifted from being a niche product (for young people or experienced tourists seeking a lodging type more integrated in the local community) to being a conventional product open to mass demand.

This phenomenon has been dealt with extensively in recent scientific literature. A significant part of the production concerns legal [36], economic [37,38], and business-related [39–41] aspects. Contributions that consider this activity to be a new form of tourist experience linked to direct contact with the local population and distanced from the accommodation formalities in the regulated offering are also frequent [31,42].

From a spatial perspective, there is already a substantial group of insights based on analysis of the location of such housing in cities and its relationship with other elements such as tourism resources or the hotel offering. Among those contributions, the following can be cited: Arias and Quagliari [43], on the location of lodgings offered in Airbnb and their relationship with areas of high hotel presence in Barcelona; Gutiérrez-Puebla et al. [44], with analysis of the spatial correlation between the offering of Airbnb, hotels, and photos uploaded to the Panoramio platform (also in Barcelona); Dudas et al. [45], who studied the concentration of Airbnb offerings compared to the population's age, the available real property, and the closeness of tourism resources in New York City; or Yrigoy [46], who studied the supply's concentration in the historic center of Palma de Mallorca. In more detail, Ioannides et al. [33] conducted an in-depth analysis of the case of the Lombok neighborhood in Utrecht.

One of the most fruitful research lines focuses on studying the phenomenon's social repercussions on urban populations, especially with respect to distortion of the property market boom (especially rental prices) and gentrification and touristification of urban districts [47]. These processes were analyzed in different cities such as New Orleans [48], Los Angeles [49], San Francisco, Valparaíso [50], and the previously mentioned New York, [45]. Other studies hold that these processes are very complex and that tourist housing rentals can only explain part of the price rises [51]. The phenomenon is also analyzed from angles that are more specific to or focused on particular aspects of the respective processes, such as: (1) the so-called commercial gentrification or the disappearance of traditional businesses for residents and their replacement by franchised establishments for tourists [52,53]; (2) the exploitation of the less-qualified population working in the activity [54]; or (3) the role played in these processes by the concentration of the so-called creative classes in certain sectors of the city who act as a vanguard or precedent for touristification [55]. Finally, there is also a focus on diagnosing its negative effects on the hotel industry at destinations where rental housing ends up competing for the same overall demand [56]. The papers that compare and even quantitatively estimate the negative effects (on both income and jobs) for local societies owing to this transfer of demand from the hotel offering to rentals are of particular interest (see the estimate for Spain's Costal del Sol done by Fuentes and Navarrete [57]).

The focus assumed by this article is accordingly based on approaching the phenomenon by considering the assessment of its positive and negative effects and, more specifically, the assessment of groups or activity segments that it either benefits or harms. In this respect, the following can be said to benefit from the phenomenon:

- First, tourist demand itself, which now has the possibility of accessing lodgings cheaper than the traditional supply at such destinations by means of online platforms that are easy to access and use with a very diverse and large offering;
- The local owners of housing that can be included in the rental market who see the value of their property assets boosted and their income rise substantially through the supply of new housing or

the switch from rentals for long-term residential use to tourist rentals for short stays with high user rotation;

- Agents who act as intermediaries between suppliers and prospective users, as indicated in the above points, referring to the companies behind the online platforms and the local property agents who have gradually oriented their activity to managing a more or less large group of dwellings, acting as intermediaries between the individual owners, the platforms, and the end users;
- Investors in property assets outside the destination, often international investment funds that acquire buildings in areas of tourism interest for the express purpose of renting them out [49,58]. The influence of these agents on the activity has grown as the high profitability obtained from the investments has been demonstrated. Indeed, various studies point out that major global property sector agents have shifted their activity from the purchase of property assets for subsequent sale to rental offerings [59]. This is a key factor for understanding the extent of the phenomenon, at least in major European and North American cities. In this respect, the two major multinational investment funds now dominating the Spanish market can be cited as Blackstone Group and Cerberus Capital Management, both based in the USA;
- The construction sector—above all, the part that specializes in renovating homes—as real property in historic town centers is often quite old and hence requires renovation work before being placed on the rental market;
- Establishments that sell food, given the visitors' usual practice of acquiring food to be consumed in the rented housing;
- Tourism-related companies such as restaurants, guide services, or souvenir shops, which see their earnings rise due to the higher tourist influx.

The following stand out among the groups harmed by the phenomenon:

- Residents of neighborhoods that experience the phenomenon, who see their day-to-day environment change to become a tourism space with a high rotation rate of visitors, accompanied by problems stemming from their mass arrival [60,61], such as noise, inappropriate schedules, perception of insecurity due to unknown people transiting buildings, deterioration of their common areas, changes in the type of nearby business establishments, modification of the traditional urban scene, etc;
- Renters, a resident group that can be labeled the one most affected by this process in which the problems of vulnerability that constitute the core theme of this article are concentrated. The conflict situation is generated due to higher rents in the city's tourist zones owing to the higher benefits from offering those buildings for short-stay tourism rentals instead of long-term residential rentals [62]. These higher prices are leading to the expulsion of rental residents in such areas who cannot pay the higher rents that owners apply to their contracts. They are consequently displaced to other, more peripheral areas of the city with lower prices. The arrival of these displaced groups in a first peripheral zone likewise raises the respective rents, displacing in turn some of its population to another more peripheral zone, and so on [63]. Ultimately, a wave of higher rents is generated, even in areas not affected by touristification, with the result that the residential rental market throughout the city is generally more expensive;
- Companies and workers involved in other lodging modalities, especially hotels. In the early stages of the phenomenon, it was believed that tourist rental housing would not directly compete with hotels, as it addressed other demand segments that sought differential features such as direct contact with the local population [42]. However, the currently prevailing analyses indicate that the price factor plays the decisive role when it comes to choosing one or another offering [64], whereby it can be stated that they directly compete against the regulated offering. Part of the hotel sector will thus find it impossible to compete against the comparatively low prices of rental housing, diminishing their ability to attract the demand and their profitability. This aspect is especially significant for local economies and populations, as all studies [56,57] have shown that

the economic (effects caused in other sectors) and the social (regarding generation and stability of jobs) impacts are higher in hotel-related activity compared to that of tourist rental housing;

- The state as a whole, represented in the intake of resources via taxation for public finance. One of the repeatedly indicated problems of tourist rental housing [65] has been their fiscal opacity due to the specific features of occasional activity in private homes scattered around the city with scant regulation (until recently) and that are very hard to properly inspect. This has led to very little rigor regarding compliance with tax obligations, with the hotel sector frequently issuing accusations of unfair competition. Yet, once the initial stage of its sudden emergence was over, and given the extent of the phenomenon, public administrations around the world have been striving to impose tighter control over that fiscal opacity, improving the respective collection mechanisms. In the Spanish case, Royal Decree 1070/2017 of 29 December requires that intermediate platforms must identify the building, its owner, the number of days the dwelling will be used, the amount received, and the respective means of payment. This took force fully in 2019, whereby it is still too early to assess its effectiveness;
- Traditional businesses, the reverse of what was indicated for the tourism-oriented establishments that have benefited. Traditional businesses are doubly affected by higher rental prices due to the higher demand for space, the payment capacity of large franchise chains that settle in the respective districts, and the gradual replacement of the traditional local population by high-rotation tourist demand, whereby they lose their traditional clientele, making it hard for them to survive [53,66]. The end result is the disappearance of a large part of the traditional commercial offerings in those neighborhoods, which in turn affects the vulnerability of their resident population, who lose the commercial fabric that serviced their daily lives beyond the effects derived from trivialization of the urban scene that accompanies these replacement processes;
- Finally, reference must be made to the negative effects on elements that do not belong or cannot be assigned to specific groups, rather affecting the whole community. These are elements such as the cityscape, the tangible historic heritage (when the ability of monuments or spaces to accommodate tourists is exceeded), or the intangible heritage [understood to be citizens' ways of life and manners relating to their city, sometimes resulting from identity-based processes that developed over centuries (traditions, festivals or social habits in public spaces)], which are trivialized or changed as residential districts are transformed into tourism spaces [67].

Based on the above description of those who stand to win or lose due to the phenomenon, this investigation focuses on the resulting conditions for local populations of the tourism destination apart from other considerations such as the general future of the activity, the evolution of national or regional gross domestic product (GDP), or the level of the territory's ability to attract outside investment. From this standpoint, most of the aforementioned studies consider that the common good of the pre-existing local populations is one of the major sacrifices as the phenomenon expands [53,68,69], and that, given the extent of the phenomenon and its effects, it cannot be conceived (or dealt with by public administration) as being a simple economic relationship between private individuals because it notably affects general aspects of the city's life [70]. For that reason, increasingly more regulations are being approved. These aim to regulate (if not restrict) tourist rental housing, and all of them are based on the basic principle of placing the local population's needs—the right to decent housing among them—above the legitimate profit-making goals of the agents involved. Notably, in the Spanish case in this respect are the Special Urban Lodging Plan (PEUAT) approved in 2017 in Barcelona and the Special Plan for Regulating Third-Party Use in the Accommodation Category (PEH) approved in 2019 in Madrid.

Tourism's presence is therefore added to a known list of phenomena, such as access to and quality of housing, mobility [71], and security or services, among others, which have caused displacements in search of spaces that better fit the socio-labor conditions, even attaining what has been called the geography of opportunity [72].

4. Seville: A City Consolidating as a Tourist Destination

The city of Seville was chosen as the case study for this research due to its significance as a tourist destination (as is described further on) and the intensity and the speed of the recorded changes. Seville is the capital of the Autonomous Community of Andalusia (Figure 2), the most populous city in southern Spain (688,711 inhabitants in 2018, according to the Municipal Register), and Spain's third-ranking city in tourism activity after Madrid and Barcelona.

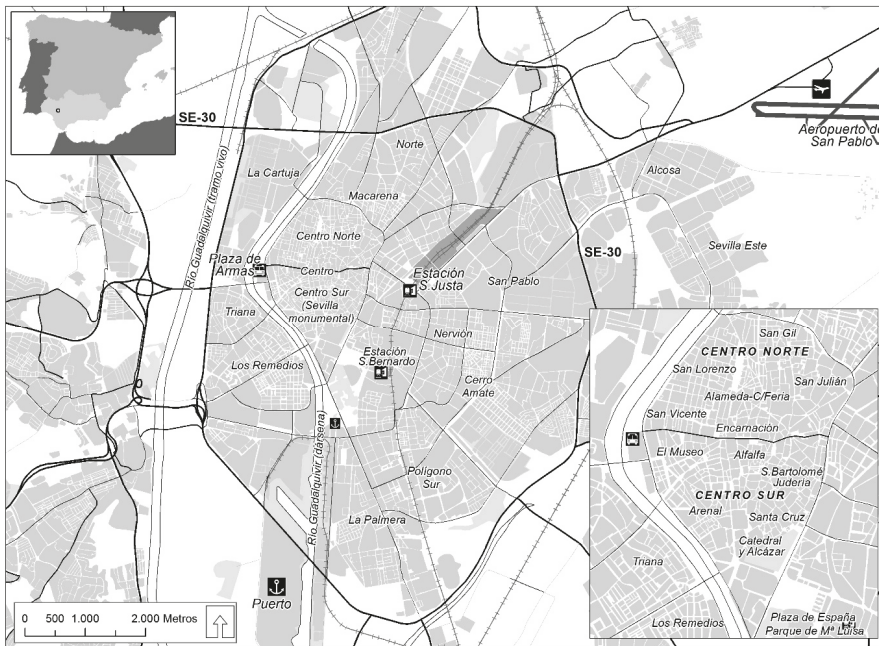


Figure 2. Location of the city of Seville and its historic center. Source: own production.

In recent years, it has experienced rapid growth of tourism activity. Its respective activity levels were already high; since the early 20th century, it has received high tourist influxes due to its heritage resources [73]. However, the increase recorded in the last decade in the context of recovery from the crisis has surpassed all previous periods, as shown in Table 1, which uses overnight stays recorded in hotel establishments as an indicator due to its statistical reliability uses. As can be seen, the annual average increase during the period 2014–2018 reached 9.08%; for overnight stays generated by foreign visitors, it rose to a very considerable 12.62% annually.

Table 1. Overnight stays in hotel establishments in Seville (2010, 2014, 2018).

	2010	2014	% Avg. Annual Increase 2010–2014	2018	% Avg. Annual Increase 2014–2018
Spanish	1,566,614	1,755,507	3.01	2,066,734	4.43
Foreigners	1,766,253	2,297,922	7.53	3,458,315	12.62
Total	3,332,867	4,053,429	5.40	5,525,049	9.08

Source: National Statistics Institute.

This rapid increase can be noted in many other indicators, such as airport passenger arrivals, number of hotel accommodations, restaurant establishments, or visits to major landmarks. All figures

converge on an undeniable reality—the city is undergoing a period marked by the most growth of tourism activity in its entire history, surpassing even what was experienced during the most important event to occur in the city, the 1992 Universal Exposition.

The growth of tourism activity is not only reflected by the statistical data; an enlargement of the city's tourism space has also occurred, understood to be the area that experiences a notable presence of tourist companies and visitors [74]. The most significant expansion direction has been within the historic city center, from the traditionally visited southern half toward the northern half, comprising working-class neighborhoods distant from tourist flows until the beginning of the 21st century.

These recent phenomena are presented as the culmination of a much longer process that affects the city's traditional popular districts. These neighborhoods (Triana, the Alameda de Hércules and the northern part of the historic center taken together, and San Bernardo) have been experiencing a process of regeneration and urban and social transformation largely sponsored by the public administration (e.g., the San Luis-Alameda Urban Plan from 1994) since the 1990s [75]. The results have been a process of replacement of the original resident population, i.e., the working (and in some cases, the marginal) classes, by upper-middle-class residents. At the same time, and especially in the northern part of the historic center, the so-called "creative classes" have been settling [76]. Altogether, this has culminated in a far-reaching social transformation of those sectors, which some authors have called a clear example of gentrification [77].

After this stage, which can be framed between the last decade of the 20th century and the first decade of the 21st century, recent impacts of the aforementioned touristification have occurred in these spaces. The impacts are manifested by the proliferation of tourist rental housing, the replacement of traditional businesses by others oriented towards tourist demand, and the rapid increase in residential rents. The sum of these factors has resulted in a second process of population expulsion, now involving the middle and the creative classes (generally young people who live in rental housing) being displaced to more peripheral and cheaper areas of the city. The central parts are therefore left to residents with higher economic capabilities and to high-rotation tourist accommodations [78].

In Seville, this situation has led to the emergence of heated debate in news media and academic circles. The interest focuses on the effects these dynamics are generating, the resulting city model, and the right to the city [27], understood as being the need to build a city in accordance with the needs of its residents and not its visitors. Furthermore, incipient movements and social platforms resisting the touristification of Seville have begun to appear [79], such as the assembly group Cactus (<https://cactusevilla.wordpress.com/>) or the #SetNet network, in which a group of European cities (including Barcelona, Palma de Mallorca, Málaga, Seville, Girona, the Canary Islands, San Sebastián, and Pamplona) promote activities against the mass influx of tourists. One of them is the founding manifesto against such touristification. It highlights tourism-derived problems such as increased precariousness and reduction of the right to housing due to the difficulty of access caused by uncontrolled rent increases, the transformation of local commerce, or the generation of waste.

5. Objectives and Methods

This was an eminently quantitative investigation that aims to accomplish the following objectives:

- To delve into the concept of vulnerability associated with the proliferation of tourist rental housing (TRH) as a new interpretation for assessing the effects of tourism's growth in historic town centers, the aim being to thereby progress from a theoretical concept to a practical instrument to assist management;
- To design an urban vulnerability indicator associated with TRH based on a combination of demographic, social, economic, and housing variables;
- To test, in reality, the indicator's possibilities by applying it to the historic center of the city of Seville.

To that end, an important review of the current literature on urban vulnerability, urban tourism and, more specifically, tourist rental housing was first carried out. The result was a theoretical approach to the problem, the factors that determine it, and the corresponding winning and losing groups.

An indicator of social vulnerability associated with TRH was then designed by combining socioeconomic and housing variables (Table 2). These choices were justified based on bibliographical readings, the consultation of platforms specializing in vulnerability such as the Observatory of Urban Vulnerability in Spain, and contributions from experts. The experts met in Santiago de Compostela in October 2018 to participate in the roundtable on Citizen Participation and Resilience during the seminar on New Regional and Urban Governance Models in the 21st Century. Among them were representatives from the Regional Federation of Madrid Neighbour Associations, the Anti-Eviction Platform of Pontevedra, the European Anti-Poverty Network, and the non-profit organization (NGO) Manos Unidas—Santiago.

Table 2. Variables and sources.

Variable	Information/Data	Date	Source
Socioeconomic	Population from 2015 (year of the TRH boom) until 2018 (last year for which complete information is available). Population over 65 years old (senior citizens). Population between 35 and 50 years old. Population between 20 and 35 years old (young adults). Migrant population from Africa and Latin America.	2015–2018	National Statistics Institute
	Number of unemployed. Working-age population (19–69 years old).	2017	National Statistics Institute Longitudinal Population Database of Andalusia of the Andalusian Statistics Institute
Rental housing	Rental price in Idealista ads (May and June 2019) Number of ads for Airbnb, HomeAway, HouseTrip, and OnlyApartments (2019) Room price per availability/availability (2019)	2019	Idealista (https://www.idealista.com/) Datahippo (https://datahippo.org/es/)

Source: own production. TRH: tourist rental housing.

The variables in the socioeconomic block refer to groups more vulnerable due to TRH. Documents from the 8th Foessa Report [80], the Red Cross Social Vulnerability Report, or the Atlas of Urban Vulnerability [81] agree that the young population, adults between 35 and 50 years old, senior citizens, and the unemployed are the new profiles of populations vulnerable to the advance of tourist rentals.

The problems young people face when seeking their first jobs and the precarious nature of the respective contracts limit their ability to pay high rents or buy a home. Eurostat figures indicate that, in 2017, 28.7% of young people in Spain were unemployed and that 57.9% of those who worked had temporary contracts. These circumstances hamper the earning capacity of young people and limit their emancipation process. The result is that 91.3% of young people between 20 and 24 years old and 61.7% of those between 25 and 29 years old continue to live with their parents. These percentages are quite far from those recorded in Europe, which are 74.1% and 39%, respectively.

In the case of senior citizens over 65 years old, the vulnerability is relative and is associated with a two aspects, economic and social. It is considered relative because senior citizens usually own their own home and benefit from a retirement pension, though it is certain that, in many cases, it is not enough to meet monthly costs or pay the rent if it is very high. On the other hand, the vulnerability is associated with the importance of social relationships, health and mobility, social participation, and safe and pleasant neighborhoods for the wellbeing of the elderly. Those aspects may be endangered by processes such as gentrification and touristification by reducing their secure ability to move about the neighborhood due to the mass influx of tourists, impinging on public spaces where neighbors socializes, and generating more sound pollution.

For its part, the group between 35 and 50 years old corresponds to young people who were 25 years old a decade ago when the crisis broke out. This is the group that has most suffered its impact, both when seeking jobs and when attempting to buy or rent a place to live. It has also been one of the most affected by mortgage executions or evictions; according to the study on Housing Emergency in

Catalonia. Impact of the Mortgage Crisis on the Right to Health and Children's Rights [82], the average age of affected people was around 43–44 years old.

All the consulted experts and reports on vulnerability agree when they state that unemployment places people in a situation of vulnerability grounded on financial insecurity when it comes to meeting their own needs. Those paying mortgages have been affected by mortgage executions and evictions and have had to switch to renting a home. However, the higher rental prices in historic city centers have caused populations to be displaced to peripheral districts. The situation suffered by the group of immigrants from Africa and Latin America is similar. The authorization to work and its processing can substantially limit their ability to find work or hold a job. Without a job, it is very hard for them to be able to buy a home, thus they must rent one.

In the housing block, two variables were chosen—density of tourist housing compared to total housing and profitability of tourist rentals compared to traditional rentals. In this case, the premise from the start was the one defended by the Anti-Eviction Platform (PAH—Plataforma anti-desahucios) in the discussion panel on Housing is a Right, Not a Luxury, Not an Asset. It is consequently understood that the higher the density of tourist housing is, the smaller the proportion of housing for residential rentals will be. This circumstance in turn leads to historic centers being occupied by tourists and losing residents, limiting the possibilities for neighborhood renewal, care, and social life. For that reason, we considered the population trend during the period from 2015 to 2018 as a variable from the socioeconomic block. The boom in platforms such as Airbnb extended the belief that profitability of tourism rentals is much higher than residential rentals, mainly in housing situated close to tourist zones. Thus, in some blocks of neighborhoods such as Sol in Madrid, Eixample in Barcelona, Santa Cruz in Seville, and Ciutat Vella in Valencia, housing offered by Airbnb already accounts for 20% of dwellings.

Once the variables were selected, the data acquisition entailed the consultation of many sources. All were analyzed at the census tract scale because it is the unit of statistical information with the most detail. It also enables the establishment of homogeneous spatial zones from the land-use standpoint.

All the information was analyzed using ArcGis 10.3 and grouped per the different join options (attributes and spatial location). For that reason, it was previously processed. In the case of information from the National Statistics Institute (INE), information on new tracts had to be updated, as their boundaries can change over time. For its part, the information from the Longitudinal Population Database of Andalusia referring to a statistical grid measuring 25 m on each side was transferred to the census tracts proportional to the area occupied in each of them. Finally, data from the two sources associated with housing were also adjusted for respective comparison. In both cases, the price per room per month was calculated in both modalities. For that reason, in the case of TRH, the average availability of lodging for each tract was calculated. Advertisements in the Idealista portal were obtained by its Application Programming Interface (API), which enabled the downloading of 566 geo-localized rental offerings. For its part, Datahippo enabled the downloading via its webpage of 7433 geo-localized ads, which were reviewed to avoid reiterations or repetitions.

First, the variables were calculated using the available statistical information: (1) population evolution between 2015 and 2018 (%); (2) ageing rate—population over 65 years old compared to total population (%); (3) mature adult rate—population between 35 and 50 years old compared to total population (%); (4) young adult rate—population between 20 and 35 years old compared to total population (%); (5) immigrant rate—migrant population from Africa and Latin America compared to total population (%); (6) unemployment rate—number of jobless compared to the working-age population (%); (7) density of tourist dwellings with respect to total housing (%); and (8) profitability of tourist rentals versus traditional rentals.

Each variable was then separately mapped and, depending on the values, it was determined which tracts were most vulnerable for that value. Thus, in all of them, the mean total of values for the historic center of Seville was used as a differentiating threshold.

Each variable was assigned a weight according to its impact on vulnerability generated by TRH (Table 3). For that reason, ordinary least squares (OLS) analysis was conducted for each of the variables

to ascertain its relationship with the tourist rental housing (Table 4). The results obtained indicated that the variables with more incidences with respect to residential vulnerability corresponded to the density of tourist housing and the profitability of tourists versus residential rentals; they were thus assigned the maximum weight of 4. These variables were followed in importance by the unemployed group and the group of foreigners from African and Latin America, both of which are highly rental dependent and very sensitive to rent increases. Both were weighted with a value of 3. The other variables of the socioeconomic block were weighted less. The group of young people and young adults was given a value of 2 because, compared to the previous groups, this group is less vulnerable because it includes a family support network. Finally, the lowest weighting value, 1, was assigned to the group of senior citizens over 65 years old and the evolution of the population, two variables that have less direct impact on residential vulnerability according to OLS.

Table 3. The results of the variables and their weighting.

	Minimum	Maximum	Mean	Weighing
Population evolution 2015–2018	−11.21	4.06	2.82	1
Population over 65 years old	12.30	33.28	20.64	1
Population between 20 and 35 years old	12.57	18.56	15.62	2
Population between 35 and 50 years old	18.69	33.11	25.50	2
Foreign population	0.3	3.68	1.27	3
Unemployed population	7.5	49	15	3
Density of tourist dwellings with respect to total housing	0.01	1.76	0.24	4
Profitability of tourist rental/traditional rental	44.71	210.62	72.84	4

Source: own production.

Table 4. Ordinary least squares (OLS) analysis.

	R ²
Population evolution 2015–2018	0.27
Population over 65 years old	0.04
Population between 20 and 35 years old	0.01

Source: own production.

Once all of the maps were homogenized and weighted, they were rasterized so their values could be summed up with Raster Calculator. The end result was a map with values between 1 and 16 resulting from the combination of all the variables. For the final mapping, they were vectored, and the resulting numeric figures (between 1 and 16) were grouped, establishing three levels that differentiated low, medium, and high vulnerability.

6. Results

The results after applying the eight selected variables to the census tracts are shown in Table 5 and Figure 3 Figure 4 Figure 5 Figure 6 (maps 6.1 to 6.8). In them, the heterogeneous nature of situations present in this historic city center can be appreciated. However, broadly speaking, it can be seen that historical patterns have maintained; some zones to the south and the west show higher socioeconomic levels compared to the more impoverished zones to the north and the east, with exceptions that are indicated further on.

Table 5. Result of applying the eight selected variables by census tract.

Census Tracts	1	2	3	4	5	6	7	8
001	1.19	14.98	16.01	24.80	0.96	9.38	0.16	33.37
002	-3.48	18.80	18.47	24.04	0.98	13.87	0.22	77.43
003	-1.96	17.38	16.52	27.78	0.85	10.78	0.09	79.91
004	0.86	26.41	12.89	24.28	1.49	12.53	0.12	40.55
005	0.47	19.34	16.86	25.94	1.77	10.16	0.22	50.39
006	-0.72	20.81	18.56	26.22	2.25	9.88	0.13	77.12
007	-5.72	25.66	15.20	21.18	0.75	11.67	0.30	15.73
008	-0.29	27.08	14.99	23.03	0.58	13.82	0.07	48.95
009	0.47	17.58	12.57	31.78	1.16	7.08	0.19	56.32
010	-0.59	21.20	14.92	25.85	1.11	12.98	0.12	42.98
011	-3.90	20.46	14.77	25.39	0.77	14.69	0.13	42.62
012	-2.41	20.83	15.05	25.31	1.16	8.55	0.16	36.30
013	-2.06	20.52	14.21	25.53	0.40	10.96	0.12	19.85
014	-6.10	21.67	15.33	27.08	1.33	21.46	0.17	44.71
015	-4.10	22.67	14.56	25.32	0.74	12.42	0.13	50.49
016	-4.10	19.62	14.56	25.32	0.74	12.42	0.54	105.64
017	-3.40	12.46	15.89	33.11	2.00	21.30	0.17	68.18
018	-3.66	18.53	12.98	31.74	1.52	25.00	0.26	84.43
019	-4.39	12.40	14.70	31.69	1.84	40.61	0.08	8.08
020	-4.15	17.84	16.86	27.46	0.65	12.07	0.01	1.82
021	-3.72	21.24	15.45	24.39	1.22	7.68	0.20	168.14
022	-1.71	16.96	16.61	26.52	1.26	12.62	0.15	65.86
023	-3.76	12.84	14.98	32.04	1.51	13.21	0.17	128.72
024	2.59	14.14	13.85	31.24	0.87	14.01	0.14	101.39
025	-1.70	16.42	14.79	28.85	1.25	33.87	0.11	79.43
026	3.03	27.02	16.49	18.69	1.22	12.31	0.03	48.75
027	-1.42	24.64	15.85	21.33	0.72	14.96	0.27	75.60
028	-0.79	12.30	15.58	31.75	0.40	13.70	0.08	61.52
029	-1.18	18.45	16.33	26.62	1.09	15.66	0.12	35.22
030	-1.36	33.28	13.28	18.78	0.46	48.72	0.5	47.34
031	-3.66	18.53	12.98	31.74	1.52	25.00	0.42	-1.34
032	-1.82	20.64	17.14	23.76	0.88	40.90	0.12	73.24
033	-0.62	16.61	15.00	28.21	2.32	11.87	0.12	18.83
034	-2.33	25.62	16.21	21.21	0.30	9.89	0.06	82.50
035	-6.35	25.34	15.17	25.91	0.89	35.38	0.33	210.62
036	-6.35	26.34	15.17	25.91	0.89	35.38	0.33	138.38
037	-9.22	27.66	15.00	20.23	1.02	25.71	1.76	148.42
038	0.15	24.33	17.21	21.88	3.19	8.25	0.14	48.42
039	-0.58	22.69	14.51	23.35	0.75	7.08	0.18	76.08
040	-0.08	23.68	17.70	21.33	0.83	8.12	0.23	26.07
041	-5.02	22.27	15.68	22.79	1.21	7.06	0.20	132.75
042	4.06	22.20	16.95	25.49	1.83	9.96	0.47	79.85
043	-5.71	20.11	16.99	19.19	1.56	7.49	0.44	204.23
044	-9.22	27.66	15.00	20.23	1.02	25.71	1.15	128.38
045	-6.35	18.81	15.24	25.12	2.02	13.00	0.18	36.53
046	0.32	20.47	17.23	23.52	1.08	9.04	0.34	49.41
047	-11.21	19.17	17.49	26.23	1.81	11.54	0.28	160.56
048	-2.72	18.60	16.71	25.19	1.48	17.98	0.11	69.30
049	-1.99	21.95	15.12	25.44	1.16	13.30	0.18	23.96
050	-8.90	20.25	17.14	26.91	3.68	16.53	0.29	67.32
051	-6.38	18.03	18.03	24.06	2.27	21.13	0.20	149.62

Source: own production.

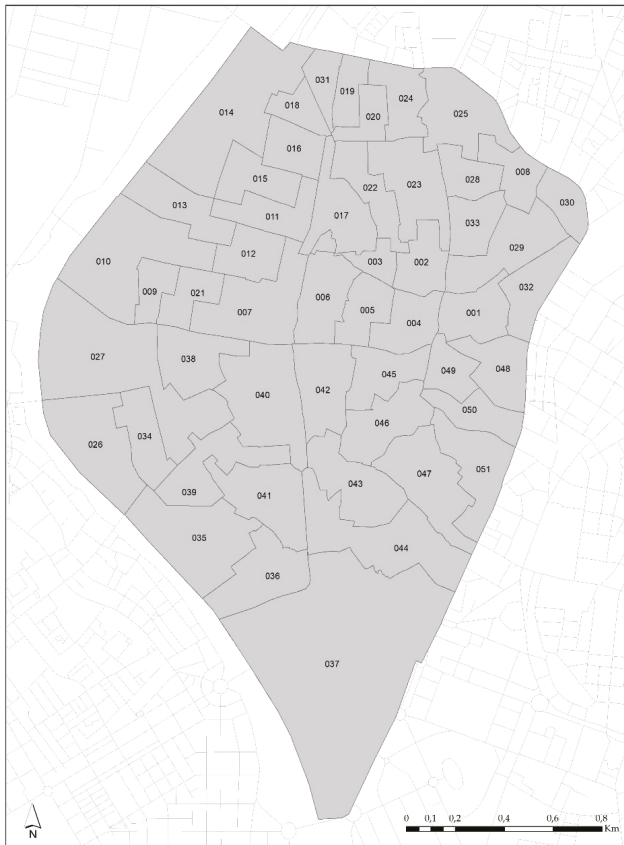


Figure 3. Sections tract distribution. Source: own production.

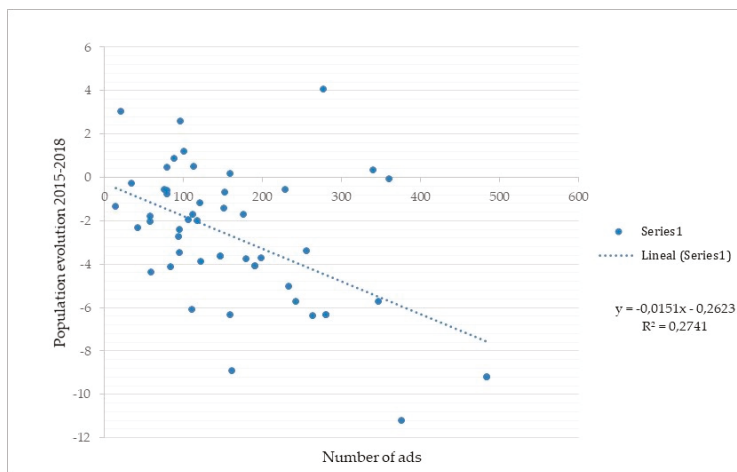


Figure 4. OLS population evolution 2015–2018/tourist rental housing. Source: own production.

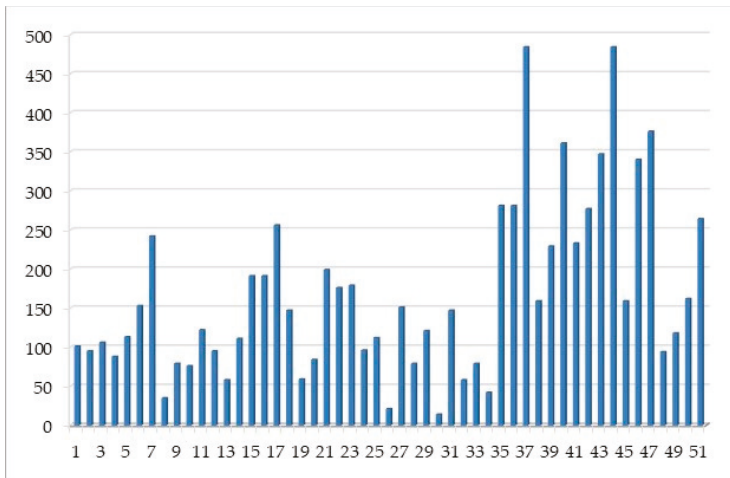


Figure 5. Distribution of tourist housing rental ads. Source: own production.



Figure 6. Map of result of the variables in the historic center of Seville. Source: own production.

Without going into detail for each indicator, some notable results are:

- There is a predominance of spaces that are losing population or have an elderly population, especially in southern and western parts of the historic center. On the other hand, this progressive population decline and ageing is a common pattern in Spanish historic centers;
- The contrary situation appears in a central zone comprising tracts with a higher presence of young people between 20 and 35 years old, with most needing to live in rented housing;

- The concentration of economic immigrants, usually with low income levels, presents a distribution hard to interpret due to its duality. This is because there is a notable presence in tracts at the eastern and the northern ends of the historic center (where rents are predictably cheaper), though they also appear in its southern part in areas with a higher economic level. This may possibly be due to a combination of factors that are hard to interpret with the available sources (domestic help, presence in some deteriorating buildings in the center with low rents, population contingents from those countries but with higher income levels, etc);
- The proportion of unemployed, as an essential socioeconomic variable, does present spatial distribution in accordance with the previously indicated patterns, as it is concentrated in the northern and the eastern sections of the historic center, traditionally considered to have lower economic and social standing;
- Regarding the variables most directly linked to TRH, the map of the ratio of TRH/total number of residences shows the highest density around the main traditional tourist resources [monuments designated as World Heritage by the United Nations Educational, Scientific and Cultural Organization (UNESCO), in the southern part of the historic center, and areas along the Guadalquivir River] as well as in new tourist spaces of the city, such as close to the Alameda de Hércules in the northern part of the historic center. As for the variable concerning the profitability of tourist rentals versus residential rentals, it largely reproduces the previous map, indicating high profitability in both traditional and recent tourism spaces. However, it also shows above average values in sections of the northeast end of the historic center.

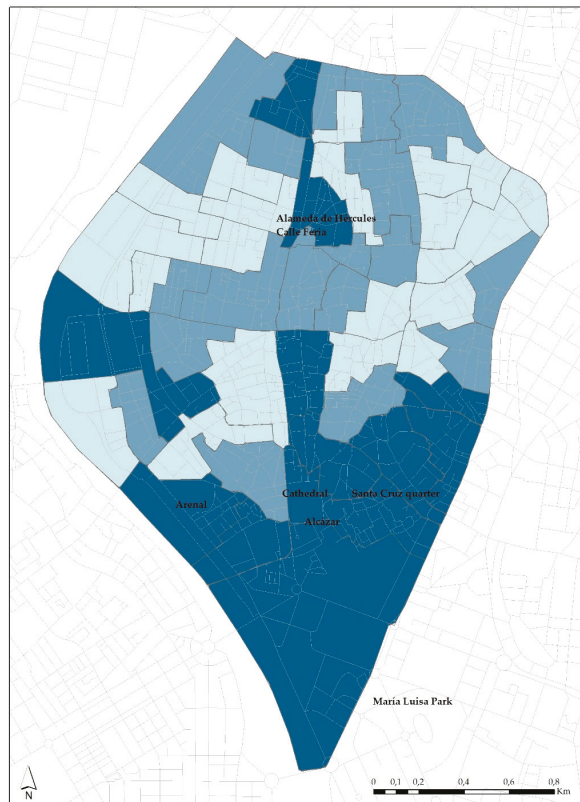


Figure 7. Vulnerability indicator in the historic center of Seville. Source: own production.

Lastly, the final map of the vulnerability indicator (see Figure 7) shows how the areas with higher vulnerability associated with the presence of TRH are those most heavily visited by tourists in the southern part of the historic center, close to major traditional tourist resources (Cathedral, Alcázar, Santa Cruz quarter, María Luisa Park, banks of the Guadalquivir River). This notwithstanding, and very importantly for the aims of this article, a notable area also appears in the north in the new tourism area around Alameda de Hércules/Calle Feria.

For its part, the less vulnerable areas are situated in the central zone of the historic center, which is less attractive for tourists and has not lost population in recent years.

7. Discussion

Despite the importance acquired by the topics of vulnerability and touristification processes in Spanish cities, research has generally suffered from insufficient data at an intra-urban scale, a problem this article aimed to confront. For example, the last census of population and housing dates back to 2011, whereby the figures it offers have become obsolete for studying such a recent phenomenon. The shortage of information is combined with its differentiated processing by administrations. While, in some cases, the reference unit is the census tract, in others, larger and less standardized units such as neighborhoods are used. For this article, it was possible to obtain more detailed spatial information due to the availability of the Longitudinal Population Database of Andalusia produced by the Andalusian Institute of Statistics and Mapping, which supplies some population information in a grid with squares measuring 250 m on each side; this information is very detailed, though it had to be transferred to the tracts. All these circumstances limit ascertainment of the true socioeconomic reality of the intra-urban spatial units and the extent of touristification's impact on residents.

There are some research limitations that can affect the study of this topic. Regarding the sources used, there was a notable lack of availability of the sought-after scale (census tracts) for two variables essential for analyzing the article's subject, i.e., the evolution of residential rents and the income levels of the population. This information would have been very useful to differentiate areas of the historic center regarding the main factors (and the intensity of said factors) causing populations to leave (residential rent increases in recent years) as well as one of the main differential elements indicating the population's vulnerability—their income level. Given that, in Spain, there are no statistics that break down that information at the intended scale, other variables that were available (or could be calculated by the authors) were used to understand their significance, such as estimating the difference in benefits for owners between residential rentals of their buildings or tourist rentals, or determining socioeconomic variables close to income level such as distribution of unemployment rates. It was therefore possible to mitigate the insurmountable lack of relevant statistical data without renouncing the research objectives.

Likewise, the use of Datahippo as a source to analyze the presence of TRH was also a limitation. This source is very useful since it groups together the existing offers on Airbnb, HomeAway, HouseTrip, and OnlyApartments platforms and is usually used in this type of study. However, it presents a problem regarding the location of these homes in the urban fabric. The problem is that these platforms do not offer the exact location of the house (until a specific one is actually hired). In this way, the location of each house in Datahippo is located within a radius of 150 m from its real location. This is not a problem for larger space units, but when working with census sections, it introduces a certain margin of error since it is only an approximation of 150 m. A dwelling might appear in one census section while, in reality, it is located in another, modifying the calculation of the indicator obtained. However, we deemed that, statistically, these errors were balanced out between neighboring census sections, thus there should have been no significant alteration of the results in the end.

In the same way, within the study limitations, it is worth noting the lack of data on residential mobility in the interior of the city. This information would be the key to exactly determining the population volumes that are changing their residence between the census sections. This in combination with the presence of TRH would have allowed correlations between the two phenomena that demonstrate

the process of expulsion of residents, their exact numbers, and the places of origin and destination of the mobility processes. However, these data are not available in local administrations, thus they were not provided despite having been requested.

From the standpoint of the results obtained, the calculated and the mapped data concerning the eight base variables are very diverse. Altogether and broadly speaking, the permanence (with some recent changes that are discussed herein) of the historic patterns of division in the city of Seville stands out. Differences are seen between some working-class neighborhoods with lower incomes situated in the north and the east versus others in the south and the west, where the city's emblematic landmarks are traditionally concentrated along with its centers of administrative, religious, judicial, and academic power and its wealthier population. It is significant that this duality, which has its origins in the formation of the great Islamic city of the 12th century, can still be clearly perceived today and is a factor that helps explain social vulnerability differences within the historic center. For example, it can be clearly seen in the result from the variable for proportion of unemployed over the whole working age population Figure 6 (map 6.6), which is the most significant of the social differences between the different zones and very closely reproduced the traditional spatial pattern mentioned above.

Regarding the other variables used, the meaning of the results is disputable. For example, the level of population ageing might a priori be considered a relevant factor for vulnerability when faced with touristification, given that people over 65 may be more sensitive to the respective problems or changes in their everyday lives, as is occurring in both public spaces and in the buildings themselves. However, the analysis showed a scant statistical correlation (practically nil, with an R^2 of 0.037) that would ratify the initial approach. The explanation for this is that the main vulnerability factor concerns the system governing housing occupation according to whether it is rented or owned, regardless of the age of the dwellers. Hence, in the Spanish situation, the elderly mostly live in housing that they own, regardless of their economic level, as they have had many long years to acquire their homes by means of mortgage credit. For that reason, they are anchored to their owned residence and will not move to other parts of the city, even when upset about perceived transformations in their day-to-day environment. Indeed, they could not do so even if they wanted to due to the high current prices for buying another home. Also, the distribution of the ageing variable in the historic center, though it seems to dominate in neighborhoods with higher income, does not supply very decisive conclusions. This situation, as indicated in the section on methodology, justifies the low weighting factor assigned to this variable, although it should not be ignored.

Based on the previously referenced approach (that the need to dwell in residential rentals is a decisive factor for assessing vulnerability before the expansion of tourist rentals), variables close to that reality were sought, given the inexistence of information about the volume of people who live in rented homes. An attempt was made to resolve that lack by ascertaining the proportion of the population between 20 and 35 years old (principally students from elsewhere or workers in the first career levels) who are still unable to acquire a home and therefore need to live in rented housing and the proportion of the population between 35 and 50 years old (young households with young children) who, according to the literature indicated in the methodology section, are the group most affected by evictions. Both age groups contributed nuances of interest, given the intention for the indicator to cover the highest possible number of problems and groups liable to being affected by vulnerability, depending on the available information sources.

Among the variables used, also noteworthy is the result obtained for the profitability difference between tourist rentals and residential rentals. This is considered one of the most significant results of the article. This is because that difference is the fundamental factor for changing the use of buildings, which has shifted from long-term residential rental to short-term tourist rentals with high user rotation. The higher the profitability difference between one and the other situation is, the higher the number of owners who decide to modify the use of their property will be, reducing the ability of the population seeking rental housing to reside in those neighborhoods. The result obtained, shown in Figure 6 (map 6.8), offers two readings of great interest. On the one hand, it is confirmation of the notable difference

of profitability in the southern and the western sections, which was foreseen because they are wealthier areas with higher property prices in addition to being more touristic due to the closeness to the city's main monuments and landmarks. On the other hand, various sections of the northern historic center clearly stand out, specifically some of its most depressed areas, which are undergoing a rapid process of gentrification and touristification (as indicated in the bibliographic review of the case of Seville). This second result is extremely important, as it statistically shows processes heretofore only indicated qualitatively or hypothetically. From the standpoint of prospective analysis, we could anticipate, in coming years, a situation of serious difficulty for rental residents in that zone, which is also one of those most affected by unemployment. For all these reasons, the certain possibility that these sections at the north end of the historic center will see processes of eviction and population replacement, as other areas have already experienced, can be asserted.

Lastly, regarding the final result of the vulnerability indicator (Figure 7), which is the article's fundamental contribution, it reveals high vulnerability, as previously indicated, in two parts of the historic center. First, to a greater extent, are the southern and the western sections close to the city's emblematic and heavily visited spaces. This should be interpreted in the sense that the population residing there, who currently present features of sensitiveness to the phenomenon (basically because they live in rented homes and have low income and, for example, are affected by unemployment), will face an extreme degree of vulnerability, running the certain risk of being forced to move to other areas of the city in the near future. Indeed, in the areas that can be properly defined as tourist spaces (for example, the Santa Cruz quarter), the monoculture of this activity makes it hard to believe that the population such as the one referred to can live there nowadays.

Second, and as an even more notable result due to its novelty, a second set of tracts stands out with less surface area in the northern part of the historic center (the area around Alameda de Hércules and Calle Feria). This finding is worth emphasizing because it is a traditionally depressed environment that has serious problems of urban deterioration and social exclusion but which is in the process of transforming to become a new tourist space in the city after a series of public and private renewal actions in the last two decades (as indicated in the section presenting the case of Seville). Since the beginning of the 21st century, it has become an area where the creative classes and new cultural and specialized restaurant spaces are concentrated, thus experiencing gradual gentrification. The result shown in the map indicates that, after being included in the city's tourist circuits, it now has a large amount of TRH, whereby it is one of the spaces with higher vulnerability to the phenomenon in the entire historic center. This caused a historic break from what had been the patterns for the locations of activities in the city throughout the 20th century, and the result of the vulnerability indicator seems to portend that the phenomenon is not finished and that a gradual replacement of those creative classes (with an alternative or Bohemian orientation) and the few remaining original inhabitants by contingents of tourists lodged in rental housing can be predicted for the future.

It can also be indicated that the vulnerability indicator has its lowest values in a central zone of tracts that cross the historic center from east to west. These are traditionally transition environments peopled by a large variety of middle classes who currently seem to be the ones that largely maintain their traditional urban functions in contrast with the tourist spaces to the south and the gentrified ones to the north.

8. Conclusion

As a first conclusion, it can be stated that the three objectives planned for this article were fulfilled. First of all, the concept of social vulnerability was studied in depth at the level of theory and review of the literature, as was its current relationship with the phenomenon of touristification and the impact of manifestations of the so-called sharing economy, such as the proliferation of rental housing for tourists in cities' historic centers.

Second, as a main contribution of this article, a vulnerability indicator associated with the TRH was designed based on the selection and the statistical processing of eight variables of demographic,

socioeconomic, and housing natures. The result was the delimitation of zones of high, medium, and low vulnerability in the cities.

Third, the applicability of this indicator in a real case, the city of Seville, was tested due to the volume of tourism activity attained therein. This application led to concrete results by mapping vulnerability before the phenomenon at the scale of census tracts in its historic center.

The work undertaken shows that Seville has joined one of the world's major urban trends—the gradual increase of tourism function in central areas of the city, which is displacing other uses or previous activities as well as part of the previous residential population. It was noted how the phenomenon's patterns in Seville very much resemble those in other cities heavily frequented by tourists.

The method followed implies an advance in quantitative and statistical treatment of a phenomenon that, until now, had basically been approached with qualitative or descriptive focuses or at a scale of spatial breakdown with less detail. The design of the methodology for establishing the indicator is the article's greatest contribution.

Finally, it must be noted that this kind of research can generate tools to support decision making by public administrations responsible for alleviating the phenomenon's negative effects so that the residents' rights to the city can prevail over the interests of tourism and property agents.

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References

1. González Kichner, B. *La ciudad tradicional como objeto de consumo: Banalización del espacio público a imagen de los centros comerciales suburbanos*; Universidad Politécnica de Madrid: Madrid, Spain, 2011.
2. Lois, R.C.; Piñeira, M.J. The revival of urban social and neighbourhood movements in Spain: a geographical characterization. *Di Erde* **2015**, *146*, 127–138.
3. Llano Ortiz, J.C. *El estado de la pobreza seguimiento del indicador de pobreza y exclusión social en España 2008–2017*; EAPN España: Madrid, Spain, 2018.
4. United Nations. *Report on the World Social Situation 2003: Social Vulnerability—Sources and Challenges*; United Nations: Rome, Italy, 2003.
5. Durán Villa, F.R.; Piñeira Mantiñán, M.J. Evictions and the social crisis in Spanish cities. In *Urban Challenges in a Complex World: Resilience, Governance and Changing Urban*; Moore-Cherry, N., Ed.; University College Dublin & IGU: Dublin, Ireland, 2015; pp. 80–85.
6. Wehrhahn, R. Contentious urban housing politics in European metropolises between financialisation, dispossession and re-possession: Jahrbuch StadtRegion. In *Housing and Housing Politics in European Metropolises*; Wehrhahn, R., Pohlan, J., Hannemann, C., Othengrafen, F., Schmidt-Lauber, B., Eds.; Springer: Wiesbaden, Germany, 2019; pp. 3–20.
7. Koutrolikou, P. Changing landscapes of urban citizenship: Southern Europe in times of crisis. *Citizsh. Stud.* **2017**, *21*, 1–14.
8. Heffernan, E.; McHale, J.; Moore-Cherry, N. *Debating Austerity in Ireland: Crisis, Experience and Recovery*; Royal Irish Academy: Dublin, Ireland, 2017.
9. Janoschka, M. Who Loses and Who Wins in a Housing Crisis? Lessons from Spain and Greece for a Nuanced Understanding of Dispossession. *Hous. Policy Debate* **2017**, *28*, 1–18.
10. Amendola, N.; Rossi, M.C.; Vecchi, G. *Vulnerability to Poverty in Italy*; Working Papers; Department of Economics and Statistics: Torino, Italy, 2012; Volume 007, pp. 1–16.

11. Sánchez, S.; Méndez, R.; Prada, J. The “shrinking cities” phenomenon in Spain: An approach to causes, effects and revitalization strategies using a case study of Avilés. In *New Trends in the XXI Century: Spanish Geography*; Spanish Committee IGU: Madrid, Spain, 2012; pp. 252–266.
12. Piñeira, M.J.; Trillo, J.M. The effect of the crisis on vulnerable neighbourhoods: An approximation of the Spanish context through a case study (A Coruña, Galicia). In *Crisis, Globalization and Social and Regional Imbalances in Spain*; Spanish Committee IGU: Madrid, Spain, 2016; pp. 136–148.
13. Piñeira, M.J.; Lois, R.C.; González, J.M. New models of urban governance in Spain during the post-crisis period: The fight against vulnerability on a local scale. *Territ. Politics Gov.* **2019**, *7*, 336–364. [[CrossRef](#)]
14. Alaminos, A.; Penalva, F.; Domenech, Y. Reacciones comunitarias a la crisis económica y social en España. *Azarbe. Revista Internacional de Trabajo Social y Bienestar* **2014**, *3*, 47–53.
15. Díaz Hernández, R.; Domínguez Mujica, J.; Parreño Castellano, J.M. Vulnerabilidad urbana y segregación residencial de la población extranjera no comunitaria en las ciudades más populosas de Canarias. In Proceedings of the XXII Coloquio de Historia Canario-Americana, Canarian Islands, Spain, 3–7 October 2016.
16. Castellano, J.M.; Mujica, J.D.; Martín, M.T.; Hernández, J.B.; García, T.P. Real estate dispossession and evictions in Spain: A theoretical geographical approach. *Boletín de la Asociación de Geógrafos Españoles* **2019**, *80*, 1–25. [[CrossRef](#)]
17. Carman, M.; Vieira, N.; Segura, R. *Segregación y Diferencia en la Ciudad*; FLACSO, CLACSO, Ministerio de Desarrollo Urbano y Vivienda: Quito, Ecuador, 2013.
18. Nel-Lo, O. *Evolution of the Urban Segregation to Catalonia 2001–2012. Presentation and Preliminary Results*; Autonomous University of Barcelona: Bellaterra, Spain, 2014.
19. Nel-Lo, O. *Transform the City with Citizenship. Criteria and Reflections for the Barrios Plan of Barcelona*; Ayuntamiento de Barcelona: Barcelona, Spain, 2017.
20. Ministry of Public Works. *Atlas of Urban Vulnerability in Spain*; Ministry of Public Works: Madrid, Spain, 2011.
21. Ministry of Public Works. *Urban Analysis of Vulnerable Neighborhoods in Spain*; Ministry of Public Works: Madrid, Spain. Available online: www.fomento.gob.es (accessed on 4 June 2019).
22. Méndez, R.; Abad, L.D.; Echaves, C. *Atlas de la crisis*; Tirant lo Blanch: Valencia, Spain, 2015.
23. Alguacil, J.A.; Camacho, J.; Hernández, A. La vulnerabilidad urbana en España. Identificación y evolución de los barrios vulnerables. *Empiria. Revista de Metodología de Ciencias Sociales* **2014**, *27*, 73–94. [[CrossRef](#)]
24. Arias, F. *La desigualdad urbana en España*; Ministerio de Fomento: Madrid, Spain, 2000.
25. Subirats, J.; Martí-Costa, M. *Ciudades, vulnerabilidades y crisis en España*; Junta de Andalucía: Sevilla, Spain, 2014.
26. Ministry for Ecological Transition. *Air Quality Assessment Report in Spain*; MITECO: Madrid, Spain, 2019.
27. Hernández-Ramírez, J. La voracidad del turismo y el derecho a la ciudad. *Revista Andaluza de Antropología* **2018**, *15*, 22–46. [[CrossRef](#)]
28. Díaz Parra, I. La gentrificación en la cambiante estructura socioespacial de la ciudad. *Biblio 3W Revista Bibliográfica de Geografía y Ciencias Sociales* **2013**, *XVIII*, 1030.
29. Forno, F.; Garibaldi, R. Sharing economy in travel and tourism: The case of home-swapping in Italy. *J. Qual. Assur. Hosp. Tour.* **2015**, *16*, 202–220. [[CrossRef](#)]
30. Sigala, M. Collaborative commerce in tourism: Implications for research and industry. *Curr. Issues Tour.* **2015**, *20*, 1–20. [[CrossRef](#)]
31. Tussyadiah, I.P.; Pesonen, J.O. Impacts of peer-to-peer accommodation use on travel patterns. *J. Travel Res.* **2015**, *55*, 1022–1040. [[CrossRef](#)]
32. Dredge, D.; Gyimothy, S. *Collaborative Economy and Tourism: Perspectives, Politics, Policies and Prospects*; Springer: Cham, Switzerland, 2017.
33. Ioannides, D.; Röslmaier, M.; Van der Zee, E. Airbnb as an instigator of ‘tourism bubble’ expansion in Utrecht’s Lombok neighbourhood. *Tour. Geogr.* **2018**. [[CrossRef](#)]
34. Christensen, C.; Raynor, M. *The Innovator’s Solution: Creating and Sustaining Successful Growth*; Harvard Business Review Press: Harvard, MA, USA, 2003.
35. Guttentag, D. Airbnb: Disruptive innovation and the rise of an informal tourism accommodation sector. *Curr. Issues Tour.* **2015**, *18*, 1192–1217. [[CrossRef](#)]
36. Dredge, D.; Gyimothy, S. The collaborative economy and tourism: Critical perspectives, questionable claims and silenced voices. *Tour. Recreat. Res.* **2015**, *40*, 286–302.

37. Ikkala, T.; Lampinen, A. Defining the price of hospitality: Networked hospitality exchange via Airbnb. In Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing, Baltimore, MD, USA, 15–19 February 2014; ACM: Baltimore, MD, USA, 2014; pp. 173–176.
38. Ikkala, T.; Lampinen, A. Monetizing Network Hospitality: Hospitality and Sociability in the Context of Airbnb. In Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing, Vancouver, BC, Canada, 14–18 March 2015; ACM: Vancouver, BC, Canada, 2015; pp. 1033–1044.
39. Díaz Armas, R.J.; Gutiérrez Taño, D.; García Rodríguez, F.J. Airbnb como nuevo modelo de negocio disruptivo en la empresa turística: Un análisis de su potencial competitivo a partir de las opiniones de los usuarios. In Proceedings of the XVIII Congreso AECIT (Asociación Española de Expertos Científicos en Turismo), Turismo: Liderazgo, Innovación y Emprendimiento, 26–28 November 2014; AECIT: Benidorm, Spain. Available online: <https://aecit.org/files/congreso/18/papers/29.pdf> (accessed on 4 June 2019).
40. McNamara, B. Airbnb: A not-so-safe resting place. *Colo. Technol. Law J.* **2015**, *13*, 149–169.
41. Zervas, G.; Proserpio, D.; Byers, J. A First Look at Online Reputation on Airbnb, Where Every Stay is Above Average. SSRN **2015**. Available online: <https://ssrn.com/abstract=2554500> (accessed on 4 June 2019). [CrossRef]
42. Stors, N.; Kagermeier, A. Share Economy in Metropolitan Tourism. The role of authenticity-seeking. In *Metropolitan Tourism Experience Development*; Tózsza, I., Zátori, A., Eds.; Regional Studies Association: Budapest, Hungary, 2015; pp. 90–104.
43. Arias Sans, A.; Quagliero Dominguez, A. Unravelling Airbnb: Urban perspectives from Barcelona. In *Reinventing the Local in Tourism: Producing, Consuming and Negotiating Place*; Russo, A.P., Richards, G., Eds.; Channel View Publications: Bristol, UK, 2016; pp. 209–228.
44. Gutierrez, J.; Garcia-Palomares, J.C.; Romanillos, G.; Salas-Olmedo, M.H. Airbnb in tourist cities: Comparing spatial patterns of hotels and peer-to-peer accommodation. *Tour. Manag.* **2017**, *62*, 278–291. [CrossRef]
45. Dudas, G.; Vida, G.; Kovalcsik, T.; Boros, L. A socio-economic analysis of Airbnb in New York City. *Reg. Stud.* **2017**, *7*, 135–151. [CrossRef]
46. Yrigoy, I. The impact of Airbnb in the urban arena: Towards a tourism-led gentrification? The case study of Palma old quarter. In *Turismo y Crisis. Turismo Colaborativo y Ecoturismo*; Blázquez, M., Mir-Gual, M., Murray, M., Pons, G.X., Eds.; Societat d’Història Natural de les Balears: Balearic Islands, Spain, 2016; pp. 281–289.
47. Colomb, C.; Novy, J. (Eds.) *Protest and Resistance in the Tourist City*; Routledge: London, UK, 2017.
48. Gotham, K.F. Tourism gentrification: The case of New Orleans’ vieux carre (French Quarter). *Urban Stud.* **2005**, *42*, 1099–1121. [CrossRef]
49. Lee, D. How Airbnb short-term rentals exacerbate Los Angeles’s affordable housing crisis: Analysis and policy recommendations. *Harv. Law Policy Rev.* **2016**, *10*, 229–253.
50. Oppilard, F. From San Francisco’s ‘Tech Boom 2.0’ to Valparaiso’s UNESCO World Heritage Site: Resistance to tourism gentrification from a comparative political perspective. In *Protest and Resistance in the Tourist City*; Colomb, C., Novy, J., Eds.; Routledge: London, UK, 2017; pp. 129–151.
51. Fuller, H.; Michel, B. ‘Stop being a tourist!’ New dynamics of urban tourism in Berlin-Kreuzberg. *Int. J. Urban Reg. Res.* **2014**, *38*, 1304–1318. [CrossRef]
52. Gant, A. Tourism and Commercial Gentrification. Available online: www.rc21.org/en/wpcontent/uploads/2014/12/E4-C%C3%B3cola-Gant.pdf (accessed on 4 June 2019).
53. Blázquez-Salom, M.; Blanco-Romero, A.; Guall, J.; Murray, I. Tourist gentrification of retail shops in Palma (Majorca). In *Overtourism: Excesses, Discontents and Measures in Travel and Tourism*; CABI Publishing: London, UK, 2019; pp. 39–69.
54. Sundararajan, A. The ‘Gig Economy’ Is Coming. What Will it Mean for Work? Available online: www.theguardian.com/commentsfree/2015/jul/26/will-we-get-by-gig-economy (accessed on 4 June 2019).
55. Maitland, R. Tourists, the creative class and distinctive areas in major cities: The roles of visitors and residents in developing new tourism areas. In *Tourism, Creativity and Development*; Richards, G., Wilson, J., Eds.; Routledge: New York, NY, USA, 2007; pp. 73–86.
56. Zervas, G.; Byers, J. The Rise of the Sharing Economy: Estimating the Impact of Airbnb on the Hotel Industry. 2016. Available online: <http://cs-people.bu.edu/dproserp/papers/airbnb.pdf> (accessed on 6 June 2019).
57. Fuentes, R.; Navarrete, L. Tourists in hotels versus holiday homes: Economic impact and characterization. *Tour. Rev. Int.* **2016**, *20*, 177–195. [CrossRef]

58. Johnson, C. Gentrifying New Orleans: Thoughts on race and the movement of capital. *Souls* **2015**, *17*, 175–200. [CrossRef]
59. Ioannides, D.; Petridou, E. Contingent neoliberalism and urban tourism in the United States. In *Neoliberalism and the Political Economy of Tourism*; Mosedale, J., Ed.; Routledge: New York, NY, USA, 2016; pp. 21–35.
60. Gil, J.; Sequera, J. Expansión de la ciudad turística y nuevas resistencias. El caso de Airbnb en Madrid. *Empiria Revista de Metodología de Ciencias Sociales* **2018**, *41*, 15–32. [CrossRef]
61. Nofre, J.; Giordano, E.; Eldridge, A.; Martins, J.C.; Sequera, J. Tourism, nightlife and planning: Challenges and opportunities for community liveability in La Barceloneta. *Tour. Geogr.* **2018**, *20*, 377–396. [CrossRef]
62. Merante, M.; Horn, K.M. Is Home Sharing Driving up Rents? Evidence from Airbnb in Boston. *J. Hous. Econ.* **2017**, *38*, 14–24.
63. Pixová, M.; Sládek, J. Touristification and awakening civil society in postsocialist Prague. Protest and resistance in the tourist city. In *Contemporary Geographies of Leisure, Tourism and Mobility*; Routledge: London, UK, 2016; pp. 73–89.
64. Owyang, J. The Collaborative Economy. Altimeter Research Theme. *Technol. Bus. Econ. Financ.* **2013**. Available online: www.slideshare.net/Altimeter/the-collaborative-economy (accessed on 4 June 2019).
65. Oskam, J.; Boswijk, A. Airbnb: The future of networked hospitality businesses. *J. Tour. Futures* **2016**, *2*, 22–42. [CrossRef]
66. González, S.; Waley, P. Traditional retail markets: The new gentrification frontier? *Antipode* **2013**, *45*, 965–983. [CrossRef]
67. Janoschka, M.; Sequera, J. Gentrification in Latin America: Addressing the politics and geographies of displacement. *Urban Geogr.* **2016**, *37*, 1175–1194. [CrossRef]
68. Requejo, J. Frente a la marabunta: Territorio y trabajo, bases del turismo responsable y sostenible". *Razones de Utopía* **2017**, *2*, 30–47.
69. Blanco-Romero, A.; Blázquez-Salom, M.; Canoves, G. Barcelona, Housing Rent Bubble in a Tourist City. Social Responses and Local Policies. *Sustainability* **2018**, *10*, 2043. [CrossRef]
70. Hoffman, L.M.; Fainstein, S.S.; Judd, D.R. (Eds.) *Cities and Visitors: Regulating People, Markets, and City Space*; Blackwell Publishing: Oxford, UK, 2003.
71. Temes, R. Valoración de la vulnerabilidad integral en las áreas residenciales de Madrid. *EURE* **2014**, *40*, 119–149. [CrossRef]
72. Galster, G.C.; Killen, S.P. The geography of metropolitan opportunity: A reconnaissance and conceptual framework. *Hous. Policy Debate* **1995**, *6*, 7–43. [CrossRef]
73. Villar, A.; Fernández-Tabales, A. Reconstruir la historia del turismo a través de la prensa: La evolución del espacio turístico de Sevilla (1915–2015). *Cuadernos Geográficos de la Universidad de Granada* **2018**, *56*, 290–321.
74. Mercado-Alonso, I.; Fernández-Tabales, A. Percepciones y valoraciones sociales del paisaje en destinos turísticos. Análisis de la ciudad de Sevilla a través de técnicas de investigación cualitativas. *Cuadernos de Turismo* **2018**, *42*, 355–383. [CrossRef]
75. Díaz-Parra, I. Procesos de gentrificación en Sevilla en la coyuntura reciente. Análisis comparado de tres sectores históricos: San Luis-Alameda, Triana y San Bernardo (2000–2006). *Scr. Nova* **2009**, *13*, 281–309.
76. García-García, A.; Fernández-Salinas, V.; Caravaca, I.; González-Romero, G. Actividades creativas, transformaciones urbanas y paisajes emergentes. El caso del casco norte de Sevilla. *Documents d'Anàlisi Geogràfica* **2016**, *62*, 27–54. [CrossRef]
77. Díaz-Parra, I. Viaje solo de ida. Gentrificación e intervención urbanística en Sevilla. *EURE* **2015**, *41*, 145–166. [CrossRef]
78. Díaz Parra, I.; Jover, J. Enclaves urbanos de éxito. Transformación urbanística, gentrificación y turismo en la Alameda de Hércules de Sevilla. In *Capital Inmobiliario y Transformaciones del Espacio Urbano Contemporáneo*; Universidad Nacional Autónoma de México: Mexico City, Mexico, 2018.
79. Jover, J.; Berraquero-Díaz, L.; Barrero-Rescalvo, M.; Jiménez-Talavera, A. Turistización y movimientos urbanos de resistencia: Experiencias desde Sevilla. In *Ciudad de vacaciones. Conflictos urbanos en espacios turísticos*; Milano, C., Mansilla, J.A., Eds.; Pol-len edicions: Barcelona, Spain, 2018; pp. 403–438.
80. Fundación Foessa. VIII Informe sobre exclusión y desarrollo social en España 2019. Available online: www.foessa.es/viii-informe (accessed on 4 June 2019).
81. Cruz Roja. Informe de la vulnerabilidad 2014. Estudios e innovación. Available online: www.cruzroja.es/principal/web/estudios-e-innovacion/informes-de-vulnerabilidad (accessed on 4 June 2019).

82. Observatorio DESC. Emergencia habitacional en Cataluña. Impacto de la crisis hipotecaria en el derecho a la salud y los derechos de la infancia. Available online: <https://observatoridesc.org/es/node/4309> (accessed on 4 June 2019).



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Article

Culture and Tourism in Porto City Centre: Conflicts and (Im)Possible Solutions

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Abstract: City centres are spaces where different economic and cultural values converge as a consequence of their current uses and functions. In the case of Porto (Portugal), more than 20 years after being declared a World Heritage Site by UNESCO (in 1996), tourism has had remarkable effects on its physical, social and economic features. Therefore, Porto—and in particular its city centre—is taken in this article as the object of study. The interest of this space lies in the fact that it has been rapidly transformed from a devalued old area into the centre of an important urban tourism destination on a European level. Based on the spatial and temporal analysis of a set of indicators related to tourism, housing and economic activity, we identify the main threats that this “culture-led regeneration”—much supported by tourism—could have on the cultural values of Porto. Our results show that this process is promoting an excessive use of space by tourism and an overexploitation of cultural values. We conclude with some policy recommendations to support strategies capable of keeping cultural values alive, which we consider sustainable compromises between heritage and modernization.

Keywords: urban tourism; culture-led regeneration; cultural capital; sustainability; Porto city centre

1. Introduction

In a context marked by neoliberalism and globalization, characterized—among other things—by the ease of capital circulation and relocation of parts of a productive process, the competition between cities has intensified [1,2]. In this context, urban policies began to prioritize the attraction of people and investments, especially those considered most capable of producing wealth, because they are more “talented” or “creative” [3]. These dynamics, together with other factors, have placed culture and tourism at the service of the city. As a result, the use of culture in the socio-economic regeneration processes of territories, particularly in city centres, has become a common practice. In Western Europe, this is seen as an engine of renewal, regeneration and development [4,5]. These processes are carried out mainly through the construction of new cultural facilities, such as the Guggenheim Museum in Bilbao [6]; the celebration of major events, such as the European Capital of Culture [7]; or the creation of a territorial brand, based on cultural icons, such as Gaudi in Barcelona [8], among many other examples. In many cases, the close relationship between culture and the revaluation of the historic city is based on the high economic value assigned to culture. On the one hand, this is because the so-called cultural and creative industries have increasingly gained prominence within regional economies [9], and on the other hand, it is because the cultural and symbolic dimension of the goods and services has significant relevance in consumers’ decision-making process [5,10]. Additionally, culture is continuously used

as a form of territorial differentiation and promotion of an image, thus being seen as a fundamental resource for marketing and branding strategies [11]. Efforts are made to establish policy in which promotion and marketing seem to overlap the urbanism based on management and cohesion. At the same time, “places of tourism” and cosmopolitan consumption, in which material and immaterial cultural resources are integrated, are prioritized. However, concerns with the maintenance of the original cultural values are rarely considered.

The role of culture in urban regeneration processes (*culture-led regeneration*) has gained particular relevance, especially since the 1980s, and has become focal in the revitalization of local economies, especially in urban spaces that are negatively marked by de-industrialization [8,12]. In these cases, it is common to integrate physical urban elements and intangible ones (e.g., symbols and values) as a way of attracting people and international capital [13]. The historical parts of urban spaces have become privileged locations for this kind of process due to their high concentration of heritage locations and their importance as elements of a city’s landscape [14]. Several economic activities that are directly or indirectly associated with culture settle and attract new residents and visitors, leading to the constitution of city centres as privileged spaces of the production and consumption of culture [15]. The implementation of these strategies often marks a turning point in the process of decline and abandonment of these spaces due to the entry of new users, resident or floating, and new economic activities [13,16]. Therefore, culture and tourism have contributed to a revalorization of resources in the ancient fabric of many cities that were in many cases underused and in the process of deterioration. However, this “success” might imply a loss of the multi-functionality of these spaces, if not of entire cities, endangering their residential, economic and administrative functions, and even the character of the places and/or cities [17].

Similar to what has been seen in other urban spaces, in the past several decades, the city of Porto—especially its most central section—has been the target of strong efforts toward physical and symbolic regeneration. With the classification of Porto as a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site in 1996, as well as international promotion campaigns, the regeneration process has contributed to the transformation of Porto into a relevant European urban tourist destination [18]. As a result, the social and economic dynamics of the city in general and of its centre in particular have been transformed to meet the consumption needs of its temporary users, focusing mainly on tourists (during the daytime) and students (with more intensity in the evening). In this article, we identify what could be considered the main risks associated with a growing mono-functionality of Porto’s city centre, which is potentially hazardous for the sustainability of its current cultural capital. This kind of capital is essential for the local community and for tourist activity, as well as for the resilience of the city and the entire metropolitan area. We pinpoint the case of Porto in major debates on the processes of “culture-led regeneration”, which is supported by tourism, to understand how these processes affect the cultural values of city centres. We present policy recommendations that consider the advantage of reconciling the cultural concerns with the economic gains, with strategies that take into consideration sustainability and the multiple interests present in an area of great symbolic significance.

2. Culture and Tourism: Dependencies and Conflicts

The recognition of the existence of a strong relationship between tourism and culture (see, for example, the OECD [19]), and the growing importance of tourism in general and of cultural tourism in particular [20], has given rise to debates on their relationship [21]. Abreu [22], for example, points out that the key factors relating to increasing the demand for cultural tourism are globalization and the standardization of places. Because places are increasingly more similar to one another and ever closer in terms of relative distance, and due to instant communication, there is a constant and further search for difference. In this context, culture is considered to be an effective way of claiming that a place is unique. Nevertheless, this may lead to the distortion of history and reinforcement of the social conflict in societies “possessed by the past” [23]. Culture can be broadly considered as heritage, arts and creative industries, as well inhabitants’ everyday lifestyle habits (e.g., leisure, shopping, eating and drinking) [24]. This same culture is often associated with something conceived over a long period of time, with origins in the distant past and in a

specific territory, at a time when globalization did not yet exist. Some authors claim that this tendency of combining culture and tourism has been reinforced by an increased interest of travellers in authentic, experientially oriented and meaningful interactions with locals [25]. The fantasy of authenticity (the idea that authenticity is always in the next town, on a future adventure or just over the horizon) is considered the central driver of tourism motivation and marketing [26]. This demand for what is unique to a place seems to be a trend that will be the future of touristic behaviour. According to an Expedia study published in 2016, the millennial generation's touristic behaviour especially values the "authentic culture of a place" and seeks to "live like a local" [27]. However, the economic use of culture, generated by this continuous search for authentic experiences by tourists, can trigger processes of commodification [28] and a consequent erosion of non-economic values.

The economic potential of the relationship between tourism and culture has influenced the urban policy choices of many cities around the world, as a strategy to fight the backdrop of declining urban industrial bases and fiscal crises [29]. However, the strategies followed seem in many cases to use culture as a way to attract tourism consumption, following international formulas and adapting the cultural resources to tourism consumption patterns. This kind of process often results from the fact that city leaders try to copy international examples in order to position themselves within a global imaginary of icon cases, and it can be considered a type of neoliberal urban policy [30,31]. Judd and Fainstein [28] analysed the relations between tourism and urban regeneration and talked about the tendency to concentrate a high number of tourist attractions in a limited urban space, which can be considered a "tourism bubble", physically and symbolically disconnected from the rest. Others consider this a touristification of the everyday life of cities [32]. The commercial spaces, accommodations and lifestyles of these kinds of spaces contradict the appreciation of the character of places, which the International Commission on Monuments and Sites (ICOMOS) identifies as essential for landscapes with worldwide value [33]. Such tendencies frequently cause a contradiction, which may jeopardize the economic potential of these spaces, as there is a marked tendency for creating a "staged authenticity" [34]. This creates a paradox, since while consumers appreciate "authentic" places and experiences [35] (and the character of urban spaces is one of the factors of utmost attraction), the tourist activity often contributes to the destruction of what distinguishes it [36] in a process that destroys (or at least depreciates) what it seeks to value.

To understand how the economic dimension of culture (and its relations with tourism) relates to non-economic values, it is useful to reflect on the concept of "cultural capital", developed by Throsby [37,38]. This author pointed out that culture can be considered a form of capital, such as physical or natural capital, which includes tangible assets, such as built heritage and art works, but also intangible elements, such as languages, rituals and traditions. According to this approach, cultural capital can be defined as an asset that embodies or gives rise to two types of value: on the one hand, economic value, which can be expressed in financial terms; on the other hand, cultural value, which embodies aesthetic, spiritual, social, historical, symbolic and authenticity values [39,40]. In the literature, cultural capital is continuously cited as a strong factor determining the attractiveness of places, especially in tourism but also in cultural and creative activities, and as a fundamental element in the identification of territorial environments [41]. It is also considered that tangible and intangible cultural assets contribute distinctively to the character and uniqueness of a place [41].

In this sense, it seems obvious that the economic value of this type of capital depends on its strict cultural value. However, the economic uses of cultural resources also have the ability to improve cultural values. In fact, it is sometimes the potential economic value of a cultural feature that motivates its recovery and conservation. For instance, the use of a given cultural resource for tourism increases the general interest of the public administration and of the population in its conservation. However, this same duality of values generates tensions and conflicts in its uses. Furthermore, it should be considered that the relation between economic and cultural values can also be reversed—that is, the existing cultural capital may decrease, which occurs with some frequency due to over-exploitation or inadequate use in terms of the form or time of use. Within the urban context, in order to avoid the endangerment of cultural values due to physical

changes and economic interests, a significant share of cultural heritage—including historic centres—are now protected by legal figures. At the international level, there is UNESCO and ICOMOS, and within the national context, there is a huge range of planning instruments at the local, regional and national levels.

The tangible and intangible cultural assets that exist in a country, region or city are thus their cultural capital, to which economic and non-economic values can be assigned at a given time. Thus, as happens with natural capital, the way in which cultural capital is managed is determinant for its sustainability. While there are different approaches that integrate culture and sustainability, the notion of “culturally sustainable development” developed by Throsby stresses this interdependence of economic and cultural variables [42,43]. Throsby claims that there are five dimensions that should be encompassed by public policies in order to apply sustainability to culture (p. 137 [43]):

- Intergenerational equity: do not compromise the capacities of future generations to access cultural resources and meet their cultural needs;
- Intragenerational equity: provide equity in the access to cultural production, participation and enjoyment to all members of the community on a fair and non-discriminatory basis;
- Importance of diversity: the value of cultural diversity in the processes of economic, social and cultural development should be considered;
- Precautionary principle: a risk-averse position should be adopted to avoid decisions with irreversible consequences for cultural capital, such as the destruction of cultural heritage or the extinction of valued cultural practices; and
- Interconnectedness: a holistic approach that recognizes the interconnectedness between social, environmental, economic and cultural development should be adopted.

Such approaches have given room to the debate on the sustainable domain of culture and its relationship with tourism. In fact, the overwhelming presence of tourism is considered one of the biggest threats to cultural sustainability. This is particularly evident if we consider a report by UNESCO [44], where it is stated that the urban transformations based on tourism have generated, in many locations on the planet, an increase in the price of land and urban pressure, thus leading to the exclusion of residents and the mutation of social landscapes (and sometimes not only social landscapes). This process has been especially leveraged by the dissemination of short-term rental platforms such as Airbnb, which today are a pivotal topic in urban political agendas [45]. To this we add, for example, “hop-on-hop-off” buses and “tuk-tuks”, as well as the multiplication and homogenization of souvenir shops, among other retail, catering and hospitality establishments. These processes are affecting cities such as Berlin [29], Venice [46], San Sebastián/Donostia [14] and Barcelona [47], to which we add Lisbon [48] and Porto [18]. These socio-spatial changes appear in certain urban neighbourhoods due to the need to respond to the new demand profile of consumers, residents and visitors, who have a more significant purchasing power, as a consequence of a tourist gentrification [49].

This articulation of culture and tourism promoted by urban policies has especially affected the urban city centres, where experiences, knowledge and history are usually concentrated [50]. Many of these spaces are being transformed in what Ashworth and Tunbridge [51] defined as a “Tourist Historic City”, places where the urban structure, architecture and artefacts are used to create a place-based heritage product [50]. However, the fact that city centres play a key role in large urban spaces of national and even global relevance makes the mediation and performance of public administrations necessary in order to promote cultural values and functional diversity. The need for intervention by public administrations becomes even more evident at a time when urban conflicts are intensifying. In fact, in many tourist cities, protests are carried out by residents and local associations, which put in question the bases of these “tourist-centred” urban models [50,52]. Furthermore, in recent decades, the deficits generated in the sustainability of culture, together with the impacts on the social landscapes and environment that the growing mass tourism is generating, are acknowledged by the wider public and amplified by the media [53,54].

3. Materials and Methods

3.1. Case Study

Located in the north of Portugal (Figure 1), Porto is a municipality with a population of 214,587 (estimate of 2017). Despite being a small municipality with an area of 41.42 km², it is the second largest city in Portugal and the anchor of a metropolitan area with 1,719,702 residents, and a regional space where 3.5 million people reside [55]. In recent decades, a process of suburbanization associated with a “donut effect” [56] has prevailed in Porto. Before this process began, the city’s historic district and surroundings constituted the civic centre of the entire city, with housing, administrative and services functions. However, since the 1960s, a growing number of inhabitants have moved to more peripheral areas of the city, especially to the surrounding municipalities, where the land prices were cheaper, and new centres of economic activity were being created: Matosinhos, Maia, Valongo, Gondomar and Vila Nova de Gaia. According to Balsas (p. 398 [56]) “This urban development in Porto may be parallel to the pattern of suburbanization, typical of the Western metropolitan city”. The process of functional obsolescence in this area became worse with the opening of shopping centres and retail parks in the surrounding areas of Porto [57,58]. This caused the devitalization of Porto’s city centre, where the decadent buildings, vacant houses and old shops had turned into important features of its landscape [59,60]. However, an urban renewal policy started with the creation of the *Comissariado para a Renovação Urbana da Área de Ribeira-Barredo* (CRUARB) in 1974. Later, the *Fundação para o Desenvolvimento da Zona Histórico do Porto* (FDZH), in 1990, and most recently, the *Sociedade de Reabilitação Urbana* (SRU-Porto Vivo), in 2004, were responsible for introducing important changes into the dynamics of the city centre. Different area-based initiatives were implemented from the 1980s and transformed Porto’s city centre from a devalued area into what is now an important urban tourism destination. While we consider the totality of the municipality of Porto as a case study, we use the official delimitation of the Priority Intervention Zone (ZIP) to define our specific study area, the “city centre”. According to the SRU-Porto Vivo’s Masterplan, this is the central area of Porto. It “... possesses a permanent and diversified commercial and service profile, which is mainly identified by the residents of Oporto as the Baixa district, and it is a consolidated area from the viewpoint of the urban fabric and architectural value” [60]. With an area of about 5 km², this area includes the Historic Centre of Porto and the traditional downtown, which correspond to the growth of the city in the 18th and 19th centuries. At present, the physical, economic and social characteristics of this area make it very close to the definition of a “Tourist Historic City” [51].

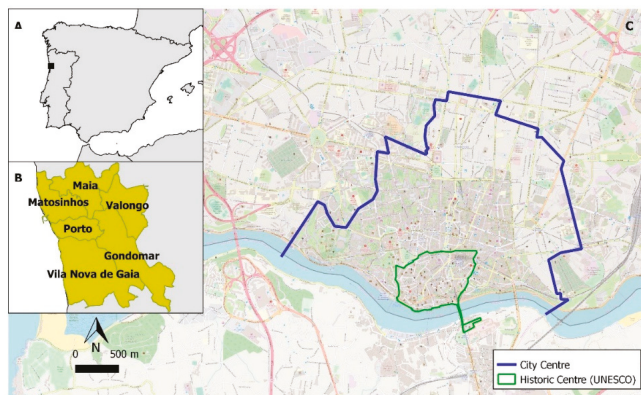


Figure 1. (A) Location of the Municipality of Porto; (B) Porto and the surrounding municipalities (Grande Porto); and (C) The City Centre and the Historic Centre (UNESCO). Source: Produced by the authors using the cartographic base of Open Street Maps.

3.2. Research Methodology

The debates on the dependencies and conflicts generated between culture and tourism in urban regeneration processes are common to several European cities [14,36,53]. In this article, we analyse the case of the Portuguese city of Porto, as it is now an ideal case for understanding the interdependencies between urban tourism and the cultural values of city centres. This is because, after more than 20 years of being declared a World Heritage Site by UNESCO and several urban rehabilitation efforts, the city has experienced a rapid and marked growth in tourism, which is felt in its current sociocultural dynamics. Even though previous works have focussed on the effects that tourism have on the residential and economic functions of Porto [18,61–63] this paper discusses the impacts that this urban strategy can have on the cultural values of the city. To achieve this, based on the data available from official secondary sources, we selected indicators related to the tourism industry, real estate, transport and economic activity. The data were collected from sources such as the Instituto Nacional de Estatística (INE, Statistics Portugal), Turismo de Portugal and Eurostat, from a spatial and temporal standpoint. To complement this analysis, we used some results obtained from other studies related to the case of Porto, including semi-annual surveys in the field [61]. Moreover, we analysed a range of documents (evaluation reports, touristic and planning documents) to understand the process of the Porto's rehabilitation and to collect the visions of the main stakeholders involved. Additionally, we reviewed some published material from the national and international press in order shed light on how Porto is considered in the current public debate on over-tourism. Apart from that, we identified the parallels between our case study and other European cities with similar tourist intensity and the particularities of our case study in order to understand what policy responses are being implemented in those cases.

4. Results

4.1. The Transformations of Porto's City Centre

In 1996, after more than two decades of rehabilitating many buildings and public spaces, first under the central Government of Portugal and, after 1982, under the authority of the municipality, the work led by CRUARB allowed Porto to be classified as a World Heritage Site (area marked in green in Figure 1). The inscription of this place in the World Heritage List was done under the following criterion: "The Historic Centre of Oporto, Luiz I Bridge and Monastery of Serra do Pilar with its urban fabric and its many historic buildings bears remarkable testimony to the development over the past thousand years of a European city that looks outward to the sea for its cultural and commercial links" [64]. However, the protection and management requirements of UNESCO's description stresses that sustaining the outstanding universal value of this area over time "...will require ensuring that the attributes that convey that value are protected, conserved, and managed, and continuing to address, to the degree possible, the issues associated with depopulation" [64]. To CRUARB's work and UNESCO's declaration, we must add other important initiatives that contributed to the renovation of this centre, and which are illustrated in the timetable of Figure 2. Among them are the Ibero-American Summit of 1998 and the European Capital of Culture initiative (2001). During the "Porto 2001 European Capital of Culture" initiative, the city underwent a large set of transformations that have lasted until the present day, with important interventions in the qualification of the public space (Batalha, Cordoaria, historic centre), increase of the parking offer (Palácio da Justiça, Cordoaria-Leões-Carlos Alberto, Praça de D. João I), reorganization of the road network (with the opening of the Ceuta Tunnel) and requalification of an important set of buildings, with the improvement or creation of new cultural equipment. Besides the urban regeneration, this event had two more intervention areas: the rehabilitation and construction of cultural facilities, such as the new music hall, the library of the Biblioteca Almeida Garrett and the celebration of cultural events. In parallel, important processes associated with the requalification of two spaces of the city of Porto have been implemented: Antas and Boavista. These processes are associated with the Portuguese organization of the Euro 2004 and the construction of two football stadiums. The effects of the creation of the light rail Metro system were

equally relevant in the context of the rehabilitation and regeneration intervention of the urban spaces of *Grande Porto*.

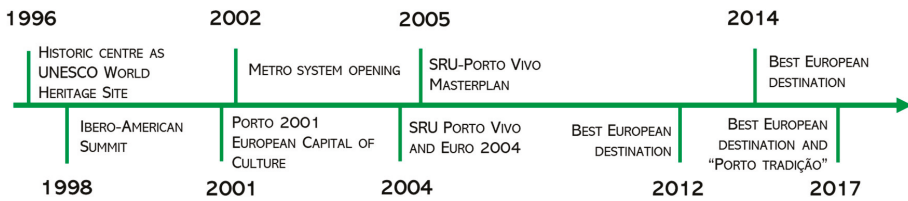


Figure 2. Timetable with the most relevant initiatives of the transformations of Porto's city centre.

Source: Produced by the authors.

Since 2004, the built heritage intervention management of Porto's historic centre has been run by SRU-Porto Vivo, a public limited company (60% of which was initially owned by the central state and 40% by the municipality). Approved in 2005, the SRU-Porto Vivo Masterplan defined a strategy of requalification based upon the re-population and economic revitalization through the promotion of activities related to commerce, culture, and leisure, which benefit from the tourism dynamics and structuring of the public space [60]. Accordingly, during the first years of the 21st century, innumerable interventions in public spaces were conducted, especially in streets, cultural facilities, streetscaping, pedestrianization schemes, and new urban furniture, funded and directly executed by the municipality [58]. Driven by the proliferation of low-cost airlines and the instability in competitive markets, especially in the Mediterranean basin, among other factors, Porto has become a hotspot for European urban tourism. At the same time, the search for private investment has promoted the proliferation of "charming hotels", the attraction of new "cosmopolitan" residents and the opening of new shops in the most attractive streets of Porto's city centre [62]. The municipal measures of attracting private investment were boosted during the 2008 economic crisis, when national measures to attract foreign investment to the real estate market were implemented [48]. As a result, many of the old and vacant buildings were transformed into hotel units and catering establishments, as well as short-term rentals or residences for students, especially foreigners. In some cases, however, this intervention took place in classified buildings of undeniable historical, aesthetic or cultural importance, as occurred in the case of "Quarteirão das Cardosas" [63]. From this building, which was once a monastery, only the façades were maintained, while the property and the surrounding space were "Disneylanded" [65]. In addition to this exemplary case, many others have succeeded through a process of the "scenarisation" and commercialization of cultural heritage [58]. In some cases, residents and businesses were forced to move, either by the unbearable increase in rental value and commercial lease, or by force. These dynamics justify the severe criticism of the management of the Historic Centre of Oporto, including its (deactivated) Special Protection Zone, in the last technical report of ICOMOS Portugal of 2018. The report considers in particular that there are "several attacks on the integrity and authenticity" of Porto due to a growing loss of the "characteristics of the fabric and the urban landscape, following massive demolitions of historic buildings and new buildings, as well as a growing depopulation of the historic centre of Porto" (p. 2 [66]).

The process of urban regeneration in Porto was felt not only in the physical and social structures, but also in its symbolic dimension. If it is true that Porto has never lost its character as the central space of an enlarged city, the transformation in recent years has catapulted the city's iconic expression to the international scale. An example of this is the creation of tourism products based on the Harry Potter saga, the main character of a great and worldwide literary and box-office success. The epicentre of this strategy is the centennial bookstore, *Livraria Lello & Irmão*, which may have been attended by the writer J.K. Rowling during the time she resided in Porto, a few years before the publication of the bestseller. In addition, there are allegedly elements in these books based on the characteristics of Portugal. As a result, the entrance to this bookstore is currently subject to a fee and the queues of those

waiting to visit it are an image that marks the day-to-day experience of the historic centre of the city and hinders the passage of pedestrians. Another of the significant elements of the strategies to promote the international image of Porto is its cuisine and wines, especially Port wine. In 2017, the city and its gastronomic treasures were scenery of the famous gastronomy and tourism TV programme “Parts Unknown” by Anthony Bourdain of the CNN chain, and the consumers of one of the most typical dishes of the city, the “Francesinha”, keep growing. In fact, cuisine and wine are considered anchor products of the tourist promotion of Porto and the northern region [67]. Several of the infrastructures associated with wine, such as the recently relocated Port Wine Museum and the Port Wine Institute, are located in Porto’s historical centre. To these actions, we must add those promoted by several international organizations that helped to project the image of the city of Porto in the international market: in 2010, the Lonely Planet travel guide editor considered Porto among the top 10 tourist destinations in Europe, and in 2012, the city was voted the best European destination of the year by the *European Best Destination* (a prize that it won again in 2014 and 2017).

4.2. Tourism in Porto

The first decades of the 21st century were marked by numerous and important transformations of the city of Porto—particularly its centre—with notable effects on the social, economic and cultural dynamics of the city. Together with the previously mentioned rehabilitation actions and the classification of the historic centre as a World Heritage Site, the growth of Porto’s Airport and the increase in the frequency and routes of low-cost airlines, as well as the significant international tourist recognition that the city has gained over the past decade, had an immediate impact on tourism.

Considering the data on the passenger traffic of Porto airport, in the year 2018, 5,579,287 people landed in this city, representing an increase of 166% when compared to the statistics for 2008 [68]. Furthermore, the data on tourism in the city as a whole revealed a remarkable growth. The change in the ratio between accommodation capacity and residents raised from 35.8 per 1000 inhabitants in 2004 to 85.4 by 2017 [69]. In addition, between 2002 and 2017, the number of hotel guests (not considering the various forms of short-term rental) increased by 70%, from 560,777 to 1,876,720 annually, of which 74.4% were foreigners [70]. In recent years, this growth has featured even higher rates, since from 2015 to 2017, there was a 42% growth in the number of guests in the city (Figure 3). Porto can be considered a city-break destination, meaning that visitors usually do a short stay to visit the main attractions. In 2017, the average stay in tourist accommodations was 2.7 days in Portugal and 2 days in Porto [71].

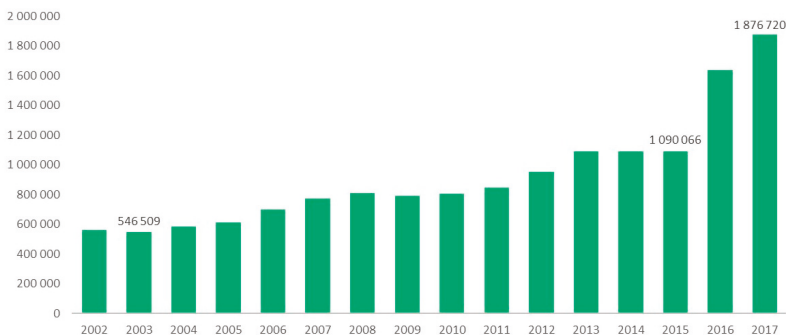


Figure 3. Number of guests in hotel establishments in the municipality of Porto. Source: Produced by the authors, based on Instituto Nacional de Estatística (INE) data [70].

In terms of overnight stays in tourist accommodation establishments per resident, Porto is significantly above the levels recorded in most European cities of its size. It is the city with the nineteenth highest ratio in terms of the accommodation capacity and residents [72]. As Figure 4 shows, when compared with already mentioned other cities that are being affected by touristification processes, tourism in Porto is more intense than in other cities such as Barcelona, Berlin and San Sebastián/Donostia.

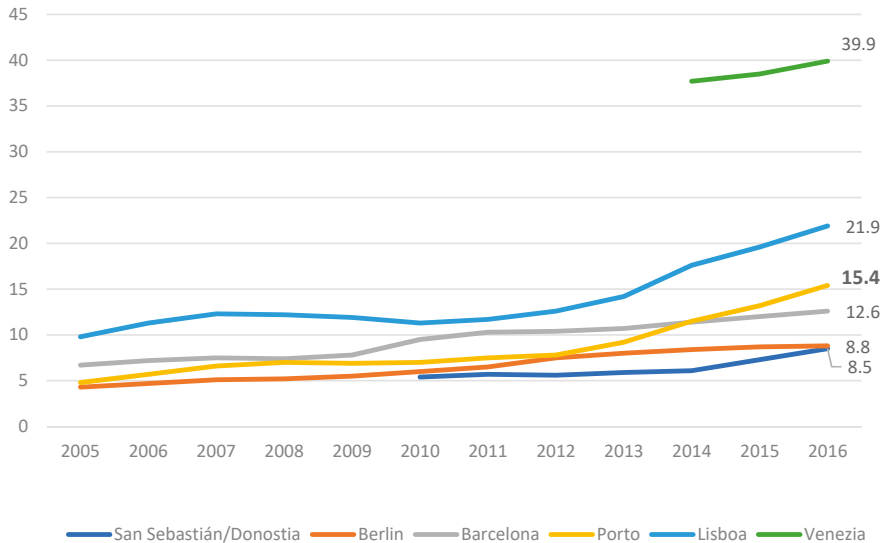


Figure 4. Total nights spent in tourist accommodation establishments per resident of the population of some European cities between 2005 and 2016. Source: Produced by the authors, based on Eurostat [72].

This intensity is especially alarming if we consider that the most important tourism assets of Porto are located in its city centre, which is a relatively small space (around 5 km²). As we can observe in Figure 5, it is possible to find around 75% of Porto’s main tourist attractions in this area, and 37% of them are located within its historical centre. Considering the type of attraction, we can identify that the major attractions are museums, monuments and churches, but architectural sites, cultural infrastructure, shops and public infrastructure such as libraries are among the main attractions of the city. In fact, the number of museum visitors per year in Porto rose by 48% from 2011 to 2016 [72]. Nevertheless, the high concentration of tourist attractions, together with the cultural value of this city centre’s urban landscape, has raised the number of users of this area, causing evident effects on its residential functions.

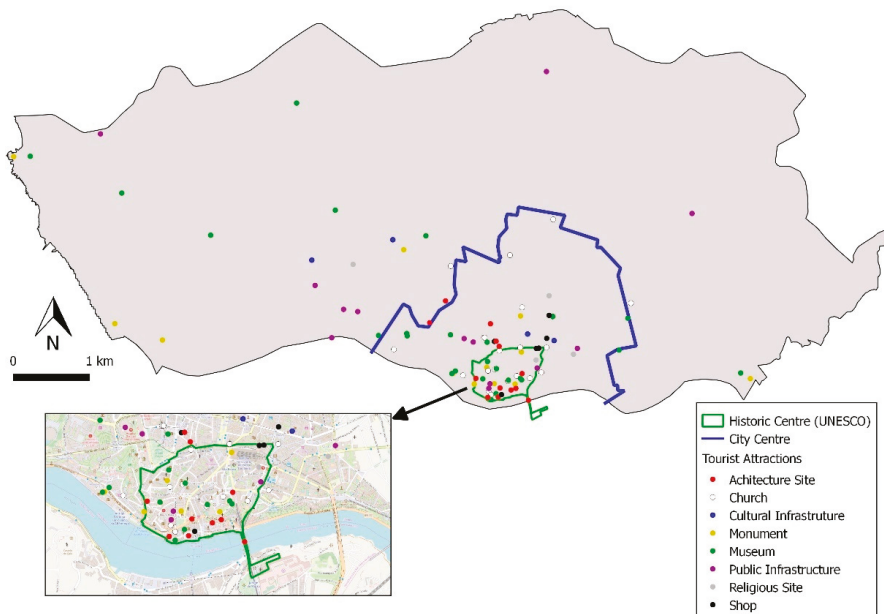


Figure 5. Porto's municipality and the main tourist attractions in the historic centre. Source: Produced by the authors, based on Porto's official tourism plan [73].

Among the most significant impacts that the increased touristic demand has caused is the expressive growth of short-term rentals. This has especially affected the central parish where the historic city centre is located, as shown in Figure 6. Between 2015 and 2018, 2081 new short-term rentals were officially registered, of which 67% were located in the central parish. The dimension that short-term rentals has been gaining in this urban space is even more evident if we consider data from local digital housing platforms, which include short-term rentals that are not officially registered. Considering only the Airbnb platform, in seven years, the number of properties listed went from less than 100 in 2011 to more than 11,000 as of 31 May 2018. Of these, more than 70% are complete houses or flats, and the vast majority are concentrated in the old city, where about 4 out of 5 of the 200 most profitable properties of the entire Porto Metropolitan Area are located [74]. The direct economic impacts and benefits are clear, since only between June 2017 and May 2018, the hosts registered with Airbnb had an income of more than 67 million Euro, plus the multiplier effects on activities associated with services, catering, restoration and construction, for example [74].

At the same time, there was also an increase in the real estate value. In fact, the average value in Euro of buildings transacted in the municipality of Porto increased by 42% between 2000 and 2017 [75]. Figure 7 shows the variation, between 2016 and 2018, of the median value per square metre of dwelling sales of existing flats in the parishes of Porto. In this same image, it is possible to observe that it was in two of the three parishes, where the city centre is located (União das freguesias de Cedofeita, Santo Ildefonso, Sé, Miragaia, São Nicolau e Vitória and Bonfim), that this value registered a bigger growth. Furthermore, between 2000 and 2017, the municipality of Porto lost 18.4% of its inhabitants [56], while all municipalities in *Grande Porto* logged population growth, which is especially evident in Maia (14.2%) and Valongo (11.7%). This seems to indicate that the inhabitants of Porto, especially those who lived in the city centre have been displaced into the surrounding territories, and this area is losing its residential function.

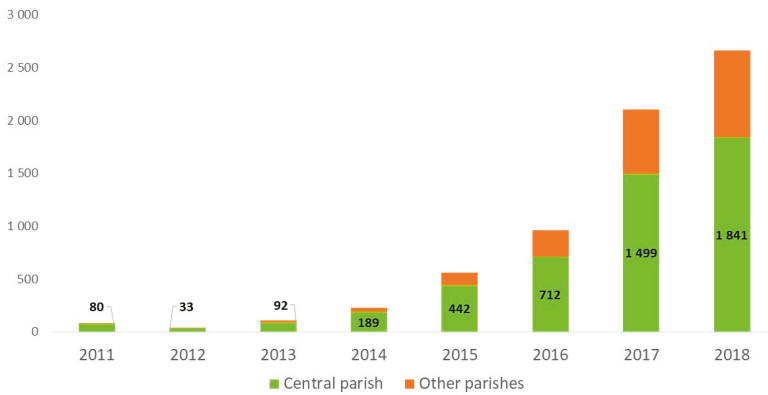


Figure 6. Number of short-term rental registries in the parishes of the municipality of Porto. Source: Produced by the authors, based on data from Turismo de Portugal [76].

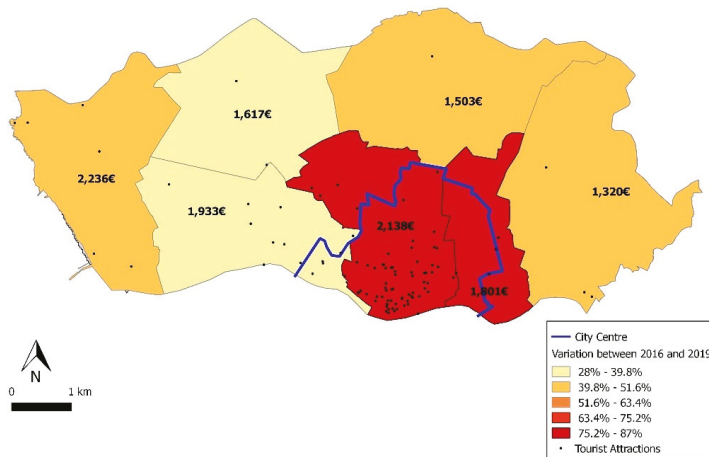


Figure 7. Median value per square metre of dwellings sales in flats in the parishes of Porto: total value and variation between the 1st Quarter of 2016 and the 1st Quarter of 2019. Source: Produced by the authors, based on INE data [77].

Moreover, in trying to adapt to the new dynamics and requirements of the tourism demand and respond to rising real estate prices, the economic actives have changed. Figure 8 shows, between 2008 and 2017, the gross value added (GVA) and the number of enterprises dedicated to activities such as trade, construction and manufacturing decreased. In the same period, activities such as consultancy, accommodation and food, electricity, information and communication increased in terms of GVA and the number of enterprises. This same figure shows that the GVA of businesses related to education has increased, whereas the number of enterprises was lower in 2017 than in 2008. Another important point to highlight is that, although the number of enterprises dedicated to activities related to sports, arts and culture has risen, the GVA of these activities has declined by 88%. In general, these changes suggest that in recent years, the services sector has increased its importance in the economy of Porto, especially those services associated with tourism.

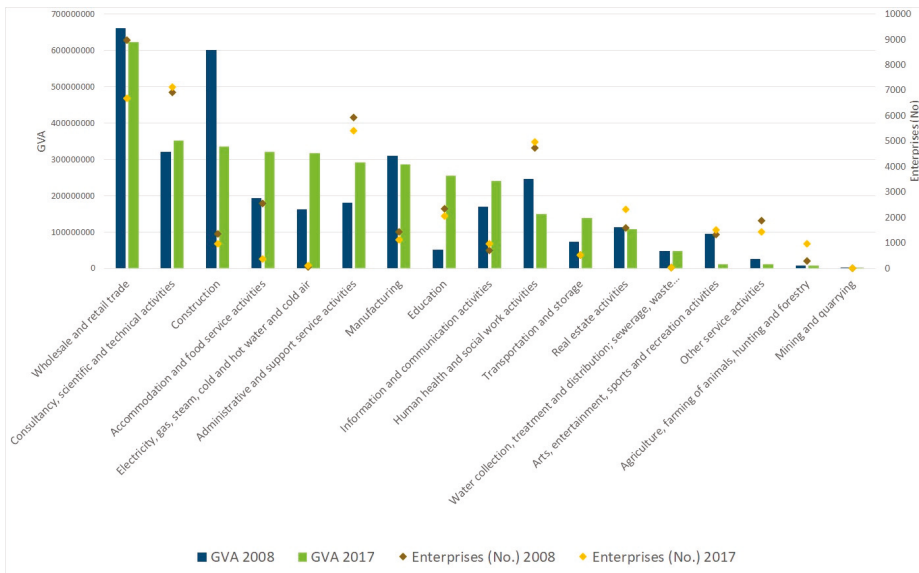


Figure 8. Gross value added (GVA) and the number of enterprises of Porto by economic activity in 2008 and 2017. Source: Produced by the authors, based on INE data [78].

The changes are even more evident considering the street trade of the core of the city centre. The main growth occurred in activities aimed at temporary users (coffeehouses, restaurants, self-service laundries and souvenir shops), and the main reduction was in establishments positioned to respond to the resident population. According to the data collected in Fernandes and Chamusca [61], between 2012 and 2018 the street trade in the core of the city centre (area marked in orange in Figure 9) changed significantly. As Table 1 shows, there was a clear increase of 39% in accommodation units, 8.6% in coffee shops and restaurants, 16.1% in hybrid establishments (which combine several offers) and 2.2% in non-specialized retail spaces, especially souvenir shops (18.4%); meanwhile, services relating to hygiene, health and beauty (14.1%) and personal items (13.4%) have disappeared.

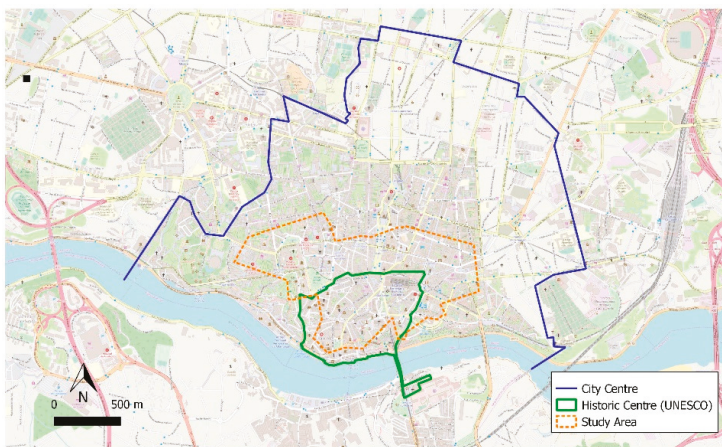


Figure 9. The study area used by Fernandes and Chamusca [61]. Source: Produced by the authors.

Table 1. Changes of the street trade of the core of the city centre between 2012 and 2018.

Type of Unit	July '12	July '14	July '16	July '18
Food products	94	100	99	98
Personal products	480	466	461	399
Home products	123	119	97	86
Beauty and personal care products	87	97	92	79
Sports and culture	201	247	218	196
Professional equipment	27	35	37	33
Non-specialized retail	102	91	93	95
Hybrids	16	19	31	36
Construction and bricolage	70	47	38	31
Fuel and transports	2	1	1	0
Retail (total)	1202	1222	1167	1053
Coffeehouses and restaurants	406	454	523	568
Accommodation/hotels	79	102	141	196
Hotel/Catering (Total)	485	556	664	764
Retail/Hotel/Catering (Total)	1687	1778	1831	1817
Shopping centres	8	8	8	8
Other services	269	272	280	277
Retail and services (Total)	1964	2058	2119	2102
Empty	829	734	657	707
Total	2793	2792	2776	2809

Source: Adapted from Fernandes and Chamusca [61].

Furthermore, it is possible to identify a process of homogenization that is in line with what is occurring in other urban spaces [79]. This process is caused on the one hand by the extension street trade of some brands and products from multinational companies (e.g., the large chains Amorino, Starbucks and Costa Café) and, on the other, by the reinforcement of a (presumed) specific character of “neo-traditional” units. These spaces are deliberately marketed as region-specific, with the trivialization and massification of products and environments seen as “typical”, which aim to carry the past into the future through post-modern models of spectacularisation and revivalism that target consumers with a medium or high purchasing power [61]. In addition, we have recently witnessed initiatives to exploit traditional shops as heritage places under specific legislation [80]. In Porto, this has been conducted under a program called “Porto tradição”, which has so far been unable to protect and preserve a large number of already-threatened commercial establishments.

The strong pressure of tourism in Porto and its consequences have drawn the attention of the international press. Using any Internet search engine, it is easy to find several articles in different languages with favourable information concerning Porto and the best sites to visit; in August 2018, the German newspaper *Der Spiegel* published an extensive article on “How Tourists Are Destroying the Places They Love” [81], using the waiting in lines in front of the *Livraria Lello & Irmão* bookstore as an example (Figure 10). Additionally, the English newspaper *The Guardian* recently published an article on movements critical of the conventional forms of tourism on the rise, using the case of Porto as an example [82].



Figure 10. Waiting line in front of the *Livraria Lello & Irmão* bookstore. Source: Picture by Maria Gomes (26 July 2019). Reproduced with permission of the author.

In some cases, of which the Casa Oriental is a good example (Figure 11), we can speak of a “staged authenticity”, with a business aimed at a tourist demand to replace a conventional commercial place, while maintaining the main elements of the façade.



Figure 11. (a) Casa Oriental in 2006; and (b) Casa Oriental in 2019. Source: (a) by Manuel de Sousa [83] licensed under CC; and (b) by the authors (17 June 2019).

5. Discussion: The Risks of Unsustainability and the Conflicts between Culture and Tourism

The analysis of the recovery strategies of the city centre of Porto and the evolution of its socio-economic dynamics evidence some conflicts that may jeopardize the sustainability of the relation between culture and tourism. This could be especially problematic if we consider the dependency that the city has on its cultural capital. This dependency is notorious, considering the importance that

culture had in the process of the physical, functional and symbolic recovery of the city. Among the most important actions are: firstly, efforts made to achieve the distinction of a World Heritage Site by UNESCO in 1996; secondly, the construction of new cultural equipment and the improvements of the infrastructure, carried out through the European Capital of Culture initiative in 2001 [84]; and thirdly, using tourism, culture and leisure as development vectors for the revitalization of Porto's city centre. In fact, according to the SRU-Porto Vivo Masterplan, Porto's culture, based on the "city's traditions, history and festivals, represented in their traditional form or with a greater contemporary influence", has been essential for the renovation project of the city. As a result, together with other already mentioned measures and the strong growth of low-cost travel at the global scale, Porto is now an important urban tourist destination. As a consequence, Porto in general, and its centre in particular, is now heavily influenced by tourism in all areas.

The equilibrium between tourism, culture and urbanism in the city centre of Porto may be in danger because of the overuse of its touristic function and the loss of its residential function. That is precisely what the ICOMOS report of 2018 pointed out: *"Local residents and traders are expropriated, and the buildings are replaced by hotels, car parks, shops and luxury apartments, while the World Heritage Committee recommended to deal with the issue of depopulation as soon as the city integrated the World Heritage List. The population of the historic Centre of the city of Porto has decreased by more than 50% since then"* (p. 22 [66]). To these warnings, we add all the collected data which show that the transformations experienced by the city of Porto are similar to those verified in many other cities that have a stake in urban recovery based on tourism and culture, and are oriented towards international markets and short-term returns. In fact, Porto's trajectory is similar to that of Lisbon or Barcelona, for example, although the scale of what happened and the time that it took to happen are especially difficult to absorb [18]. Likewise, in Porto, this process is highly concentrated in the centre of the city, which is the place where the major part of the tourist attractions are located. As a consequence, its residential function is becoming marginal, thus constituting, in the face of processes of speculation, gentrification and touristification, a space of conflict and claim [85]. Consequently, the impacts also seem to be similar to those in these cities. Among the main the main damaging consequences of "over-tourism" (i.e., an overuse of the resources, infrastructure, or facilities of a destination or parts of it) are: the rising costs of living, real-estate speculation and the associated gentrification, congestion of transport infrastructure and a deterioration of the local identity [86]. Furthermore, the evolution of the functions of the city centre, namely, the opening of short-term rentals, the changes in street trade and the expansion of the franchised retailing, seem to indicate that this place is being transformed into a place of visitor consumption. These transformations seem to be in line with what Sequera and Nofre (p. 6 [79]) described as being the "new Disneyficated commercial tourist areas", which today characterize the most central areas of the "tourist city".

In response to the problems generated by the growing mass tourism, several municipal governments are pushing for specific regulations, legislation and taxes. The most notorious have been made in the regulation of the economic activity of tourist accommodation platforms, which currently in cities such as Amsterdam and Barcelona have limitations on the time and space in which they operate [87]. In the case of Amsterdam, the control of tourist activity has gone further, and it has recently been announced by the municipal authorities that a campaign will be launched to dissuade people from visiting certain parts of the city, having already removed one of the tourist icons of the city, the "Iamsterdam" [88]. Another of the measures most used in several cities, recently adopted in Porto is the application of a tourist tax per person and per night, whose revenue should in principle be used to minimize the consequences of tourism growth. Additionally, in Portugal, the regulations around short-term rentals changed at the end of 2018 and regulatory powers were devolved to municipalities. Nevertheless, the municipality of Porto is being accused by some social movements and political parties of having a passive attitude regarding the problems generated by tourism—especially those which affect housing [89].

Policy approaches in Porto should contribute to keeping the city centre as a multifunctional place, capable of answering the needs of inhabitants and visitors. The maintenance of the residential function of the historical centres and of the associated social and economic environments is beyond the issues related to urban social equity, pivotal for the maintenance of their cultural values, on which their economic values are based. Therefore, the maintenance of cultural capital is strongly dependent on the existence of long-term residents. Moreover, transforming cultural capital into an item for visitor consumption can endanger its original genius [90]. This is especially relevant for the visiting experience, because what is considered “authenticity” has a strong impact on the demand, and everything points to an ongoing influence on the dynamics of the next few years [91]. Furthermore, cultural capital resources are central to the sense of identity and belongingness of the residents.

In this sense, public administrations at the local and central levels should facilitate the intermediation of interests between the different users of the cities. Following what is being done in other overvisited places in Europe, policymakers in Porto should consider which forms of tourism to encourage and set incentives and disincentives accordingly through tourism and marketing policies [52,90]. It is also important to ensure that the policies that most affect the local dynamics (among which are housing, urban, cultural and tourism dynamics) work in an integrated manner and maintain the different values of cultural capital, while prolonging them in time. Moreover, as the tourism intensity of Porto has reached high levels, it would be important to spread the touristic dynamics over a wider territory. This could be done by creating tourist products outside the city centre to give visitors an incentive to travel to the less-visited spaces of the city and the region. For this, it would be important to improve the collaboration between Porto and the surrounding municipalities in tourism matters. Porto’s touristic success could allow those depopulated and peripheral territories of the northern region of Portugal to profit from the increasing number of visitors.

6. Conclusions

The incorporation of culture and tourism into urban regeneration strategies has contributed to the increase of the dynamics in areas that were once heavily devalued, both economically and socially. Many city centres, which reached the last decades of the twentieth century with strong signs of decay and devaluation, are now essential poles of consumption and cultural animation. The centre of Porto is a good example of this transformation. After decades of decay, where depopulation, ruin and insecurity were expanding, it was the target of strong rehabilitation interventions and today is the main image of the city’s calling cards.

However, the regeneration of the ancient fabric of the city of Porto was also followed by conflicts and contradictions. First, despite the strong real estate valuation of this space, fuelled by its great tourist attraction, the number of residents remains very small. There are also problems related to the expulsion—sometimes forced—of residents and long-term business owners, who wished to preserve their place in this space. Additionally, new users have difficulty in settling in this centre. The high prices of real estate and the types of housing available make residing in this centre a privilege, only within the reach of some. Secondly, the transformation of the centre’s functions, caused by the need to respond to the requirements of the new temporary users, has led to a loss in terms of the multi-functionality of the city, with the generality of streets and squares increasingly dominated by businesses related to accommodation and catering, offering goods and services demanded by consumer-tourists. Many of these new spaces are associated with brands, services or products that are also present in many other European cities, thus contributing to a loss of the distinctive character of the urban landscape. Finally, the recent transformation of the centre of the city of Porto, as a space especially dedicated to temporary users, whose economic and cultural functions are mainly aimed at the enjoyment of visitors, makes the resident population of Porto progressively move away. Between the excess of people in several emblematic spaces of the city centre and the increase of the prices of its goods and services, there is little room for a part of the resident population. This may jeopardize the maintenance of the cultural capital of Porto and, consequently, of the main elements that attract visitors to this space.

For the reasons already stated, it is necessary for a policy to be articulated with a sustained vision, and it is therefore necessary to promote the strategic planning and strategic thinking of the city in the medium–long term. This should be done through an integrated approach between sectors and between the stakeholders of diverse domains and at several scales. In addition, we identified that the strategies implemented in the city of Porto seem to follow similar patterns to those used in other European cities, and the consequences also manifest themselves in the same manner. Consequently, it is important to encourage the sharing of experiences with other cities currently experiencing problems similar to those in Porto through participation in joint work networks. This could be an effective way to find similar answers to common issues related to the management of tourism activities and the maintenance of cultural capital. In addition, it is essential for tourism and cultural strategies to be integrated into a transparent and negotiated project for the long-term development of the city, including strong participation, monitoring and evaluation mechanisms. Only then, at the service of a desired future, may these measures balance the population and the material and immaterial cultural heritage, which is desirable for the maintenance and reinforcement of cultural capital. Lastly, the recent dynamics of Porto reveal that the excessive use of space and an overexploitation of culture poses serious threats to the maintenance of the values of the centre, particularly the cultural ones, calling into question the “character of the place” or *genius locus*. This should be considered in the context of the sustainability of all regeneration strategies. On one hand, because the dimensions that Thorsby [43] claimed to be essential to the sustainability of culture should be encompassed: the intergenerational equity; the intragenerational equity; the maintenance of diversity; the precautionary principle; the interconnectedness between cultural, social, environmental and economic systems. On the other hand, and strictly related to this last dimension, because tourism and culture are interconnected and their relationship depends on the capacity of places to maintain the distinctive character conferred on them by their cultural capital.

This research has some limitations related to the fact that the gathering of data relied on secondary sources, which are often limited in terms of time and scale. Additionally, to better understand the present state of the relationship between culture and tourism in Porto it would be important to consider the perspective of stakeholders such as residents, agents from different economic activities, cultural associations, visitors and so on. These limitations attest to the need to further develop future research related to the relationship between tourism and culture in Porto. Future research could include the implementation of qualitative methodologies such as interviews of different stakeholders, and techniques such as cultural mapping to conduct a diagnostic survey of the cultural capital of Porto. Nevertheless, by reviewing the regeneration process of Porto and analysing the data on tourism, economy and housing, this paper contributes to the understanding that culture, more than being a booster for tourism, is essential for the development of place-based strategies, and its maintenance is fundamental for the touristic attractiveness of urban spaces.

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References

1. Gospodini, A. European cities in competition and the new ‘uses’ of urban design. *J. Urban Des.* **2002**, *7*, 59–73. [[CrossRef](#)]
2. Brenner, N. *New State Spaces: Urban Governance and the Rescaling of Statehood*; Oxford University Press: New York, NY, USA, 2004.

3. Florida, R.L. *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life*; Basic Books: New York, NY, USA, 2002.
4. Hutton, T. The New Economy of the Inner City: Restructuring, Regeneration and Dislocation in the 21st Century Metropolis. *Cities* **2009**, *21*, 89–108. [CrossRef]
5. Scott, A.J. Cultural economy and the creative field of the city. *Geogr. Ann. Ser. B Hum. Geogr.* **2010**, *92*, 115–130. [CrossRef]
6. Lord, G.D. The 'Bilbao effect' from poor port to must-see city. *Art Newsp.* **2007**, *184*, 32–33.
7. Garcia, B. Cultural Policy and Urban Regeneration in Western European Cities: Lessons from Experience, Prospects for the Future. *Local Econ.* **2004**, *19*, 312–326. [CrossRef]
8. Evans, G. Hard-Branding the Art Museum—from Prado to Prada. *Int. J. Urban Reg. Res.* **2003**, *27*, 417–440. [CrossRef]
9. Ernst & Young. *Creating Growth: Measuring Cultural and Creative Markets in the EU*; Ernst & Young: Paris, France, 2014.
10. Pine, J.; Gilmore, J.H. Welcome to the Experience Economy. *Harv. Bus. Rev.* **1998**, *76*, 97–105.
11. Rius Ulldemolins, J. Culture and authenticity in urban regeneration processes: Place branding in central Barcelona. *Urban Stud.* **2014**, *51*, 3026–3045. [CrossRef]
12. Landry, C.; Bianchini, F. *The Creative City*; Demos: London, UK, 1995.
13. Russo, A.P.; Scarnato, A.; Russo, A.P. "Barcelona in common": A new urban regime for the 21st-century tourist city? *J. Urban Aff.* **2017**, *40*, 455–475. [CrossRef]
14. García-Hernández, M.; de la Calle-Vaquero, M.; Yubero, C. Cultural heritage and urban tourism: Historic city centres under pressure. *Sustainability* **2017**, *9*, 1346. [CrossRef]
15. Ritchie, B.W. Contribution of urban precincts to the urban economy. In *City Spaces-Tourist Places*; Hayllar, B., Griffin, T., Edwards, D., Eds.; Elsevier: Oxford, UK, 2010; pp. 169–200.
16. Scott, A.J. The Cultural Economy of Cities. *Int. J. Urban Reg. Res.* **1997**, *21*, 323–339. [CrossRef]
17. Troitinho Vinuesa, M.Á. El turismo en las ciudades históricas. *Polígonos* **1995**, *5*, 49–65. [CrossRef]
18. Carvalho, L.; Chamusca, P.; Fernandes, J.; Pinto, J.; Chamusca, P. Gentrification in Porto: Floating city users and internationally-driven urban change. *Urban Geogr.* **2019**, *40*, 565–572. [CrossRef]
19. OECD. The Impact of Culture on Tourism. 2009. Available online: <https://www.oecd.org/cfe/tourism/theimpactofcultureontourism.htm> (accessed on 10 May 2019).
20. Richards, G. *Cultural Tourism in Europe*; CAB International: Wallingford, UK, 1996.
21. Pred, A. Place as historically contingent process: Structuration and the time-geography of becoming places. *Ann. Assoc. Am. Geogr.* **1984**, *74*, 279–297. [CrossRef]
22. Abreu, M.D.A. Sobre a memória das cidades. *Rev. Territ.* **1998**, *3*, 5–26.
23. Lowenthal, D. *Possessed by the Past: The Heritage Crusade and the Spoils of History*; Cambridge University Press: Cambridge, UK, 1996.
24. Smith, M.K. *Tourism, Culture and Regeneration*; CABI: Oxfordshire, UK, 2007.
25. Paulauskaite, D.; Powell, R.; Coca-Stefaniak, J.A.; Morrison, A.M. Living like a local: Authentic tourism experiences and the sharing economy. *Int. J. Tour. Res.* **2017**, *19*, 619–628. [CrossRef]
26. Vidon, E.S. The Fantasy of Authenticity: Touring with Lacan. *Ann. Tour. Res.* **2016**, *58*, 33–45.
27. Future Foundation. Millennial Traveller Report. Why Millennials Will Shape the Next 20 Years of Travel. 2016. Available online: <https://www.foresightfactory.co/wp-content/uploads/2016/11/Expedia-Millennial-Traveller-Report-Final.pdf> (accessed on 24 May 2019).
28. Judd, D.R.; Fainstein, S.S. *The Tourist City*; Yale University Press: New Haven, USA, 1999.
29. Novy, J.; Colomb, C. Urban tourism and its discontents: An introduction. In *Protest and Resistance in the Tourist City*; Colomb, C., Novy, J., Eds.; Routledge: London, UK; New York, NY, USA, 2016; pp. 1–30.
30. McCann, E.; Ward, K. *Mobile Urbanism: Cities and Policymaking in the Global Age*; University of Minnesota Press: Minnesota, USA, 2011.
31. Ioannides, D.; Petridou, E. Contingent neoliberalism and urban tourism in the United States. In *Neoliberalism and the Political Economy of Tourism*; Mosedale, J., Ed.; Routledge: New York, NY, USA, 2016; pp. 33–48.
32. Bourdeau, P.; François, H.; Bensahel, L. *Fin (?) et Confins du Tourisme: Interroger le Statut et les Pratiques de la Récréation Contemporaine*; L'Harmattan: Paris, France, 2013.
33. International Council on Monuments and Sites (ICOMOS). *Princípios de Valletapara a Salvaguarda Gestão das Cidades Históricas e Áreas Urbanas*; ICOMOS: Paris, France, 2011.

34. MacCannell, D. Staged authenticity: Arrangements of social space in tourist settings. *Am. J. Sociol.* **1973**, *79*, 589–603. [CrossRef]
35. Gilmore, J.; Pine, J. *Authenticity: What Consumers Really Want*; Harvard Business Press: Harvard, MA, USA, 2007.
36. Pinkster, F.M. When the spell is broken: Gentrification, urban tourism and privileged discontent in the Amsterdam canal district. *Cult. Geogr.* **2017**, *24*, 457–472. [CrossRef]
37. Throsby, D. *Economics and Culture*; Cambridge University Press: Cambridge, UK, 2001.
38. Throsby, D. Cultural Capital. *J. Cult. Econ.* **1999**, *23*, 3–12. [CrossRef]
39. Dewar, K.; Cros, H.; Li, W. The search for World Heritage brand awareness beyond the iconic heritage: A case study of the Historic Centre of Macao. *J. Herit. Tour* **2012**, *7*, 323–339. [CrossRef]
40. Capello, R.; Perucca, G. Cultural Capital and Local Development Nexus: Does the Local Environment Matter? In *Socioeconomic Environmental Policies and Evaluations in Regional Science. New Frontiers in Regional Science: Asian Perspectives*; Shibusawa, H., Sakurai, K., Mizunoya, T., Uchida, S., Eds.; Springer: Singapore, 2017; pp. 103–124.
41. Licciardi, G.; Amirtahmasebi, R. *The Economics of Uniqueness: Investing in Historic City Cores and Cultural Heritage Assets for Sustainable Development*; The World Bank: Washington, DC, USA, 2012.
42. Duxbury, N.; Kangas, A.; Beukelaer, C. Cultural policies for sustainable development: Four strategic paths. *Int. J. Cult. Policy* **2017**, *23*, 214–230. [CrossRef]
43. Throsby, D. Culturally sustainable development: Theoretical concept or practical policy instrument? *Int. J. Cult. Policy* **2017**, *23*, 133–147. [CrossRef]
44. UNESCO Global Report on Culture for Sustainable Urban Development Heritage and Creativity Culture. Available online: <http://openarchive.icomos.org/1816/1/245999e.pdf> (accessed on 14 May 2019).
45. Sans, A.A.; Quaglieri, A. Unravelling Airbnb: Urban Perspectives from Barcelona. In *Reinventing the Local in Tourism: Producing, Consuming and Negotiating Place*; Russo, P., Richards, G., Eds.; Channel View: London, UK, 2016; pp. 209–228.
46. Minoia, P. Venice reshaped? Tourist gentrification and sense of place. In *Tourism in the City*; Bellini, N., Pasquinelli, C., Eds.; Springer: Cham, Switzerland, 2016.
47. Gant, A.C. Holiday Rentals: The New Gentrification Battlefield. *Sociol. Res. Online* **2016**, *21*, 1–9. [CrossRef]
48. Lestegás, I.; Lois-González, R.C.; Seixas, J. The global rent gap of Lisbon’s historic centre. *Sustain. City* **2018**, *13*, 683–694. [CrossRef]
49. Gant, A.C. Tourism and commercial gentrification. In *The Ideal City: Between Myth and Reality, Representations, Policies, Contradictions and Challenges for Tomorrow’s Urban Life, Proceedings of the RC21 International Conference, Urbino, Italy, 27–29 August 2015*; Urbino University: Urbino, Italy, 2015.
50. Sequera, J.; Nofre, J. Urban activism and touristification in Southern Europe. In *Contemporary Left-Wing Activism Vol. 2: Democracy, Participation and Dissent in a Global Context*; Roberts, J.M., Ibrahim, J., Eds.; Routledge: New York, NY, USA, 2018; Volume 2.
51. Ashworth, G.J.; Tunbridge, J.E. *The Tourist-Historic City*; Routledge: London, UK, 2000.
52. Troitiño Vinuesa, M.Á.; Troitiño Torralba, L. Visión territorial del patrimonio y sostenibilidad del turismo. *Boletín la Asoc. Geógrafos Españ.* **2018**, *78*, 212–244. [CrossRef]
53. Benner, M. From overtourism to sustainability: A research agenda for qualitative tourism development in the Adriatic, Heidelberg University. MPRA Paper No 92213. 2019. Available online: <https://mpra.ub.uni-muenchen.de/92213/> (accessed on 24 August 2019).
54. Duignan, M. ‘Overtourism’? Understanding and Managing Urban Tourism Growth beyond Perceptions: Cambridge Case Study: Strategies and Tactics to Tackle Overtourism. In *‘Overtourism’? Understanding and Managing Urban Tourism Growth beyond Perceptions*; United Nations World Tourism Organisation (UNWTO): Madrid, Spain, 2019; Volume 2, pp. 34–39.
55. Instituto Nacional de Estatística (INE). População Residente (N.o) por Local de Residência (NUTS–2013), Sexo e Grupo Etário; Anual. Available online: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&contacto=pi&indOcorrCod=0008273&selTab=tab0{T1|textgreater|} (accessed on 10 May 2019).
56. Balsas, C.J.L. Local Economy City Centre Regeneration in the Context of the 2001 European Capital of Culture in Porto, Portugal. *Local Econ.* **2004**, *18*, 396–410. [CrossRef]
57. Fernandes, J.A.R. A cidade, os municípios e as políticas. *Sociol. Rev. Fac. Let. Univ. Porto* **2017**, *13*, 227–251.
58. Balsas, C.J.L. City Centre Revitalization in Portugal: A Study of Lisbon and Porto City Centre Revitalization in Portugal: A Study of Lisbon and Porto. *J. Urban Des.* **2007**, *12*, 231–259. [CrossRef]

59. Pinto, N.; Burns, M. The impacts of urban regeneration companies in Portugal: The case of Porto Vivo SRU. *Adv. Urban Rehabil. Sustain.* **2010**, *9*, 104–112.
60. Porto Vivo Sociedade de Reabilitação Urbana da baixa Portuense. Porto Vivo Masterplan. Available online: <http://www.portovivosru.pt/pt/area-de-atuacao/enquadramento> (accessed on 24 March 2019).
61. Fernandes, J.; Chamusca, P. Novos tempos, dinâmicas e desafios no centro do Porto. In *Brasil e Portugal Vistos Desde as Cidades. As Cidades Vistas Desde o seu Centro*; Sposito, M.E., Rio Fernandes, J.A., Eds.; Cultura Académica: São Paulo, Brazil, 2018; pp. 265–291.
62. Fernandes, J.A. Area-based initiatives and urban dynamics. The case of the Porto city centre. *Urban Res. Pract.* **2011**, *4*, 285–307. [[CrossRef](#)]
63. Branco, R.; Alves, S. Models of urban requalification under neoliberalism and austerity: The case of Porto. In *Spaces of Dialogue for Places of Dignity: Fostering the European Dimension of Planning, Proceedings of the AESOP Annual Congress'17*; Marques da Costa, E., Morgado, S., Cabral, J., Eds.; Universidade de Lisboa: Lisbon, Portugal, 2017.
64. UNESCO. Historic Centre of Oporto, Luiz I Bridge and Monastery of Serra do Pilar. Available online: http://whc.unesco.org/pg.cfm?cid=31&id_site=755&l=en (accessed on 6 May 2019).
65. Ritzer, G.; Liska, A. “McDisneyization” and “Post-tourism”. In *Touring Cultures: Transformations of Travel and Theory*; Rojek, C., Urry, J., Eds.; Routledge: London, UK, 1997; pp. 96–109.
66. ICOMOS-PORTUGAL. Comissão Nacional Portuguesa do Conselho Internacional dos Monumentos e Sítios. In *Technical Evaluation Report on the Conservation State of UNESCO*; Historical Centre of Oporto, Luiz I Bridge and Monastery of Serra do Pilar: Lisboa, Portugal, 2018.
67. Turismo do Porto e Norte de Portugal. *Estratégia de Marketing Turístico do Porto e Norte de Portugal. Horizonte 2015–2020*. Available online: <https://estrategia.turismoportugal.pt/content/plano-de-marketing-tur%C3%ADstico-porto-e-norte> (accessed on 6 May 2019).
68. Instituto Nacional de Estatística (INE). Passageiros Embarcados (N.o) nos Aeroportos por Localização Geográfica, Tipo de Tráfego e Natureza do Tráfego, Mensal. Available online: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&contexto=pi&indOcorrCod=0000861&selTab=tab0 (accessed on 6 May 2019).
69. Instituto Nacional de Estatística (INE). Capacidade de Alojamento nos Estabelecimentos Hoteleiros por 1000 Habitantes (N.o) por Localização Geográfica (NUTS—2013). Anual. Available online: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0008784&contexto=bd&selTab=tab2 (accessed on 26 May 2019).
70. Instituto Nacional de Estatística (INE) Hóspedes (N.º) nos Estabelecimentos Hoteleiros por Localização Geográfica (NUTS—2013) e Tipo (Estabelecimento Hoteleiro), Mensal. Available online: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0001817&contexto=bd&selTab=tab2\T1\textgreater{} (accessed on 10 May 2019).
71. PORDATA. Average Stay in Tourist Accommodations: Total, Residents and Non-Residents. Available online: <https://www.pordata.pt/en/Municipalities/Average+stay+in+tourist+accommodations+total++residents+and+non+residents-758> (accessed on 26 May 2019).
72. Eurostat. Culture and Tourism—Cities and Greater Cities. Available online: http://ec.europa.eu/eurostat/web/products-datasets/-/urb_ctour (accessed on 27 August 2019).
73. Porto’s Official Tourism Plan. Available online: http://www.visitporto.travel/Lists/ISSUUDocumentos/mapa_por.pdf (accessed on 26 August 2019).
74. Fernandes, J.A.R.; Carvalho, L.; Chamusca, P.; Mendes, T. *O Porto e a Airbnb*; Book Cover Editora: Porto, Portugal, 2018.
75. Instituto Nacional de Estatística (INE). Valor Médio dos Prédios Transaccionados (€/N.o) por Localização Geográfica (NUTS—2013) e Tipo de Prédio, Anual. Available online: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0008760&contexto=bd&selTab=tab2&xlang=pt (accessed on 25 April 2019).
76. Turismo de Portugal. Registo Nacional do Alojamento Local. Available online: <https://www.alesclarecimentos.pt/legal/registo-nacional-do-al\T1\textgreater{}> (accessed on 6 May 2019).

77. Instituto Nacional de Estatística (INE). Valor Mediano das Vendas por m2 de Alojamentos Familiares (€) por Localização Geográfica (Cidade) e Categoria do Alojamento Familiar, Trimestral—INE, Estatísticas de Preços da Habitação ao Nível Local. Available online: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&contecto=pi&indOcorrCod=0009492&selTab=tab0&xlang=en (accessed on 26 August 2019).
78. Instituto Nacional de Estatística (INE). Valor Acrescentado Bruto (€) das Empresas por Localização Geográfica (NUTS—2013) e Atividade Económica (Subclasse—CAE Rev. 3); Anual—INE, Sistema de Contas Integradas das Empresas. Available online: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0008485&contexto=bd&selTab=tab2&xlang=PT (accessed on 26 August 2019).
79. Sequera, J.; Nofre, J. Shaken, not stirred: New debates on touristification and the limits of gentrificatio. *City* **2018**, *22*, 843–855. [CrossRef]
80. Lei n.º 42/2017 de 14 de Junho. Diário da República n.º 114/2017 Série I de 2017-06-14, 2993–2996. Available online: <https://data.dre.pt/eli/lei/42/2017/06/14/p/dre/pt/html> (accessed on 15 May 2019).
81. Der Spiegel. How Tourists Are Destroying the Places They Love. Available online: <https://www.spiegel.de/international/paradise-lost-tourists-are-destroying-the-places-they-love-a-1223502.html> (accessed on 24 May 2019).
82. The Guardian “No One Likes Being a Tourist”: The Rise of the Anti-Tour. Available online: <https://www.theguardian.com/cities/2019/jan/28/no-one-likes-being-a-tourist-the-rise-of-the-anti-tour> (accessed on 24 May 2019).
83. Manuel Sousa. Casa Oriental. Available online: [https://pt.wikipedia.org/wiki/Ficheiro:Casa_Oriental_\(Porto\).JPG](https://pt.wikipedia.org/wiki/Ficheiro:Casa_Oriental_(Porto).JPG) (accessed on 10 June 2019).
84. Hitters, E. Porto and Rotterdam as European Capitals of Culture: Toward the festivalization of urban cultural policy. In *Cultural Tourism: Global and Local Perspectives*; Richards, G., Ed.; The Haworth Press: New York, NY, USA, 2007; pp. 281–301.
85. Mota Santos, P. Tourism and the critical cosmopolitanism imagination: “The Worst Tours” in a European World Heritage city. *Int. J. Herit. Stud.* **2017**, *25*, 943–957. [CrossRef]
86. Koens, K.; Postma, A.; Papp, B. Is Overtourism Overused? Understanding the Impact of Tourism in a City Context. *Sustainability* **2018**, *10*, 4384. [CrossRef]
87. Novy, J. Urban tourism as a bone of contention. Four explanatory hypotheses and a caveat. *Int. J. Tour. Cities* **2019**, *5*, 63–74. [CrossRef]
88. The Guardian. “We Must Act Now”: Netherlands Tries to Control Tourism Boom. Available online: <https://www.theguardian.com/world/2019/may/06/we-must-act-now-netherlands-tries-to-control-tourism-boom> (accessed on 24 August 2019).
89. Público. Câmara do Porto só travará Alojamento Local Quando Houver Regulamento. Available online: <https://www.publico.pt/2019/06/04/local/noticia/camara-porto-so-travara-alojamento-local-regulamento-1875339> (accessed on 23 August 2019).
90. Bhandari, K. Touristification of cultural resources: A case study of Robert Burns. *Tourism* **2008**, *56*, 283–293.
91. NBTC Holland Marketing, Intell & Insight. Tourism in Perspective. Available online: https://nbtcmagazine.maglr.com/en_US/15394/217245/tourism_in_perspective_july_2019.html (accessed on 24 May 2019).



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Article

“The Overwhelmed City”: Physical and Social Over-Capacities of Global Tourism in Venice

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Abstract: Venice is one of the most famous iconic destinations and one of the most emblematic cases of overtourism affecting a historic city. Here, social movements against tourism have emerged as a reaction to vastly unsustainable tourist flows that have had dramatic and transformational impacts on Venetians' lives. The aim of this paper is to investigate how tourism transforms the social, cultural, and everyday geographies of the city. The effects of tourism on the historic city are conceived as a process of continuous transformation and repositioning. Taking into consideration the most tangible daily practices of tourists (eating, sleeping, and buying) and the finer dynamics of Venice's tourism problem, we translate data on these practices into a temporal and spatial analysis to better understand how dynamic the texture of the city is in relation to the tourism subsystem. A comparison between 2008 and 2019 is conducted to evaluate the impact of tourism on residential uses of the city and measure the sustainability of growth of the tourism facilities. The investigation highlighted an impressive accommodation's growth, from 8.249 in 2008 to 49.260 in 2019 of bed places (497% growth) in the entire historical city, a similar expansion is also evident in the total number of restaurants that has increased by 160% in all districts and a variations of 4% in shops instead of a population decline of -13% in the same period. In addition, a residents' survey in spring 2019 was conducted to better understand the intensity of these impacts and the motives for depopulation and the anti-tourism movements. We focus on how tourism, if not managed and planned, radically changes the social and urban structures of the city and the lives of local residents. We conclude by presenting some local theoretical and practical insights into the touristic pressure, provided by citizens' associations on one side and policymakers on the other.

Keywords: overtourism; urban tourism; Venice; social impacts; residents' perception

1. Introduction: Overtourism, a New Word for an Old Problem

Venice is probably one of the most famous iconic destinations and one of the most emblematic cases of tourism overcrowding, where problems related to its impacts are evident [1,2]. The city is a victim of its own tourism success. Over the last decade, while many scholars have been interested in the traditional debate concerning the impact of tourism, some have attempted new conceptualizations, others acquire a critical understanding of inequality and injustice generated by tourism [3], and in recent years, some have adopted the narrative of social movements challenging the tourism growth premise, with the subsequent coining of the terms “overtourism” and “tourismphobia” [4–7]. Indeed, overtourism occurs in a physical sense (too many people in one place or lack of control over visitor flow and regulation), as well as a psychological perception by residents (feeling hemmed in by tourism). As pointed out in a recent book edited by Cheers, Milano, and Novelli, “The term ‘overtourism’ is a neologism, but not necessarily a new concept. It is undoubtedly a complex phenomenon associated with the liveability of a place, the well-being of residents, visitor experiences, and the extent to which

stakeholders have a direct or indirect involvement in tourism” [7] (p. 1). The term should also be related to what is more generally known as the tourist carrying capacity, that is, the maximum limit to tourism development [8,9].

Heritage cities have always attracted many visitors, generating benefits and costs. To put it simply, when the costs exceed the benefits, tourism development is no longer sustainable. Interventions become necessary because the pressure of tourism—with its economic power—modifies spaces, alters facilities, and blocks infrastructure. These changes are reflected in the inhabitants themselves, who in turn change attitudes, habits, and perceptions [10]. In this context, however, “overtourism” is not only related to the economic status quo but defines the occurrence of far too many visitors for a particular destination to absorb over a given period. Indeed, “too many” is a subjective term, and it is best defined in each destination relative to the number of local residents, hosts, business owners, and tourists [11]. From a social and perceptible point of view, tourists and residents grow increasingly annoyed with each other. Indeed, boundaries and practices have become more and more fluid; tourists and residents share the same urban amenities, spaces, and places, especially in some heritage cities. Divergence between tourists’ and residents’ practices are especially visible in their lifestyles or in peculiar uses of daily places [12–14].

There are different views on the positive and negative impacts of tourism on cities. In their analysis of urban tourism, for example, Ashworth and Page [15] affirm that only a small part of the physical space, services, facilities, and host communities of destinations is notably affected by tourism. García-Hernández, Calle-Vaquero, and Yubero [16], however, argue that the impacts of positive tourism can influence the destination as a whole, but negative effects are likely to focus more on surrounding areas. The case of Venice is different due its limited geographical space, or better, has become different during the last years because of the spreading pressure of tourism. Tourism pressure occurred not only in areas where the major attractions are located (St. Mark’s Square, the Rialto Bridge, and Accademia), but also in all six districts composing Venice’s urban structure (Cannaregio, Castello, San Polo, San Marco, Dorsoduro, and Santa Croce). Van der Borg, Costa, and Gotti [9] proposed a distinct view. Using the case of Venice, they asserted that the entire urban community is affected by tourism in cities, not only its physical spaces. In recent years, high tourism pressure in Venice has attracted public attention, especially regarding the numerous demonstrations by Venetians against tourism. Scholars’ interest in the city is part of a long tradition in tourism studies. Residents’ experiences and perceptions became popular research topics in tourism and recreation, especially in economic and quantitative studies [16–18]. In recent decades, many researchers have paid attention to residents’ perceptions of the quality of life related to the impacts of tourism [19–22].

The phenomenon of overtourism is also associated with the problematic relationship between tourists and hosts and the continuous exchange between the two. This has generated recent waves of anti-tourism protests in enduringly popular European cities such as Venice, Barcelona, Amsterdam, Rome, and Dubrovnik [1,14,23,24], as well as in other parts of the world, such as Central America [25] or in the Southeast Asia. The increasing conflict between host communities and tourists has led to the emergence of new urban social movements in different localities. In the Mediterranean area, for example, it has encouraged the emergence of the Network of Southern European Cities against Touristification. Cities such as Barcelona, Ibiza, Palma de Mallorca, Malta, Florence, and Venice, among others, are part of this network and aim to share common problems and local solutions [26]. The debate concerning the backlash of social movements against the pressure of tourism is not something new, but a common platform has emerged based on shared problems caused by touristic saturation, urban social issues and justice, touristic growth reinforced by neoliberal politics, and gentrification. On this platform, new paradigms for fighting the transformation of the city into a tourism destination are debated.

In Venice, the poster child of overtourism, social movements against tourism have emerged as a reaction to vastly unsustainable tourist flows that have had dramatic and transformational impacts on the lives of Venetians, among other things. The aim of this paper, following previous work that

measured the rate of touristification in the city's districts [2], is to investigate how tourism transforms the social, cultural, and everyday geographies of Venice.

The effects of tourism on the historic city are conceived as a process of continuous transformation and repositioning. Taking into consideration the most tangible daily practices of tourists (eating, sleeping, and buying) and the finer dynamics of Venice's tourism problem, we translate the growing numbers of restaurants and bars (eating), accommodations (sleeping), and shops (buying) into a temporal and spatial analysis to better understand how these changes occurred on the texture of the city and how they could affect the residents' perception and the formal, socioeconomic, and symbolic aspects of the city landscape in relation to a tourism subsystem.

First, we examine the contemporary touristification of Venice, through a "panoramic" overview, and develop the debate through a literature review. Then a comparison between the transformations that occurred in 2008 and 2019 is conducted and the results are spatialized to show how and where effects have grown in the historic city center. Our analysis also evaluates the impact on and changes in residential and liveable uses of the city, as well as measures the sustainability of the growth of tourism facilities. We focus on how tourism, if not managed and planned, radically changes the social and urban structures of the city and local residents' lives. "Overtouristification" is not simply a problem of management and prices but has a relevant impact on the long-term well-being of communities. Finally, to understand these impacts, we also present the results of a questionnaire we conducted with three queries about inhabitants' current perceptions of tourism pressure in order to better locate and evaluate local impressions.

2. Venice: The Flooded City

On Sunday 2 June 2019, as if taking part in the worst disaster movie, the MSC cruise ship "Opera", a 275-meter-long ship weighing 65 tons, crashed into a wharf (close to the Marittima Terminal) and a tourist boat in Venice, injuring five people. In the era of social media, the news spread throughout the globe in a couple of minutes, and the images of the cruise ship slowly but inevitably advancing towards the dock were quite impressive [27,28]. Immediately afterwards, the *Comitato No Grandi Navi* ("No Big Ships Committee", an activist group born in 2012, hereafter also referred to as "the Committee") organized a protest at the crash site (For more details on the protest against cruise tourism and the environmental impact of the cruise ships on the Lagoon, see Vianello [29]). One week later, on Saturday June 8, a big demonstration was organized by the Committee, with large and across the board participation by local associations, some political parties, and especially citizens who were not necessarily previously involved in protests or activist groups. The demonstration drew thousands of people and started close to the crash site along the Giudecca Canal, marching to the heart of the city, St. Mark's Square (Figure 1). The impact of cruise tourism is just one side of the multilayered phenomenon called "touristification," but this battle became a sort of synecdoche of the tourism problem's complexity. Indeed, while the main goal of the demonstration and the Committee was to ban large cruise ships from St. Mark's basin (and possibly from the Lagoon), the protest was also an opportunity for many associations and citizens to openly voice their dissatisfaction with the seemingly unlimited, uncontrolled flood of tourists [30–33].

Taking into consideration intangible effects, Wang and Pfister [34] argued that the attitudes of residents towards tourism are also influenced by non-economic values. In the case of Venice, this assumption is ambivalent, because tourism has become a sort of monocultural economic driver for the city. The job market has gone in that direction as well and has narrowed considerably, making it difficult to find jobs outside the tourism sector. This causes the social fabric to lose its "socio-ecological" complexity. Using the metaphor coined by D'Eramo [10] (pp. 72, 142–143), Venice is becoming a kind of Company Town, where development depends on only one "industrial" sector, in this case, tourism. This produces not only impacts at an economic level but at social, cultural, and environmental levels as well, creating an internal rift between those who are employed (and interested) in tourism and those who are not. Obviously, there are nuances to this rift, as there are other groups with interests in

tourism besides official employees, for example, people with part-time jobs in food services (mostly students), people with a job (in other sector) who rent housing to tourists, and especially a small galaxy of non-qualified positions (for example, welcoming people for Airbnb or other peer-to-peer platforms, cleaning staff, and workers for events, etc.). This juxtaposition between those who have direct or indirect interests in tourism and those who are excluded from the tourism business exacerbates contrasts, fragments social cohesion, and raises the level of protests surrounding the city's tourism debate. Instead of involving citizens and policymakers and looking at collaboration between various social groups, the possible (and desirable) dialogue about tourism management is moving towards an almost critical position rather than towards a shared field. In such a field, proposals that engage marginalized groups in a participatory and ethical production of solutions and in sharing benefits can improve the situation [35–39].



Figure 1. No Grandi Navi protest in St. Mark's Square after the cruise crash (source, author).

The debate about the tangible and intangible impacts of tourism on the city's social spaces is also associated with increasing frictions between inhabitants and tourists, as highlighted by the emergence of urban social movements, organizations, and associations in many European destinations [6,26]. The problematic relationship between visitors and inhabitants and the overlap between the two has generated recent waves of anti-tourism protests and Venice has its own part in this wave of an anti-tourism movement [40]. Therefore, the intensification of unsustainable tourism practices, the economic pressure of tourism exemplified by gentrification, and the expanded effects of short-term holiday rentals (such as Airbnb) on all urban areas, including peripheral zones, have commodified historical cities and favored a growing discontent between both hosts and guests. It is also remarkable how tourism has changed recently. Today, each of us is a potential tourist and part of the problem of fostering unsustainable touristic practices. For different reasons, purposes, and because of curiosities or necessities, we exercise our mobility. In the early 2000s, travel and tourism scholars sought to place "mobility at the heart of our understanding of tourism" [41] (p. 134), [42]. The "new mobilities paradigm" helps us understand global tourism in the context of other social and spatial travel processes while paying attention to the production and consumption patterns of both tourists and residents, all influenced by similar (and also opposite) gazes and performances in different places [43,44].

It can be argued that sustainable tourism across Europe's historical cities remains elusive, with the industry not fully comprehending how to achieve desirable sustainability goals [45]. Tourism has a Janus-faced character [46]; indeed, for many destinations, tourism has become the most important economic development vehicle, yet it is also the most problematic and complex to tackle and come to terms with. The paucity and ineffectiveness of regulations has doubtlessly increased residents'

vulnerability and livelihoods in Venice. Over the past two decades, free market principles have been followed “dogmatically” by the various local government administrations. This can be seen for example in the liberalization of retail stores, where the pre-existing network of small shops, manufacturers, and workshops has made way for enterprises largely focused on tourism traffic, with little direct relevance to Venetian culture [32,47]. It can also be seen in the internationalization of real estate, especially housing, which has exacerbated the crisis of housing affordability for local Venetians [2] (p. 23).

3. Materials and Methods of Analysis: Eating, Sleeping, and Buying

The aim of this research is to underline the physical and social impacts of tourism on the historical center of Venice, analyzing its effects on the city’s six districts (*sestieri* in Venetian). Looking at the urban form of Venice, there are central districts that are historically affected by tourism pressure. This is the case for San Marco and San Polo, which contain the most famous sights, such as St. Mark’s Basilica, the Duke’s Palace, and the Rialto Bridge. For this reason, these areas are also the most densely populated in terms of tourists, hotels, and purveyors of souvenirs. The southern part of the city, i.e., the district of Dorsoduro that includes the Giudecca Island was once home to cotton mills, traditional shipyards (namely *squeri* in Venetian), and factory workers. Today, it could be considered a sort of museum district, with the famous Accademia Museum, the Guggenheim Museum, and the Punta della Dogana. The Santa Croce district, located in the northwest, experiences growing tourism pressure because of its location and the presence of cars, buses, and cruise terminals have made it into an excellent transportation hub for visitors. The two remaining districts, Cannaregio and Castello, have still managed to maintain a balance between tourism and residential activities, but with growing difficulty. These districts are more densely populated and have been historically the residential and working-class areas of the city. In Castello, the Biennale of Art is located, and in Cannaregio we find the railway station.

The physical and social concept of overtourism (surpassing carrying capacity) and the impossibility of moving facilities and visitor flows outside (due to Venice’s geographical limits) has led to the entire destination of Venice being considered a historical city more than a destination with a historical center or area. To carry out our research, we considered urban changes that have occurred in the city in the last 10 years (2008 to 2019). What we would like to highlight and understand are the spatial patterns of the tourism industry and how the increase in tourism has threatened the social sustainability of the historical city and affected the entire historical city center. Before delving deeper into the analysis, it is necessary to briefly describe the two trends that have characterized Venice for several years now. These are the depopulation of the city, because of local residents leaving, and the continuous growth of the tourism sector, represented by an increase in the number of day trippers and overnight stays. Some data can easily demonstrate this. In 1951, the historical city of Venice reached its highest number of residents. Almost 174,800 people were living in its six districts. Today, on the one hand, only 30% of that number remain, namely 52,988 inhabitants [48]. On the other hand, the number of tourists from all over the world grows every year (with a trend of +3% of overnight stays in 2017 to the previous year, [49]). People arrive at one of the most popular tourist-historic cities in different ways, from low-cost flights to luxury cruise ships, as described by Visentin and Bertocchi [2]. From 2008 to 2018, the number of tourists arriving in the historical city increased from 2,075,000 to 3,156,000. This growth is astounding if we also take into account overnight stays which have grown from 5,677,000 to 7,862,000 [49] (pp. 16–39). To this data we should add daily commuters and workers. According to an estimate by Carrera [50], yearly commuter numbers in Venice are estimated at about 7.5 million, to which 17.5 million annual day trippers are added. These figures suggest that the number of people who daily crowd the “*calli*” (streets in the Venetian dialect) includes around 20,500 commuters and 66,800 day-tripping tourists.

A mixed-method approach was applied to analyze the rate of growth of the tourism subsystem and, in relation to that, the physical and social impacts within a destination. Taking into consideration the major activities of tourists, i.e., eating, sleeping, and buying and connecting them to tourism facilities,

this research aims to, first, show how the urban texture of tourist-historical cities can change without a sustainable tourism growth approach and, secondly, measure (un)sustainable tourism's impact. Using this analysis, we aim to create tourism indicators that can monitor tourism and guide decision-making processes. The calculated indicators for the six districts of the historical center of Venice were developed according to the conceptual models of the main elements important to overtourism [51]. They follow the UNWTO Measuring the Sustainability of Tourism report (MST), which provided a useful categorization of tourism's characteristic products and activities (tourism industries). Data regarding official tourism facilities (number and type of hotel and extra hotel accommodation, restaurants and bars, and shops) were collected from the open data platform of the municipality of Venice with reference to the situation of January 2008 and January 2019 (<http://dati.venezia.it>). Data on the number of residents [48] and tourists [49] were collected from there as well. The data about Airbnb listings (January 2019) were taken from an open dataset provided by the web platform "InsideAirbnb" (<http://insideairbnb.com/>).

In addition, a residents' survey in the spring of 2019 was conducted to better understand the intensity of these impacts and the motives for depopulation and the anti-tourism movements. Of the inhabitants living in the historical center, 12% replied, and we collected 6272 opinions.

Using these data, the study develops an analysis regarding two key aspects of tourism carrying capacity, physical-facility capacity and social-perceptual capacity [52] (p. 224). Combining a quantitative analysis of tourism infrastructure data (level of tourist development) with qualitative aspects (the level of tourism congestion and crowding of local activities perceived by residents), this research attempts to understand the impacts of tourism and the use (and overuse) of the tourist-historical city of Venice.

4. Analysis and Discussion: The Physical and Social Impacts on the City and Its Residents

4.1. Physical-Facility Capacity

The physical facility of a tourism destination entails the major tourism subsystem that affects the historical city. This is connected to the main tourist activities while travelling, whether tourists travel for business or leisure reasons. In both cases, the spatial impacts of tourism development can transform cities' social patterns, and cause problems or conflicts with local residents' lifestyles. In addition to an analysis of the accommodation sector, we take other activities related to the tourist subsystem into consideration, in particular, the food sector (restaurants, bars, and pizzerias, etc.) and shopping (food, non-food, and mixed shops), in order to evaluate the changes that occurred in the urban structure of Venice. Taking those sectors as case studies of the physical-facility capacity of Venice's city center, we compare their prevalence and their spatial diffusion in the year 2008 and today (2019). To better situate these changes in their spatial context, we examine the pressure of each subsystem per single district. Finally, we calculate the impacts on the resident community.

4.1.1. Sleep: Accommodation Sector

As Venice's city center is a global urban destination, its accommodation sector has seen a huge revolution in its features and typology. In addition to the continuous development of the official accommodation system (hotel and extra hotel facilities), this transformation of space and functions is characterized by the growth of sharing-economy activities related to tourism, especially peer-to-peer short-term holiday rentals offered on the Airbnb platform [53–55]. This is evident by the variation in the percentages of the total number of beds between 2008 and 2019 (Table 1). The growth is impressive, from a rise of 227% in the already "touristified" district of San Marco to a rise of 1635% in the San Polo district. All districts are ready to host tourists nowadays, showing a range of ratios between 6.4 beds for tourists for each 10 residents (Dorsoduro) and three tourist beds for each resident for the San Marco area (Table 1 and Figure 2).

In addition to the Airbnb phenomenon, it is necessary to remember regional law 33/2002, which made the opening of new extra-hotel facilities (e.g., bed-and-breakfasts) easier and less costly in terms of money and time. On the one hand, this was a useful strategy to develop tourism in the entire region,

but on the other, it was tragic for Venice, who started to see homes changing from residency purposes to tourism before Airbnb’s growth.

These dramatic changes of Venice’s urban structure are shown by the variation % impacts 2008 to 2019 (Table 1), with extremely high rates of growth.

Table 1. Accommodation situation and its impact on the local community, 2008–2019 (authors’ elaboration on open data Municipality of Venice: <http://dati.venezia.it/>).

	2008 Residents	2019 Residents	2008 Number of Beds	2019 Number of Beds	Var% 2008–2019	2008 Beds/Resident	2019 Beds/Resident	Var% Impacts 2008–2019
Cannaregio	16,993	15,147	1356	11,473	746%	0.08	0.76	849%
Castello	15,140	12,868	1496	11,043	638%	0.10	0.86	769%
Dorsoduro	13,467	12,013	1110	7723	596%	0.08	0.64	680%
San Marco	4169	3632	3381	11,048	227%	0.81	3.04	275%
San Polo	5060	4477	211	3661	1635%	0.04	0.82	1861%
Santa Croce	5471	4851	695	4312	520%	0.13	0.89	600%



Figure 2. Spatial impacts of the accommodation sector on Venice districts, 2008–2019 (authors’ elaboration on open data Municipality of Venice: <http://dati.venezia.it/>).

4.1.2. Eat: Restaurants and Bars

Although several studies have focused on the quality of the food sector in Venice [56,57], more has to be done to better understand the impacts of mass tourism on the diffusion, popularity, and replacement of food and beverage facilities in Venice’s historical center. What is remarkable is that, even if the number of residents has experienced a significant drop between 2008 and 2019, the total number of restaurants has increased by more than 10% a year in all districts (Table 2). The physical impacts are showing in Table 2 and Figure 3, where it is clear that the initial situation of the San Marco district in 2008 (two restaurants for each 100 residents) has been almost equaled by all other districts in 2019, deteriorating San Marco’s situation and destabilizing two less touristic areas, San Polo and Santa Croce. These two districts are, for different reasons, more strongly affected by the growth of

restaurants and bars. San Polo is close to San Marco and is connected to it by the Rialto Bridge, one of the most important sights of the city. The Santa Croce district can be considered Venice’s gate. In this area one finds all the car parks (for example the Tronchetto Island), the bus and tram terminal (Piazzale Roma), and the cruise ships’ wharfs. If we see the growth in these districts as a consequence of the intensification of tourism pressure, the other three areas, Cannaregio (+160%), Castello (+181%), and Dorsoduro (+190%) show that the distribution of food and beverage facilities affects the entire historical city center; a sort of wildfire effect. The ratio remains less impressive just because these areas are the most populous of the city, but the variation in percentage underlines that this trend is valid for the peripheral areas as well.

Table 2. Food and beverage sector and its impact on local community, 2008–2019 (authors’ elaboration on open data Municipality of Venice: <http://dati.venezia.it/>).

	2008 Residents	2019 Residents	2008 Number of Restaurants	2019 Number of Restaurants	Var% 2008–2019	2008 Restaurants/100 Residents	2019 Restaurants/100 Residents	Var% Impacts 2008–2019
Cannaregio	16,993	15,147	97	252	160%	0.57	1.66	191%
Castello	15,140	12,868	83	233	181%	0.55	1.81	230%
Dorsoduro	13,467	12,013	71	206	190%	0.53	1.71	225%
San Marco	4169	3632	87	182	109%	2.09	5.01	140%
San Polo	5060	4477	41	114	178%	0.81	2.55	214%
Santa Croce	5471	4851	45	115	156%	0.82	2.37	188%

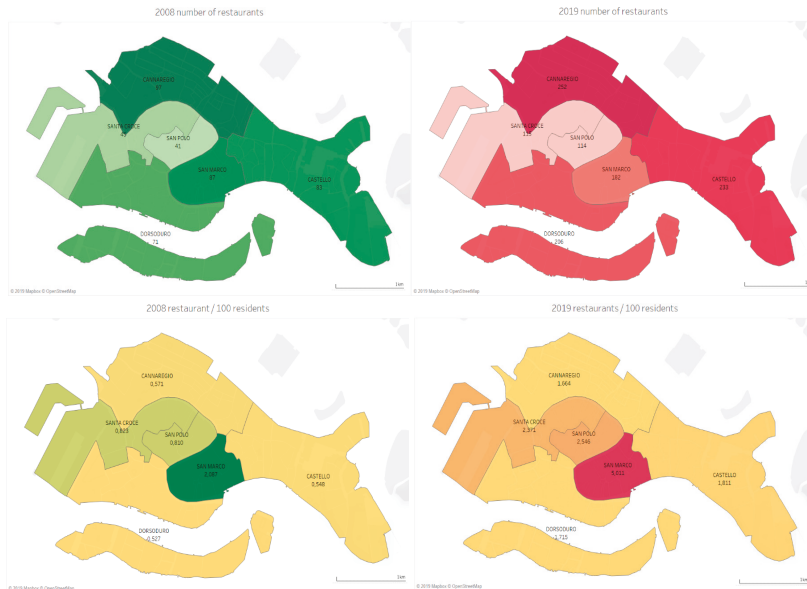


Figure 3. Spatial impacts of food sector on Venice’s districts, 2008–2019 (authors’ elaboration on open data Municipality of Venice: <http://dati.venezia.it/>).

4.1.3. Buy: Shops

The evolution and distribution of commercial structures in Venice’s city center is well described by Zanini, Lando, and Bellio (2008), who demonstrated the reshaping of the city in terms of retail business. Their work monitors the increase of stores dedicated to tourists between 1976 and 2007, showing the touristification in some districts and the “progressive marginalization of some areas (those exclusively supplying residents’ demand) excluded from the tourist routes” [36] (p. 17). Our research is

an attempt to develop this study on the basis of the growth of commercial facilities and not on the type of shops, emphasizing the relationships with, impacts on, and distribution of spaces and residents. The commercial structure of Venice did not expand in the same way as the other two tourism subsystems. A 4% average growth (Table 3 and showed in Figure 4) for the entire destination seems natural for a city (to underline the shops degrowth of Dorsoduro district) in terms of total number of shops. The problem is always the same. There are new and more shops but there are less residents as potential customers (see the ratio per 100 residents). This is probably not related to the number of shops but to their typology. Assuming that the trends encountered by Zanini, Lando, and Bellio [36] are still going in the same direction since 2008, Venice today is characterized by a majority of shops dedicated to tourists and visitors, more than to residents and workers. There has been a visible increase in the number of restaurants, pizzerias, and, especially, ice-cream shops, many of which are now installed in refurbished inns and shops or small warehouses (normally located on the ground floor), and are a direct result of the need to address the demand of both tourists and work commuters. Tourism has also triggered an increase in the number of sunglasses and clothes stores, especially those located along the routes towards the central zone. These mainly comprise branches of well-known Italian stores.

Table 3. The commercial sector and its impact on local community, 2008–2019 (authors’ elaboration on open data Municipality of Venice: <http://dati.venezia.it/>).

	2008 Residents	2019 Residents	2008 Number of Shops	2019 Number of Shops	Var% 2008–2019	2008 Shops/100 Residents	2019 Shops/100 Residents	Var% Impacts 2008–2019
Cannaregio	16,993	15,147	477	509	7%	2.81	3.36	20%
Castello	15,140	12,868	430	472	10%	2.84	3.67	29%
Dorsoduro	13,467	12,013	296	273	−8%	2.20	2.27	3%
San Marco	4169	3632	856	882	3%	20.53	24.28	18%
San Polo	5060	4477	384	392	2%	7.59	8.76	15%
Santa Croce	5471	4851	162	177	9%	2.96	3.65	23%

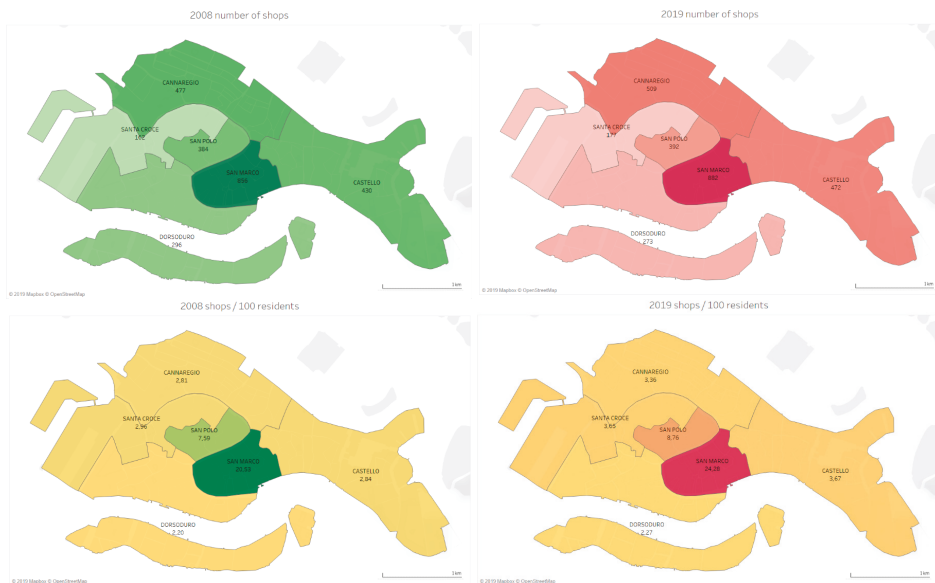


Figure 4. Spatial impacts of commercial sector on Venice’s districts, 2008–2019 (authors’ elaboration on open data Municipality of Venice: <http://dati.venezia.it/>).

4.2. Social-Perceptual Capacity

In addition to the analysis of the physical changes that occurred in the city center, we also conducted a residents' survey in the spring of 2019. Understanding residents' perceptions of the impacts of tourism on their daily lives is important to evaluate the emerging antagonistic feelings towards the pressure of tourism and the level of saturation and concerns regarding the excessive and pervasive presence of visitors in the everyday spaces and lives of inhabitants. Consequences can entail a permanent change in their lifestyles and more difficult access to amenities, with tangible and intangible damage to their well-being. In this section, we present and discuss the results of an online survey [58]. To disseminate the questionnaire, personal contacts and local associations have been the base for reaching a relevant number of inhabitants, using social-media platforms such as Facebook and WhatsApp. Our objective was to evaluate residents' social perception of tourism pressure. For this reason, we took into consideration only questionnaires filled in by people actually living in the historical city center of Venice. We collected 6272 opinions from 12% of the residents.

The six districts were merged into three more homogeneous areas (Centre, North, and South) for three reasons. First, the districts that we joined present relevant historical, social, and "tourist attractiveness" affinities. Second, the results of the physical impact analysis gave us the opportunity to notice some common trends and similar problems. Third, we could better spread our questionnaire over groups of people living in similar conditions. Therefore, we merged the San Marco and San Polo districts (called Center Venice), Santa Croce and Dorsoduro (South Venice), and Cannaregio and Castello (North Venice).

Three questions were proposed for the investigation of the inhabitants' perceptions of tourism pressure in order to better understand their reactions and reasons behind the friction between visitors and hosts:

- The first question was about overcrowding and its impacts on daily life. (How much does overcrowding affect your daily life? Choose from 0 = not at all to 5 = very much);
- The second question sought to investigate residents' intention to move out of Venice. (Have you ever thought about moving out of Venice? Why?);
- The last question was intended to comprehend what were possible reasons that pushed out residents. (If you thought about moving out, what are the main motivations? (1) lack of services for residents (shops, groceries, cinema, hairdresser, etc.); (2) too many tourists; (3) life has become too expensive; (4) Venice is itself inconvenient; (5) lack of jobs; (6) possibility to rent out their house; (7) personal reasons.).

Residents' feelings regarding overtourism are geographically distributed in a homogeneous way, proving once again that overcrowding and negative impacts related to tourism are spread out equally in the historical city. The following results demonstrate that there are no substantial differences between residents from different areas: they show a high value from 4.2 to 5 in North Venice, from 4.3 to 5 in South Venice, and from 4.4 to 5 in Center Venice; extremely high averages (Table 4). However, thoughts about leaving the city are stronger in the southern part, where 22% of total interviewees would be ready to leave the historical city center as compared with the other areas (13% in North Venice and 8% in Center Venice).

Table 4. Levels of social capacity of residents by Venice area (data from the residents' survey).

District	Avg. Tourism Stress from 0 to 5	Residents that Have Thought about Moving out	Reason to Move: Too Many Tourists	Reason to move: Lack of Services for Residents (Shops, Groceries, Cinema, Hairdresser)	Reason to Move: Life Has Become too Expensive	Reason to Move: Venice Is Itself Inconvenient	Reason to Move: Lack of Jobs	Reason to Move: Personal Reasons	Reason to Move: Possibility to Rent out House
Centre Venice	4.4	8.40%	20.49%	20.51%	19.55%	18.93%	19.82%	17.44%	22.30%
South Venice	4.3	22.37%	27.44%	29.04%	28.55%	25.89%	31.35%	30.81%	29.05%
North Venice	4.2	12.77%	52.08%	50.45%	51.90%	55.18%	48.83%	51.74%	48.65%

Residents’ motivations for moving out of Venice’s city center endorse the physical impacts described above, without substantial differences between districts. The negative externalities caused by changes in the urban texture described above are strongly felt by the local community. As a matter of fact, the most common reasons (Figure 5), ranked by frequency, are related to the following:

1. The number of tourists and overcrowding in the city (see Section 3);
2. The lack of services for residents (mainly shops and other facilities, see Section 4.1.3);
3. Life being too expensive for Venetians (this could open a discussion on the general increase of rental prices due to Airbnb, similar peer-to-peer platforms, and the liberalization of the real estate market, see Section 4.1.1);
4. The lack of jobs (outside the tourism market, see Section 2);
5. The inconvenience of a city that has been turned into a tourism monoculture (see Section 2);
6. Personal reasons (not attributable to tourism’s impacts);
7. Possibility to rent out their house (big trend, described in Section 4.1.1).

In Figure 6, the level of tourism overcrowding perceived by residents increasingly affects the entire island, reinforcing the perception that the environment is more hospitable to tourists than to residents. Indeed, the average of tourism stress in the South (Santa Croce e Dorsoduro districts with an average score of 4.3 to 5) and North (Cannaregio and Castello districts with an average of 4.2) is comparable with results in the center (San Polo and San Marco districts with an average of 4.4). We cannot compare these results to similar surveys (due to the absence of these data), but we can assume that the detrimental effects on residents’ well-being and the generalized perception of being “invaded” by tourists everywhere, in spite of tourism having grown for several decades, has been intensified by the introduction of Airbnb and the large territorial spread of this kind of accommodation (and other short-term holiday rentals). This could be the last straw for the island’s local residents and may well constitute the most important driver in the establishment and amplification of anti-tourism movements. As shown in Figure 5, the deficiencies evident in the management of tourism flows and the associated regulation of tourism facilities and infrastructure are strong driving factors that influence residents’ opinions. In addition, as seen in Figure 5, similar reasons for residents’ moving out and similar opinions emerged in the three investigated areas. The more common reasons for the abandonment of the city are the same and also equivalent in the order of preference for the Center, the South, and the North, i.e., first, too many tourists; second, lack for services; and third, the cost of living.

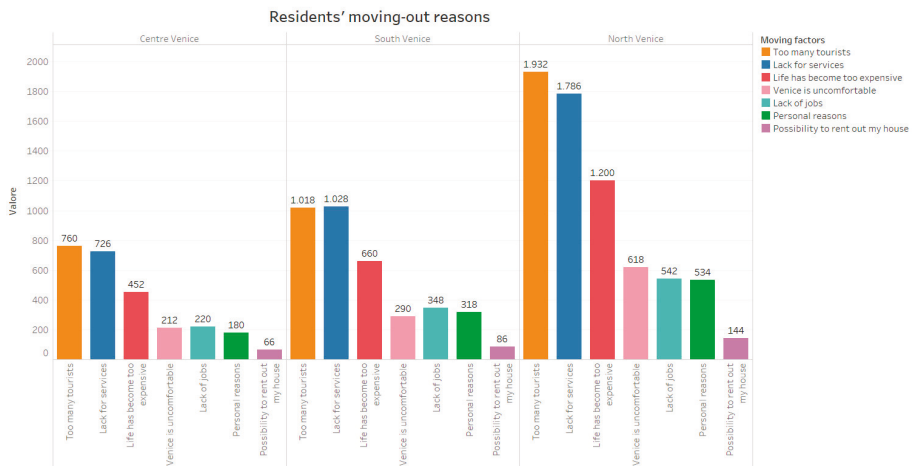


Figure 5. Resident’s moving-out reasons (data from the residents’ survey).

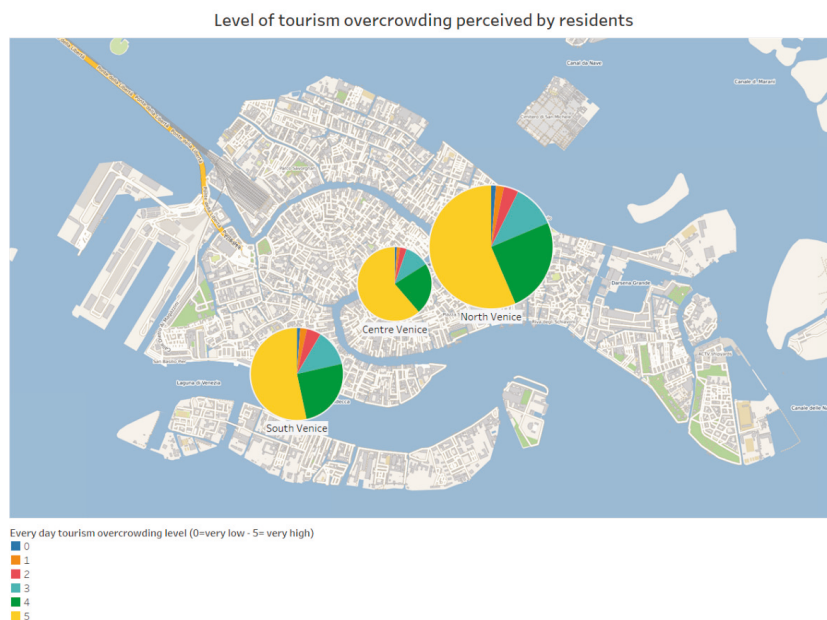


Figure 6. Level of tourism overcrowding perceived by residents (data from the residents' survey).

5. Conclusions and Some Theoretical and Practical Insights

5.1. Conclusions

Recently, increasing numbers of tourists and the changing trends of the tourism sector are two of the most important characteristics that affect destinations. This is particularly true when looking at historical and heritage cities [59–62]. The recent growth of tourist flows constitutes not only a threat to the conservation of heritage (tangible and intangible) but also strongly influences the well-being of residents, who face physical, social, economic, and cultural challenges that undermine their quality of life. In some European cities, such as Venice, Barcelona, or Amsterdam, the debate has been taken to the streets, and significant social mobilization is taking place with very “belligerent” positions against tourism. These are superficially associated with tourismphobia, especially by the media and some politicians. Recently, new contributions regarding the different aspects of overtourism have emerged [63–68], underlining the impacts on residents' communities and the aggravation of the consequences of uncontrolled tourism growth in urban and cultural destinations.

As we saw in the previous sections, the tourism sector has strongly impacted the evolution of Venice and its historical city center, especially in the last ten years. The city has maintained its tourism attractiveness despite increasing overcrowding, however, its daily uses and intangible heritage have changed profoundly. This evolution has influenced the city's urban and social structure, and facilities for tourists have spread over all six districts (accommodation, shops, restaurants, and bars), also through the refurbishment of abandoned production areas. This has led to the far-reaching transformation of commercial and residential structures, which are more and more adapted to tourist demands, increasing possible friction and points of contact between visitors and residents. The Venetian overtourism loop was well described by Russo in 2002 [1]. Our results show that today, this loop is more alarming and unhealthier for the “city ecosystem” than before, with a strong impact on the urban texture and social cohesion of the destination. Uncontrolled growth of the accommodation sector (Cannaregio +746%, Castello +638%, Dorsoduro +596%, San Marco +227%, San Polo +1635%, and Santa Croce +520%) has caused all residents of the city to suffer from the negative impact of

tourism (Centre Venice a score of 4.4 to 5, South Venice 4.3 to 5, North Venice 4.2 to 5, see Table 4). Some now consider moving away from Venice (15% of those interviewed, representing 2% of the total number of residents). This represents a further intensification of physical and social impacts on the city (as visible in the situation of 1.2 tourist beds for each resident).

After having illustrated the overall situation of overtourism in Venice, the results point out potential methods of measuring different tourism capacities of a destination, evaluate their development, and assess if there are conditions of overcapacity. The accommodation sector and food and beverage facilities are continuously growing in the entire historical city, even in the peripheral area. There was less tourism considered in the area, only ten years ago (in particular the Castello and Cannaregio districts or the Giudecca Island), and residents concentrated there while trying to avoid massive tourist flows. Commercial structures have been stable in terms of numbers but have changed in terms of what they sell. Especially in what were considered areas with less tourism, high percentages of residents are now suffering from a lack of services such as shops, groceries, cinemas, and hairdressers (20.51% in Center Venice, 29.04% in South Venice, and one in two residents of North Venice or 50.45%, see Table 4). In the northern and southern districts, the general situation has been exacerbated for residents, as shown by the ten-year variation of the physical (number of facilities) and social (facilities per number of residents) impacts, which it is almost always positive and runs into three digits. This situation also clearly emerged in the survey, which demonstrated inhabitants' growing intolerance of and dissatisfaction with the uncontrolled flood of tourists. As early as 1991, Canestrelli and Costa [8] warned policymakers and public authorities about the possibly increasing risks associated with uncontrolled tourism development in Venice. Nevertheless, so far, little has been done to develop a system of governance capable of making the development of tourism compatible with the economic and social well-being of Venice's inhabitants and the sustainability of the complex Lagoon environment.

5.2. Theoretical Insights

The growing friction between the local residents and the tourists is, from one side, the result of a diffused anti-tourism narrative and, from the other side, the result of uncontrolled and unplanned strategies implemented by local administrations, who are more devoted to the promotion and commodification of urban structures that increase the attractiveness of the destination than to devising new strategies to increase the well-being, social cohesion, and job possibilities for citizens. There used to be a prevalently optimistic view, which emphasized the contribution of leisure and tourism to urban development [66], often as part of major renovation operations. The emergence of new collective mobilizations and the recent waves of anti-tourism protests have attracted increasing global and local attention. As we show, through the maps in Section 4 (Figures 2–4), the transformations have led to more and more touristification of the entire island, making the environment more hospitable to tourists than to its residents.

This situation has led to a growing number of social movements and associations that centre their protests on the quality of life and well-being of local residents in the face of the pressure (economic, social, cultural, and environmental) that the growth of tourism has reinforced [67]. The emergence of grassroots-led social movements responds and corresponds to bottom-up processes driven by cross-scale citizens and associations. One such case is the event *Un'altra città è possibile* ("Another city is possible"), organized in Mestre on 18 May 2019 by a group of citizens in collaboration with the association *Poveglia per Tutti* ("Poveglia for Everyone"). This meeting was important because the organizers aimed to create a large network between existing entities (associations, movements, individual citizens, and non-organized groups) to build a platform for discussion in a participatory way. Its goal was to identify priorities and projects for a liveable city and to try and influence policymakers. After the meeting, an open day workshop was organized on 29 June on 10 themes identified during May's event (additional information on it [69]).

These events could be under-interpreted as a reaction to a situation related to the unsustainability of the tourist phenomenon, but the responses and proposals coming from this variegated "urban

fabric” demonstrate a certain willingness on the part of the inhabitants to react and not suffer passively. In this way, they are not just a response to tourism per se. The different platforms that seek to influence policymakers’ decisions are increasingly revealing themselves as lobbies capable of producing knowledge, participation, and solutions. They succeed in this thanks to the skills they were able to put into play and thanks to the experiences accumulated in other associations with both political and cultural, social and geographical different origins and scopes (association methods). At the beginning, we referred to the *Comitato No Grandi Navi*. In addition to this group, we also have to mention other important social movements and associations that are working not against tourists but to legitimize themselves as stakeholders in Venice’s tourism and the Venice Administration. Examples include the following: the activism of the Venetian *Poveglia per Tutti* (“Poveglia for Everyone”) for common goods; the *Gruppo 25 Aprile* (“25 April Group”) for a sustainable management of tourism and for a socially inclusive and respectful tourism; *O.Cio Osservatorio Civico Indipendente sulla casa e residenzialità* (“Civic and Independent Observatory for housing and residency”), the outcome of a series of meetings and discussions between Venetian associations, individual citizens, and some researchers, which was established in 2018 to analyze the housing issue in insular Venice; *Venezia Autentica* (“Authentic Venice”) which promotes a positive impact on the local artisan community; and *Generazione 90* (“Generation 90”), an association of young people living in Venice who work to find new ways and perspectives for a liveable Venice that is not only related to tourism. In all these social movements, a critical discourse is present that started from a reaction to the commodification and resistance to tourism. However, we can observe a variety of themes related to a global critique involving a number of contemporary globalized issues, from neoliberal politics to the exploitation of the city and common goods to the environmental sustainability of the delicate ecosystem represented by the Venice Lagoon.

5.3. Practical Insights

Managerial implications also emerge from these research findings. It is clear that a tourist-historical city without a strategic plan will easily face problems like overcrowding, negative externalities, and strong impacts on the resident community. In Venice, these phenomena had stronger repercussions for the more relevant dynamics of the city. Venice urgently needs management plans, new strategies, and an overall vision not only focused on the tourism sector but also on non-tourism productive categories. To draft some implications, we decided to cluster two different operations, policies and a new perspective.

Regarding tourism policies, Venice’s municipality has introduced some initiatives, with others in the works. To protect a delicate environment like Venice from excessive tourism traffic and to avoid situations of overcapacity, most commonly, regulations are considered a solution to the problem. These fail to take into account the reasons for the excessive and quick growth of tourist facilities (accommodations and restaurants), as a consequence of the promotion of the destination. In destinations affected by overtourism, therefore, it is common that solutions to the problem are formulated without having a sustainable development plan for the city in place.

The ones already implemented or currently being deployed regard the tourist tax, which was introduced in Venice in 2011 in order to let tourists who spend the night contribute to the cost of the city’s maintenance. Currently, the municipality is developing a new tax to involve not only tourists but also a huge part of day trippers. It has recently introduced the “contribute for access to Venice” for this category of visitors (it will be fully operational from 2022), which aims at “reducing the extra costs, for example, cleaning, waste collection, and city maintenance.” The total amount collected through the tourist tax and the “contribute for access” will be equally redistributed among residents in the form of major cleaning and maintenance of the city (see www.comune.venezia.it). Strategically, the information provided by the results in both textual and visual forms shows the need for other policies regarding the limitation of the growth of the number of tourists and tourism subsystems. The diffusion of Airbnb needs to be regulated, as other destinations such as Amsterdam, Berlin, and Barcelona have

already done, in order to limit the urban changes related to this trend and curb the conversion from residential to tourist use. A discussion should be opened as soon as possible to limit the expansion of the number of listings or the number of bookable days per year. Other regulations should take into account the uncontrolled development of the food and beverage sector, which is transforming Venice into open air-restaurant and commercial businesses, enforcing more authenticity to prevent the city center from becoming a large souvenir shop.

We assume, in the context of Venice's historical center, that it is also crucial and indispensable to find ways to monitor, control, and regulate the tourism flows. This will likely take the form of trying to put a daily limit on tourists and visitors, as the newest points of the tourism management agenda are drafted (the creation of a smart control room is in progress).

However, new perspectives need to be developed. Focusing only on regulating tourism is not a comprehensive solution to invert, even partially, the trend underlined in the previous paragraphs. The municipality of Venice has drafted some new policies for the destination governance plan of 2017 [66] that turns attention to residents' quality of life, rather than looking only at tourist services and facilities' issues (results need to be evaluated in the future).

Advanced policy plans to make Venice more competitive in other productive sectors should be developed in order to make the historical city more attractive to new residents and to help the old residents, promoting different businesses and traditional activities not related to tourism. Focusing on policies that are not directly related to the management of tourism could represent a new wave able to overturn Russo's vicious circle [1], shifting global and local attention from tourism to the reactivation of other urban ecosystems, services and uses.

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References

1. Russo, A.P. The 'vicious circle' of tourism development in heritage cities. *Ann. Tour. Res.* **2002**, *29*, 165–182. [CrossRef]
2. Visentin, F.; Bertocchi, D. Venice: An Analysis of Tourism Excesses in an Overtourism Icon. In *Overtourism: Excesses, Discontents and Measures in Travel and Tourism*; Milano, C., Cheer, J., Novelli, M., Eds.; CABI: Wallingford, MA, USA, 2019; pp. 18–38.
3. Ateljevic, I.; Pritchard, A.; Morgan, N. (Eds.) *The Critical Turn in Tourism Studies. Innovative Research Methodologies*; Elsevier: Amsterdam, The Netherlands, 2007.
4. Dredge, D. 'Overtourism' Old Wine in New Bottles? 2017. Available online: <https://www.linkedin.com/pulse/overtourism-old-wine-new-bottles-dianne-dredge/> (accessed on 26 July 2019).
5. Goodwin, H. The Challenge of Overtourism. Responsible Tourism Partnership Working Paper 4. October 2017. Available online: <https://haroldgoodwin.info/pubs/RTP\T1\textquoterightWP4Overtourism01\T1\textquoteright2017.pdf> (accessed on 26 July 2019).
6. Milano, C. *Overtourism y Turismofobia. Tendencias Globales y Contextos Locales*; Ostelea School of Tourism & Hospitality: Barcelona, Spain, 2017.
7. Milano, C.; Cheer, J.; Novelli, M. (Eds.) *Overtourism: Excesses, Discontents and Measures in Travel and Tourism*; CABI: Wallingford, MA, USA, 2019.
8. Canestrelli, E.; Costa, P. Tourist carrying capacity: A fuzzy approach. *Ann. Tour. Res.* **1991**, *18*, 295–311. [CrossRef]
9. Van der Borg, J.; Costa, P.; Gotti, G. Tourism in European heritage cities. *Ann. Tour. Res.* **1996**, *23*, 306–321. [CrossRef]

10. D'Eramo, M. *Il Selfie del Mondo. Indagine Sull'età del Turismo*; Feltrinelli: Milano, Italy, 2017.
11. Diedrich, A.; García-Buades, E. Local perceptions of tourism as indicators of destination decline. *Tour. Manag.* **2009**, *30*, 512–521. [[CrossRef](#)]
12. Kavaratzis, M.; Minoia, P. (Eds.) *Tourism in the City: Towards and Integrative Agenda on Urban Tourism*; Springer International Publishing: Cham, Switzerland, 2017.
13. Lim, S.E.Y.; Bouchon, F. Blending in for a life less ordinary? Off the beaten track tourist experiences in the global city. *Geoforum* **2017**, *86*, 13–15. [[CrossRef](#)]
14. Novy, J. 'Destination' Berlin revisited. From (new) tourism towards a pentagon of mobility and place consumption. *Tour. Geogr.* **2018**, *20*, 418–442. [[CrossRef](#)]
15. Ashworth, G.; Page, S.J. Urban tourism research: Recent progress and current paradoxes. *Tour. Manag.* **2011**, *32*, 1–15. [[CrossRef](#)]
16. Andereck, K.L.; Valentine, K.M.; Knopf, R.C.; Vogt, C.A. Residents' perceptions of community tourism impacts. *Ann. Tour. Res.* **2005**, *32*, 1056–1076. [[CrossRef](#)]
17. Chen, J. Assessing and Visualizing Tourism Impacts from Urban Residents' Perspectives. *J. Hosp. Tour. Res.* **2001**, *25*, 235–250. [[CrossRef](#)]
18. Kumar, C.; Sakthivel, R.; Ramanathan, H. Local residents perception and attitude towards model tourism village Kumbalangi Kerala. *J. Contemp. Res. Manag.* **2013**, *8*, 59–67.
19. Kim, K.; Uysal, M.; Sirgy, M.J. How does tourism in a community impact the QOL of community residents? *Tour. Manag.* **2013**, *36*, 527–540.
20. Liang, Z.X.; Hui, T.K. Residents' quality of life and attitudes toward tourism development in China. *Tour. Manag.* **2016**, *57*, 56–67. [[CrossRef](#)]
21. Rivera, M.; Croes, R.; Lee, S.H. Tourism development and happiness: A residents' perspective. *J. Destin. Mark. Manag.* **2016**, *5*, 5–15. [[CrossRef](#)]
22. Yu, C.P.; Cole, S.T.; Chancellor, C. Assessing community quality of life in the context of tourism development. *Appl. Res. Qual. Life* **2016**, *11*, 147–162. [[CrossRef](#)]
23. Butler, R.W. The concept of a tourist area cycle of evolution: Implications for management of resources. *Can. Geogr. Géogr. Can.* **1980**, *24*, 5–12. [[CrossRef](#)]
24. Gerritsma, R.; Vork, J. Amsterdam residents and their attitude towards tourists and tourism. Coactivity: Philosophy. *Commun. Santalka Filos. Komun.* **2017**, *25*, 85–98. [[CrossRef](#)]
25. Cañada, E. (Ed.) *Turismo en Centroamérica: Nuovo Escenario de Conflictualidad*; Enlance Editorial: Managua, Nicaragua, 2010.
26. Colomb, C.; Novy, J. (Eds.) *Protest and Resistance in the Tourist City*; Routledge: London, UK, 2017.
27. Giuffrida, A. Cruise Ship Crashes into Tourist boat in Venice, Injuring Five People. *The Guardian*. 2 June 2019. Available online: <https://www.theguardian.com/world/2019/jun/02/cruise-ship-crashes-into-tourist-boat-in-venice-injuring-five-people> (accessed on 29 November 2019).
28. Mantegnoli, V. Venezia, Nave da Crociera Msc Urta Battello nel Canale della Giudecca: Ferite 5 Turiste Straniere. *La Repubblica*. 2 June 2019. Available online: https://www.repubblica.it/cronaca/2019/06/02/news/venezia_scontro_tra_una_nave_msc_e_una_barca_fluviale_alla_stazione_marittima-22777952/ (accessed on 29 November 2019).
29. Vianello, M. The no Grandi Navi campaign: protests against cruise tourism in Venice. In *Protest and Resistance in the Tourist City*; Colomb, C., Novy, J., Eds.; Routledge: London, UK, 2017; pp. 185–204.
30. Picard, M. Cultural heritage and tourist capital: Cultural tourism in Bali. In *International Tourism: Identity and Change*; SAGE: London, UK, 1995; pp. 44–66.
31. Trancoso González, A. Venice: The problem of overtourism and the impact of cruises. *J. Reg. Res.* **2018**, *42*, 35–51.
32. Salerno, G.M. Estrattivismo contro il comune. Venezia e l'economia turistica. *ACME Int. E J. Crit. Geogr.* **2018**, *17*, 480–505.
33. Seraphin, H.; Sheeran, P.; Pilato, M. Over-tourism and the fall of Venice as a destination. *J. Destin. Mark. Manag.* **2018**, *9*, 374–376. [[CrossRef](#)]
34. Wang, Y.; Pfister, R.E. Residents' attitudes toward tourism and perceived personal benefits in a rural community. *J. Travel Res.* **2008**, *47*, 84–93. [[CrossRef](#)]
35. Quinn, B. Performing tourism in Venice: Local residents in focus. *Ann. Tour. Res.* **2007**, *34*, 458–476. [[CrossRef](#)]

36. Zanini, F.; Lando, F.; Bellio, M. Effects of Tourism on Venice: Commercial Changes Over 30 Years. Venezia, Working Paper Economics Department, Ca' Foscari Venezia, 2008. Research Paper Series No. 33/WP/2007. Available online: https://www.unive.it/media/allegato/DIP/Economia/Working_papers/Working_papers_2008/WP_DSE_zanini_lando_bellio_33_08.pdf (accessed on 11 August 2019).
37. Settis, S. *Se Venezia Muore*; Giulio Einaudi Editore: Torino, Italy, 2014.
38. Cavallo, F. La Laguna di Venezia, dispute territoriali e movimenti sociali. *Riv. Geogr. Ital.* **2016**, *123*, 125–140.
39. Minoia, P. Venice reshaped? Tourist gentrification and sense of place. In *Tourism in the City: Towards an Integrative Agenda on Urban. Tourism 2017*; Bellini, N., Pasquinelli, C., Eds.; Springer International Publishing: New York, NY, USA, 2017; pp. 261–274.
40. Coldwell, W. First Venice and Barcelona: Now Anti-Tourism Marches Spread Across Europe. *The Guardian*. 10 August 2017. Available online: https://static1.squarespace.com/static/53109b11e4b05040160f0a8f/t/59bfcc8b90badecf7cc1564/1505741995422/First+Venice+and+Barcelona+_now+anti-tourism+marches+spread+across+Europe+_+Travel+_+The+Guardian.pdf (accessed on 29 November 2019).
41. Hall, C.M. *Tourism: Rethinking the Social Science of Mobility*; Pearson Education: London, UK, 2005.
42. Hannam, K. Tourism geographies, tourist studies and the turn towards mobilities. *Geogr. Compass* **2008**, *2*, 127–139. [CrossRef]
43. Sheller, M.; Urry, J. *Tourism Mobilities: Places to Play, Places in Play*; Routledge: London, UK, 2004.
44. Adey, P. *Mobility*; Routledge: London, UK, 2017.
45. Cheer, J.M.; Lew, A.A. Sustainable tourism development: Towards resilience in tourism. *Interaction* **2017**, *45*, 10–15.
46. Sanchez, P.M.; Adams, K.M. The Janus-faced character of tourism in Cuba. *Ann. Tour. Res.* **2008**, *35*, 27–46. [CrossRef]
47. Gant, A.C. Tourism and commercial gentrification. In Proceedings of the RC21 International Conference on “The Ideal City: Between Myth and Reality, Representations, Policies, Contradictions and Challenges for Tomorrow’s Urban Life”, Urbino, Italy, 27–29 August 2015.
48. Città di Venezia. Serie storica della popolazione residente e dei numeri indice per zone del Comune di Venezia dal 1871. Available online: <https://www.comune.venezia.it/it/content/serie-storiche> (accessed on 29 November 2019).
49. Città di Venezia. Annuario del Turismo 2017. Assessorato al Turismo. Centro Produzione Multimediale, Venice, Italy. 2018. Available online: <https://www.comune.venezia.it/sites/comune.venezia.it/files/immagini/Turismo/ANNUARIO%202017%20Ver%202.8.1%20cover.pdf> (accessed on 29 November 2019).
50. Carrera, F. Soluzioni “Made in Venie” per un Turismo Sostenibile, Presentation at Venice Municipality, 5 December 2016. Available online: https://docs.google.com/presentation/d/1hUm6o-Wd_VvwdWPLANgNmQYoE_DdLnQZb6ce_wqQ8o/edit (accessed on 29 November 2019).
51. Peeters, P.; Gössling, S.; Klijs, J.; Milano, C.; Novelli, M.; Dijkmans, C.; Eijgelaar, E.; Hartman, S.; Heslinga, J.; Isaac, R.; et al. *Research for TRAN Committee—Overtourism: Impact and Possible Policy Responses, European Parliament*; Policy Department for Structural and Cohesion Policies: Brussels, Belgium, 2018.
52. Mowforth, M.; Munt, I. *Tourism and Sustainability: Development, Globalisation and New Tourism in the Third World*; Routledge: London, UK, 2008.
53. Guttentag, D. Airbnb: Disruptive innovation and the rise of an informal tourism accommodation sector. *Curr. Issues Tour.* **2015**, *18*, 1192–1217. [CrossRef]
54. Zervas, G.; Proserpio, D.; Byers, J.W. The rise of the sharing economy: Estimating the impact of Airbnb on the hotel industry. *J. Mark. Res.* **2017**, *54*, 687–705. [CrossRef]
55. Gutiérrez, J.; García-Palomares, J.C.; Romanillos, G.; Salas-Olmedo, M.H. The eruption of Airbnb in tourist cities: Comparing spatial patterns of hotels and peer-to-peer accommodation in Barcelona. *Tour. Manag.* **2017**, *62*, 278–291. [CrossRef]
56. Ganzaroli, A.; De Noni, I.; van Baalen, P. Vicious advice: Analyzing the impact of TripAdvisor on the quality of restaurants as part of the cultural heritage of Venice. *Tour. Manag.* **2017**, *61*, 501–510. [CrossRef]
57. Van der Borg, J.; Russo, A.P. Towards sustainable tourism in Venice. In *Sustainable Venice: Suggestions for the Future*; Springer: Dordrecht, The Netherlands, 2001; pp. 159–193.
58. Scarpa, C. Venezia e l’overtourism: Problematiche e proposte legate alla sostenibilità sociale. Master’ thesis, Università Ca’ Foscari, Venice, Italy, 2019. Available online: <http://dspace.unive.it/bitstream/handle/10579/15491/839637-1235193.pdf?sequence=2> (accessed on 29 November 2019).

59. Page, S.J. *Urban Tourism*; Routledge: London, UK, 1995.
60. Hall, C.M.; Page, S. *Managing Urban Tourism*; Prentice Hall: Harlow, UK, 2003.
61. García-Hernández, M.; de la Calle-Vaquero, M.; Yubero, C. Cultural Heritage and Urban Tourism: Historic City Centres under Pressure. *Sustainability* **2017**, *9*, 1346. [[CrossRef](#)]
62. Capocchi, A.; Vallone, C.; Pierotti, M.; Amaduzzi, A. Overtourism: A Literature Review to Assess Implications and Future Perspectives. *Sustainability* **2019**, *11*, 3303. [[CrossRef](#)]
63. Capocchi, A.; Vallone, C.; Amaduzzi, A.; Pierotti, M. Is 'overtourism' a new issue in tourism development or just a new term for an already known phenomenon? *Curr. Issues Tour.* **2019**. [[CrossRef](#)]
64. Dodds, R.; Butler, R.W. (Eds.) *Overtourism. Issues, Realities and Solutions*; De Gruyter: Berlin, Germany, 2019.
65. Perkumienė, D.; Pranskūnienė, R. Overtourism: Between the Right to Travel and Residents' Rights. *Sustainability* **2019**, *11*, 2138. [[CrossRef](#)]
66. Van den Berg, L.; Van der Borg, J.; Van der Meer, J. *Urban Tourism: Performance and Strategies in Eight European Cities*; Aldershot: Avebury, UK, 1995.
67. Milano, C.; Novelli, M.; Cheer, J.M. Overtourism and Tourismphobia: A Journey Through Four Decades of Tourism Development, Planning and Local Concerns. *Tour. Plan. Dev.* **2019**, *16*, 353–357.
68. Città di Venezia. Progetto di Governance Territoriale del Turismo a Venezia Assessorato al Turismo. 2017. Available online: <https://live.comune.venezia.it/sites/live.comune.venezia.it/files/articoli/allegati/Prog-governance%20terr> (accessed on 29 November 2019).
69. Report Workshop "Un'altra città è possibile", Venice, Italy, 2019. Available online: <https://www.unaltracittapossibile.it/wp-content/uploads/2019/07/Report-29-giugno-.pdf> (accessed on 29 November 2019).



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Article

Residents' Opinions and Perceptions of Tourism Development in the Historic City of Toledo, Spain

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Abstract: Historic centers have become first-line tourist destinations. In order to achieve sustainable development, it is essential to get to know the opinions of the host community on the impact of tourism, the positives, as well as the negatives. This paper aims to understand the residents' opinions and perceptions of destinations as the historic cities. This research looks into the residents' opinions on the impact of tourism in the historic city of Toledo, Spain. The results of a quantitative survey among 442 residents in the city of Toledo are presented. The study is a revision of the literature and analysis and explanation of an empiric study's results. Descriptive statistics have been used, as well as factor analysis and non-parametric tests to analyze data. The main results point out that residents have a positive vision of tourism development, rather than negative. The economic importance of tourism and its ability to create jobs stand out. However, they also think that the historic center is being turned into a museum for tourists. Analyzing their opinions according to certain demographic and socioeconomic characteristics, some major differences come up, such as that the inhabitants of residential areas have a more positive opinion than those who live in the historic center. Understanding the perspective of the residents can help the managers and planners of the tourism in the city to play down the potential negative impact of tourism and to achieve support from the host community in regards to tourism.

Keywords: tourism development; residents' opinions; residents' perceptions; tourism impacts; historic city; cultural tourism; Toledo

1. Introduction

"They knew everything there was for the tourists, the despised tourists who kept Nova Scotia alive." [1]

The development of tourism results in diverse economic, environmental, and sociocultural changes in daily community life, some of those positive and some negative [2]. The touristic overcrowding increase magnifies these impacts and their consequences on the touristic destinations and their inhabitants. In fact, nowadays, there is an irreversible process of touristification that affects a number of destinations in regards to cultural, economic, political, and social aspects [3]. In these places, the risk of altering the balance of the territorial system in favor of the touristic function is real. It happens particularly in the cities, where territorial transformation and touristic pressure processes are spotted [4]. This phenomenon appears significantly in historic cities. They are the "touristic-historic city", an idea conceptualized by Ashworth and Tunbridge, which they defined as an area of older cities, where the urban structure, architecture, and artifacts are used to create a place-based heritage product [5]. The touristic-historic cities are first line touristic destinations [6]. Their cultural heritage and their particular characteristics make them especially sensitive to the negative impact of tourism. In these cities, the host community has to coexist with a growing number of tourists who fill their spaces. As Aranburu, Plaza, and Esteban conclude, in these urban destinations, it is of the essence to achieve sustainable cultural tourism [7].

The introduction—theoretically and in good practices—of the principles of sustainability in the touristic-historic cities is key to diminishing the negative impact derived from its touristification [3]. It is unarguable that cultural tourism offers many opportunities for touristic-historic cities. However, the strategical planning in regards to sustainability has to be tackled in its touristic development [8]. Making of the touristic activity something sustainable has to be a critical issue [9].

On the other hand, the continuous growth of tourism in historic cities in the last years has caused an increase in popularity in social movements against tourism. It happens so especially in those cities where the touristic flows are very significant, as it happens in the main European touristic-historic cities. Dubrovnik and Venice are two clear examples [10]. In this way, concepts like “overtourism” [11] and, especially, “tourismophobia” have spread out [12]. In this context, it is necessary to understand in an analytical, scientific, and integrated manner, the residents’ opinions of tourism. That is to say, clear comprehension of the phenomenon in order to understand how the host community perceives the positive and negative impacts of tourism [10].

Understanding the expectations, needs, and the level of satisfaction of the host community is a key element for the success of any form of touristic development [13]. The support and participation of the hosting society are essential to achieve sustainability in every tourist destination [14]. The members of the community must play an important role in the strategy and action plan of touristic development. They play an important role in successful tourism development [15]. Incorporating the touristic destination inhabitants’ perceptions, tourism-resilient communities can be built [16]. Besides, understanding the attitudes and perceptions of the residents towards tourism can mitigate present—and foremost—potential future conflict between the host community and the visitors [10], and hostility towards tourists [17].

Nowadays, it is important to understand how local residents perceive the development of tourism and its impacts on historic cities. The understanding of the host community is essential to achieve success in the touristic development and its sustainability [18]. This research looks into the residents’ opinions on the impacts of tourism in the historic city of Toledo, Spain.

How do the residents of Toledo feel about the impact of tourism on their city? This is the main research question. According to classical theory based on the cost-benefit analysis from a social and psychological perspective, introduced by Homans in 1958 and known as the Social Exchange Theory (SET), human beings have a favorable attitude when they are benefited and unfavorable when the cost is increased [19]. Ap makes a case for the implementation of SET in those studies that analyze the resident’s perception of tourism [20]. The existing literature has proved that the host community’s reactions to tourism are, to a great extent, influenced by the perceptions of the cost versus the obtained benefits [21,22]. Thus, if they perceive that the touristic development reports more benefits than costs, the local community will support tourism and vice versa. For this reason, a key issue that is being brought up in the research is finding out whether the host community of a touristic-historic city, such as Toledo, perceives tourism mainly as a benefit or as a cost. For this, we need to figure out their opinion about the positive and negative impact of tourism in the city. Which do prevail? For instance, does the obviously positive economic impact of tourism in Toledo bring about the prevalence of positive opinions? Or, on the contrary, has the increased influx of tourists made negative opinions to grow, and are we faced with a tourismophobia phenomenon?

It is also interesting to answer other questions, such as: Do basic demographic characteristics—age and gender—have an influence on the opinions of the touristic-historic city’s host community? Are the differences in income and in the ownership of a home play a relevant role in those opinions? Can economic tourism-dependence predict the opinion of the residents about tourism development? Equally, it is interesting to get to know whether the residents think that the local council must control the touristic development or not and whether they think they can influence the touristic development in the city.

Answering these research questions sets the main goals for the research. The paper’s structure fits these goals. After this introduction, a literature review is made about the residents’ attitudes and

perceptions of tourism, and the research methodology is explained in detail. Next, the results are addressed analyzing the residents' opinions as a whole and through demographic and socioeconomic independent variables. Finally, it ends with the discussion and conclusion sections.

Planning and tourism policies must take into consideration the residents' attitudes towards the development of touristic activity. Understanding the residents' perspective may help tourism development planning, leading to local development. It can also get greater support for tourism from the host community. On the contrary, if the host community proves hostile towards tourists, this activity could end up declining. In the touristic-historic cities, this information has serious implications on the management of tourism [23]. Thus, this study is relevant for touristic development planners and destination managers. Just as Snaith and Haley point out in their research about the opinions of York's residents about tourism development, their findings may translate into potential policies that highlight the importance of communication with the host community, raising their awareness of the issues, and then marketing the value of tourism internally in order that more residents can feel involved [23] (p. 602).

2. Literature Review

In studies about tourism from different scientific disciplines, the attitudes, behavior, and perceptions of the tourists have been recurrently taken into account [24]. On occasion, they have been combined and contrasted with the visitors' and the tourist destination inhabitants' opinions [25–27]. Finally, there is a growing number of papers, with different goals and methods in mind, that have contributed to a significantly broader comprehension of the attitudes and opinions of the residents towards tourism. In fact, Nunkoo, Smith, and Ramkissoon did a literature review on the question and used 140 published articles [28]. Sharpley has also reviewed the research on the host community's perception of tourism [29].

This line of research has been established since the 1980s [30,31] and has been developed above all, from the 1990s, in multiple publishings and from research, such as Perdue, Long, and Allen's, on the resident community's support of tourism development [32] or Ap's [20] and Lankford and Howard's [33] on the attitudes towards tourism impact. In 2010, two decades past, getting to know the residents' support and reactions to tourism was still a focal point for researchers, such as Nunkoo and Gursoy [34]. Following this line of research, Jurowski, Uysal, and Williams have carried out a theoretical analysis on the host community's reactions towards tourism [35], and Vargas, Porras, and Plaza have considered the possibility of building a universal model to analyze the residents' attitudes towards tourism and, after implementing it in the Spanish province of Huelva, they reach a positive conclusion as long as the "tourist density" and "perceived touristic development level" variables are taken into account, which according to these authors are missing or barely incorporated into most models [36]. According to Cardoso and Silva, "the conceptual framework and theories used by such research vary significantly" [10] (p. 690). Recently, Nunkoo and So have reviewed this type of analysis and have established a structural model for the study of the residents' support of tourism [37]. Lindberg and Johnson have tried to model the residents' attitudes towards tourism [38]. Sinclair-Maragh et al. have carried out a factor-cluster approach [39]. In the same fashion, Fredline and Faulkner analyze the host community's reactions to tourism through a cluster analysis [40]. In short, according to Cardoso and Silva, "the literature review on residents' attitudes towards tourism evidence that this is a complex analysis, as a number of distinct elements and frameworks can be involved" [10] (p. 691).

One of the main focuses of academic literature about this issue resides on the impacts of tourism on the host community. Consistency amongst researchers relies upon resident perception studies focusing on tourism impacts [41]. Ap [20] and Stylidis et al. [21] focus on how the residents perceive touristic impacts. This issue is the same that concerns Almeida et al. [42], Andereck et al. [43], Bastias and Var [44], Korça [45], Tosun [46], this one in a comparative way between three destinations, and Yen and Kerstetter [47]. Faulkner and Tideswell have devised a framework for monitoring the community impacts of tourism [48]. Pham and Kayat relate the residents' perception of the impacts of

tourism with their support of tourism [49]. Some authors highlight through their research the intensity and importance of some impacts over others. This way, Jurowski et al., following the Social Exchange Theory, favor the relevance of the economic impacts [35]. Other academicians, such as Ward and Berno, prefer to go further than the economic impacts [50]. King et al. opt for focusing exclusively on the social impacts [51], and Broughan and Butler did so previously and through a segmented analysis of the residents' attitudes [31]. In this sense, Pearce et al. devise a Social Representation Theory as an alternative approach to studying the tourism impacts and the attitudes of the local community [52]. Finally, for other authors, the cultural [53], environmental [54], or sociocultural [55] impacts would be the most relevant when it comes to the host community's perceptions.

There is also growing concern about the local host community's support of tourism development analysis, especially about the cost that it may entail for them. The residents' perception towards touristic development concerns Cardoso and Silva [10], Johnson et al. [56], McCool and Martin [57], and Teye et al. [22]. In this concern, researchers have pointed out the importance of the host community's attitude in order for tourism development to be sustainable in the future [15,43]. Choi and Sirakaya [58] have assessed the residents' attitude towards sustainable tourism through the development of a scale.

Other particular aspects have been taken into consideration to assess the residents' opinion about tourism. For instance, Davis, Allen, and Cosenza are interested in doing segmentation of the residents into attitudes, interests, and opinions of tourism and end up distinguishing four categories: The haters, the critical realists, the conscious lovers, and the passionate lovers [59]. The effects of the distance from the touristic focus on the attitudes of the inhabitants of the destination are analyzed by Jurowski and Gursory, who show that, based on different variables, the residents who live closer to the touristic attraction feel more negatively (the users of the recreational facilities) or positively (those sensitive to the environment) than those who live further away [60].

The empirical study of the attitudes, images, opinions, and perceptions of the residents towards tourism development has been carried out in multiple cases around the world. They are carried out in different destinations worldwide and in different types of tourism. Logically, research focused on mass coastal tourism stands out [14,30,61–69]. But there is also similar research in very different fields from beach tourism, such as in rural communities [70,71], in the mountain communities [72], or in national parks [49,73]. The same happens in specific varieties of tourism, such as industrial tourism [74] or therapeutic tourism [18]. Research has also been carried out about the residents' attitudes towards the celebration of great events [17,75].

One of the main research scopes has been cities, such as Koens and Postma's paper on six European cities [76], Ross' about residents' perceptions on the impacts of tourism in Australian cities [77], or Tichaawa and Moyo's in an African developing country, Zimbabwe [41]. City centers are oftentimes the main focus for major tourism [78]. In them, cultural and heritage resources are key elements for touristic development [3]. Thus, among city-center-focused studies, there are published articles about the attitudes and opinions of the residents in different areas with assets declared United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage, such as Krishnaswamy et al., Malaysia [79]; Cardoso and Silva's in Porto, Portugal [10], where cultural and heritage tourism is the core axis of visitors, just as in the case of this present paper, Toledo, Spain; or the one focusing in Portugal by Lourenço et. al in which they analyze the residents' general perception of the impacts of their World Heritage Site nomination, specifically delving in the development of the touristic activities [80]. In these areas, developing sustainable tourism is especially key. But independently from the UNESCO denomination, there is an interest in the residents' attitudes towards heritage tourism development [81]. This way, researchers of the residents' perceptions of tourism have taken on heritage areas, as Chand does for the Indian town of Praggpur [82], in the same way as the cultural cities [83]. In this way, studies in European cities, such as Bruges [16], Canterbury [84], Oxford, in this case contrasting it with the opinions of visitors [25], or York [23] are carried out.

3. Methods

The article study area is the historic city of Toledo, Spain. Toledo is a city of 84,282 inhabitants in 2018, located in the interior of the Iberian Peninsula. It is located in the center of the Peninsula, 75 km southerly the capital of the country, Madrid—approximately an hour by the highway and half an hour by high-speed train. The city of Toledo, with its medieval old quarter and unique landscapes, has been a protected site since the early 1940s when it was designated as a National Historic-Artistic Site. It was declared a World Heritage Site by UNESCO in November 1986 [85]. Toledo holds the category of touristic-historic city and is today one of the main cultural tourist destinations in Spain. The main characteristics of its development in the present—its realities as well as its issues—have been previously addressed by the author [85]. For instance, one of its main features is that, on top of receiving around a million tourists, it is also visited by over two million day-trippers (there are no official and accurate figures for these data). They are individuals who do not stay overnight in Toledo and who come mainly from the nearby capital of the country, Madrid. This issue has also been previously addressed by the author [86].

The study uses quantitative data in the form of questionnaires. Sharpley showed in their previous work that the majority of studies on our topic use quantitative data in the form of questionnaires [29]. Opinions were tested using empirical data that were gathered from a sample of 442 adult members. According to Di Grino, the required number of answers to achieve a representative sample in a population of 25,000 or more people is 348. This figure allows the trust of 95% inside a margin of error of $\pm 2.5\%$ [87]. Toledo has a population of 84,282 in 2018. Thus, the sample fits the appointed criteria.

The questions in the questionnaire were asked in a non-force approach like previous papers do, such as Styliadis et al.'s, who employ a non-force approach in order to find out how the residents perceive the impacts of tourism and analyze their support to touristic development [21]. This allows the respondents, residents of Toledo, to express positive or negative comments about the perceived touristic impacts. That is to say, their opinions are freely expressed.

The questionnaire in this research was built on references to previous studies on similar topics. Specifically, the questionnaire by Snaith and Haley to obtain the opinion of the residents in the touristic-historic city of York, England, was the main reference [23]. This questionnaire was manufactured, in turn, based on previous work by Perdue et al. [32]. However, the question items were chosen and adapted meticulously keeping Toledo in mind as the destination and based on a previous paper by the author in which the dynamics and difficulties of cultural tourism in this touristic-historic city were analyzed [85].

The questionnaire was divided into 3 sections. In the first, there are questions about the respondent's residence, how long they have resided, as well as the area where they live in Toledo. Just like Krishnaswamy et al. [79], the initial condition of the respondent residing in the touristic destination for at least one year has also been taken into account. Just like Cardoso and Silva [10], this circumstance has been used to ask for how long it is that they have lived in the city. The area of residence is also asked about since the distance from the touristic center has an effect on the residents' attitudes towards tourism [60].

The second is the key section and includes 26 items, 13 about the positive impacts of tourism in Toledo and 13 about the negative ones, in which the residents must assess their degree of agreement with every item on a five-point Likert scale (where: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree). There are also two yes or no final questions included, asking whether the local council should control the touristic development and whether, as a resident, they consider that they can personally influence the decision-making process in regards to touristic development.

In the last section, socioeconomic and demographic information is demanded with the intention of finding out whether it is significant in their ability to point out the different opinions of the residents of tourism in Toledo. In this way, several analysis-independent variables are included. Firstly, basic demographic variables, such as gender and age, as is the standard [41,61]. It is also asked whether the resident was born in Toledo, in some other area in Spain, or abroad. Next, and following Snaith and

Haley [23], it is taken into consideration whether the resident is the owner of their home and whether they reside in Toledo all year round. Then, the resident is asked whether they or someone in their family work in the tourism industry, as well as whether they think tourism in Toledo is important to their occupation. According to Krippendorf, another variable to consider is the fact that the residents are in direct contact with tourism and tourists. Thus, the citizens who work in activities closely related to tourism would have opinions differing from those that do not have such a close relationship with these activities [88]. Finally, they are asked about the residents' monthly income, given that income is another relevant factor to the residents' attitudes towards tourism [41]. In Table 1, there is a summary with all the independent variables used.

Table 1. Demographic and socioeconomic variables of the questionnaire sample.

Independent Variable	Subgroups		
Gender n = 442	Men 44.6%	Women 55.4%	
Age n = 441	18–40 years 50.8%	41–60 years 41.3%	+60 years 7.9%
Place of Birth n = 442	Toledo 60.6%	Rest of Spain 35.5%	Foreign 3.8%
Length of Residence n = 442	1–5 years 12.4%	6–15 years 11.5%	+15 years 76.0%
Place of Residence n = 442	Historic Center 38.2%	Residential Areas 61.8%	
Home Ownership n = 442	Yes 67.4%	No 32.6%	
Year Round Residence n = 441	Yes 92.5%	No 7.5%	
Employed in the Tourism Industry n = 442	Yes 25.8%	No 74.2%	
Importance of Tourism to Occupation n = 442	Yes 36.0%	No 64.0%	
Income n = 393	€0–1000 monthly 33.6%	€1000–2500 monthly 58.0%	+ €2500 monthly 8.4%

The data in this study were collected between the months of October and December 2019. According to González and López-Guzmán, “convenience sampling was used, common in this type of research, where the surveyed persons are available to be surveyed in a determined space and time” [89] (p. 113). This way, the respondents were randomly chosen in the historic center as well as in the rest of the neighborhoods in the city. In order to obtain a global view of the residents' opinions in Toledo, the survey was conducted in all the areas of the city, just like Cardoso and Silva did in Porto [10]. Even though tourism is located in the historic center, the touristic-historic city, finding out about the opinion of the inhabitants of the different residential areas in Toledo, was opted on. The questionnaires were conducted by trained pollsters face to face, being the pollster the one filling in the questionnaire, or allowing the respondent to fill it in under the pollster's assistance.

The data were analyzed using descriptive methods to summarize data in a meaningful way [10]. Thus, a descriptive analysis was carried out in order to obtain a general view of the variables in the sample. The mean was used as a measurement of the central tendency, and the typical deviation was detailed in order to appreciate the importance of the variations in the answers in relation to the mean. Also, just like Tichaawa and Moyo [41], the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity were performed to consider whether a factor analysis would be useful. When positive results were obtained, it was opted on to carry out a study on the correlations between the question items and applying the varimax rotation method, with Kaiser normalization following the example of Sharma and Dyer [61]. The socioeconomic and demographic

profiles of the respondents were entered as independent variables in multiple tests in order to investigate the potentially different opinions, which residents possess regarding the reality of tourism development following the recommendations in Ap's paper [20]. Based on the number of variable groups, the pertinent test was applied: The Student's *t*-test was performed for comparing only two groups, for example, in the case of gender, and the ANOVA in order to compare the variables in three groups, for example, in the case of income. Thus, the data analysis methodology applied by Sharma and Dyer [61] was followed and, in general, the most commonly non-parametric tests used in research about residents' attitudes to tourism [28]. However, given the diversity in the size of the sample between the groups of some of the variables, it was decided to perform a variance homogeneity test for the ANOVA test. When that test showed non-significant results ($p > 0.05$), it was decided to perform the Kruskal-Wallis test because the variables did not show a normal distribution. Thus, another very normal statistical technique in these topic related issues was applied [28].

4. Results

The opinions and perceptions of tourism impacts on a local scale are logically variable and heterogeneous. Nevertheless, it is key to understand how local residents perceive tourism development and how their demographic characteristics and their socioeconomic context influence their opinions [16]. The opinions of Toledo's residents regarding the impacts of tourism in their city are analyzed in this section, and the experimental results of the research are displayed in two subheadings. The results are presented by analyzing the opinions of the positive dimensions and the negative aspects of tourism in the touristic-historic city of Toledo, first in a general manner and then taking into account the demographic and socioeconomic independent variables.

4.1. The Residents' Opinions about Tourism Development

The residents in Toledo have a somewhat more positive than the negative opinion on tourism development in their touristic-historic city. After analyzing the 13 items for both possibilities through a Likert scale from 0 to five, the final mean average was 3.67 for the positive opinions of tourism versus 3.49 for the negative opinions.

If we review, in the first place, the answers to the question items about positive opinions of the tourism in Toledo (see Table 2), it was observed that there was an agreement about the economic impacts of tourism. The residents thought that tourism provides with jobs (4.15) and that more tourism improves Toledo's economy (4.07). These economic benefits of tourism are acknowledged and, because of their influence, it complies with the general principle stated in the Social Exchange Theory: the residents in Toledo have a more positive than negative view of tourism, as has been pointed out. For this same reason, it is remarkable the fact that there were strong degrees of agreement in the opinions about how Toledo must increase the number of tourists who stay overnight (4.25) and increase the average stay of the tourists in the city (4.17). Achieving both goals would increase the income that tourism leaves in the city and would also solve a problem in the structural tourism development in Toledo: the excessive number of day-trippers [86]. In fact, the highest percentage of Strongly Agrees was for P8, where 53.4% of the respondents grade at a five that Toledo has to increase the number of tourists who stay overnight in the city. Among the positive opinions, a more neutral grade was obtained with the idea that tourism development improves quality of life (3.00)—"quality of life" is always somewhat broad. Residents may have different notions of the meaning of the concept of quality of life. In fact, the high standard deviation that we can see in the answers (1.31), seems to prove it—and that it improves Toledo's appearance (3.35). Therefore, there is a lower degree of agreement with the sociocultural impacts of tourism rather than economic ones. Nevertheless, the question that got the lowest mark, the sole one with disagreement, was the one related to the fact that tourism provides good employment in Toledo (2.75). The residents in Toledo acknowledge the value of tourism to create jobs in the city, but are of the opinion that they are not good jobs.

Table 2. Findings for residents' positive opinions on tourism development impacts.

Question Items	Likert Scale (%)					Mean	SD	Factor Loading ¹
	1	2	3	4	5			
P1. More tourism improves Toledo's economy	3.4	5.9	17.4	26.7	45.9	4.07	1.09	0.633
P2. The benefits of tourism outweigh its negative impact in Toledo	9.7	11.3	27.8	25.8	20.4	3.38	1.23	0.480
P3. Tourism must play a vital role in Toledo's future	3.4	7.7	19.2	28.7	39.8	3.95	1.10	0.567
P4. Tourism creates jobs in Toledo	1.6	5.9	15.4	29.4	46.6	4.15	0.99	0.631
P5. Tourism creates good jobs in Toledo	17.4	20.1	38.5	14.0	8.1	2.75	1.15	0.680
P6. Tourism provides Toledo's residents with jobs	7.7	14.0	25.8	31.0	18.1	3.39	1.18	0.682
P7. Toledo must try to attract more tourists	9.0	9.3	16.7	24.2	40.0	3.77	1.31	0.692
P8. Toledo has to increase the number of tourists that stay overnight	2.7	4.5	11.8	25.6	53.4	4.25	1.02	0.782
P9. The average stay of tourists in Toledo has to increase	2.9	2.7	15.2	28.7	46.2	4.17	1.00	0.764
P10. Tourism improves Toledo's appearance	11.3	13.1	26.5	24.7	22.9	3.35	1.29	0.605
P11. Tourism increases the cultural and leisure opportunities in Toledo	8.8	11.8	18.1	26.9	32.6	3.64	1.30	0.554
P12. Toledo should strengthen as a tourist destination	5.7	8.4	18.6	26.5	39.8	3.87	1.20	0.732
P13. Tourism development increases quality of life in Toledo	17.0	16.7	30.1	18.1	16.1	3.00	1.31	0.620
Mean for the scale						3.67	0.47	0.932 ²

¹ Calculated by extraction communalities, which are estimates of the variance in each variable accounted for by the factors in the factor solution. ² The Kaiser-Meyer-Olkin measure of sampling adequacy.

When studying the dispersion of the data through standard deviation, it is in P4, the appointed question that tourism provides people with jobs in Toledo, where there is a smaller variation in answers and, therefore, a more unanimous agreement. On the contrary, where there is a wider dispersion in answers is in P7, tourism must attract more tourists; in P13, tourism development improves quality of life; in P11, tourism increases cultural and leisure activities. There is not a unanimous agreement in the assessment of the sociocultural impacts of tourism in Toledo and neither there is, in a significative way, a need for increasing the number of tourists. The stances between the residents are diverse in these concepts.

The Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity were performed on the answers obtained in the questionnaire about the positive opinions of tourism development in Toledo. The results obtained in both tests proved the usefulness of applying factor analysis to data. In the Kaiser-Meyer-Olkin test, a very high value was obtained (0.932), which clearly surpassed the 0.5 appointed as necessary for the factor analysis to be effective. When analyzing the factor loading of each question item through extraction communalities, every question surpassed 0.5, except for P2 about whether the positive benefits of tourism outweigh the negatives in Toledo, which got 0.480, in any case, a mark very close to the limit. The Bartlett's test of sphericity gave a 0.000 value, a significance level, which indicates that factor analysis can be useful with the data.

For this reason, it was decided to make a correlation matrix between the 13 items in the questionnaire about positive opinions of tourism (see Table 3). The highest values indicate that the relationship is closer. The obtained results show, in a general manner, an average correlation between the different questions. As an exception, there was a high correlation degree (0.817) between questions P8 and P9, so there is a direct relationship between the number of people that think that the number of tourists who stay overnight must be increased and those who think that the average stay should be longer. The clear link between these two questions explains the high level of correlation. The less related questions (0.270) have been P5, tourism provides Toledo with good jobs, with P9, the increase in the average stay. The residents of Toledo have a favorable opinion on the economic benefits of tourism, but consider that the tourism industry jobs are bad quality.

Table 3. Correlation matrix between positive question items.

Question Items	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13
P1. More tourism improves Toledo's economy	1.000	0.585	0.582	0.596	0.483	0.504	0.639	0.572	0.474	0.558	0.498	0.574	0.571
P2. The benefits of tourism outweigh its negative impact in Toledo	0.585	1.000	0.497	0.428	0.425	0.461	0.520	0.483	0.420	0.495	0.414	0.454	0.480
P3. Tourism must play a vital role in Toledo's future	0.582	0.497	1.000	0.545	0.454	0.433	0.595	0.590	0.509	0.522	0.501	0.567	0.520
P4. Tourism creates jobs in Toledo	0.596	0.428	0.545	1.000	0.526	0.629	0.510	0.528	0.433	0.453	0.495	0.491	0.487
P5. Tourism creates good jobs in Toledo	0.483	0.425	0.454	0.526	1.000	0.564	0.480	0.367	0.270	0.431	0.396	0.420	0.520
P6. Tourism provides Toledo's residents with jobs	0.504	0.461	0.433	0.629	0.564	1.000	0.475	0.421	0.361	0.471	0.463	0.417	0.462
P7. Toledo must try to attract more tourists	0.639	0.520	0.595	0.510	0.480	0.475	1.000	0.666	0.583	0.644	0.550	0.682	0.610
P8. Toledo has to increase the number of tourists that stay overnight	0.572	0.483	0.590	0.528	0.367	0.421	0.666	1.000	0.817	0.573	0.527	0.664	0.551
P9. The average stay of tourists in Toledo has to increase	0.474	0.420	0.509	0.433	0.270	0.361	0.583	0.817	1.000	0.496	0.469	0.666	0.492
P10. Tourism improves Toledo's appearance	0.558	0.495	0.522	0.453	0.431	0.471	0.644	0.573	0.496	1.000	0.615	0.572	0.678
P11. Tourism increases the cultural and leisure opportunities in Toledo	0.498	0.414	0.501	0.495	0.396	0.463	0.550	0.527	0.469	0.615	1.000	0.655	0.609
P12. Toledo should strengthen as a tourist destination	0.574	0.454	0.567	0.491	0.420	0.417	0.682	0.664	0.666	0.572	0.655	1.000	0.652
P13. Tourism development increases quality of life in Toledo	0.571	0.480	0.520	0.487	0.520	0.462	0.610	0.551	0.492	0.678	0.609	0.652	1.000

Finally, factor analysis was made via an extraction method and a rotation method in order to find out the main components and to be able to approach a profile of the residents in relation to their positive opinions of tourism development in Toledo. A varimax rotation method with Kaiser normalization was applied (see Table 4). The rotation converged in three iterations and showed two main factors in the positive answers; that is to say, two groups of residents in relation to their positive opinions of tourism in Toledo: one including every opinion except for the one about how tourism creates good jobs and another, which also includes this opinion, but discards the one about how the average stay of tourists must increase.

Table 4. Factor analysis of positive opinions using principal component analysis and varimax rotation method with Kaiser normalization ¹.

Positive Question Items	Factor	
	1	2
P1. More tourism improves Toledo's economy	0.521	0.602
P2. The benefits of tourism outweigh its negative impact in Toledo	0.427	0.546
P3. Tourism must play a vital role in Toledo's future	0.582	0.478
P4. Tourism creates jobs in Toledo	0.346	0.715
P5. Tourism creates good jobs in Toledo		0.811
P6. Tourism provides Toledo's residents with jobs	0.205	0.800
P7. Toledo must try to attract more tourists	0.704	0.443
P8. Toledo has to increase the number of tourists that stay overnight	0.852	0.238
P9 The average stay of tourists in Toledo has to increase	0.869	
P10. Tourism improves Toledo's appearance	0.628	0.458
P11. Tourism increases the cultural and leisure opportunities in Toledo	0.610	0.427
P12. Toledo should strengthen as a tourist destination	0.795	0.315
P13. Tourism development increases the quality of life in Toledo	0.601	0.509

¹ Rotation converged in three iterations.

Regarding the residents' opinions on the negative impacts of tourism, the first question that stands out is that the variation in the distribution of the answers is greater, and the average scores are different depending on the questions (see Table 5). In fact, the standard deviation was always above one in the 13 questions about the negative impacts of tourism in Toledo. The final average score obtained was 3.49, lower than that of the positive impacts. The opinion that presents the highest level of agreement is N4, Toledo is a museum for tourists, with a 4.27 score. The host community perceives a museumification in the city. Actually, this is the question, which reached the highest percentage of top scores, and 57.2% of the respondents completely agreed with this affirmation. In addition, the residents showed a high degree of agreement with the fact that tourism in Toledo creates problems of pedestrian congestion (3.97) and that the traffic flow increments (3.91). Therefore, there is a negative opinion on the impact of tourism in the pedestrian and traffic flow in the city. On the polar opposite, the residents showed disagreement with items N11, tourism raises the crime rate (2.30), and N12, tourism affects negatively Toledo's cultural heritage (2.46). None of these negative impacts are perceived as problematic in Toledo, and they are the ones that received, percentage-wise, more minimum scores (a 27.6% of one score). On the other hand, it is especially significant that the residents do not appreciate a negative impact on the city's conservation of its heritage. Under three, although marginally, N13 opinion appears as well, that tourism reduces the use of Toledo by the residents (2.98). However, this is the question that presented a greater standard deviation (1.38), and, thus, the disagreement was strong between the respondents. Finally, it must be pointed out that in the negative impacts, there was a greater number of people who did not answer certain questions, higher than in the positive impacts. Even in items N8, tourism development raises the local tax, and N10, tourism companies are too influential politically speaking, more than 25% of the respondents did not answer, presumably thinking themselves incapable of assessing these two aspects.

Table 5. Findings for residents' negative opinions on tourism development impacts.

Question Items	Likert Scale (%)					Mean	SD	Factor Loading ¹
	1	2	3	4	5			
N1. Tourism increments the traffic flow in Toledo	4.5	10.6	17.0	24.2	42.8	0.9	1.20	0.716
N2. Tourism makes it more difficult to park in Toledo	4.3	12.0	21.5	15.6	45.9	0.7	1.24	0.649
N3. Tourism in Toledo creates problems of pedestrian congestion	3.2	8.6	19.2	24.9	43.0	1.1	1.13	0.631
N4. Toledo is a museum for tourists	2.5	5.2	12.4	20.6	57.2	2.0	1.04	0.669
N5. There are too many day-trippers in Toledo	7.5	10.9	28.3	27.4	24.7	1.4	1.20	0.596
N6. There are too many tourist-oriented shops in Toledo	5.2	10.2	25.8	20.8	36.7	1.4	1.21	0.697
N7. Tourism produces more waste in Toledo	7.5	11.1	25.6	28.1	25.3	2.5	1.21	0.482
N8. Tourism development raises local taxes	6.6	8.4	24.2	20.4	12.9	27.6	1.17	0.353
N9. Tourism unfairly increases the cost of real estate in Toledo	4.8	6.6	22.4	23.5	30.8	12.0	1.16	0.550
N10. Tourism companies are too influential politically	4.1	7.9	18.3	19.0	23.5	27.1	1.19	0.476
N11. Tourism raises the crime rate in Toledo	27.6	26.5	19.9	7.9	6.1	12.0	1.20	0.506
N12. Tourism negatively affects Toledo's cultural heritage	27.6	24.2	24.0	12.4	7.5	4.3	1.25	0.529
N13. Tourism reduces the use of Toledo by the residents	19.5	16.7	26.7	15.8	18.8	2.5	1.38	0.556
Mean for the scale							0.59	0.860 ²

¹ Calculated by extraction communalities, which are estimates of the variance in each variable accounted for by the factors in the factor solution. ² The Kaiser-Meyer-Olkin measure of sampling adequacy.

For this reason, much like with the positive opinions, a correlation matrix of 13 items was produced (see Table 6). This time, and because of the heterogeneous answers, the correlations did not show any significant relationship. All of the values obtained were low, far from one. There were even some indirect relationships, negative ones, but also with non-significant values whatsoever. No correlations between the negative questions about the impact of tourism development in Toledo are shown.

Table 6. Correlation matrix between negative question items.

Question Items	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13
N1. Tourism increments the traffic flow in Toledo	1.000	0.469	0.430	0.175	0.236	0.120	0.332	0.125	0.294	-0.018	0.113	0.224	0.191
N2. Tourism makes it more difficult to park in Toledo	0.469	1.000	0.534	0.129	0.219	0.182	0.283	0.221	0.328	0.149	0.237	0.355	0.244
N3. Tourism in Toledo creates problems of pedestrian congestion	0.430	0.534	1.000	0.129	0.454	0.329	0.370	0.400	0.487	0.351	0.317	0.420	0.456
N4. Toledo is a museum for tourists	0.175	0.129	0.129	1.000	0.116	0.232	-0.039	0.005	0.132	-0.010	-0.014	0.020	0.033
N5. There are too many day-trippers in Toledo	0.236	0.219	0.454	0.116	1.000	0.550	0.375	0.322	0.420	0.296	0.286	0.441	0.545
N6. There are too many tourist-oriented shops in Toledo	0.120	0.182	0.329	0.232	0.550	1.000	0.313	0.232	0.474	0.301	0.251	0.376	0.443
N7. Tourism produces more waste in Toledo	0.332	0.283	0.370	-0.039	0.375	0.313	1.000	0.381	0.482	0.263	0.363	0.396	0.354
N8. Tourism development raises local taxes	0.125	0.221	0.400	0.005	0.322	0.232	0.381	1.000	0.488	0.277	0.289	0.254	0.279
N9. Tourism unfairly increases the cost of real estate in Toledo	0.294	0.328	0.487	0.132	0.420	0.474	0.482	0.488	1.000	0.384	0.324	0.356	0.457
N10. Tourism companies are too influential politically	-0.018	0.149	0.351	-0.010	0.296	0.301	0.263	0.277	0.384	1.000	0.399	0.351	0.346
N11. Tourism raises the crime rate in Toledo	0.113	0.237	0.317	-0.014	0.286	0.251	0.363	0.289	0.324	0.399	1.000	0.537	0.368
N12. Tourism negatively affects Toledo's cultural heritage	0.224	0.355	0.420	0.020	0.441	0.376	0.396	0.254	0.356	0.351	0.537	1.000	0.534
N13. Tourism reduces the use of Toledo by the residents	0.191	0.244	0.456	0.033	0.545	0.443	0.354	0.279	0.457	0.346	0.368	0.534	1.000

Also, the factor analysis with the varimax rotation method with Kaiser normalization gave more complex results than in the case of positive opinions (see Table 7). The rotation converged in six iterations and gave a result of three main factors in the answers; that is to say, three groups of residents in relation to their negative opinions on the impacts of tourism in Toledo. The first would include all the negative perceptions except for those related to the traffic and parking of vehicles and, in addition, would not consider Toledo to be a museum for tourists. The second and third detected sets would be the residents who consider some impacts to be negative, six, and seven in 13, respectively, and rule out the rest. For the second, the highest cost of tourism in Toledo would be the increase in traffic flow, and for the third, the museumification of its historic center.

Table 7. Factor analysis of negative opinions using principal component analysis and varimax rotation method with Kaiser normalization ¹.

Negative Question Items	Factor		
	1	2	3
N1. Tourism increments the traffic flow in Toledo		0.836	
N2. Tourism makes it more difficult to park in Toledo		0.780	
N3. Tourism in Toledo creates problems of pedestrian congestion	0.477	0.602	0.201
N4. Toledo is a museum for tourists	-0.223		0.766
N5. There are too many day-trippers in Toledo	0.575		0.496
N6. There are too many tourist-oriented shops in Toledo	0.497		0.671
N7. Tourism produces more waste in Toledo	0.573	0.390	
N8. Tourism development raises local taxes	0.544	0.239	
N9. Tourism unfairly increases the cost of real estate in Toledo	0.591	0.330	0.302
N10. Tourism companies are too influential politically	0.682		
N11. Tourism raises the crime rate in Toledo	0.693		
N12. Tourism negatively affects Toledo's cultural heritage	0.681	0.238	
N13. Tourism reduces the use of Toledo by the residents	0.667		0.307

¹ Rotation converged in six iterations.

The questionnaire ended with two yes or no questions about the role that the local council should adopt in relation to tourism development as well as in relation to their own responsibility with that question. Regarding the opinion on whether the council should control tourism in Toledo, the degree of agreement was very high, with 93.7% of the respondents saying yes. It is obvious that the host community thinks that the authorities should watch over tourism in the touristic-historic city, and

they are also of the opinion that it is dangerous to leave it to the market’s free will. However, this responsibility is not felt like their own by the residents. On the contrary, 67.4% thought they could not influence personally the decision-making process in relation to tourism development in Toledo, against a 30.5% who answered yes and a 2.0% who did not answer at all. Despite the academicians considering the role of the host community in sustainable tourism development of the destinations to be key, the truth is that in the survey, most people who live in Toledo do not think this question affects them personally.

Ultimately, Figure 1 presents the final summary of the residents’ positive and negative main opinions of the residents.

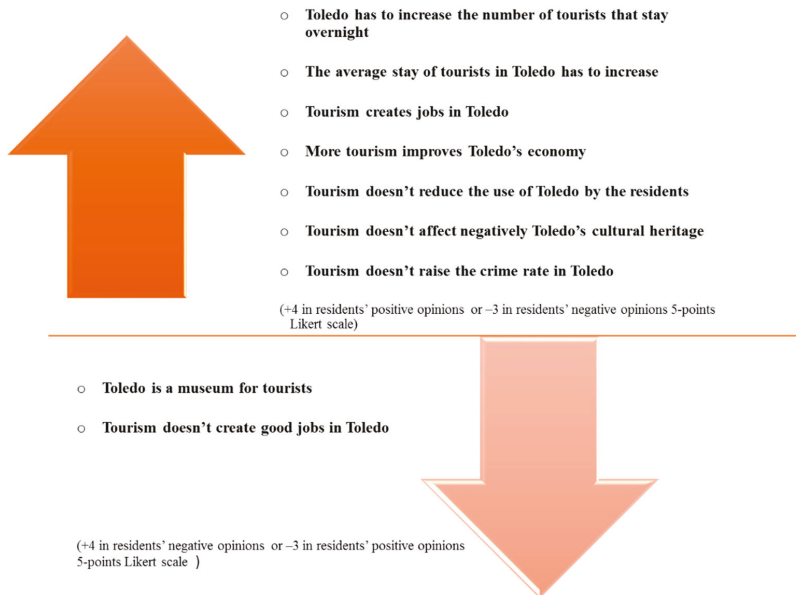


Figure 1. A final summary of the residents’ positive and negative main opinions of the residents.

4.2. The Residents’ Opinions on Tourism Development According to Their Demographic and Socioeconomic Characteristics

One of the main aims of the research was to analyze whether the residents’ opinions about the touristic-historic city changed according to their demographic and socioeconomic characteristics. For this, the following were taken into account: gender, age, place of birth, length of residence, place of residence, ownership of the home, yearly length of residence, whether they were employed in the tourism industry, the importance of tourism to the occupation, and their income. According to the groups and variances of every variable, several non-parametric tests were performed, as explained in the Methods Section, in order to find out whether there were significant differences between the groups in relation to the negative and positive opinions on the impacts of tourism development in Toledo (see Table 8). The results of the different tests maintained almost constantly the null hypothesis. That is to say, there were no differences between the opinions of the different independent variable groups. In fact, in relation to the negative impacts, there were no significant differences in any case. However, in the positive opinions, some significant differences did appear: the host community had different positive opinions depending on the place of residence, the ownership of the home, the importance of tourism to the occupation, and income.

Table 8. ANOVA, Kruskal-Wallis test, and Student's *t*-test results: differences in opinions of tourism development according to demographic and socioeconomic characteristics.

Independent Variable	Positive Impacts					Negative Impacts					
	ANOVA		Kruskal-Wallis Test	t-Test		ANOVA		Kruskal-Wallis Test	t-Test		
	F Value	<i>p</i>	<i>p</i>	<i>t</i> -Value	<i>p</i>	F Value	<i>p</i>	<i>p</i>	<i>t</i> -Value	<i>p</i>	
Gender				0.556	0.579					0.029	0.977
Age	0.719	0.488						0.060			
Place of Birth			0.515					0.894			
Length of Residence			0.344					0.781			
Place of Residence				−3.475	0.001 *				1.554	0.121	
Home Ownership				−3.580	0.000 *				1.619	0.107	
Year Round Residence				1.312	0.198				−1.725	0.092	
Employed in the Tourism Industry				−1.527	0.128				0.199	0.843	
Importance of Tourism to Occupation				−4.224	0.000 *				0.300	0.765	
Income			0.016 *			0.029	0.971				

* $p < 0.05$. Significant difference.

In order to assess the differences between groups in the positive opinions, the descriptive statistics for each item are shown, as well as the average and the general standard deviation (see Table 9). Observing the independent variables, which had shed significant results in the tests, we conclude the following:

- The residents who live in the residential areas have a more positive opinion on tourism development than those who live in the historic center, the main location for touristic visits in Toledo.
- The residents who own a home have a more positive opinion on tourism in Toledo than those who do not.
- The residents who consider tourism to be important for their occupation have a more positive opinion on tourism development in the city than those who do not appreciate any relevance of tourism for their occupation.
- Regarding income, there are differences between people with higher income (over €2500/monthly), with a more positive opinion on tourism development than other residents.

In the negative opinions, the non-parametric tests did not show significant differences between the groups of the demographic and socioeconomic variables analyzed. Of course, the scores obtained diverge in relation to the questions and in the whole average of the items about negative opinions (see Table 10), but not in a conclusive way so as to state that one specific element offers a more or less negative view on tourism in Toledo. Nevertheless, it is observed that there is a growing negative opinion on the impacts of tourism as age increases. Also, differences appear depending on whether they live in the historic center, with a higher average in the negative opinions, or in the residential areas; depending on whether they own the home, with a lower average in their negative opinions than the non-owners and depending on the length of residence, a higher average in the negative opinions in those who live there all year round than those who do not.

Table 9. Findings for residents’ positive opinions on tourism development impacts according to their demographic and socioeconomic characteristics.

Independent Variable		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	Mean	SD
Gender	Men	4.05	3.40	3.99	4.22	2.91	3.52	3.71	4.23	4.16	3.35	3.71	3.88	3.01	3.70	0.44
	Women	4.08	3.35	3.91	4.09	2.62	3.29	3.82	4.27	4.19	3.35	3.58	3.87	2.98	3.65	0.50
Age	18–40 years	4.11	3.40	4.03	4.15	2.75	3.44	3.86	4.35	4.25	3.36	3.70	3.95	3.04	3.72	0.49
	41–60 years	3.99	3.37	3.88	4.19	2.73	3.37	3.68	4.21	4.12	3.37	3.65	3.82	2.97	3.64	0.46
	+60 years	4.26	3.29	3.89	4.00	2.91	3.29	3.83	3.94	4.09	3.29	3.26	3.71	2.91	3.59	0.45
Place of Birth	Toledo	4.06	3.30	3.99	4.19	2.78	3.42	3.79	4.30	4.22	3.32	3.67	3.89	2.99	3.69	0.49
	Rest of Spain	4.06	3.44	3.86	4.08	2.65	3.33	3.71	4.14	4.09	3.39	3.56	3.79	3.00	3.62	0.45
Length of Residence	Foreign	4.12	3.94	4.19	4.12	3.24	3.59	4.06	4.50	4.27	3.41	3.81	4.44	3.00	3.90	0.46
	1–5 years	4.02	3.50	4.06	4.32	2.87	3.55	3.87	4.21	4.02	3.52	4.00	4.09	3.24	3.79	0.42
	6–15 years	4.22	3.65	4.12	4.29	2.72	3.52	3.92	4.29	4.15	3.61	3.71	3.98	3.14	3.79	0.47
Place of Residence	+15 years	4.05	3.31	3.91	4.10	2.73	3.35	3.74	4.25	4.20	3.28	3.57	3.82	2.93	3.63	0.49
	Historic center	3.92	3.23	3.81	4.09	2.71	3.27	3.54	4.04	3.91	3.12	3.49	3.65	2.73	3.50	0.46
Home Ownership	Residential areas	4.16	3.47	4.03	4.19	2.77	3.47	3.92	4.38	4.34	3.49	3.73	4.01	3.17	3.78	0.48
	Yes	4.19	3.48	4.04	4.23	2.83	3.46	3.90	4.35	4.26	3.49	3.77	3.97	3.14	3.77	0.47
Year Round Residence	No	3.82	3.15	3.77	3.99	2.58	3.24	3.52	4.05	4.00	3.08	3.36	3.67	2.70	3.46	0.49
	Yes	4.05	3.37	3.94	4.13	2.71	3.34	3.77	4.25	4.18	3.32	3.63	3.89	2.98	3.65	0.48
Employed in the Tourism Industry	No	4.32	3.50	4.03	4.41	3.19	4.03	3.94	4.25	4.10	3.72	3.78	3.72	3.22	3.86	0.38
	Yes	4.05	3.35	4.04	4.30	2.79	3.54	3.88	4.42	4.26	3.38	3.69	4.06	3.14	3.76	0.49
Importance of Tourism to Occupation	No	4.07	3.39	3.92	4.10	2.73	3.34	3.74	4.19	4.15	3.34	3.62	3.81	2.95	3.64	0.47
	Yes	4.26	3.65	4.15	4.25	2.98	3.56	4.01	4.45	4.32	3.53	3.83	4.18	3.30	3.88	0.44
Income	No	3.95	3.23	3.84	4.09	2.62	3.29	3.64	4.13	4.09	3.25	3.53	3.70	2.83	3.55	0.49
	€0–1000 monthly	4.04	3.26	4.01	4.18	2.60	3.26	3.81	4.29	4.20	3.37	3.66	3.96	3.03	3.67	0.52
	€1000–2500 monthly	4.06	3.34	3.86	4.12	2.82	3.45	3.70	4.19	4.14	3.27	3.61	3.77	2.93	3.63	0.45
	+ €2500 monthly	4.33	3.97	4.42	4.55	3.00	3.64	4.25	4.53	4.47	3.91	4.00	4.27	3.36	4.05	0.47

Table 10. Findings for residents' negative opinions on tourism development impacts according to their demographic and socioeconomic characteristics.

Independent Variable	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	Mean	SD	
Gender	Men	3.95	3.88	4.02	4.26	3.61	3.79	3.51	3.24	3.81	3.66	2.28	2.48	2.97	3.50	0.59
	Women	3.88	3.87	3.93	4.29	3.44	3.71	3.56	3.42	3.76	3.71	2.32	2.44	2.98	3.48	0.58
Age	18–40 years	3.82	3.78	3.97	4.22	3.47	3.67	3.45	3.31	3.71	3.62	2.26	2.40	2.93	3.43	0.58
	41–60 years	4.00	3.96	3.93	4.34	3.55	3.83	3.67	3.30	3.85	3.76	2.35	2.51	3.05	3.54	0.59
	+60 years	4.09	3.97	4.23	4.39	3.66	3.86	3.46	3.76	3.88	3.70	2.31	2.56	2.82	3.59	0.64
Place of Birth	Toledo	3.92	3.84	4.00	4.32	3.54	3.74	3.56	3.38	3.79	3.67	2.28	2.40	2.97	3.49	0.60
	Rest of Spain	3.88	3.93	3.93	4.18	3.48	3.72	3.50	3.26	3.77	3.72	2.31	2.56	3.00	3.48	0.56
Length of Residence	Foreign	4.00	3.94	3.88	4.41	3.47	4.06	3.63	3.46	3.87	3.64	2.56	2.31	2.94	3.55	0.61
	1–5 years	3.91	3.94	3.92	4.23	3.69	3.74	3.63	3.20	3.96	3.51	2.54	2.35	2.94	3.50	0.58
	6–15 years	3.76	3.76	4.00	4.29	3.41	3.69	3.26	3.00	3.76	3.95	2.32	2.42	2.84	3.42	0.61
Place of Residence	+15 years	3.93	3.88	3.97	4.28	3.50	3.76	3.57	3.42	3.76	3.68	2.26	2.48	3.00	3.50	0.58
	Historic Center	3.97	3.99	4.14	4.21	3.68	3.92	3.63	3.35	3.90	3.70	2.20	2.42	2.99	3.55	0.63
Home Ownership	Residential areas	3.87	3.80	3.86	4.31	3.42	3.64	3.48	3.33	3.71	3.68	2.36	2.48	2.97	3.45	0.56
	Yes	3.89	3.84	3.96	4.25	3.47	3.67	3.50	3.41	3.80	3.65	2.18	2.41	2.91	3.46	0.61
Year Round Residence	No	3.94	3.94	4.00	4.32	3.61	3.90	3.63	3.21	3.75	3.76	2.56	2.55	3.12	3.56	0.64
	Yes	3.96	3.92	3.98	4.27	3.50	3.74	3.55	3.35	3.80	3.68	2.33	2.49	3.00	3.51	0.58
Employed in the Tourism Industry	No	3.34	3.31	3.84	4.32	3.69	3.81	3.47	3.25	3.64	3.76	1.93	1.97	2.71	3.31	0.71
	Yes	3.80	3.82	4.00	4.23	3.50	3.68	3.66	3.38	3.85	3.73	2.28	2.39	2.80	3.47	0.61
Importance of Tourism to Occupation	No	3.95	3.89	3.96	4.29	3.52	3.77	3.50	3.32	3.76	3.67	2.31	2.48	3.04	3.50	0.58
	Yes	3.78	3.91	3.97	4.30	3.49	3.71	3.66	3.31	3.83	3.55	2.30	2.38	2.82	3.46	0.61
Income	No	3.98	3.86	3.97	4.26	3.53	3.77	3.47	3.36	3.76	3.76	2.30	2.50	3.06	3.51	0.58
	60–1000 monthly	3.95	3.89	3.96	4.30	3.55	3.70	3.56	3.36	3.84	3.56	2.32	2.41	2.98	3.49	0.59
	€1000–2500 monthly	3.91	3.89	4.05	4.31	3.57	3.78	3.56	3.26	3.76	3.67	2.25	2.57	3.05	3.51	0.59
+ €2500 monthly	4.27	4.09	3.73	4.22	3.36	3.73	3.70	3.46	3.93	4.00	2.40	2.27	3.03	3.55	0.64	

5. Discussion

There are many papers and research about the attitudes, opinions, and perceptions of the residents towards tourism development. There is a great availability of relevant work, but there are no shared and conclusive results. It is impossible to contrast the results obtained from this research with all the previous studies, given the great amount of them [28]. However, it is necessary to interpret some of the main findings with the ones obtained from previous studies.

In a general manner, our study gives a positive opinion (3.67) slightly higher than the negative (3.49), agreeing with Krishnaswamy et al.'s work about the residents in the historic city of Penang, Malaysia [79] and Cardoso and Silva's in Porto, Portugal [10]. In spite of the growth of the touristic activity in recent years [19], Toledo has not reached the limiting situation appointed by Rudsari and Gharibi that when the volume of tourists surpasses the physical capacity of tourism in a certain destination, the host community has a very negative opinion on tourism [27]. In Toledo, the residents remark the benefits of tourism development over their costs. Just like Burges [16], the limits of overtourism have not been overstepped.

Contrasting the results with Snaith and Haley's paper on York [23], research which has been the main reference point of this article for the making of the questionnaire, we have to point out that regarding the most remarkable positive opinions, they coincide in the assessment of the improvement of the economy, but not so much in the perception that they increase the cultural and leisure activities for the residents. This aspect, in the case of Toledo, gets a 3.64 score. In the main negative impacts, there is no agreement, since Snaith and Haley remarked the rise in price of the real estate and the crime rate, but in Toledo, the first aspect, even with a high score (3.78), is not among the main ones, and the question of the rise of crime is precisely the negative opinion with the lowest score.

It is commonly accepted that the economic dimension is the factor that receives the most positive attitudes from the host community. Previous studies show that this situation takes place in almost every tourist destination since tourism creates more employment opportunities and increases the income of the local economy [10,42,79,90]. The host community of Toledo complies with this regularity and considers that more tourism improves Toledo's economy. Specifically, the residents perceive the benefits generated by tourism as it raises the employment opportunities [49,61]. It happens so in Toledo, where the residents gave a score of 4.15 to the opinion that tourism creates jobs in Toledo, even though they consider those jobs not to be good. Ultimately, these aspects are repeated in relation to previous studies. The same happens with the research in Burges, where the tourism-generated income and the jobs created were the most remarkable positive aspects [16].

Regarding the negative aspects, the residents in Toledo agree anew with those in Krishnaswamy et al.'s study and have a negative evaluation of traffic congestion and pedestrian massification in the city [79]. However, while in the quoted work, the residents perceived the danger of the impacts of tourism on the heritage [79], in Toledo, they do not think it affects their cultural heritage negatively.

An agreement obtained from the yes or no questions is that the residents in Toledo, just like in Omar et al.'s paper [91], consider themselves unable to influence personally the decision-making process in regards to tourism development. Nevertheless, and as opposed to what happened in the city of Porto [10], the residents do consider it to be necessary to set limits to the future development of tourism. They think the local council is responsible for this.

Regarding the independent variables analyzed, some agreements and divergencies are observed in relation to previous studies. This way, for example, according to Huh and Voght, age contributes to changing the residents' attitudes towards tourism [92] and, in this regard, Almeida et al. point out that older population tend to show more positive attitudes towards tourism [42]. In our case, the differences in age are not statistically significant, but the exact opposite can be appreciated: as age increases, the opinions are less positive and more negative.

In relation to the place of residence, according to Andereck et al., the distance to the tourist area has no impacts on the residents' attitudes [43], but for Sharma and Dyer, the closer to it, the more negative the perception of the tourism activity by the residents [61]. This last conclusion is exactly the

conclusion obtained in the research. In Toledo, the residents who live in the residential areas have a more positive opinion on tourism development than those who live in the historic center. However, in Katarzyna et al.'s work, the inhabitants of the historic center had positive opinions towards the development of tourism in the city, while those who lived in other parts of the city and very rarely got in touch with tourists expressed more negative opinions [16]. Again, contradictions in the opinions of the residents do appear, depending on the destination.

Regarding the time of residence in the touristic destination and the opinions of tourism, the researchers find contradictions: Sheldon and Abenoja state that the longer the time they have resided there, the more positive is the attitude towards tourism [63], and Almeida et al. state the opposite [42]. In the study of Toledo, no significant differences are appreciated regarding this variable, in favor or against it. In the same way, according to Lankford and Howard, the residents who were born in the tourist destination have a more critical attitude towards touristic development and do not support it completely [33], but in the present research, significant differences due to this factor are not spotted. Equally, and as opposed to Tichaawa and Moyo who state that those who do work in the tourism industry have more contrasted opinions of tourism than those who do not, in the positive as well as in the negative [41], in the host community of Toledo, this is not appreciated as relevant. Nevertheless, those who work in the tourism industry do have a higher average in negative opinions (3.76) than those who do not (3.64). According to Glasson et al., the opinions are more favorable between those who work or have family members who work in the tourism industry in Oxford [25]. This does not occur in Toledo.

It has also been remarked that the difference in income has an influence on the perceptions, especially among those who have a lower income who rated more positively the economic impacts of tourism [41,62]. In the case of Toledo, the most remarkable difference in income is the polar opposite. It is the people who make a higher income who have a more positive opinion on the impacts of tourism (4.05).

There is indeed an agreement with Snaith and Haley's work [23] in the significant fact that homeowners see tourism in a more positive way than renters, and the significant fact that those who feel tourism is important for their occupation consider it in a more positive way than those who do not feel that way. Even though in the case of Toledo, the non-parametric tests are inconclusive, there is a tendency similar to that of York in the fact that the shorter the residence, the more positive the residents' opinions of tourism are, and that those employed in the tourism industry see the impact of tourism in a more positive light. Regarding the negative impacts, Snaith and Haley [23] find several significant differences by groups, but in the host community of Toledo, the results are inconclusive.

In conclusion, the heterogeneous results obtained from the academic literature still make it necessary to carry out more research about case studies, such as the one performed here in the touristic-historic city of Toledo. Comparative analyses are also advisable between different host communities and even between different types of destinations. A future line of research by the author will follow this path, comparing the results obtained in Toledo, a cultural heritage destination, with those of a similar questionnaire conducted in a nature destination very geographically apart, in Patagonia, Argentina.

6. Conclusions

The main question asked in this research was, How do the residents of Toledo feel about the impact of tourism on their city? The host community has a somewhat more positive than negative view of tourism development in their city. The 13 positive opinions of the survey received a final average grade of 3.67 on the five-point Likert scale, while the 13 negative opinions had an average score of 3.49. If we rank the question items from highest to lowest, there are four positive opinions among the top five that have the highest grade: P8. Toledo has to increase the number of tourists that stay overnight (4.25), P9. The average stay of tourists in Toledo has to increase (4.17), P4. Tourism creates jobs in Toledo (4.15), and P1. More tourism improves Toledo's economy (4.07). On the contrary, three

of those that are among the five question items that have the worst marks, are negative: N11. Tourism raises the crime rate in Toledo (2.30), N12. Tourism negatively affects Toledo's cultural heritage (2.46), and N13. Tourism reduces the use of Toledo by the residents (2.98).

The classical Social Exchange Theory (SET) takes place, and because of the economic benefits that tourism yields for Toledo that have been acknowledged broadly in its residents' opinions—most of all in the creation of jobs (4.15), even though they think they are not good jobs (2.75)—the local population feels favorable to tourism. No tourismophobia is detected. On the contrary, the residents manifest their wish for a growing number of tourists that will stay overnight in Toledo (4.25) and whose stay will be longer (4.17), although giving the city council responsibility to control future tourism development (93.7% of the respondents). The increase in overnight stays that the residents wish for would increase the income that tourism yields in the city.

Even though the positive opinions outweigh the negative, the residents express certain derogatory opinions about the impacts of tourism on their touristic-historic city. The main one is about the growing museification of the historic center (4.27). The other big issue that they perceive is that of the increase in traffic flow and pedestrian congestion (3.97). On the contrary, it is worth noting the fact that they do not consider tourism to negatively affect the cultural heritage or to hinder the use of Toledo by the residents (2.46).

It was also interesting to contrast how the demographic and socioeconomic characteristics influenced the residents' opinions. The main findings are that (1) the inhabitants in the historic center have a less positive view of tourism, (2) the homeowners value more highly tourism development, (3) the people who think tourism is important for their occupation have a more positive perception of this activity, abiding by the SET once again, and (4) the residents with the highest income are the ones that grant the positive impacts of tourism a higher score. Regarding the negative opinions, even though some tendencies are detected, such as that they increase with age, the statistical techniques applied show that there are no significant differences.

This research is part of the studies on the attitudes and perceptions of the host community towards tourism and, specifically, inside the studies focused on cultural tourism and, especially, in the UNESCO World Heritage Sites. Particularly, it brings comprehension of the opinions of the residents in the touristic-historic cities towards the development of the touristic activity. The methodology used in this work can be applied to historical cities with similar characteristics. It can be used in small and medium-sized cities that receive a large number of tourists and day-trippers, such as the nearby Avila or Segovia, within Spain, or many other European cities, such as Bath, United Kingdom; Carcassonne, France; Lübeck, Germany; Siena, Italy, next to other examples. The article shows potential problems for which mitigating measures can be applied. Taking action about the negative impacts perceived by the host society means raising their quality of life and improving the enjoyment of the tourist stay.

As it happens in every research, this study has limitations derived from the applied methodology itself, a questionnaire that, mandatorily, is about a sample of the residents and not its entirety. Equally and above all, in the negative opinions, it is important to remark that the answers are heterogeneous, with high values in the standard deviations. The items about negative questions, such as tourism raising the local taxes or tourism companies being too influential politically, it is worth remarking that a high number of respondents were unable to answer.

Tourism must be planned and managed in a sustainable way for the present and future generations' benefit. Getting to know the opinion of the host communities and taking them into consideration is indispensable. Finally, residents favorable to the development of tourism will give way to an atmosphere that will improve the visitor's experience.

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References

1. Proulx, A. *Barkskins*; Simon and Schuster: New York, NY, USA, 2016.
2. Lee, J.W.; Brahmasrene, T. Investigating the influence of tourism on economic growth and carbon emissions: Evidence from panel analysis on the European Union. *Tour. Manag.* **2013**, *38*, 69–76. [[CrossRef](#)]
3. Jansen-Verbeke, M.; Lievois, E. Analysing heritage resources for urban tourism in European cities. In *Contemporary Issues in Tourism Development*; Pearce, D.G., Butler, R.W., Eds.; Routledge: New York, NY, USA, 1999; pp. 81–107.
4. García Hernández, M.; de la Calle Vaquero, M.; Yubero, C. Cultural heritage and urban tourism: Historic city centres under pressure. *Sustainability* **2017**, *9*, 1346. [[CrossRef](#)]
5. Ashworth, G.; Tunbridge, J.E. *The Tourist-Historic City*; Belhaven Press: London, UK, 1990.
6. Ashworth, G.; Tunbridge, J.E. The tourist-historic city. In *Retrospect and the Prospect of Managing the Heritage City*; Pergamon: Oxford, UK, 2000.
7. Aranburu, I.; Plaza, B.; Esteban, M. Sustainable cultural tourism in urban destinations: Does space matter? *Sustainability* **2016**, *8*, 699. [[CrossRef](#)]
8. McNulty, R. Cultural tourism and sustainable development. *World Travel Tour. Rev.* **1993**, *3*, 156–162.
9. Landorf, C. Managing for sustainable tourism: A review of six cultural World Heritage Sites. *J. Sustain. Tour.* **2007**, *17*, 53–70. [[CrossRef](#)]
10. Cardoso, C.; Silva, M. Residents' perceptions and attitudes towards future tourism development: A challenge for tourism planners. *Worldw. Hosp. Tour. Themes* **2018**, *10*, 688–697. [[CrossRef](#)]
11. Dodds, R. *Overtourism: Issues, Realities and Solutions*; Butler, R., Ed.; Walter de Gruyter GmbH: Berlin, Germany, 2019.
12. Huete, R.; Mantecón, A. The rise of tourismophobia. Research hypothesis or ideological noise? *Pasos. Rev. Tur. Y Patrim. Cult.* **2018**, *16*, 9–18. [[CrossRef](#)]
13. Jennings, G. *Tourism Research*, 2nd ed.; John Wiley & Son: Milton, Australia, 2010.
14. Gursoy, D.; Chi, C.G.; Dyer, P. Locals' attitudes toward mass and alternative tourism: The case of Sunshine Coast, Australia. *J. Travel Res.* **2010**, *49*, 381–394. [[CrossRef](#)]
15. Choi, H.C.; Murray, I. Resident Attitude Toward Sustainable Community Tourism. *J. Sustain. Tour.* **2010**, *18*, 575–594. [[CrossRef](#)]
16. Katarzyna, J.; Six, S.; Vanneste, D. Building tourism-resilient communities by incorporating residents' perceptions? A photo-elicitation study of tourism development in Bruges. *J. Tour. Future* **2017**, *3*, 127–143. [[CrossRef](#)]
17. Prayag, G.; Hosany, S.; Nunkoo, R.; Alders, T. London residents' support for the 2012 Olympic Games: The mediating effect of overall attitude. *Tour. Manag.* **2013**, *36*, 629–640. [[CrossRef](#)]
18. Zamani-Farahani, H. Host attitudes toward tourism: A study of Sareyn Municipality and local community partnerships in therapeutic tourism. *J. Tour.* **2016**, *2*, 16–34. [[CrossRef](#)]
19. Homans, G.C. Social behavior as exchange. *Am. J. Sociol.* **1958**, *63*, 597–606. [[CrossRef](#)]
20. Ap, J. Resident's perceptions on tourism impacts. *Ann. Tour. Res.* **1992**, *19*, 665–690. [[CrossRef](#)]
21. Styliadis, D.; Biran, A.; Sit, J.; Szivas, E.M. Residents' support for tourism development: The role of residents' place image and perceived tourism impacts. *Tour. Manag.* **2014**, *45*, 260–274. [[CrossRef](#)]
22. Teye, V.; Sonmez, S.F.; Sirakaya, E. Residents' attitudes toward tourism development. *Ann. Tour. Res.* **2002**, *29*, 668–688. [[CrossRef](#)]
23. Snaith, T.; Haley, A. Residents' opinions of tourism development in the historic city of York, England. *Tour. Manag.* **1999**, *20*, 595–603. [[CrossRef](#)]
24. Poria, Y.; Reichel, A.; Cohen, R. Tourists perceptions of World Heritage Sites and its designation. *Tour. Manag.* **2013**, *35*, 272–274. [[CrossRef](#)]
25. Glasson, J.; Thomas, J.; Chadwick, A.; Elwin, J.; Crawley, R.; Bibbings, L. *Oxford Visitor Study*; Oxford Brookes University: Oxford, UK, 1992.

26. Henkel, R.; Henkel, P.; Agrusa, W.; Agrusa, J.; Tanner, J. Thailand as a tourist destination: Perceptions of international visitors and Thai residents. *Asia Pac. J. Tour. Res.* **2006**, *11*, 269–287. [[CrossRef](#)]
27. Rudsari, S.M.M.; Gharibi, N. Host-Guest Attitudes toward socio-cultural carrying capacity of urban tourism in Chalus, Mazandaran. *J. Tour. Hosp. Res.* **2019**, *6*, 31–47.
28. Nunkoo, R.; Smith, S.L.; Ramkissoon, H. Residents' attitudes to tourism: A longitudinal study of 140 articles from 1984 to 2010. *J. Sustain. Tour.* **2013**, *21*, 5–25. [[CrossRef](#)]
29. Sharpley, R. Host perceptions of tourism: A review of research. *Tour. Manag.* **2014**, *42*, 37–49. [[CrossRef](#)]
30. Belisle, F.J.; Hoy, D.R. The perceived impact of tourism by residents a case study in Santa Marta, Colombia. *Ann. Tour. Res.* **1980**, *7*, 83–101. [[CrossRef](#)]
31. Brougham, J.E.; Butler, R.W. A segmentation analysis of resident attitudes to the social, impact of tourism. *Ann. Tour. Res.* **1981**, *7*, 569–590. [[CrossRef](#)]
32. Perdue, R.R.; Long, P.T.; Allen, L.R. Resident support for tourism development. *Ann. Tour. Res.* **1990**, *17*, 586–599. [[CrossRef](#)]
33. Lankford, S.V.; Howard, D.R. Developing a tourism impact attitude scale. *Ann. Tour. Res.* **1994**, *21*, 121–139. [[CrossRef](#)]
34. Nunkoo, R.; Gursoy, D. Residents' support for tourism. *Ann. Tour. Res.* **2012**, *39*, 243–268. [[CrossRef](#)]
35. Jurovski, C.; Uysal, M.; Williams, D.R. A theoretical analysis of host community resident reactions to tourism. *J. Travel Res.* **1997**, *36*, 3–11. [[CrossRef](#)]
36. Vargas Sánchez, A.; Porras Bueno, N.; Plaza Mejía, M. Explaining residents' attitudes to tourism—Is a universal model possible? *Ann. Tour. Res.* **2001**, *38*, 460–480. [[CrossRef](#)]
37. Nunkoo, R.; So, K.K.F. Residents' support for tourism: Testing alternative structural models. *J. Travel Res.* **2016**, *55*, 847–861. [[CrossRef](#)]
38. Lindberg, K.; Johnson, R.L. Modeling resident attitudes toward tourism. *Ann. Tour. Res.* **1997**, *24*, 402–424. [[CrossRef](#)]
39. Sinclair-Maragh, G.; Gursoy, D.; Vieregge, M. Residents' perceptions toward tourism development: A factor-cluster approach. *J. Destin. Mark. Manag.* **2015**, *4*, 36–45. [[CrossRef](#)]
40. Fredline, E.; Faulkner, B. Host community reaction: A cluster analysis. *Ann. Tour. Res.* **2000**, *27*, 763–784. [[CrossRef](#)]
41. Tichaawa, T.M.; Moyo, S. Urban resident perceptions of the impacts of tourism development in Zimbabwe. *Bull. Geogr. Socio-Econ. Ser.* **2019**, *43*, 25–44. [[CrossRef](#)]
42. Almeida García, F.; Balbuena Vázquez, A.; Cortés Macías, R. Resident's attitudes toward the impacts of tourism. *Tour. Manag. Perspect.* **2015**, *13*, 33–40. [[CrossRef](#)]
43. Andereck, K.L.; Valentine, K.M.; Knopf, R.C.; Vogt, C.A. Residents' perceptions of community tourism impacts. *Ann. Tour. Res.* **2005**, *32*, 1056–1076. [[CrossRef](#)]
44. Bastias Pérez, P.; Var, T. Perceived impacts of tourism by residents. Research notes and reports. *Ann. Tour. Res.* **1995**, *22*, 208–210. [[CrossRef](#)]
45. Korça, P. Resident attitudes toward tourism impacts. *Ann. Tour. Res.* **1996**, *21*, 695–697. [[CrossRef](#)]
46. Tosun, C. Host perceptions of impacts: A comparative tourism study. *Ann. Tour. Res.* **2002**, *29*, 231–253. [[CrossRef](#)]
47. Yen, I.Y.; Kerstetter, D. Residents' view of expected tourism impact, attitude, and behavioral intention. *Tour. Anal.* **2008**, *13*, 545–564. [[CrossRef](#)]
48. Faulkner, B.; Tideswell, C. A framework for monitoring community impacts of tourism. *J. Sustain. Tour.* **1997**, *5*, 3–28. [[CrossRef](#)]
49. Pham, L.; Kayat, K. Residents' perceptions of tourism impact and their support for tourism development: The case study of Cuc Phuong National Park, NinhBinh Province, Vietnam. *Eur. J. Tour. Res.* **2011**, *4*, 123–146.
50. Ward, C.; Berno, T. Beyond social exchange theory: Attitudes toward tourists. *Ann. Tour. Res.* **2011**, *38*, 1556–1569. [[CrossRef](#)]
51. King, B.; Pizam, A.; Milman, A. Social impacts of tourism: Host perceptions. *Ann. Tour. Res.* **1993**, *20*, 650–665. [[CrossRef](#)]
52. Pearce, P.; Moscardo, G.; Ross, G. *Tourism Community Relationships*; Elsevier: Oxford, UK, 1996.
53. Besculides, A.; Lee, M.E.; McCormick, P.J. Resident's perceptions of the cultural benefits of tourism. *Ann. Tour. Res.* **2002**, *29*, 303–319. [[CrossRef](#)]

54. Liu, J.; Var, T. Resident attitudes towards tourism impacts in Hawaii. *Ann. Tour. Res.* **1986**, *13*, 193–214. [[CrossRef](#)]
55. Brunt, P.; Courtney, P. Host perceptions of sociocultural impacts. *Ann. Tour. Res.* **1999**, *26*, 493–515. [[CrossRef](#)]
56. Johnson, J.D.; Snepenger, D.J.; Akis, S. Residents' perception of tourism development. *Ann. Tour. Res.* **1994**, *12*, 629–642. [[CrossRef](#)]
57. McCool, S.; Martin, S. Community attachment and attitudes toward tourism development. *J. Travel Res.* **1994**, *32*, 29–34. [[CrossRef](#)]
58. Choi, H.-S.C.; Sirakaya, E. Measuring residents' attitude toward sustainable tourism: Development of sustainable tourism attitude scale. *J. Travel Res.* **2005**, *43*, 380–394. [[CrossRef](#)]
59. Davis, D.; Allen, J.; Cosenza, R.M. Segmenting local residents by their attitudes, interests and opinions toward tourism. *J. Travel Res.* **1988**, *16*, 216–236. [[CrossRef](#)]
60. Jurowski, C.; Gursory, D. Distance effects on residents' attitudes toward tourism. *Ann. Tour. Res.* **2003**, *31*, 296–312. [[CrossRef](#)]
61. Sharma, B.; Dyer, P. An investigation of differences in residents' perceptions on the Sunshine Coast: Tourism impacts and demographic variables. *Tour. Geogr.* **2009**, *11*, 187–213. [[CrossRef](#)]
62. Almeida García, F.; Peláez Fernández, M.A.; Balbuena Vázquez, A.; Cortés Macías, R. Residents' perceptions of tourism development in Benalmadena (Spain). *Tour. Manag.* **2016**, *54*, 259–274. [[CrossRef](#)]
63. Sheldon, P.J.; Abenoja, T. Resident attitudes in a mature destination: The case of Waikiki. *Tour. Manag.* **2001**, *22*, 435–443. [[CrossRef](#)]
64. Kuvan, Y.; Akan, P. Residents' attitudes toward general and forest-related impacts of tourism: The case of Belek, Antalya. *Tour. Manag.* **2005**, *26*, 691–706. [[CrossRef](#)]
65. Zorzi, M.; Campodonico, G. From a barren landscape to the jewel: Narratives about the transformation of Punta del Este, Uruguay, from the perspective of long-time residents of the beach resort. *Rosa Ventos-Tur. E Hosp.* **2019**, *11*, 236–252. [[CrossRef](#)]
66. Akis, S.; Peristianis, N.; Warner, J. Residents' attitudes to tourism development: The case of Cyprus. *Tour. Manag.* **1996**, *17*, 481–494. [[CrossRef](#)]
67. Andriotis, K. Community groups' perceptions and preferences to tourism development. Evidence from Crete. *J. Hosp. Tour. Res.* **2005**, *29*, 67–90. [[CrossRef](#)]
68. Haralambopoulos, N.; Pizam, A. Perceived impacts of tourism: The case of Samos. *Ann. Tour. Res.* **1996**, *23*, 503–526. [[CrossRef](#)]
69. Monterrubio, C.J.; Andriotis, K. Social representations and community attitudes towards spring breakers. *Tour. Geogr.* **2014**, *16*, 288–302. [[CrossRef](#)]
70. Park, D.B.; Nunkoo, R.; Yoon, Y.S. Rural residents' attitudes to tourism and the moderating effect of social capital. *Tour. Geogr.* **2015**, *17*, 112–133. [[CrossRef](#)]
71. Látková, P.; Vogt, C.A. Residents' attitude towards existing and future tourism development in rural communities. *J. Travel Res.* **2012**, *51*, 50–67. [[CrossRef](#)]
72. Brida, J.G.; Osti, L.; Barquet, A. Segmenting resident perceptions towards tourism—A cluster analysis with a multinomial logit model of a mountain community. *Int. J. Tour. Res.* **2010**, *12*, 591–602. [[CrossRef](#)]
73. Türker, A.P.D.N.; Öztürk, A.P.D.S. Perceptions of residents towards the impacts of tourism in the Küre Mountains National Park, Turkey. *Int. J. Bus. Soc. Sci.* **2013**, *4*, 45–56.
74. Vargas Sánchez, A.; Plaza Mejía, M.; Porras Bueno, N. Understanding residents' attitudes toward the development of industrial tourism in a former mining. *J. Travel Res.* **2009**, *47*, 373–387. [[CrossRef](#)]
75. Lorde, T.; Greenidge, D.; Devonish, D. Local Residents' perception of the impacts of the ICC Cricket World Cup 2007 on Barbados: Comparisons of pre-and post-games. *Tour. Manag.* **2011**, *32*, 349–356. [[CrossRef](#)]
76. Koens, K.; Postma, A. Understanding and measuring visitor pressure in urban tourism. In *A Study into the Nature and Methods Used to Manage Visitor Pressure in Six Major European Cities*; Centre of Expertise in Leisure, Tourism and Hospitality (CELTH): Breda, The Netherlands, 2017.
77. Ross, G.F. Residents perceptions of the impact of tourism on an Australian city. *J. Travel Res.* **1992**, *31*, 13–17. [[CrossRef](#)]
78. Rogerson, C.M. Urban tourism in the developing world: The case of Johannesburg. *Dev. S. Afr.* **2002**, *19*, 169–190. [[CrossRef](#)]

79. Krishnaswamy, J.; Abdullah, D.; Wen, T.C. An empirical study on residents' place image and perceived impacts on support for tourism development in Penang, Malaysia. *Int. J. Acad. Res. Bus. Soc. Sci.* **2018**, *8*, 178–198. [CrossRef]
80. Lourenço Gomez, L.; Rebelo, J.F.; Ribeiro, C. Residents' perceptions of a World Heritage property: A multivariate analysis. *J. Cult. Herit. Manag. Sustain. Dev.* **2019**, *9*, 212–226. [CrossRef]
81. Schmutz, V.; Elliott, M.A. Tourism and sustainability in the evaluation of World Heritage Sites, 1980–2010. *Sustainability* **2016**, *8*, 261. [CrossRef]
82. Chand, M. Residents' perceived benefits of heritage and support for tourism development in Pragpur, India. *Tourism* **2013**, *61*, 379–394.
83. Álvarez Sousa, A. The problems of tourist sustainability in cultural cities: Socio-political perceptions and interests management. *Sustainability* **2018**, *10*, 503. [CrossRef]
84. Gilbert, D.; Clark, M. An exploratory examination of urban tourism impact, with reference to resident's attitudes in the cities of Canterbury and Guildford. *Cities* **1997**, *14*, 343–352. [CrossRef]
85. Escudero Gómez, L.A. Realities and problems of a major cultural tourist destination in Spain, Toledo. *Pasos. Rev. Tur. Y Patrim. Cult.* **2018**, *16*, 617–636. [CrossRef]
86. Escudero Gómez, L.A. Cultural hiking from urban touristic destinations to heritage places: From Madrid to Toledo. *Polígonos. Rev. Geogr.* **2018**, *30*, 117–141. [CrossRef]
87. Di Grino, B.N. Community surveys: Purchasing confidence and accuracy. *J. Park Recreat. Adm.* **1986**, *4*, 61–69.
88. Krippendorf, J. *The Holiday-Makers: Understanding the Impact of Travel and Tourism*; Butterworth-Heinemann: Oxford, UK, 1987.
89. González Santa-Cruz, F.; López-Guzmán, T. Culture, tourism and World Heritage Sites. *Tour. Manag. Perspect.* **2017**, *24*, 111–116. [CrossRef]
90. Andereck, K.L.; Nyaupane, G.P. Exploring the nature of tourism and quality of life perceptions among residents. *J. Travel Res.* **2010**, *50*, 248–260. [CrossRef]
91. Omar, S.I.; Muhibudin, M.; Yussof, I.; Sukiman, M.F.; Mohamed, B. George Town, Penang as a World Heritage Site: The stakeholders' perceptions. *Procedia—Soc. Behav. Sci.* **2013**, *91*, 88–96. [CrossRef]
92. Huh, C.; Vogt, C.A. Changes in residents' attitudes toward tourism over time: A cohort analytical approach. *J. Travel Res.* **2008**, *46*, 446–455. [CrossRef]



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Review

Using Big Data to Measure Tourist Sustainability: Myth or Reality?

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Abstract: The concern about the production of international standards to measure the sustainability of tourism is present today, especially the discourse on the introduction of new sources. This article aims to survey and describe the main approaches and methodologies to use big data to measure tourism sustainability. Successful cases are addressed by explaining the main opportunities and challenges for the creation of official tourist statistics. A comprehensive review of publications regarding this field was carried out by applying the systematic literature review technique. This contributes a knowledge base to destination management organisations to encourage the implementation of official tourism statistics systems using big data.

Keywords: big data; tourism sustainability; official statistics; indicators

1. Introduction

Sustainability constitutes a key element in the tourism industry's competitiveness, as destinations are appreciated according to the quality of their environment, including the local communities' attitudes. For tourist historic cities, this is a real challenge considering that the flows of visitors are continuously growing [1]. As a result, some destinations or significant tourist attractions suffer from overtourism, which not only makes the resident's quality of life worse, but also the visitors' experience. In order to prevent such conditions in historic cities, tourism practices should follow integral sustainable models, instead of only guaranteeing heritage protection [2].

Today, in the discussion about the role of natural and social resources to increase economic benefits, sustainable development and sustainability are fundamental [3]. In this context, various initiatives have emerged at different territorial scales to establish systems to measure tourism sustainability. However, there is not an international and generally accepted statistical framework, including social and environmental dimensions for the measurement of tourism sustainability [4]. The initiative, "Measuring Sustainable Tourism (MST)", is currently under development by the United Nations World Tourism Organisation (UNWTO) with the aim of publishing a global procedure to measure tourism's effect on sustainability. It asks for a framework based not on the use of traditional data sources, but capable of using and integrating all possible sources to provide the richest picture possible.

In this context, new sources have emerged from the use of big data technologies in the tourism sector, with real potentialities to improve the relevance and quality standards of official statistics [5]. Some examples of these new data sources include: store cashiers, mobile network operators, social media, web activity, flight reservation systems, smart mobile devices, financial transactions, traffic loops, satellite images, Wikimedia content and image collections, among others [6].

Most tourist applications have focused on recommender systems, which are software-based tools to personalise tourist products based on visitors' interests. This is to propose the model

experience according to the visitors' desires [7]. However, the exploitation potential to support destination management organisation's strategic decisions has only received little consideration [8,9]. The application of big data technologies to tourism planning and managing is complex as it requires technological expertise [10]. Nevertheless, this is not the only factor determining its application. Important and coordinated efforts have to be made by statistical authorities and data providers to obtain results with the quality standards actually achieved by current official statistics [5]. Furthermore, for the integration of private and public stakeholders, the organisational learning processes are fundamental, allowing them to define their specific knowledge requirements [11,12].

From the above-mentioned, two gaps can be identified: On the one hand, the lack of an up-to-date international and generally accepted statistical framework to measure tourist sustainability; on the other, the underexploited application of big data by official statistical agencies. Therefore, this study considers two hypotheses: (1) Official tourism statistical systems are not including specific indicators to measure tourist sustainability (economic, social, environmental) because of the absence of practical guidelines and tools; (2) they are still generally based on the use of traditional sources, especially due to the lack of collaboration among tourism authorities, data providers, big data experts and academia.

This article aims to survey and describe the approaches and methodologies for big data to generate official tourism statistics that support destination management organisations. A special focus is placed on measuring social, economic, and environmental sustainability. The research sets out to study to the extent to which big data potentialities are exploited in the generation of official tourism statistics, as well as in the design of tourist intelligence information systems. According to the authors' knowledge, this is the first systematic review of literature in the field of hospitality and tourism that focuses on the use of big data in official tourism statistics. The management of the main opportunities and challenges addressed in this study could encourage destination manager organisations to use it to optimise competitiveness and sustainability, especially in tourist historic cities.

2. Literature Background

2.1. Measuring Tourism Sustainability

Sustainability applied to tourism refers to a type of tourism that satisfies the current public's necessities without risking the possibility of future generations satisfying their own needs [13]. For the European Association of Historic Cities and Regions, sustainability encompasses social, environmental and economic issues, and in the case of cultural tourism, this means taking into account each of the components through [14]:

- Visitors: Their requirements, desires and comfort;
- Industry: The obligation for tourist companies to achieve profitability and a long-standing future;
- Community: Being respectful towards local communities in matters such as values, necessities or quality of life;
- Environment: The need to preserve physical and cultural environments, local traditions and a sense of place.

Sustainable tourism has been included in the agenda of some of the most important global institutions in the sector. This is the case of the Global Sustainable Tourism Council (GSTC) (<https://www.gstccouncil.org/>). It started in 2007 as a partnership among international institutions to promote knowledge on tourist sustainability and to agree on common rules for sustainable tourism, and became an organisation in 2010 supported by the United Nations Environment Programme, United Nations Foundation and the United Nations World Tourism Organisation (UNWTO). The latter, launched the Guide, "Indicators of Sustainable Development for Tourist Destinations", intended to use indicators as a main tool to optimise tourism planning and management [13]. However, since its release in 2004, new formulas have emerged to support local authorities to guarantee the destination's sustainability.

Furthermore, in 2015, all members of the United Nations adopted the Sustainable Development Goals (SDGs). This constitutes a set of 17 goals to encourage sustainability at a global level by setting targets to be fulfilled by 2030 in issues such as the environment, health, poverty, social rights, innovation and education (<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>). In addition, in 2017, the International Year of Sustainable Tourism for Development was nominated by the 70th General Assembly of the United Nations. In this favorable context, multiple initiatives have emerged. A relevant example is the UNWTO International Network of Sustainable Tourism Observatories (INSTO). It is a network of tourism observatories that, through the regular use of monitoring, assessment and information administration, provide significant instruments to support the design and application of policies on sustainable tourism [15].

In Europe, several initiatives have been promoted by the European Commission, the European Environment Agency, or the Council of Europe among other organisations. In 2010, a group of actions included in the communication, “Europe, the World’s No. 1 Tourist Destination—A New Political Framework for Tourism in Europe”, were launched to encourage sustainable tourism in Europe and promote competitiveness and visibility on a global scale [16]. The European Tourism Indicator System for sustainable management at a destination level (ETIS) is one of these actions. It was initiated in 2013 by the European Commission as an easy and useful toolkit for tourism stakeholders to improve sustainable tourism management. The ETIS results are supported by self-assessment, observation, data gathering and analysis, which allow the destinations to collect the necessary information to supervise sustainability and effectively manage tourism activities. The ETIS includes 43 indicators that have been divided into four categories: destination management, social and cultural impact, economic value and environmental impact. The ETIS tries to respond to the need to protect and enhance cultural heritage, local identity and resources to avoid the phenomenon of banalisation and the residents’ discontent [3].

It is also worth mentioning the Barcelona Declaration, “Better Places to Live, Better Places to Visit” launched in April 2018 aiming to deliver a legacy for Europe beyond the 2018 European Year of Cultural Heritage (EYCH 2018). This was an action initiated by the Network of European Regions for Sustainable and Competitive Tourism (NECSTouR), in collaboration with the European Cultural Tourism Network, the European Travel Commission and Europa Nostra, and supported by the European Heritage Alliance 3.3. Its main objective is to show the synergies between tourism and cultural heritage to benefit European citizens, cultural heritage, companies, visitors and destinations. In addition, it parts from assuming a collective responsibility of all involved sectors to achieve SDGs. Principle 4 “Balancing Place, People and Business” of the Declaration clearly mentions the need for efficient tools to measure tourism impacts [17].

The need to introduce new tools to measure tourism sustainability is present in several projects and actions that have been implemented worldwide. For example, the project “Models of Integrated Tourism in the MEDiterranean Plus (MITOMED+)” (<https://mitomed-plus.interreg-med.eu/>) financed by the Interreg Mediterranean Programme, focuses on public policies for the sustainable development of maritime and coastal tourism. It develops evaluation and planning tools to help tourist destinations to improve their sustainability levels.

In Asia, for instance, some projects have been developed through the involvement of small and medium-sized enterprises (SMEs) as part of the SWITCH-Asia programme (<https://www.switch-asia.eu/>). This initiative is based on the possibilities SMEs can offer in terms of innovation management, uniqueness of services, and practical solutions in the implementation of sustainable measures in the tourism industry [18]. In Latin America, or more specifically in Honduras, Bolivia, Peru, México and Costa Rica, some projects are responsible for improving the locals’ quality of life, including indigenous communities from the development of sustainable tourism both in urban and rural areas [19]. It is also worth mentioning some initiatives in African countries such as Kenya, Zimbabwe, Egypt, Burkina Faso, South Africa and Mozambique (<https://sustainabletourism.net/case-studies/australianz/africa/>). These actions focus on eco-efficient

accommodation, ecotourism, wildlife tourism regulations, instruments for economic development, and initiatives to preserve the communities' culture and the environment.

Several studies have been carried out worldwide to assess the importance of sustainable tourism in the promotion of well-being and local development due to the use of indicators [20–22]. Indeed, the indicators to monitor tourist sustainability have been accepted as valid tools for: (1) The assessment of policies and the monitorisation of destination performances [23–25]; (2) the definition of development plans and establishment of quantitative objectives [26–29]; (3) easy communication to destination stakeholders about the present situation and upcoming scenarios [30]. In more exact terms, the problems regarding the practical application of sustainability are understood by all stakeholders, including policymakers, local communities, entrepreneurs, Non-Governmental Organisations (NGOs), and visitors. Hence, it still remains a challenging concept [3].

The need to measure both the performance of tourism and its impacts has led the tourism sector to focus, for the past 15 years, on the sustainability indicator-based case studies [28]. However, some issues make it difficult to implement actions to measure and manage tourism, thus creating a gap [31–33]. The handling of the large number of indicators that are generally included in measuring tourism impacts, the data availability at a local level, and the incomplete quantification of indicators are some of the difficulties [26,28,34]. In addition, there are a few studies especially oriented to the use of sustainable tourism indicators at heritage destinations [26,35].

The discussion on the synergies between science and policy in choosing a set of indicators to properly monitor sustainability [34,35] expresses the relevance of incorporating both scientific principles and participatory planning processes [36–40]. Therefore, this is a political as well as a technical choice that must focus on establishing significant indicators to assess sustainability in the social, economic and environmental dimensions [41–43].

In addition, there are recurring criticisms which sustain that academics and public organisations have manifested great enthusiasm towards sustainable tourism, but without achieving any major results. [36]. While academia is criticised for concentrating their efforts on the production of literature instead of the production of practical tools, public agencies are accused of misusing the concept to justify tourism development. In spite of these criticisms, there is a recognition of the need to move towards a more sustainable horizon, as well as the important role that the business sector will play in its effective implementation [18,37,38].

The concern about the production of practical international standards to measure the sustainability of tourism activity is very present today. The UNWTO has been working on a draft framework through the initiative “Measuring Sustainable Tourism” (MST). It was presented at the 6th International Conference on Tourism Statistics held in Manila in June 2017. The Secretary-General of the UNWTO expressed the relevance of the MST initiative as a framework of meaningful and feasible indicators for a real contribution of tourism to SDGs, the 2030 Development Agenda, and a new era of sustainable and inclusive development. It also highlighted the need to collect more data sources, developing clear and unified concepts, and building technical capacity. More precisely, in the conference Session 5, “Producing Data on Sustainable Tourism”, the potential to use various data sources, particularly big data, for the measurement of sustainable tourism was addressed. It was concluded that it is essential that statisticians find opportunities to access and utilise new data sources to improve and extend current tourism datasets [4].

2.2. Big Data: A New Source for Official Tourist Statistics

Big data can be defined as a set of data collected from various sources with diverse formats, including texts, images, voices or rasters. They may be extracted from Instagram, Facebook, Twitter, blogs, videos and voice recordings, and also, from communication systems, business databases and sensors. Apart from the large volume of information, there are other features that characterise big data. The five main properties of big data are well-known as the 5V: variety, velocity, volume, veracity and value [39].

In exact terms, the report “Tourism Statistics: Early Adopters of Big Data?” states that big data in a gradual but persistent manner will partially take the place of traditional sources or surveys [6]. It also highlights the relevant role tourism statisticians should have in rethinking the statistics systems through the integration of big data. It allows the measurement of not only an individual’s physical movements, but also monetary transactions, thereby becoming an indispensable tool for designing, implementing and disseminating innovation systems within the field of tourism. Figure 1 shows the most generally considered sources of big data. As in other categorisations, some elements may be subjectively identified within different groups. For example, publications on social networks can be classified either as communication systems or world wide web, while Wikipedia can be considered web-based and crowd sourced at the same time [6].

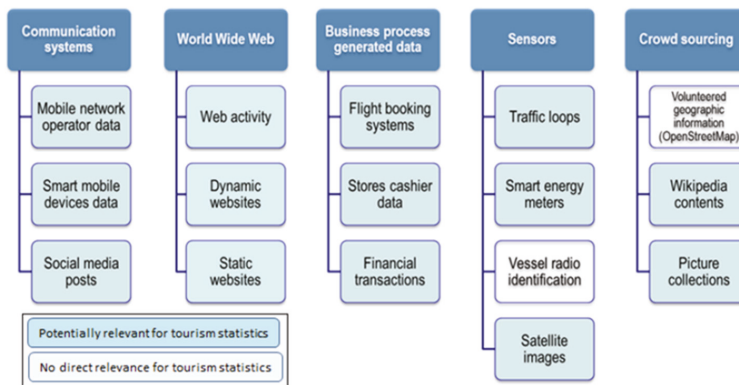


Figure 1. Sources of big data [6].

Recently, the amount of available public data has increased exponentially due to: The implementation of open data initiatives worldwide by public sectors; the popularisation of collaborative tools, such as Open Street Maps or social networks like Twitter or Instagram, that provide data generated by users without the need of governmental or central institutions; and also the broad usage of tools like TripAdvisor or Booking.com. Accordingly, this circumstance represents a new paradigm of communication and knowledge sharing between citizens, companies and public institutions. However, they are not being fully exploited [9].

As part of the current data revolution, the concept of a smart tourism destination has gained relevance. It has been defined as the product of the interconnection between a tourist destination and the various stakeholders through dynamic platforms and knowledge-intensive communication flows, as well as with improved support systems for decision-making [40–43]. The final purpose of an intelligent tourist destination must be the improvement of the tourist experience, the maximisation of competitiveness and consumer satisfaction based on sustainability [44].

However, although sustainability is supposed to be a fundamental pillar in the smart tourism destinations or smart cities approaches, the models integrating smartness and sustainability are still dealing with some gaps [45–50]. The situation is particularly acute in tourist destinations, because reaching sustainability is, in general, an unsolved issue which still lacks practical actions [51]. In this context, and in order to reinforce the sustainable dimension, terms such smart sustainability [51] and smart sustainable cities have emerged [48].

Smart sustainability is based on a governance framework that applies technology to five fundamental pillars [51]: (i) long-term planning, the efficient management of resources; (ii) monitoring, transparency and participation, public-private cooperation, knowledge, innovation; (iii) communication, (iv) awareness raising; (v) the improvement of the tourist experience. The intensive use of technology by smart tourism destinations plays a key role through the potential interactions that

may arise between the technologies and the basic elements of sustainability, which could accelerate the process of achieving it. Nevertheless, the relevant modifications in the business sector at different territorial scales are required to exploit the potential of information technologies to support sustainable tourism, as well as more innovative models developed by tourism academics and solid interactions with public authorities in tourism [52].

Big data includes, on one hand information collected from the sensorisation of the destination from different subsystems, such as those to monitor water consumption, waste volume, energy usage, urban mobility, etc. On the other hand, it encompasses new and relevant data sources to support sustainable tourist models. This is the case of the information regarding the spatial and temporal concentration of visitors compiled from online booking [53] or from social networks [54]. A deep understanding of visitors' movements at the destination and the factors influencing them allows tourism managers to solve or prevent overcrowding situations that affect the tourist's experience and the residents' quality of life, particularly in historic centres.

As part of the expansion of the use of big data in the tourism sector, different applications have arisen, such as destination management systems (DMS) or tourist information systems (TIS), which integrate relevant statistical data collected from traditional sources or big data. They cover the demand side, as for example: the visitor's profile, behaviour and opinions, the supply side (expenditure, overnight stay, seasonality), and the residents' perspective (satisfaction, involvement). The data can be accessed through platforms, which generally allows for the easy visualisation and understanding of the information, chart data, keyword graphs, trend charts, tag cloud, etc. Furthermore, if the DMS or TIS incorporates the data about environmental indicators, they will contribute not only towards reaching economic and social sustainability of the destination, but also environmental [55,56]. Unfortunately, this integration is too far in the future to be in widespread use at this time [51].

The use of intelligent systems in tourism is widely used as a support for destination management. For example, in Spain, the State Society for the Management of Innovation and Tourism Technologies, A. S. (SEGITUR, by its Spanish acronym) is leading initiatives to use the latest technologies (big data and business intelligence) to measure and analyse the real behaviour of the consumption of the city by its visitors and tourists. This is the case of the Tourism Intelligence System (SIT, by its Spanish acronym), a technological platform based on the exhaustive analysis of different sources of information selected according to the needs and idiosyncrasies of the territory and the priorities that are marked by its managers. The system has been implemented in the cities of Las Palmas de Gran Canarias, Palma de Mallorca, and Badajoz. In the latter, the system is shared with the city of Elvas (Portugal) framed in a project financed by the European program of Cross-Border Cooperation Spain-Portugal (POCTEP) [57].

The Tourist Intelligence System of Buenos Aires (<https://turismo.buenosaires.gob.ar/es/observatorio>) also exploits big data to generate information about the visitors' volume, origin, stay, expense, booking preferences, as well as the data from the accommodation industry and aviation connection competitiveness. It also provides information about the visitors' movements in the city by neighbourhood, day and even by hours. This indicator is significant enough to ensure the social and environmental sustainability of the destination. As overcrowded areas and tourist attractions can be identified, the adoption of measures to ensure a quality tourist experience and the preservation of the local environment and communities can be adopted in real time.

Sustainable tourism can benefit from the application of technologies on at least three levels. At a destination level, they provide stakeholders with a global understanding of the tourist phenomenon and its economic, social and environmental impacts, which can encourage them to adopt a responsible and proactive attitude towards sustainable goals [58]. At the visitors' level, as they can access these platforms, be informed about the sustainability levels of the destination, and as a prosumer, they can choose one place or another to travel, while more responsible behaviour at the destination is encouraged. At the local communities' level, as residents are interviewed, they participate in tourism planning, and as a result, engage in more actions supporting sustainable tourism [51].

3. Materials and Methods

The establishment of a strong theoretical frame was the base to survey and describe approaches and methodologies for using big data in the generation of tourism statistics, with a special focus on measuring sustainability. For this purpose, a comprehensive review of publications regarding this field was carried out by applying the systematic literature review (SLR), widely used in social sciences [59–62]. The SLR allows studies to be weighed against each other in terms of the confidence with which their findings can be accepted, while data integration makes it possible to reach an overall judgement from all studies. Both contribute to the communication between researchers and practitioners. They also reduce the effort required by practitioners and other service decision-makers in finding and evaluating research evidence to make their decisions [59].

According to this research objective, the systematic literature review was oriented to answer the following questions:

1. What are the motives for using big data in tourism statistics?
2. What are the main types of big data used? And why are they the most used?
3. Which actors are involved in studying and applying big data to generate tourism statistics? Are they implementing Tourist Information Systems?
4. Which are the approaches and methodologies to use big data to measure tourism sustainability?

In order to locate high-quality studies for the research topic, databases from the Web of Science (WOS) and SCOPUS were examined. The search encompassed different types of publications, such as articles from peer-review journals, books, proceedings or reviews. Furthermore, relevant publications from international organisations such as the World Tourism Organisation, UNESCO or the European Commission related to the use of big data in tourist statistics were consulted.

In order to ensure the inclusion of all significant studies needed to give a response to the research questions, several criteria were established. Firstly, both databases were searched using the following keywords: “big data & tourism”, “big data & tourism & sustainability”, “big data & tourism & indicators”, “big data & tourism statistics”. Secondly, papers were selected between the years 1999 and 2019, thus guaranteeing a wide period to observe tendencies and changes. Thirdly, both theoretical and case studies within the social science, arts and humanities fields were included.

The process of selection and exclusion of articles is shown in Figure 2. After removing duplicate articles, a total of 180 abstracts were read. However, 108 were excluded because they did not respond to the research objective and questions. Next, the full texts of the remaining 72 selected were read, which allowed a final selection of 10 articles to be analysed, representing only 15% of the 72 full texts. The criteria to select them was the presence of a clear intention to use the information gathered with big data technologies to generate official statistics in tourism or to create tourist information systems to promote sustainable tourism planning. Therefore, the remaining 85% of articles were rejected for not matching this essential condition, which is the main purpose of this research.

Most of the refused articles (58%) cover interesting aspects of the application of big data in tourism, but the information is not used to generate official tourist statistics. They deal with understanding the visitors’ profile, opinion and behaviour through user generated content as a tool to study specific issues such as the destination image, tourist movement patterns and preferences, and visitors’ satisfaction [9,59–63]. Furthermore, tourist companies’ interests were present in 17% of the papers. They use big data to follow online consumers’ reviews, to predict hotel demands, as well as to co-create new tourist products together with visitors [64–68].

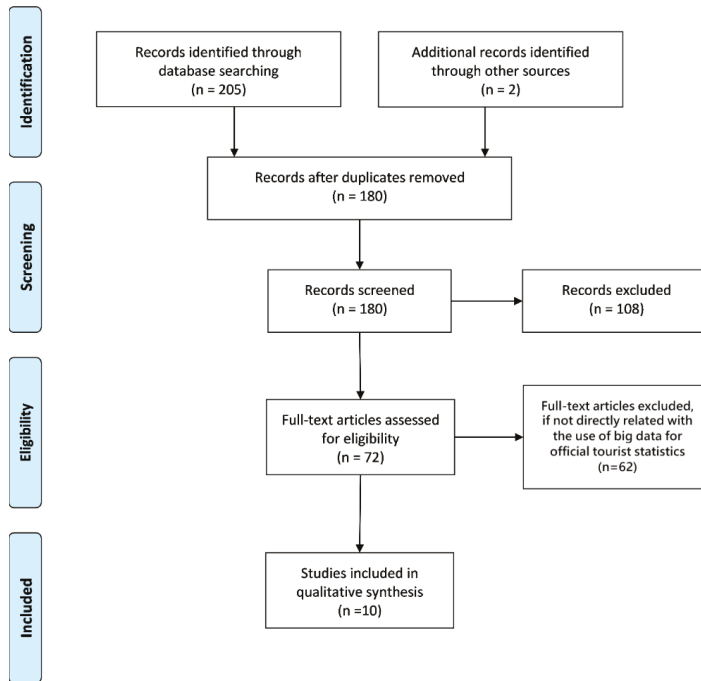


Figure 2. Flowchart of the inclusion and exclusion of studies [62].

In addition, four papers (6%) related to the development of methodologies to measure tourism sustainability were identified [69–72]. However, they were not included because they did not consider big data as a source to measure tourism sustainability. Finally, three theoretical works (4%) were not included either, as they had a general approach on the use of big data in tourism [73,74] or addressed a different perspective in relation to this research [75]. In terms of research bias, there is one issue that should be taken into account. Some publications related to the research topic could have been left out of the literature review, because they are not included in Scopus or Web of Science. However, using these databases guaranteed the selection of the ones with the highest research quality.

Once selected, the studies were evaluated to identify the kinds of theoretical and conceptual contributions and advances made, the array and nature of empirical situations investigated, the methodological approaches adopted, the conclusions and recommendations outlined, and the tools, guidelines and regulations produced in reports. The synthesis was done based on a descriptive approach through registering, tabulating and integrating all of the articles' contributions.

4. Results and Discussions

This section presents the results and discussions of the information gathered from the selected papers. For the integration of the data, the following parameters had previously been defined and extracted from the papers: title, authors, year of publication, journal or editorial, objectives, methodology (research technique, setting, type of data and source, tools for collection processing and visualising data), sustainability approach, stakeholders involved, big data opportunities and challenges.

4.1. Publications on Tourism Statistics and Sustainability: General Remarks

Table 1 shows the list of the selected publications that were analysed in depth in order to identify the approaches and methodologies to use big data to generate tourism statistics, especially indicators that measure tourism sustainability. The selection includes 8 articles from journals, *Tourism Management*

being the only journal with 2 articles [63,64]. Furthermore, a chapter of a book [65] and a report based on a keynote prepared by EUROSTAT were included [6].

Table 1. List of publications on tourism statistics and sustainability.

Authors and Years of Publication	Title	Journal or Editorial
Fuchs, Höpken and Lexhagen (2014)	Bigdata analytics for knowledge generation in tourism destinations—A case from Sweden	Journal of Destination Marketing & Management
Raun, Ahas, and Tiru (2016)	Measuring tourism destinations using mobile tracking data	Tourism Management
Cortina, Izquierdo, Prado and Velasco (2016)	Quality implications of the use of big data in tourism statistics: three exploratory examples	European Conference on Quality in Official Statistics
Miah, Huy, Gammack and McGrath (2017)	A Big Data Analytics Method for Tourist Behaviour Analysis	Information & Management
Peng and Huang (2017)	A Novel Popular Tourist Attraction Discovering Approach Based on Geo-Tagged Social Media Big Data	ISPRS International Journal of Geo-Information
Scharl, Lalicic and Onder (2017)	Tourism Intelligence and Visual Media Analytics for Destination Management Organizations	Springer
Demunter (2017)	Tourism statistics: Early adopters of big data?	Publications Office of the European Union
Donovan, Flaherty and Healy (2017)	Using big data from Wikipedia page views for official tourism statistics	Statistical Journal of the IAOS
Batista e Silva, Herrera, Rosina, Barranco, Freire and Schiavina (2018)	Analysing spatiotemporal patterns of tourism in Europe at high-resolution with conventional and big data sources	Tourism Management
Del Vecchio, Mele, Ndou and Secundo (2018)	Open Innovation and Social Big Data for Sustainability: Evidence from the Tourism Industry	Sustainability

In relation to the research objectives, all papers are oriented to the use of big data technologies to develop tools and methods to support strategic decision-making in tourism destination management. In particular, the incorporation of big data to official tourism statistical systems was addressed in four papers [5,6,12,53]. They all highlighted the potential relevance of big data in gathering tourism statistics, as well as its opportunities and challenges, which is further discussed in the following sections.

In spite of the fact that the research period was set in the last 10 years, between 1999 and 2019, the first publication addressing the subject of interest of this paper was published in 2014 [11]. As shown in Figure 3, in 2017 and 2018 the number of papers increased, totalling 70% of the total papers. This is a result of the growing recognition of big data as a complementary source for the generation of official tourism statistics [5,12]. However, if compared with the rest of articles being published on the use of big data in the tourism sector, the number of papers on this particular topic still remains low, as explained above.

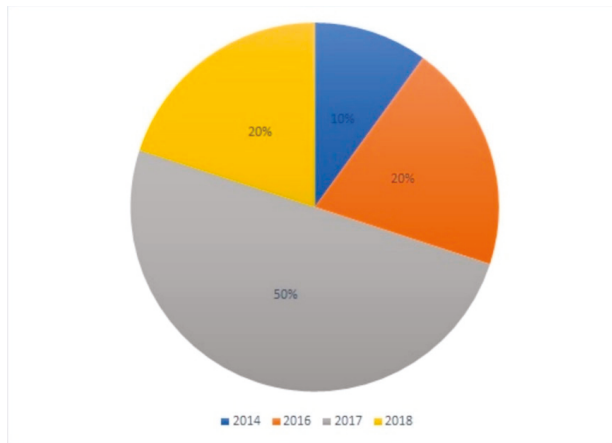


Figure 3. Distribution of the selected papers according to their publication date.

4.2. Methodologies and Approaches: Tourism Statistics and Sustainability

A case study is the most common technique used in the analysed papers. However, what does differ is the territorial scale, which varies from local to continental. Thereby, there are cities such as: Melbourne [8], Beijing [66], Noci [9], Helsinki, Oslo, Stockholm and Copenhagen [65]; Dublin and London [12]. Furthermore, regions such as Are in Sweden [11] and Saare and Tartu county in Estonia [64] are studied. The country level is represented by research developed in Spain [4], while research at a continental level is covered by Batista et al. [53]. In general, a prevalence of European territories can be seen, with the only exceptions being Melbourne and Beijing.

The types of data used to generate tourism statistics were grouped in three categories, according to Li et al. [67]: users, devices and operations (Figure 4). The user-generated content (UGC) is the prevalent source, used in 60% of the papers. This includes online textual data, mainly social and news media, and geotagged photos. Further, 20% exploits the potential of devices by collecting information from mobile roaming, traffic loops and traffic control cameras. While, the transaction data was used by another 10%, in particular, point of sales terminals (POS), ATM withdrawals and Booking.com. According to this, it can be said that UGC is the most relevant source for tourism statistics purposes. This conclusion is the same that Li et al. [67] obtained when researching the applications of big data in tourism studies in general, although they addressed a lower dominance of UGC (47%).

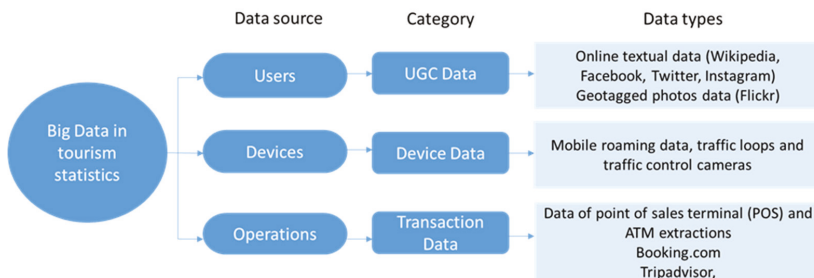


Figure 4. Sources of data for the generation of tourism statistics [67].

4.2.1. User-Generated Content

The articles based on the analyses of online textual data utilise different analytics methods. Donovan et al. [12] used the Hadoop tool to process data extracted from Wikipedia, as it is open

source, relatively user-friendly and could be useful in official statistics for analysing text files, networks and sensor data. Furthermore, these authors utilised Big Data Sandbox which is a United Nations Economic Commission for Europe platform. This is an experimental area where participating statistical organisations around the world can jointly explore how big data can be best used for the production of official statistics (<https://joinup.ec.europa.eu/solution/big-data-sandbox/about>).

To understand the role of social big data in nurturing open innovation to define sustainable tourism strategies, Del Vecchio et al. [9], used two tools: Keyhole and Buzztrack. They allowed the examination of different social networks such as Instagram, Twitter and Facebook to extract the users' preferences, behaviours and opinions in relation to a destination. These applications provide access not only to visitors demanding a conventional supply, but also to ones interested in eco-friendly products and services. Therefore, this market segment could be better exploited, thus attracting visitors that can minimise environmental impacts. Furthermore, the issues that could affect the destination's sustainability can be also detected. For example, the identification of overcrowded areas assists in the implementation of measuring visitor's management, which is an urgent topic, especially in tourist historic cities. This means big data provides tourism managers with valuable data to take actions on matters significant for managing sustainable destinations such as accessibility, mobility, pricing, taxes or booking systems [68–71].

The user-generated content is also useful when translated to web intelligence applications. This is the case of Visual Analytics Dashboard (<https://www.weblyzard.com/interface/>) proposed by Scharl et al. [65], which monitors data posted on online media channels for a tourist destination in real-time. The system, developed by WebLyzard Technology, has a visual analytics dashboard, which is an advanced information, exploration and retrieval interface. It provides information about tourists' perceptions on particular destinations or events, allowing geographical patrons to be established and also to be aware of the volume of documents associated with the topic of interest. From the authors' point of view, the great benefit of this technology is the use of interactive tools (trend charts, keyword graphs, tag cloud, etc.) that help to easily visualise and understand the information. This is a valuable aspect in raising awareness among tourism authorities and enterprise managers about the need to use them to support decision-making based on sustainable objectives.

WebLyzard Technology is also oriented to the environmental sustainability domain through the creation of different applications as for example the United Nation Environment Web Intelligence (<https://unep.ecoresearch.net/weblyzard/en/>). It aggregates data from Twitter and website news on sustainable development, climate change, biodiversity, water and energy consumption, and air pollution (Figure 5). The users can filter the search by date, source, language, and country of publication. Through diverse visual resources, the users can also discover connections among different institutions, places or people, which is a valuable tool for decision makers to be kept up to date. This kind of instrument increases the visualisation of environmental issues, thus raising awareness among the general public, and as a consequence, enhancing the visitor's behaviour once at their destination. Therefore, they contribute to the need to mitigate tourism impacts on climate change to ensure environmental sustainability, as widely addressed [38,52,72,73].

Moreover, the Destination Management Information System Åre (DMIS-Åre) was introduced by Fuchs, Höpken and Lexhagen, 2014 [10]. This is an intelligent application developed in Åre, a mountain destination in Sweden for monitoring tourism activity from the supply and demand perspective. Some economic indicators include bookings, rate of occupancy, overnights, product and services prices and trades. Furthermore, the customers' behaviour is measured through website search and navigation, profiles and booking trends. In addition, the customer's perception about image destination, satisfaction, loyalty, and value for money were included. One interesting aspect in DMIS-Åre that the authors identified was the integration of big data with traditional sources, a highly recommended practice to make the most of big data [6]. For example, the visitors' feedback integrates the data from Booking.com and TripAdvisor, surveys conducted by some accommodation providers, destination surveys, and real-time feedback from an electronic registration tool.



Figure 5. Screenshot from the United Nation Environment Web Intelligence showing the results of a query for “Sustainable Tourism” [74,75].

Otherwise, for the papers that used geotagged photos data extracted from Flickr, there are similar methodologies, although with some particularities. A spatial clustering and text mining approach was used in both cases [8,66]. A model for predicting the future trend of tourist demand was developed by Miah et al. [8] with the aim of complementing the estimate figures from general surveys and official statistics. However, the method proposed by Peng and Huang [66] is higher in classification accuracy, enables tourist zones or in-demand attractions to be distinguished and is more adaptable to irregular density distribution. These two cases assist tourist managers with other possibilities to monitor the visitors’ flows that consequently allow them to carry out preventative actions to guarantee tourist sustainability.

4.2.2. Device and Transaction Data

The use of traffic loops and traffic control cameras was used by Cortina et al. [5] to estimate the number of foreign visitors (tourist and same-day visitors) that arrive in Spain every month by road. In addition, these authors utilised mobile phones positioning data to measure the number of tourists, both residents and non-residents, and their average stay, broken down by region of destination (NUTS 2) and region/country of origin. This tool was also applied by Raun et al. [64] to measure visitor flows through spatiotemporal tracing records in Estonia. The data on foreign visitors were collected from the main national mobile operator. These techniques for the quantification of the number of visitors are in fact relevant to estimate the amount of excursionists at a destination, which according to the authors’ knowledge, is difficult to calculate using traditional methods. It allows better estimations of the volume of visitors and, therefore, of the economic impact of tourism activity.

Another source of information that was explored was the data recorded by the BBVA bank electronic payment system, one of the most important in Spain [5]. In the case of residents, the registers of all payments made by the bank’s clients at every point of sales terminal (POS) and ATM withdrawals with an entity card were analysed. Only cash payments and those made with a card from any other entity were out of scope of the study. For non-residents, the available information came from the

payments or extractions in POSs or ATMs in the BBVA network, so the vision of their activity in Spain was more limited.

Moreover, Batista et al. [53] combined the data from Eurostat official statistics, and also from Booking.com and TripAdvisor, the two main online booking systems, which provide accurate localisation and capacity for accommodation providers. The objective was to produce a comprehensive dataset representing tourist density supported by statistical software and geographical information systems in all European countries. This study proposes relevant indicators to measure tourism sustainability in EU-28, such as tourism intensity, tourism seasonality, and regional vulnerability to the tourism index. Tourism intensity measures the relative importance of tourism in the territorial context, which for example, can be useful for the detection of overtourism. In the authors' opinion, this constitutes an invaluable resource as this phenomenon is increasingly affecting social sustainability of highly in-demand places. In the last few years some destinations, such as for example Barcelona, Venice or Amsterdam have been dealing with the residents' intolerance towards tourists and social movements demanding urgent intervention from the public authorities to control overtourism. Therefore, measuring variables, such as tourism seasonality and regional vulnerability to tourism, provides managers with a complete picture of the social, economic and environmental impacts of the tourism activity, which should be used to support measures to ensure sustainable tourism.

4.3. Opportunities and Challenges in Using Big Data for Tourism Statistics

As discussed in the previous sections, the application of big data is useful technology to support decision-making processes in sustainable tourism planning and management. However, some challenges should be considered, particularly when contemplating its use for official statistical purposes. Figure 6 summarises some of the opportunities and challenges extracted from the analysed articles for the application of big data in tourism statistics, which is further discussed below.



Figure 6. Opportunities and challenges in using big data for tourism statistics.

One of the most relevant opportunities of big data is the availability of an immense volume of information. The traditional analytical practices are insufficient for the analysis of the enormous and unstructured datasets gathered from such diversified sources (social media, devices, transactions, etc.) [8]. Apart from the high volume, another possibility is the real-time synchronisation of big data sources, which allows destination management organisations to respond timely to breaking news [65].

Furthermore, big data allow the introduction of new indicators to measure the functioning of the destination, visitors' behaviour and experiences [11]. For instance, the number of arrivals and overnight stays can be estimated, independent of the accommodation category. This possibility offers a more precise quantification of the real volume of tourists. Nowadays, with the explosion of informal

accommodation systems such as Airbnb, Homestay, HomeExchange, among others, establishing the volume of visitors just considering official accommodation is not accurate.

However, big data opportunities are particularly significant to measure and promote tourist sustainability. Monitoring creates a huge amount of data that allows tourism statistics to be supported with information unable to be gathered by traditional methods [5,53]. This is the case of spatiotemporal analysis [5,53], which is very useful in managing tourist flows to ensure social sustainability to preserve a quality tourist experience and the liveability of the place. In addition, the combination of big data and computational knowledge allows the creation of intelligence tourism information systems to generate meaningful information and predictive insights. Some examples of this are the Web Intelligence Application developed by WebLyzard Technology [65], the Destination Management Information System Åre [11], the Tourism Intelligence System Badajoz-Elvas (<http://www.sitbadajozelvas.es/>) and the Tourist Intelligence System of Buenos Aires (<https://turismo.buenosaires.gob.ar/es/observatorio>).

Finally, big data facilitates open data innovation practices which contribute to the sustainable development of tourism activities. Adverse tourist impacts can be minimised by encouraging destination stakeholders and the general public to raise awareness of the need to preserve environmental sustainability. For instance, the use of applications on climate change, such as the United Nation Environment Web Intelligence, provide knowledge and make people aware of the urgency of taking active participation in this situation. Visitors are increasingly demanding eco-friendly products and services and a lower consumption of natural resources. As a consequence, tourist providers are more interested in offering ecological products and services and getting a quality certification that can differentiate them from their competitors. In the authors' opinion, all these changes in behaviour from both the supply and demand perceptions are what support the sustainable development of destinations.

In relation to the challenges, one important issue to consider regarding big data for official statistics purposes is the need for collaboration among public and private agents [5,11]. However, 50% of the papers that matched this research came from academia [8,9,11,64,66]. Public administrations are represented in 20% of papers by the National Statistics Institute of Spain [5], and the European Commission [6,53], while initiatives involving different stakeholders are only present in two papers. One case combines a technological company, a national public institution and a European organisation [12], and the other is a case of academics linked to a technological company [65].

Guaranteeing access to big data sources and its continuity in time is also a handicap. While access to some data such as social media posts, web activity and dynamic websites are free, others are held by private companies such as mobile network operators or bank entities that are not always willing to share them for statistical purposes. Some of the motivations could be: legal uncertainty [64], internal data monetisation projects or concern about public dissatisfaction. For these reasons, collaboration among stakeholders is a crucial factor to guarantee transparency and, as a consequence, a balanced win-win for all involved [65]. Furthermore, the fact that diverse data suppliers may be involved represents a risk of guaranteeing the systematicity of data in time [6].

The complexity of data is another disadvantage. In order to use the data as an input to produce statistics, a deep examination and definition of algorithms on datasets is necessary [6]. Heterogeneous and large volumes of data must be aggregated and visual dashboards must be provided to analyse patterns and relations in the extracted information [65]. Raun et al. [64] also addressed the necessity to standardise geographical analyses with destination marketing and development demands. Miah et al. [8] found that technologies to analyse and convert such amounts of big data to support decision-making are generally available for large companies. However, from this paper's authors' point of view, company size does not necessarily prevent it from exploiting big data, as the diversification of the data is quite wide, even including some with free access.

The use of big data may also introduce bias when framing populations. For example, the estimations from mobile network operators are based on market share, but it can introduce differences according to the region or socio-economic segment. In addition, the penetration levels for mobile phone ownership

and utilisation are not necessarily at 100 %, although this is comparable to the matter of over-coverage or under-coverage when establishing a sample structure in the traditional application of surveys [6].

Furthermore, as official statistics follow high-quality principles, big data also needs to guarantee these criteria to be considered as official statistics. In this respect, Eurostat have studied methods for statisticians to evaluate the quality of big data sources [76]. Furthermore, a change towards different sources or methodologies can cause a considerable break in systematicity. This can risk the establishment of the data series that guarantee comparisons through time, which is one primary objective of official statistics [6].

Another issue to consider for the statistical use of big data is that official statisticians lose full control of data production processes and depend on data providers, which are partially responsible for controlling data quality. In addition, they would need to acquire some skills in data management and understanding computing methods [6].

A holistic perspective to integrate big data with economic, environmental and social tourism sustainability is not generally addressed in the reviewed articles. Indeed, it can be appreciated that the direct intention of applying big data to measure sustainability remains unsolved, as stated by Perles and Ivars, 2018 [51]. In addition, the articles mostly concentrate on the analysis of visitors, disregarding local communities. In the authors' opinion, big data should also be applied to the resident's approach to measure social sustainability. For example, indicators such as the residents' level of satisfaction with tourism, the effects on the rented housing market, the situations of expulsion, the amount of involvement in planning tourist policies, among others, must be undoubtedly monitored.

In terms of methodologies, the authors consider that the best way to improve the connection among big data and measuring sustainability is the integration of the different big data sources (users, devices and operations) in an open access tourist intelligence systems. Additionally, it should be connected to traditional touristic sources (surveys, interviews, etc.) and to environmental monitoring systems which are able to address the supply, demand and residents' approaches. In the case of tourist historic cities, special attention must also be paid to the damage that tourism can cause to tangible and intangible heritage. Therefore, the tourist intelligence system should also envisage the integration with other applications such as heritage information systems for heritage preservation and management based on spatial data infrastructure [77]. This is certainly a complex issue, especially if destination management organisations fail to lead the process along with relevant stakeholders.

5. Conclusions

The research on the application of big data for tourism statistics to support destination management organisations is still relatively new, being concentrated in the last two years. The case study is the most used methodology with examples that cover local, regional, national and European levels. However, local cases, in particular, from European cities prevail over all others. In exact terms, the incorporation of big data in official tourism statistics, either at local, regional or national levels has a favorable environment, as it has been supported by different European and international organisations [4,6,12,53].

Although big data offer a wide range of possibilities, a predominance of user-generated content for tourism statistics can be seen. It includes online textual data such as Wikipedia, Facebook, Twitter or Instagram and geotagged photos data from Flickr. This behaviour can be explained because these sources are free and, in some cases, can be collected using free tools, such as Keyhole. However, the data from mobile network operators or banking entities are more difficult to be accessed as they belong to private companies.

In this regard, the need to establish win-win relationships among public and private stakeholders is crucial. However, this constitutes a critical issue that needs to be resolved due to the traditional separation among key agents such as academia, public authorities, tourist companies and technological centres. Furthermore, this can be proved as only two papers surpassed this barrier [12,65], while half came from academia. In summary, the initiatives to create tourist information systems using big data

have been developed within the academic environment [11,65], however an example of transference to the business world could be appreciated [65].

The measurement of sustainable tourism is perhaps one of the most under researched subjects in tourism statistics, because it lacks the practical tools to guide the implementation and systematicity. Nevertheless, big data can cover this gap by proposing indicators, especially those contributing with geographical and temporal granularity, as used by Batista et al. [53] and Cortina et al. [5]. Apart from this, some interesting initiatives, such as the ones developed by WebLyzard Technology, are examples of the potentialities of social and news media to encourage integral sustainable practices and open innovation [9]. These cases prove that integration among indicators to measure tourist sustainability and big data really is possible, it is not a myth, and it also shows its potential to destination management organisations. Unfortunately, this is not expansive enough. For this reason, future research should be oriented towards creating mechanisms to coordinate tourism authorities with data providers, data experts, academia and business communities. On the condition that all these actors understand and believe in big data as a complementary data source, they will be able to face the challenges and build official tourist statistics.

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References

1. Timothy, D.J. *Cultural Heritage and Tourism: An Introduction*; Channel View Publications: Bristol, UK, 2011; ISBN 978-1-84541-178-7.
2. Cohen-Hattab, K. Public involvement and tourism planning in a historic city: The case of the Old City of Jerusalem. *J. Herit. Tour.* **2013**, *8*, 320–336. [CrossRef]
3. European Commission European Tourism Indicators System for Sustainable Destination Management. ETIS Toolkit for Sustainable Destination Management. Available online: [/growth/sectors/tourism/offer/sustainable/indicators_en](#) (accessed on 29 August 2018).
4. UNWTO. Measuring Sustainable Tourism: A Call for Action—Report of the 6th International Conference on Tourism Statistics, Manila, Philippines, 21–23 June 2017 | Statistics. Available online: http://statistics.unwto.org/publication/report_philippines_intl_conf (accessed on 29 November 2018).
5. Cortina, F.; Izquierdo, M.; Prado, J.; Velasco, M. Quality Implications of the Use of Big Data in Tourism Statistics: Three Exploratory Examples. In Proceedings of the European Conference on Quality in Official Statistics (Q2016), Madrid, Spain, 31 May–3 June 2016; Volume 11.
6. Demunter, C. *Tourism Statistics: Early Adopters of Big Data*; Publications Office of the European Union: Luxemburg, 2017.
7. Kzaz, L.; Dakhchoune, D.; Dahab, D.; Park, D.H.; Kim, H.K.; Carrer-Neto, W.; Hernández-Alcaraz, M.L.; Valencia-García, R.; Meehan, K.; Lunney, T.; et al. Tourism Recommender Systems: An Overview of Recommendation Approaches. *Int. J. Comput. Appl.* **2018**, *180*, 9–13. [CrossRef]
8. Miah, S.J.; Vu, H.Q.; Gammack, J.; McGrath, M. A Big Data Analytics Method for Tourist Behaviour Analysis. *Inf. Manag.* **2017**, *54*, 771–785. [CrossRef]
9. Del Vecchio, P.; Mele, G.; Ndou, V.; Secundo, G. Open Innovation and Social Big Data for Sustainability: Evidence from the Tourism Industry. *Sustainability* **2018**, *10*, 3215. [CrossRef]
10. Chen, H.-C.; Chiang, R.H.L.; Storey, V.C. Business Intelligence and Analytics: From Big Data to Big Impact. *MIS Q.* **2012**, *36*, 1165–1188. [CrossRef]
11. Fuchs, M.; Hoepken, W.; Lexhagen, M. Big data analytics for knowledge generation in tourism destinations—A case from Sweden. *J. Destin. Mark. Manag.* **2014**, *3*, 198–209. [CrossRef]
12. Donovan, C.; Flaherty, E.T.; Healy, E.Q. Using big data from Wikipedia page views for official tourism statistics. *Stat. J. IAOS* **2017**, *33*, 997–1003. [CrossRef]

13. UNWTO. Indicators of Sustainable Development for Tourism Destinations a Guidebook (English version) | World Tourism Organization. Available online: <https://www.e-unwto.org/doi/book/10.18111/9789284407262> (accessed on 29 August 2018).
14. European Association of Historic Towns and Regions. Guidelines for Sustainable Cultural Tourism in Historic Towns and Cities 2009. Available online: <http://heritage.paston2.webfactional.com/wp-content/uploads/2018/09/SustainableTourismGuidelines.pdf> (accessed on 29 August 2018).
15. INSTO; UNWTO. International Network of Sustainable Tourism Observatories 2018. Available online: <http://insto.unwto.org/> (accessed on 11 July 2019).
16. European Commission. Estimular el Turismo Internacional en Europa 2010. Available online: <https://eur-lex.europa.eu/legal-content/ES/TXT/HTML/?uri=LEGISSUM:et0004&from=EN> (accessed on 11 July 2019).
17. NECSTOUR. Barcelona Declaration “Better Places to Live, Better Places to Visit” | NECSTOUR. Available online: <http://www.necstour.eu/better-places-to-live-better-places-to-visit> (accessed on 30 November 2018).
18. Muqbil, I. Strengthening Small and Medium Sized Enterprises in the Asia-Pacific Travel & Tourism Industry. In ITB Asia, Singapore. 24 October 2008. Available online: https://www.accessibletourism.org/resources/south-asia_sme_study_imtiazi_muqbil.pdf (accessed on 29 August 2019).
19. Ortiz, D.; Solo, M. *Responsible and Sustainable Tourism-Lessons from LATIN America and the Caribbean*; The World Bank: Washington, DC, USA, 2009; Volume 142, pp. 1–4. Available online: <http://siteresources.worldbank.org/INTLACREGTOPURBDEV/Resources/EnBreve142.pdf> (accessed on 11 July 2019).
20. Garcia, S.M.; Staples, D.J. Sustainability reference systems and indicators for responsible marine capture fisheries: A review of concepts and elements for a set of guidelines. *Mar. Freshw. Res.* **2000**, *51*, 385–426. [CrossRef]
21. Miller, G. The development of indicators for sustainable tourism: Results of a Delphi survey of tourism researchers. *Tour. Manag.* **2001**, *22*, 351–362. [CrossRef]
22. Sirakaya, E.; Jamal, T.; Choi, H.S. Developing Tourism Indicators for Destination Sustainability. In *The Encyclopedia of Ecotourism*; CAB International: New York, NY, USA, 2001; pp. 411–432.
23. Gahin, R.; Veleva, V.; Hart, M. Do Indicators Help Create Sustainable Communities? *Local Environ.* **2003**, *8*, 661–666. [CrossRef]
24. Castellani, V.; Sala, S. Sustainable performance index for tourism policy development. *Tour. Manag.* **2010**, *31*, 871–880. [CrossRef]
25. Tanguay, G.A.; Rajaonson, J.; Therrien, M.-C. Sustainable tourism indicators: Selection criteria for policy implementation and scientific recognition. *J. Sustain. Tour.* **2013**, *21*, 862–879. [CrossRef]
26. Lozano-Oyola, M.; Blancas, F.J.; González, M.; Caballero, R. Sustainable tourism indicators as planning tools in cultural destinations. *Ecol. Indic.* **2012**, *18*, 659–675. [CrossRef]
27. Torres-Delgado, A.; Palomeque, F.L. Measuring sustainable tourism at the municipal level. *Ann. Tour. Res.* **2014**, *49*, 122–137. [CrossRef]
28. Fernández-Tabales, A.; Foronda-Robles, C.; Galindo-Pérez-de-Azpillaga, L.; García-López, A. Developing a system of territorial governance indicators for tourism destinations. *J. Sustain. Tour.* **2017**, *25*, 1275–1305. [CrossRef]
29. Navarro Jurado, E.; Tejada Tejada, M.; Almeida García, F.; Cabello González, J.; Cortés Macías, R.; Delgado Peña, J.; Fernández Gutiérrez, F.; Gutiérrez Fernández, G.; Luque Gallego, M.; Málvarez García, G.; et al. Carrying capacity assessment for tourist destinations. Methodology for the creation of synthetic indicators applied in a coastal area. *Tour. Manag.* **2012**, *33*, 1337–1346. [CrossRef]
30. OECD. Governing Regional Development Policy: The Use of Performance Indicators. Available online: <http://www.oecd.org/gov/governingregionaldevelopmentpolicytheuseofperformanceindicators.htm> (accessed on 13 September 2018).
31. Saarinen, J. Traditions of sustainability in tourism studies. *Ann. Tour. Res.* **2006**, *33*, 1121–1140. [CrossRef]
32. Dodds, R. Sustainable Tourism and Policy Implementation: Lessons from the Case of Calviá, Spain. *Curr. Issues Tour.* **2007**, *10*, 296–322. [CrossRef]
33. Klein-Vielhauer, S. Framework model to assess leisure and tourism sustainability. *J. Clean. Prod.* **2009**, *17*, 447–454. [CrossRef]
34. Agyeiwaah, E.; McKercher, B.; Suntikul, W. Identifying core indicators of sustainable tourism: A path forward? *Tour. Manag. Perspect.* **2017**, *24*, 26–33. [CrossRef]

35. Jurigova, Z.; Lencsesova, Z. Monitoring System of Sustainable Development in Cultural and Mountain Tourism Destinations. *J. Compet.* **2015**, *7*, 35–52. [CrossRef]
36. Pulido-Fernández, J.I.; Andrades-Caldito, L.; Sánchez-Rivero, M. Is sustainable tourism an obstacle to the economic performance of the tourism industry? Evidence from an international empirical study. *J. Sustain. Tour.* **2015**, *23*, 47–64. [CrossRef]
37. Ruhanen, L. Progressing the Sustainability Debate: A Knowledge Management Approach to Sustainable Tourism Planning. *Curr. Issues Tour.* **2008**, *11*, 429–455. [CrossRef]
38. Zeppel, H.; Beaumont, N. Climate Change and Sustainable Tourism: Carbon Mitigation by Environmentally Certified Tourism Enterprises. *Tour. Rev. Int.* **2014**, *17*, 161–177. [CrossRef]
39. Vardarlier, P.; Silahtaroglu, G. Gossip Management at Universities using Big Data Warehouse Model Integrated with a Decision Support System. *Int. J. Res. Bus. Soc. Sci.* **2016**, *5*, 1–14. [CrossRef]
40. Buhalis, P.D.; Amaranggana, A.; Buhalis, D.; Amaranggana, A. Smart Tourism Destinations Enhancing Tourism Experience through Personalisation of Services. In *Information and Communication Technologies in Tourism 2015*; Tussyadiah, I., Inversini, A., Eds.; ENTER 2015 Proceedings: Lugano, Switzerland; Springer: Wien, Austria, 2014; pp. 377–390, ISBN 9783319143422.
41. Buhalis, D.; Foerste, M. SoCoMo marketing for travel and tourism: Empowering co-creation of value. *J. Dest. Mark. Manag.* **2015**, *4*, 151–161.
42. Albino, V.; Berardi, U.; Dangelico, R.M. Smart Cities: Definitions, Dimensions, Performance, and Initiatives. *J. Urban. Technol.* **2015**, *22*, 3–21. [CrossRef]
43. Boes, K.; Buhalis, D.; Inversini, A. Smart tourism destinations: Ecosystems for tourism destination competitiveness. *Int. J. Tour. Cities* **2016**, *2*, 108–124. [CrossRef]
44. Gretzel, U.; Sigala, M.; Xiang, Z.; Koo, C. Smart tourism: Foundations and developments. *Electron. Mark.* **2015**, *25*, 179–188. [CrossRef]
45. Gretzel, U. Intelligent systems in tourism: A Social Science Perspective. *Ann. Tour. Res.* **2011**, *38*, 757–779. [CrossRef]
46. Ali, A.; Frew, A.J. *Information and Communication Technologies for Sustainable Tourism*; Routledge: London, UK, 2013.
47. Bibri, S.E.; Krogstie, J. Smart sustainable cities of the future: An extensive interdisciplinary literature review. *Sustain. Cities Soc.* **2017**, *31*, 183–212. [CrossRef]
48. Ahvenniemi, H.; Huovila, A.; Pinto-Seppä, I.; Airaksinen, M. What are the differences between sustainable and smart cities? *Cities* **2017**, *60*, 234–245. [CrossRef]
49. Haarstad, H. Constructing the sustainable city: Examining the role of sustainability in the ‘smart city’ discourse. *J. Environ. Policy Plan.* **2017**, *19*, 423–437. [CrossRef]
50. Perles Ribes, J.F.; Ramón-Rodríguez, A.B. Calp, hacia la sostenibilidad a través de la inteligencia. In *Congresos-Seminario Destinos Turísticos Inteligentes 2017-Libro de Actas*; Vera-Rebollo, J.F., Ivars-Baidal, J., Celdrán Bernabéu, M.A., Eds.; Servicio de Publicaciones de la UA: Alicante, España, 2017; pp. 71–95.
51. Perles, R.J.F.; Ivars, J. Smart sustainability: A new perspective in the sustainable tourism debate. *Investig. Reg.* **2018**, *42*, 151–170.
52. Gössling, S. Tourism, information technologies and sustainability: An exploratory review. *J. Sustain. Tour.* **2017**, *25*, 1024–1041. [CrossRef]
53. Batista e Silva, F.; Herrera, M.A.M.; Rosina, K.; Barranco, R.R.; Freire, S.; Schiavina, M. Analysing spatiotemporal patterns of tourism in Europe at High-Resolution with conventional and big data sources. *Tour. Manag.* **2018**, *68*, 101–115. [CrossRef]
54. Salas-Olmedo, M.H.; Moya-Gómez, B.; García-Palomares, J.C.; Gutiérrez, J. Tourists’ digital footprint in cities: Comparing Big Data sources. *Tour. Manag.* **2018**, *66*, 13–25. [CrossRef]
55. Buhalis, D. *eTourism Information Technology for Strategic Tourism Management*; Financial Times Prentice Hall: Harlow, UK, 2003.
56. Benckendorff, P.; Sheldon, P.; Fassenmaier, D. *Tourism Information Technology*; CABI: Oxford, UK, 2014.
57. SEGITTUR. Tourist Intelligence System. 2018. Available online: <https://www.segittur.es/es/proyectos/proyecto-detalle/Sistema-de-Inteligencia-Turstica/#.XaClvUYzZPb> (accessed on 11 July 2019).
58. Ali, A.; Frew, A.J. Technology innovation and applications in sustainable destination development. *Inf. Technol. Tour.* **2014**, *14*, 265–290. [CrossRef]
59. Gomm, R. *Social Research Methodology. A Critical Introduction*; Palgrave: Basingstoke, UK, 2008.

60. Petticrew, M.; Roberts, H. Systematic Reviews in the Social Sciences: A Practical Guide. Available online: <https://www.wiley.com/en-es/Systematic+Reviews+in+the+Social+Sciences%3A+A+Practical+Guide-p-9781405121101> (accessed on 4 September 2018).
61. Denyer, D.; Tranfield, D. Producing a systematic review. In *The Sage Handbook of Organizational Research Methods*; Sage Publications Ltd: Thousand Oaks, CA, USA, 2009; pp. 671–689, ISBN 978-1-4129-3118-2.
62. Moher, D.; Liberati, A.; Tetzlaff, J.; Altman, D.G. The PRISMA Group Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med.* **2009**, *6*, e1000097. [\[CrossRef\]](#)
63. Antonio, N.; de Almeida, A.M.; Nunes, L.; Batista, F.; Ribeiro, R. Hotel online reviews: Creating a multi-source aggregated index. *Int. J. Contemp. Hosp. Manag.* **2018**, *30*, 3574–3591. [\[CrossRef\]](#)
64. Raun, J.; Ahas, R.; Tiru, M. Measuring tourism destinations using mobile tracking data. *Tour. Manag.* **2016**, *57*, 202–212. [\[CrossRef\]](#)
65. Scharl, A.; Lalicic, L.; Önder, I. Tourism Intelligence and Visual Media Analytics for Destination Management Organizations. In *Analytics in Smart Tourism Design: Concepts and Methods*; Xiang, Z., Fesenmaier, D.R., Eds.; Tourism on the Verge; Springer International Publishing: Cham, Switzerland, 2017; pp. 165–178, ISBN 978-3-319-44263-1.
66. Peng, X.; Huang, Z. A Novel Popular Tourist Attraction Discovering Approach Based on Geo-Tagged Social Media Big Data. *ISPRS Int. J. Geo-Inf.* **2017**, *6*, 216. [\[CrossRef\]](#)
67. Li, J.; Xu, L.; Tang, L.; Wang, S.; Li, L. Big data in tourism research: A literature review. *Tour. Manag.* **2018**, *68*, 301–323. [\[CrossRef\]](#)
68. Barrera, D.; Castillo, A.L.; Azevedo, E.M. Tourist use of historic cities: Review of international agreements and literature. *Int. Humanit. Stud.* **2014**, *1*, 1–11.
69. Coccossis, H. Carrying capacity as a tool for the management of tourism pressures on heritage sites. In *Extended Abstracts of the International Colloquium Visitor Management and Carrying Capacity at World Heritage Sites in China*; Mogao Grottoes: Dunhuang, China, 2013; pp. 35–38.
70. Xiaory, Y.; Fang, H.; Kaixuan, S. Tourist capacity management and control at west lake cultural landscape. In *Extended Abstracts of the International Colloquium Visitor Management and Carrying Capacity at World Heritage Sites in China*; Mogao Grottoes: Dunhuang, China, 2013; pp. 120–124.
71. Massiani, J.; Santoro, G. The relevance of the concept of capacity for the management of a tourist destination: Theory and application to tourism management in Venice. *Riv. Ital. Econ. Demogr. E Stat.* **2012**, *66*, 141–156.
72. Reddy, M.V.; Wilkes, K. *Tourism in the Green Economy*, 1st ed.; Routledge: London, UK, 2017; ISBN 978-1-138-09563-2.
73. Wall, G. Sustainable tourism futures: Perspectives on systems, restructuring and innovations edited by Stefan Gössling, C. Michael Hall, and David, B. Weaver. *Can. Geogr. Géographe Can.* **2012**, *56*, 150–151. [\[CrossRef\]](#)
74. United Nation Environment Web Intelligence. Available online: <http://unep.ecoresearch.net> (accessed on 22 July 2019).
75. Scharl, A.; Herring, D.; Rafelsberger, W.; Hubmann-Haidvogel, A.; Kamolov, R.; Fischl, D.; Fols, M.; Weichselbraun, A. Semantic Systems and Visual Tools to Support Environmental Communication. *IEEE Syst. J.* **2017**, *11*, 762–771. [\[CrossRef\]](#)
76. Wirthmann, A.; Stavropoulos, P.; Petrakos, M. Proposal for an Accreditation Procedure for Big Data, Paper for the NTTS2015 (New Techniques and Technologies in Statistics). Available online: https://ec.europa.eu/eurostat/cros/system/files/Wirthman-et-al%20Accreditation%20unblinded%20abstract_20150122.pdf2014 (accessed on 11 July 2019).
77. Pérez-Guilarte, Y.; Pazos Otón, M. Spatial Data Infrastructures in Santiago de Compostela. In *Proceedings of the New Metropolitan Perspectives*; Calabrò, F., Della Spina, L., Bevilacqua, C., Eds.; Springer International Publishing: Cham, Switzerland, 2019; pp. 12–20.



Article

The Study of Tourist Movements in Tourist Historic Cities: A Comparative Analysis of the Applicability of Four Different Tools

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Abstract: This paper presents the results of the application of four different tools (tourist card, questionnaire, GPS and NFC) with the objective to study the movement of tourists in a tourist historic city (Popayán, Colombia). Given the need for these types of cities to manage tourism in a sustainable way, and considering that the management of tourist flows is a key aspect to achieve this, the aim was to find out which of the tools applied provides more precise data on the movement of tourists in the destination. For this, information was collected on the movement of tourists with four different tools, applying each tool in four different years (2011, 2012, 2013 and 2015) during the same time period (Holy Week). For the analysis of tourist movements, the Markov chain was obtained for each period. In order to study the generation of routes geo-location was used in each case. The results show that even though GPS technology provided more information on the visited places, NFC technology facilitates more extensive information. In addition, NFC technology allowed the extraction of important information about the places visited, showing a wide number of sites visited and, therefore, providing greater value for the study. Finally, the results of the study provide a better understanding of how destination management organizations could develop more suitable alternatives of the customer services systems, the delivery of tourist information and the identification of sites with heavy use. Conclusively, this study helps to identify how to take better advantage of the marketing strategies through different tools that analyses tourism movements.

Keywords: tourist movement; GPS; NFC; tourist card; questionnaire; tourism destination; historic city

1. Introduction

The rapid growth of cultural tourism in historic cities can turn these destinations into unsustainable places [1], provoking cycle changes and even introducing them in phases of decline [2]. This situation irremediably demands proactive policies on the part of those responsible for destinations, sustainable strategies and control measures to anticipate and prevent these cycle changes [1]. There is no doubt that the impact of tourist activity in the historic city has direct and indirect positive effects such as the generation of employment, the conservation of heritage, the stimulation of commercial activity and urban services [3]. But it is also necessary to be aware of the negative impacts among which are the massification of space, agglomerations in certain attractions [4] and of local services, producing in some cases an effect of “musealization” [5].

Within the control measures to anticipate and prevent decline, knowing and managing tourist flows is a very important element for destination managers [6]. The study of the movement of tourists makes it possible to understand their spatial-temporal behaviour in the destination and their interactions with space [7] which provides a better understanding of the visitor [8], optimizes the carrying capacity [4] and improves the use of resources, and thus facilitating both their management and organization [9]. Additionally, this type of analysis makes it possible to more efficiently define the marketing strategies of these destinations [10].

As mentioned above, the analysis of visitor movement usually encompasses spatial and temporal considerations [11] and the combination of both (space-time) [12]. Spatial elements include direction, location and distance. Temporal elements include time of arrival and duration, and the space-time element includes velocity. Likewise, movement can also be seen as the process of changing location in time, space and time being the main characteristics of time, as presented by K. Hummel and Hess (2010) [13].

The relevance of the study of tourist movements in destinations is reflected in the number of studies that have previously focused on this topic. As a result of these studies, several tools are known today that allow both the capture of data and the process of analysis of the same [8]. Nevertheless, the related literature nearly ignores historical cities, whose peculiar features illuminate the relation among tourism spatial organization, the quality of its products, and the general dynamics of regional economies. In relation to the use of space and the mobility of visitors, no studies have been found that address in a comparative way, the results of the use of different tools for collecting information on the movement of tourists in the same destination. This type of study would help decision making in these destinations, facilitating the implementation of certain technologies to undertake the study of visitor movements [14]. However, most of the works that have studied the movement of tourists at destination do so using one or two data collection tools [15,16].

There are two main reasons that justify this study. The first one is the importance of the tourist mobility management for the sustainable development of historic cities. The second one is the study of the existing tools from a comparative perspective for the monitoring of the tourist flows in the cultural destinations, in order to decide which fits better to a historic touristic city. For this study Popayan historic city has been chosen as case study. It is a small city in an initial step of its tourism development that can be representative of other cities that, with the same characteristics (Colombian small city, inhabitants: 280.000, seasonal tourist activity, cultural resources based, public-private local DMO) are facing the challenge of managing the visitors from the beginning in order to be more sustainable.

For this reason, in this paper we propose four tools for the study of visitor movements in a historic tourist city in order to determine which tool provides the best results. Our contribution is twofold: it deepens the knowledge about the study of tourist movements by providing a comparative analysis of the results of the use of four different tools in a historic city. It also facilitates the decision making of historic cities that wish to know how their tourists move in the destination in the most efficient way.

2. Tools for the Study of the Movement of Tourists in Historic Tourist Cities

Knowledge about how tourists interact with the heritage area of a city is crucial to manage the impact and, at the same time, to create sustainable historic and tourist cities [17]. Although the cultural tourism boom has undoubtedly generated many benefits, the growth of cultural tourism has also begun to cause problems: the large number of visitors attracted by major cultural attractions has become a concern, especially in historic city centres [18]. The representatives of the DMO (Destination Management Organizations) must understand what is the movement of tourists in the destination, and therefore, what is the consumption they make of the tourist space and resources in order to be more sustainable [19]. This is especially important in the case of historic cities, characterized by a high influx of tourists in their main resources and especially in their historic centers [17,20].

The technologies have allowed the advance in the tools that allow the collection of information on the movement of visitors in the destinations. In recent years we have witnessed substantial

advances in tracking technologies (GPS, GIS, RFID, APPS) that have led to the emergence of new research [10,21]. These investigations reflect the results of the use of different tools for tracking tourists, from the more traditional ones such as site-based interviews to the use of other tools with technological support. Below are the most relevant tools, the results of which have been previously considered by academic literature.

2.1. Interviews and Surveys

Interviews are a traditional tool supported in many cases by a pre-developed questionnaire. It is characterised by a high response rate, since, if the tourist collaborates, a large amount of data can be collected about his visit to a destination. Smallwood [8] mention that, one of the benefits of this technique is, that researches can verify the information provided by the visitor. Like interviews, surveys are also considered traditional tools for capturing tourist information. They continue to be an essential tool for visitor research, complemented by other monitoring methods, which can provide useful information to explain travel patterns such as Wolf [22]. For Parroco [23], one of the main problems of tourism surveys relates to the mobile nature of tourists, which with this tool is difficult to measure; while Terrier [24] mentions that the survey is a good way to measure tourist flow; these surveys can be done in the homes of respondents, at the places they visit or at points along the way when they are travelling. Household surveys are carried out after the tourists return home, the most complete information is requested, since the trip is completed, can be done through telephone interviews, correspondence or home visits.

2.2. Direct Observation

Direct observation is another of the traditional tools for the study of visitors, Thornton, Williams, and Shaw [25] summarize it as identify, follow, observe, and map, which, in practical terms, implies that the researcher accompanies the person to observe it directly. O'Connor [26], mention that this tool can provide a lot of information, but it depends on human interpretation to derive the travel itineraries of people, which make this a tedious process, prone to errors and costly for the number of supervisors needed for adequate coverage of the study area. Likewise, Zakrisson and Zillinger [27], emphasize that there are several risks from the use of this tool, such as misinterpretation, lack of registration when people move very fast and the influence in the behavior of the tourist by the presence of the researcher.

2.3. Video Surveillance

Video surveillance, like direct observation, can provide the information needed to study tourist movements, but it depends on human interpretation to derive people's travel itineraries, which is complex, error-inducing and costly because it must be added to the investment in surveillance equipment [26].

2.4. Tourist Card

Tourist cards are instruments usually used by DMOs (Destination Management Organizations) with the aim of facilitating visits to different resources and improving the experience in the destination [28]. The tourist cards (also called 'destination card', 'city card', 'city pass', 'tourist pass', 'guest card', 'visitor card', or 'welcome card') allow this access to the resources of the destination in a more economical way than if the tourist pays each of the accesses separately [29]. The main benefits of applying tourist cards are the improvement of the visitor experience, increase the consumption of products and services, promote those resources less visited and balance the distribution of tourist flows in the resources of the destination, monitor experiences, promote the use of public transport, lengthen stays, among others [29]. Zoltan and Mckercher [30] used the destination card to analyze the spatial distribution and activities carried out by tourists in the Canton of Ticino (Switzerland). The authors reflect in this work how the use of this type of tools can help the decision making of the destinations as they help to better understand their markets.

Another example of the use of tourist card is the Dubrovnik's Old City. The City has attempted to diversify tourist interest points by introducing the 'Dubrovnik Card' [31]. This card gives visitors access to multiple sites and not just the main cultural 'honey pot' attractions such as the City Walls [32].

2.5. GIS and GPS

Among the most "technological" tools is the GIS (Geographic Information System). This tool has previously been used in several studies [4,33,34] alone or in combination with GPS (Global Position System), as Grinberger [35]. GPS consists of specialized software and hardware that makes use of the public satellite network, with the ability to provide the position by triangulation of satellite signals. It is very popular as an individual device and has been widely incorporated into smartphones, thanks to the ability to incorporate these mapping applications [11,15,36–40]; Zheng, Specifically, in the case of historic cities, historic cities or historic centres it has been used by Tchetchik [41], Grinberger [35]; Aranburu [19] and Sugimoto [42]. Likewise, it is common to find works that combine GPS with another information collection system, as in the case of Bauder and Freytag [39] and East et al. [43] where information is combined with visitor surveys.

2.6. Mobile Networks

Other work has relied on information provided by mobile networks [44,45] and in some cases has combined the method with the application of GIS [46]. The tool based on records of activities in mobile networks generates the information originated by the use of these phones, can become very complex due to the dependence of mobile operators to provide the positioning data of the same, given the active competition between them and hardware and software suppliers, which generate professional secrets that lead them to hide data and XXgures, which becomes one of the main problems of this tool, along with the invasion of privacy of the phone user, as mentioned in [38]. For Vaccari et al. (2009) [47], mobile phone calls can inform how many people are present in a given area and how many enter or leave it. This tool presents two major problems, the invasion of privacy, since it needs to follow the signal from the mobile phone to obtain the location of the individual cell of the phone company, estimate the travel speed and travel time. The analysis of records of activities in mobile networks, are carried out by means of a GIS tool (Geographic Information System), which allows to study the distribution of activity in urban space and time to assess the density of users in cities and their movements across the territory as in [46]; this information is very useful, given its accuracy, compared with questionnaires and accommodation statistics for the analysis of tourist movements.

2.7. Bluetooth

Bluetooth has also been used as a tool for collecting information on the movement of tourists in previous works [48–52]. The main advantage of this tool is that it is not exclusive to smart phones, since phones with lower features may have it, as [53] propose, and which allow signals to be emitted between these devices that can be monitored.

2.8. Social Networks

Social networks as tool for capturing tourist information when visiting a destination, are supported by the publication of tweets with geographic location. This information is available on the Internet, which represents an advantage, having a low cost for access to information and not invading the privacy of the user, and from which you can obtain data of place, date and time, three important elements to reconstruct movements of a person in an specific area. In [54], the study case was developed in Barcelona metropolitan area (Spain) is presented, where this tool is used to reconstruct the trajectory that tourists followed when moving through several locations, based on the social network twitter. Also the work of Encalada [55] use the more than 17,000 photographs published in the social network "Panoramio" Lisbon visitors to analyze the spatial distribution of tourists. In the work of Chua [56] the spatial, temporal and demographic aspects of tourist flows are characterized

by geotagged tweets posted by individuals in the region of Cilento region which includes different heritage sites declared by UNESCO (e.g., Paestum, Punta Licosa, Capo Palinuro). Shao et al. [7] also use China's most popular social network, Sina-Weibo, to study visitor behavior in Huangshan City. His et al's work [57] also uses the Flickr social network to analyze the geographical preferences of international tourists through their geo-tagged pictures.

2.9. Travel Stories

The travel stories published on the web also constitute a tool based on the use of the stories that travellers write on the Internet, about their tourist experiences in a destination. Tourists often voluntarily write the report of their tour after a day or their entire trip, which becomes an advantage, as their activities are not affected by observation, whether by monitoring with some device, direct observation or interviews. Internet sites, such as blogs, become orderly sources for information about travel experiences, as people there freely write down their experiences and problems during their journey, as presented by [58].

2.10. NFC

NFC (Near Field Communication) technology is also another tool that enables travellers to be tracked electronically or to markup information about places with advantages from QR codes [59,60]. Atzori [61] make a review of various technologies that are used in traceability, which in the future may impact various fields, one of them is the NFC technology for its great usefulness for information capture, being a technology that is being included in mobile phones and is gaining much acceptance thanks to its easy interaction. It is known a case of use of NFC in tourist cards; Basili [62] that propose a mobile application as an assistant providing functions and benefits of a tourist card with services according to location. This integrates several technologies in addition to NFC that allows the tourist to make payments at destination, in addition to other information services that enhance their experience at the destination, before, during and after their visit.

2.11. Alge System

Alge systems are information capture systems that are based on the placement of bands on the ankles of participants (similar to those used in sports races), so that these are captured by sensors located along a network of routes, to capture all possible combinations of movements through them. Among their main limitations or disadvantages is the possible loss of data, due to the exhaustion of the batteries of the sensors and the bands, equally, these sensors do not provide as detailed information compared to GPS as analyzed in [26].

These studies, focused on specific places, have a mainly qualitative focus, that is, they seek to know the behaviour patterns of tourists during their trips. They use one or two tools to obtain data. However, the works that have used different tools for this type of studies are more limited. The comparative approach provided using several tools in the same destination makes it possible to determine which is the most suitable for the study of tourist movements in a destination that meets certain characteristics. This makes it easier for destination managers to make decisions based on the key variables they consider.

2.12. Classification of Tools for the Study of the Movement of Visitors

In general, the methods for the analysis of tourists can be classified according to different variables. For example [15] classify methods as observational or non-observational. Observational methods involve tracking a subject by means of direct surveillance or remote sensing, while non-observational methods rely on self-reported information to recount the subject's sequence of movements. For this work, we have considered as a classificatory variable the intervention of the tourist and the level of incorporation or support in technology. Figure 1 as presented in [63] shows the classification of the tools previously described. The first variable corresponding to the interaction or intervention of the

tourist, located on the X axis, relates the necessary actions that are requested of the tourist to carry out in a conscious way and in collaboration with the study, investing time and effort, if it is the case; or on the contrary without the direct intervention of the tourist, not beyond his own activity within the destination. The second variable corresponding to the level of incorporation or support in technology, located on the Y axis, is refers to the need for the use or intervention of a greater or lesser number of electronic devices, communications networks or processing services for the capture of information.

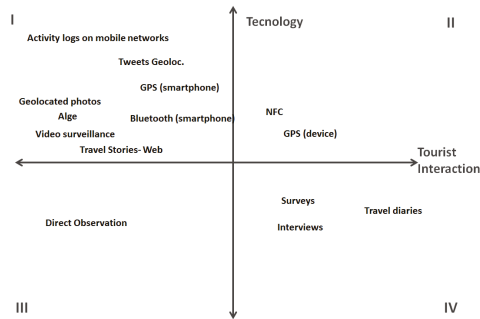


Figure 1. Classification information capture tools. Source: [63].

The tools located in the first quadrant relate a higher level of technology incorporation and a lower level of tourist interaction or collaboration; here are located: geolocalized tweets, records of activities in mobile networks, the Global Positioning System (GPS) of mobile phones (Smartphone), geolocalized photographs available on the Internet, Bluetooth technology incorporated in mobile phones, travel stories published on the web, video surveillance and the Alge system. The second quadrant relates those tools that demand greater technological support or infrastructure, and a greater effort from tourists to generate data; here are located the NFC technology (communication of nearby fields) and the Global Positioning System (GPS) in independent device and tourist cards. The third quadrant, relates the tool that demands a lower level of interaction or collaboration of the tourist, not beyond giving consent to participate in the study, which in some cases may be null and require little infrastructure or technological support, here is located the direct observation. Finally, the fourth quadrant, relates those tools that require a higher level of interaction or collaboration of the tourist and a lower incorporation or technological infrastructure, which in some cases becomes null; here are located: interviews, travel journals and surveys.

3. Methods

The methodologies used for the analysis of visitor movements in previous works are very varied [64]. One of the methods for classifying the data obtained is that of discrete models or in events such as the Markov chains [12,65–67]. The Markov Chains are statistical methods for the analysis of data, which represent by means of a matrix, a discrete model of probabilities of occurrence of events.

Other previous works have used Markov Chains as a way of analyzing trends and results, as a series of events that are linked together by a dependency. For example, Xia et al. [12] use them for the analysis of the spatial-temporal movement of the tourist. Previously Mednick [65] modelled the behaviour of tourist trips in the United States, using these chains to predict the probabilities of different travel patterns. In addition, Lusseau [67] focuses on the biological effects of tourist boat movements. Zheng et al. [68], use this model to estimate the statistics of visitors travelling from one region to another, to investigate the topological characteristics of tourist routes. This type of analysis has also been widely used in transportation issues as part of tourism activity, as seen in [69,70] or [71]. Its application is also highlighted in some analyses of the movements of people walking,

as mentioned in [72,73]. In this work, for the analysis of tourist movements, the Markov Chain is extracted for each period and the movements at route generation level are analyzed, based on the geolocalized coordinates in each case. The Markov chains present certain advantages for the study of tourist movements because they allow the analysis of movement data by proposing discrete models, allowing the modelling of the spatial-temporal movement of tourists at a macro level and calculating their probabilities to visit a given tourist site, as was done by [12].

As far as the visualization of results is concerned, different tools are available as a way of representing the movement in a graphic way. Among the most used alternatives of visualization, are those generated by the Geographic Information Systems (GIS), which according to their capacities, can show static views in which they represent, fixed dynamic points with points in movement, being this an alternative for analysis of relevant movements, representing the movements on two dimensions or three dimensions as it is presented by [35,74–79]. Mckercher, Lau, and McAdam highlight the value of GIS as an alternative for data entry and analysis, providing graphic representation and modes of managing them in the search for patterns, both at the level of aspects of space and time; They generating analysis on maps based on GPS tools delivered to tourists during their journey, first taking a 2D representation on a map with densities and then a 3D map with the activities, which allows various levels of analysis. [80,81]. Most of the studies on visualization come from geography; however, the focus should not be lost from tourism, in terms of tourist movement and consumption of a destination, as highlighted by [82].

For this research we used the GPS Visualizer tool [83] and the plotsat R plotting functionalities of the package used, we generated the coordinate maps on Google Maps to visualize more clearly the visits and periods. The moveHMM package [84] of R, specialized in analysis of movements based on GPS coordinates (longitude and latitude), based on Markov Chains and more punctually, on hidden Markov chains (HMM), is used for the analysis of movements based on coordinate paths. Additionally, the diagrams and analyses have been carried out with the statistical software R [85], used for its programming what was proposed in [86,87]; as well as for the descriptive analysis, what was used in social sciences by [88,89]; the visualization alternatives proposed in [90,91]; analysis of correlograms of [92,93]; visual analysis of movements of Michelot, Langrock, and Patterson (2016a) [84,94–96].

3.1. Definition of Fieldwork

This work focuses on the application of the four tools with the aim of analyzing the flow of visitors in a historic city, specifically in the city of Popayán (Colombia). It is the capital of the Department of Cauca, founded in 1537, located in the south of the country, 596 km from Bogota D.C., close to Ecuador, with an average temperature of 19/grades all year round, with a territorial extension of 512 km² and an approximate population of 280 thousand inhabitants. According to [97], the white colour of the architecture of the historical centre of the city, is constituted in a symbolic mark that identifies Popayán with the name of “White City of Colombia”, from century XVI, epoch in which the city was an important “axis of the Spanish colonial power, exercising by then an outstanding civilizing work in its environment, so much to economic level as political and cultural”. The main tourist attraction are the Holy Week processions, an event that year after year attracts countless visitors, which have not been able to be measured for different reasons, linked to the organization of the sector, despite the existence of a management body of the destination, which although it exists, still lacks the necessary experience for the proper planning and development of activities that can contribute to establishing an official figure of tourists visiting the region. The city is characterized for being a small city (280.000 habs aprox), in phase of tourist development, with cultural tourist vocation and with a highly seasonal activity.

3.2. Facts

The data collection was carried out in four different periods (2011, 2012, 2013 and 2015, see Table 1) in the same season (Easter), the date on which seasonal tourism is presented at the destination. For all

periods, a survey-based procedure to collect information from tourists, contributed to identify the tourists profile visiting the historic city of Popayán, this being especially a tourist who is in the age range between 30 to 50 years. It is important to mention that for the execution of the fieldwork we counted on the cooperation of the different public and private agents of the destination. In the following table the detail by period can be observed. In total, the sequence of visits for all periods was extracted, adding up to a total of 1346 movements and generating an additional exit state, called “E” (state in which the sequence goes to an end), with a total of 490 times. The following table reflects the periods and the tools used.

Table 1. Description of the instruments used by period. Source: Own elaboration.

Static Information, Collected by Means of a Survey in the Four Periods			
Amplitud	Tourist profile. Variables; age, nationality, company, previous visits, motivation, age, expenditure, gender, means of transport, means of information.		
Depth	Number of visits to the 36 resources identified within the tourist offer		
Dynamic information, collected differently in the four periods			
Year	INSTRUMENT	INFORMATION RECOLECTION	Nº Movements and DATA ANALYSIS
2011	Tourist Cards (System that stores the records of visits. Tourist database). Inventiveness was provided when the tourist presented it.	Definition of points of observation for delivery or reception of the tourist card, called PAT (Point of Attention of the Tourist).	120 movements recorded. The system developed ensures that surveys and movements are processed and stored properly. The information is first captured on paper and then digitized.
2012	Survey. Tool to process the survey. Survey database. Applied at the exit points of the destination.	Definition of identification points of tourist, for the delivery and realization of 420 surveys. It is decided to carry it out at the points of entry and exit of the destination.	821 movements recorded. We have a database that allows surveys and movements to be processed and stored properly. The information is first captured on paper and then digitized.
2013	GPS Mobile phones with GPS and information capture application. Application for information downloads. Database. Provides the position of the tourist through the triangulation of satellite signals.	Mobile phones are delivered to visitors who accessed the site.	304 movements recorded. There is a database that allows surveys to be processed and stored properly. The information is first captured on paper and then digitized. The movements are stored in files in the mobile that are extracted.
2015	NFC (Near Field Communication). Mobile phones with NFC. City map with NFC tags. Information download tool. Database. Allows the tourist to expand information on the resources visited.	Mobile phones with NFC support and map with NFC tags are delivered.	104 movements recorded. There is a database that allows surveys to be processed and stored properly. The information is first captured on paper and then digitized. Movements are stored in files on the mobile that are extracted.

Table 2 contains the identifiers of the visited sites codification, the list presents the sites that were visited in some of the periods, with their respective estimated coordinates, and these are used for the generation of Markov Chains.

Table 2. List with ID of sites visited in all periods. **Source:** Own elaboration.

ID Place	LOCATION	LONGITUDE	LATITUDE
3	Cámara de Comercio del Cauca	−76.6067755	2.4420285
4	Policía de Turismo – Terminal	−76.6084486	2.4513106
5	Centro Comercial Campanario	−76.5946944	2.4593543
6	Museo Casa Mosquera	−76.60501	2.44293
13	Museo Negret Y MIAMP	−76.609726	2.4424412
14	Museo Guillermo León Valencia	−76.6092814	2.442345
23	Los Quingos Restaurante Típico	−76.6006021	2.4404079
24	Jengibre Restaurante y Cafetería	−76.5986672	2.4516348
26	Aplanchados Doña Chepa	−76.60405308	2.44401423
27	Restaurante y Pizzería El Recuerdo	−76.5980828	2.4521989
28	Wipala Galería Café – Bar	−76.6018963	2.4424512
29	Museo Historia Natural Unicauca	−76.601178	2.4430614
30	Museo Nacional Guillermo Valencia	−76.6051384	2.4431587
31	Miscelánea La Torre del Reloj	−76.607261	2.44159708
32	Manos de Oro (Corseda)	−76.60437495	2.4407985
36	El Taller de Esperanza Polanco	−76.60936922	2.44325854
38	Rincón Payanés (Café La Nigua)	−76.59897968	2.44349838
39	Rincón Payanés (Cerámicas Tierra y Fuego)	−76.59891531	2.44347962
41	Rincón Payanés (Artesanías Dennis)	−76.59893677	2.44348498
42	Expocauca	−76.60905138	2.44882575
48	Granja Integral Mama Lombriz	−76.5560174	2.51045209
51	Rincón Payanés (Arte y Fuego)	−76.59899645	2.44342267
52	Rincón Payanés (Anthera Accesorios)	−76.59903266	2.44367859
53	Rincón Payanés (Muñecas de Trapo)	−76.59892	2.44367993
55	Museo Arquidiocesano	−76.6044021	2.4417669
57	Panteón de los próceres	−76.6063617	2.4428647

In relation to the process of informing visitors of the procedure, each visitor involved was told that the data declared in the survey would be used with research goals, that they would not be marketed to third parties and do not involve any personal data. Movements and surveys are anonymous and assigned an ID. The data collected does not contain individualized or private personal information, but part of the anonymous profile, in compliance with the management of personal information management rules. Additionally, the visitors surveyed had the opportunity to not declare (not answer) any special data, so that some of the variables present unanswered results. The questions that presented the most unanswered answers were expenditure, age and means of information about the destination. At no time was contact information processed, so one could have the peace of mind that they would not be contacted in the future and would not be subject to commercial strategies.

In the case of applications with smartphones, you had the option to close the application or turn off the phone, in case you did not want at some particular time, to record motion data. Although in the surveys are recorded, some visitors in the range of minors, never took data from minors; for all cases it was ensured that, without the respective accompaniment of an adult, no data would be recorded and the data recorded would correspond to a group or greater companion. For all of these cases, the data from said surveys were made sure that they corresponded to a group in which an adult requested or delegated the use of a tourist card or mobile device; in other cases, these records were discarded if the accompaniment of an adult was not certain.

A subject and his or her survey information are not processed in isolation, nor is information cross-checked with any other source. The case study was conducted at different times in the historic city of Popayán in Colombia, and is therefore subject to Colombian law.

4. Results

Below is the analysis of tourist movements under the Markov Chains, which are extracted by observing the case as one and then, the analysis of movements based on coordinate routes, which is analyzed both individually by period, as well as jointly to visualize the variations versus partial analyses. In this case, an event of a Markov Chain, is the visit of a tourist to a specific place. Each tourist is identified in a unique way and visited or declared visits to specific sites. From these visits a chain of visited sites is constructed, in which the order of the visit is highly relevant. From this sequence of visits, the transition matrix is constructed, which is the probability that a tourist visits a site X, according to the conditional probability that comes from a site Y. The transition matrices can be accompanied by transition graphs, which are representations in nodes (a node is a visited state or site), and their transition (lines between two), with their respective probability, which correspond to the transition matrix. For your analysis, since you will always have a finite sample of movements, you must analyze whether the values of the matrix, tend to a probability value (i.e., stabilize), or tend to zero. This is studied by means of a convergence analysis, which makes it possible to simulate the transition matrix, from some initial data and finally, to propose the transition final matrix. Likewise, an initial probability matrix can be established, which is the probability that a tourist starts in a site X, which is extracted from the sequence, taking into account the place or site from where each tourist started.

4.1. Construction of the Chain of Sequence of Visits

The sequence is extracted from the use of tourist cards for the 2011 period, from the visits declared in the 2012 case survey, from the route of visits extracted from the use of the mobile application with GPS in 2013 and from the use of the NFC mobile phone in 2015. From the sequence of movements the following matrix of transitions is extracted, presented in Table 3, with a confidence interval of 0.95 based on the standard error matrix of Table 4.

The generated matrix is of size 27, with the states that were presented (according to IDs 13, 14, 23, 24, 26, 27, 28, 29, 3, 30, 31, 32, 36, 38, 39, 4, 41, 42, 48, 5, 51, 52, 53, 55, 57, 6, E), which is resized in two parts for visualization. This implies that the transition probability between state X to state Y, $P(X|Y)$, is given by the calculated probability, which is at the crossroads between both states; for example, the transition probability from state with ID32, to state with ID29, is $P(32|29) = 0.01546392$, or from state 3 to state 6, is $P(3|6) = 0.181818182$.

The transition matrix, in turn, is represented by the graph in Figure 1. In this case, each of the IDs of the states (sites) is a vertex (node), which is linked to other vertex(s), by means of edges (links) that are directed, that is, with direction of the arrows, which represent the jump from one state to another, with its probability of transition.

The purpose of figure 2 is to show, in a visual way that from any (or most) state, it is possible to move to another as part of the irreducibility explored below.

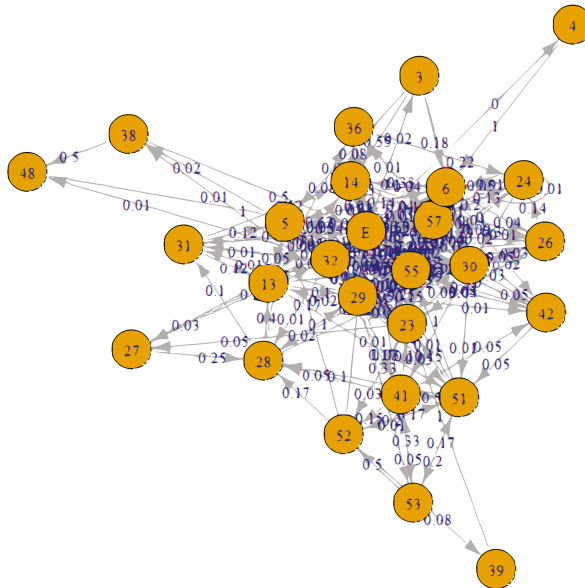


Figure 2. Transitions graph of the transition matrix of the Markov Chain—All periods. Source: Own elaboration using R.

4.2. Descriptive Analysis

Figure 3 corresponds to the graphical view as a tabulation of the sites visited in relation to the previous table, highlighting the three museums among the four most visited sites.

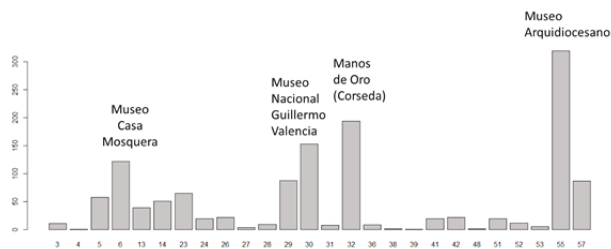


Figure 3. Distribution of the count of visits to sites (states) of all periods. Source: Own elaboration.

Since the visits are supported in a single identifier, Figure 4 shows in an integrated way, the number of visitor identification against the number of visits it has had in the figure. The codification used for the 2012 periods onwards is 5 digits, starting with the last two digit of the year. Of this, it is found that for all periods, the declaration of more sites visited by identification of visitors, was for the period 2015, followed by the period 2012. It should be remembered that, for the period 2015, the option managed is a map with NFC tags, which when consulted, provides more information, and in the case 2012, was as a statement in the survey. This gives indications that the way to stimulate the possible declaration of visits is more indicated in a strategy that delivers value to the visitor, based on providing information

about the destination, instead of delivering comercial benefits, as in the case of 2011, or the exploration of the destination without delivery of information as in 2013 and 2011.

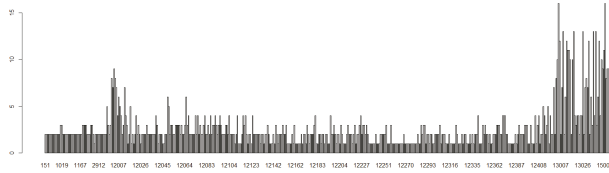


Figure 4. Number of visits per visitor identification for all periods. Source: Own elaboration.

4.3. Movement Patterns

In order to establish the possible patterns of movement, analyses of both the matrix of movement transitions and the initial probabilities should be made. A count is made at the end of each state, understanding as states of departure, those that are in the first column and of arrival, each one of the crosses in the row, with the column of arrival. Since there are individually 6 establishments (38, 39, 41, 51, 52 and 53) located in the same place known as Payanés Corner, an additional RP state is created, resulting from the sum of all its transitions and probabilities that will be called RP from now on.

Performing an analysis you can find:

- According to the initial vector, the only start options for possible patterns are states (sites) 13, 14, 23, 26, 29, 3, 30, 32, 36, 4, 42, 5, 55, 57 and 6.
- The states in their order, to which most other states arrive (transition to it) (excluding E), 55 (16 transitions) followed by states 23, 29, 30 and 57 (with 12 transitions) and PR (11 states). This means that the sites of Rincón Payanés, Museo Arquidiocesano, followed by the Quingos, Museo de Historia Natural, Museo Nacional Guillermo Valencia and Panteón de los próceres, are the most visited.
- The states in their order, which most reach others (transition others from it) (excluding E), are RP arriving at 15 transitions, 29 and 6 arriving at 14 transitions, 32 with 13 transitions, and 57 with 12 transitions. This means in its order Rincón Payanés, Museo Historia Natural, Museo Casa Mosquera, Manos de Oro and Panteón de los próceres.
- It is then the strategic importance of these sites, highlighting the Rincon Payanés, the Museum of Natural History and Pantheon of the heroes, which are of greater transition from and to other sites or states.
- The probabilities of transitions between higher states for tourist sites of non-commercial activity are: between 13 and 14 ($p = 0.615384615$) (Museo Negret Y MIAMP - Museo Guillermo León Valencia), between 3 and 14 ($p = 0.545454545$) (Cámara de Comercio del Cauca - Museo Guillermo León Valencia), between 32 and 55 ($p = 0.46907216$) (Manos de Oro - Museo Arquidiocesano), between 42 and 55 ($p = 0.40909091$) (Expocauca - Museo Arquidiocesano), between 42 and 55 ($p = 0.40909091$) (Expocauca - Museo Arquidiocesano). The case of the state known as Rincón Payanés, is found repeatedly, to be a set of craft shops, which was expected to be located a few meters. Of these transitions, the only one that has no obvious geographical proximity is the relationship between 3 to 14 ($p = 0.545454545$) (Cauca Chamber of Commerce - Museo Guillermo León Valencia).
- It should be noted that in the Chamber of Commerce, there is the Tourist Information Point of the city.

Exploring alternatives of possible patterns of sites to visit, in Table 5, the possibilities of transitions of states are reflected, that is to say, the transitions with non null value.

Table 5. Transition alternatives between states simplified. Source: Own elaboration.

FROM	TO
13	14 23 27 29 30 36 55 RP
14	13 23 26 29 30 36 55 57 6
23	13 26 27 29 30 32 55 57 6 RP
24	29 30 32 55 57 6 RP E
26	23 24 29 30 32 55 57 RP
27	28 32 RP E
28	13 29 30 31 5 55 RP
29	23 28 30 31 32 38 42 5 55 57 RP
3	14 30 5 6 RP
30	14 26 29 30 31 32 42 55 57 6 RP
31	13 14 5 55 RP E
32	23 24 28 29 31 42 48 5 55 57 6 RP
36	23 24 57 RP
38	48 RP
4	6 RP
42	55 57 RP
48	RP
5	13 29 30 32 38 55 57 6 RP
55	14 24 29 30 32 5 57 6 RP
6	13 14 23 24 26 29 30 32 42 5 55 57 6 RP

4.4. Analysis of Movements Based on Coordinate Paths

Figure 5 represents, in a unified way (all periods), the graphic representation of the coordinates of the tourist visits. It is remembered that the coordinates of the X and Y axes correspond to the latitude and longitude of each visit made, and the stroke between points represents the movement or moment of jump between each site, according to the instant of time (date and time) in which it took place. There is a greater concentration in the coordinates of what is called the historical centre and a specific range of the routes, the volumes of visits can be reaffirmed with the results of Figure 3, previously presented, which indicate the counts of visits of each site according to its ID for all periods.

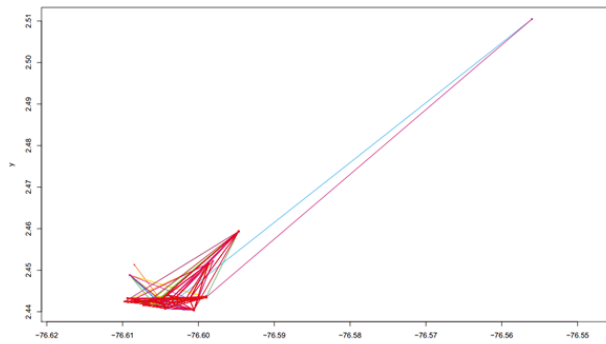


Figure 5. Visual map of visits by coordinates - All periods. Source: Own elaboration.

In Figure 6, all periods plotted on a map are shown, as follows hybrid, showing the total routes developed for all periods. In the upper right corner, you will find the nomenclature of each period, being red for 2011, green for 2012, blue for 2013 and violet for 2015. In this it can be noted that only for 2012 there is a point far from the city, being for the other periods in an area of greater concentration, eminently related to the historic centre and surroundings. This central zone can be revised in an enlarged way in Figure 7.

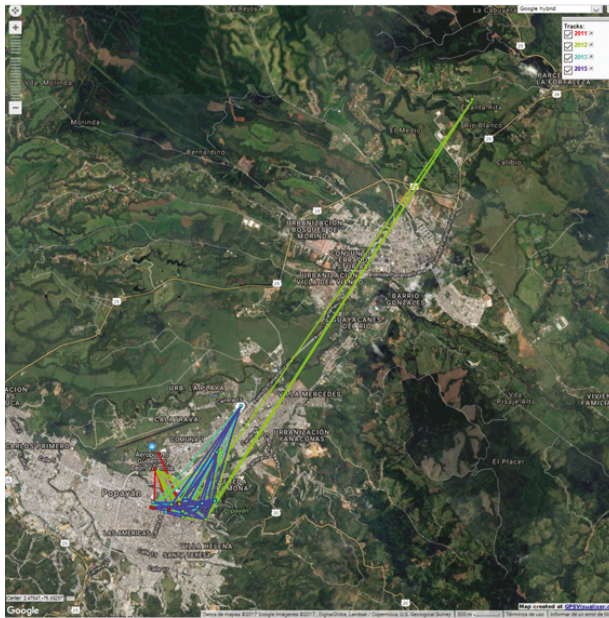


Figure 6. Display map of all periods on hybrid map. Source: Own elaboration.



Figure 7. Extended map display of all periods on street map. Source: Own elaboration.

Figure 8 shows a representation of the magnitude of the visits, presenting a greater radius, the sites with greater visits. It can be noted that the area of greatest activity is the centre, confirming the raised with the Markov Chains, and then by way of expansion is Figure 9.

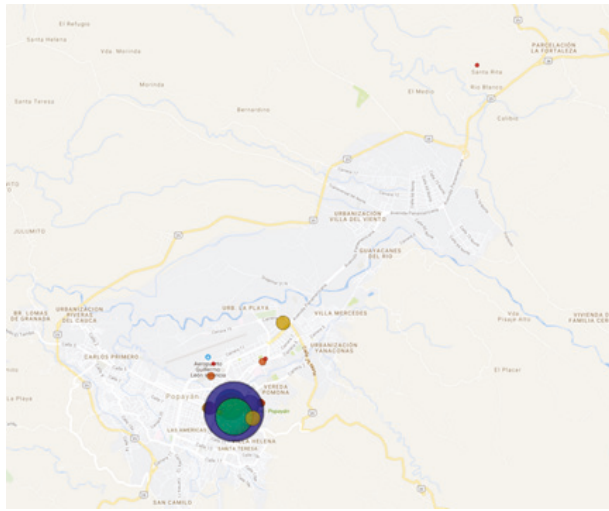


Figure 8. Visualization map of the intensity of the general visit of the city. Source: Own elaboration. .



Figure 9. Visualisation map of the intensity of visits to the historic centre. Source: Own elaboration.

The purpose of these representations, diagrams and maps generated is to confirm and provide visualization support to the analysis of patterns previously carried out, given that they are their representation in space, which also allows evidence of some other elements or patterns that mathematically cannot be evidenced.

4.5. Statistical Tests and Model Validation

Tourist movements can be modeled at the micro or macro level according to Xia and Arrowsmith [12,98–100]. At the micro level the movements are represented by a continuous stochastic process $(X_t)_{t \in T}$, where $T = [0, \infty)$ and that takes values in a space of states S . The S states consist of several georeferenced spatial points representing the locations of people’s movements, so called continuous state space. On the other hand, in a tourist destination such as a city it is possible to model spatial—temporal movement in a state space S as the set of the different places of interest, therefore, S is discrete. At the macro level tourist movements are represented by a stochastic discrete process $(X_t)_{t \in T}$, where $T = 1, 2, 3, \dots$ and takes values in a space of states S . In this way: $S = A_1, A_2, A_3 \dots A_k$. So A_i where $i = 2, 3, \dots, k$ represents the tourist attractions and A_k represents the state “OUT” which is the outer space region S . For this research this space of states S is presented in Table 2, and the movement of tourist represented in a Markov Chain according to Section 4.1.

In order to validate this modeling, the null hypothesis to be contrasted is the independence between the factors and the alternative hypothesis as the dependence between the factors. In a general the value of X^2 calculated is compared with the tabulated value of X^2 , the latter indicates the value of a given confidence level and $(n - 1) * (k - 1)$ degrees of freedom, where n number of rows of the matrix and k number of columns of the matrix. If the calculated value is greater than the table value of $X^2_{(n-1)(k-1)}$, it will mean that the differences between the observed frequencies and the theoretical or expected frequencies are very high, so it is concluded that there is dependence between the factors or attributes analyzed. In short: $H1 = X^2 > X^2_{(n-1)(k-1)}$ means to reject null hypothesis (dependence between variables) and $H2 = X^2 < X^2_{(n-1)(k-1)}$ means to accept null hypothesis (independence between variables). Thus, if the results of the validation are in relation to the equation $H1$, it will indicate if the null hypothesis was rejected, thus existing the dependence between variables, otherwise, equation $H2$, the null hypothesis will be accepted, existing independence between the variables. However this works best for low values of n and k . For higher samples and multiple combinations of n and k a more elaborate treatment is wanted.

To test the model proposed we use the `verifyMarkovProperty` function from `markovchain` package [101] of R: this verifies whether the Markov property holds for the given sequence of events. "The test implemented in the package looks at triplets of successive observations (this implies more freedom degrees). If x_1, x_2, \dots, x_N is a set of observations and n_{ijk} is the number of times t ($1 \leq t \leq N - 2$) such that $x_t = i, x_{t+1} = j, x_{t+2} = k$, then if the Markov property fulfilled n_{ijk} indicates a binomial distribution with parameters n_{ij} and p_{jk} . A standard χ^2 test can check, since $\sum_i \sum_j \sum_k \frac{n_{ijk} - n_{ij}p_{jk}}{n_{ij}p_{jk}} \sim \chi^2(|S|^3)$ where $|S|$ is the cardinality of the state space" according to Spedicato in [101]. The calculated chi-square value for this research is $X^2 = 1939.842$ with degrees of freedom $df = 17,576$ and p -value = 1, Since the p -value shown is 1, we do not reject the null hypothesis that the sequence follows the Markov property on independence between variables so the approach of the construction of a transitions matrix as in Table 3 is correct.

5. Discussion and Conclusions

The preservation and conservation of the historic site is directly related to the actions of urban mobility management, so in the case of visitor mobility, it is essential to have the right tools. Knowing which areas are under tourist pressure effectively contributes to tourism and city management and competitiveness, providing decision-makers with improved tools to design better, smarter, and sustainable strategies; also contributes to optimise tourists' experience, which should be, ultimately, the goal of a smart tourism destination [55]. The application of different tools during different years in the same period and in the same historical city allows us to conclude the following aspects:

Firstly, that the GPS (in standalone device, used in 2013) provides more accurate results. However, the NFC technology (used in 2015) offers more results, in terms of declaration of visits, by providing value with delivery of information. Secondly, the survey (used in the 2012 period) requires a higher level of interaction or collaboration of the tourist and a lower incorporation or technological infrastructure. It was the only tool used that collected records of visits after they had taken place, which showed that many of the data collected were not accurate because it was based, first, on the willingness of the tourist to answer the questions in the questionnaire, and second, on the ability of the person to remember the times (exact or not) of the sites visited at the destination. Thirdly, the tourist card (used in 2011) allows by means of incentives to the tourists, to capture their data of profile and the exact registry of date and hour, in which it visited the different tourist sites of the city of Popayán. This type of results coincides with those obtained in later works [29,30]. Compared to the other tools, the card requires greater interaction of the tourist, since it is the tourist who takes the decision to accept it and present it in each associated establishment. One of the advantages is that this type of card does not require more supporting technology, since being a plastic card with a serial number; it does not demand more technology to be registered in each of the establishments. Likewise, it presents

advantages related to a greater cooperation between different agents and also the greater visit of less known resources, which facilitates the distribution of flows outside the historic centre of the cities. In general, the results allow us to confirm that in the case of historic cities with an influx of tourists it is important to assess the availability of technologies and the use they can make of them to analyse the flow of their visitors.

In the case of cities with the capacity to incorporate technologies in the data collection tools, they will obtain captures of a greater number of data or greater precision; among the tools with these characteristics, the most convenient to obtain the best information on tourist movements will be those that require low participation or interaction of the tourist so that data capture is as transparent as possible. In this sense, for future studies it is important to consider tools that incorporate NFC technology, which, according to our study, is the one that produced the best results. Other previous studies [62,102–106] also confirmed that the use of NFC offers other services related to information supply, mobile payment, mobile ticketing, device pairing, access authorization, management of loyalty, bonus and membership cards. More recent works such as [107] confirm that in the case of MICE events, the use of NFC technology with a mobile application allows the experience to be improved for both the user and the organizer. Also, the Near Field Communication (NFC) technology has been applied previously in airports [108] and hotels [109]. In the touristic-cultural field we also can find applications such as museums [108,110] or in tourism destinations. Many destinations have implemented NFC technologies to improve the activity sustainability, to increase guest loyalty, boost the image and brand of the destination and to ultimately improve turnover [103]. In France a number of NFC field trials have been made. In June 2010 the first pilot study for the general public was launched in the city of Nice under the name “Cityzi” [102]. In Spain, the historic city of Cáceres was pioneer in the use of NFC technology applied to tourism from 2011. Also, in the Spanish city of Córdoba the NFC technology has been used [111] to help the user to find the location of interest points within the city and navigate through them. The users assessed very positively the simplicity of its use and the help that the system provides for surfing in urban environments, finding quite attractive that they just need their mobile device, as a support or alternative to traditional techniques. According with the authors in [111], touristic cities would require systems based on the NFC technology in order to provide its touristic offer with extra added value, given the social and economic impact of the tourism revenue in those kinds of cities. In Italy the NFC technology has been implemented in different regions [108,111] offering a wide range of services (information supply, mobile payment, mobile ticketing, device pairing, location based services, access 508 authorization, management of loyalty, bonus and membership cards). Destinations and attractions have the opportunity to know more about the tourist mobility and also, to enhance the consumer experience, through for example, the creation of new customer touchpoints through the use of NFC technology in different areas (information, ticketing or for access control) [103]. Even more, there are some authors [112] that highlight the future implication of NFC technology in within Smart City concepts.

To achieve these goals, it is necessary the good cooperation with and between the stakeholders in the destinations [103]. The advantages provided by NFC technology are very much recognized for the previous applications, reflected in the literature: first, because enables de sustainable tourism activity because it allows tourism destination a deeper knowledge about the tourism movements, what facilitates de management of the carrying capacity. Second because NFC encourages paperless travel, making the mobile phone all a tourist might need when travelling to certain, technologically advanced destinations [102]; third, because it is possible the connection with social media networks, such as Facebook , that are widely used both by consumers and companies and also because its high level of security [113]. It is important also to recognise the main limitations of the NFC technology applied in tourism destinations [108]; (i) the first one is related to the high fragmentation of the tourism sector, characterized by the existence of many small companies that often lack sufficient resources to invest in new technologies and infrastructure; (ii) secondly, this technology include a wide variety of heterogeneous and diversified services and this could be a barrier for the implementation of

this offer; (iii) finally, local tourism destinations have few financial resources to invest in improving tourist offerings.

As a recommendation and according to the results presented, when historic cities are subject to the risk of increasing their flow of visitors that can concentrate in specific points, affecting their load capacity and putting at risk the sustainability of the cultural heritage (architectural and urban), as proposed by [114], it is necessary a better management that considers that its heritage is a non-renewable good. The sustainability of a tourist destination is directly related to the tourist reception capacity, a concept that according to Hernandez [115], is also applied to historic cities that are considered heritage ecosystems (more complex to manage) and have the challenge to manage the tourist activities in a responsible and sustainable way. Likewise, the author states that in order to do this it is necessary to manage the visitor flow in a proper way, which will allow protecting the patrimonial spaces experiencing tourist saturation, putting in value those of no tourist use, creating an infrastructure to welcome visitors, and improving the visitor's satisfaction. To achieve this, the DMO (Destination Management Organization) must select the best tools available to collect precise and detailed data, which according to this study, are the mobile phones with GPS and NFC technologies, since they are much more accurate to identify the tourist movement patterns in a destination. To sum up, this work evidences two fundamental aspects: first, the added value of NFC technology compared to other technologies, in the study of tourist movement patterns in the historic city of Popayán. Furthermore, it can also be concluded that it is possible to model the spatio-temporal movement of tourists at the macro level, by using the MC methodology. This methodology using Markov chains can analyse trends and the results of a series of related events, since they depend on each other in a first order.

6. Practical Implications, Limitations and Future Research Lines

For destinations with similar characteristics to those of the city of Popayán, that are starting the stage of developing their sector of tourism and count on cultural attractions of interest to visitors, it is fundamental to use a methodology of tourist movement analysis which allows them to manage the flows more efficiently, and also to optimize the carrying capacity of the resources; that way, they can achieve a more sustainable tourist activity. Additionally, this allows a better collection of information about the tourists they receive (number, profile and movements), which facilitates the definition of the marketing rules in the destination.

One of the limitations of this study is the distribution of the samples, more specifically, the one regarding the tourists who used NFC, since due to the restrictions of the device, it represented a small number. Nevertheless, given the exploratory character of this research, it is considered big enough, as the proportion of the samples regarding foreign and national visitors is maintained, and the priority is the recorded movements. This is in agreement with the recommendations to assess technological systems using any interface novelty (in this case, the interaction with the mobile device), as proposed by J. Nielsen & Landauer (1993) [116], and K. Baxter, Courage, & Caine (2015) [117] for experimentation with this type of technologies.

Another limitation of this study has to do with the number of participants in 2013, when just mobile telephones with GPS(Global Positioning System) were the chosen tool for data collection: not all the tourists were willing to allow all their movements during their visit to the destination to be tracked. This limited the scope of this study for this period.

Any future research should test the advances in the use of the NFC technologies applied in tourism destinations not only cultural, in order to generalize these findings to a wider context. Also, it could be of interest to analyze the visitor's and other stakeholders perceived value of the application of new technologies from both points of view.

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References

1. Russo, A.P. The “vicious circle” of tourism development in heritage cities. *Ann. Tour. Res.* **2002**, *29*, 165–182. [[CrossRef](#)]
2. Butler, R. *The Tourism Area Life Cycle*; Channel View Publications: Bristol, UK, 2006; Volume 1.
3. Fernández, D.B.; Castillo, L.A.; Salomao, E.M.A. Tourist use of historic cities: Review of international agreements and literature. *Int. J. Humanit. Stud.* **2014**, *1*, 1–11
4. Lau, G.; McKercher, B. Understanding tourist movement patterns in a destination: A GIS approach. *Tour. Hosp. Res.* **2006**, *7*, 39–49. [[CrossRef](#)]
5. Hernández, G.M. Turismo y conjuntos monumentales. In *Capacidad de Acogida Turística y Gestión de Flujos de Visitantes*; Tirant lo Blanch: Valencia, Spain, 2003.
6. Shoval, N.; Isaacson, M. Tracking tourists in the digital age. *Ann. Tour. Res.* **2007**, *34*, 141–159. [[CrossRef](#)]
7. Shao, H.; Zhang, Y.; Li, W. Extraction and analysis of city’s tourism districts based on social media data. *Comput. Environ. Urban Syst.* **2017**, *65*, 66–78. [[CrossRef](#)]
8. Smallwood, C.B.; Beckley, L.E.; Moore, S.A. An analysis of visitor movement patterns using travel networks in a large marine park, north-western Australia. *Tour. Manag.* **2012**, *33*, 517–528. [[CrossRef](#)]
9. Tiwari, S.; Kaushik, S.; Jagwani, P. Location based recommender systems: Architecture, trends and research areas. In Proceedings of the IET International Conference on Wireless Communications and Applications (ICWCA 2012), Kuala Lumpur, Malaysia, 8–10 October 2012.
10. Zheng, W.; Huang, X.; Li, Y. Understanding the tourist mobility using GPS: Where is the next place? *Tour. Manag.* **2017**, *59*, 267–280. [[CrossRef](#)]
11. Orellana, D.; Bregt, A.K.; Ligtenberg, A.; Wachowicz, M. Exploring visitor movement patterns in natural recreational areas. *Tour. Manag.* **2012**, *33*, 672–682. [[CrossRef](#)]
12. Xia, J.C.; Zeepongsekul, P.; Arrowsmith, C. Modelling spatio-temporal movement of tourists using finite Markov chains. *Math. Comput. Simul.* **2009**, *79*, 1544–1553. [[CrossRef](#)]
13. Hummel, K.A.; Hess, A. Movement activity estimation for opportunistic networking based on urban mobility traces. In Proceedings of the 2010 IFIP Wireless Days, Venice, Italy, 20–22 October 2010; pp. 1–5.
14. Bryon, J.; Russo, A.P. The tourist historic city. *Ann. Tour. Res.* **2003**, *30*, 492–494. [[CrossRef](#)]
15. Shoval, N.; Isaacson, M. *Tourist Mobility and Advanced Tracking Technologies*; Routledge: British, UK, 2009.
16. Schaick, J.; Spek, S.C. *Urbanism on Track: Application of Tracking Technologies in Urbanism*; IOS Press: Amsterdam, Netherland, 2008; Volume 1.
17. Martínez-García, E.; Raya-Vilchez, J.; Galí, N. Factors Affecting Time Spent Visiting Heritage City Areas. *Sustainability* **2018**, *10*, 1824. [[CrossRef](#)]
18. Richards, G.; Raymond, C. Creative tourism. *ATLAS News* **2000**, *23*, 16–20.
19. Aranburu, I.; Plaza, B.; Esteban, M. Sustainable Cultural Tourism in Urban Destinations: Does Space Matter? *Sustainability* **2016**, *8*, 699. [[CrossRef](#)]
20. García-Hernández, M.; de la Calle-Vaquero, M.; Yubero, C. Cultural heritage and urban tourism: Historic city centres under pressure. *Sustainability* **2017**, *9*, 1346. [[CrossRef](#)]
21. Zheng, W.; Zhou, R.; Zhang, Z.; Zhong, Y.; Wang, S.; Wei, Z.; Ji, H. Understanding the tourist mobility using GPS: How similar are the tourists? *Tour. Manag.* **2019**, *71*, 54–66. [[CrossRef](#)]
22. Wolf, I.D.; Hagenloh, G.; Croft, D.B. Visitor monitoring along roads and hiking trails: How to determine usage levels in tourist sites. *Tour. Manag.* **2012**, *33*, 16–28. [[CrossRef](#)]
23. Parroco, A.M.; Vaccina, F.; De Cantis, S.; Ferrante, M. Multi-destination trips and tourism statistics: Empirical evidences in Sicily. *Econ. Open-Access Open-Assess. E-J.* **2012**, *6*, 1–27. [[CrossRef](#)]

24. Terrier, C. Tourist flows and inflows: on measuring instruments and the geomathematics of flows. In *Transport Survey Methods: Keeping up with a Changing World*; Emerald Group Publishing Limited: England, UK; 2009; pp. 219–241.
25. Thornton, P.R.; Shaw, G.; Williams, A.M. Tourist group holiday decision-making and behaviour: The influence of children. *Tour. Manag.* **1997**, *18*, 287–297. [[CrossRef](#)]
26. O'Connor, A.; Zenger, A.; Itami, B. Geo-temporal tracking and analysis of tourist movement. *Math. Comput. Simul.* **2005**, *69*, 135–150. [[CrossRef](#)]
27. Zakrisson, I.; Zillinger, M. Emotions in motion: Tourist experiences in time and space. *Curr. Issues Tour.* **2012**, *15*, 505–523. [[CrossRef](#)]
28. Zoltan, J.; Masiero, L. The relation between push motivation and activity consumption at the destination within the framework of a destination card. *J. Destin. Mark. Manag.* **2012**, *1*, 84–93. [[CrossRef](#)]
29. Angeloni, S. A tourist kit ‘made in Italy’: An ‘intelligent’ system for implementing new generation destination cards. *Tour. Manag.* **2016**, *52*, 187–209. [[CrossRef](#)]
30. Zoltan, J.; Mc Kercher, B. Analysing intra-destination movements and activity participation of tourists through destination card consumption. *Tour. Geogr.* **2015**, *17*, 19–35. [[CrossRef](#)]
31. DubrovnikCard. Available online: <http://www.dubrovnikcard.com/> (accessed on 30 September 2019).
32. Centre, UNESCO World Heritage. UNESCO World Heritage Centre—Document—Report on the UNESCO/ICOMOS Reactive Monitoring mission to the Old City of Dubrovnik, Croatia, 27 Oct.-1 Nov. 2015. Available online: <https://whc.unesco.org/en/documents/141053/> (accessed on 30 September 2019).
33. Van der Knaap, W.G. GIS-oriented analysis of tourist time-space patterns to support sustainable tourism development. *Tour. Geogr.* **1999**, *1*, 56–69. [[CrossRef](#)]
34. Connell, J.; Page, S.J. Exploring the spatial patterns of car-based tourist travel in Loch Lomond and Trossachs National Park, Scotland. *Tour. Manag.* **2008**, *29*, 561–580. [[CrossRef](#)]
35. Grinberger, A.Y.; Shoal, N.; Mc Kercher, B. Typologies of tourists’ time–space consumption: A new approach using GPS data and GIS tools. *Tour. Geogr.* **2014**, *16*, 105–123. [[CrossRef](#)]
36. Ørmen, J.; Thorhauge, A.M. Smartphone log data in a qualitative perspective. *Mob. Media Commun.* **2015**, *3*, 335–350.
37. Medzini, A.; Meishar-Tal, H.; Sneh, Y. Use of mobile technologies as support tools for geography field trips. *Int. Res. Geogr. Environ. Educ.* **2015**, *24*, 13–23. [[CrossRef](#)]
38. Ahas, R.; Aasa, A.; Mark, Ü.; Pae, T.; Kull, A. Seasonal tourism spaces in Estonia: Case study with mobile positioning data. *Tour. Manag.* **2007**, *28*, 898–910. [[CrossRef](#)]
39. Bauder, M.; Freytag, T. Visitor mobility in the city and the effects of travel preparation. *Tour. Geogr.* **2015**, *17*, 682–700. [[CrossRef](#)]
40. De Cantis, S.; Ferrante, M.; Kahani, A.; Shoal, N. Cruise passengers’ behavior at the destination: Investigation using GPS technology. *Tour. Manag.* **2016**, *52*, 133–150. [[CrossRef](#)]
41. Tchetchik, A.; Fleischer, A.; Shoal, N. Segmentation of visitors to a heritage site using high-resolution time-space data. *J. Travel Res.* **2009**, *48*, 216–229. [[CrossRef](#)]
42. Sugimoto, K.; Ota, K.; Suzuki, S. Visitor Mobility and Spatial Structure in a Local Urban Tourism Destination: GPS Tracking and Network analysis. *Sustainability* **2019**, *11*, 919. [[CrossRef](#)]
43. East, D.; Osborne, P.; Kemp, S.; Woodfine, T. Combining GPS & survey data improves understanding of visitor behaviour. *Tour. Manag.* **2017**, *61*, 307–320.
44. Raun, J.; Ahas, R.; Tiru, M. Measuring tourism destinations using mobile tracking data. *Tour. Manag.* **2016**, *57*, 202–212. [[CrossRef](#)]
45. Zhao, X.; Lu, X.; Liu, Y.; Lin, J.; An, J. Tourist movement patterns understanding from the perspective of travel party size using mobile tracking data: A case study of Xi’an, China. *Tour. Manag.* **2018**, *69*, 368–383. [[CrossRef](#)]
46. Bastianoni, S.; Pulselli, R.; Romano, P.; Pulselli, F. Dynamics and evolution of urban patterns: the evidence of the Mobile Landscape project. *Des. Nat. IV Comp. Des. Nat. Sci. Eng.* **2008**, *4*, 253.
47. Vaccari, A.; Liu, L.; Biderman, A.; Ratti, C.; Pereira, F.; Oliveirinha, J.; Gerber, A. A holistic framework for the study of urban traces and the profiling of urban processes and dynamics. In Proceedings of the 2009 12th International IEEE Conference on Intelligent Transportation Systems, St. Louis, MO, USA, 4–7 October 2009; pp. 1–6.

48. Ros, M.; D'Souza, M.; Postula, A.; MacColl, I. Location based services with personal area network for community and tourism applications. In Proceedings of the IET International Communication Conference on Wireless Mobile and Computing (CCWMC 2011), Shanghai, China, 14–16 November 2011.
49. Georgeta-Irina, P. An insight into m-tourism. *Rev. Econ.* **2013**, *65*, 51–63.
50. Versichele, M.; De Groote, L.; Bouuaert, M.C.; Neutens, T.; Moerman, I.; Van de Weghe, N. Pattern mining in tourist attraction visits through association rule learning on Bluetooth tracking data: A case study of Ghent, Belgium. *Tour. Manag.* **2014**, *44*, 67–81. [[CrossRef](#)]
51. Delafontaine, M.; Versichele, M.; Neutens, T.; Van de Weghe, N. Analysing spatiotemporal sequences in Bluetooth tracking data. *Appl. Geogr.* **2012**, *34*, 659–668. [[CrossRef](#)]
52. Gerval, J.P.; Le Ru, Y. Fusion of multimedia and mobile technology in audioguides for museums and exhibitions. In *Fusion of Smart, Multimedia and Computer Gaming Technologies*; Springer: New York, NY, USA, 2015; pp. 173–205.
53. Moussouri, T.; Roussos, G. Conducting visitor studies using smartphone-based location sensing. *J. Comput. Cult. Herit. (JOCCH)* **2015**, *8*, 12. [[CrossRef](#)]
54. Gabrielli, L.; Rinzivillo, S.; Ronzano, F.; Villatoro, D. From tweets to semantic trajectories: mining anomalous urban mobility patterns. In Proceedings of the International Workshop on Citizen in Sensor Networks, Barcelona, Spain, 19 September 2013; pp. 26–35.
55. Encalada, L.; Boavida-Portugal, I.; Cardoso Ferreira, C.; Rocha, J. Identifying tourist places of interest based on digital imprints: Towards a sustainable smart city. *Sustainability* **2017**, *9*, 2317. [[CrossRef](#)]
56. Chua, A.; Servillo, L.; Marcheggiani, E.; Moere, A.V. Mapping Cilento: Using geotagged social media data to characterize tourist flows in southern Italy. *Tour. Manag.* **2016**, *57*, 295–310. [[CrossRef](#)]
57. Su, S.; Wan, C.; Hu, Y.; Cai, Z. Characterizing geographical preferences of international tourists and the local influential factors in China using geo-tagged photos on social media. *Appl. Geogr.* **2016**, *73*, 26–37. [[CrossRef](#)]
58. Tussyadiah, I.P.; Fesenmaier, D.R. Interpreting Tourist Experiences from First-Person Stories: A Foundation for Mobile Guides. In Proceedings of the Fifteenth European Conference on Information Systems, ECIS 2007, St. Gallen, Switzerland, 7–9 June 2007; pp. 2259–2270.
59. Borrero, F.; Sanjuán, P.; Ramírez-Gonzalez, G. Gamification techniques in tourism, application test, Casa Mosquera Museum. *Sistemas & Telemática* **2015**, *13*, 63–76.
60. Dickinson, J.E.; Ghali, K.; Cherrett, T.; Speed, C.; Davies, N.; Norgate, S. Tourism and the smartphone app: capabilities, emerging practice and scope in the travel domain. *Curr. Issues Tour.* **2014**, *17*, 84–101. [[CrossRef](#)]
61. Atzori, L.; Iera, A.; Morabito, G. The internet of things: A survey. *Comput. Netw.* **2010**, *54*, 2787–2805. [[CrossRef](#)]
62. Basili, A.; Liguori, W.; Palumbo, F. NFC smart tourist card: Combining mobile and contactless technologies towards a smart tourist experience. In Proceedings of the 2014 IEEE 23rd International WETICE Conference, Parma, Italy, 23–25 June 2014; pp. 249–254.
63. Chantre-Astaiza, A.; Fuentes-Moraleda, L.; Muñoz-Mazón, A.; Ramirez-Gonzalez, G. Science Mapping of Tourist Mobility 1980–2019. Technological Advancements in the Collection of the Data for Tourist Traceability. *Sustainability* **2019**, *11*, 4738. [[CrossRef](#)]
64. Xia, J. Modelling the Spatial-Temporal Movement of Tourists. Ph.D. Thesis, Mathematical and Geospatial Sciences, RMIT University, Melbourne, Australia, 2007.
65. Mednick, H. A Markov chain model of travel patterns of US visitors to Ontario. *J. Leis. Res.* **1975**, *7*, 246–255. [[CrossRef](#)]
66. Tobler, W. Movement modeling on the sphere. *Geogr. Environ. Model.* **1997**, *1*, 97–103.
67. Lusseau, D. Effects of tour boats on the behavior of bottlenose dolphins: using Markov chains to model anthropogenic impacts. *Conserv. Biol.* **2003**, *17*, 1785–1793. [[CrossRef](#)]
68. Zheng, Y.T.; Li, Y.; Zha, Z.J.; Chua, T.S. Mining travel patterns from GPS-tagged photos. In Proceedings of the International Conference on Multimedia Modeling, Taipei, Taiwan, 5–7 January 2011; pp. 262–272.
69. Yamamoto, T.; Kitamura, R.; Kishizawa, K. Sampling alternatives from colossal choice set: Application of Markov Chain Monte Carlo algorithm. *Transp. Res. Rec.* **2001**, *1752*, 53–61. [[CrossRef](#)]
70. Kikuchi, A.; Kitamura, R.; Yamamoto, T.; Fujii, S. Simulating spatial choices with quasi-continuous representation of urban space: An application of MCMC algorithms. In Proceedings of the Transportation Research Board 82nd Annual Meeting, Washington, DC, USA, 12–16 January 2003.

71. Tabatabaee, N.; Ziyadi, M. Bayesian approach to updating Markov-based models for predicting pavement performance. *Transp. Res. Rec.* **2013**, *2366*, 34–42. [[CrossRef](#)]
72. Spitzer, F. *Principles of Random Walk*, 2nd ed.; Graduate Texts in Mathematics; Springer: New York, NY, USA, 2001.
73. Harabagiu, S.; Hickl, A.; Lacatusu, F. Negation, contrast and contradiction in text processing. In Proceedings of the 21st National Conference on Artificial Intelligence, Boston, MA, USA, 16–20 July 2006; Volume 6, pp. 755–762.
74. Wolf, I.D.; Stricker, H.K.; Hagenloh, G. Interpretive media that attract park visitors and enhance their experiences: A comparison of modern and traditional tools using GPS tracking and GIS technology. *Tour. Manag. Perspect.* **2013**, *7*, 59–72. [[CrossRef](#)]
75. McKercher, B.; Shoval, N.; Ng, E.; Birenboim, A. Using GPS data to compare first-time and repeat visitors to Hong Kong. *Tour. Geogr.* **2012**, *14*, 147–161. [[CrossRef](#)]
76. Paulino Valledpérez, I. Tourism Destination Zoning in Rural Regions: A Consumer-Based Approach in Terres de l’Ebre. 2013. Available online: <https://dugi-doc.udg.edu/handle/10256/8808> (accessed on 30 September 2019).
77. Blasco, D.; Guia, J.; Prats, L. Emergence of governance in cross-border destinations. *Ann. Tour. Res.* **2014**, *49*, 159–173. [[CrossRef](#)]
78. Chen, Z.; Shen, H.T.; Zhou, X. Discovering popular routes from trajectories. In Proceedings of the 2011 IEEE 27th International Conference on Data Engineering, Hannover, Germany, 11–16 April 2011; pp. 900–911.
79. Zhao, J.; Forer, P.; Sun, Q.; Simmons, D. Multiple-view strategies for enhanced understanding of dynamic tourist activity through geovisualization at regional and national scales. *Cartogr. Geogr. Inf. Sci.* **2013**, *40*, 349–360. [[CrossRef](#)]
80. Mckercher, B.; Lau, G. Movement patterns of tourists within a destination. *Tour. Geogr.* **2008**, *10*, 355–374. [[CrossRef](#)]
81. McAdam, D. The value and scope of geographical information systems in tourism management. *J. Sustain. Tour.* **1999**, *7*, 77–92. [[CrossRef](#)]
82. Beeco, J.A.; Brown, G. Integrating space, spatial tools, and spatial analysis into the human dimensions of parks and outdoor recreation. *Appl. Geogr.* **2013**, *38*, 76–85. [[CrossRef](#)]
83. GPS Visualizer. Available online: <https://www.gpsvisualizer.com/> (accessed on 30 September 2019).
84. Michelot, T.; Langrock, R.; Patterson, T.A. moveHMM: An R package for the statistical modelling of animal movement data using hidden Markov models. *Methods Ecol. Evol.* **2016**, *7*, 1308–1315. [[CrossRef](#)]
85. R: The R Project for Statistical Computing. Available online: <https://www.r-project.org/> (accessed on 30 September 2019).
86. Schumacker, R.; Tomek, S. *Understanding Statistics Using R*; Springer Science & Business Media: New York, NY, USA, 2013.
87. Kabacoff, R. *R In Action: Data Analysis and Graphics with R*; Kabacoff, R., Ed.; Manning Publications Co.: Shelter Island, NY, USA, 2015.
88. Vinod, H.D. *Advances in Social Science Research Using R*; Springer: New York, NY, USA, 2010.
89. Pagano, R.R. *Understanding Statistics in the Behavioral Sciences*; Cengage Learning: Boston, MA, USA, 2012; Volume 1.
90. Friendly, M.; Kwan, E. Effect ordering for data displays. *Comput. Stat. Data Anal.* **2003**, *43*, 509–539. [[CrossRef](#)]
91. Friendly, M. A brief history of data visualization. In *Handbook of Data Visualization*; Springer: New York, NY, USA, 2008; pp. 15–56.
92. Friendly, M. Corrgrams: Exploratory displays for correlation matrices. *Am. Stat.* **2002**, *56*, 316–324. [[CrossRef](#)]
93. Wei, T.; Simko, V.; Levy, M.; Xie, Y.; Jin, Y.; Zemla, J. corrplot: Visualization of a Correlation Matrix. 17 October 2017. Available online: <https://cran.r-project.org/web/packages/corrplot/corrplot.pdf> (accessed on 21 September 2019).
94. Loecher, M.; Ropkins, K. RgoogleMaps and loa: Unleashing R graphics power on map tiles. *J. Stat. Softw.* **2015**, *63*. [[CrossRef](#)]
95. Cheshire, J.; Lovelace, R. Spatial data visualisation with R. In *Geocomputation: A Practical Primer*; SAGE: London, UK; 2015, p. 3.

96. Kahle, D.; Wickham, H. ggmap: Spatial Visualization with ggplot2. *R J.* **2013**, *5*, 144–161. [CrossRef]
97. Quintero, F.G. La ciudad colonial y sus textualidades contemporáneas: El color blanco en Popayán. Un estudio de semiótica cultural urbana. *Revista Nexus Comunicación* **2014**. [CrossRef]
98. Xia, J.C.; Evans, F.H.; Spilsbury, K.; Ciesielski, V.; Arrowsmith, C.; Wright, G. Market segments based on the dominant movement patterns of tourists. *Tour. Manag.* **2010**, *31*, 464–469. [CrossRef]
99. Xia, J.; Arrowsmith, C. Managing Scale Issues in Spatio-temporal Movement of Tourists Modelling. In Proceedings of the International Congress on Modelling and Simulation (MODSIM05), Melbourne, Australia, 12–15 December 2005; Zenger, A., Argent, R.M., Ed.; pp. 162–169.
100. Arrowsmith, C.; Zanon, D.; Chhetri, P. Chapter 4—Monitoring Visitor Patterns of Use in Natural Tourist Destinations. In *Taking Tourism to the Limits*; Ryan, C., Page, S.J., Aicken, M., Eds.; Elsevier: Oxford, UK, 2005; pp. 33–52.
101. Spedicato, G.A. Discrete Time Markov Chains with R. *R J.* **2017**, *9*, 84–104. [CrossRef]
102. Pesonen, J.; Horster, E. Near field communication technology in tourism. *Tour. Manag. Perspect.* **2012**, *4*, 11–18. [CrossRef]
103. Egger, R. The impact of near field communication on tourism. *J. Hosp. Tour. Technol.* **2013**, *4*, 119–133. [CrossRef]
104. Ramírez-González, G.; Muñoz Organero, M.; Kloos, C.D.; Astaiza, A.C. Exploring NFC Interactive Panel. In Proceedings of the 5th Annual International Conference on Mobile and Ubiquitous Systems: Computing, Networking, and Services (Mobiquitous '08), Dublin, Ireland, 21–25 July 2008; ICST (Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering): Brussels, Belgium, 2008; p. 32.
105. Palumbo, F.; Dominici, G. Unraveling the complexity of tourist experience with NFC technology and mobile wallets. In *Chaos, Complexity and Leadership 2013*; Springer: New York, NY, USA, 2015; pp. 189–196.
106. Imbachi, J.L.C.; Jacome, D.L.N.; González, G.R. Mobile payments system employing NFC technology under the Android operating system. *Sistemas & Telemática* **2015**, *13*, 77–87.
107. Silva-Pedroza, D.; Marin-Calero, R.; Ramirez-Gonzalez, G. NFC Evaluation in the Development of Mobile Applications for MICE in Tourism. *Sustainability* **2017**, *9*, 1937. [CrossRef]
108. Tecnología NFC Servirá Para Promover el Turismo en España. Available online: <https://www.fayerwayer.com/2011/04/tecnologia-nfc-servira-para-promover-el-turismo-en-espana/> (accessed on 30 September 2019).
109. NFC Phones Replace Room Keys and Eliminate Check-In at Swedish hotel NFC World. 2010. Available online: <https://www.nfcworld.com/2010/11/03/34886/nfc-keys-hotel-sweden/> (accessed on 30 September 2019).
110. Ceipidor, U.B.; Medaglia, C.; Volpi, V.; Moroni, A.; Sposato, S.; Carboni, M.; Caridi, A. NFC technology applied to touristic-cultural field: A case study on an Italian museum. In Proceedings of the 2013 5th International Workshop on Near Field Communication (NFC), Zurich, Switzerland, 5 February 2013; pp. 1–6.
111. Borrego-Jaraba, F.; Luque Ruiz, I.; Gómez-Nieto, M.Á. A NFC-based pervasive solution for city touristic surfing. *Pers. Ubiquitous Comput.* **2011**, *15*, 731–742. [CrossRef]
112. Ronay, E.; Egger, R. NFC smart city: Cities of the future—A scenario technique application. In *Information and Communication Technologies in Tourism 2014*; Springer: New York, NY, USA, 2013; pp. 565–577.
113. Agredo, E.A.C.; Martínez-Acosta, L.C.; Chantre, A.; Ramirez-Gonzalez, G. Pervasive NFC-based solution for the analysis of tourism data in an environment of smart cities. *Sistemas & Telemática* **2015**, *13*, 41–60.
114. Vinuesa, M.A.T. Turismo y desarrollo sostenible en las ciudades históricas con patrimonio arquitectónico-monumental. *Estudios turísticos* **1998**, *137*, 5–53.
115. Hernández, M.G. Turismo y medio ambiente en ciudades históricas. De la capacidad de acogida turística a la gestión de los flujos de visitantes. *Anales de Geografía de la Universidad Complutense* **2000**, *2000*, 131–148.
116. Nielsen, J.; Landauer, T.K. A mathematical model of the finding of usability problems. In Proceedings of the INTERACT'93 and CHI'93 Conference on Human Factors in Computing Systems, Amsterdam, The Netherlands, 24–29 April 1993; pp. 206–213.
117. Baxter, K.; Courage, C.; Caine, K. *Understanding Your Users: A Practical Guide to User Research Methods*; Morgan Kaufmann: Burlington, MA, USA, 2015.



Article

Glocal Tourism and Resilient Cities: The Case of Matera “European Capital of Culture 2019”

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Abstract: This research paper presents the key elements of the strategic project “European Capital of Culture 2019” initiated by the city of Matera in 2014. Through the “big event”, defined by the combination “diluted time/diffuse space”, the “Città dei Sassi”, UNESCO World Heritage since 1993, is innovating the symbolic, material, and organizational levels of all the Basilicata municipalities whose tourist resources were almost unknown both at national and international levels, thus showing high resiliency, i.e., flexibility, inclusiveness, integration, and initiative. Through a self-centered and sustainable model of tourist accommodation that minimizes the infrastructure fixed capital investment aiming, at the same time, to increase collective empowerment processes, it is planned to accommodate about 700,000 “temporary citizens” who, by adopting an active and participative approach, wish to live a unique and unrepeatable identity experience in the Lucanian community instead of being mere spectators. Special attention is paid to “virtual” communication by using the world wide web not only as a showcase to promote the bottom-up identification and enhancement process of the heritage, but also as a tool to manage contacts with potential visitors in order to avoid any adverse impact of the event on the environmental and cultural components of the city and of the regional planning.

Keywords: “big events”; experiential tourism; Matera “European Capital of Culture 2019”

1. Introduction

If the search for “useful things” and “things to see” [1] (p. 169), together with the increasing commoditization of the “front regions” [2,3], could be regarded as distinct features of tourism demand in the 20th century, in the new millennium such demand is unquestionably based on a kaleidoscope of reasons, often difficult to figure out, which lead an increasing number of visitors to choose not mere “places to visit”, but real “destinations to be experienced” [4] where, by adopting a proactive and participative approach, they can get in touch with customs and traditions, food and wine, handicraft activities, routes to travel and workshops to experience, getting on the same wavelength with communities and sharing original and inclusive emotions and experiences.

Thus, so-called “empirical” [5] (p. 50) or “experiential” [6,7] tourism has been developing from “the desire to see life as it is really lived, even to get in with the natives” [2] (p. 592). For many territorial systems, far from major circuits of attractions, this could become a significant external disruptive element, especially if combined with another specific category of exogenous inputs: the so-called “big events”, real “short-term and high-profile” [8] urban disasters meaningfully engaging self-organization capacities of host populations [9].

The term “big event”, which in the scientific field has many synonyms (mega-events, special events, hallmark events) [8,10] and lends itself to various classifications (based on the orders of magnitude of visitors, investment budget, media coverage) [11,12], was initially used mainly in reference to important

sporting competitions, such as Summer and Winter Olympics or World Expos [11,13]. Currently, it is used for events, shows and even for the implementation of major infrastructure projects [12] (p. 752) having in common “a sort of “hypnotic” power” [14] (p. 719): indeed, this power captures such a global attention that several and deep improvements to the location and to the performance are required in order to advertise the best image to the audience.

The experience gained by many urban systems during the 1990s and the literature on the topic showed how, after a fierce competition among many candidate cities, very often a big event “proposed and received as a manna from Heaven” [14] (p. 720) proves to be like “a demanding, whimsical and unsteady lover who, after a long engagement—the preparations—during which the city makes every effort to host it in the best possible way, abandons it” [14] (p. 720), leaving behind the so called “white elephants” [15] (p. 800), that are hugely expensive works which, furthermore, require maintenance costs higher than their actual return (mega-stadiums, oversized hotels, etc). Therefore, the new preparation processes (the so-called “before”) for big events (especially for medium-sized urban spaces) should avoid the construction of huge buildings and futuristic infrastructures in the “city of stone” [16] aiming, instead, at the recovery of what already exists and at the involvement of a wider territorial area (suburban environmental resources, small rural centers, etc.) over which spread the pressure and the thrust effects of tourism demand. Thus the investment, rather than address the infrastructure fixed capital, should aim at increasing the collective empowerment processes [17] (p. 13), that is the width of the relational space [18] (p.124), through actions addressed to local players and designed to raise awareness of the value of resources, project capabilities, institutional expertise, and the disposition to act in synergy. Special attention has to be devoted to the creation of a “virtual” [19] communication subsystem in order to convey to the world wide web not only the event promotion but also the management of contacts with potential visitors, thus avoiding any adverse impact on the environmental and cultural components of the city.

Besides a long “before”, most of “big events” are characterized by a “during” (actual performance) that, as Dansero [20] (p. 863) reminds us by analogy with the physics notion of “point instant”, takes place in a limited space and in a rather short, if not fleeting, time. The case of the event “European Capital of Culture”, promoted by the EU, included by Guala [12] (p. 752) among the “special cultural events”, is different. The initiative, developed in 1895 with the name “European City of Culture”, offers to the awarded city 365 days to promote its environmental and cultural heritage; in 1999 the event took its current name and, since then, every year two cities located in different Member States have been selected to carry out coordinated territorial enhancement actions co-financed by the Creative Europe Framework Programme. In this type of event, inherently featuring a “diluted time” [17] (p. 6) type of “during”, the awarded cities, by using a “diffuse space” [17] (p. 5), that involves a territorial context wider than the merely urban area, can create beneficial synergies between such external drivers and the experiential tourist demand.

This seems to be the direction in which Matera is headed. In October 2014, together with Plovdiv (Bulgaria) it was awarded the title of “European Capital of Culture 2019”. The strategic project that allowed the Lucanian city to decidedly prevail over the other European cities, aims at offering an alternative and special accommodation to an estimated audience of about 700,000 “temporary citizens”, proposing to them the genuineness—a highly debated notion in the scientific field [2,3,21–28]—of an urban space that, after being doomed with the whole Basilicata regional system to a distressing isolation since the end of the Second World War, is now facing an intensive internal regeneration, opening up to glocal tourism competition showing high resiliency [29,30], that is inclusiveness, eco-friendliness and, above all, initiative, carrying out a bottom-up identification and enhancement process of the heritage that Cohen E. and Cohen S.A. [23] would define as a “hot authentication”, to offer a self-centred, sustainable and lasting management model for the environmental and cultural heritage.

The objectives of this preliminary research are: (i) to highlight the first steps towards a “virtual” territorial reconfiguration [31,32] initiated by the “Città dei Sassi”, UNESCO World Heritage since 1993; (ii) to understand whether the city, by focusing on the quality of social relations, landscape, protection

of identity, culture, traditions and history has started, through the Internet, a “renewal” and sustainable process of the symbolic, material and organizational levels of all the Basilicata municipalities, whose tourist resources were almost unknown in the past, both at national and international levels.

2. Matera, Resilient City

The urban structure of Matera originates from its particular position, it is located on the edge of a cliff and dominates the homonymous ravine or one of those deep gorges with steep walls, typical of the southern part of the Plateau of Murgia, created by rainwater over thousands of years. Actually, on the side of the ravines, the tuff erosion created two contiguous cavities whose ground goes down as in two large amphitheatres with a side opening towards the ravine. Its size was not always the same in the past, but it can certainly be said that man has been living in this part of the ravine since ancient times. At first, the caves were used as simple shelters, then, over time, were transformed into homes. Then, after realizing how easily similar cavities could be excavated in the tuff, the number of such dwellings increased, aligned in the softer layers of tuff and, though the artificial caves were as rough as the natural ones, man introduced some element designed to meet particular needs. Finally, going up the wall of the ravine and approaching the edge of the gorge, due to the less steep ground and, in some places, to the transition from the tuffaceous to the clayey-sandy formation, man has built his successive dwellings above street level using the same tuff he dug in the area or in the immediate vicinity of the city centre [33].

Matera is often referred to as the “city of stone” precisely because the most striking feature of its dwellings is that they fit perfectly with the morphology of the relevant territory. Actually, the building of the first dwellings followed closely the lesson learned from nature, that is the excavation of the crumbly rock of which this side of the valley is made of.

For many decades the name Matera represented something negative. In 1937, child mortality among the population that inhabited the Sassi was 44.32%, due to diseases like malaria and tuberculosis; illiteracy was massive. The sanitary conditions of the cave-houses were unhealthy and unacceptable for inhabitants, farmers, laborers, workers, craftsmen, and shopkeepers, only relieved by the sense of solidarity among families.

Until the end of the 18th century, the Sassi ecosystem was kept sustainable thanks to principles that were state-of-the-art at the time, such as the conservation of rainwater, waste storage and space reuse. The city expansion and the sudden and dramatic demographic increase, combined with the crisis of pastoralism, were some of the factors leading to a progressive disruption.

During the 1930s the ancient communication routes underwent a complete change; in particular, two streams (called *grabiglioni*, partly natural partly dug by man, that collected spring water from the Castle’s hill and conveyed it in the river Gravina) that had always characterized the development of Sassi, were channeled and paved, thus creating two rather wide roads that joined, thus connecting the whole city. Further, sewers and a network of public fountains located in the centre of neighborhoods were created, thus allowing for an easier water supply for the population. The impact of the Second World War on Matera, as well as all over Italy, worsened a situation already near collapse: the population of the rural areas, exhausted by poverty and extremely harsh conditions, tried once more to take shelter in the cities. In a particular context such as Matera, this led a high number of displaced families to settle in caves and old cisterns not always suitable for residential use. Consequently, water available to the population that in the early 1900s reached 20,000 inhabitants, suddenly decreased.

In 1945, upon the publication of Carlo Levi’s “Cristo si è fermato a Eboli”, the whole country became aware of the Sassi matter, and the appalling living conditions of the population struck the country and its ruling class. Deputy Palmiro Togliatti was the first to travel to the Basilicata city in 1948 to see personally the unhealthy places where people and livestock lived together. He straight away defined the Sassi as a “national shame” and a symbol of backwardness that Italy, and above all workers, could not tolerate. Thus, many projects had commenced to be developed to solve this problem [34].



Figure 2. View of the Sassi in the 1960s [33] (p. 351).

Several socio-economic studies on what the future role of Sassi could and should be were published between the 1970s and 1980s. Nevertheless, to talk again of life in the ancient heart of Matera we had to wait until the middle of the 1980s when Law No. 771, of 11 November 1986, “Conservazione e recupero dei rioni Sassi di Matera” (Conservation and recovery of Matera’s Sassi) reversed the population outflow from the Sassi, encouraging people to return through the leasing of buildings. Actually, Article 10 states that “The Municipality of Matera, after carrying out the actions under the biannual programme, leases the buildings to natural persons or legal entities who shall use them for their proper purpose”.

Thirty years after, Law No. 771, by stating the major national interest in the conservation and architectural, urban, environmental, and economic recovery of Matera’s Sassi and the protection of the overlooking Murgia plateau (Article 1), was the first step for the return of man into the Sassi habitat. The total funding for the site renovation and restoration amounted to 100 billion Italian Lire (granted over four years). The critical element for the resettlement of the Sassi was a grant to private individuals who wished to carry out a restoration of up to 50% of the total amount.

The big push that boosted the renovation and recovery of the Sassi area took place in 1993 when UNESCO included Matera’s Sassi on the World Heritage List. They were the first site in southern Italy to be included in the List and the first to be defined “Cultural Landscape” [36]. Since 2007 the definition has been enlarged to “The Sassi and the Park of the Rupestrian Churches of Matera”, deciding to also include the Park of the Rupestrian Churches area which represents for the province and for the city an additional evidence of their history.

In 2001 the shameful project of a tourist resort in the Sassi was stopped and the relaunch of the city as a filming location began. Mel Gibson’s “The Passion of the Christ” was almost entirely filmed in Matera in 1994. Anyway, the three Sassi, the Barisano in the North, the Caveoso in the South and the Civita in the middle, had already been used as natural locations by Lattuada (*La lupa*, 1953), Pasolini (*Il Vangelo secondo Matteo*, 1964), the Taviani brothers (*Il sole anche di notte*) and by many other directors.

In 2008, the Associazione Matera 2019 submitted the city’s candidacy to become European Capital of Culture 2019, obtaining the first reflections on the tangible (the Sassi and the rupestrian civilization) and intangible heritage, that is the renovation capacity widely proved by the city until then, in short

its resiliency [37]. The candidacy was formally structured through the submission, in 2013, of a first dossier to the MIBACT, Ministero Italiano per i Beni Culturali (Italian Ministry of Cultural Heritage and Activities and Tourism) for the pre-selection phase. The common thread was the slogan “Insieme, dal basso” (Together, from the bottom up) to emphasize the participation path of the population that allowed the preparation of the dossier, as well as its future role. Together with Cagliari, Lecce, Perugia-Assisi, Siena and Ravenna, Matera was shortlisted for the final selection. The Selection Panel, which met in Rome in November 2013, appreciated the candidacy which was marked by a strong “anthropological” dimension. It highlighted how, always, Matera and the Basilicata have been territories of passage, exchange and transformation, for *Magna Graecia* and Rome, Byzantium, Arabs and Swabia. Today, they host new and widespread forms of new immigration. The city, following the complete abandonment of the “Sassi” which took place after the Second World War, began, since 1986, one of the most important urban rehabilitation processes in the Mediterranean. In 1993, thanks to these efforts, the Sassi were repopulated and offered on the tourist market. The project is based on five pillars: ‘Ancient futures’, to build a future remembering the past; ‘Roots and Routes’, on the concept of mobility in the past, in the present and in the future; “Reflections and Connections”, aimed to link daily life to culture; ‘Continuity and Disruptions’, moving from the above abandonment of the Sassi; ‘Utopias and Dystopias’, that intends to give concrete solutions to current crisis, taking into account culture, economy, ethics. [38].

The second dossier was submitted to the panel in 2014. The common thread of the second dossier was the slogan “Open Future”, it highlighted the possibility of combining scientific and technological expertise with the particularly creative streak that has always been a hallmark of the manual skill of the Italian people. Through the event Matera 2019, the authors of the dossier hoped for a future in which the city could combine its extraordinary traditions and the great architectural and cultural heritage with its new role as a meeting place for different populations, Italian and European.

The goals of the programme are to use culture as the propellant for conceiving of an open future; strengthen the breadth and diversity of citizens who actively participate in culture; increase Matera’s relationships; engage in a capacity-building programme for socio-cultural operators; build useful and sustainable cultural infrastructures; enhance the international visibility of the city and its tourist potential and consolidate its leadership in the world of open-data. They tried to make of Matera the most important open cultural system platform in Europe.

On 17 October 2014, with 7 preferences on 13, Matera was designated European Capital of Culture 2019 (together with Plovdiv in Bulgaria).

3. The Start of the “Virtual” Reconfiguration Path of Matera

Being invisible on the Internet “in the Google age is like not existing” [7] (p. 47): this belief guided since the beginning the Matera-Basilicata 2019 Foundation (whose purpose was the implementation of the lines of action as per the final Bid Book) which, in order to consolidate the position of the city and of Basilicata in the creative sector at the European level and set up a cultural platform for Southern Europe, focused on the creation of a “powerful” [39,40] tourist image of the “big event” “European Capital of Culture 2019”, by a clever and careful use of the world wide web, one of the more flexible and useful tools, in terms of comprehensiveness, update and reliability, to convey tourist information at all levels of the spatial scale and in real time, which allows for the ability to directly reach potential visitors and be reached by them [41].

The entire cultural program designed by the Foundation, to which the 70% of the operating budget (about 67 million Euros, of which 86% made of public funds) is allocated, will be placed in the commons and published under a Creative Commons license. It can be freely used and copied by visitors who, on the home page of the official website www.matera-basilicata2019.it, are asked if they are ready to become “temporary citizens” by purchasing the “Matera 2019 Passport”. Each Euro 19 Passport allows for participation in all the scheduled events within the official programme and to live a complete 365-day experience. The background for the question addressed to the visitor is the

portrait of a “Time Traveller”, who goes through any spatial and temporal context and whose purpose is not being a mere observer, but to become an integral part of a community, to connect with it and get emotionally involved by it, this is why the event is defined as “a full-immersion experience at 360-degrees” [38]. The “Time Traveller”, wearing steampunk goggles whose glasses reflect a Lucanian landscape, and wondering “what the past would look like if the future had happened sooner is the central image of the event campaign and an important communication factor [38].

In general, the website provides specific information about the Foundation and the team in charge of organizing the event, useful contacts to request further information, and instructions to reach the city, as well as the reasons that led the international panel to designate Matera as European Capital of Culture 2019. The final Bid Book and the path leading to its preparation are also available on the website.

The cultural program offered to the “temporary citizens” revolves around five main themes. The first, “Ancient Future”, consists of 36 projects aimed at allowing for a careful reflection on the millennia-long relationship of humanity with space and the stars, and, at the same time, the possibilities of dialogue between man and nature. Thus, the city becomes a laboratory to reconsider the value of what we have lost over time, examining the endless possibilities of remote futures by organizing concerts and visits in evocative sites, such as the rupestrian churches or the Space Geodesy Centre, the main operating centre of the ASI (Agenzia Spaziale Italiana) one of the pillars of the global geodetic network.

By the second Section of the program, “Continuity and Disruptions”, Matera, after experimenting with deep and traumatic changes, proposes itself as a place to reflect upon its possible redemption and rebirth after being considered a “national shame” (see Section 2) and, in general, to face the multiple “shames” of the contemporary society (social inequality, racism, migrations): 24 scheduled micro-events aim at highlighting the extraordinary resiliency of the city and rediscovering, through its history, the chance of reinventing itself, to be born again and make its way toward a sustainable future.

The third theme “Reflections and Connections” draws on the Latin motto “Festina lente” (Make haste slowly), believing it to be necessary re-start from the re-discover of the value of time, slowness, darkness, and silence, going back to the fundamental values, giving importance to art, science and the widespread practice of cultural citizenship as catalyzing elements of an unprecedented and innovative model of community rooted in the “practice of daily life”. This Section includes 37 cultural projects mainly based on storytelling, oral histories, and cinematic narratives (short films, anthology films, and medium-length films).

The fourth theme “Utopias and Dystopias”, starting from the troubled history of Matera (see Section 2), intends to show, through 16 events (urban games, underground explorations, garden nurturing), the possible testing of new innovating schemes that represent a challenge to preconceptions, and oblige us to look at the world through the eyes of a child, making us rediscover the wonder and importance of play in our daily lives, and allowing us to find possible alternatives to the realities that we take for granted.

The fifth theme “Roots and Routes” focuses on the mobility culture that plays an important role for Basilicata, traditionally a place of meeting and convergence. After being a land of emigration for a long time, Matera is now seeing the return of young people attracted by traditional values. This Section, with its 38 projects, aims at revealing the extraordinary opportunities offered by the travel, showing how the nomadic spirit can approach Matera to Europe.

The “big event” “European Capital of Culture 2019” started on 19 January 2019, with an opening ceremony whose undisputed protagonists were the marching bands of 20 Lucanian municipalities that, together with those of the previous European Capitals of Culture, for a total of 2019 musicians (equaling the number of the current year), made their music resound in the streets of the city from early in the morning. At 7.00 p.m. began the “Matera 2019. Open Future” night, broadcasted live in Eurovision and on Rai1 in Italy, which showed in all its splendor the San Pietro Caveoso square crowded with people. The night ended with the long-awaited speech of the President of the Republic,

Sergio Mattarella, who recalled that “being Europeans” is, today, “an unavoidable part of our national identities” and that “culture is the connective tissue of the European civilization”.

The intense programme of events, described in detail on the website, started on 20 January. In particular, an in-depth reading of the fiches of each of the 151 projects organized (that will be carried out more than once during the year), highlighted that they will take place over 48 weeks, as already mentioned, and above all their distribution in the whole regional territorial context: indeed, besides Matera, all the 130 municipalities of Basilicata take part at least in one of the projects developed and 76 are active protagonists as “Capital for a day” by organizing events, shows, concerts, and performances according to the themes and the values of the Bid Book. Further, many of those municipalities decided to create a real enlarged network to build a relation between insider and outsider, stroking the keys of “nostalgia, sense of belonging, identification and search for identity” [24] (p. 51), by offering experiential tourists the opportunity to: 1) taste food and wine, resulting from a valuable tradition with ancient roots [42]; 2) explore the history of places by an active enjoyment of a tangible and intangible heritage layered in the territory; 3) live customs and traditions, handicraft activities, routes to travel and workshops to experience, sharing original and inclusive emotions and experiences.

It is clearly a shared itinerary based not only on the value of the “capital for a day” but also on the material and immaterial asset left to the community, translated in the symbolic and pedagogic value [43].

The calendar of events is very rich and varied: lectures on global concerns (migration, illegal immigration, racism, violence against women, identity, sustainability, pollution, diversity, barriers) with the participation of local and European experts, exhibits, photo exhibitions, craft workshops to teach ancient skills, hiking, games, sport activities, films, graffiti, historical re-enactments, costume parades and, above all, plays, concerts, and dance performances.

“People Places Purposes” (in the third theme “Reflections and Connections”) is a really interesting project, an exploration of the tangible and intangible heritage of the city that allows for an understanding on how to become a “Materano” for one day, simply stopping being a tourist to transform into “temporary citizens”, becoming an integral part of Matera daily life, an unusual way to live in the city thanks to the new and unprecedented participation of the people who live in it every day. This project involves weekly events during which the permanent citizens will tell a different “City of Sassi”, through five original routes, each of them dedicated to one of the themes of the event, thus diversifying the narrations and perceptions of Matera and Basilicata, exchanging views and opinions in order to create a strong relation among its permanent citizens and those who hardly know it, offering the latter the opportunity to seize the essence of the European Capital of Culture 2019.

Another journey to the soul of places is proposed by “The Atlas of the City’s Emotions” (from the fourth theme “Continuity and Disruptions”), a project conceived and co-produced by the Teatro dei Sassi and the Foundation Matera Basilicata 2019. Here too, the purpose is an unprecedented way of visiting the city, using an Emotional Map created through a collection of stories and memories of its inhabitants and, little by little, of the visitors/“temporary citizens” themselves. About 400 of Matera’s inhabitants have already been involved as emotional mappers: they have created their own emotional maps including the most important places of their lives. After a selection and literary and artistic “translation” (thanks to the collaboration of Alessandro Baricco, of the Holden School of Turin, the visual artist Stefano Faravelli and the choreographer Heike Henning), an “Emotional Master Map” will be defined, made up by 15 places throughout Matera. Between March and July 2019, visitors can begin their journey through “La secretissima camera de lo core”, a multisensory installation (created by Faravelli himself together with Paolo Baroni, artisan of light and designer of theatre machines) which will tell the soul of places through the memories of their inhabitants. But that it is not all: once back home, the traveler will have the opportunity to share with other visitors his/her own experience of “temporary citizen” through the Atlas website (www.playatlas.com). Further, starting from 2020, every tourist will be given a pocket Emotional Master Map to explore Matera through the emotions of its

inhabitants in a detailed and evocative journey animated by moments that draw on theatre, music, cinema, and visual and performing arts.

The organization of such a wide and significant range of events is undoubtedly allowed by the active participation of hundreds of people to the candidacy process, mostly volunteers, along with cultural, social, and religious associations, as well as private operators and all the municipalities of the region. A key role was played by the web team, a group of people who, on a wholly voluntary basis, organized and managed the Matera 2019 candidacy webpage: shared projects, entirely implemented by citizens, were proposed through the web community “Matera 2019”. Thus, an active community was created in order to start a bottom up innovation process to set up an important exchange network with Italian and European communities. Therefore, it is hardly surprising that 45 out of 151 events scheduled are co-produced by local associations as well as national realities (Radio 3, Teatro Stabile di Napoli) with a total of 150 national and international project partners.

The Lucanian municipalities seem to have seized the opportunity offered by “Matera 2019 European Capital of Culture”, a valuable one since most of these territorial realities, due to their small size or their organizational weakness, could not, up to this moment, start a significant tourist enhancement [42] (p. 21). Therefore, the “big event” is able to involve many different parties of the local community “around which grows an awareness that could pave the way” [44] (p. 30) allowing the creation of collaborative networks, encouraging aggregation and involvement, enabling them to regain confidence in their potential and to understand that the future increasingly depends on the capacity of the community members to act strategically and effectively, using each cultural event of Matera 2019 as an introduction to a wider project of enhancement and relaunch for the whole region.

4. Discussion

In mid-2019, while the calendar of initiatives is reaching the period of greatest intensity expected for the month of August, it seems premature to attempt an evaluation of the multiplier effects of “Matera 2019 European Capital of Culture”; they will be the subject of subsequent research, which we will carry out after the conclusion of the event, and in which we will estimate the economic and social impacts through field research (interviews with tourists and residents, pivot actors, etc). To date, however, through the reading of studies on the experiences of previous European Capitals of Culture [45–51], it is already possible to identify a series of good practices, also adopted by Matera, leading to a positive evaluation of the current strategy. In our opinion, there are strong similarities between the governance plan adopted by the “City of Stones” with the 130 other Lucanian municipalities and that of Essen (Germany, 2010); together with the entire metropolitan area of the Rhur, it has been transformed from a mining and steel district to an area dedicated to culture and leisure involving 53 urban centers in the area of the organization and implementation of a joint project while strengthening, at the same time, its identity and visibility. Since the beginning of the new millennium, Bruges (Belgium, 2002) had focused on a close collaboration with the surrounding region (decision also taken by Guimarães—Portugal, 2012), distributing the events throughout the year, as did also Graz the following year (Austria, 2003). The involvement of the entire citizenship in the event was implemented for the first time by Lille (France, 2004) where more than 17,000 volunteers played the role of “ambassadors” creating an information system managed from below, which will be proposed again in Cork (Ireland, 2005) and Sibiu (Romania, 2007); the French city, moreover, renounced, like Matera, the construction of great symbolic buildings promoting creativity and cultural experiences. The case of Tallin (Estonia, 2011), which placed guests at the center of its cultural project, can be considered the precursor of the idea of “temporary citizen” that guides Matera, to whom we wish the same fate of Stavanger (Norway, 2008), which has been able to transform the network of collaboration between the 26 municipalities involved in the event in a solid and lasting partnership.

Alongside these contact points with the winning strategies of previous European capitals, there are significant signs of growth in the city’s tourism supply and demand. Between 2014 (year of designation) and 2016, in fact, the number of arrivals rose from 153,005 to 250,093 (+63.5%) and the

number of visitors from 244,847 to 409,421 (+67.2%). At the same time, the city's accommodation capacity has been expanded: in fact, while in 2009 (the year of the start of the bid) the hotels were 22 (1437 beds) and non-hotel structures were 75 (661 beds), in 2016 they were respectively 26 (1597 beds) and 456 (mainly bed & breakfast for a total of 1930 beds) [52].

As a weakness, we find that the average stay index remains unchanged at 1.6, showing that Matera is considered by most tourists to be a simple transit destination. Moreover, the tourism movement is dominated by the Italian market, from which 73% of tourists come (182,568 in 2016) [53]. In our opinion, the systemic idea of the heritage of material and immaterial sediments offered by the official website (see Section 3) can contribute to overcoming this criticality, creating a brand "Basilicata" able to extend the period of stay and the number of foreign tourists, who can enjoy the content translated entirely into English.

5. Conclusions

After presenting the troubled history of the resilient city from the 1930s to its designation as European Capital of Culture (Section 2), we tried to highlight the start of its process of territorial reconfiguration through the world wide web (Section 3). Reading the contents of the official website led us to formulate a series of reflections on the key elements of the event, such as its bottom-up and participatory nature, the choice to focus on experiential tourism through the dissemination in time and space of various projects (designed for temporary citizens by an inclusive network of local and non-local actors); these projects are intended as integrated products able to spread the image of a structured and concrete proposal.

In our opinion, this strategy is still in progress and has positive values, which are reflected in the good practices already implemented by other European Capitals of Culture, in the encouraging signals coming from the accommodation sector (Section 4) and in the forecasts for 2019, according to which the organizers believe they can accommodate about 700,000 "temporary citizens" to whom they can offer a visible and attractive "product area".

Based on the above, we can say that "Matera 2019 European Capital of Culture", a "special cultural event" to be certainly included in the "diffuse space/diluted time" type [17] (pp. 5–6), represents an opportunity to defend and promote the Lucanian tourist space, protect its cultural values, and maximize the local milieu.

Last but not least, it should be underlined that the ongoing process of territorial reconfiguration focuses on the theme of sustainability and minimization of all forms of environmental impact.

Actually, 82.5% of the total investment for the candidacy (amounting to 649.85 million Euros from a Framework Programme between the Basilicata Regional Authority and the Municipality of Matera) refers to infrastructure (railway, road, port) on the whole Lucanian territory, severely lacking [45] (p. 17), while capital investments carried out in the Matera urban space (113.4 million Euros, or 15.5%) are almost totally referred to regeneration aiming at the recovery of the rural village "La Martella", the tufa quarry system in the north-east of Matera and the ancient trails, and the building/conversion of the few premises really needed (such as the I-DEA Museum, the Open Design School and the Arca di Prometeo Theatre) [53] (pp. 94–110): actually, Matera's candidacy is underpinned by an ethic of "reduce, recycle, reuse".

Therefore, there is good reason to believe that such a "big event", that has not entered yet the more intense implementation phase scheduled in the quarter July-September, will not leave a "poor, if not cumbersome and useless legacy" [14] (p. 720), but rather a valuable endowment of key intangible skills, such as "creating the local society" [54] (p. 80) and "nurturing the *amor loci*" [55], both necessary conditions to start a sustainable and shared "contextualized capitalization" [56] (p. 316), capable of inspiring the future European Capitals of Culture.

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References

1. Brusa, C. *Evoluzione di Un'immagine Geografica. Il Varesotto Turistico*; Giappichelli: Turin, Italy, 1979.
2. MacCannell, D. Staged authenticity: Arrangements of social space in tourist setting. *Am. J. Sociol.* **1973**, *79*, 589–603. [CrossRef]
3. MacCannell, D. *The Tourist: A Theory of the Leisure Class*; Schocken: New York, NY, USA, 1976.
4. MiBACT (Ministero dei Beni e delle Attività Culturali e del Turismo). Piano Strategico di Sviluppo del Turismo 2017–2022. Available online: www.turismo.beniculturali.it (accessed on 13 June 2016).
5. Lemmi, E. Dallo «spazio consumato» ai luoghi ritrovati. In *Verso una Geografia del Turismo Sostenibile*; Franco Angeli: Milan, Italy, 2009.
6. Ferrari, S. Modelli gestionali per il turismo come esperienza. In *Emozioni e Polisensorialità nel Marketing delle Imprese Turistiche*; Cedam: Padua, Italy, 2006.
7. Rossi, A.; Goetz, M. *Creare Offerte Turistiche Vincenti con Tourist Experience Design*; Hoepli: Milan, Italy, 2011.
8. Hiller, H. Mega-events, urban boosterism and growth strategies: An analysis of the objectives and legitimations of the Cape Town 2004 Olympic Bid. *Int. J. Urban Reg. Res.* **2000**, *2*, 439–458. [CrossRef]
9. Guarrasi, V. Ground Zero: Grandi eventi e trasformazioni urbane. In *Bollettino della Società Geografica Italiana*; series XII; Società Geografica Italiana: Rome, Italy, 2002; pp. 727–742.
10. Ritchie, J.R.B. Assessing the impact of hallmark events: Conceptual and research issues. *J. Travel Res.* **1984**, *23*, 2–11. [CrossRef]
11. Roche, M. *Mega-Event and Modernity*; Routledge: London, UK, 2000.
12. Guala, C. Per una tipologia dei mega-eventi. In *Bollettino della Società Geografica Italiana*; series XII; Società Geografica Italiana: Rome, Italy, 2002; pp. 743–755.
13. Essex, S.; Chalkley, B. Olympic games: Catalyst of urban change. *Leis. Stud.* **1998**, *3*, 187–206. [CrossRef]
14. Dansero, E.; Segre, A. Presentazione. In *Bollettino della Società Geografica Italiana*; series XII; Società Geografica Italiana: Rome, Italy, 2002; pp. 719–725.
15. Furrer, P. Giochi Olimpici sostenibili: Utopia o realtà? In *Bollettino della Società Geografica Italiana*; series XII; Società Geografica Italiana: Rome, Italy, 2002; pp. 795–830.
16. Beguinot, C. (a cura di). La città cablata. In *Un'Enciclopedia*; CNR-Università di Napoli: Naples, Italy, 1989.
17. Dansero, E.; Mela, A. Per una teoria del ruolo dei grandi eventi nei processi di territorializzazione. In Proceedings of the XXVII Conferenza Italiana di Scienze Regionali, Pisa, Italy, 12–14 October 2006; p. 18. Available online: www.academia.edu.com (accessed on 16 May 2019).
18. Harvey, D. Spaces of global capitalism. In *Toward a Theory of Uneven Geographical Development*; Verso: London, UK; New York, NY, USA, 2006.
19. Fistola, R. Funzioni e trasformazioni urbane. Per una pianificazione della città digitale. In Proceedings of the Atti della XXI Conferenza Italiana di Scienze Regionali, Palermo, Italy, 20–22 September 2000; p. 34. Available online: www.romanofistola.it (accessed on 16 May 2019).
20. Dansero, E. I “luoghi comuni” dei grandi eventi. Allestendo il palcoscenico territoriale per Torino 2006. In *Bollettino della Società Geografica Italiana*; series XII; Società Geografica Italiana: Rome, Italy, 2002; pp. 861–894.
21. Bendix, R. *Search of Authenticity: The Formation of Folklore Studies*; University of Wisconsin Press: Madison, WI, USA, 1997.
22. Cohen, E. Authenticity and commoditization in tourism. *Ann. Tour. Res.* **1988**, *15*, 371–386. [CrossRef]
23. Cohen, E.; Cohen, S.A. Authentication: Hot and cool. *Ann. Tour. Res.* **2012**, *39*, 1295–1314. [CrossRef]
24. Gilli, M. *Autenticità e Interpretazione Nell'esperienza Turistica*; Franco Angeli: Milan, Italy, 2009.
25. Gilli, M. Teorie sull'autenticità: Dall'inautenticità ai processi di autenticazione. In AA.VV.; NS 15; (S)radicamenti; Memorie Geografiche, Società di Studi Geografici: Florence, Italy, 2017; pp. 515–520.
26. Gilmore, J.H.; Pine, B.; Autenticità, J. *Ciò che i Consumatori Vogliono Davvero*; Franco Angeli: Milan, Italy, 2009.
27. Rickly-Boyd, J. Authenticity and aura: A Benjaminian approach to tourism. *Ann. Tour. Res.* **2012**, *39*, 269–289. [CrossRef]
28. Taylor, J.P. Authenticity and sincerity in tourism. *Ann. Tour. Res.* **2001**, *28*, 7–26. [CrossRef]
29. Pollice, F.; Urso, G. Turismo vs. globalitarismo, in Filiere etiche del turismo. In *Territori della Vacanza tra Valori, Politiche e Mercati*; Turco, A., Ed.; Unicopli: Milan, Italy, 2014; pp. 75–96.

30. Vale, L.J.; Campanella, T.J. *The Resilient City*; Oxford University Press: New York, NY, USA, 2005.
31. Turco, A. *Configurazioni della Territorialità*; Franco Angeli: Milan, Italy, 2010.
32. Turco, A. (a cura di). Paesaggio, luogo, ambiente. In *La Configuratività Territoriale Come Bene Comune*; Unicopli: Milan, Italy, 2014.
33. Ranieri, L. *Basilicata*; Unione Tipografico-Editrice Torinese: Turin, Italy, 1972.
34. Giura Longo, R. *Matera Sassi e Secoli*; BMG Editrice: Matera, Italy, 1986.
35. Chisena, L. *Matera dalla Civita al Piano*. In *Stratificazione, Classi Sociali e Costume Politico*; Congedo editore: Galatina, Italy, 1984.
36. Laureano, P. Giardini di Pietra. In *I Sassi di Matera e la Civiltà Mediterranea*; Bollati Boringhieri: Turin, Italy, 1993.
37. D'Alessandro, L.; Stanzione, L. Scale, dinamiche e processi territoriali in vista di Matera 2019: Riflessioni su sviluppo locale, cultura e creatività. *Geotema* **2018**, *2*, 78–90.
38. Selection Panel. Nomination of the European Capital of Culture in Italy 2019. Pre-Selection Report, 2013. Available online: <https://ec.europa.eu/programmes/creative-europe> (accessed on 4 April 2019).
39. Lynch, K. *The Image of the City*; M.I.T. Press: Cambridge, MA, USA; London, UK, 1960.
40. Miossec, J.M. *L'Image Touristique Comme Introduction à la Géographie du Tourisme*; Annales de Géographie: Paris, France, 1977; pp. 55–70.
41. Pollice, F. Territori del turismo. In *Una Letture Geografica delle Politiche del Turismo*; Franco Angeli: Milan, Italy, 2002.
42. Pollice, F. *Piano di Miglioramento Della Qualità del Sistema Turistico Regionale Della Basilicata*; Centro Universitario Europeo per i Beni Culturali: Ravello, Italy, 2017; p. 109.
43. Finocchi, F. *Geografie del Gusto*; Aracne: Roma, Italy, 2010.
44. Garibaldi, R. Esperienze creative a confronto. In *Viaggio per Cibo e per Vino*; Aracne: Rome, Italy, 2017; Volume II.
45. MiBAC (Ministero Beni e le Attività Culturali), Capitali Europee della Cultura Focus Point. In *Capitali Europee della Cultura*; Quintilia Edizioni: Roma, Italy, 2012.
46. Quinn, B. The European Capital of Culture initiative and cultural legacy: An analysis of the cultural sector in the aftermath of Cork 2005. *Event Manag.* **2009**, *13*, 249–264. [CrossRef]
47. Richards, G.; Rotariu, I. *Sibiu European Capital of Culture 2007*; Evaluation report; Atlas: Arnhem, The Netherlands, 2008.
48. Palmer, R.; Richards, G. *European Cultural Capital Report 1*; Atlas: Arnhem, The Netherlands, 2007.
49. Palmer, R.; Richards, G. *European Cultural Capital Report 2*; Atlas: Arnhem, The Netherlands, 2009.
50. Cogliandro, G. European Cities of Culture for the year 2000: A Wealth of Urban Cultures Celebrating the Turn of the Century, 2001. Available online: www.kracow2000.pl (accessed on 20 July 2019).
51. Sacco, P.L.; Tavano Blessi, G. European Cultural Capitals and Local Development Strategies: Comparing the Genoa 2004 and Lille 2004 Cases. *Homo Oeconomicus* **2007**, *24*, 111–141.
52. Pepe, A. Le Capitali Europee della Cultura. In *Il Caso Studio di "Matera 2019"*; Fondazione Eni Enrico Mattei, Collana Percorsi: Milano, Italy, 2017.
53. Comitato Matera 2019. *Matera Città Candidata Capitale Europea Della Cultura 2019*; Antezza Tipografi: Matera, Italy, 2014; Available online: <https://www.matera-basilicata2019.it> (accessed on 11 May 2019).
54. Magnaghi, A. Il progetto locale. In *Verso la Coscienza di Luogo*; Bollati Boringhieri: Milan, Italy, 2013.
55. Pileri, P.; Granata, E. Amor loci. In *Suolo, Ambiente, Cultura Civile*; Libreria Cortina: Milan, Italy, 2012.
56. Emanuel, C. Patrimoni paesistici, riforme amministrative e governo del territorio: Svolte e percorsi dissolutivi di rapporti problematici. In *Bollettino della Società Geografica Italiana*; Società Geografica Italiana: Rome, Italy, 1999; pp. 295–318.



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