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Tourist intensity in medium and small Spanish cities. Urban tourism research using a quantitative indicator: Tourism Intensity Index (TII)

Intensidad turística en ciudades medianas y pequeñas españolas. Investigación de turismo urbano mediante un indicador cuantitativo: Indicador de Intensidad Turística

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ABSTRACT

Urban tourism has experienced significant growth in recent decades, generating situations of overtourism and tourismophobia. In Spain, cities such as Barcelona, Sevilla, Valencia, and Madrid face the effects of excess tourism on a daily basis, even in times of the pandemic. The objective of this study is to determine whether an increase in tourism intensity has also occurred in small and medium-sized Spanish cities and, if so, to develop an assessment of the phenomenon. To this end, a Tourism Intensity Index (TII) has been designed and applied to international tourist flows and statistically tested (through cluster analysis and Student's 't' test), permitting not only a confirmation of the phenomenon but its characterization during the period 2003-2020 and its interpretation from a geographical perspective. This research shows that tourist intensity is a phenomenon that extends also to medium and small Spanish cities.

KEYWORDS: Tourist intensity; cities; indicators; overtourism; urban tourism.

RESUMEN

En las últimas décadas el turismo urbano ha experimentado un importante crecimiento generando situaciones de overtourism y turismofobia. En España, ciudades como Barcelona, Palma de Mallorca o Madrid afrontan diariamente los efectos de los excesos turísticos, incluso en tiempos de pandemia. Precisamente, es objetivo de este estudio determinar si también se está produciendo un incremento de la intensidad turística en las ciudades españolas de tamaño medio y pequeño y, en caso positivo, desarrollar una valoración del fenómeno. Para ello, se ha diseñado un Indicador de Intensidad Turística (ITT) cuyos resultados, aplicados a los

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flujos de turismo internacional y testeados estadísticamente (análisis clúster y prueba "t"-Student), han permitido no solo confirmar el fenómeno sino también caracterizarlo durante el periodo cronológico 2003-2020 e interpretarlo desde una perspectiva geográfica. Esta investigación muestra que la intensidad turística es un fenómeno que también deben afrontar las ciudades españolas pequeñas y medianas que han experimentado en los últimos años un importante crecimiento turístico.

PALABRAS CLAVE: Intensidad turística; ciudades; indicadores; overtourism; turismo urbano.

I. INTRODUCTION

According to data from the World Tourism Organization (UNWTO), in 2019 more than 1.4 billion international tourist arrivals were registered on an international scale – a volume corresponding to approximately one-fifth of the global population – with 45% of these flows destined mainly for cities, especially large world capitals. Hong Kong, for example, received more than 26 million tourists, Bangkok about 27 million, and London over 19 million (Yasmeen, 2019). These data are not surprising but confirm a clear trend of accelerated growth in urban tourism over recent decades (De la Calle Vaquero, 2019; Judd & Fainstein, 1999).

This phenomenon forms part of the protagonism of contemporary urban societies and responds to various rationales. From a geopolitical perspective, the incorporation of Asia into the tourism market is a principal factor: from the turn of the millennium, this region came to occupy second place in terms of international tourist arrivals, meanwhile exercising its considerable capacity to direct tourist flows to other areas of the planet (Shao *et al*., 2020). In terms of economic causes, the global recession of 2008 proved to be a turning point in the resurgence of urban tourism. Neoliberal policies promoted by agents both public and private generated a framework of political and economic deregulation (Novy & Colomb, 2017) that favored the commercialization of cities and their conversion into entertainment spaces (Barrado-Timón e Hidalgo-Giralt, 2019). At the same time, the emergence of low-cost companies, supported by globalization as well as the advent of new business models based on 'peer 2 peer' and blockchain technologies, accelerated the transformation of cities into cultural and tourist consumer products, contributing to what Sorando and Ardura (2016) have called the destruction of creative cities.

Urban tourism is not a problem *per se*; in fact, the positive impacts that it generates in cities are well known. The conflict arises when its intensity exceeds the parameters of sustainable growth, and when the tools implemented for its management are inoperative, whether due to poor calibration or because they seek to prioritize economic benefit at all costs. The problem worsens when the perception of tourism changes and critical voices begin to mount, above all from the local population, which suffers most directly the consequences of a poorly managed intensification of tourism (Blanco-Romero *et al*., 2019; Koens *et al*., 2018; Lopez *et al*., 2019). As a result of this situation, new terms such as 'overtourism', 'touristification' and 'tourismophobia' have been coined by social movements and the media and then quickly transferred to the academic sphere (Velasco & Carrillo, 2021).

II. THEORETICAL FRAMEWORK AND STATE OF THE QUESTION

These three conceptual aspects – overtourism, touristification and tourismophobia – establish the theoretical basis of this research. Overtourism refers to a rapid and unprecedented increase in the number of tourists who are mainly concentrated in city centers, the urban areas where most tourist resources and services are located (Goodwin, 2017; Seraphin *et al*., 2018). Not only does an increase in tourist intensity have negative impacts on inhabitants of the affected areas (noise, environmental degradation, urban deterioration, etc.), but it also decreases the quality of the tourist's own experience (saturation, degradation, pollution, etc.). As mentioned in the Introduction, the causes of overtourism are multiple but can mainly be related to the new geopolitics of tourism, especially following the incorporation of Asia into the tourism market and the emergence of 'low-cost' airlines; at the same time, the development of platform economies such as Airbnb has increased the use of homes for touristic purposes.

Touristification is understood as changes generated in particular zones of cities to satisfy the requirements of tourists, leaving aside the needs of the citizens (Clancy, 2019; Espinar, 2018; Miriam-Hermi, 2019). This usually occurs in historic centers of cities, where a wealth of heritage including the main tourist attractions, products, and services are often located (Seraphin *et al*., 2018; Milano, 2018). Such spaces have moreover been the subject of urban rehabilitation policies and programs that have favored their gentrification. This concept of gentrification, introduced in the 1960s by Jane Jacobs as the "expulsion of residents from neighborhoods, basically for the interests of the market," refers to planned urban transformations that suppose a kind of creative destruction by investors who, supported by administrations, seek economic benefits at all costs (Sorando & Ardura, 2016). Urban centers are very sensitive to any change, causing gentrification and tourism to generate significant impacts on these areas. The transformation of the housing market (increases in rental prices, proliferation of tourist apartments, appearance of investment funds, etc.), the substitution of traditional commerce for franchises, or changes in cultural facilities to reorient them to the tastes of visitors are just a few examples of the impacts of this phenomenon (Palacios-García et al., 2020).

As a consequence of overtourism, touristification, and gentrification, neighborhoods can lose their particular essence, and residents pressured by touristic consumption are often ultimately expelled from historic centers. Tourism then ceases to be perceived as a friendly activity that produces benefits for the territory and becomes a source of conflict that threatens the life of the local population, resulting in tourismophobia (Morales-Pérez, *et al*. 2020; Milano (2018). In fact, numerous voices in recent years have expressed discomfort and concern around the increase in tourism as experienced in their neighborhoods. Berlin, Amsterdam, and Venice offer paradigmatic examples at the international scale, while local Spanish protests in Barcelona (*La Assemblea de Barris per un Turisme Sostenible*), Valencia (*La Saïdia Comuna*), and Madrid (*SOS Lavapiés* and *SOS Malasaña*) are also very significant. Reactive discourses have reached public administrations that have then launched actions to alleviate the increase in tourism, with varying degrees of acceptance and applicability. For example, in 2019, the Dutch Tourism Office found itself overwhelmed by tourist flows chiefly to Amsterdam; it suspended new promotions of tourism in the Netherlands in order to focus on better management of existing ones. For its part, the Barcelona City Council has launched

two Special Urban Plans for Tourist Accommodation (2017 and 2021) in order to limit such accommodation in the city center. During the administration of Manuela Carmena in Madrid, the Special Accommodation Plan was designed and later approved by the Superior Court of Justice (in 2021).

Although overtourism, touristification, and tourismophobia[1] serve as the theoretical pillars of this research, another key issue that helps to contextualize this work from a territorial perspective cannot be overlooked: tourism in medium and small cities. Taking into account the diversity of dynamics that urban tourism generates (Duxbury, 2020; Richards, 2012; Spirou, 2011), it may be understandable that greater preference has traditionally been given to the study of these phenomena in large cities.

Nevertheless, recent years have seen an increase in publications that focus on tourism in medium and small urban areas (Ferreira, 2013; Gómez, 2012). This bibliography is very oriented to the study of cultural tourism; a high proportion analyzes the tourist dynamics in historic centers and how they contribute to the construction of destinations and to urban regeneration. Less frequent but of great interest are publications oriented to analysis of tourism segmentation and the creation of specialized cultural products, such as museums (Gómez, 2012) or cultural festivals (Barrera-Fernández *et al*., 2017; Georgoula & Terkenli, 2018; Gómez & Guzmán, 2017; Snowball & Antrobus, 2020), along with works related to language tourism (Pardo-Abad, 2011). Also noteworthy are studies like those by Vázquez-Varela and Martínez-Navarro (2016) that analyze the impact that high-speed rail development has had on tourism in medium and small cities, or those that delve into aspects related to sustainability (Del Espino Hidalgo *et al*., 2016). Outside the Spanish sphere, notable analyses include the studies by Jansen-Verbeke (1988) on inland cities, especially those examining the tourist function of Dutch urban centers of medium and small size. In this same line is a bibliography focused on 'creative tourism' (Richards, 2019) – that is, the configuration of personalized products that facilitate tourist participation in experiences/activities of given destinations, as in certain inland Portuguese cities of medium and small size (García & Maldonado-Erazo, 2019; Remoaldo *et al*., 2020). Parallel to examinations of the modalities of cultural tourism as developed in medium and small Spanish cities, other studies have recently shown that, like larger cities, these are also affected by overtourism and the dynamics of touristification and tourismophobia (Escudero, 2020; Hidalgo et al., 2020; Gómez, Apilánez & Trapero, 2019; Lopez, Otón & Antelo, 2019; De la Calle, 2019).

Taking into account the context of overtourism, touristification, and tourismophobia that many destinations must now confront, it is essential to develop planning strategies that allow for identification and management of increased tourist flows to improve the experience of visitors according to criteria of sustainability and resilience, without harming the lives of residents. Numerous existing diagnostic tools can shed light on how tourist flows affect destinations, in order to manage them properly. To the traditional capacity indicators for

[1] Obviously, COVID-19 has put all these processes on hold, highlighting the fragility and uncertainty of the tourism sector in the face of external threats. As a positive aspect, it should be noted that the pandemic has made possible the articulation of a framework for reflection on the future of tourism (Bauzá-Martorell & Melgosa-Arcos, 2020; Galvani *et al*., 2020; Simancas-Cruz *et al*., 2020). Indeed, in a very short period of time, an abundant bibliography has been published on the reactivation of tourist destinations, with the vast majority of these works committed to criteria of sustainability, resilience, and digitization (Hartman, 2020; Rastegar *et al*., 2021).

destinations (García, 2000; García & De la Calle, 2012) can now be added the Doxey 'Irritation Index' that determines changes in the attitudes of residents toward tourism based on the number of visitors, or Butler's life-cycle of tourist destinations, or novel techniques to exploit Big Data, among others.

Relevant here is the report by McKinsey & Company and the World Travel & Tourism Council (2017) diagnosing the potential risks of overtourism in 68 cities around the world, through analysis of a series of indicators constituting five factors: 'Alienated local residents', 'Degraded tourist experience', 'Overloaded infrastructure', 'Damage to nature', and 'Threats to culture and heritage'. The specific factor termed 'Alienated local residents' is addressed by two indicators: 'tourism density' (number of visitors per km^2) and 'tourism intensity' (the relation between arriving travelers and a local population). As will be shown in greater depth in the Materials and Methods section, a new Tourist Intensity Indicator (TII)[2] has been developed in this research project based on the aforementioned report. The TII quantitatively relates the population of a touristic destination in Spain with non-resident travelers who stay there for one or more consecutive nights (in the same accommodation). This indicator has been applied to monitor the target phenomenon in medium and small Spanish cities across a period of nearly two decades, including part of the COVID-19 period.

III. WORK HYPOTHESIS AND RESEARCH OBJECTIVES

Taking into account the theoretical framework and state of the question, the main working hypothesis of this research is that tourist intensity is not exclusive to large Spanish cities but has an analogous presence in smaller urban spaces. It is therefore suggested that tourist intensity is a manifestation that can affect all urban tourist destinations regardless of size. To respond to this hypothesis, the main objective of this research is to implement an indicator that allows deeper consideration of the dynamics of the tourist intensity affecting medium and small Spanish cities, taking 'Non-resident travelers' in Spain as a reference for analysis. A diagnostic tool has been created that can contribute to the correct management of tourist intensity within the paradigm of sustainability, and this objective is further complemented by secondary aims that provide coherence to the overall study:

- Analyze the phenomenon of tourist intensity in medium and small Spanish cities by implementing quantitative indicators.
- Assess the evolution of tourist intensity in medium and small Spanish cities during the years 2003 and 2011 (first period) and 2011 and 2018 (second period).
- Determine patterns of geographic behavior that explain the dynamics of tourist intensity in medium and small Spanish cities.
- Establish a cluster analysis that allows the visual grouping of cities affected by the phenomenon of tourist intensity.

[2] The concept of tourist intensity has been the object of study for other tourism-related organizations, always as an operational diagnostic tool. For example, the Statistical Office of the European Union (EUROSTAT) defines tourism intensity as "the ratio of nights spent at tourist accommodation establishments relative to the total permanent resident population of the area." At Spain's Galician Institute of Statistics, the intensity of tourism demand is understood as a set of indicators that permit the collection of "more territorially disaggregated information on tourism demand than currently exists, in order to help in planning resources and policies aimed at promoting tourism activity under sustainability criteria."

- Evaluate the impact of COVID-19 on the dynamics of tourist intensity in medium and small Spanish cities during the years 2018 and 2020 (third period).
- Point out future lines of research in which results attained by large and small Spanish cities would be compared. From this, the possibility will be assessed of expanding the TII to include other variables that reinforce the representativeness of the results.

In order to verify this research hypothesis and to develop the proposed work objectives, we have selected as a case study those medium and small Spanish cities that meet three main conditions:

- Cities considered tourist spots by the National Institute of Statistics of Spain (INE); that is, municipalities where the concentration of touristic offer is especially significant. Working with statistics on 'points of touristic interest' allows for obtaining the same statistical data within a given period for a broad set of municipalities, thus favoring analysis and the comparison of results.
- Although debate around the definition of 'medium and small cities' is undoubtedly interesting (Precedo & Miguel, 2014; Miles, 2006; Bell & Jane, 2006 and 2009; Bellet & Llop, 2004), it is outside the objectives of this research; as a selection parameter, cities of between 10,000 and 300,000 inhabitants are considered in accordance with the reflective and operative criteria developed within the project's framework (Barrado et al., 2022; Barrado-Timón et al., 2020).

Non-coastal cities (that is, inland destinations specialized in tourism of a cultural typology).

IV. MATERIALS AND METHODS

In order to analyze the tourist intensity of medium and small Spanish cities, a quantitative 'Tourist Intensity Indicator' TII has been designed that relates the number 'Non-resident travelers' in Spain with the local population. Another indicator on 'tourist intensity' – validated by Wöber (1998) and by McKinsey & Company and the World Travel & Tourism Council (2017) – has been taken as a reference.

$$TII = \frac{\text{Non– resident travelers in Spain}}{Local\ population}$$

The results obtained from each city using the statistical program XLSTAD have been classified according to four quartiles of tourist intensity:

- Very low (Q4): points with TII values between 0% and 25% of the values of the total sample set.
- Low (Q3): points with TII values between 25% and 50% of the values of the total sample set.
- High (Q2): points with TII values between 50% and 75% of the values of the total sample set.
- Very high (Q1): points with TII values between 75% and 100% of the values of the total sample set.

In addition, the means of the quartiles and their percentage distribution have been

calculated (Tables 1-3) in order to obtain representative results on the evolution of tourist intensity in the Spanish cities analyzed during the period 2003-2020 in terms of the variable 'Non-resident travelers' (*i.e.*, international tourists). Data were extracted from two different statistical sources, both from the INE – data for tourists from the Hotel Occupancy Survey (specifically, 'Travelers and overnight stays by tourist spots'), and data for city demographics from Municipal Registry Figures. The sample 'Non-resident travelers in Spain' from the Hotel Occupancy Survey has been selected to establish operational work limits. In future research, the sample will be expanded by incorporating new elements of analysis.

Subsequently, two types of analysis have been carried out to further understand the phenomenon of tourist intensity by 'Non-resident travelers' in small and medium Spanish cities during the period 2003-2018. In the first place, Student's statistical 't' test (or 'Test-T') was performed to determine the significant statistical variability of the TII throughout the analyzed period. This is a parametric test that allows two independent samples to be compared to determine whether there are significant differences between the group means.

In addition to Student's 't' test, a cluster analysis was developed using the two-stage cluster method in order to determine the homogeneous groupings of cities based on the TII. This method defines a fixed number of clusters, iteratively assigns registers to the clusters, and adjusts their centers until the model cannot be improved. Through a classification criterion, the space of each cluster can be delimited and will show an index of distance with respect to the centroid (the value around which each selection of data will be grouped). The SPSS Statistics 26 program was used for data analysis, and in this case, the number of clusters was determined based on the TII and the four levels of tourist intensity ('Very high', 'High', 'Low', and 'Very low').

V. MAIN RESULTS

5.1 Tourist Intensity Indicator (TII)[3]

According to data from the INE Hotel Occupancy Survey, 'Non-resident travelers' in Spain experienced an increase of 145% during the period under study, from 1,189,381 persons in 2003 to 2,761,528 in 2018. An increase in tourists is also seen in the number of 'Total travelers' (both residents and non-residents), which rose from 5,314,887 million in 2003 to 9,272,178 in 2018, for an increase of 74%.

The TII reflects this situation, especially in the period 2003-2018. Taking into account the average tourist intensity of the cities analyzed (Annex-Table A1), the TII registers similar values for the years 2003 and 2011. In fact, the average in 2003 stood at 1.47 in cities that scored 'Very high' in the indicator, versus 1.42 in 2011. For those cities that scored 'High', the average value remained the same for the years 2003-2011 (0.45). However, the average values of the TII increased in both categories for the subsequent period of 2011-2018, rising from 1.42 in 2011 to 2.33 in 2018 in the cities that scored 'Very high' and from 0.45 to 0.77 in those that rated a 'High' value in terms of tourist intensity. These data indicate that the TII is very sensitive to the growth of tourist flows, which became more intense in the 2011-2018 period once the effects of the global economic crisis had diminished and international tourism resumed its growth as a consequence of factors mentioned in the Introduction.

[3] To facilitate visualization of the results, a table can be found in the Annex with the results of 2003, 2011, and 2018.

In addition to the quantitative analysis, the TII also makes possible a determination of the evolution of tourist intensity in the selected cities. Taking as reference Annex-Table A1, in the year 2003, seven cities stand out within the first quartile (scoring 'Very high' in the TII); these are Arcos de la Frontera, Jaca, Ronda, Salamanca, Santiago de Compostela, Segovia, and Toledo. Positioned in the second quartile and scoring 'High' are the cities of Ávila, Burgos, Cáceres, Cuenca, Jerez de la Frontera, Mérida, and Úbeda. Eight years later, in 2011, we find that Ronda, Salamanca, Santiago de Compostela, Toledo, Segovia, and Jaca all remained in the first quartile and were joined by Burgos, Ávila, and Cuenca. In the second quartile, Úbeda, Mérida, and Jerez de la Frontera remained and were joined by Arcos de la Frontera (previously in the first quartile) as well as León, Pamplona, and Teruel (previously positioned in the third quartile). By the year 2018, seven cities were in the first quartile (Jaca, Ronda, Salamanca, Santiago de Compostela, Toledo, and Ourense) with scores of 'Very high' intensity according to the TII. Also in 2018, cities previously located in the second quartile of 'High' tourist intensity (Ávila, Burgos, León, Mérida, Pamplona, and Teruel) were joined by Zafra and L'Hospitalet de Llobregat, which began to provide records for the first time in the series. The results reveal six cities that have proven insensitive to variations in tourist flows. During the overall period analyzed, Ronda, Salamanca, Santiago de Compostela, Toledo, Segovia, and Jaca are consistently positioned in the first quartile of the TII. Another set of cities (Ávila, Arcos de la Frontera, Cuenca, and Ourense) are found to have oscillated between the first and the second quartiles, depending on the year.

The results of application of the TII show that approximately 50% of these cities scored 'Very High' and 'High' during the period of analysis (Annex-Table A1 and Table 1). Despite the fact that some percentage variations appear to be considerable (for example, the 19.7% increase in the 'Very high' variable between 2011 and 2018), Student's 't' test confirms that these differences are not statistically significant (Table 2); that is, the number of 'Non-resident travelers' in Spain does not vary in a representative way throughout the series. Cities that score 'Low' or 'Very Low' likewise account for approximately 50% of the total during the period analyzed (Table 1). Although there are some notable percentage variations (for example, a decrease of 14.9% between 2003 and 2011 in the cities scoring 'Low', followed by a rise of 18.2% of this same variable in the 2011-2018 period), Student's 't' test again indicates that there are no significant statistical variations between the periods under analysis (Table 2). Therefore, from a general perspective, it can be affirmed that the percentage evolution according to the TII assessment of 'Non-resident travelers' in Spain is fairly stable, despite some variations that may appear significant.

Table 1. Percentage evolution of the TII, 'Non-resident travelers' in Spain (2003-2018)

Tourist Intensity	2003 (%)	2011 (%)	2018 (%)	Variation 2003-2011	Variation 2011-2018
Very high	24.1	26.4	21.2	9.5	-19.7
High	24.1	23.5	24.2	-2.5	3.1
Low	24.1	20.5	24.2	-14.9	18.2
Very low	27.5	29.4	30.3	6.9	3.1

Authors' elaboration

Table 2. T-Test for two independent samples (2003–2011 y 2011-2018)

	Year 2003–2011*	Year 2011-2018**
Difference	0,575	-1,793
T (observed value)	0,022	-0,543
|t| (critical value)	2,447	2,776
GL	6	4
p-value (bilateral)	0,983	0,616
alpha	0,050	0,050

Authors' elaboration

* Confidence interval for the difference between the means at 95%: [64,453; 65,603]
Interpretation of the test:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.
Since the calculated p-value is greater than the significance level alpha = 0.05, the null hypothesis H0 cannot be rejected.
** Confidence interval for the difference between the means at 95%: [-10,966; 7,379]
Interpretation of the test:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.
Since the calculated p-value is greater than the significance level alpha = 0.05, the null hypothesis H0 cannot be rejected.

To verify that flows of 'Non-resident travelers' in Spain did not experience significant statistical variations throughout the period indicated (*i.e.*, that they remained stable over time), the same methodology has again been applied, taking in this case the means of the cities analyzed (Annex-Table A1). Percentage variations are again observed in both periods – for example, between 2011 and 2018 there was a 64.1% increase in 'Very high' scores and a 140% increase in 'Very low' scores (Table 3). Nevertheless, Student's 't' test indicates that there are no significant statistical variations between the periods analyzed (Table 4); that is to say, as in the case of distribution by quartiles, the means of tourist intensity in these cities present no statistically significant differences over time.

Table 3. Means evolution of the TII, 'Non-resident travelers' in Spain (2003-2018)

Tourist Intensity	**2003**	**2011**	**2018**	**Variation 2003-2011**	**Variation 2011-2018**
Very high	1.47	1.42	2.33	-3.4	64.1
High	0.45	0.45	0.77	0.0	71.1
Low	1.34	0.27	0.45	-79.9	66.7
Very low	0.10	0.15	0.36	50.0	140.0

Authors' elaboration

Table 4. T-Test for two independent samples (2003-2011 and 2011-2018)

	Years 2003-2011*	Years 2011-2018**
Difference	0,340	-0,237
T (observed value)	0,896	-1,558
|t| (critical value)	2,776	2,776
GL	4	4
p-value (bilateral)	0,421	0,194
alpha	0,050	-0,237

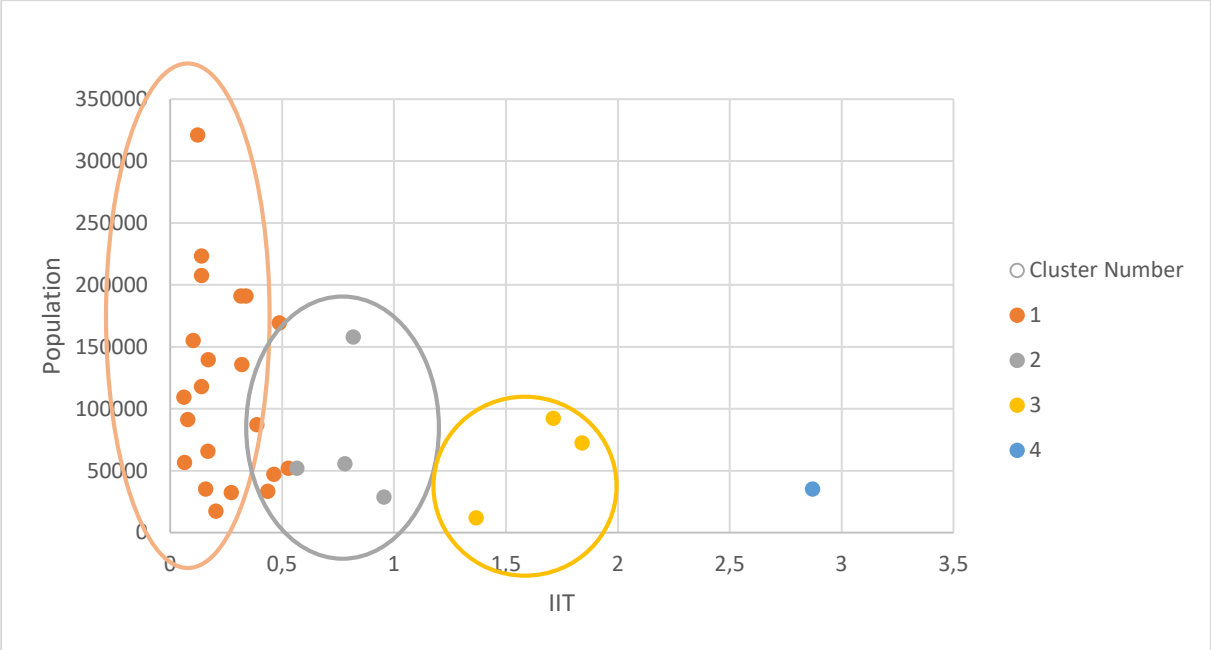
Authors' elaboration

* Confidence interval for the difference between the means at 95%: [-0,713; 1,393]
Interpretation of the test:
H0: The difference between the means is equal to 0. Ha: The difference between the means is different from 0.
Since the calculated p-value is greater than the significance level alpha = 0.05, the null hypothesis H0 cannot be rejected.
** Confidence interval for the difference between the means at 95%: [-0,658; 0,185]
Interpretation of the test:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.
Since the calculated p-value is greater than the significance level alpha = 0.05, the null hypothesis H0 cannot be rejected.

5.2 Cluster analysis: two-stage cluster method

The cluster analysis of the variable 'Non-resident travelers' in relation to the total population in Spain makes it possible to establish groupings of cities based on their degrees of relation with the TII (Figure 1 and Annex-Table A2). In 2003, the first of the years analyzed, a conglomeration is detected of cities with a 'Very low' level of TII (cluster 1, containing 72.41% of small and medium-sized cities). Moreover, these present the greatest dispersion in relative terms, with a relatively significant weight greater than 0.5. Cluster 2, comprised of four cities, has an average TII of 0.78; these are therefore cities with a 'Low' level of tourist intensity. Cluster 3, with an average TII of 1.64, includes Jaca, Santiago de Compostela and Toledo, all with a 'High' level of tourist intensity. Finally, of the groups obtained, only Ronda stands out as atypical – an extreme outlier of cluster 3. Thus in the year in question, it might be said that only two clear clusters are detected: one with 'Very low' tourist intensity and another of 'High' level.

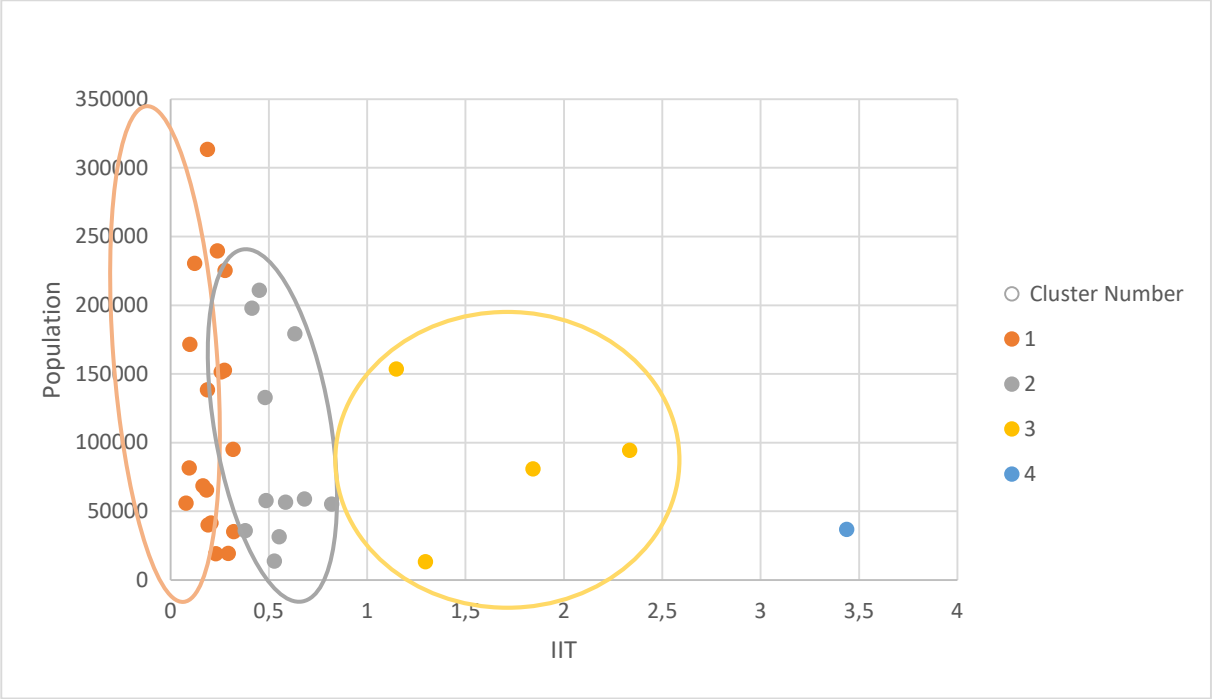
Figure 1. Clusters of medium and small Spanish cities considered tourist spots (2003)



Authors' elaboration

In 2011 (Figure 2 and Annex-Table A3), four groups were again generated, or else merely three, since only Ronda corresponds to a 'Very high' calculation of TII, making it an atypical case 'within the third cluster'. Cluster 1, composed of 18 small and medium-sized cities (52.94%) are those showing a lower average TII (0.207, with a standard deviation of 0.076). Despite having the lowest dispersion in absolute terms, this is still the most disperse group compared to the others. Cluster 2 is made up of eleven of the cities (32.35%) with an average TII of 0.547 and a dispersion of 0.128. This is the group with the least dispersion in relative terms and includes cities with a 'Low' level of tourist intensity. Finally, cluster 3 comprising Jaca, Salamanca, Santiago de Compostela, and Toledo presents an average TII of 1.655 with a dispersion of 0.542. Again, we might consider Ronda an extreme case and view this cluster as one of small and medium-sized cities with both 'High' and 'Very high' levels of tourist intensity.

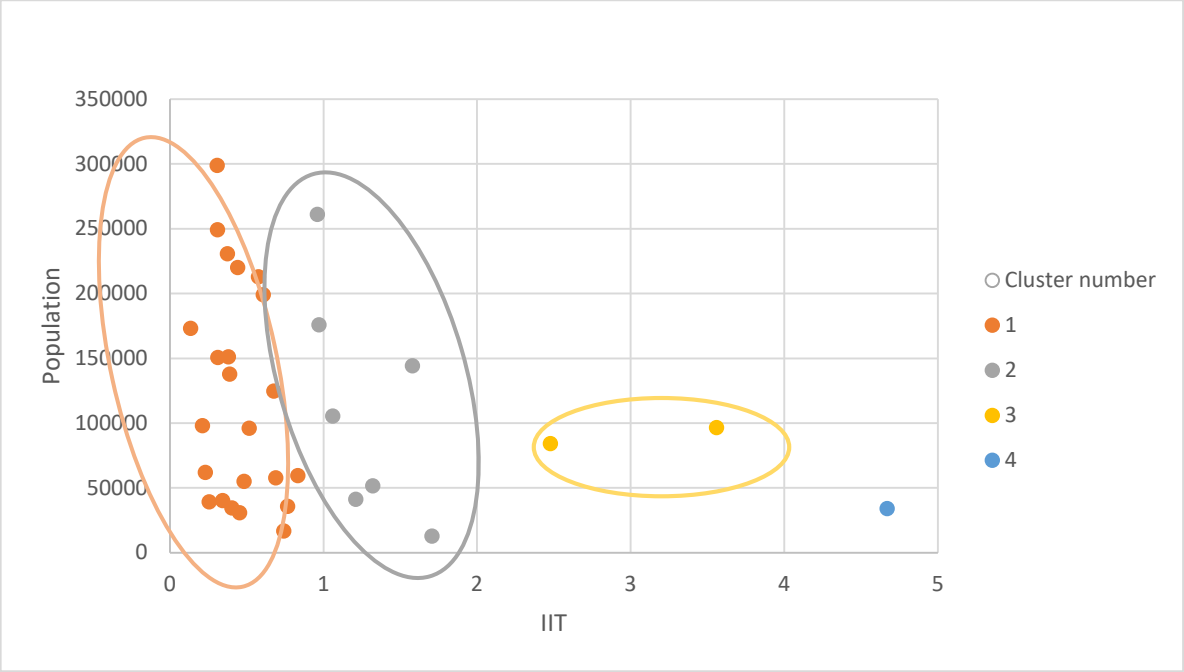
Figure 2. Cluster of medium and small Spanish cities considered tourist spots (2011)



Authors' elaboration

In 2018, the number of clusters obtained was again four, or else three with an outlier (Figure 3 and Annex-Table A4). Cluster 1 presents a sample of 23 cities (69.7%); the mean here is 0.453, the standard deviation is 0.192, and these are cities with a 'Very low' index of tourist intensity with an average population of 120,558.39, receiving an average of 235,582.91 travelers. Cluster 2 presents a sample of seven cities (21.2%); the mean TII is 1.257 with a standard deviation of 0.294. Cluster 2 represents small and medium-sized cities with a 'Low' TII level and an average population of 113,196, receiving an average of 323,043.57 travelers. The only atypical city in this group is Jaca, with an average TII of 1.706. Cluster 3 includes just two (6.1%) of the small and medium-sized cities, Santiago de Compostela and Toledo. The mean TII is 3.017 with a standard deviation of 0.765, and these are cities with an average population of 90,343.5 that receive, on average, a total of 669,676.5 travelers – indicating a 'High' level of tourist intensity. Finally, the city of Ronda (with a population of 33,978 inhabitants and 253,113 visitors in the year 2018) might again be considered an extreme case from cluster 3, or else the sole occupant of cluster 4, with a 'Very high' intensity of tourism.

Figure 3. Cluster of medium and small Spanish cities considered tourist spots (2018)



Authors' elaboration

5.3 The impacts of COVID-19 on medium and small Spanish cities in relation to flows of international travelers

COVID-19 has clearly had a very strong impact on tourism at an international scale. In countries like Spain, which in 2019 received more than 83 million international tourists, the effect has been dramatic. For the purposes of this research – the assessment of tourist intensity in medium and small Spanish cities in relation to 'Non-resident travelers' – the pandemic has generated two immediate effects: an unprecedented 86.8% decrease in international tourists visiting these cities, much greater than the impact of the economic crisis of 2008-2011 (Hidalgo & Maene, 2017); and a reduction in the number of cities analyzed, given that only 22 have so far provided statistical data to the INE, the source from which this study draws.

Despite these limitations, the TII analysis has yielded interesting results (Table 5). Regarding the first two quartiles, practically the same groups of cities are maintained as established in previous years. Salamanca, Santiago de Compostela, Toledo, and Segovia all continue to score 'Very high' according to the TII while cases such as Ávila, Cáceres, and Jerez de la Frontera sustain 'High' value. Some variations can certainly be attributed to the pandemic, such as Elche (which rose to the second quartile) and Burgos (which returned to the first). Notable cities not appearing in the 2020 data include Ronda and Jaca. In any case, the results indicate that, despite the health crisis, the groups of cities remained relatively stable during 2020, and the tourist intensity of 'Non-resident travelers' in medium and small Spanish cities was sustained.

Table 5. Tourist Intensity Indicator (non-residents/total population), medium and small Spanish cities (2020)

	(Q1) >0,421	**(Q2) >0,223**	**(Q3) >0,098**	**(Q4) >0,062**
Tourist spots (inland destinations)	**Very high**	**High**	**Low**	**Very low**
Burgos	27.2% $\bar{x}$=0,31			
Salamanca				
Santiago de Compostela				
Segovia				
Teruel				
Toledo				
Ávila		22.7% $\bar{x}$=0,13		
Cáceres				
Elche/Elx				
Jerez de la Frontera				
Mérida				
Badajoz			22.7% $\bar{x}$=0,081	
León				
Logroño				
Soria				
Vitoria - Gastéiz				
Albacete				27.2% $\bar{x}$=0,05
Lugo				
Ourense				
Oviedo				
Plasencia				
Zamora				

Authors' elaboration

Indeed, cluster analysis confirms this trend. For this period, the two-stage sampling method allows the determination of four different city groupings. Cluster 1 presents a sample of eight cities (36.4%); the mean here is 0.055 and the standard deviation is 0.008. These are cities with an average population of 111,445.25 that receive an average of 75,765 travelers ('Very low' TII). Cluster 2 presents a sample of seven cities (31.8%); the mean is 0.106 with a standard deviation of 0.017. These are cities with an average population of 161,643.14 inhabitants that receive an average of 103,249.71 travelers (small and medium-sized cities with a 'Low' TII level). The only atypical city within this group is Cáceres, with an average TII of 0.139. Cluster 3 groups a total of four cities (18.2%); the TII mean is 0.220 with a standard deviation of 0.022. This group is comprised of Burgos, Mérida, Segovia, and Teruel, with an average population of 81,065.75 inhabitants and receiving an average total of 10,4009.25 travelers (cities with a 'High' level of tourist intensity). Finally, cluster 4 includes three cities (13.6%): Salamanca, Santiago de Compostela, and Toledo, with an average population of 109,212.33 inhabitants and receiving an average number of travelers well above the global average, at 193,953.33. These cities constitute a conglomeration with a 'Very high' TII level. In

the table of means of the four clusters, all are seen to show a very low dispersion, with the 'High' and 'Very high' clusters having the least dispersed TII levels (all less than 0.5).

Student's 't' test confirms that the distribution of cities as a function of quartiles remains stable during the 2018-2020 period. No statistically significant variations are found despite the health crisis (Table 6). However, significant variations are detected in terms of the means of the cities by quartiles (Table 7), and the effect of the pandemic becomes evident when the decrease in all quartiles of close to 85% is observed (Table 8).

Table 6. T-Test for two independent samples (2018–2020). Distribution of the number of cities by quartiles*

Difference	2,033
T (observed value)	0,805
|t| (critical value)	2,776
GL	4
p-value (bilateral)	0,466
alpha	0,050

Own elaboration

* Confidence interval for the difference between the means at 95%: [-0,4,982; 9,049]
* Interpretation of the test:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.
Since the calculated p-value is greater than the significance level alpha = 0.05, the null hypothesis H0 cannot be rejected.

Table 7. T-Test for two independent samples (2018–2020). Means of cities grouped in quartiles*

Difference	0,440
T (observed value)	3,474
|t| (critical value)	2,776
GL	4
p-value (bilateral)	0,025
alpha	0,050

Authors' elaboration

* Confidence interval for the difference between the means at 95%: [0,088; 0,791]
* Interpretation of the test:
H0: The difference between the means is equal to 0.
Ha: The difference between the means is different from 0.
Since the computed p-value is less than the significance level alpha = 0.05, we must reject the null hypothesis H0 and accept the alternative hypothesis Ha.

Table 8. Percentage evolution of the TII, 'Non-resident travelers' in Spain (2018–2020)

Tourist Intensity	2018 (%)	2020 (%)	Variation 2016-2018
Very high	2.33	0.31	-86.6
High	0.77	0.13	-83.1
Low	0.45	0.081	-82
Very low	0.36	0.05	-86.1

Authors' elaboration

VI. CONCLUSIONS AND DISCUSSION

Once the results have been analyzed, a few key overarching conclusions can be arrived at. First of all, it should be noted that the tourist intensity generated by flows of international visitors to small and medium inland cities in Spain has remained very stable. No significant variations have been noted throughout the period analyzed, except due to the pandemic caused by COVID-19. The economic crisis of 2008, despite its global nature, produced no representative variations in terms of international tourist flows. Therefore, this research confirms the results of researchers such as Hidalgo y Maene (2017) indicating that international tourism in Spain remains stable despite economic crises. Continuing with this notion of stability, the excellent positioning of several Spanish cities in the international tourism market should also be noted. A series of destinations including Toledo, Santiago de Compostela, Salamanca, and Segovia persist in the first quartile of tourist intensity throughout the period under study, even in the COVID era. The TII relates international tourist flows to the local population; therefore, persistence in the first or second quartile implies that a destination continually draws a considerable volume of international visitors.

Two factors contribute most to tourist intensity in the cities analyzed: proximity to pivotal population centers such as Madrid or Barcelona; and the tourist specialization of the destinations. Spain's most populous cities serve to channel international flows to other destinations, also facilitating mobility as communication hubs (airports, high-speed rail, highways, etc.), as indicated by authors including Giussani *et al*. (2010). Apart from proximity to major population centers, the high specialization of these destinations in products related to culture and heritage further contributes to tourist intensity, as noted by Barrera-Fernández *et al*. (2017), Gómez & Guzmán (2017), and Pardo-Abad (2011). All of the cities analyzed possess exceptional cultural features that have won them the special status of 'Asset of Cultural Interest' (*Bien de Interés Cultural*), granting the maximum protection that a heritage element can enjoy in Spain. The cultural wealth recognized in the Camino de Santiago and similar activities has prompted their integration into programs of both national and international scope, including UNESCO's World Heritage Cities and the Council of Europe's Cultural Itineraries. It is not surprising, therefore, that a large part of the scientific literature examining tourism in medium and small cities does so from a cultural perspective, as heritage is the resource most often used to articulate the touristic dynamization of destinations (Barrado-Timón et al., 2020).

This research has shown that tourist intensity is a phenomenon that extends to medium and small Spanish cities, which have experienced growth in terms of urban tourism

in recent years. While their touristic offer is certainly more limited than that of large cities, the high level of specialization of these cities contributes to a differentiated brand image that favors their positioning in the international market. Thus our starting hypothesis is confirmed: tourist intensity is not a phenomenon exclusive to large Spanish cities, but one which shows analogous behavior in smaller urban spaces, suggesting that tourist intensity is a manifestation that can equally affect all urban tourist destinations regardless of size.

This study has focused on the use of the TII as a tool for assessing the tourist intensity of small and medium-sized Spanish cities in a way that contributes to diagnosing the risks of overtourism, touristification, and tourismophobia. Nevertheless, the authors are aware that the TII has significant limitations, and that it is necessary to strengthen this indicator by including additional parameters such as evaluation of the implementation of tourism policies, evolution of the population, or assessment of the tourism tradition, among other factors. Once the tourist intensity in medium and small Spanish cities has been demonstrated and characterized from a macro perspective, new studies will necessarily be proposed to analyze the repercussions of this phenomenon on destinations.

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ANNEX. Table A1. Tourist Intensity Indicator (non-residents/total population), medium and small Spanish cities

Year 2003	**(Q1) >2,870**	**(Q2) >0,620**	**(Q3) >0,330**	**(Q4) >0,154**	**Year 2011**	**(Q1) <3,438**	**(Q2) <0,585**	**(Q3) <0,321**	**(Q4) <0,206**	**Year 2018**	**(Q1) >0,569**	**(Q2) >0,318**	**(Q3) >0,189**	**(Q4) >0,080**
Tourist spots (inland destinations)	**Very high**	**High**	**Low**	**Very low**	**Tourist spots (inland destinations)**	**Very high**	**High**	**Low**	**Very low**	**Tourist spots (inland destinations)**	**Very high**	**High**	**Low**	**Very low**
Arcos de la Frontera	**24.1% X̄=1,47**				Ávila	**26.4% X̄=1,42**				Jaca	**21.2% X̄=2,33**			
Jaca					Burgos					Ourense				
Ronda					Cuenca					Ronda				
Salamanca					Jaca					Salamanca				
Santiago de Compostela					Ronda					Santiago de Compostela				
Segovia					Salamanca					Segovia				
Toledo					Santiago de Compostela					Toledo				
Ávila		**24.1% X̄=0,45**			Segovia					Ávila		**24.2% X̄=0,77**		
Burgos					Toledo					Burgos				
Cáceres					Arcos de la Frontera		**23.5% X̄=0,45**			L'Hospitalet de Llobregat				
Cuenca					Ciudad Rodrigo					León				
Jerez de la Frontera					Jerez de la Frontera					Mérida				
Mérida					León					Pamplona/Iruña				
Úbeda					Mérida					Teruel				
Benavente			**24.7% X̄=1,34**		Pamplona/Iruña					Zafra				
León					Teruel					Arcos de la Frontera			**24.2% X̄=0,45**	
Logroño					Úbeda					Cáceres				
Pamplona/Iruña					Badajoz			**20.5% X̄=0,27**		Cuenca				
Soria					Benavente					Jerez de la Frontera				
Teruel					Cáceres					Lleida				
Zamora					Logroño					Logroño				
Albacete				27.5%	Manzanares					Oviedo				

Lleida				$\bar{X}$=0,10	Oviedo					Úbeda				
Lugo					Vitoria - Gastéiz					Albacete				**30.3% $\bar{X}$=0,36**
Ourense					Albacete				**29.4% $\bar{X}$=0,15**	Antequera				
Oviedo					Elche/Elx					Badajoz				
Torrelavega					Lleida					Elche/Elx				
Valladolid					Palencia					Lugo				
Vitoria - Gastéiz					Plasencia					Plasencia				
					Ponferrada					Soria				
					Soria					Valladolid				
					Valladolid					Vitoria - Gastéiz				
					Zamora					Zamora				

Authors' elaborat