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Location on hotels value in sun and sand destinations: Case study using GIS and Hedonic modeling in Alcudia Bay.

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ABSTRACT

The present article studies the relevance of location on sun and sand destinations by analyzing two aspects: first, the relationship between prices and location features, and second, the spatial distribution of hotels. The studied destination is Alcudia Bay, a Majorcan famous sun and sand area located on the north-east of the island. The task is achieved using hedonic regression to estimate the value of location features on hotel prices, and spatial analysis (Getis-Ord Gi*, Anselin Local Morans I statistics and Interpolation) to map the level of clustering of different hotels characteristics. Data from the hotels of the area has been collected using Tripadvisor, Online Travel Agencies (OTAs) and Hotel websites. Findings confirm the effect of certain location variables on prices, mainly a negative effect between prices and distance to the beach, distance to urban centers and presence of competence. As for the spatial analysis, it has confirmed areas that can be considered of low and high quality, denoting mature destinations, and different urban and economic trends useful for decision-making processes.

1. INTRODUCTION

The Balearic Islands, an archipelago located in the western Mediterranean Sea, are a famous sun and sand destination among European citizens. The importance of tourism for the Balearic society is well presented in economic figures: almost 45% of their GDP is produced by tourism industry, generating around 32% of the employment and representing nearly a 40% of the total taxes collected by the Balearic Government (*Impactur, 2014*). This situation makes necessary for public and private institutions to have all possible knowledge, as a necessity for improving the management of the main boosting economic sector of the island, either for better economic performance or better coexistence between social welfare, environmental sustainability and touristic pressure.

The aim of the present paper is to use hedonic modeling (regression analysis) in combination with spatial techniques (using Geographical Information Systems, GIS) to promote alternative methods that can help to better characterize touristic spots. The two main objectives of the paper are, first, use regression analysis to define the relation between prices and location variables. And second, use geographical information systems to apply clustering (Local Indicators of Spatial Association, LISA statistics) and interpolation methods to map the spatial distribution of touristic variables, such as price or stars category, to define the spatial organisation of hotels and the tourism economy.

The destination analysed is the Majorcan touristic area of Alcudia Bay, formed by 3 main cells or resorts: Alcudia beach, Muro beach and Can Picafort. A variety of secondary data has been used, both quantitative and qualitative, collected from different sources and explain it in depth on following pages. Results obtained are presented both in tables and maps showing the relation between all variables and how econometrics techniques combined with GIS are a helpful tool to improve evaluation of coastal sun and sand areas, and for the concrete case of Mallorca it deepens the knowledge about Alcudia Bay.

2. LITERATURE REVIEW

Tourism on last decades has turned into a relevant world economic sector, being even the main economic resource in some regions as the Balearic Islands. In our paper the hedonic price model (*Rosen, 1974*) and spatial statistics (*Getis and Ord, 1992; Anselin L., 1995)* are used to estimate the value of location on sun and sand destinations. Tourism development in sun and sand destinations is well studied. *Espinet et al* (2001 & 2003) examined the effect on price of different characteristics of holiday hotels in the sun-and-beach segment using the hedonic function. Between their numerous findings one of them is the significant effect on price of concrete towns and distances to the beach, among other structural variables. This paper establishes two important facts for our research, first it confirms significance of location features, and second, it analyses in depth structural features of hotels (number of rooms, outdoor swimming pool, accepts credit cards, air-conditioning…), this is relevant because our research tries to reduce structural variables and focus mainly on location variables, hence we want to collect the more significant structural variables and not all of them. This last consideration is relevant for a reason, since hotel star rating is nothing more than a representation of a big pool of structural variables, considering both hotel star rating and independent structural variables could lead to endogeneity. In this sense, there is no such a thing as an international common method for hotel star rating. Even in Spain different autonomous communities have different methodologies. In the Balearic Islands, the standards are defined by the Balearic government in the *Decret 20/2015, de 17 d'Abril*. This law defines a questionnaire with 362 characteristics, in which each characteristic has a defined score, and the sum of all the scores, the final score, determines the hotel category. This score moves from 120 points for receiving the one-star hotel category to 950 points for receiving the Big Luxury category (requiring 700 points for five-stars category). About the locational factor it is represented in 4 of the 362 characteristics (number 4, 5, 6 and 7 on the questionnaire), summing up a total of 16 points, which is 1,7% of the total possible score (950 points). Hence the locational factor plays a small role in the star rating, being shadowed by the higher punctuation of structural variables such as: room size, bed size, architecture of the building, existence of lifts among others.

Later, *Thrane* (2005) show some light on this issue studying the possible endogeneity of the hotel star rating variable trough hierarchical regression. *Thrane* concludes that the hotel star rating variable has a strong effect on the overall package tour price even when some separately independent variables have not. This will partially determine our model, since we

just considered then as necessary hotel star rating and a few other relevant structural variables to reduce unproductive collection of data while keeping the most important structural variables for a good-fitness hedonic model.

Among location factors, seems evident that beaches are the prime motivation on sun and sand tourism, and as literature suggest they can thus be considered a core product for this kind of destination (*Aguiló et al, 2003; Aguiló et al, 2005; Alegre et al, 2011*). Also, beaches width and quality have a clear influence on the value of coastal property (Hamilton & Morgan, 2009; Gopalakrishnan et al, 2009). Hence, if quality of beaches influences coastal property it should too influence hotel prices, then different places, with different beaches, must show also variability in the price component. This spatial variability of price according to place, among different Mediterranean destinations, was one of the finding of *Juaneda, Raya & Sastre (2011).* The importance of place is even relevant at the scene-view level, and rooms with sea-view have a higher price than those who are not *(Fleischer, 2011*).

All the previous reinforced our main research goal: unfold if a set of different location features have significance influence on price component. To examine the combination of GIS and hedonic pricing, *Alegre, Cladera and Sard (2013)* undertook a rich study examining the effects of location attributes on prices, findings suggest that location attributes influence prices, such as beach distance, room with sea-view and distance to the centre of the tourist resort. The GIS-Hedonic approach is confirmed too as useful in other fields (*Kong et al*, 2006; J*ae Su and Ming-Han, 2008; Norzailawati et al, 2014*), being useful to determine i.e., the value of green spaces or landscape amenities on properties value.

About spatial techniques, are a useful and valid tool for complementing tourism analysis. *Bateman et al (2000)* highlighted the great potential which GIS techniques offered for incorporating the spatial dimension into applied studies, mainly environmental and economics. But the diversity of studies discussed illustrated the great flexibility and applicability of such techniques to a range of issues. The paper exemplified how the functionality provided by GIS packages allows the researcher to incorporate spatial complexity directly within applications. Some examples are the ability to incorporate detailed isochrones into travel cost studies, to assess what can and cannot be seen from each property in a hedonic pricing study, or to include the aspect angle in models of timber yield.

Yang et al (2012) suggests that, star rating, ownership, agglomeration effect, public service infrastructure and accessibility to tourism sites are important determinants in the distribution pattern and choosing of hotels. This choosing pattern follows the rule defined by *Tobler (1970)* of "*everything is related to everything else, but near things are more related than distant things*" published in the paper *A computer movie simulating urban growth in the Detroit region,* which established the foundations of the concept of spatial dependence. The concept of spatial dependence is the principle used to analyse Alcudia Bay using LISA statistics and Interpolation techniques.

Interpolation is a technique that predicts values for cells in a raster from a limited number of sample data points, being frequently used for natural and physical phenomena, but it offers utility, with certain restrictions of interpretation, for social and economic phenomena. *Estrany and Vicens (2000)* and later *Estrany and Galiano (2013)* analysed how the different economic sectors where distributed in the Majorcan municipality of Inca using interpolation techniques and compared the evolution.

About LISA statistics, broadly used in the field of healthcare and criminology. It too offers upside in the field of economy. *Geoghegan et al (1997)* used spatial techniques and a hedonic model to explain residential values in a region within a 30-mile radius of Washington DC. *Le Gallo and Ertur (2003)* detected clusters of high and low per capita GDP in a sample composed by 138 European regions. *Baumont et al (2004)* highlighted using LISA statistics the monocentric character of the agglomeration of Dijon (the regional capital of Burgundy, France). And *García-Palomares et al* (2015) used Getis-Ord General G statistic and the Global Moran's I statistic to determine global location patterns on main European tourist attractions.

3. METHODOLOGY AND DATA

3.1 AREA OF STUDY

The area of study is Alcudia bay, a coastal area composite by 4 municipalities: Alcudia, Muro, Santa Margalida and Arta. All municipalities have some level of tourism development in their coast, but the 3 main spots are in Alcudia, Muro and Santa Margalida, all located approximately 40 kilometres away from the airport of the island. These are: *Alcúdia Beach*, inside the municipality of Alcudia; *Muro Beach*, an urban area inside Muro and Alcudia and *Can Picafort*, inside the municipality of Santa Margalida (figure 1).

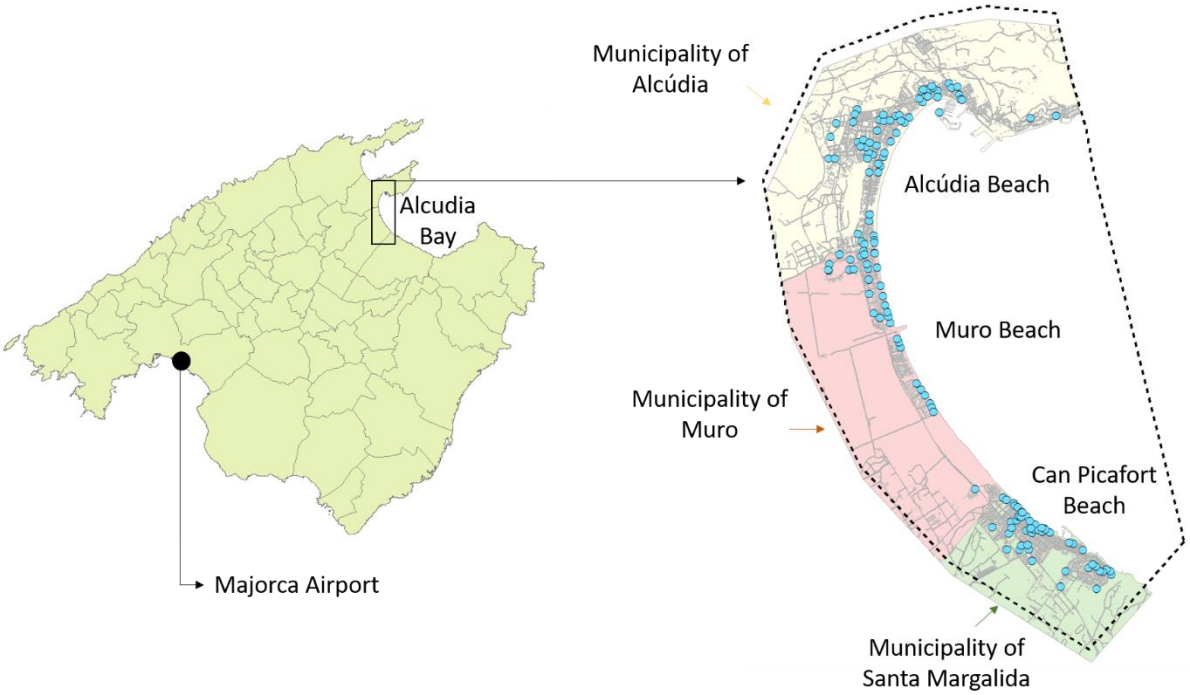
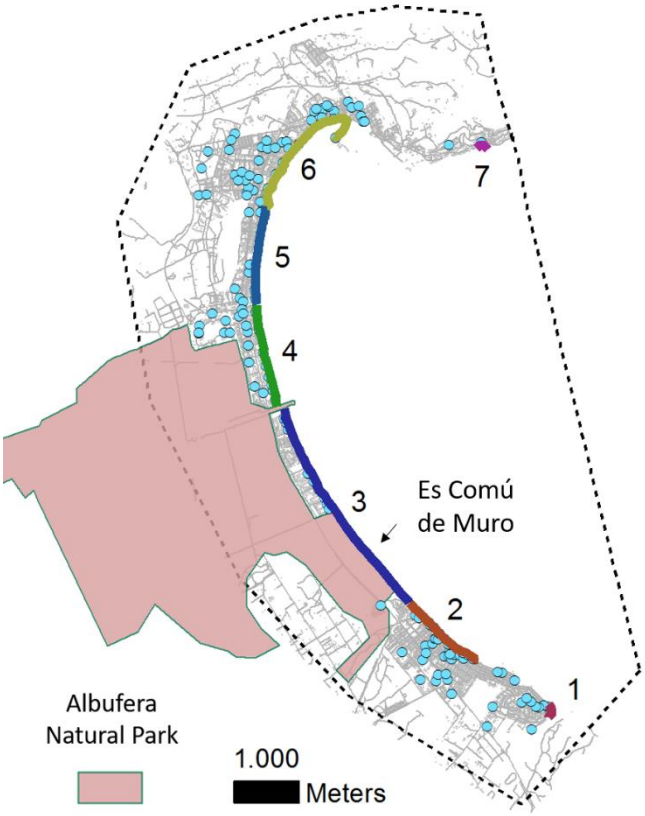


***Figure 1**. Area of study and hotels database distribution (blue points).*

The study area has a land penetration from the coastline of 1,5 kilometres at its max extend. This means the furthest hotel found inside the area of study is no more than 1.500 meters away from the closest beach. We do not analyse hotels farther away from 1,5 kilometres from the coast. This distance is set by the own urban land organisation, hotels located inside the mentioned municipalities but outside the resort area were omitted because of spatial and conceptual reasons: are clearly disconnected from the resort in terms of distance and although being in Majorca and having easy access to beaches, hotels located a few kilometres away

from coastline are better considered rural tourism. Also, the northernmost hotel is 12 kilometres away from the southernmost hotel.

In terms of natural characteristics, the area of study presents no differences in terms of altitude, surrounded by plain terrain. Waves, tides, and wind dominance doesn't offer significance differences. Sand composition is also similar, carbonate beaches with sediments supplied by biogenic debris (*Jaume and Fornós, 1992*). In this sense, each municipality overtakes maintenance services prior to the beginning of the season, sometimes this implies the import of sand sediments from the marine platform. It can be a relevant factor in coastal processes and sand composition, but it is not for our research objectives. Only two natural factors were found to be worth of consideration in our research: beach disposable area (width and length) and the presence of a well-conserved beach sector inside the Albufera Natural Park.



ID	Beach Name	Width	Length
1	Son Baulo	60 m	239 m
2	Can Picafort	30 m	1413 m
3	South Muro	20 m	3630 m
4	North Muro	22 m	1616 m
5	South Alcudia	25 m	1550 m
6	North Alcudia	65 m	2401 m
7	Alcanada	15 m	224 m

***Figure 2**. Albufera Natural Park, beaches distribution and width in Alcudia Bay.*

The beach sector incorporated in the Albufera Natural Park, known as *Es comú de Muro* and part of Muro Beach, is an especially protected beach due to their dune system located at the backshore. This protection and the lack of hotels and urban settlements on the coast line

makes it a different option in comparison with the other beaches of Alcudia Bay. In terms of width we used orthophotography (Ortofoto 2010-2011 IB 25cm, IDEIB) and field work to classify the area of study, a total of 7 sectors can be distinguished based on beach width (figure 2).

3.2 DATA COLLECTION

The core sample of hotels was taken from the IDEIB (*Infraestructura de Dades Espacials de les Illes Balears*) public database, formed by 164 hotels from which: 64 are in Alcudia beach, 54 are in Can Picafort and 46 in Muro beach. A total of 37 hotels were dropped due to important gaps of information, for a final database of 129 hotels, from which: 44 are in Alcudia beach (10.343 rooms available), 47 are in Can Picafort (6.313 rooms available) and 38 in Muro beach (6.964 rooms available). Among the dropped cases, but only for the spatial analysis and not the hedonic, are also the two hotels located at Alcanada beach (figure 2). Alcanada beach is slightly isolated, and it was decided to better keep that area out of the spatial analysis. Other sources for the hotel sample collection were considered, but none of them offered the reliability of the IDEIB database.

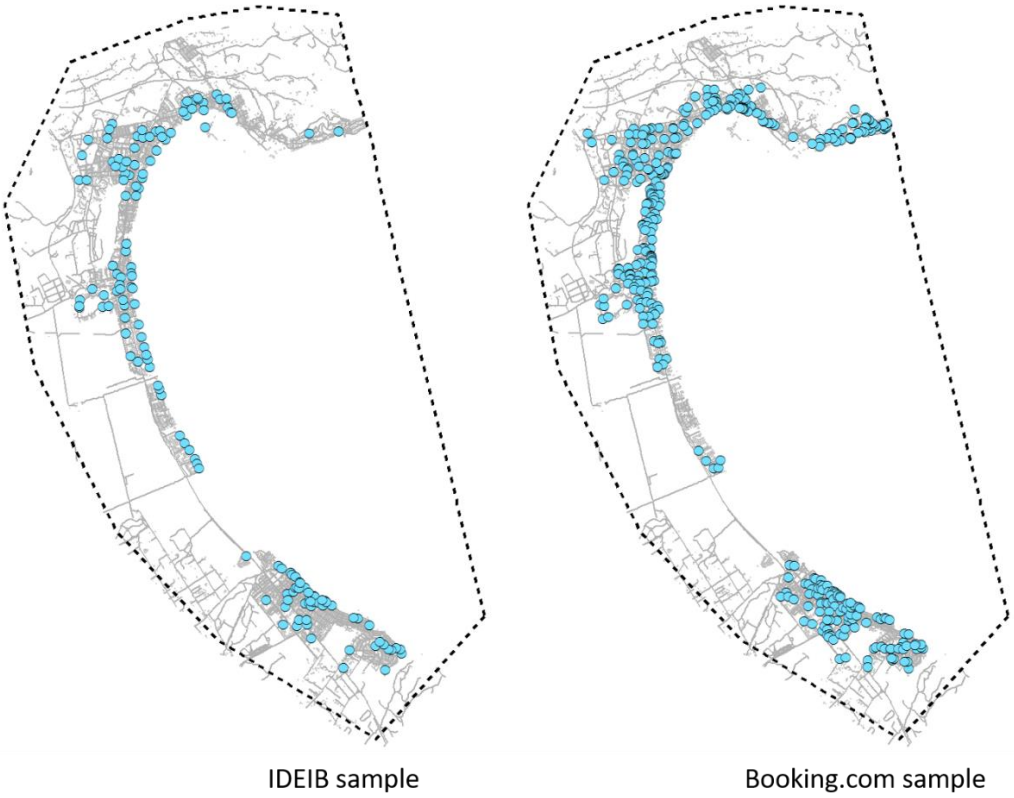


***Figure 3**. IDEIB hotels database (left) and Booking.com (right) hotels database.*

The Booking.com sample database was too initially collected because it offered a bigger pool of cases, 375 cases in opposition to the 164 from IDEIB. But the sample of Booking.com has both hotels, apartments and vacation rentals, from a typology perspective is very heterogeneous, that mix of typologies was out of the scope of the paper and it was not proper for being our core sample. The desired sample was one homogenous formed by registered hotels, hence the IDEIB database (held by governmental institutions) offered a more solid and rigorous option. Nonetheless this data from booking.com is interesting, and it has been used to generate variables of pressure and competence.

The dataset of the study is formed by the following variables:

Variables	**Description**
Dependent Variables	
Price	Price in euros of standard room, 1 night, 2 people
Log Price	Logarithm of Price
Hotel structure and service (S)	
Stars	Hotel star rating, from 1 to 5+
Star 1	If the hotel is 1 or 1+ star hotel: Yes = 1; No = 0
Star 2	If the hotel is 2 or 2+ star hotel: Yes = 1; No = 0
Star 3	If the hotel is 3 or 3+ star hotel: Yes = 1; No = 0
Star 4	If the hotel is 4 or 4+ star hotel: Yes = 1; No = 0
Star 5	If the hotel is 5 or 5+ star hotel: Yes = 1; No = 0
Room size	Number of square meters of the standard hotel room
Hotel size	Number of rooms in the hotel
Hotel Size squared	Hotel Size variable squared
Pool	If the hotel has pool: Yes = 1; No = 0
Kitchen	If the hotel has kitchen: Yes = 1; No = 0
Meta score	Travelers websites score, from 0 to 100
Log Meta score	Logarithm of Meta score
Spatial and locational features (L)	
Distance to beach	The distance in metres to the nearest beach

Distance to centre	The distance in meters to the nearest resort centre
Distance to restaurant	The distance in meters to the nearest restaurant
Distance to Albufera	The distance in meters to the Albufera Natural Park
Distance to Alcudia	The distance in meters to the city of Alcúdia.
Apartments pressure	The number of apartments at a 200 meters buffer
Hotels pressure	The number of hotels at a 200 meters buffer
Restaurants pressure	The number of restaurants at a 200 meters buffer
A&H pressure	The number of apartments and hotels at a 200 meters buffer
Son Baulo beach	If the hotel nearest beach is Son Baulo beach: Yes = 1; No = 0
Can Picafort beach	If the hotel nearest beach is Can Picafort beach: Yes = 1; No = 0
North Muro beach	If the hotel nearest beach is North Muro beach: Yes = 1; No = 0
South Muro beach	If the hotel nearest beach is South Muro beach: Yes = 1; No = 0
North Alcudia beach	If the hotel nearest beach is North Alcudia beach Yes = 1; No = 0
South Alcudia beach	If the hotel nearest beach is South Alcudia beach: Yes = 1; No = 0

***Table 1**. Variables included in the dataset and their description.*

The sources of the dataset have several origins. Prices are taken from Tripadvisor.com, the prices showed in Tripadvisor.com are the average nightly price for 2 people and 1-night stay provided by the following companies: Booking.com, Expedia.es, Hoteles.com, eDreams, Rumbo.es, AMOMA, Roomdi.com, TUI, Atrapalo.com and HotelQuickly. In some cases where price in Tripadvisor.com was not found (very few), an average price of different months (15th of May, June, July, August, September and October) was done taken the information from the Hotel website and from some of the previous mentioned Online Travel agencies (OTA's) if available, if not, then the hotel case was dropped. As a mean to verify the validity of the data prices presented in Tripadvisor.com all prices from the hotels were taken individually from two OTA's: Booking.com and Expedia.es. The correlation between the Tripadvisor.com prices and the OTA's prices is positive and strong (0.77, see Appendix A). It was considered high enough, and hence valid for the analysis.

The data from: Stars, Room size, Hotel Size, Pool and Kitchen was taken from various sources, since all data was not available in one unique source. Sources are: Hotel websites, Booking.com, Tripadvisor.com and HolidayCheck.de. In relation to hotels meta scores, it represents the average value of three travel websites: Booking.com, Tripadvisor.com and

Holidaycheck.de. Since not all hotels are on the three travel web platforms the score can be formed by one or two platforms only, not necessarily the mentioned three.

When measuring distances from locations: distance to beaches, to resort centres, to Albufera Natural Park, to Alcudia, to other hotels, to apartments/vacation rental and to restaurants. The used technique was the simplest Euclidean distances (using GIS software). This technique simply calculates the closest linear distance from *A* (i.e. a Hotel) to *B* (i.e. a beach). Although is true that real distances from accommodation to locations are not strictly linear, considering the street structure (coast oriented) and the flat terrain, differences between Euclidean and non-Euclidean distances should not be relevant.

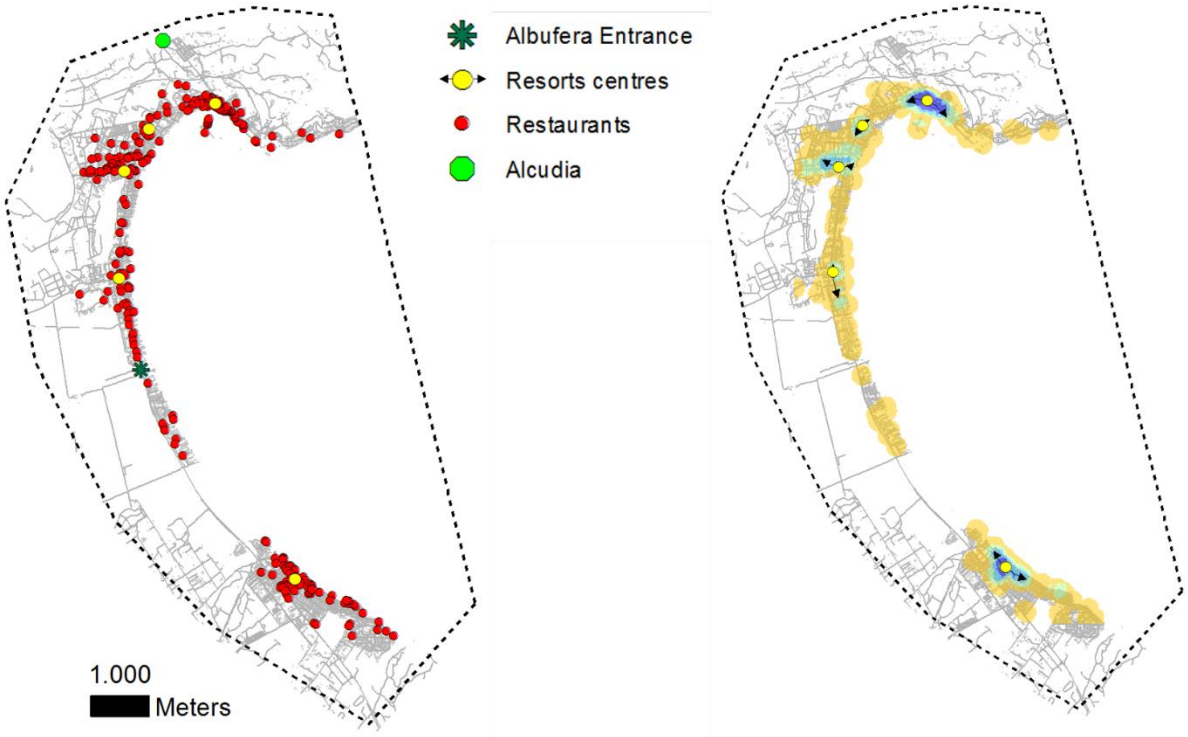


***Figure 4**. Restaurants distribution and other locations (left). Definition of Resort centres through the usage of density maps (right).*

The apartments and vacation rental data was taken from booking.com, as mentioned earlier. The data for restaurants was taken from Tripadvisor.com. The reference point for the distance between the Albufera Natural Park and the hotels was always the entrance located in front of *el Port dels Anglesos*. The centres of the resorts were generated following point density techniques applied to restaurants data. The assumption was to consider a resort centre a high accumulation of restaurants, giving our data conditions, we considered a resort centre an area with more than 1 restaurant per hectare, a total of five centres were defined.

The sample is considered representative since it uses the average price of 10 of the most important OTA's and it covers 78.7% of the registered hotels in our area of study. A summary of the descriptive results of the variables of the dataset is presented in table 2.

Variable	Mean	Minimum	Maximum	Std. Dev.
Dependent Variables				
Price	146.32	31.0	323.50	60.78
Log Price	4.90	3.43	5.77	0.41
Hotel structure and service (S)				
Stars	3.37	1.0	5.0	0.81
Star 1	0.03	0	1.0	0.19
Star 2	0.06	0	1.0	0.24
Star 3	0.41	0	1.0	0.49
Star 4	0.42	0	1.0	0.49
Star 5	0.03	0.0	1.0	0.17
Room size	29.61	12.0	61.0	12.18
Hotel size	185.58	10.0	1468.0	162.63
Hotel size squared	60685.9	100.0	2.15502e+006	193266.0
Pool	0.92	0	1.0	0.26
Kitchen	0.46	0	1.0	0.50
Meta score	81.32	51.70	92.30	8.00
Log Meta score	4.39	3.94	4.52	0.10
Spatial and locational features (L)				
Distance to beach	253.18	4.41	1104.87	268.95
Distance to centre	486.59	0.87	2586.60	608.85
Distance to restaurant	99.65	4.09	447.37	85.53
Distance to Albufera	1612.36	0	4855.87	1288.06
Distance to Alcudia	5739.92	1107.02	11213.0	3502.82
Apartments pressure	7.07	0	18.0	4.56
Hotels pressure	3.82	1.0	11.0	2.27

Restaurants pressure	6.87	0	30.0	6.55
A&H pressure	10.89	1.0	27.0	6.30
Son Baulo beach	0.06	0	1.0	0.25
Can Picafort beach	0.28	0	1.0	0.45
North Muro beach	0.16	0	1.0	0.37
South Muro beach	0.07	0	1.0	0.26
North Alcudia beach	0.29	0	1.0	0.45
South Alcudia beach	0.09	0	1.0	0.29

***Table 2**. Summary Statistics, using the observations 1 – 129*

3.3 METHODS

The methodology is structured in two parts: regression techniques and spatial techniques. The first part has been done using the open-source software Gretl and the second one has been done using the proprietary software ArcGIS.

3.3.1 Regression analysis (hedonic pricing)

The theoretical and statistical foundations of hedonic price theory are found in the works of Lancaster (1966), Rosen (1974), and Feenstra (1995). In essence, this theory assumes that the price of a product is a function of its immanent utility-bearing characteristics or attributes. In this sense, tourism accommodations are not homogeneous. They are composed of different characteristics. Therefore, hotel price can be described as a function of different heterogeneous dimensions or factors. They generally consist of the hotel structure-services and locational-spatial features. A hedonic price analysis will be conducted of the prices of hotels considering structural and spatial variables. The functional form of the empirical model can be expressed as follows:

$$AP = f(x_1, x_2, x_3 \ldots x_n)$$

Where (AP) is the accommodation price in a touristic area and (x_1), (x_2) …(x_n) are heterogeneous characteristics of the accommodations. The heterogeneous characteristics can also be divided into several groups. Where (HP) is accommodation price in a touristic area, (S) are the structural characteristics, (L) are locational and spatial characteristics, (α) is a

constant, (β_1), and (β_2) are estimated parameter vectors and (ε) is the error term. The model can then be expressed as follows:

$$HP = \alpha + \beta_1 S + \beta_2 L + \varepsilon$$

The model used is a linear model (OLS). A semi-log model is also used and the results are equally presented in the paper. Heteroskedasticity and correlation analysis has been done and the existence of multicollinearity has been checked. The number of variables used in regression analysis has been defined according to the previous mentioned factors, sample size and previous studies. The dependent variables used in the final model are the following: Price and Log Price. The explanatory variables used in the final model are the following: hotels categories (1,2,4 and 5 stars), room size, hotel size, hotel size squared, distance to beach, to centre, to restaurant, to Albufera, to Alcudia and A&H pressure.

As an additional analysis, the same model of explanatory variables but with the dependent variable being the meta score and the logarithm of meta score of the hotels will also be presented in the results section.

3.3.2 Spatial analysis

Spatial analysis are techniques which study entities using their topological, geometric or geographic properties. In our research, we use Local Indicators of Spatial Association (LISA), interpolation techniques and density maps.

3.3.2.1 LISA statistics

Local Indicators of spatial association (LISA). Are statistics that evaluate the existence of clusters in the spatial arrangement of a given variable. For instance, if we are studying prices among the hotels in Alcudia Bay (or each of its touristic spots), local clusters in prices mean that there are areas that have higher or lower prices than is to be expected by chance alone; that is, the values occurring are above or below those of a random distribution in space. LISA will help us then to identify hotspots, coldspots and outliers on prices, meta score and other variables to try to understand better the spatial patterns of hotels in Alcudia Bay.

When applying LISA measures a previous step is to verify the non-random distribution of our sample. For this purpose, an Average Nearest Neighbour analysis has been conducted, which

calculates a nearest neighbour index based on the average distance from each feature (hotels in our case) to its nearest neighbouring feature. Results suggest our sample does not follow a random distribution, results are accessible in table 3 and show a z-score of -11,90, indicating there is a less than 1% likelihood that the pattern could be the result of random chance, and that the pattern is a clustering pattern, in opposition to a dispersed pattern.

Average Nearest Neighbour Summary	
Observed Mean Distance:	116,974583
Expected Mean Distance:	261,213384
Nearest Neighbour Ratio:	0,447812
z-score:	-11,904726
p-value:	0,000000

***Table 3**. Average Nearest Neighbour analyzing pattern, using the observations 1 – 127. High negative z-scores suggest clustering pattern while high positive z-score suggest dispersed pattern.*

The two LISA measures to be used are Cluster and Outlier analysis (Anselin Local Moran I) and Hot Spot analysis (Getis-Ors Gi*).

Anselin Local Morans I: Identifies statistically significant spatial outliers, as well as hot spots and cold spots. The conceptualization of spatial relationships used in our analysis is the simple Inverse Distance, from which nearby neighbouring features (hotels) have a larger influence on the computations for the target feature than features that are far away. In terms of threshold distance, all hotels are considered neighbours of all other hotels; this means that we analyse the different spots of Alcudia Bay altogether and as a continuous space of individual features. However, since we use the Inverse Distance conceptualization hotels that are closer have a bigger influence than hotels that are further away.

Getis-Ord Gi*: Identifies statistically significant hot spots and cold spots. The conceptualization of spatial relationships used in our analysis is the Zone of Indifference, from which features within the specified critical distance of the target feature receive a weight of 1 and influence computations for that feature. Once the critical distance is exceeded, weights, and the influence of neighbouring features, diminish with distance. This conceptualization gives an equal weight to the features inside the selected distance, in opposition to Inverse Distance where influence reduces from the very first meter away from the target feature. In terms of threshold distance or critical distance, the distance used is 3.000 meters for two reasons, first, because is where the z-score peaks: 8.64 (table 5), and hence where more clustered are our

hotels (and less random is the distribution), and second, because in opposition with the Anselin Local Moran I, with this measure we want to apply a more zonal analysis, this means we want to focus our analysis not as a continuous space of individual features, but instead analyse the space from the perspective of the three main resorts: Can Picafort, Muro Beach and Alcudia beach. This way the results interpretation will be based on the trend differences between the three main resorts of Alcudia Bay.

Spatial Autocorrelation (Moran I) among variable Price						
Meters	1000	2000	3000	4000	5000	6000
Moran's Index:	0,31510	0,28422	0,26657	0,25321	0,24247	0,23511
Expected Index:	-0,00793	-0,00793	-0,00793	-0,00793	-0,00793	-0,00793
Variance:	0,00158	0,00115	0,00100	0,00092	0,00088	0,00084
z-score:	8,11783	8,59715	8,64285	8,56736	8,41607	8,35429
p-value:	0,00000	0,00000	0,00000	0,00000	0,00000	0,00000

***Table 4**. Spatial autocorrelation (Moran I) among variable Price, using the observations 1 – 127.*

Results from Spatial autocorrelation Moran I (table 4), besides being the measure used to select the threshold distance in our Hot Spot analysis, also coincides with the results of the Average Nearest Neighbour measure, suggesting our sample follows a clustering pattern rather than a dispersed one. In opposition with the Average Nearest Neighbour, higher positive z-scores in Spatial autocorrelation Moran I suggest clustering pattern. The clustering pattern can be explained by a simple logical fact, since the beach is the main core product of sun and sand destinations (*Aguiló et al, 2003*), then hotels are clustered near the coast line and at the urban agglomerations disposed on the terrain.

3.2.2 Interpolation technique

Interpolation is a technique that predicts values for cells in a raster from a limited number of sample data points. It is used to predict unknown values for any geographic point data. The interpolation technique follows specifically the Tobler's First Law, which is the foundation of the concept of spatial dependence and which states that "*everything is related to everything else, but near things are more related than distant things*" (*Tobler, 1970*). Hence it is frequently used for natural and physical phenomena, such as rainfall or noise level. For social phenomena interpolation presents some limitations since the concept of spatial dependence does not hold or is weak in multiple cases. The interpolation results are presented in next section for different variables, but is important to note that those must not be read it from a strict view of an

interpolation result, this means: areas of same values should not be interpreted as feasible potential areas of the hypothetical value. Instead the results should be analysed as a general trend image and as a useful tool to visualize areas of high and low values, and to complement results from LISA statistics.

The interpolation results maps consider all the 127 hotel data points of our database and uses the Inverse Distance Weighted (IDW) method. The Inverse distance weighted (IDW) interpolation determines cell values using a linearly weighted combination of a set of sample points. The weight is a function of inverse distance. This method assumes that the variable being mapped decreases in influence with distance from its sampled location. For example, when interpolating a surface of consumer purchasing power for a retail site analysis, the purchasing power of a more distant location will have less influence because people are more likely to shop closer to home.

3.3.2.3 Density maps

The density maps used the point density techniques. Density analysis takes known quantities of some phenomena, i.e., points representing restaurants, and spreads them across the landscape using neighbourhood method, this is based on the quantity that is measured at each location and the spatial relationship of the locations of the measured quantities. A neighbourhood is defined around each raster cell centre, and the number of points that fall within the neighbourhood is totalled and divided by the area of the neighbourhood. The result is a heat-type map, that draws areas composed by cells that represent similar density values of a concrete variables (price, rating...). In opposition with Interpolation, density maps do not calculate potential values of unknown areas, and the results are representation of the known data cases.

4. RESULTS

4.1 HEDONIC REGRESSION

The final model, with the variables *Price* and *Log_Price* as dependent variables and refined by considering factors of correlation, explanatory power and previous studies, are presented in table 5 and 6. As additional information for further analysis, table 7 presents the same model of explanatory variables but with the dependent variable being the logarithm of meta score of the hotels.

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
constant	135.102	21.9879	6.1444	<0.0001	***
Star 1	−1.34564	20.4959	−0.0657	0.9478	
Star 2	−28.7609	16.6027	−1.7323	0.0859	*
Star 4	21.8922	8.85879	2.4712	0.0149	**
Star 5	121.367	22.1032	5.4909	<0.0001	***
Room Size	0.701022	0.338446	2.0713	0.0405	**
Hotel Size	0.199879	0.053135	3.7617	0.0003	***
Distance to Beach	−0.0427565	0.0159982	−2.6726	0.0086	***
Distance to Centre	0.00692021	0.0077491	0.8930	0.3737	
A&H Pressure	−2.00884	0.821629	−2.4449	0.0160	**
Distance to Albufera	−0.00170238	0.00340979	−0.4993	0.6185	
Distance to Alcudia	−0.00293353	0.00138241	−2.1220	0.0360	**
Hotel Size Squared	−0.000147495	4.18832e-05	−3.5216	0.0006	***

Mean dependent variable	146.3295	S.D. dependent variable	60.78836
Sum squared residual	190401.4	S.E. of regression	40.51409
R-squared	0.597450	Adjusted R-squared	0.555807
F(12, 116)	14.34694	P-value(F)	6.81e-18
Log-likelihood	−653.7046	Akaike criterion	1333.409
Schwarz criterion	1370.587	Hannan-Quinn	1348.515

***Table 5**. OLS model using observations 1-129. Dependent variable Price.*

Only 12 of the 28 original explanatory variables that constructed the original database were used in the final model. The estimated models have a goodness-of-fit coefficient (adjusted R^2) of 0.55 for the linear model and 0.60 for the log-linear form. The signs of both structural and locational attributes were as expected and they broadly coincided with those obtained in previous papers. In relation to the interpretation of the results, the constant gives us information about the mean price of a standard room, one-night stay at a three-star hotel in Alcudia Bay. When the dependent variable is in euros the result of the coefficient is the difference in euros

per unit respect to the constant. When the dependent variable is in logarithms, the effect of the explanatory variable on the dependent one is the exponential of its coefficient minus 1.

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
constant	4.90391	0.132963	36.8817	<0.0001	***
Star 1	−0.112049	0.139267	−0.8046	0.4227	
Star 2	−0.437809	0.148286	−2.9525	0.0038	***
Star 4	0.14679	0.0562273	2.6106	0.0102	**
Star 5	0.580765	0.0964829	6.0194	<0.0001	***
Room size	0.00521135	0.00208073	2.5046	0.0136	**
Hotel size	0.00124109	0.000324599	3.8235	0.0002	***
Distance to Beach	−0.000275891	9.95627e-05	−2.7710	0.0065	***
Distance to centre	4.43767e-05	4.27608e-05	1.0378	0.3015	
A&H Pressure	−0.0127006	0.00518368	−2.4501	0.0158	**
Distance to Albufera	−2.29326e-05	2.38776e-05	−0.9604	0.3388	
Distance to Alcudia	−2.63079e-05	9.66449e-06	−2.7221	0.0075	***
Hotel Size Squared	−9.85703e-07	2.10658e-07	−4.6792	<0.0001	***

Mean dependent variable	4.903168	S.D. dependent variable	0.413250
Sum squared residual	7.830075	S.E. of regression	0.259809
R-squared	0.641797	Adjusted R-squared	0.604741
F(12, 116)	35.85583	P-value(F)	2.03e-33
Log-likelihood	−2.324371	Akaike criterion	30.64874
Schwarz criterion	67.82630	Hannan-Quinn	45.75474

Table 6*. OLS model using observations 1-129. Dependent variable Log of Price.*

Based on the results not all the location attributes were statistically significant. The location attributes that resulted statistically significant are: Distance to Beach, Distance to Alcudia and Apartments and Hotels pressure. The variable Room size, Hotel size and Hotel size squared resulted significant too, as well as the two, four and five stars hotels. The big majority of hotels in Alcudia Bay are three-star (56 out of the 129, the 43.4% of the studied area) and four-star hotels (55 out of the 129, the 42.6%). Existing 9 hotels of two stars (6.9%), 5 hotels of one star (3.8%) and 4 hotels of five stars (3.1%).

As for the category of hotel, the fact of a hotel being two-star decreases the price of the room in comparison with a three-star hotel by 28.7 euros. For the one-star hotels it is not statistically significant, but both the one-star and two-star hotels have a good location. As it can be seen in figure 5, both categories are near the beach, with the mean distance to the beach of one-star hotels being 118 meters and 127 meters for two-star hotels. This advantageous position

allows them to reduce the difference in terms of price with higher categories despite of been structurally poorer than three-star or four-star hotels.

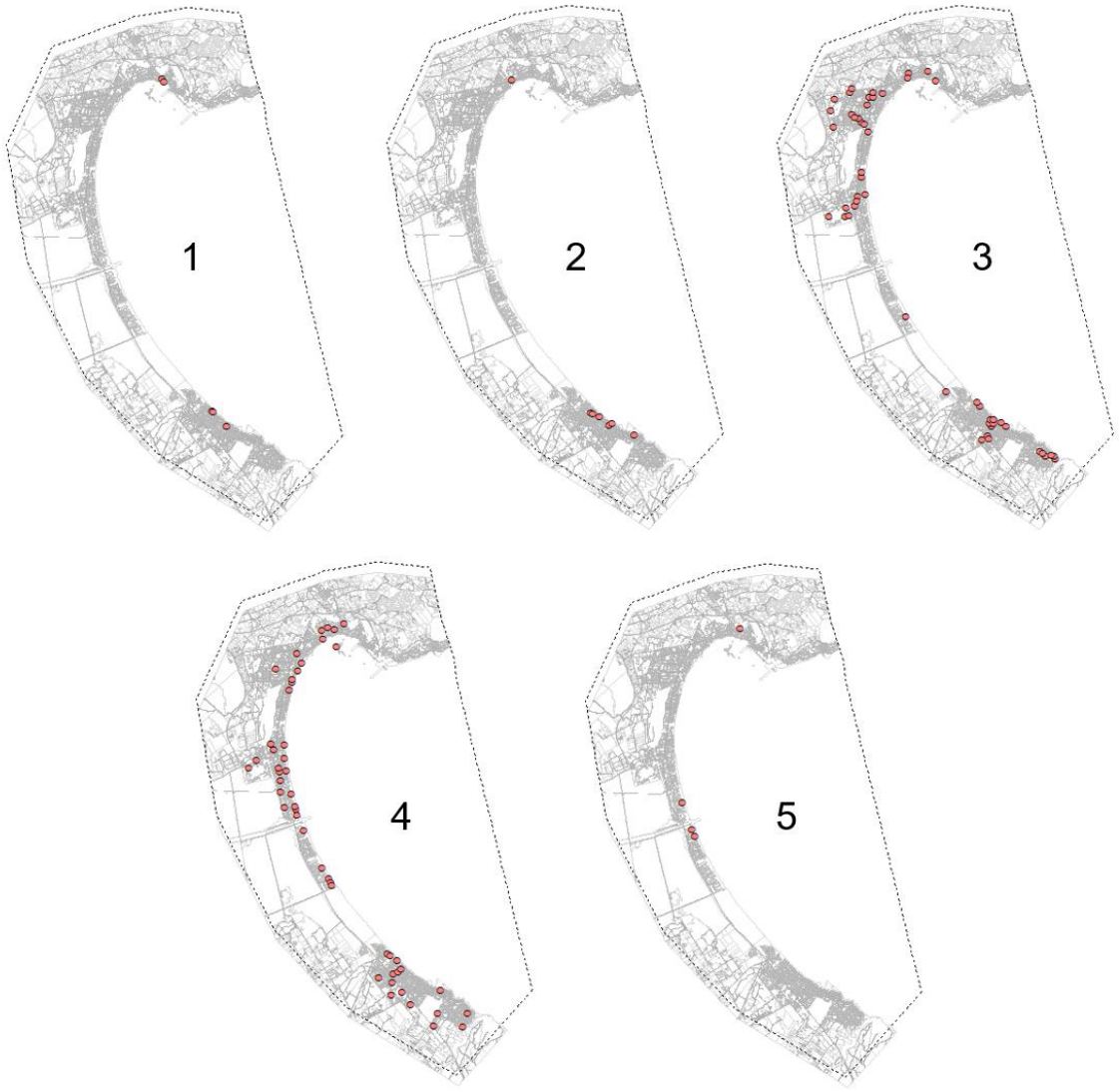


***Figure 5**. Location of hotels by star category. From left to right, and from the top to the bottom: one star, two stars, three stars, four stars and five stars.*

In fact, the one-star and two-star hotels are the second and third most closer to the beach, after the five-star hotels, which have a mean distance to the beach of 94 meters. The three-star and four-star hotels have a mean distance to the beach of 328 and 233 meters respectively. The fact of a hotel being four-star or five-star increases the price of the room by 21.8 euros and 121.3 euros respectively. The big difference in price between the five-star hotels and the other categories, besides the obvious structural and services characteristics, it is due to location factors. The five-star hotels have the best score for the three statistically

significant explanatory variables. As mentioned earlier, they have the best position in terms of proximity to the beach (94 meters). But five-star hotels have also the best score in terms of proximity to Alcudia (4.587 meters), in comparison to one-star hotels (6.353 meters), two-star hotels (8.525 meters), three-star hotels (5.648 meters) and four-star hotels (5.811 meters). And as discussed in the next section, they are also the least surrounded by competence.

In terms of percentage, according to the results we can state that each 100 meters closer to the beach increases the price a 2.75%. Each 1-kilometre closer to Alcudia increases the price a 2.63% and each hotel or apartment located in a 200-meter buffer reduces the price of the target hotel by a 1.27%. In terms of structural characteristics each 5 square meters extra in the room increases the price a 2.61% and each 10 rooms more in a hotel increase the price a 1.24%, however it seems there is a point where price decreases the bigger is the size of the hotel.

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	4.38753	0.0370528	118.4128	<0.0001	***
star1	−0.111279	0.0699092	−1.5918	0.1142	
star2	−0.144753	0.0543823	−2.6618	0.0089	***
star4	0.0281958	0.0147993	1.9052	0.0592	*
star5	0.0491133	0.0193087	2.5436	0.0123	**
Room_size	0.00191583	0.000596981	3.2092	0.0017	***
Hotel_size	0.000146039	0.000102612	1.4232	0.1574	
Beach_Distance	−9.44426e-05	2.93856e-05	−3.2139	0.0017	***
Centre_Distance2	7.26179e-06	1.09831e-05	0.6612	0.5098	
AH_Buffer	−0.00151399	0.0017051	−0.8879	0.3764	
Albufera_Distance2	−4.82062e-06	5.91095e-06	−0.8155	0.4164	
Alcudia_Distance	−3.2276e-06	2.67317e-06	−1.2074	0.2297	
sq_Hotel_Size	−2.52951e-07	6.5053e-08	−3.8884	0.0002	***

Mean dependent var	4.393091	S.D. dependent var	0.106430
Sum squared resid	0.723981	S.E. of regression	0.079001
R-squared	0.500671	Adjusted R-squared	0.449016
F(12, 116)	90.21845	P-value(F)	6.38e-53
Log-likelihood	151.2477	Akaike criterion	−276.4954
Schwarz criterion	−239.3179	Hannan-Quinn	−261.3894

Table 7*. OLS model using observations 1-129. Dependent variable log of Meta score.*

In terms of meta score, adjusted R^2 of 0.50, only the distance to the beach seems to be statistically significant for the location variables. According to the results we can state that each 100 meters closer to the beach increases the meta score of the hotel a 0.9%.

4.2 SPATIAL ANALYSIS

In a two-dimensional space, each hotel has concrete coordinates (x), (y). These coordinates are the fundamental characteristic from which we can develop spatial analysis. In figure 6, we observe the distribution and frequency of our hotels database using point density techniques. At first glance, we can distinguish three cells (the known three resorts of Alcudia Bay) and areas of higher (Can Picafort beach) and lower concentration of hotels (Muro Beach).

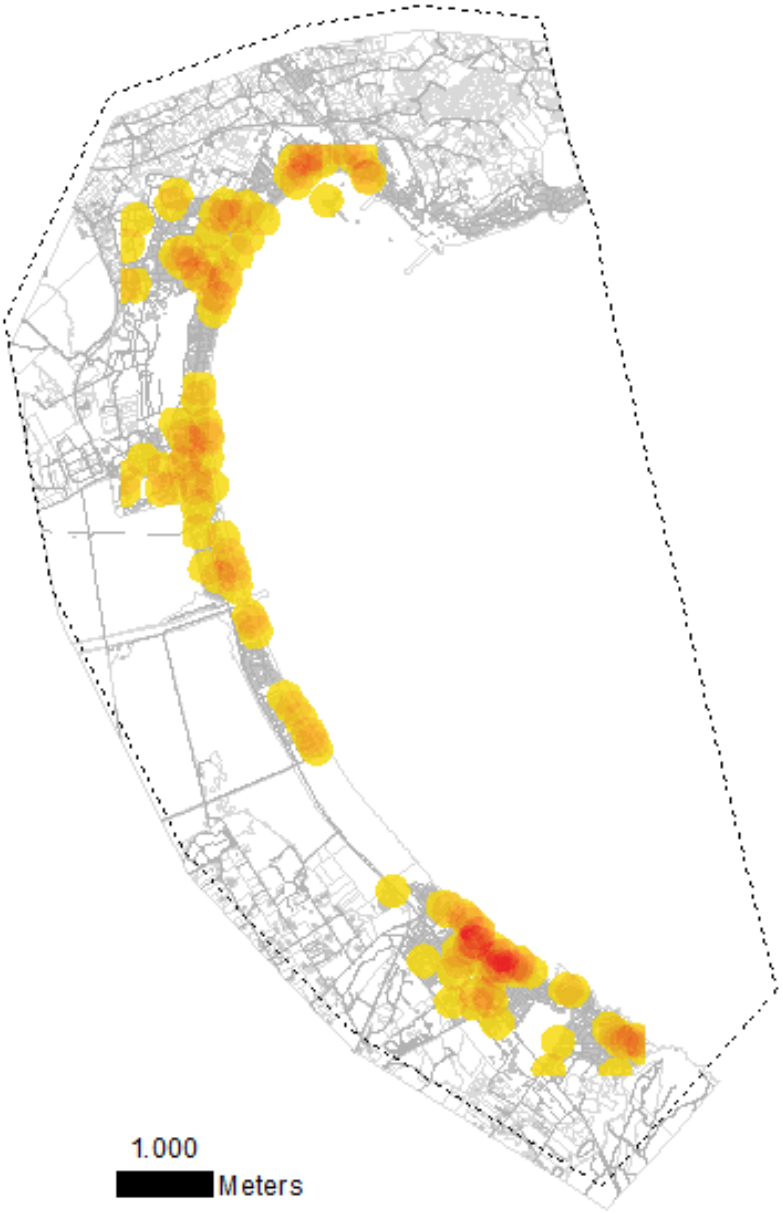


***Figure 6**. Density map of hotels in Alcudia bay. The darker the higher the concentration of hotels.*

4.2.1 Hot Spot analysis (Getis-Ord Gi*)

The Hot Spot analysis has been done with the purpose of maximizing the differences between the three resorts of Alcudia Bay. According to results, presented in figure 7, Muro beach is above the mean for both price and meta score, composing a hot spot area. In the other hand, Can Picafort is below the mean for both price and meta score, composing a cold spot area. From this result and in relation to Alcudia Bay, we can state that Muro Beach is the resort with higher prices and better tourists scores, and Can Picafort is the resort with lower prices and worst tourists scores.

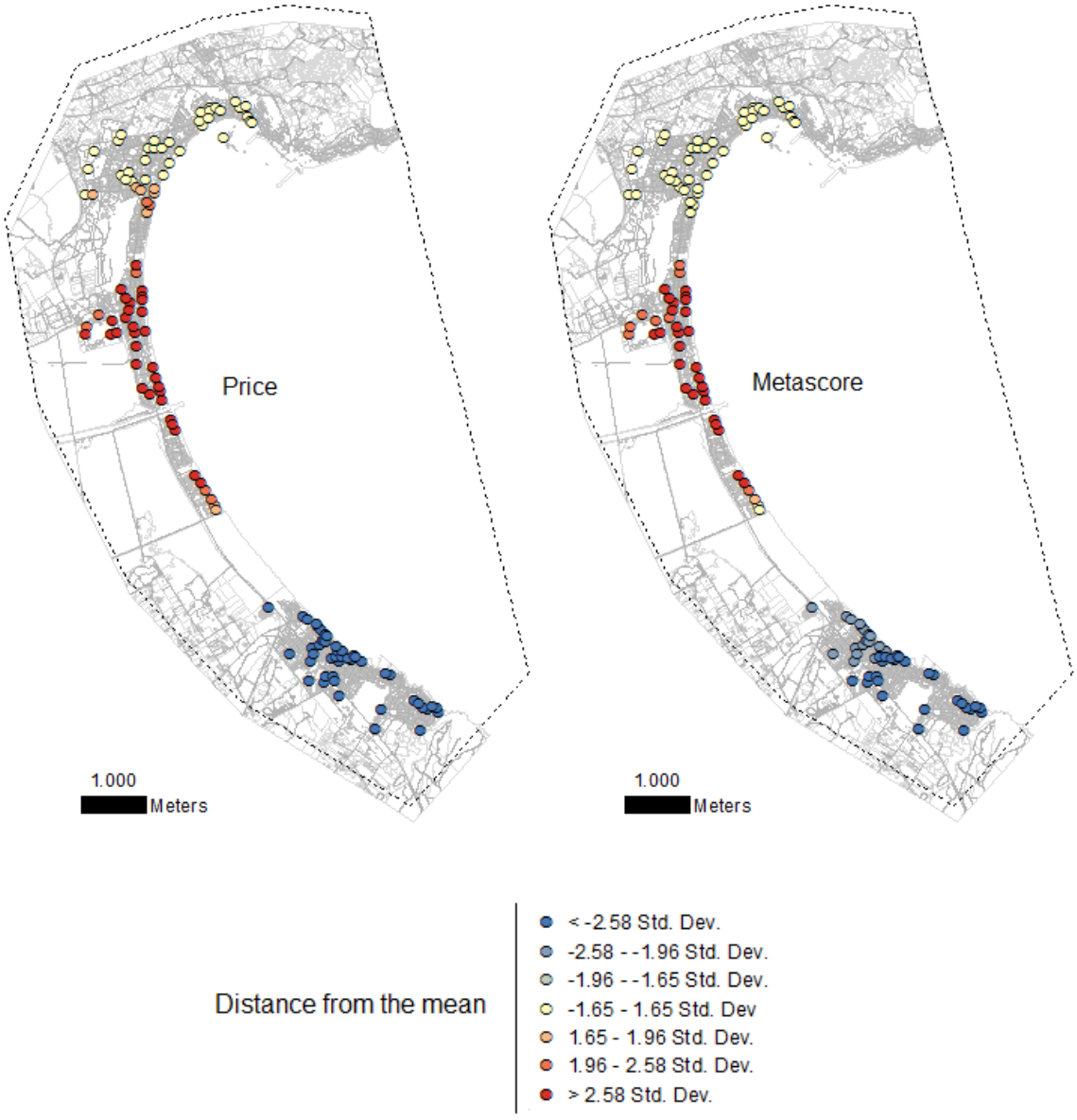


***Figure 7**. Hot Spot analysis for prices and meta score. The analysis has been done to see the statistical differences in price and meta score between the three resorts.*

In relation to prices, the mean price in Alcudia Bay for a 1-night stay, 2 people is 146.32 euros. If we look on prices according to beach dominance (beaches sectors were defined at figure 2) the mean prices are: 114 euros in Can Picafort beach and 123 in Son Baulo beach (both belong to Can Picafort resort); 140 euros in South Alcudia and 158 euros in North Alcudia (both belong to Alcudia beach resort); and 160 euros in North Muro and 225 euros in South Muro (both belong to Muro beach resort). If we observe the relation between prices and natural beach features (width, length and area), price is positively correlated with the area disposable (0.35). Being negative for only beach width (-0.36) and strongly positive with beach length (0.88). All in all, beach length, disposable area (square meters of disposable beach land) and beach conservation and maintenance seems to be factors related with price.

4.2.2 Cluster and Outlier analysis (Anselin Local Moran I)

The Cluster and Outlier analysis has been done without maximizing resorts differences, hence results show us a more exact image of the spatial relationships. Results distinguishes between a statistically significant cluster of high values (HH), cluster of low values (LL), outlier in which a high value is surrounded primarily by low values (HL), and outlier in which a low value is surrounded primarily by high values (LH). Statistical significance is set at the 95 percent confidence level. Features with p-values smaller than 0.05 are considered statistically significant.

As for the variable Price (figure 8), and following the results showed at the hot spot analysis, we can observe that the most important cluster of high values is in Muro beach, more specifically in South Muro beach, next to the *Es Comú de Muro*. The fact of being next to a protected natural area could be a relevant factor for determining the price. However, this same spot is statistically not significant for the variables Stars and Meta score (figure 8). Instead, for both variables the cluster of high values seems to move slightly north, to North Muro Beach. Both Stars and Meta score show moderate positive relationship (0.57). The relationship between price and stars (0.60) and price and meta score (0.50) is also positive.

As for clusters of low prices, the main one is in Can Picafort as deduced by the hot spot analysis, but we can observe the exact location of the cluster, right at the centre of the resort, where the more restaurants and hotelier offer is found (figure 10). This area is also the most important cluster of low values for meta scores, and although less populous, it is also a cluster of low values for the variable Stars.

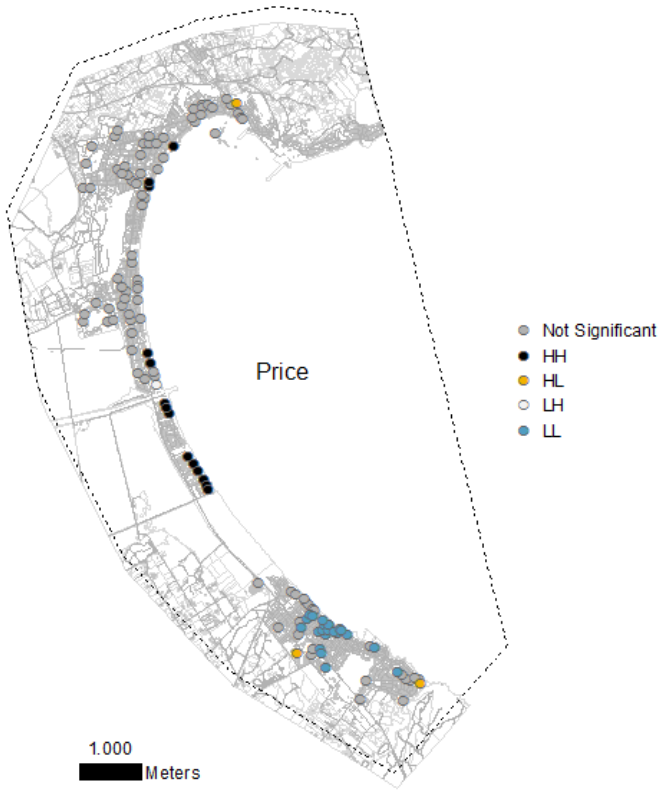


***Figure 8**. Cluster and Outlier analysis on prices.*

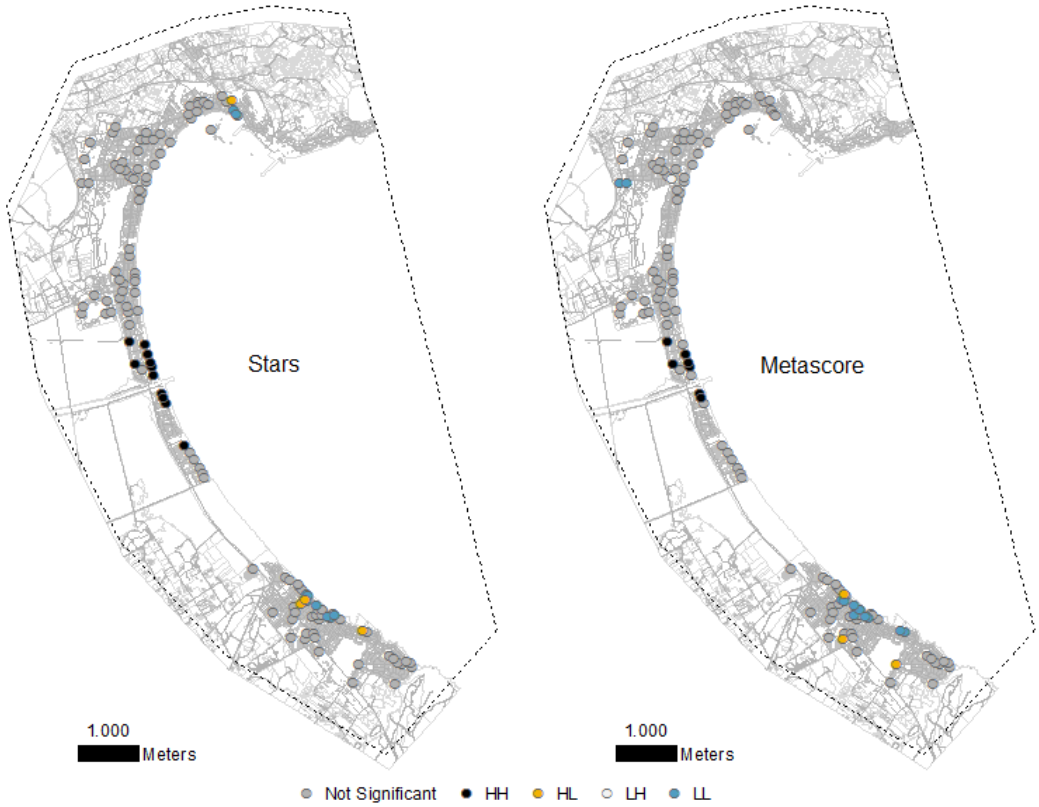


***Figure 9**. Cluster and Outlier analysis on stars and meta score.*

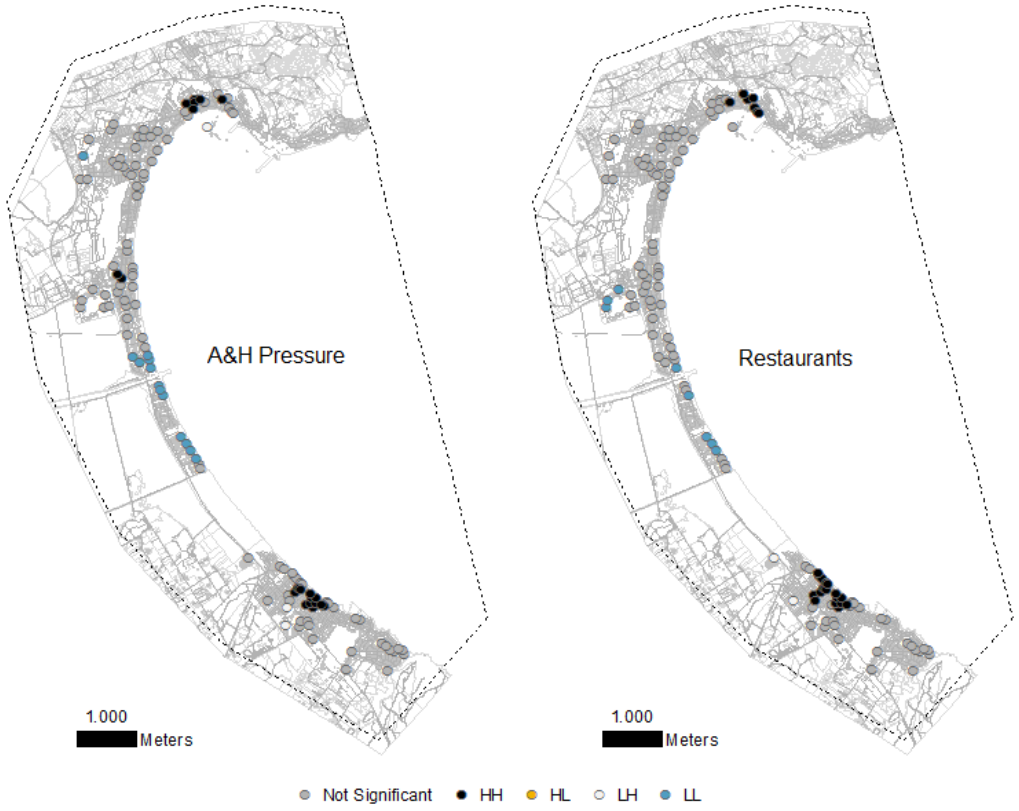


***Figure 10**. Cluster and Outlier analysis on Apartments and Hotel pressure and Restaurants.*

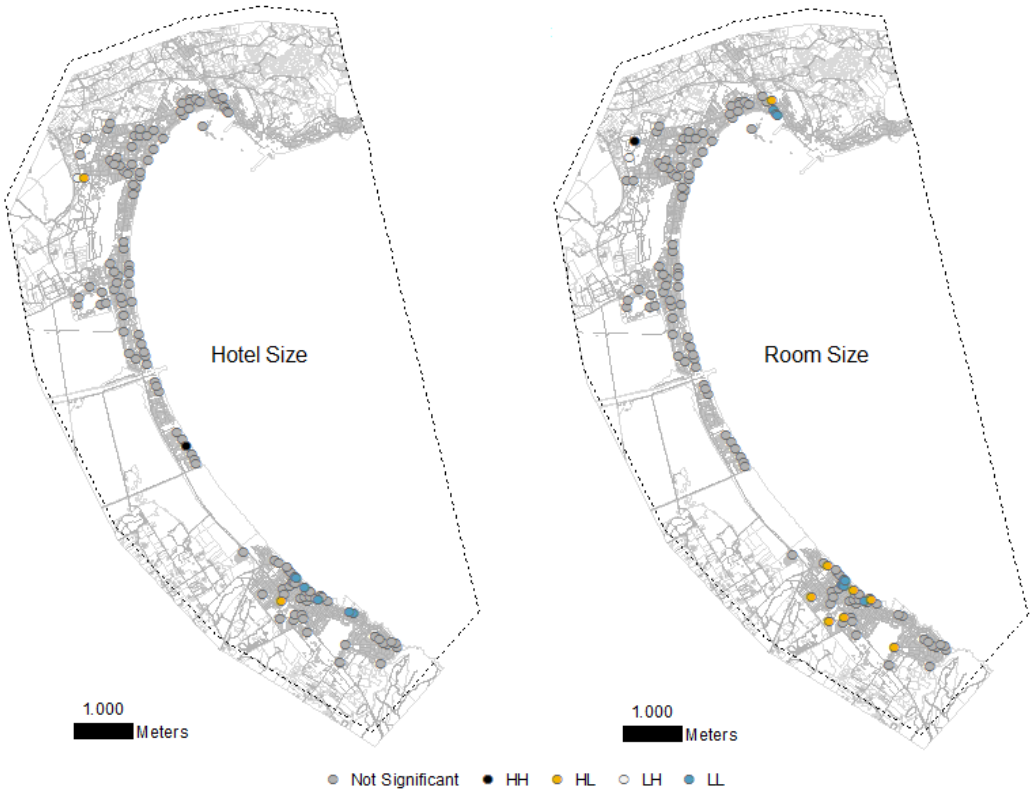


***Figure 11**. Cluster and Outlier analysis on Hotel size and Room size.*

In relation to outliers, three high values surrounded by low values are found. One in Alcudia, referencing the hotel *Zafiro Palace Alcudia* (five-star) and two others in Can Picafort: *Zafiro Can Picafort* (four-star) and *Hotel Son Baulo* (three-star).

For the *Zafiro Palace Alcudia*, we must consider that is a very recent hotel, opened in 2015, it is inside an area with A&H pressure, but it must be noticed that this pressure responds to a cluster of low values for both prices and stars, hence it is a weak competence for a new five-star hotel, since the profile of tourists is different. In fact, in figure 11 we can see hotel Zafiro Alcudia being a positive outlier in terms of room size, offering then bigger rooms than surrounding hotels. It is also inside a cluster area of restaurants, which is generally well appreciated by clients, but it also could be a risk for the All-Inclusive strategy of the hotel. The distance to the beach is not huge, 286 meters, but still is clearly higher than the average distance for five-star hotels (94 meters). Since it is a new hotel, it will be interesting to see its evolution, how the different variables interact and the moves of the competence. For the other two cases, *Zafiro Can Picafort*, although far away from beach (728 meters), seems it offers good infrastructures and services, and is located closer enough to the centre of the resort to go walking and further enough to avoid noise at nights. Is a similar strategy as the one followed by *Zafiro Palace Alcudia*, not strange since it is presented under the same brand. Hotel *Son Baulo* seems to explode the advantageous beach location in a low crowded area.

Only one low value surrounded by high values is found in North Muro, referencing the *Aparthotel Esperanza Park* (four-star). Although it has a good location and average Alcudia Bay hotel prices, the reason for being a negative outlier could be strong competence and a little bit outdated infrastructure.

Finally, it is interesting to see how the clusters of high values for prices, stars and meta scores are at the same time clusters of low values for restaurants and apartments and hotels pressure. This fact will be discussed and visualized in the next section.

4.2.3 Interpolation (Inverse Distance Weighted)

The interpolated maps are a good visual aid to see how the values of a concrete variable are distributed on space, and then by comparison, to observe certain spatial relationships between variables.

The most expensive areas (figure 12, red spots) tend to be distributed near the coast and mainly in Muro beach, except for the two outliers mentioned earlier: *Zafiro Palace Alcudia* and *Zafiro Can Picafort*. The least expensive area is in Can Picafort (blue spots). However, different areas of low prices are found in the other two resorts, such as in the northern part of Alcudia Beach, where the beach ends and starts the harbour.

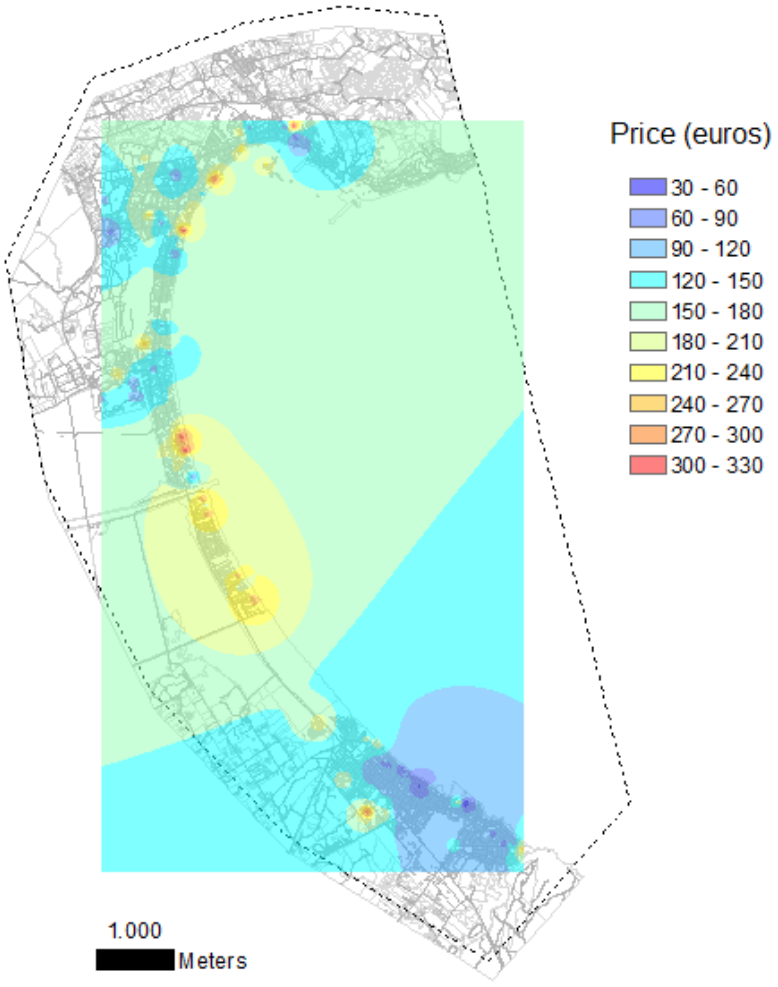


***Figure 12**. Prices interpolation map.*

If we observe figure 13 the main area of high prices, Muro beach, is at the same time the area with less A&H pressure, this means it is the area with less closer competence. It is also the area with less presence of restaurants. However, the lack of restaurants is well covered by the own hotels, which are mainly four and five-star hotels (figure 14) with All-Inclusive strategies. These hotels also enjoy the fact of being surrounded by a well preserved natural area (Albufera Natural Park), with one of the best beaches of the island (Platges de Muro).

In general terms, areas of high concentration of restaurants are at the same time areas of low prices. This could be explained by the fact that hotels of one, two and three stars do not need to invest in offering this type of services, then they can rely on external businesses of the surroundings. Lower prices can also be explained by the high competence, since it exists too an inverse relation, where the higher concentration of competence is, the lower are the prices.

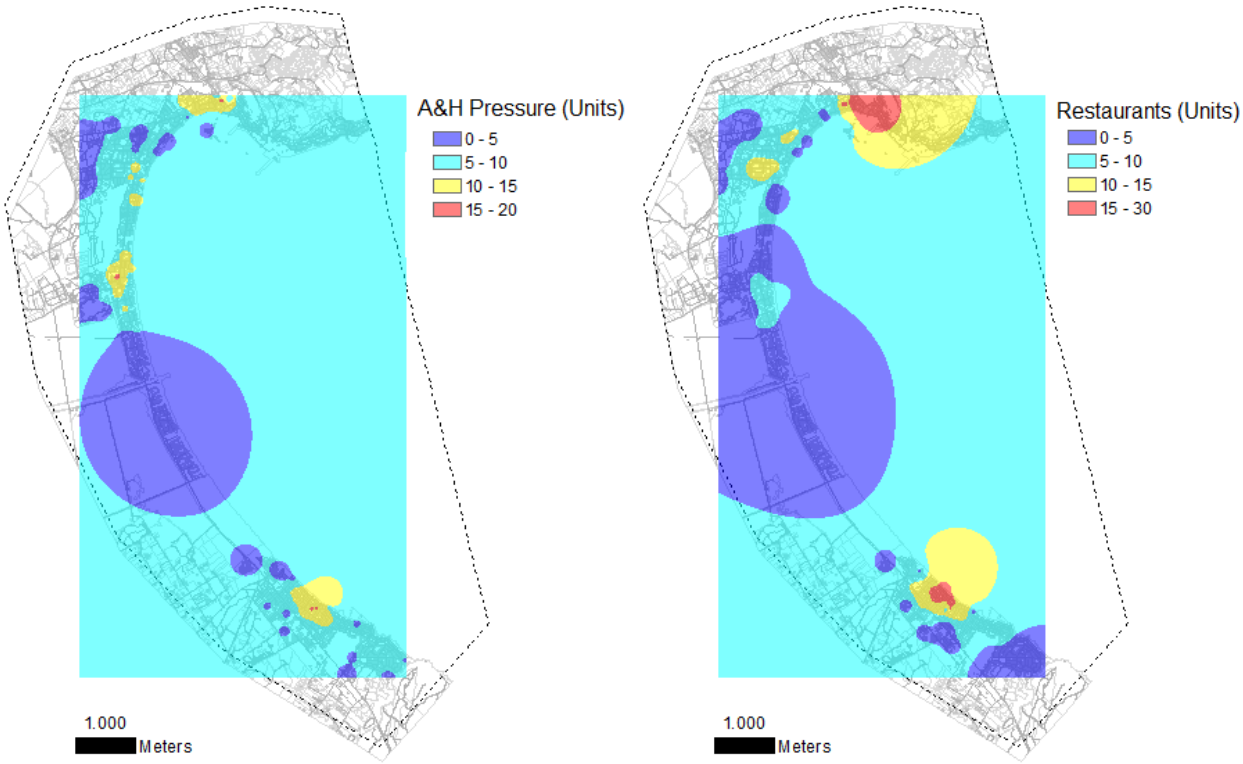


***Figure 13**. A&H pressure and Restaurants interpolation maps.*

In terms of hotels category (figure 14), is interesting to see the different distribution for the three resorts, with different urban and touristic organizations. In Can Picafort beach the low category hotels dominate the beach line, while high category hotels are found behind them. Alcudia beach is the other way around, with four and five-star hotels in the front line and low category hotels on the backline, except for the harbour area, where the beach line is dominated by low category hotels. Muro beach is mainly an exclusive area of four and five-star hotels.

Finally, in relation to room size (figure 15) high category hotels tend to have bigger rooms and low category hotels tend to have smaller rooms, nevertheless three-star hotels can offer similar room size as four and five-star hotels. For the Hotel size, it presents wide variability, but it seems that the bigger hotels tend to be 3-star hotels.

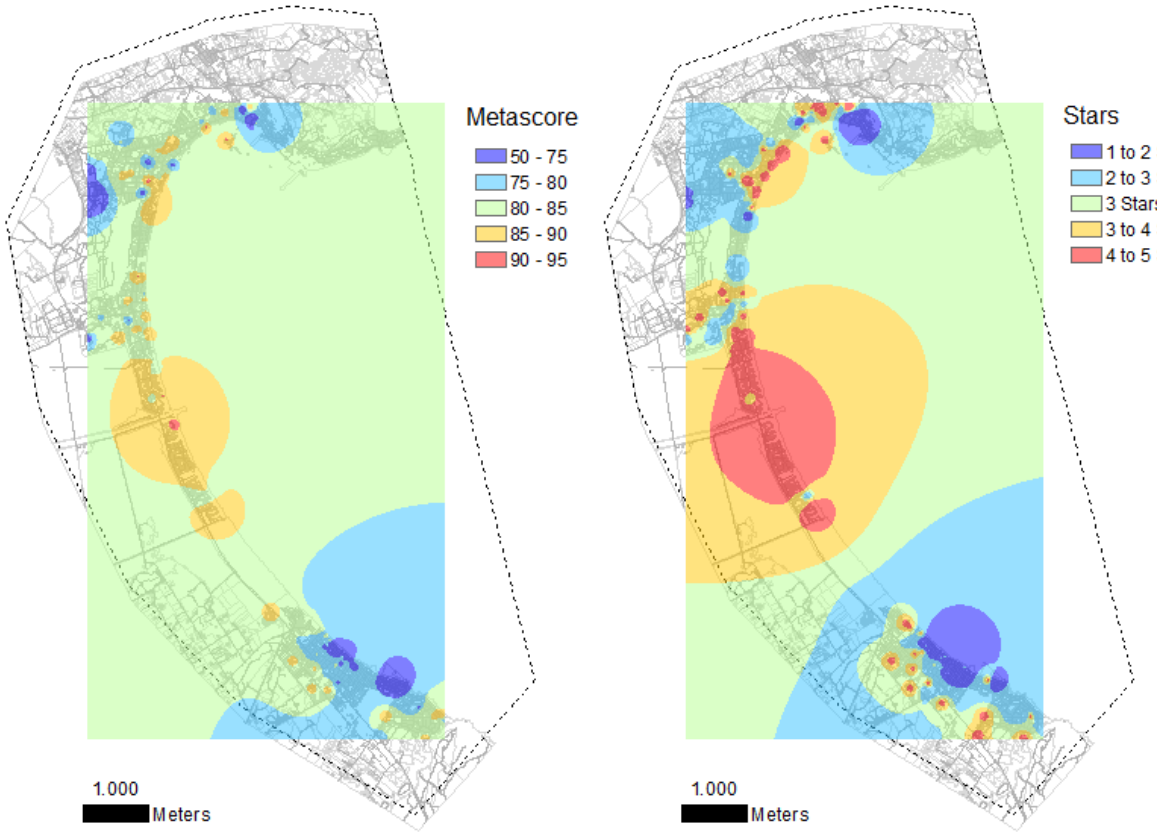


***Figure 14**. Meta score and Stars interpolation maps.*

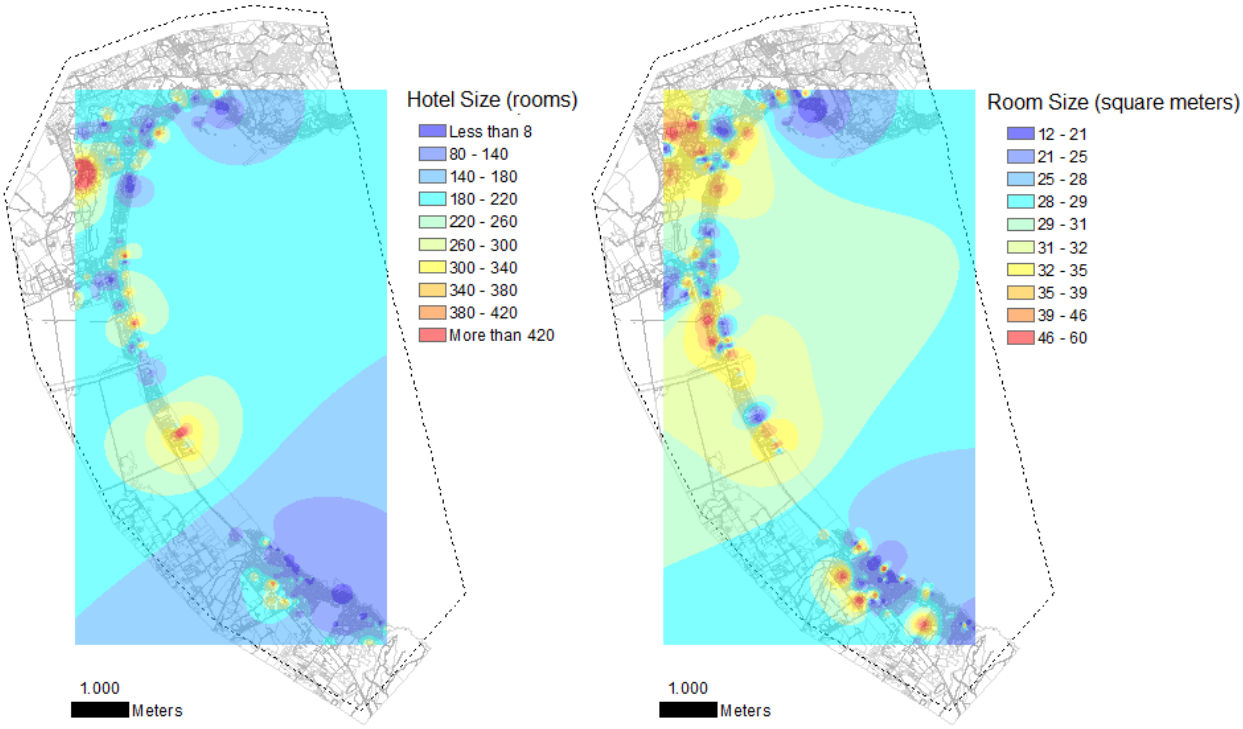


***Figure 15**. Hotel size and Room size interpolation maps.*

5. CONCLUSIONS

This paper examined the location factor on hotels taking two different types of analysis: the hedonic method and the spatial analysis. The hedonic method has been broadly used and studied, and some previous papers also combined it with GIS techniques. This paper has tried to take a next step and deepens the spatial analysis part, the combination has resulted in an approach especially useful for local analysis. The measurement of the effect of some location features on hotels prices have appeared as a relevant factor in price determinacy. Nevertheless, when analysing hotels prices from a same resort, location features only explain a relatively small part of the total value of the hotels. The structural and services characteristics of the hotels still are logically the main factors in price determinacy.

By using the hedonic method, and coinciding the results with those of previous papers, it has confirmed that distance to the beach is the most important locational factor, reinforcing the beach as the core product of this type of tourism. Distance to the beach has been the only location variable which both was significant for hotels prices and hotels tourists scores. In terms of distance by category, five-star hotels are the nearest to the beach, but followed not by three-star and four-star hotels (three-star and four-star hotels represent the 86% of the hotelier offer in Alcuda Bay), but by one-star and two-star hotels. In this sense, one-star and two-star hotels rely upon their proximity to the beach as a reclaim at a higher extent than superior categories. Higher categories sacrifice distance to the beach to offer additional services to tourists (restaurant, bar, pool…). Even some five-star hotels, which are generally the closest to the beach, have sacrificed distance to the beach in exchange of higher quality services and infrastructures, as the Zafiro hotels.

Urban touristic centres, such as Alcudia in our case, are statistically significant. However, distance to resort centres, where the more restaurants and shops are found in the direct area of the resort, seems to not be statistically significant when in previous papers has been found as statistically significant. Is interesting though to observe the positive sign of the variable, meaning that the further away of the city centre the better. *Alegre, Cladera and Sard (2013)* found different signs patterns for this variable depending on the nationality: British tourists showed positive sign and Germans tourists negative. The mixture of nationalities in Alcudia Bay could be a reason to explain the not significancy of this variable due to the opposing pattern shown by both nationalities. A variable that indeed resulted significant, is the variable representing the concept of competence (A&H pressure). From which can be stated that hotels

with less hotelier offer on their surroundings have higher prices than those with more hotelier offer on their surroundings. However, we must consider that four-star and five-star hotels, normally surrounded by less competence, also tend to use land extensively (for parking lot, gardens area, big pool…) and this could also partially explain why they have less competence in a two hundred-meter radius than lower categories hotels, more compacted spatially.

By using spatial analysis, we have highlighted how certain variables are distributed in Alcudia Bay. The structure of each resort is different and it is explained by urban history in where both public and private agents determined the today organization. It can be stated that Muro beach resort presents the higher prices and better tourists ratings. Meanwhile the Can Picafort resort presents the lower values both for prices and tourists valuation. The score obtained by hotels in different web platforms, although not the main goal of the paper, is every time more a key issue for hotel managers and hotels strategy, since it is a main source of information for potential clients and they represent the reputation of the hotel. In this sense, it shows a positive moderate correlation both with price and category.

The presence of different clusters of low and high values has been confirmed. In the context of Alcudia Bay, Can Picafort has the most important cluster of low values for prices, tourist valuation and hotels category, which also spatially coincides with a high cluster of restaurants and hotels. This is not a new discovery since Can Picafort it is a well-known mature resort, but the results extracted from this paper reinforce empirically this fact and defined concrete coordinates where the public administration could focus their investment. In the opposite sense, Muro beach has the main cluster of high values for prices, categories and tourist valuation. And at the same time a cluster of low values for restaurants and hotels. However, we must denote this are all big hotels with no less than hundred rooms, hence the final number of rooms existent in Muro Beach and Can Picafort is similar, around six thousand rooms. The specific area of clusters is located near the well-conserved natural areas of *Es Comu de Muro*, and the Albufera Natural park. This fact reinforces the necessity of keeping a balance between touristic development and natural conservation, not just from an ecologist thinking but from an economic one, since well conserved natural areas can offer better outcomes.

To conclude, the paper has confirmed and reinforced previous hedonic findings and showed useful capabilities through spatial analysis to explain processes and help decision-making. However, is important to bear in mind important limitations as the small sample, the use of mean prices and a not focused study for each spatial technique. All in all, this research hopefully can enhance future study combining both methods.

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APPENDIX A. CORRELATION MATRIX

Correlation Coefficients, using the observations 1 - 129
5% critical value (two-tailed) = 0.1729 for n = 129

Metascore	Stars	Room_size	Hotel_size	
1.0000	0.5757	0.2609	-0.0017	Metascore
	1.0000	0.2489	0.2929	Stars
		1.0000	0.0209	Room_size
			1.0000	Hotel_size

Price_TripAd	Price_OTAs	Beach_Distance	Centre_Distanc~	
0.5057	0.4559	-0.1914	0.2197	Metascore
0.6092	0.4935	-0.0511	0.2686	Stars
0.2249	0.2325	0.1677	0.1218	Room_size
0.2710	0.2344	0.1667	0.1817	Hotel_size
1.0000	0.7708	-0.1337	0.3093	Price_TripAd
	1.0000	-0.0834	0.2497	Price_OTAs
		1.0000	-0.0296	Beach_Distance
			1.0000	Centre_Distanc~

Restaurant_Dis~	AH_Buffer	Albufera_Dista~	Alcudia_Distan~	
0.1735	-0.2817	-0.0979	-0.1436	Metascore
0.2609	-0.3974	-0.1243	-0.1219	Stars
0.1595	-0.2985	-0.0287	-0.1263	Room_size
0.1998	-0.2466	-0.0523	-0.1507	Hotel_size
0.2651	-0.4272	-0.0773	-0.2416	Price_TripAd
0.2150	-0.2840	0.0065	-0.2214	Price_OTAs
0.3705	-0.3441	0.1112	-0.0926	Beach_Distance
0.4381	-0.4712	-0.1541	0.2613	Centre_Distanc~
1.0000	-0.4729	-0.1465	0.1685	Restaurant_Dis~
	1.0000	0.1103	0.1412	AH_Buffer
		1.0000	-0.4892	Albufera_Dista~
			1.0000	Alcudia_Distan~

sq_Hotel_Size	
-0.2139	Metascore
0.0472	Stars
0.0811	Room_size
0.8561	Hotel_size
0.0234	Price_TripAd
0.0350	Price_OTAs
0.2105	Beach_Distance
0.0688	Centre_Distanc~
0.0523	Restaurant_Dis~
-0.1611	AH_Buffer
-0.0014	Albufera_Dista~
-0.1025	Alcudia_Distan~
1.0000	sq_Hotel_Size