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accommodation activities,

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CONTENT

	Page
1. Description and characteristics of the industry in Spain	3
2. SPPI measurement	7
3. Evaluation of measurement	12
Annex 1	15
Annex 2	16
Annex 3	17

SPPI: SHORT TERM ACCOMMODATION

1. DESCRIPTION AND CHARACTERISTICS OF THE INDUSTRY IN SPAIN

Following *International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4*, the class 5510 'Short term accommodation services' includes:

The provision of accommodation, typically on a daily or weekly basis, principally for short stay by visitors. This includes the provision of furnished accommodation in guest rooms and suites or complete self-contained units with kitchens, with or without daily or other regular housekeeping services, and may often include a range of additional services such as food and beverage services, parking, laundry services, swimming pools and exercise rooms, recreational facilities and conference and convention facilities.

This class includes the provision of short-term accommodation provided by:

- *Hotels*
- *Resort hotels*
- *Suite/apartment hotels*
- *Motels*
- *Motor hotels*
- *Guesthouses*
- *Pensions*
- *Bed and breakfast units*
- *Visitor flats and bungalows*
- *Time-share units*
- *Holiday homes*
- *Chalets, housekeeping cottages and cabins*
- *Youth hostels and mountain refuges.*

This class excludes: provision of homes and furnished or unfurnished flats or apartments for more permanent use, typically on a monthly or annual basis (see division 68).

Comparing that class in ISIC Rev.4 to *Statistical Classification of Economic Activities in the European Community, Rev. 2 (NACE Rev.2)*, you can find the activity in two different classes:

- *55.10, Hotels and similar accommodation*

This class includes the provision of accommodation, typically on a daily or weekly basis, principally for short stays by visitors. This includes the provision of furnished accommodation in guest rooms and suites. Services include daily cleaning and bed-making. A range of additional services may be provided such as food and beverage services, parking, laundry services, swimming pools and exercise rooms, recreational facilities as well as conference and convention facilities.

This class includes accommodation provided by:

 - hotels
 - resort hotels
 - suite/apartment hotels

- motels
- bed and breakfast units, with daily room cleaning and bed making

This class excludes: provision of homes and furnished or unfurnished flats or apartments for more permanent use, typically on a monthly or annual basis, see division 68.

- *55.20, Holiday and other short-stay accommodation*

This class includes the provision of accommodation, typically on a daily or weekly basis, principally for short stays by visitors, in self-contained space consisting of complete furnished rooms or areas for living/dining and sleeping, with cooking facilities or fully equipped kitchens. This may take the form of apartments or flats in small free-standing multi-storey buildings or clusters of buildings, or single storey bungalows, chalets, cottages and cabins. Very minimal complementary services, if any, are provided.

This class includes accommodation provided by:

- children's and other holiday homes
- visitor flats and bungalows
- cottages and cabins without housekeeping services
- youth hostels and mountain refuges
- Hotels with self-service, without daily room cleaning and bed making
- Bed and breakfast units, without daily room cleaning and bed making

This class excludes:

- provision of furnished short-stay accommodation with daily cleaning, bed-making, food and beverage services, see 55.10
- provision of homes and furnished or unfurnished flats or apartments for more permanent use, typically on a monthly or annual basis, see division 68

In Spain, the net turnover of the 551(ISIC) industry represents around 4.7% of total turnover of service sector, according Structural Business Statistic 2017. As it shows in Table 1, the growth rates for those three main variables of this activity comparing with Service sector are higher.

Table 1: Companies, turnover and employment. Years 2016 and 2017.

Activity	Number of companies			growth rate %
	2016	2017		
Service Sector	1.546.525	1.550.969		0,29
551 Hotels and similar establishments	12.676	12.619		-0,45
552 Holiday and other short-stay accommodation	11.523	12.408		7,68
551+552 (=551 ISIC)	24.199	25.027		3,42

Source: Structural Business Statistics (INE)

Analysing in detail the net turnover of Hotels and similar establishments (551 NACE Rev.2) according the services provided (see Table 2), 83.7% of turnover is linked to accommodation and boards, with a clear domain of the first service.

Table 2: Breakdown of turnover according to services rendered. Year 2017.

TOTAL
Rooms (only accommodation)
Board (breakfast, half board and full board)
Catering (except board)
Meeting and conference rooms
Dance clubs and discoteques
Sports facilities and health treatments
Retail trade

On the other hand, it is also important to analyse the relevance of different clients of this activity. 76.6% of turnover were generated by non-households clients.

Table 3: Breakdown of turnover according to the type of client. Year 2017.

TOTAL	100,0
Households	23,4
Domestic tour operators	14,2
Non-domestic tour operators	39,3
Domestic travel agencies	8,9
Non-domestic travel agencies	7,5
Others	6,6

Source: Structural Business Statistics (INE)

Due to the fact of great importance of class 551 NACE Rev.2 over 552 in terms of turnover and employment (and also in terms of number of guests an overnight stays, see table 4), this paper shows the methodology of SPPI only for 551 NACE Rev.2, although SPPI for 552 NACE Rev2 is also produced by NSI Spain, being very similar both methodologies.

Table 4: Guests and overnightstays by activity. Years 2017 and 2018.

	2017	2018
551 NACE Rev2		
Guests	103.804.067	105.290.343
Overnightstays	340.582.712	340.052.655
552 NACE Rev2		
Guests	16.712.090	16.547.957
Overnightstays	89.182.225	84.904.660

Source: Tourist Accommodation Occupancy Surveys

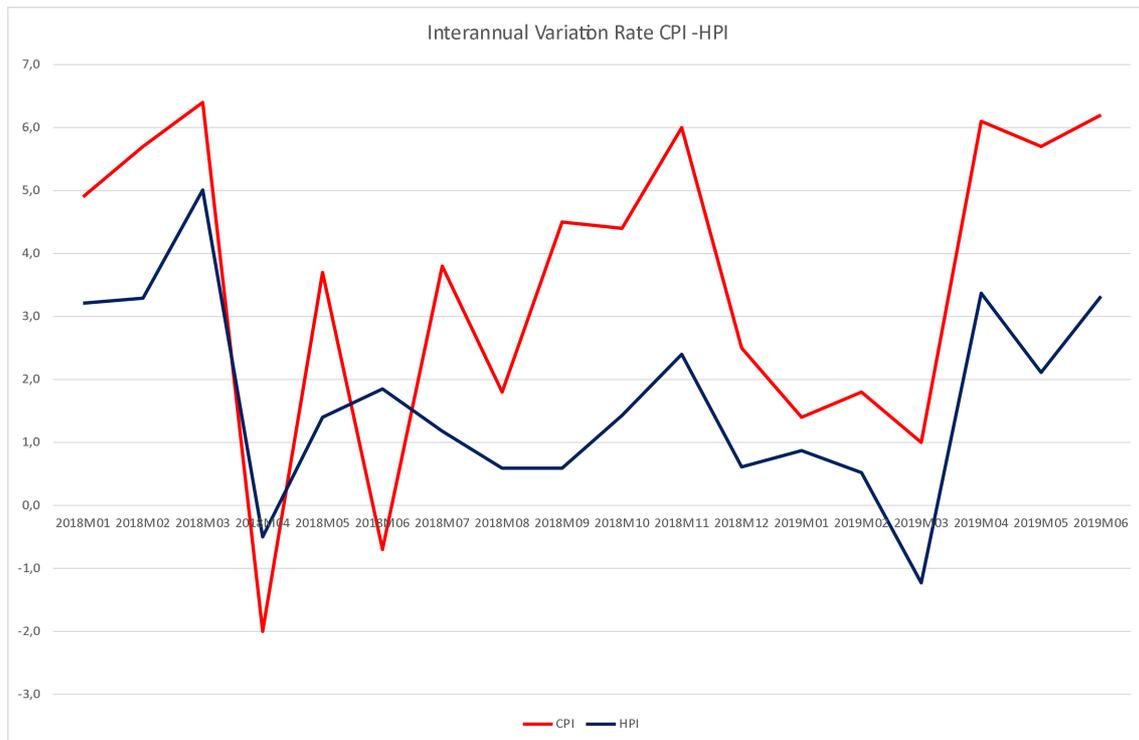
2. SPPI MEASUREMENT

The relevance of this activity for a country as Spain, where tourism is the main 'industry' in the economy is unquestionable. Tourism represents 11.7% of GDP (TSA, 2017). There is a wide system of statistical information providing information about tourism from many different points of view that goes beyond official/regulation requirements, but also responds information needs of Spanish tourism sector.

The first available data of SPPI for 551 NACE rev2 date from January 2000 (base 1999). There wasn't, at that moment, any European regulation to produce SPPI for this activity, but the needs of Spanish Hotel Sector to know the evolution of prices, considering that CPI didn't describe it correctly, motivated NSI Spain to carry out this project.

The main reasons explained by Hotel Sector to argue that CPI didn't measure properly prices in hotels was that CPI took into account prices paid by Spanish households, but they had a wider type of clients, not only Spanish households with different behaviour related to evolution of prices.

Graph 1: Interannual variation rates CPI-hotels and HPI. January 2018-June 2019.



Methodology

The Hotel Price Index, HPI, is a statistical measure of the monthly evolution of a set of prices applied by hotel entrepreneurs to their clients.

To obtain those prices, the Tourist Accommodation Occupancy Survey: Hotel Establishments (HOS) is used. That survey collects, monthly, information provided by over 10,900 establishments in summer season and by over 9,200 establishments in winter season, to whom a questionnaire is sent.

That questionnaire collects information on hotel occupancy (travellers, overnight stays, occupied rooms...), offer (no. of available rooms and bedplaces), employment ... with a broad geographical breakdown. The establishments in the sample are asked also the Average Daily Rate (ADR) for a double room with bathroom. These prices are detailed depending the type of client:

- Off line tour operator
- Off line travel agency
- Enterprises/companies
- Individuals
- Groups
- Direct booking through the hotel website
- Online tour operator
- Online travel agency
- Other

(See Annex 1, an extract of the questionnaire)

Scopes of the indicator

1. Time scope:
Base period: year 2008
Reference period of prices: monthly
Reference period of the weighting: the weightings applied in months of year *T* are calculated with the information about prices and occupied rooms in the same month, but in previous year.
2. Population scope: all hotel establishments located in the national territory are part of population.
3. Geographical scope: it is comprised of the entire national territory.

Sample design

As the framework for the selection of the sample the directories of the Tourist Offices of the Autonomous Communities are used. Those directories contain among others, the following variables for each establishment: name, address, category, normal opening period, number of available bedplaces and number of available rooms.

The survey sample design is defined by the pair province x category (or island x category).

The survey is exhaustive in all provinces, except in some categories for the provinces detailed in Annex 2.

General calculation method.

The main characteristics of this price index are:

- The formula used is a linked Laspeyres Index
- Simple geometric mean (without weighting) to group establishment prices
- Different weightings are calculated for each month.

For year 2009, the simple indices, on an establishment category, type of client and province level, is obtained as the relation between the average price in month m of the current year T and the average price in the same month of the previous year.

$$\square I_{m(08)}^{m(09)} = \frac{\hat{M}_{jkt}^{m(09)}}{\hat{M}_{jkt}^{m(08)}} \cdot 100 = \frac{\text{average price of client } t, \text{ category } k \text{ province } j \text{ in month } m \text{ of } 2009}{\text{average price of client } t, \text{ category } k \text{ province } j \text{ in month } m \text{ of } 2008} \cdot 100$$

To calculate HPI, base 2008, in month m of 2009, simple indices are aggregated using weightings calculated as is explained below.

The weightings are calculated at establishment category, type of client and province level, i.e. with the same detail as simple indices, and they represent the percentage of incomes received by hoteliers for occupied double rooms with bathroom by type of client t , in category k and province j , over total income. The weightings applied in month m of year 2009 are calculated with the information about ADR and occupied rooms in the same month, but the previous year:

$$\square L_{jkt}^{m(08)} = \frac{\hat{M}_{jkt}^{m(08)} \cdot \hat{B}_{jkt}^{m(08)}}{\sum_{j,k,t} \hat{M}_{jkt}^{m(08)} \cdot \hat{B}_{jkt}^{m(08)}}$$

being $\hat{B}_{jkt}^{m(08)}$ the estimation of occupied rooms of establishments of category k in province j that were sold to type of client t in month m of year 2008. They are calculated using the following formula:

$$\hat{B}_{jkt}^{m(08)} = \left(\sum_{i=1}^{e_{jkt}} B_{ijk}^{m(08)} \cdot A_{ijkt}^{m(08)} \right) \cdot f_{jk}^{m(08)}$$

Where:

- $B_{ijk}^{m(08)}$: number of occupied rooms in the establishment i of category k in province j , in month m of year 2008
- $A_{ijkt}^{m(08)}$: percentage of occupied rooms in the establishment i of category k in province j sold to type of client t in month m of year 2008.
- $f_{jk}^{m(08)}$: elevation factor in stratum jk , calculated as ratio of available rooms in target population for that stratum by the available rooms in the sample for the stratum, in period $m(08)$.
- e_{jkt} : represents the set of establishment of the sample in stratum jk which have answered the survey questionnaire.

These weightings are summed up (W) by categories, type of client, provinces, according to the aggregated index that we want to calculate.

For example, to calculate HPI at national level:

$${}_{m(08)}\square HPI^{m(09)} = \sum_j \left(\sum_k \left(\sum_t {}_{m(08)}\square L_{jkt}^{m(09)} \cdot {}_{m(08)}\square W_{jkt} \right) {}_{m(08)}\square W_{jk} \right) {}_{m(08)}\square W_j$$

Where:

$${}_{m(08)}\square W_{jkt} = \frac{\acute{M}_{jkt}^{m(08)} \cdot \hat{B}_{jkt}^{m(08)}}{\sum_t \acute{M}_{jkt}^{m(08)} \cdot \hat{B}_{jkt}^{m(08)}}$$

$${}_{m(08)}\square W_{jk} = \frac{\sum_t \acute{M}_{jkt}^{m(08)} \cdot \hat{B}_{jkt}^{m(08)}}{\sum_{k,t} \acute{M}_{jkt}^{m(08)} \cdot \hat{B}_{jkt}^{m(08)}}$$

$${}_{m(08)}\square W_j = \frac{\sum_{k,t} \acute{M}_{jkt}^{m(08)} \cdot \hat{B}_{jkt}^{m(08)}}{\sum_{j,k,t} \acute{M}_{jkt}^{m(08)} \cdot \hat{B}_{jkt}^{m(08)}}$$

The index in 2009 is Laspeyres, but since January 2010 the formula used to calculate HPI is the chained Laspeyres formula. The reference period of the prices considered is the same month from the previous year, then 12 series of chained indices, one for each month, are obtained.

This formula guarantees the continuous update of the structure used in the weighting system of the indices, as they are always calculated with the date referred to the immediately previous year. To ensure the comparability of the indices obtained with different structures, a chained index is used in order to avoid the need to calculate linked coefficients for each update carried out. It is owing to the fact that the chained index is equivalent to the index calculated with the new structure linking forward, so it is completely comparable with the index previously calculated with different structures.

On the other hand, one of the disadvantages of this formulation is

- Lack of additivity: it is not possible to obtain the index of any group as weighted average of the group indices that comprises it.

Since January 2010 on, the calculation of HPI is done in the following way (for example, national index by category) for any year T ($T \geq 2010$):

$${}_{m(08)}\square HPI_k^{mT} = 100 \cdot \prod_{b=2009}^T \frac{{}_{m(b-1)}\square HPI_k^{mb}}{100}$$

Being the general expression for weightings (see Annex 3: weighting 2019):

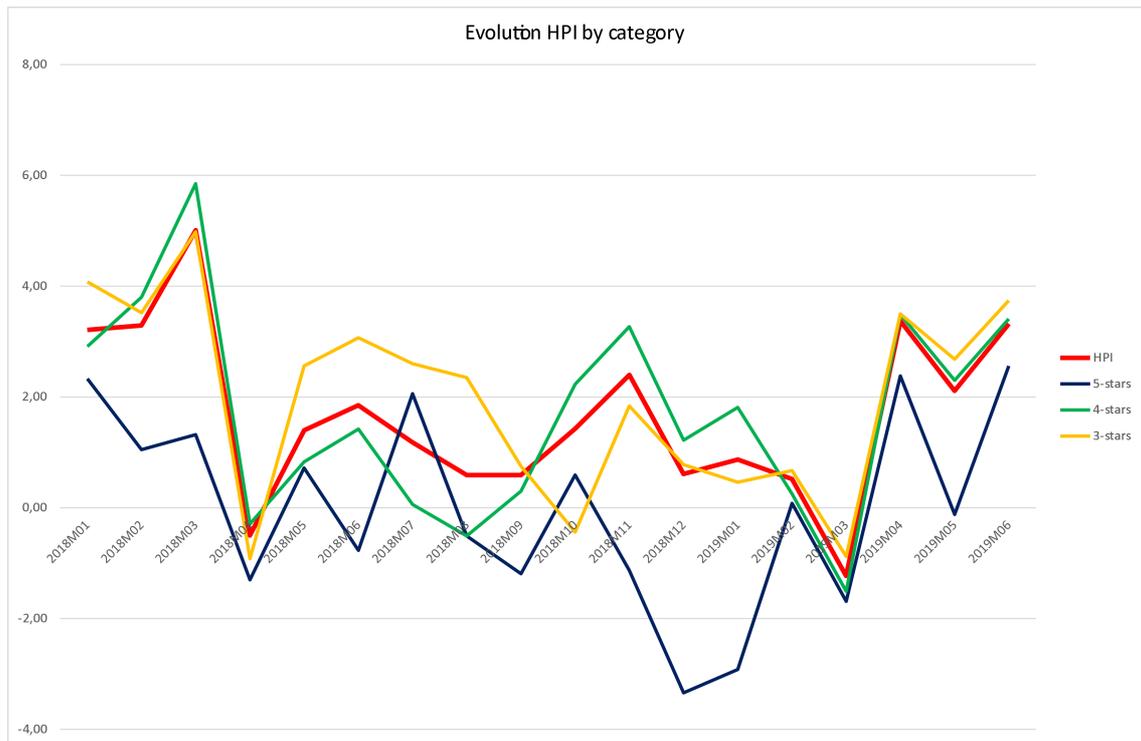
$${}_{m(T-1)}\square L_{jkt} = \frac{\acute{M}_{jkt}^{m(T-1)} \cdot \hat{B}_{jkt}^{m(T-1)}}{\sum_{j,k,t} \acute{M}_{jkt}^{m(T-1)} \cdot \hat{B}_{jkt}^{m(T-1)}}$$

HPI is released 23 days after the references period and the results can be downloaded from NSI website:

(<http://www.ine.es/dynt3/inebase/en/index.htm?padre=2270&dh=1>)

HPI series (indices and/or interannual variation rates) broken down by categories, Autonomous Communities (NUTS2) are available (also coefficients of variation as measure of quality).

Graph 2: Interannual variation rates HPI by category. January 2018-June 2019



3. EVALUATION OF MEASUREMENT

Base changes

Since the beginning of the HPI series there has been two changes in methodology. The HPI base 1999 was calculated using same weights for the whole year, taking into account tariffs and not type of client.

Base 1999-2001 change

The first change took place in 2001, with a change of year base. During 2001 the methodology used to calculate the index was analysed, with the aim of introducing improvements in the indicator. The base used until that moment was also checked with data from 1999. As result, some methodological improvements were included and the index base were updated. The improvements were introduced in two phases:

1. Since January 2002:
 - a. Weightings were calculated not only by province and tariff level, but also a category level.
 - b. Simple geometric measurement (without weighting) were used to group establishment prices.
 - c. Occupied rooms instead of overnightstays were taken into account in the weighting
2. Since January 2003:
 - a. Different weightings were calculated for every month.
 - b. The formula used was a chained Laspeyres index

Those changes had several implications on the formulation of the index and on its interpretation.

Due to these changes, it was necessary to calculate linking coefficients that could give continuity to the series. These coefficients, calculated for grouped indices, were applied to data prior to the introduction of modifications in order to make them comparable with the new base indices.

Due to the strong seasonal nature of HPI, monthly linked coefficients were considered the most appropriate. With this method, the interannual variation rates already published were maintained and the overlapping period was increased to the whole 2001.

Therefore, in 2001, all indices were calculated again for every month using the new methodology and the new base. Linking coefficients were obtained as quotient of indices calculated with the new base by those published with the previous one for all aggregated indices already published:

$$K_{01/99}^m = \frac{I_{2001}^m}{I_{1999}^m}$$

These multiplicative coefficients were applied to 2001 indices to calculate the interannual variant rates since January 2002. The break caused by the new HPI methodology was saved and the comparability of series was achieved.

Base 2001-2008 change

The main change was the introduction of the variable ADR (Average Daily Rate) as measure of price. This variable is managed by hoteliers instead of price or tariff. Moreover, there was a modification in terms of broken down, moving from type of tariffs to type of client.

Again linked coefficients were calculated in order to have the series since January 2001 with base 2008.

Variation coefficients

To calculate an estimation of HPI variance Jackknife method is applied. For each type of client, province and category Jackknife variance is calculated:

$$\widehat{V}(\hat{\theta}) = \sum_{h=1}^L \frac{n_h - 1}{n_h} (1 - f_h) * \sum_{k=1}^{n_h} (\hat{\theta}_{h(k)} - \hat{\theta}_{h(.)})^2$$

Where the subscript $h(k)$ means that unit k is eliminated and $\hat{\theta}_{h(.)} = \frac{\sum_{k=1}^{n_h} \hat{\theta}_{h(k)}}{n_h}$

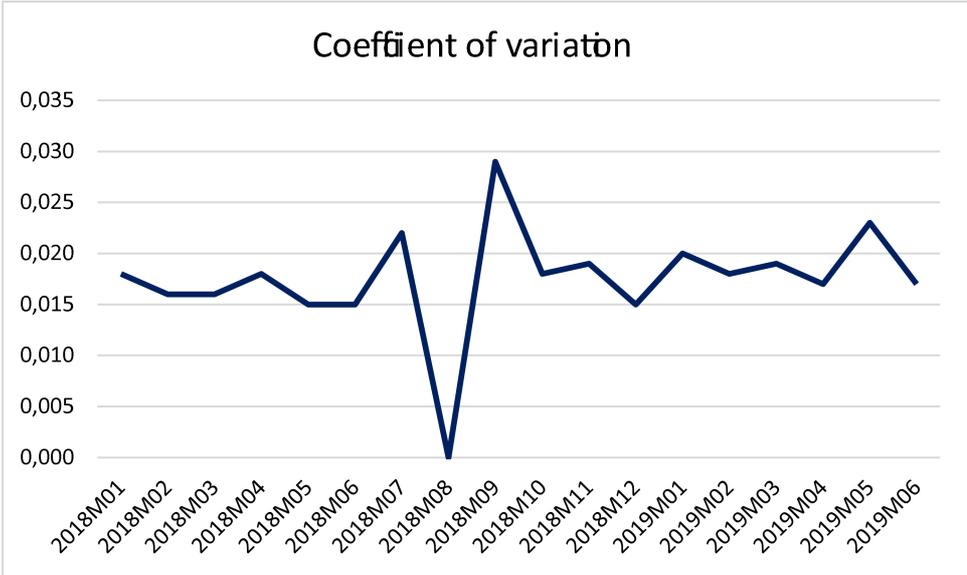
The following estimated variation coefficient is published:

$$\widehat{CV}(\hat{\theta}) = \frac{\sqrt{\widehat{V}(\hat{\theta})}}{\hat{\theta}} * 100$$

It is important to take into account when variation coefficients are analysed that:

1. It is an approximation of sampling errors.
2. Due to the fact that most of the population is included in the sample, the sampling errors are insignificant. In this type of survey non-sampling errors are more important.

Graph 3: HPI coefficient of variation. January 2018-June 2019



Annex 1: HOS questionnaire

6. Average Daily Rate (ADR) for each type of customer (in euros, VAT not included)

Indicate the ADR (Average Daily Rate) for each type of customer per day, only including accommodation –without breakfast, half-board or full board- for a double room with bathroom (irrespective of its use). Gross ADR is requested, that is to say, including discount and commissions but excluding VAT.

Also indicate the approximate number of rooms occupied by each type of guest as a percentage of the total occupied rooms -the same as in section 4.3- in the reference week. (This percentage may be zero in some cases).

	ADR in Euros	% ²
Traditional tour operator _____	_____	_____
Traditional travel agents ¹ (including hotel vouchers) _____	_____	_____
Companies _____	_____	_____
Individuals (including weekday rate and weekend rate) _____	_____	_____
Groups _____	_____	_____
Direct booking through the hotel website and/or the hotel chain _____	_____	_____
Online tour operator _____	_____	_____
Online travel agents _____	_____	_____
Other _____	_____	_____
		100 %²

¹Guests who have handed in hotel vouchers in compensation for the services provided should be included in this category.

²This percentage will be zero if there have been no rooms occupied during the reference week.

ANNEX 3: Weighting 2019

By months						
	January	February	March	April	May	June
Total	100,00	100,00	100,00	100,00	100,00	100,
Andalucía	11,70	12,76	15,24	16,84	15,74	14,
Aragón	1,84	1,96	1,68	1,27	1,02	0,
Asturias, Principado de	0,56	0,58	0,81	0,73	0,72	0,
Balears, Illes	1,65	3,09	5,90	11,10	22,07	28,
Canarias	40,10	34,42	29,77	21,15	15,25	13,
Cantabria	0,39	0,41	0,58	0,65	0,56	0,
Castilla y León	2,03	1,92	2,17	2,11	1,88	1,
Castilla - La Mancha	1,02	1,11	1,08	1,10	0,86	0,
Cataluña	14,75	17,56	16,97	19,09	19,12	18,

By months						
	January	February	March	April	May	June
Total	100,00	100,00	100,00	100,00	100,00	100,
HOTELS: Gold stars						
Five	16,82	15,63	14,53	14,52	12,89	11,
Fourth	55,55	56,47	56,31	55,56	54,09	52,
Three	17,75	17,99	19,45	19,87	23,14	25,
Two	4,10	3,91	4,10	4,12	4,17	4,
One	1,42	1,70	1,47	1,54	1,50	1,
HOSTALS: Silver stars						
Three and two	2,49	2,53	2,35	2,51	2,34	2,