# Evaluation of crowding and tourist satisfaction in the practice of humpback whale - watching, the case of Puerto López - Ecuador

# Evaluación de la satisfacción del turista y la congestión en la práctica de observación de ballenas jorobadas, el caso de Puerto López – Ecuador

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**Abstract:**

*The effect of crowding on tourist satisfaction is a widely studied aspect. Its knowledge is valuable not only to guide ordering of tourism activity but also to ensure a satisfactory experience that contributes to its economic sustainability. However, studies of this type are scarce in the context of whale watching tourism. Therefore, this research aims to evaluate tourist satisfaction and crowding in the practice of humpback whale - watching in Puerto López - Ecuador. At the methodological level, a survey was applied to 340 tourists who observed whales in the June-September 2017 season. Data analysis was based on descriptive record, the structuring of an importance-performance analysis matrix, principal components analysis and binary logistic regression model. Unlike others, this research incorporated the calculation of a perceived crowding threshold and the analysis of the relationship between perceived crowding of boats and people on board. Among main results, the study finds that crowding influences tourist satisfaction when four or more boats coincide at a sighting site. In that sense, the activity in Puerto López is satisfactory in the face of a reported crowding scenario of 3.7 boats and 16.3 people per boat, on average. The limitations of this study are its exploratory nature because it is based on a non-probabilistic sampling and the questionnaire application exclusively in standard capacity boats, without considering those of 35 passengers.*

**Keywords:**

*Humpback whale, tourist, satisfaction, crowding, boat.*

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**Resumen:**

*El efecto de la congestión sobre la satisfacción del turista constituye un aspecto ampliamente estudiado. Su conocimiento resulta valioso no solo para orientar el ordenamiento de la actividad turística sino además para asegurar una experiencia satisfactoria que contribuya a su sostenibilidad económica. Sin embargo, son escasos los estudios de este tipo en el contexto del turismo de observación de ballenas. Por tanto, esta investigación tiene como objetivo evaluar la satisfacción del turista y la congestión en la práctica de observación de ballenas jorobadas en Puerto López – Ecuador. A nivel metodológico se aplicó una encuesta a 340 turistas que observaron ballenas en la temporada junio-septiembre de 2017. El análisis de datos se apoyó en el registro descriptivo, la estructuración de una matriz de análisis importancia-desempeño, el análisis de componentes principales y un modelo de regresión logística binaria. A diferencia de otras, esta investigación incorporó el cálculo de un umbral de congestión percibida y el análisis de la relación entre congestión percibida de botes y de personas a bordo. Como resultado, el estudio encuentra que la congestión influye en la satisfacción del turista cuando cuatro o más embarcaciones coinciden en un sitio de avistamiento. En ese sentido, la actividad en Puerto López es satisfactoria frente a un escenario de congestión reportada de 3,7 botes y 16,3 personas por bote, en promedio. Constituyen limitaciones del estudio su carácter exploratorio por basarse en un muestreo no probabilístico y la aplicación exclusiva del cuestionario en botes de capacidad estándar, sin considerar aquellos de 35 pasajeros.*

**Palabras clave:**

*Ballena jorobada, turista, satisfacción, congestión, bote.*

## 1. **INTRODUCTION**

The practice of humpback whale - watching is a tourist product that distinguishes the offer of numerous coastal destinations around the world. Such is the case of Puerto López on the central coast of Ecuador, where it represents the emblematic product on the June - September season of each year.

As a tourist activity that takes place in very particular conditions (marine surface of a wide open space under state control, tourist attraction protected in migratory movement, sighting on board of boats that are concentrated simultaneously around an individual or group of whales to achieve the best visual approach), it has earned the attention of the naval and tourism authorities around its ordering as a tool to support its sustainability. Likewise, the need to study the effect of crowding on tourist satisfaction has been recognized in previous research (Bentz et al. 2015; Ziegler et al. 2016), since it can contribute to generate useful information to order the activity and ensure a satisfactory experience that contributes to its economic sustainability.

Satisfaction in the tourist context has been studied in association with motivational variables and the sociodemographic profile (Sukiman et al. 2013; Ramírez et al. 2016). Similarly, aspects such as service performance and levels of crowding have been considered binding (Ziegler et al. 2012; Buultjens et al. 2016). Assuming the previous contributions, this research aims to evaluate tourist satisfaction and crowding in the practice of humpback whale - watching in Puerto López - Ecuador. The specific objectives are: 1) to determine motivations, socio-demographic and behavior on board characteristics, of tourists that practice whale watching in Puerto López; 2) to establish aspects of the whale watching activity that are satisfactory for tourist from an importance/performance perspective; 3) to establish the relationship between perceived crowding of boats and motivations, socio-demographic and behavior characteristics of tourists; 4) to establish the relationship between perceived crowding of people and perceived crowding of boats; 5) establish the relationship between perceived and reported crowding of boats with tourist satisfaction; and 6) to determine the pertinence of the number of boats prescribed in the standard with respect to tourist satisfaction. By virtue of this, the study raises the following questions:

1. What socio-demographic and behavioral characteristics on board do tourists who practice watch whales in Puerto Lopez have?
2. What motivations are important for tourists who practice whale watching in Puerto Lopez?
3. What aspects of the whale watching activity are satisfactory for tourist from a perspective of importance/performance?
4. To what extent do tourists who practice whale watching in Puerto Lopez, report and perceive crowding of boats on site and people on board?
5. In what way do tourists value perceived crowding of boats and people on board?
6. Does perceived crowding of people on board, influence on perceived crowding of boats?
7. Do socio-demographic, motivational and behavioral characteristics, influence perceived crowding of boats?
8. Does perceived crowding of boats influence on tourist satisfaction?

In accordance with these questions, the following hypotheses are proposed:

1. Sociodemographic characteristics influence perceived crowding of boats
2. Behavior on board of tourists influences perceived crowding of boats
3. Push motivations influence perceived crowding of boats
4. Perceived crowding of people influences perceived crowding of boats
5. Perceived crowding of boats influences tourist satisfaction
6. Reported crowding of boats influences tourist satisfaction
7. The number of boats prescribed in the standard affects tourist satisfaction

The study was carried out through application, processing and analysis of a survey applied to 340 tourists who practiced humpback whale -watching between June and September 2017 in Puerto López. The methodological adjustment of this research in front of other similar ones included the measurement of perceived crowding, using a 9-point ordinal scale widely used in natural spaces (Shelby et al. 1989). This scale allows registering four categories of perceived crowding, letting to notice with greater sensitivity the degree of perceived crowding by the tourist. The scale also makes it possible, in light of the distributions of frequencies found, to dichotomize the variables to verify their correlation with satisfaction through regression analysis. A bipolar five-point scale was also incorporated for crowding assessment to differentiate it in a positive or negative sense. Also it was applied a threshold of 3 boats equivalent to the number of boats authorized to remain around an individual or group of whales, in accordance with the norm that regulates whale watching in Ecuador. It was used as a measure of contrast to evaluate the influence of perceived crowding of boats. Processing was carried out through the SPSS version 23 program, while the analysis of data was based on the descriptive record, the structuring of an importance/performance analysis matrix and binary logistic regression model.

## 2. **THEORETICAL FRAMEWORK**

### 2.1 **Whale watching tourism**

The humpback whale (*Megaptera novaeangliae*) has an average length between 14 to 16 meters and a weight that ranges between 30 and 50 tons. It is distributed throughout the planet and inhabits the Pacific and Atlantic Oceans. The three populations (North Pacific, North Atlantic and South Pacific-South Atlantic) are geographically and reproductively isolated (Frisch 2009).

Whales are popular tourist attractions in many coastal areas of the world (Malcolm et al. 2017). Guerrero et al. (2006) report that although the gray whale has been identified as the one that caused the origin of whale watching tourism (Hoyt 2002), it is the humpback whale that reconverted this activity into a large industry, because of this specie was the first in which friendly behavior was detected when habituated to human presence, and because it performs many activities on the surface, becoming very popular and attractive to tourists (Meynecke et al. 2017).

Nowadays there are several tourist destinations that integrate the humpback whale - watching, as a product: Vancouver in Canada, Hawaii in USA, Bay of Banderas in México, Reykjavik in Iceland, Okinawa in Japan, Puerto López in Ecuador, Máncora in Peru, Hervey Bay in Australia and the Eastern Cape in South Africa, just to mention a few.

### 2.2 **Whale watching in Puerto Lopez – Ecuador**

Puerto López is located on the central coast of Ecuador, in the province of Manabí on the shores of the Pacific Ocean. Its urban area contains the administrative center of the Machalilla National Park, which integrates a terrestrial and marine protected area under state jurisdiction. The marine area under protection is deployed two nautical miles from the coastal profile and the edge of the islands of Salango and La Plata, as well as a group of nearby islets.

The areas where whale sightings have been recorded go beyond the limits of the marine protected area. Felix and Haase (1998) recorded sightings on the route Puerto López - Isla de la Plata (traditional route of whale tourism operators), highlighting some sites: surroundings of Isla de la Plata, Bajo de Cantagallo, near Puerto López and in front of Puerto Cayo and Machalilla.

According to Herrera and Lasso (2014) whale watching in Puerto López began in the late eighties of the twentieth century, with the participation of fishermen who transported in their boats adventurous tourists who watched humpback whales during fishing, in a season of about four months (June-September). Nowadays, excursions are carried out in authorized and conditioned boats. According to the Tourist Cadastre of the Local Government of Puerto López (2017), the number of boats authorized for the whale watching activity corresponds to 37, which exercise their activity under the umbrella of 23 legally constituted tour operators. This is an indication that an operator has the faculty to use more than one boat. According to the same source, the capacity of the boats is generally 16 passengers (35 boats), although there are also two boats that have a capacity for 35 passengers.

Officially, according to the Tourist Wharf Office of Puerto López, in 2017 a total of 30,181 tourists departed to carry out this activity. The increasing flow of tourists has been the reason to the activity in Ecuador has been regularized through Ministerial Agreement No. 20140004, signed on May 30, 2014 by the Ministries of Environment, Tourism, Transport and National Defense. The regulation seeks to safeguard the integrity of both whales and tourists, and establishes among other rules: the exclusive use of tourist service boats; departures granted only from authorized places; a number no greater than three authorized departures for whale watching by port and by hour; a maximum of two trips per day and per boat; a maximum of 25 minutes of sighting to a group of cetaceans; a maximum number of three boats around the same group of cetaceans; and, forbidding passengers from standing or moving around on the boat during the sighting.

Whale watching from the perspective of tourists, has been a phenomenon little studied in Ecuador. Among the few existing studies, there are topics such as the profile of tourist (Castro 2016); the effect of whale tourism in the local community (Herrera and Lasso 2014) and compliance with regulations (Dalfo et al. 2017). The study of tourist satisfaction and perception of crowding is an issue that remains without study, despite the importance it has regarding the sustainability of the activity.

### 2.3 **Crowding perception and tourist satisfaction in whale watching practice**

Buultjens et al. (2016), consider whale watching creates an economic value that contributes to conservation of the species and demands sustainable management. Among the impacts that could significantly affect whale watching sustainability, are those that are extrinsic to tourism, such as global climate change (Cornejo and Chávez 2014), and those that are intrinsic, such as tourism services.

Although the spheres of influence of whale watching tourism management are multiple, they are the factors inherent to the operation of the fleet (Chavez 2008) or the behavior of service providers (Kessler and Harcourt 2013), which determines the greater need for regulation by the damage or potential affectation to the individuals or to the habitat. In this sense, there are two variables to consider: the maximum number of people that can be at the same time in each location, and the number of permits issued for boats that can provide whale watching service. Both variables are closely linked to the concept of crowding, which is a destination attribute usually considered undesirable by tourists (Alegre and Garau 2010), whose externalities throw important management concerns (Neuts and Nijkamp 2012) as evidenced by several empirical studies. For example, Malcolm et al. (2017) based on the results of a study conducted in Puerto Vallarta - México, mention that the presence of too many boats in the whale watching area was registered as one of the least pleasant aspects for tourists. Buultjens et al. (2016) corroborates this in a study conducted in Mirissa - Sri Lanka, finding that the lack of control over the number of boats and the behavior of service providers, reduced visitor satisfaction. Fernandes and Rossi (2018), based on studies carried out in Brazil, link the concept of social burden capacity in whale watching, and straight the effect of bad satisfaction in experience due to crowding, as a trigger for a negative attitude to revisit the site.

### 2.4 **Evaluation of crowding and satisfaction in whale watching tourism**

As Maruthaiah and Abdul (2014) point out, identifying tourists' acceptance of crowding in marine areas is an avid aspect of research. In recognition of this, relationship between crowding and tourist satisfaction, during nautical activities especially related to wildlife observation, has aroused the interest of academics in recent years (see for example the work of Bentz et al. 2015; Ziegler et al. 2016; Needham et al. 2018).

Customer satisfaction is a topic widely studied in the academic setting and the same happens in the field of tourism research. Given the current highly competitive scenario, tourist satisfaction has become more important than ever (Möhlmann 2015 cited Wang 2016).

For a wide range of authors, satisfaction results from a process of comparison and evaluation between what was expected and what was received (Pizam et al. 1978; Mountiho 1987; Parasuraman et al. 1994; Oliver 1997; Kotler et al. 1999). Following this line of thought and in the tourist field, Tribe and Snaith (1998) define satisfaction as the degree to which tourists' assessment of a destination's attribute exceeds their expectations.

One of the models developed to assess compliance with expectations is the so-called "importance-performance analysis" IPA. Frauman and Banks (2010) cited by Griffin and Edwards (2012) consider that the IPA method distinguishes satisfaction as a function of

the importance of a product or service to the client, and the performance of a business or agency in its provision.

Boley et al. (2017) point to IPA as one of the most ubiquitous methodological tools used in tourism research, given its ease of understanding (Martilla and James 1977), simplicity and ability to visualize gaps between perceptions of those involved regarding the importance of an attribute and performance of companies in the destination. In the field of nautical tourism, Ziegler et al. (2012) apply IPA to study tourist satisfaction during shark whale - watching on Holbox Island, from a set of specific attributes for this activity, as well as Bentz et al. (2016a) in whale watching activities in the Azores.

The attributes of the product / destination are critical aspects in the analysis of satisfaction, and in the academic literature they are frequently referred to within the motivations category (Alfaro 2006; Prayag 2010; Sukiman et al. 2013; Ramírez et al. 2016). The influence of motivations also called push and pull factors (Crompton 1979) in the measurement of satisfaction, have been explored by Correia et al. (2013). These last authors assume congruence between the push factors with the tourist internal desires, and between the pull factors with the tourist expectations in terms of destination attributes.

Attributes that have a close relationship with tourist satisfaction in cetaceans sighting have been studied previously such as: quantity and behavior of the observed individuals, number of passengers, duration of the trip, characteristics of the boat and dizziness due to sea movement (Orams 2000); minimum impact on marine fauna, learning and contemplation of marine fauna (Shapiro 2006); educational-interpretive component (Lück 2003; Shapiro 2006; Kessler et al. 2014; Sitar et al. 2017); observation time, swim time, number of people in the water, space available on the boat, sea conditions during the tour, rules to follow and information provided (Filby et al. 2015); tour price and friendly environment (Bentz et al. 2016a). In addition, Orams (2000), Kessler et al. (2014) and García & Pacheco (2017) suggest that satisfaction is not related to the proximity of whales; instead they refer a relationship with the visitor's own safety in terms of keeping a safe distance to whales.

Several authors have pointed out crowding as a variable that influences tourist overall satisfaction in their travel experience (Abubakar and Mavondo 2014; Maruthaiah and Abdul 2014; Mudiyanselage and Rathnayake 2015; Kim et al. 2016; Zhang et al. 2017). The study of crowding dates back to the early 70's of the last century (Nickerson 2016) and the term refers to the subjective evaluation of a person with respect to density in a specific environment (Zhang and Chung 2015), which is conditioned by psycho-social factors, influenced by own and alien individual aspects (Fleishman et al. 2004).

The incidence of crowding on the tourist experience is recognized by authors such as Galí (2008), Barrera et al. (2017), East et al. (2017), and it is believed to be evident when users find more people than they consider tolerable (Vaske and Donelly 2002 cited Needham and Szuster 2010), or even when the presence of these people interferes with tourist expectations (Pedersen 2002). However, authors such as Naoi et al. (2007) point out the existing divergence in the positive or negative connotation that crowding perception may have.

Among the influential factors or determinants in crowding Pedersen (2002) points out visitor's characteristics, their experiences with the area, behavior of other visitors and peculiarities of the place. Rasoolimanesh et al. (2017) mention age and educational level while Lee and Graefe (2003) and Jin et al. (2016) point to the motivations. Szuster et al.

(2011) in the context of a crowding research in diving activities in Hawaii, refer the number of divers and their proximity. Complementing the above, Kalisch and Klaphake (2007) state that tourists traveling in organized groups tend to be more tolerant to crowding than independent travelers.

The concept of crowding includes three variants: reported, perceived and regulated (Vaske and Donelly 2002). The first refers to the number of boats seen by an individual during the trip, the second is relative to the subjective perception of the encounter with other boats that affects the satisfaction, and the third refers to the number of boats that a person considers appropriate around a whale.

Concerning crowding and its relationship with satisfaction in the context of tourism in coastal areas, Avila-Foucat et al. (2013) based on a study applied to whale watching in Bahía de Banderas - México, refer that the probability of returning seems to be negatively associated to the perceived and reported crowding. This implies that the number of boats is important for tourist satisfaction and that the greater crowding the less desire to return. Bentz et al. (2016a) report the results of their research on satisfaction in whale watching in the Azores, in which they apply a scale of 5 points for the importance assessment of the absence of crowding during the activity. They find differences of opinion among three types of observing tourists: new, passionate and committed; being the latter those that give greater importance to the absence of crowding.

In the same line, Bentz et al. (2015) measure the importance of absence of crowding in the purchase decision, finding that perceived crowding does not affect general satisfaction.

As can be seen from the above, there are authors who refer to the impact of crowding of boats on satisfaction of whale-watching tourist (Buultjens et al. 2016; Malcolm et al. 2017) and even on their intention to repeat the visit (Avila-Foucat et al. 2013, Fernandes and Rossi 2018), however there are also results that do not link it (Bentz et al. 2015). Also, it can be noted that research has correlated several variables to perceived crowding of boats, not being one of them the perceived crowding of people on board.

It is also notorious that approaches to the study of crowding vary in methodological details, finding that some authors measure the importance of absence of crowding (Bentz et al. 2015), perceived crowding associated with an acceptable number of boats (Avila -Foucat 2013) or from binary scales that refer crowding perception in a bipolar way (Bentz et al. 2015), although the perceptual range can be wider.

This determines the relevance of continuing the studies on the subject to identify other factors that may affect crowding perception and that allow a better explanation of correlation with satisfaction. As important as this is seeking scales that allow knowing with greater sensitivity the degree of perceived crowding and the positive or negative valuation of it, since in many studies it is assumed that this is negative when it might not necessarily be, which could explain that different groups of users perceive crowding differently.

Crowding in the context of this study refers to a saturation of boats near the whales and in addition, to the saturation of people inside the boat. This study includes crowding of people on board, because people number and perception of available space in the boat (both linked to crowding perception), have been elements considered in research linked to experience and satisfaction during whale and dolphin sightings (Orams 2000; Finkler and Higham 2004; Filby et al. 2015). In that sense, it is important to verify the existence of a correlation between perceived crowding of people on board and perceived crowding of boats.

## 3. **METHODOLOGY**

The study has been carried out by applying a survey to a sample of 340 tourists over 18 years of age, who participated in the sighting of humpback whales in the annual season between the months of June and September 2017, in Puerto López. The ratio of foreign and national tourists in this study is different from the tourist flows recorded by the Machalilla National Park office, where approximately foreign tourists represent 19% (Dalfo et al. 2017). In this case, the share of foreign tourists was 91.2% intentionally, as the opinion of a strategic segment was sought from the macroeconomic point of view. In that sense, it is an exploratory research, worked with a 5.28% margin of error at a 95% confidence level.

To ensure sample representativeness, the questionnaire was administered to passengers of the boats legally authorized to carry out the activity, at the time of disembarkation at the dock of Puerto López. Sixteen operators (70% of the total) were considered for the study, those who were interested and facilitated contact with their passengers; 7 operators preferred not to participate in the process. Since the passenger capacity of each boat was small, the questionnaire was applied to all groups of tourists present, choosing a representative of each family group or friends, being the chosen person the one with the closest birthday.

The questionnaire was structured in five sections: the first one aimed at obtaining the sociodemographic profile and travel preferences; the second aimed at assessing the importance of psychological and service motivations; the third designed to obtain satisfaction assessment; the fourth consigned to evaluate the perception and valuation of crowding; and, the fifth to assess the behavior of other tourists during the trip. The sociodemographic profile and travel preferences section was structured based on 7 multiple choice questions: sex, age, marital status, academic background, occupation, length of stay, and accompaniment; plus an open question related to nationality.

The psychological and service motivations section was based on a set of 21 push and pull motivations (11 and 10 respectively), prepared based on those applied by Ziegler et al. (2012) and Bentz et al. (2016b). Motivations were subjected to importance evaluation through a Likert scale of 5 points (nothing important, something important, moderately important, important and very important).

In the section on crowding perception it was used the nine-point scale proposed by Shelby et al. (1989), which establishes four levels of crowding (not crowded, somewhat crowded, moderately crowded and extremely crowded). For crowding valuation it was used a 5-point bipolar Likert scale (very negative, negative, indifferent, positive, very positive). Both cases were oriented to crowding of boat and people on board. This section was combined with two questions about the number of boats observed simultaneously during the trip and the number of people on board the contracted boat (reported crowding). For these questions it was used a closed graphic scale of 10 and 20 points respectively.

The section about perception of behavior of other tourists was structured based on two conducts: being noisy disturbing tranquility and standing up in the boat to take pictures. A Likert scale of 4 points was used (it is not a problem, it is a small problem, it is a medium problem, it is a big problem).

The questionnaire was applied with the help of survey takers at the end of whale watching trip, once the disembarkation was made. Initially, a pilot of 22 surveys was carried out, which confirmed the reliability of the instrument by calculating Crombach's Alpha for the scales used. Calculated values to scales were: 0.92 for motivations, 0.90 for satisfaction, 0.93 for crowding perception, 0.86 for crowding assessment and 0.73 for the behavior of other tourists.

Data tabulation and processing were carried out in the IBM SPSS program, version 23. First, frequencies of sociodemographic variables and travel preferences were determined. Opinion frequencies were also extracted on motivations, satisfaction, crowding perception and valuation, and behavior of others. Additionally, arithmetic mean and standard deviation of number of boats and people on board were calculated. Based on the disconfirmation of expectations model (Oh 2001 cited Sever 2015; Bigné and Andreu 2004), there were calculated the arithmetic means of importance and satisfaction opinions, and with them the importance/performance analysis matrix was structured.

Finally, to identify the influence of sociodemographic, motivational, behavioral and travel preference variables, on crowding perception and valuation, it was used a binary logistic regression model BLR. This was done once the variables were dichotomized to facilitate their processing. It should be pointed out that motivations were factorized before integrating in the model, through the analysis of principal components with varimax rotation. Finally, the BLR model was replicated to verify the relationship between crowding (perceived and reported) and tourist satisfaction with the number of boats, stablishing 3 and 4 boats as a measure of contrast.

## 4. **RESULTS**

### 4.1 **Respondent profile and travel preferences**

Responding to the first research question, results indicate that respondent profile registers a slight predominance of female sex (52.6%), as well as professional occupation (56.8%) and the dominance of foreign nationality (92.1%). The prevailing age ranges between 26 and 35 years, while the level of study mostly reported is college (66.5%), and single as the most frequent marital status (47.9%). Regarding the travel preference, it is found that the surveyed tourist prefers more frequently to travel in couple (55.9%) and visit Puerto López during 3 days (58.2%). The complete detail of the profile and travel preferences it is shown in table 1 below.

Table 1

**Respondent profile and travel preferences**

| Variable | Category | % | | Variable | Category | % |
|---|---|---|---|---|---|---|
| Gender | Male | 47.4 | | Nacionality | Ecuadorian | 7.3 |
| | Female | 52.6 | | | Foreign | 92.1 |
| Accompaniment | Group | 30.6 | | Level of education | Primary | 3.8 |
| | Couple or partner | 55.9 | | | High school | 16.2 |
| | Alone | 13.5 | | | College | 66.5 |
| | | | | | Postgraduate | 13.5 |
| Age | Under 25 years | 17.6 | | Marital status | Single | 47.9 |
| | 26-35 years | 47.1 | | | Married | 17.9 |
| | 36-45 years | 20.0 | | | Divorced | 23.5 |
| | 46-65 years | 11.8 | | | Free union | 9.4 |
| | 66 years and older | 3.5 | | | Widowed | 1.2 |
| Stay | 1 day | 7.4 | | Occupation | Student | 33.2 |
| | 2 days | 12.6 | | | Professional | 56.8 |
| | 3 days | 58.2 | | | Retired | 6.8 |
| | 4 days | 14.7 | | | Housework | 1.5 |
| | More than 4 days | 7.1 | | | Unemployed | 1.8 |

*Source:* Own elaboration from survey.

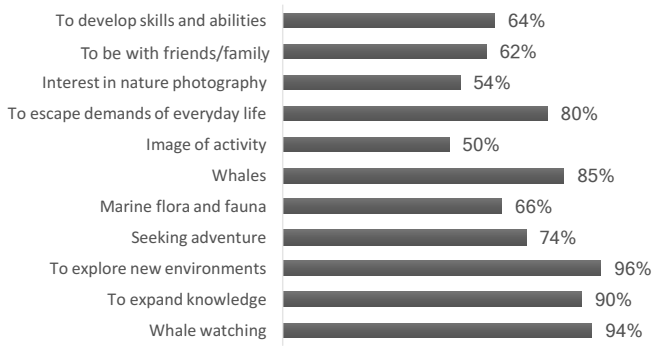
## 4.2. **Assessment of push and pull motivations**

Responding to the second research question, results about push motivations assessment indicate that respondents give greater importance to: exploring new environments (96%), whale watching (94%), expand their knowledge (90%), whale as a specie (85%) and escape from daily activities (80%). The complete detail of the set of motivations and their assessment is shown in figure 1.

Assessment of pull motivations shows that respondents give greater importance to: information provided by the crew (97%), environmental commitment (96%), quality of service of maritime transport (96%), safety procedures (93%) and proximity of whales (84%). The complete detail of assessment of this group of motivations is shown in figure 2.

Figure 1

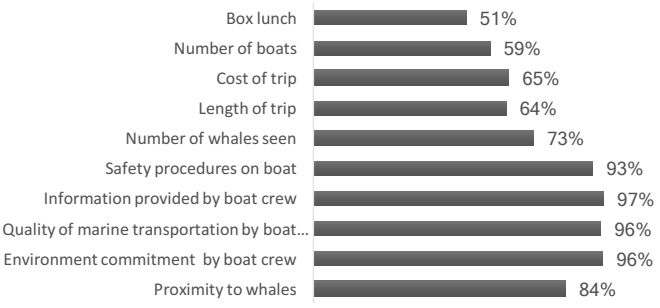
**Importance assessment of push motivations**




*Source:* Own elaboration from survey.

Figure 2

**Importance assessment of pull motivations**



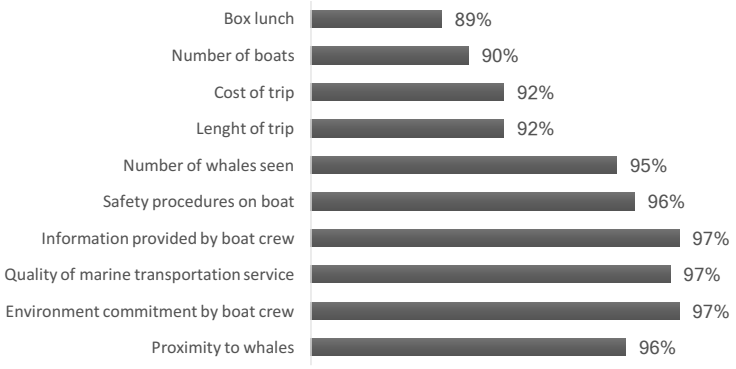

*Source:* Own elaboration from survey.

## 4.3 **Satisfaction assessment respect to service**

Satisfaction assessment given to service attributes reflects that respondents are satisfied mostly with: information provided and environmental commitment by boat crew (97%), quality of maritime transport service (97%), safety procedures (96%), proximity of whales (96%), and number of whales (95%). The complete detail of this assessment is shown in figure 3.

Figure 3

**Tourists who reported satisfaction - service variables**




*Source:* Own elaboration from survey.

### 4.4 **Importance-performance evaluation of tourist service in whale watching practice**

In response to the third research question, results of importance-performance analysis matrix in tourism service show that the attributes related to safety procedures, environmental commitment, quality of maritime transport, information provided by the crew and proximity of whales, are located in the first quadrant. Therefore, this finding shows a good performance in what is considered important by the client. This indicates that the service attributes of this quadrant are valued by the tourist as according to their expectations.

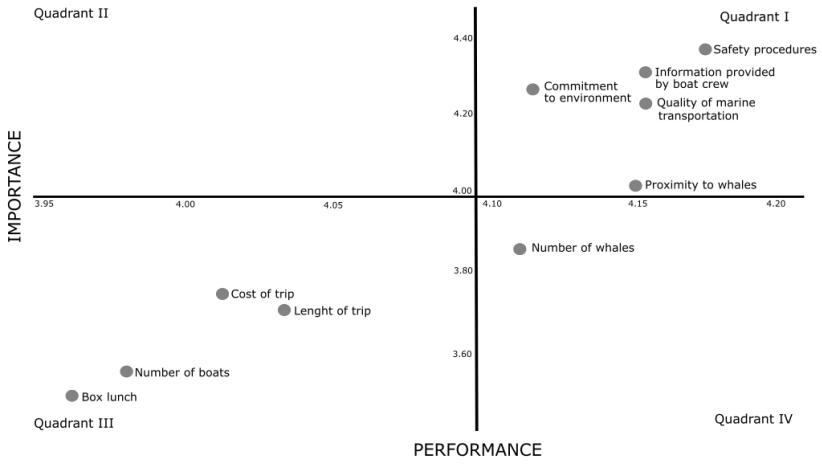
It is also observed that the number of whales is located in the fourth quadrant, which shows a high performance in an aspect of little importance for the tourist. Finally the aspects: cost and duration of the tour, number of boats and snack on board, are located in the third quadrant, which denotes a low performance in aspects that are not considered very important for tourist. Figure 4 below shows the complete IPA matrix.

Respondents mostly perceive a level of crowding of boats and people on board between light and moderate (81.2% and 78.2% respectively). Such perception is valued as negative by not much more than half of the respondents, both in the case of boats (57.6%) and for people (58.8%). These values are recorded with reference to an average density of 3.7 boats and 16.3 people per boat in the sighting trips, noting an average degree of dispersion of data given by a standard deviation of 1.0 and 3.9 respectively.

It is also found that behavior of other tourists during the trip was not considered a problem for most of respondents; thus, being noisy was a problem for 18.5% while standing up on the boat to take photographs was a problem for 15.3%. This also responds to the second part of the first research question about behavior of tourists on board. The summary of these descriptive indicators is shown in table 2.

Figure 4

**Importance-performance analysis matrix of service**




*Source:* Own elaboration from survey.

## 4.5 **Influential factors in crowding perception and valuation**

The fourth and fifth research questions about the measure and way of valuation in which whale watching tourists report and perceive crowding, is answered by the following findings:

Table 2

**Descriptives indicadors of perceived and valuated crowding**

| Perceived crowding | Boats | | Tourist | |
|---|---|---|---|---|
| | Frecuency | Percentage | Frecuency | Percentage |
| Not at all crowded | 64 | 18.8 | 74 | 21.8 |
| Slightly crowded | 46 | 13.6 | 36 | 10.6 |
| Moderately crowded | 230 | 67.6 | 230 | 67.6 |
| Extremely crowded | 0 | 0.0 | 0 | 0.0 |
| Total | 340 | 100.0 | 340 | 100.0 |
| Crowding valuation | Boats | | Tourist | |
| | Frecuency | Percentage | Frecuency | Percentage |
| Negative | 196 | 57.6 | 200 | 58.8 |
| Positive | 144 | 42.4 | 140 | 41.2 |
| Total | 340 | 100.0 | 340 | 100.0 |
| Boats average | 3.7 | | | |
| Boats standard deviation | 1.0 | | | |

| Perceived crowding | Boats | | Tourist | |
|---|---|---|---|---|
| | Frecuency | Percentage | Frecuency | Percentage |
| Not at all crowded | 64 | 18.8 | 74 | 21.8 |
| Slightly crowded | 46 | 13.6 | 36 | 10.6 |
| Moderately crowded | 230 | 67.6 | 230 | 67.6 |
| Extremely crowded | 0 | 0.0 | 0 | 0.0 |
| People on board average | 26.3 | | | |
| People on board standard deviation | 3.9 | | | |
| Behaviors of other tourists | Not a problem (%) | | It is a problem (%) | Total |
| Being noise | 81.5 | | 18.5 | 100.0 |
| Standing in the boat when taking pictures | 84.7 | | 15.3 | 100.0 |

*Source:* Own elaboration from survey.

Factorial analysis to push motivations with principal components method (Kaiser-Meyer-Olkin Test = 0.669 and Bartlett - Chi-square = 981.64; p value = 0.000) threw a set of 4 components that were named by their affinity as: escape and enjoyment, whales, know and explore, and, adventure and biota (marine flora and fauna of the area); as seen in table 3.

Table 3

**Motivacion factors**

| | Component | | | |
|---|---|---|---|---|
| | Escape & enjoy | Whales | Know & explore | Adventure & biota |
| To escape demands of everyday life | .732 | | | |
| To develop my skills and abilities | .648 | | | |
| Interested in nature photography | .631 | | | |
| Image of activity | .533 | | | |
| To be with friends/family | .483 | | | |
| Interest in whale watching | | .843 | | |
| Interest in whales | | .792 | | |
| To expand my knowledge | | | .867 | |
| To explore new environments | | | .844 | |
| Interest in marine flora and fauna | | | | .844 |
| Seeking adventure | | | | .842 |

*Source:* Own elaboration from survey.

On the other hand, BLR model among variables shows that crowding valuation of boats and people is negative while the crowding perception is greater as can be seen in table 4.

Table 4

**Estimated coefficients to crowding perception and valuation**

| | B | Standard error | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|
| Crowding perception of boats | -.932 | .285 | 10.731 | 1 | .001 | .394 |
| Constant | .445 | .256 | 3.013 | 1 | .083 | 1.560 |
| Crowding perception of people on board | -1.027 | .270 | 14.437 | 1 | .000 | .358 |
| Constant | .439 | .238 | 3.404 | 1 | .065 | 1.552 |

*Source:* Own elaboration from survey.

BLR model of respondent profile variables, factorized push motivations, density of use and behavior, in relation to crowding perception & valuation, indicate the following:

Perception of boat crowding is influenced by age, accompaniment and nationality of respondent, being higher for foreign tourists who travel accompanied and have an age equal to or less than 35 years. Regarding motivations, it is found that crowding perception increases if motivations related to whale watching and adventure & biota are lower. In as much, behavior of tourists does not show influence in crowding perception. These findings allow answer the seventh research question, accept the first and third hypothesis and reject the second; that is to say, socio-demographic characteristics and push motivations influence perceived crowding of boats, while behavior of tourists does not. The detail of the contrast statistics used is shown in tables 5 to 7.

Table 5

**Estimated coefficients to crowding perception of boats and respondent profile**

*Source:* Own elaboration from survey.

| | B | SE | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|
| Age | -.866 | .360 | 5.798 | 1 | .016 | .421 |
| Marital status | -.214 | .368 | .338 | 1 | .561 | .807 |
| Level of education | .256 | .343 | .558 | 1 | .455 | 1.292 |
| Accompaniment | -.754 | .380 | 3.933 | 1 | .047 | .470 |
| Nacionality | -1.283 | .449 | 8.150 | 1 | .004 | .277 |
| Constant | 2.005 | .371 | 29.171 | 1 | .000 | 7.425 |

Table 6

**Estimated coefficients to crowding perception of boats and motivations**

| | B | SE | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|
| Escape & enjoy | .112 | .131 | .725 | 1 | .394 | 1.118 |
| Whales | -.687 | .174 | 15.550 | 1 | .000 | .503 |
| Know & explore | .137 | .145 | .895 | 1 | .344 | 1.147 |
| Adventure & biota | -.626 | .164 | 14.470 | 1 | .000 | .535 |
| Constant | 1.706 | .168 | 103.591 | 1 | .000 | 5.509 |

*Source*: Own elaboration from survey.

Table 7

**Estimated coefficients to crowding perception of boats and behavior**

| | B | SE | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|
| Being noisy | .307 | .431 | .508 | 1 | .476 | 1.359 |
| Standing up in the boat when taking pictures | -.763 | .433 | 3.109 | 1 | .078 | .466 |
| Constant | 1.353 | .150 | 81.069 | 1 | .000 | 3.870 |

*Source:* Own elaboration from survey.

Likewise, BRL model shows that perceived crowding of boats is influenced by perceived crowding of people on board, which answers the sixth question and confirms the fourth hypothesis. The contrast statistics are shown in table 8 below.

Table 8

**Estimated coefficients to crowding perception of boats and people on board**

| | B | SE | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|
| Crowding perception of people on board | 5.637 | .585 | 92.947 | 1 | .000 | 280.714 |
| Constant | -1.455 | .297 | 24.041 | 1 | .000 | .233 |

*Source:* Own elaboration from survey.

Finally, influence of perceived crowding of boats on tourist satisfaction is presented on a crowding threshold reported less or equal to 3 boats; that is to say, from 4 boats reported on the whale watching site, perceived crowding influences tourist satisfaction. This finding answers the eighth research question and allows accepting the fifth and sixth hypotheses about the threshold of 3 boats, according to values of significance obtained that are shown in table 9. Taking into account that the threshold calculated in this study was corresponds to the number of boats provided in the national regulation (both equal to 3), it is possible to say that the number of boats provided in the standard does not influence tourists satisfaction in the framework of this study, which allows to reject the seventh hypothesis raised.

Table 9

**Estimated coefficients to satisfaction and number of boats**

| Reported crowding of boats | Perceived crowding of boats | B | SE | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|---|
| ≤3 boats | n 173 | .052 | 1.104 | .002 | 1 | .963 | 1.053 |
| = 4 boats | n 115 | 1.504 | .564 | 7.116 | 1 | .008 | 4.500 |

*Source:* Own elaboration from survey.

## 5. **DISCUSSION**

Results of this research confirm what has been exposed by other authors respect to influence of characteristics of tourists profile on crowding perception (Rasoolimanesh et al. 2017) and the role of push motivations as determinants of crowding (Lee and Graefe 2003; Jin et al. 2016). In this sense, the influence of aspects such as age, accompaniment, nationality and motivations, on perceived crowding of boats has been demostrated. In addition, this study finds that motivations with greater importance for tourist surveyed have been confirmed in other studies, such as: information provided by the crew (Filby et al. 2015; Sitar et al. 2017), environmental commitment (Shapiro 2006), maritime transport (Orams 2000), security (Buultjens et al. 2016), and proximity of whales (Kessler et al. 2014).

On the other hand, it is found that a greater perceived crowding of boats corresponds to a greater negative valuation. This finding confirms assertions collected in scientific literature such as those that refer crowding in natural contexts with a negative connotation (Desor 1972; Stokols 1972; Shelby et al. 1989; Alegre and Garau 2010; Neuts and Nijkamp 2012), and the same in the context of marine tourism (Buultjens et al. 2016; Malcolm et al. 2017; Fernandes and Rossi 2018).

Taking as reference the works of Orams (2000), Finkler and Higham (2004) and Filby et al. (2015) where the number of people on board is associated with the perception of experience and satisfaction in the sighting of whales and dolphins, this study shows that perceived crowding of boats is influenced by perceived crowding of people on board.

Regarding the use in this study of a 9-point ordinal scale to assess perceived crowding (Shelby et al. 1989), it can be affirmed that it has made it possible to register the opinions of the surveyed tourists with greater sensitivity. In this way a degree of crowding of boats and people between light and moderate was recorded (81.2% and 78.2% respectively).

Finally, the number of boats observed simultaneously during whale watching is relatively low if the average is considered to be 3.7 vessels with a standard deviation of 1. Avila-Foucat et al. (2013) conclude that the adequate number of boats simultaneously located around a group of humpback whales, for the context of Bahía de Banderas is equal to two, however, this study determines that the number of boats set by regulation (three) for the case of Puerto López does not jeopardize the tourist's satisfaction.

## 6. **CONCLUSIONS**

Whale watching practice in Puerto López is mostly satisfactory (more than 89% of the tourists surveyed). The aspects that meet the expectations of tourists are: safety procedures, environmental commitment, quality of maritime transport, information provided by the crew and proximity of the whales.

The study finds that motivations, socio-demographic and behavioral characteristics of tourists influence perceived crowding of boats. Similarly, it is found that perceived crowding of people on board in each boat influences perceived crowding of boats at the sighting site.

Finally, at a level of reported crowding less than or equal to three boats, perceived crowding is not enough intense to influence tourist satisfaction (although manifested by most of the surveyed tourists). However at a crowding reported level of 4 boats, the influence becomes evident. Therefore, it is concluded that the maximum number of 3 boats around a group of whales, prescribed in the norm, is adequate insofar as it does not affect tourist satisfaction.

Limitations of this study have to do, on the one hand, with the non-probabilistic sampling used, which prevents the results from being extrapolated to the general population of tourists who observe whales. On the other hand, it is a limitation too, the application of the questionnaire to passengers who used the standard type of boat that operates in Puerto López (16 passengers), without it being possible to apply the questionnaire to passengers of boats with greatest installed capacity (35 passengers). In this sense, it would have been interesting to know perceived crowding from people in these boats. Despite this, this study can be very useful to guide future research on the subject both in Puerto Lopez and in other tourist destinations where this activity is developed.

Future research lines suggest the identification of significant differences in crowding perception among different tourist segments and whale observer typologies, incorporating in the analysis other behavioral variables not contemplated in this study. It is suggested as well, assessing crowding perception of people on board, taking into account boats of different installed capacity.

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