



Cruise visitors' experience in Uruguay: an empirical survey study

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Abstract

The present study examines cruise passengers' characteristics, preferences and their overall experience in a port of call. Based on 5,151 survey data collected from passengers arriving at Uruguayan's ports of call during the 2008-2009 and 2009-2010 seasons, a multivariate market segment analysis is employed. The analysis starts running a factor analysis to reveal the underlying factors in the data. Based on the correspondence analysis, a hierarchical cluster investigation is performed to segment the sample into homogeneous groups, which are characterized through the use of classification and regression trees (CART). The study clearly identifies three clusters of cruise passengers, where the most discriminating factors are country of residence, occupation, locations visited in Uruguay and number of former visits to the country. The findings imply several policy directions. In particular, institutions should design and develop marketing strategies that promote Uruguayan destinations to attract first visitors, especially from Brazil, North America and Europe, which is where the heaviest spenders come from, in order to enhance the economic impact of cruise visiting in the country. Other strategic measures may especially attract repeated visitors from these regions, not only as cruise visitors but mainly as land tourists. Finally, local authorities should address and control the high level of prices in Punta del Este, which could be a deterrent factor of new cruise arrivals in the future.

Key words: Cruise, tourism, hierarchical cluster, CART

JEL codes: C38, D12, L83

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INTRODUCTION

Cruise tourism has been the fastest growing segment in the travel sector around the world with an average annual growth rate of passengers of 7.4% for the period 1990-2007 (see Brida & Zapata Aguirre, 2010b; Cruise Lines International Association, 2010) with a total of 940 million international tourist arrivals worldwide in 2010 as reported by the World Tourism Organization (WTO). This growth in cruise tourism is expected to continue into the future as only a small proportion of the population who have the resources to take a cruise have done so (Chase & McKee, 2003; Chase & Alon, 2002; Brida & Risso, 2010). In particular, the growth of the industry was led by emerging economies (+8%) while the advanced economies also grew but at a slower pace (5%). WTO also highlights the recovery of "The Americas" (+8%) after the fall suffered in 2009 as a result of the financial crisis in North America and the impact of the epidemic of influenza A (H1N1) (see MINTUR, 2011).

This form of tourism accounts for only about 2% of the worldwide total pleasure tourists but the numbers have been increasing very rapidly, from about 4 million people who took a cruise vacation in 1990 to more than 14 million in 2009 (Brida & Zapata , 2010a). Cruises represent the paradigm of globalization: physical mobility, international capital that can be relocated anywhere and at any time, crews coming from different countries on the same ship, no national or international regulations, and marine registrations optimally selected. A cruise ship represents all four faces of the tourism industry: transportation, accommodation (including food and beverages), attractions and tour operators. Thirteen million people have taken a cruise in 2008, with the industry predicting that more than 30 million people will do so in 2015 (Cruise Lines International Association, 2010). Cruise tourism can benefit a destination by increasing or improving foreign exchange earnings, profit, taxes, employment, positive externalities and economies of scale (Dwyer & Forsyth, 1998;

Dwyer et al., 2004; Brida et al., 2012). On the other hand, cruise tourism requires less infrastructure compared to stopover tourism at a tourist destination (McKee, 1998).

Uruguay is a very small country located in southern South America, next to Argentina and Brazil. As of 2010, it had a population of 3.4 million inhabitants and the GDP per capita was U\$S 14.277. With a very mild climate, the best tourist season is summer, which goes from December to March, when thousands of tourists come by land, by air and by sea to enjoy Uruguayan beaches, especially Punta del Este, considered the main summer resort in South America. Like the worldwide market trend, cruise tourism in Uruguay has been rapidly growing and has become a significant element of the local economy. According to the 2010 Yearbook of the Ministry of Tourism and Sports of Uruguay (MINTUR) (see MINTUR, 2011), in 2010 there were a total of 2.407.676 visitors, not considering cruise passengers (which were 299.699), determining a total of 2.707.375 visitors, which represented a 15% growth compared to 2009. This figure is more significant if we consider that the population projected by the National Institute of Statistics for the year 2010 was 3.356.584, with which we would have a volume of visitors representing 80% of the estimated population. 85% of visitors lived in Argentina and Brazil, and the most visited destinations were Montevideo (34%) and Punta del Este (23.7%). The total spending over the year 2010 was U\$S 1.500 million, representing an increase of 14% over the previous year (MINTUR, 2011)

Uruguay's performance in tourism has been highlighted by the WTO (2008) (Organización Mundial del Turismo, 2008), considering it as a case study in the world, not only by the number of visitors and foreign exchange earnings, but because it is a small country that focused on constantly improving the quality of their products, presenting a unique option for tourism. In a recent paper

(Brida et al., 2010), the effects in the long run of tourism on the economic growth of Uruguay are analyzed. Using co-integration analysis, the paper shows the existence of a cointegrated vector among Uruguayan real per capita GDP and tourism expenditure, and a causality relationship that positively goes in one way from tourism expenditure to real per capita GDP of Uruguay. The paper confirms the high impact of tourism on the economic growth of the country.

Arrivals of cruise ships at Uruguayan ports has experimented a surge in the last seasons, according to data published by the MINTUR (MINTUR, 2010, 2011), the institution entitled by law to stimulating, promoting, regulating, researching and controlling tourism and the activities and services directly related to it. Since 2004-05 season, that there is available data from official sources, we can distinguish an increasing tendency in the arrival of cruise ships at Uruguayan ports, Montevideo and Punta del Este. While in 2004-05 season there were 63 ships arrivals at Montevideo and 12 at Punta del Este, summing up 75 ships, in 2009-10 season there were 179 arrivals, with a 54% arriving at Punta del Este, which surpassed Montevideo's arrivals from 2008-09 season. For season 2011-2012, 233 ships arrivals are expected. The number of people who came to Uruguayan shores during the 2009-2010 season was 356.198, of which a total of 218.024 people arrived in Punta del Este (61%) while 138.174 arrived in Montevideo (39%). The proportion of people who actually landed was around 82% in both ports, demonstrating a 18.18% variation in the total number of people landed, as a result of increased landing in Punta del Este (MINTUR, 2011) While the first cruise seasons coincided with Uruguayan summer, gradually, they were getting extended and 2011-2012 cruise season would run for the first time from November to May. Up to now, there are two main cruise ports of call in Uruguay: Montevideo, the capital city and Punta del Este, the most renowned beach resort in South America. Cruise ships come either from Argentina, Brazil, Europe, North America or Japan. With respect to the growth of cruise business in Uruguay,

according to recent statements of the authorities (Launching Cruise Season 2011-2012, 2011), it is very likely that in 2012-2013 cruise season, Colonia (UNESCO World Heritage Site) and La Paloma (Atlantic Ocean's beach resort) would be incorporated as new ports of call. Besides, in 2011-2012 season Montevideo also became a home port for a cruise line that travels regularly to Brazil.

The objective of our research is to provide an in-depth investigation on passengers' behavior when visiting the ports of Montevideo and Punta del Este and portray how this profile of visitors has evolved along last summer seasons. The present study is based on valuable survey data on cruise tourism in Uruguay. These surveys were designed and conducted by the MINTUR and were proposed to cruise passengers arriving at Montevideo and Punta del Este, according to independent samples taken in each location. The methodological approach consists of three enhancements. First, a correspondence analysis is applied to find the underlying factors in the data. Second, a hierarchical cluster analysis and stopping rules allow identifying a set of homogeneous groups, within which individuals are characterized by similar demographic features, expenditure pattern and overall perception on their experience in Uruguay. Finally, a classification and regression tree is used to identify which variables are better predictors for classifying individuals in the different clusters. The empirical findings provided in this paper give destination managers, local government and policy makers valuable information to formulate private and public development and marketing strategies for tourists' repeat land visits.

The paper is organized as follows. Firstly we summarize the main literature regarding cruise tourism and its economic impact on a given destination. Secondly we introduce the survey study that was conducted in Uruguay, followed by the description of the methodology used in the present

research, to continue with the main findings of the factorial and classification techniques applied. The last section includes the main conclusions of the study as well as some ideas of future research.

A LITERATURE REVIEW ON CRUISERS' EXPERIENCE IN A PORT OF CALL

Research on cruise tourism has become more popular since the beginning of this decade (e.g. Braun et al., 2002; Klein, 2005; Brida et al., 2012; Dowling, 2006; Andriotis & Agiomirgianakis, 2010; Silvestre et al., 2008). A vast literature review on economic, socio-cultural and environmental effects deriving from cruise activity is provided by Brida & Zapata (2010). In this section, the objective is to provide an in-depth literature review on passengers' perception when visiting a port of call. Destinations, or ports of call, can be regarded as one of the main reasons why travellers choose specific cruises (Henthorne, 2000; Diedrich, 2010). This should be an argument for encouraging destination managers to identify their cruise passengers market and enhance those factors that can motivate visitors to consider the same destination for a future land vacation. Most cruise industry studies have focused on quality, motivation, satisfaction and intention to repurchase a cruise trip (e.g. Qu & Ping, 1999; Petrick, 2004, 2005; Petrick et al., 2006, 2007; Duman & Mattila 2005; De la Viña & Ford, 2001). But, to the best of our knowledge, just a few papers have concentrated on analyzing the different characteristics, behavior and onshore experience of cruise passengers while visiting a port of call.

Using data obtained from a survey conducted on cruise passengers who visited an eco-tourism area located close to the Panama Canal, Thureau et al. (2007) apply a factor analysis to identify the travel preferences of passengers visiting the area. They employ a cluster analysis to determine the different market segments of the respondents and a chi-square analysis to develop the different

profiles of each segment by identifying the statistically significant variables. They show that the different clusters are related to different activities at the destination, that is, culture, adventure and natural attractions.

For the United States, Gabe et al. (2006) carry out a logit regression model to identify the factors that influence a cruise passenger's intention to return to the port of Bar Harbor. The study was conducted during the 2002 cruise season. Their results indicate that factors like the total number of visits and the length of stay in port have a positive effect on the stated likelihood to revisit the destination, while the distance between respondents' place of residence and Bar Harbor has a negative effect. The authors also conclude that household income does not play a significant role on cruisers' stated intention to return to Bar Harbor. Following Gabe et al. (2006), similar objectives are defined by Silvestre et al. (2008). In order to analyze the main factors of attractiveness of the Azores to cruise passengers and determine which of them influences their intention regarding repurchasing the trip and recommending this cruise to friends and relatives, the authors conducted a survey during the 2004 cruise ship season with a total sample of 973 respondents. Results of the structural equation model performed show that factors such as the city's attractions and the overall visit experience are the most important determinants of the intention to return to the Azores and to recommend the islands to friends and relatives. Hence, these researchers suggest the need to implement policy measures aimed at improving these aspects. Other factors such as safety, hospitality of the locals and cleanliness of the environment are recognized as less relevant. Though satisfaction with the local population and services positively and significantly influence value for money, their influence on behavioral intentions is not found to be statistically significant.

Destination managers normally assumes that cruise passengers are likely to return on their own for a subsequent visit. In general, surveys of passengers tend to support this assumption, but little research has been done to determine whether the assumption is realized in fact. In a recent study, Marusic et al. (2008), show that less than 3% of cruise passengers who visited Croatian destinations during 2000-2006 have returned in 2006 as land-based visitors. Similar results are reported in Klein (2003). In this paper, a research sponsored by American Express indicating that 20% of first-time land-based tourists had previously visited a particular Caribbean island on a cruise is reported. The author concludes that *“While the 20% figure is reason for optimism, it needs to be viewed in context. A typical cruise stops at four or five ports, so the 20% figure must be averaged for the number of ports visited. If cruise passengers stop at five ports and 20% return to a port, on average only 4% return to a single port.”* (page 20 of Klein, 2003). In a study of the cruise industry in Atlantic Canada, also Chesworth, 2006, affirms that few cruisers return to a destination by land. In particular, the study indicates that the probability to return to the destination is higher by another cruise ship than by land.

Brida et al (2012) analyze travel experience of cruise passengers arriving at Cartagena de Indias (Colombia) during 2009, applying a set of factorial and classification techniques to identify groups of cruise passengers. A total of six distinct clusters are identified, where perception of safety and degree of satisfaction with the trip are within the most discriminating factors.

From a survey conducted by the Curaçao Tourism Development Bureau (CTDB) in cooperation with the Curaçao Institute for Social and Economic Studies (CURISES) during the 2005-2006 cruise season, Miriela and Lennie (2010) examine the factors that motivate cruise passengers to return to Curaçao for a land-based vacation. Empirically, a logit analysis is applied. Their findings reveal that the following variables have a positive impact on cruise passengers' intention to return to the island:

the number of hours spent in Curaçao, being employed, being a repeat cruise passenger. Cruise tourists that received information onshore and with a higher level of education are also more likely to return. By contrast, high-income cruise tourists and cruise tourists that had taken the overall sightseeing excursion are not inclined to come back as land tourists.

Andriotis and Agiomirgianakis (2010) study cruise ship passengers motivation, satisfaction and likelihood of return to the port of Heraklion (Crete, Greece) using a factor analysis. The findings suggest that 'exploration' and 'escape' are among the main motivations of visitors, and 'product and services' as well as 'tour pace' are significant dimensions in shaping overall satisfaction levels. Researchers point out to destination managers of Heraklion that they may direct their efforts in extending the amount of time that passengers spend offshore.

Gabe et al. (2009) study the demographic characteristics and economic impact of cruise passengers in Portland, Maine, based on survey data collected during 2008. They find that Portland cruise passengers have taken several cruises in average prior to the cruise ship visit and come mainly from US (95%). The average respondent spends U\$S 80,51 in the Portland region, not considering money paid to cruise lines for guided tours.

The Center on Ecotourism and Sustainable Development (2006) study the perceptions of economic, social & environmental impact of cruise tourism in Belize, based on field research carried out in 2005, involving over 600 surveys with cruise passengers and over 100 interviews with a range of stakeholders in Belize. The study compares spending patterns, activities, perceptions and preferences of cruise and stayover visitors. The average cruise passenger spends \$44 per day that goes into the local economy (another fraction returns to the cruise company), while the average stayover visitor spends \$96 per day, or more than twice as much.

Dwyer & Forsyth (1996) investigate the economic impacts of cruise tourism in Australia. One finding of the paper is that cruise tourists are higher yield tourists, spending, on average, much higher amounts per day than other categories of international tourists. Two examples are provided to illustrate the potential benefit to Australia from growth in cruise tourism, one a purely coastal cruise and the other a longer cruise in international waters. Another finding is that home-porting cruise ships in Australia have the greatest potential for generating large expenditure inflows to the nation.

From the previous review, some stylized facts can be drawn. Whatever the approach used, length of stay and overall experience, in terms of culture and attractions provided in the destination, are the main factors that positively influence cruisers' experience at destination and their intention to repeat their visit to the same destination either as cruisers or land tourists. The present paper, via a cluster and a classification tree analysis, aims at expanding this strand of research, providing new evidence on the main factors characterizing customers' preferences and motivations.

Unlike most of the papers outlined in the present review, that represent the main stream of literature on cruise tourism, our research will not focus on the probability of the cruise passenger returning to the destination as a land visitor. In particular, we will assess the different visitor profiles attending to socio-demographic characteristics, the positive or negative perceptions about visiting the country and the expenditure pattern of cruise passengers arriving at Uruguayan ports-of-call. Our aim is in particular to classify cruise visitors into mutually exclusive groups, so as to get a better understanding of cruise passengers' typologies that could give helpful information to policy makers and marketing organizations to promote cruise visiting in Uruguayan destinations.

Moreover, our data considers cruise passengers arriving at different ports-of-call, which may prove a factor of relevance in the segmentation of cruise visitors and it has seldom been included in cruise tourism' research (see Dwyer & Forsyth, 1996)

A SURVEY STUDY IN URUGUAY. DESCRIPTIVE STATISTICS RESULTS

The qualitative data used in the present research was drawn from surveys conducted by the MINTUR, according to a probabilistic sampling. First of all, a systematic sampling of cruises arriving at Montevideo and Punta del Este was made, considering the ships' capacity. Then from the cruises sampled, travel groups were chosen with equal probability. Trained pollsters interviewed cruise visitors with questions about socio-demographic characteristics, places visited, if it was their first visit to the country, perceptions about the trip and expenditure pattern. In 2008-09 season there were 1.803 surveys while in 2009-10 there were a total of 3.348. Since the surveys were organized differently in each season, the information was conveyed by fifteen survey variables in 2008-09 and thirty-one variables in 2009-10, corresponding to a total of 110 modalities of qualitative variables for both seasons. Survey data did not include information that proved to be relevant in similar studies, such as level of income, education, civil status or hours spent inland. The descriptive statistics is summarized in the following Table 1.

Table 1 – Characteristics of cruise visitors to Uruguay 2008 – 2010

Residence	2008	2009	Former visits	2008	2009	Occupation	2008	2009
Brazil	33%	50%	None	73%	70%	Retirees	34%	25%
North America	32%	15%	1	11%	12%	Professionals	32%	34%
Argentina	16%	22%	2	6%	6%	Owner	11%	14%
Europe	10%	6%	3	2%	3%	Employee	8%	8%
Other South America	7%	5%	4	1%	1%	Other	16%	19%
Africa/Oceania	2%	1%	5	6%	9%	Age	2008	2009
Asia	1%	1%	Sex	2008	2009	19-35	14%	8%
First visit	2008	2009	Men	43%	41%	36-64	64%	70%
(% yes)	73%	70%	Women	57%	59%	>65	22%	21%

Note: Age buckets in 2009-10 were 18-29, 30-65 and >65

Source: Cruise Surveys – Yearbook 2009-2010 - Ministry of Tourism and Sports

The results displayed in Table 1 show that more than two-thirds of cruise passengers arriving in Uruguay were visiting the country for the first time. The distribution by nationality evidences a concentration of Brazilians, Argentineans and US citizens, which represent more than 70% of cruise passengers in both seasons. Cruise visitors were mostly women (68%), for the most part were retirees and professionals and 70% were aged 36 to 64 years. As with factors of satisfaction with the trip, 70% or more said they liked everything about the trip, 11-12% said they liked people the most, another 6% said they liked our beaches and boardwalk while 2-3% were most interested in buildings and architecture. With reference to the expenditure pattern of cruise visitors, the average amount they spent per capita in each season was U\$S 58 for 2008-09 season and U\$S 61 for 2009-10. They

spent 71% in shopping, 16% in food and 6% in tours. For illustrative purposes, the average expenditure per capita of a tourist visiting Uruguay, not considering cruise visitors, was equal to U\$S 72 for 2008 and U\$S 79 for 2009 (MINTUR, 2010, 2011). It must be remarked the small difference between the amount of expenditure of cruise passengers and land tourists. Similar studies report an expenditure of land tourists that, in average, is around the double of the expenditure of cruise passengers. (see Brida et al. 2012; Brida & Risso, 2010; Diedrich, 2010; Marusic et al., 2008). Probably this is a consequence of the fact that a big portion of land tourists in Uruguay are Argentineans that are owners of second homes not expending in accommodation.

METHODOLOGY

In relation to the methodology applied in the present research, the qualitative (categorical) survey variables were transformed into a parsimonious number of quantitative factors, which synthesized the information conveyed by the original variables. The data analysis technique used is the multiple correspondence analysis, that is a factorial technique, which also let evaluate the relationship between variables and proximity of individuals. In order to signal the importance of each factor, we talk about percentage of inertia explained by each quantitative factor or of variance of each cloud of individuals. Once the dimension of the data was reduced, a hierarchical cluster analysis was applied, in order to identify groups of passengers with a degree of similarity, using an appropriate distance measure, Euclidean in our case. The Ward algorithm was selected to classify passengers in clusters, and two stopping rules were considered so as to decide the best number of clusters (pseudo-F and pseudo-t). Finally, a classification tree was used to further characterize the clusters, identifying the

variables that better predicted the formation of clusters. The goal of a CART analysis is to obtain the most accurate prediction possible and this refers to the lowest misclassification rate.

MAIN FINDINGS

CORRESPONDENCE ANALYSIS

Table 2 contains the results of the multiple correspondence analysis, showing that -according to the Benzecri’s index (Escofier & Pages, 1988)- three quantitative factors explained between 75 and 77% of the inertia in both seasons, synthesizing the information conveyed by the original survey data.

Table 2 - Main findings – Factor analysis (MCA)

<i>Factors</i> 2008	<i>Loadings</i>	<i>%inertia</i>	<i>%accum.</i>	<i>Factors</i> 2009	<i>Loadings</i>	<i>%inertia</i>	<i>%accum.</i>
Ports-of-call visited		44.87%	44.87%	Ports-of-call visited		43.94%	43.94%
<i>Residence</i>	21.98			<i>Visit PDE</i>	22.19		
<i>Visit PDE</i>	18.20			<i>Residence</i>	21.51		
<i>Visit MVD</i>	17.23			<i>Visit MVD</i>	19.71		
<i>Occupation</i>	10.79			Repeated cruise visitors		22.39%	66.32%
Repeated cruise visitors		21.80%	66.67%	<i>Former visits</i>	23.04		
<i>Former visits</i>	23.92			<i>First visit?</i>	21.87		
<i>First visit?</i>	22.58			<i>Occupation</i>	13.37		
<i>Residence</i>	12.19			<i>Residence</i>	12.57		
<i>Visit MVD</i>	10.05			Degree of satisfaction with trip		10.59%	76.91%

Tourist profile		8.05%	74.72%	Age	19.83		
Age	25.95			Dislike nothing	16.38		
Occupation	19.55			Occupation	15.35		
Visit other	16.95			Residence	11.57		
Residence	16.46			Dislike prices/other	11.46		

Source: Own calculations from R

A hundred and ten qualitative items were factor analyzed for 2008-09 season and three factor groupings were identified. In particular, in the first season, cruise passengers were classified according to the “*port of call*” they visited, either Montevideo or Punta del Este, indicating that the port of arrival is a basic characteristic of our visitors. This factor explains nearly 45% of the inertia. Secondly, the “*repeated cruise visitors*” are differentiated from the first time visitors. This factor explains a 22% of the inertia. On the other hand, demographic features (such as age, country of residence and occupation) together with the fact of having visited places other than Montevideo and Punta del Este, which can be labeled “*tourist profile*”, account for 8% of the inertia.

In the second season, the factor analysis of 110 qualitative modalities resulted also in three dimensions of cruise passengers. The first two factors, which account for more than 66% of the inertia, coincide with the factors already commented for the first season. The third factor classifies passengers considering their “*degree of satisfaction with the trip*”, taking into account if they disliked nothing, or they disliked prices or other things, explaining 11% of inertia.

It is worth noting that the “*port of call*” dimension is not only the most important factor in both seasons analyzed but also the percentage of total variance explained is also very similar

(44,87% and 43,94% for first and second season, respectively). What this dimension is telling us is that the basic segmentation between cruise visitors may easily be done by attending their respective port of call, either Montevideo or Punta del Este. Cruise ships coming from different regions prefer to stop over either in one port-of-call or the other, implying that they cater to visitor's different needs. The second most important dimension was labeled "*repeated cruise visitors*" as the qualitative items that accounted for most of the explanatory power of the factor in both seasons were related to the fact of visiting the country for the first time or either the number of former visits to the country. This finding is worth remarking as it signifies the stability of dimensions across different populations of cruise visitors. However, factors related to degree of satisfaction with the trip are meaningful only in the second season, being the least important dimension in terms of percentage of variance explained.

CLUSTER ANALYSIS

The cluster analysis, carried out using a hierarchical classification method and applied to the quantitative factors determined with correspondence analysis, showed that cruise passengers in both seasons can be grouped into three different clusters. The stopping rules used are the Pseudo-F (Calinski, 1974) and the Pseudo-t test (Duda & Hart, 1973). Both tests indicate that the optimal number of clusters is three. The results are shown in Table 3.

Table 3 – Main findings - Cluster analysis

	2008-2009			2009 - 2010		
	<i>Cl. 1</i>	<i>Cl. 2</i>	<i>Cl. 3</i>	<i>Cl. 1</i>	<i>Cl. 2</i>	<i>Cl. 3</i>
<i>Visit MVD</i>	49.7%	99.8%	11.8%	99.3%	36.4%	3.3%
<i>Visit PTA</i>	60.5%	9.2%	96.5%	2.8%	72.6%	99.5%
<i>Visit Col/Other</i>	6.0%	0.0%	0.0%	0.0%	6.7%	0.0%
<i>First visit</i>	1.2%	99.5%	99.7%	93.9%	3.2%	95.3%
<i>Visits 1-5</i>	98.8%	0.5%	0.3%	6.1%	96.8%	4.7%
<i>Brazil</i>	34.9%	3.4%	60.9%	39.0%	27.5%	68.3%
<i>North America</i>	12.2%	62.2%	13.3%	35.9%	4.8%	1.0%
<i>Europe</i>	7.2%	17.2%	2.7%	14.0%	5.6%	1.0%
<i>Argentina</i>	32.7%	2.0%	17.3%	0.4%	50.8%	29.0%
<i>Retiree</i>	21.0%	51.3%	23.1%	40.9%	17.7%	17.4%
<i>Professional</i>	31.9%	25.9%	37.9%	31.4%	30.5%	39.4%
<i>Owner</i>	10.6%	9.4%	13.0%	11.8%	13.0%	18.3%
<i>Crew</i>	8.2%	1.6%	1.8%	2.8%	22.0%	0.5%
<i>Dislike nothing</i>	67.9%	68.0%	73.7%	72.5%	72.9%	78.6%
<i>Dislike prices</i>	9.2%	2.0%	12.6%	3.8%	12.3%	11.2%
<i>Dislike other</i>	10.6%	8.3%	10.4%	10.7%	9.5%	8.7%
<i>Women</i>	60.9%	51.2%	68.2%	63.8%	50.6%	64.6%
<i>Age > 64</i>	15.0%	35.5%	12.9%	34.3%	15.2%	14.7%

Source: Own calculations from R

In 2008-09, the first cluster groups the *repeated visitors*, which have visited Montevideo or Punta del Este in significant percentages (49.7% and 60.5%, respectively), they have also visited other locations in Uruguay (6%), are mostly professionals (31.9%), Brazilians (34.9%) and Argentines (32.7%), basically coming from neighboring countries. It is important to note that it is more probable for a visitor from a neighboring country to return to Uruguay as a land visitor, considering that it is easily –and cheaply- communicated by land, air or sea with Argentina and Brazil. Within this cluster there are also an important percentage of members of the crew (8.2%). With respect to the expenditure behavior of members of the cluster, repeated visitors are the lightest spenders, with an average of U\$S 50 per capita. This cluster contained 501 visitors (27,8% of the sample), the smallest cluster of the three.

The second cluster is made up of first time visitors arriving at Montevideo (99.8%), mostly *retirees* (51.3%), North Americans (62.2%) and Europeans (17.2%), in a high percentage older than 64 years old (35.5%). This is the cluster of the heaviest spenders, with U\$S 64 spent in average during their trip to Uruguay. This cluster was comprised by 563 visitors (31,2% of the sample), the second largest cluster identified.

The third cluster comprises first time visitors arriving at Punta del Este (96.5%), for the most part Brazilian (60.9%), women (68.2%) and *professionals* (37.9%), with the highest satisfaction with their trip (73.7%). Professionals are also important spenders, with U\$S 59 in average of expenditure per capita. This cluster contained 739 visitors (41% of the sample), the most important cluster of the three.

In 2009-10 three clusters of the same characteristics are also distinguished, only the ordering is different from the previous season. The first one is the retirees cluster, followed by the repeated

visitors, to finish with the professionals cluster. The breakdown of the cruise visitors' profiles within 2009-10 clusters is as follows:

1) first time visitors arriving at Montevideo (99.3%) – major representation of North Americans (35.9%) and Europeans (14%) plus Brazilians (39%) - mostly retirees (40.9%) and professionals (31.4%) – heaviest spenders (average total expenditure USD 64 per capita) - 72.5% satisfaction with the trip – 3.8% dislike of prices. This cluster contained 1.124 visitors (33,6 % of the sample), the second largest cluster of the three.

2) repeated visitors – 72.6% visited Punta del Este, 36.4% visited Montevideo and 6.7% visited other destinations –Argentiniens (50.8%), Brazilians (27.5%) – highest percentage of members of the crew (22%) – lightest spenders (average total expenditure per capita USD 50) – 72.9% satisfaction with the trip - 12.3% dislike of prices. This cluster contained 951 visitors (28,4 % of the sample), the smallest cluster of the three.

3) first time visitors visiting Punta del Este (99.5%) –Brazilians (68.3%) and Argentiniens (29%) – 39.4% professionals – second heavy spenders (average total expenditure USD 59 per capita) – highest satisfaction with the trip (78.6%) – 11.2% dislike of prices. This cluster contained 1.273 visitors (38% of the sample), the largest cluster of the three.

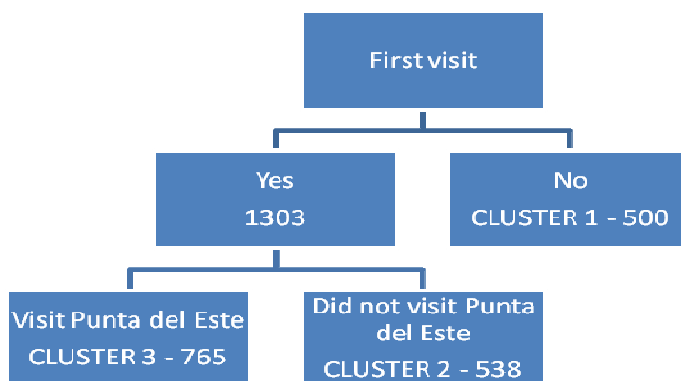
It is interesting to note that the ranking of clusters according to size is the same in both seasons. In other words, the Brazilian professionals is the most representative cluster, followed by the retirees cluster, to finish with the repeated visitors cluster. These findings are relevant for private and public tourism institutions to direct the marketing strategies adequately. However, the professionals cluster has lessened its importance in relative terms respect to the other two clusters, whereas the retirees and the repeated visitor clusters are more relevant in size in the second season. Another

finding to remark has to do with the level of dissatisfaction about prices, which is the highest in the first season for visitors arriving at Punta del Este and the second high for the members of this cluster in the second season. At the same time, cluster 3 in both seasons shows the highest levels of overall satisfaction with the trip. However, is not new that while Punta del Este is considered the Saint Tropez of South America, usually land tourists complain about the level of prices, which are much higher during summer season that in other locations in Uruguay. This is an important factor to consider, as it may constitute a deterrent of new arrivals of cruise visitors in the future.

CLASSIFICATION AND REGRESSION TREE (CART)

With respect to the classification tree analysis, in 2008-09 we find that the best decision rule to predict the membership to a cluster is through the variables, *Is this your first visit to Uruguay?* and *Have you visited Punta del Este?* These are the most discriminating variables in the first season analyzed.

Figure 1 – CART analysis 2008-09



Source: Own calculations from R

In particular, following the tree in Figure 1 we can see that repeated cruise visitors are included in cluster 1. Within first visitors we discriminate between those arriving at Punta del Este (cluster 3) whereas those who arrived at Montevideo’s port comprise the cluster 2. This means that only two questions are needed to classify cruise visitors adequately in each of the three clusters identified, which simplifies the information needed for tourism policy makers in order to tailor marketing programs to specific cruise visitors segments.

Table 4 - Misclassification table 2008-09

Observed	Predicted				
	CLUSTER 1	CLUSTER 2	CLUSTER 3	Total	% correct
CLUSTER 1	495	3	2	500	99.0 %
CLUSTER 2	3	509	26	538	94.6 %
CLUSTER 3	3	51	711	765	92.9 %
Total	501	563	739	1.803	95.1 %

Source: Own elaboration based on official data

As we see from the misclassification table in Table 4, the overall predictive power of the model is very high, classifying cruise visitors in the correct cluster in the 95.1 % of cases. In fact, as with respondents belonging to cluster 1, the model classifies correctly in the 99% of cases, which seems reasonable considering that it is the first terminal node of the three.

In the 2009-10 season, the overall predictive power of the model is also very high, classifying cruise passengers in the correct cluster in average in the 95.5 % of cases. The respective misclassification table is contained in Table 5. Cluster 1 has the highest prediction (97.7%) of the three.

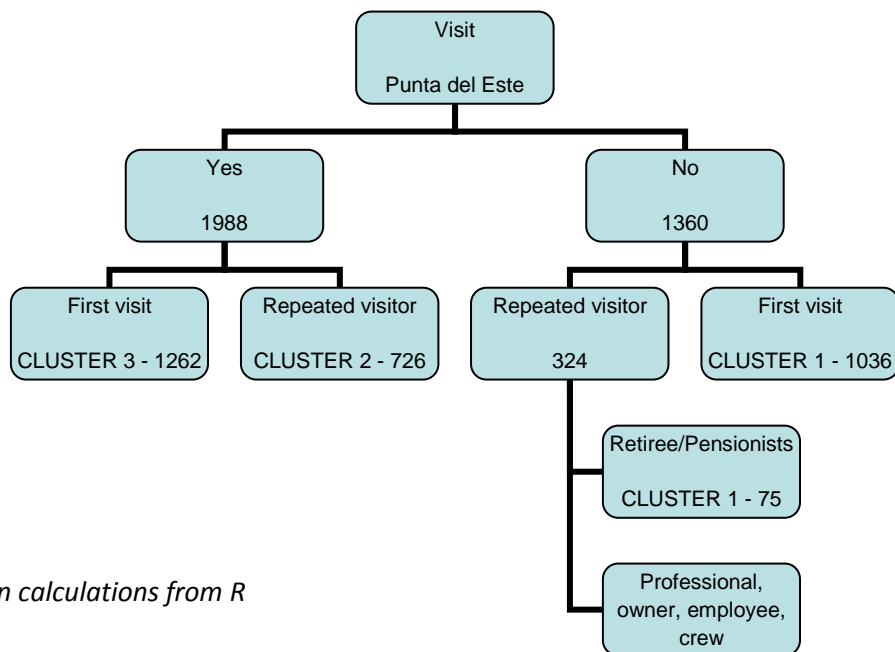
Table 5 - Misclassification table 2009-10

Observed	Predicted				
	CLUSTER 1	CLUSTER 2	CLUSTER 3	Total	% correct
CLUSTER 1	1085	20	6	1.111	97.7%
CLUSTER 2	9	906	60	975	92.9%
CLUSTER 3	30	25	1207	1.262	95.6%
Total	1.124	951	1.273	3.348	95.5%

Source: Own elaboration based on official data

Of all the variables used in cluster analysis, the most discriminating in CART model are “Have you visited Punta del Este?”, “Is this your first visit to Uruguay?” and “Occupation”. From Figure 2, we can see that cruise visitors arriving at Punta del Este are discriminated between first visitors (cluster 3) and repeated travelers (cluster 2). However, if cruise visitors arrive at Montevideo and they are visiting the country for the first time, we include them in cluster 1. Conversely, if they are repeated visitors, we include retirees in cluster 1, whereas cluster 2 is comprised with repeated cruise visitors with other occupations.

Figure 2 – CART analysis 2009-10



Source: Own calculations from R

The predictive power of the CART model is unusually high in both seasons, evidencing that only two questions (or three at the most in 2009-10 season) are really needed to correctly segment the cruise passenger population into the prespecified clusters. Unlike other surveyed papers, the differences of predictive power by cluster are not significant at all, hence we can trust in the accuracy of the CART model to predict the right membership in all cases.

CONCLUSIONS

Though the cruise sector has been experiencing a remarkable growth in recent years, to the best of the authors' knowledge, few papers investigate cruise passengers' experience within a port of call. The present study has contributed to this strand of literature, by investigating cruisers' characteristics, preferences and perceptions. To this aim, microeconomic data was collected via a survey of cruise ship passengers that stopped in Uruguay during the cruise seasons 2008/09 and

2009/10. The paper introduces a methodological enhancement based on a high quality and an original database. The use of a hierarchical cluster analysis has identified a set of clusters, within which individuals are characterized by similar demographic features, expenditure pattern and overall perception on their holiday experience in Uruguay. Second, a CART has been used to identify which variables are better predictors for classifying individuals in the different clusters.

The multiple correspondence analysis identifies three relevant dimensions to explain variations in cruise passengers in both seasons: *ports of call visited* and *repeated visitors* (2008 and 2009), *tourist profile* (2008) and *degree of satisfaction with the trip* (2009). The most important dimension is actually ports of call visited (44.87% and 43.94% for first and second season, respectively). In other words, the basic segmentation between cruise visitors may easily be done by attending their respective port of call, either Montevideo or Punta del Este. “*Repeated cruise visitors*” was identified as the second most important dimension, as the fact of visiting the country for the first time or either the number of former visits to the country accounted for most of the explanatory power of the factor in both seasons. This finding is worth remarking as it signifies the stability of dimensions across different populations of cruise visitors. However, “*tourist profile*” and “*degree of satisfaction with the trip*” emerged as the least important dimensions in 2008-09 and 2009-10 seasons, respectively, accounting for 10% or less of the total explained inertia.

Cluster analysis reveals three segments of cruise visitors with different trip profiles: retirees, professionals and repeated visitors, which remain approximately the same from one season to the other. While its relative importance diminished with respect to 2008-09 season, the professionals cluster is the largest identified cluster, followed by the retirees cluster and the repeated visitors cluster. The cluster of *repeated visitors* have visited Montevideo or Punta del Este in significant

percentages, have also visited other locations in Uruguay and are mostly coming from neighboring countries (Brazil and Argentina). The following cluster is composed by first time visitors arriving at Montevideo's port, basically *retirees* whose country of residence is located in North America and Europe, with the highest percentage of visitors older than 64 years old. The last cluster identified comprises first time visitors arriving at Punta del Este, Brazilian women and *professionals* for the most part, with the highest satisfaction with their trip. According to expenditure pattern of cruise passengers in both seasons analyzed, we see that the clusters of retirees and professionals comprise the heaviest spenders, with small differences detected between average expenditure per capita. Hence, as long as they are correctly identified, there are high chances of enhancing their economic impact in the country, by designing marketing strategies tailored to their needs. In a similar investigation, Brida et al. (2012) conclude that the heaviest spenders in Cartagena are cruise visitors coming mainly from North America y belonging to the oldest age bucket, which is in line with some of the findings of the present research.

While the professionals cluster showed the highest levels of satisfaction with their trip, they also were the ones who were the more dissatisfied about prices in Punta del Este. This is a phenomenon not new for land tourists, who usually complain about the level of prices, which are much higher during summer season than in other locations in Uruguay. This is an important factor to address by local authorities, as it may constitute a deterrent of new arrivals of cruise visitors in the future.

Finally, CART analysis shows that the best prediction rule includes the variables "*Is this your first visit to Uruguay?*" and "*Have you visited Punta del Este?*" (2008 and 2009) along with "*Occupation*" (2009). The strong predictive power of the model in both seasons (95,1% and 95,5% in average in 2008-09 and 2009-10 seasons) is remarkable, with only two to three questions needed to assign cruise visitors to the right cluster. This is especially relevant for tourism policy makers, in order to

direct marketing programs to the specific segment of cruise visitors population, catering to their especial needs.

The findings of the present investigation reveal that in order to enhance cruise visiting' economic impact in Uruguay it is necessary to design marketing strategies that promote Uruguayan destinations, attracting new cruise visitors and repeated visitors to the country. In particular, the segmentation that emerged showed that the heaviest spenders are first visitors, either Brazilian professionals or North Americans or Europeans and mostly retirees, information that could prove useful to public and private organizations to direct tailored promotion campaigns to these specific regions.

Other strategic measures may especially attract repeated visitors from these regions, not only as cruise visitors but mainly as land tourists, as it is probable that they show high levels of expenditure, unlike repeated visitors coming from neighboring countries.

While the levels of overall satisfaction with the Uruguayan experience were very high in all the clusters identified, it's noticeable that there were some indicators of dislike of the high level of prices for cruise visitors arriving at Punta del Este. We consider that this is an issue that the local authorities have to address firmly, as this could be a deterrent of cruise visitors' arrivals in the future.

Future research may further study expenditure pattern of cruise visitors arriving at Uruguay, using regression models such as TOBIT or LOGIT as well as analyzing expenditure features of ships docked at ports, other phase of cruise tourism not considered in this paper. Besides, it should prove relevant to investigate the social impact of cruise tourism in Montevideo's Old Town residents, which portray some special characteristics (port neighborhood, financial heart of the city, historical

heritage, cultural site, low income population), which may be relevant to study. Also it would be interesting to getting to know the profile of cruise passengers embarking at Montevideo in the new cruise line that is operating from 2011-12 season, investigating if they share similar characteristics with the passengers already studied in this research. Finally, in order to evaluate the probability of a cruise passenger to return to Uruguay as a tourist, it would be necessary to include a relevant question in the survey, which would prove relevant in order to compare the results to similar studies in other destinations.

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