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# Dark satisfaction in Guanajuato's Mummies Museum visitors

**Juan Gabriel Brida**

Universidad de la República, Uruguay

**Erika Lourdes González Rosas**

University of Guanajuato, Mexico

**María Nela Seijas Giménez**

Universidad de la República, Uruguay

## Abstract:

**Purpose:** The purpose of this study is to explain the determinants of the degree of visit satisfaction to the Guanajuato Mummies Museum. The study contributes to the literature related to perceptions and attitudes of museum visitors, by identifying what factors explain the satisfaction with the visit; as to the best of our knowledge, no similar investigation has been carried out yet.

**Methods:** A survey was used to collect the data (n=392) from national and foreign visitors of the said museum, containing sociodemographic variables, opinions and feelings of the visitors and information about the visit. Data analysis was conducted with an ordered Logit model.

**Results:** Findings indicate that opinions about the activity of the museum, the guided tour and the rest area are the most significant determinants of visitors' satisfaction, while the library and facilities for the disabled are moderately important. Feelings of enjoyment, tiredness or boredom marginally affect visitors' satisfaction.

**Implications:** Knowledge of the satisfaction factors can guide marketing strategies and direct the training of personnel as recommended by ICOM (International Council of Museums) to continue contributing to the improvement of services offered, increasing the levels of satisfaction, and leading to repeat visits.

**Keywords:** Museum, Guanajuato, Dark tourism, Visitors' satisfaction, logit model

**JEL Classification:** L83, N36, C48

**Biographical note:** Juan Gabriel Brida (gabriel.brida@fcea.edu.uy) is Full Professor of Economic Dynamics at the Department of Quantitative Methods, FCEA - Universidad de la República, Uruguay. He holds a PhD in Economics by the University of Siena in Italy. His research interests and expertise are in the areas of tourism economics and economic dynamics. Erika L. González Rosas (gonzalez@ugto.mx) is Full Time Professor at the University of Guanajuato at the Department of Business Management and Direction - Universidad de Guanajuato, Mexico. She holds a PhD in Business Management. Her research interests and expertise are cultural tourism and leadership. Maria Nela Seijas Gimenez (lianaarem@gmail.com) is an Associate Professor of Quantitative Methods in Managerial Decisions at the Department of Quantitative Methods, FCEA - Universidad de la República, Uruguay. She holds a PhD in Economics by the University of Santiago de Compostela (Spain) and graduated in Statistics (Universidad de la República, Uruguay). Her research interests and expertise are in the areas of tourism economics, economic dynamics and cultural economics. Corresponding author: Juan Gabriel Brida (gabriel.brida@fcea.edu.uy).

## 1 INTRODUCTION

Cultural tourism has established itself as a desirable option for tourists. Indeed, heritage is an essential issue of this type of tourism because it includes past and current expressions of people and society. In this market, museums stand out as a sector where competition is complicated and difficult to detect (Răvar & Iorgulescu, 2013). Moreover, value is added by museums to the cities (Montella, 2014) and acts as promoters as well (Reussner, 2003), and they are a fundamental part of protecting cultural heritage (Ertürk,

2006). Also, destinations found museums as significant tourist attractions (Rico Mansard, 2008) as promoters of tourism, both general and cultural (Korstanje, 2016). For example, its impact on the growth of the tourism segment in archaeological zones (Guccio et al., 2018), economic growth (Brida et al., 2014), visitors and the length of their stays increases at the destination with visit museum (Khawas & Kulshreshtha, 2016; Das et al., 2022).

This research analyzes the Museo de las Momias in Guanajuato (MUMOG). This museum preserves the most extensive collection of natural mummies in the world. In addition, it has remarkable pieces, such as a prenatal and the

tiest mummy in the world. Through the years, the museum has been a symbol of Guanajuato in Mexico, which has 194,000 habitants (INEGI, 2021). According to UNESCO, the city of Guanajuato is of World heritage, and the museum is its main attraction and related to the tourist destination. It has two venues, the old one, Santa Paula Cemetery in Guanajuato's capital, and the modern one, Parador Sangre de Cristo, in a city nearby, Silao. The number of visitors per year is approximately 700,000 (Presidencia Municipal, 2020).

This museum is part of dark tourism, a concept created in the 90s by Foley & Lennon (1996), and it strongly relates to the attraction of death (Stone, 2006). They are several types, such as exhibitions, prisons, places of conflict and disasters, camps of genocides, and cemeteries. Necro tourism, morbid tourism, thana tourism, negative, tragic, and atrocity are dark tourism types (Millán et al., 2021). It involves death spaces and includes cemeteries, corpses, and battle sites (Young & Light, 2016). Indeed, people like to see graves in dark tourism because they enjoy it. Dark tourism is associated with tragedies, pain, and legacy in some way (Stone, 2006; Séraphin & Jarraud, 2022).

Yuill (2004) described dark tourism as based on curiosity about death. In this sense, dark tourism produces an experience that involves subjective judgment but is related to death and disaster (Bowman & Pezzullo, 2009). In Mexico, there is the worship of death and a Death Day to remember family deaths. One of the most important symbols of Mexicans is the "Catrina," a fancy skeleton. So, an exhibition of mummified bodies is thrilling and attractive to the public. Regarding the attendees, it can be considered one of the most visited museums in Mexico (SIC, 2021). It has been studied according to the relationship with tourism destination (Gonzalez Rosas et al., 2020), the mummies' commercial exploitation (Caraballo Perichi, 2005; Margarida Anjo et al., 2021), and the motivation within the museum related to a collective drive rather than a personal conscious decision (Guerrero Rodríguez et al., 2018).

Indeed, as it is necessary to continue studying the museum, this research wants to analyze satisfaction at the MUMOG. This article aims to study visitors' satisfaction and to evaluate the exhibit and its characteristics. The results may vary because of dark tourism's features. Experience, satisfaction, and service quality with the visit are fundamental aspects of tourism (Pine & Gilmore, 1998). There is also a lack of research regarding emotional experience in museums (Selçuk & Kozak, 2020; Mugobi & Mlozi, 2021). In this sense, it is crucial to determine if MUMOG visitors experience satisfaction during their visit. Because of that, the study had the following research question: What is the level of satisfaction in the visit to the MUMOG considering socio-demographic variables, opinions, and sensations?

This research analyzes visitors' satisfaction with a museum in the dark tourism segment. According to this, this study helps to understand the nature of dark tourism Mexican context. Also, increasing the satisfaction of museum visitors is always a desire, and one way of achieving this is to know the level people still need. Satisfaction becomes more challenging to determine when it is about dark tourism.

In Mexico, researchers have yet to study dark tourism. However, some studies have pointed out the importance of determining this kind of tourist's motivation, satisfaction, experience, and behavior (Ashworth & Isaac, 2015), and

Guanajuato's MUMOG cannot be an exception. Therefore, this research aims to analyze the determinants of satisfaction of the visit to the Guanajuato Mummies Museum to identify the needs and experience of dark tourism. Furthermore, the study analyzes socio-demographic variables, opinions, and sensations. Finally, this study analyzes the results regarding the degree of visitor satisfaction and the generating factors.

Indeed, increasing visitors' satisfaction with museums and other tourist facilities is a fundamental aspect of their service. Therefore, museums want to enhance their brand value by improving the tourist experience. Besides, museums are essential resources for tourist destinations, growth and development of museums and their outcomes are critical issues for achieving them.

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## 2 LITERATURE REVIEW

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### 2.1 Museums' experience and satisfaction

During museum visits, experience and satisfaction can occur. It is a cognitive and affective process, which makes it possible to determine the heterogeneity of the visitors (Ruiz-Alba et al., 2019). Object, cognitive, introspective, and social are types of satisfaction experiences. The level of satisfaction is variable, and it is related to the characteristics of the museum itself, the type of exhibits, and the visitors (Pekarik et al., 1999; Sinclair-Maragh & Simpson, 2021). Quality of the service, which includes the optimal parameters and conditions that visitors are looking for and their relationship to the experience, influences satisfaction.

Furthermore, experience, quality of service, and involvement are generators of museum satisfaction (Forgas-Coll et al., 2017). Besides, high satisfaction levels relate to the museum experience, return, and intention to recommend it. Therefore, increasing visitors' satisfaction levels should be a marketing strategy (Harrison & Shaw, 2004; Samy, 2016; Yağmur, & Aksu, 2022). Satisfaction is a "group of sensations or feelings generated by both cognitive and emotional aspects of goods and services. As well as the accumulated evaluation of different components and characteristics" (Brida et al., 2012, 2013).

As can be seen, satisfaction and experience are multidimensional and complex; besides, both can contribute to the benefit of the enclosure; for example, in Italy, museum experience dimensions were related to aesthetics, escapism, and education. These dimensions positively affected satisfaction and encouraged the promotion of the museum word of mouth behavioral intentions (Vesci et al., 2021). On the other hand, socio-demographic variables and the type of satisfaction of museum visitors were studied with ambivalent results. For example, with positive emotions, the level of attraction and perception of the museum's uniqueness is higher (Del Chiappa et al., 2014). Also, Del Chiappa et al. (2013) found that socio-demographics and length of the visit influence satisfaction.

However, attendees' revisit intention to the museum is related to quality, experience, perceived value, and money rather than satisfaction (Hume, 2011; Christou et al., 2021). There is also evidence of the perceived value of introducing high technology in services as a critical element in satisfaction, as happened in the Shaanxi Museum of History in Xi'an, China (Chen & Ryan, 2020). In addition, the Cham

Museum in Danang, Vietnam, found a positive relationship between satisfaction with the conative (visitor's desire to make recommendations to other people), interpretation, and displays (Trinh & Ryan, 2013). In other words, satisfaction provokes reactions such as the generation of intentions or as a mediator for the image, experience, quality, and consistency in the visit to a museum (Han & Hyun, 2017).

As mentioned, the satisfaction of museum visitors is a complex process since it involves several factors, such as policies, quality of service, and expectations, among other aspects. In this regard, the need to analyze it through a system of dynamics to measure long-term satisfaction and the quality of service, facilities, and even the number of visitors (Yao & Hsiao, 2012). In this sense, there are antecedents of the relationship of satisfaction in museums with performance and services (Orea-Giner et al., 2021), circulation and design of the space (Faerber et al., 2021), collection, perimeter services, and environmental factors (Passebois & Aurier, 2004), supplementary services (Brida et al., 2012), the need to measure the quality of the service (Mey & Mohamed, 2010) and as a measure to improve service (Maher et al., 2011) or quality dimensions related to the degree of satisfaction and future behavior (Daskalaki, et al., 2020).

With the massive use of mobile devices, a new market for museum services has been added and analyzed about satisfaction. In this regard, museum technology is an innovation factor related to the quality and satisfaction of visitors (Hume, 2015). For example, the so-called self-service technology has strongly impacted satisfaction in the visiting experience (Jarrier & Bourgeon-Renault, 2019), while usefulness, enjoyment, and interactivity positively affect satisfaction when using mobile guide systems (Kang et al., 2018).

Indeed, there are benefits to achieving satisfaction; for example, the perception of having a positive visit can encourage the publication of comments online, which contributes to the promotion of the museum, and it can be a pole of attraction for new visitors (Antón et al., 2019). Also, there are antecedents that satisfaction, interpretation, and displays are somehow related (Trinh & Ryan, 2013). In general, museums keep the latent need to maintain audiences and seek to repeat visits.

Therefore, analyzing MUMOG's satisfaction and experience will help to understand why it is such a visited museum. The research has the following questions: what are visitors' needs and motives? Moreover, what kind of experience provokes visitors?

## 2.2 Dark tourism experience

To understand dark tourism, motivations, experiences, the relationship between visitors and identity, and new approaches to the consumption of dark tourism (Light, 2017). Stone (2006) defined "dark tourism as the act of travel to sites associated with death, suffering and the seemingly macabre" (p. 146). Due to dark tourism features, its experience is quite different, and it has unique types of experiences towards the place and a fascination with death. What some people look for in other types of tourism, more oriented to leisure and pleasure and with a feeling or having a good experience, will not apply to dark tourism related to suffering, death, and disaster (Cheal & Griffin, 2013). Dark tourists go to those destinations looking for social meaning, remembrance,

status, or integration with death to provoke emotions (Sharpley, 2009). Also, there is some morbid curiosity and voyeurism (Cheal & Griffin, 2013). Dark tourism is not only about death, but also is based on different types of experiences such as narrative, educational, entertainment, memorialization, moral instruction, and "memento mori" (remember that will die) (Stone, 2012).

Consumption of dark sites is a form of acceptance of contemporary society the death (socio-cultural perspective) (P. Stone & Sharpley, 2008). Dark tourism' experience literature is diverse and has been studied in several ways, according to service strategies to enable tourists' intention to go to macabre tourism sites (Wu & Cheng, 2018), how tourists' emotional reactions influenced experience more than cognition and learning do (Yan et al., 2016); the influence of negative emotions and geopolitics in a Prison Museum in China (Weaver et al., 2017); detection of residents' experiences more negative than positive in Canterbury earthquake place in New Zealand (Jordan & Prayag, 2021) and the presence of ethical issues in the museum narrative in Auschwitz-Birkenau State Museum because of the guided tour in such a delicate site (Griffiths, 2019).

As mentioned, dark experience is varied and can be complex and dual; it is mixed with emotion (fear, shock, depression, and appreciation, as unfavorable) and spiritual and sacredness feelings (positive experience as an appreciation), as detected in Memorial Hall of the Victims in Nanjing Massacre. Besides, negative emotions can be related to learning (Zheng et al., 2020). On the other hand, it can develop positive emotions, empathy, and geopolitical disposition, and it is an excellent tool for education, as detected in war museums in China (Chang, 2017). In the case of warfare, in battlefield tours, visitors experience deep and meaningful feelings as changing experiences (Dunkley et al., 2011), and visiting slave castles in Ghana reflects motives and perception of grief and painful experience (Mowatt & Chancellor, 2011). Besides, there are different types of dark experiences, they can be catalogued from darkest to lightest, meaning that some places are darker than others, and that can provoke different types of experiences, as Stone has proposed (P. R. Stone, 2006).

## 2.3 Dark motivation

Moreover, according to (Light, 2017), it is vital to analyze the nature of demand for dark places focusing experiences of visitors and motivation. To understand why people like to have those experiences, what motives make people visit those places? Reference to that literature shows different motives; for instance, interest in understanding what happened at the dark site; in the earthquake-ravaged county town of Beichuan in China, it was analyzed on-site experience, destination image, and behavioral intention (Iliev, 2021) and how experience and behavioral intention were related to image educational and memorial place and much less with fear or leisure (Qian et al., 2021). Also, there is evidence that emotional engagement impels the visit of these sites and generates meaning, as found in three USA dark sites, Ground Zero, Gettysburg, and Ellis Island (Sigala & Steriopoulos, 2021). Further, motives and emotions can differ depending on the circumstances. There is no general type of motivation; for example, Tuol Sleng Genocide Museum in Phnom Penh, Cambodia, found that visitors' motivation was remembrance,

worth, learning, understanding, respect, and a must. In the meantime, emotions and shock, sadness, horror, and depression are related somehow (Isaac & Çakmak, 2016); in the Gallipoli battle in Turkey, Australians who lost 8000 lives in the war, visited the site for different reasons such as national sentiment and personal feelings (Cheal & Griffin, 2013). Similarly, as found in a Cambodian study where visitors experienced and demonstrated sympathy for the victims of the genocidal past and learned about it (Hughes, 2008).

On the contrary, the visitors to the grave of Jean-Paul Satre and Simone de Beauvoir in Paris were motivated by a desire for closeness, respect, and influence of the writers (Brown, 2016); while black metal music fans' motivation for dark tourism has been associate to a desire to compare natural and imagined landscapes in dark metal festivals in simulation and emotional contagion (Podoshen, 2013).

In this sense, an analysis of the mummies collection in the Capuchin Catacombs in Palermo, Sicily, found where they thought of them as representatives of the region's culture (Polzer, 2019). Recently, the experience and terms of "an embodiment" were analyzed, which is the connection between body and feeling and how the macabre experience affects the visitors' sensory expressions and images published at TripAdvisor of the Chernobyl zone. In this case, evaluating the darkness of photos and dark was related to fear, sorrow, shock, appreciation, and depression (Sun & Lv, 2021).

The process of visiting a dark site, according to Farmaki (2013), has two poles: pull (site characteristics, infrastructure, facilities, accessibility) that create a projected image, and push factors (motives and needs) that develop a perceived image (p.288). These can be factors that may impact dark tourism demand. For example, drivers and critical motivators for visiting two dark heritage sites in Cyprus were education, remembrance, and reinforcement of national identity for locals. On the other hand, dark visitors were mainly coincidental and novelty (Farmaki, 2013). Moreover, research on dark tourism has shifted from observing emotion, motivation, and experience to behavior changes that include: intentional amnesia, displacement, physical intervention, repetition and reinforcement, revenge, contrition, and reconciliation (Ashworth & Isaac, 2015).

#### 2.4 Dark tourism satisfaction

In dark tourism, satisfaction also has its peculiarities due to its nature—for example, death consumption, awe, and frightening emotions related positively. Also, authenticity is essential to experience (Wang et al., 2021). Consumption of death requires other types of satisfiers. Indeed, dark tourists are distinctive, and their value perception and motivation rely on "feelings of grief, pain, suffering, and brutality of the past" (Sharma & Nayak, 2019, pp 2).

In this sense, literature related to tourists' values psychosociological (emotional, social, and novelty) and traditional paradigm (functional and money) significantly contributes to direct and indirect loyalty intentions and dark satisfaction in India (Sharma & Nayak, 2019). Also, tourist satisfaction and the personal interpretation of the dark site related to their beliefs in disaster memorials as detected in China. It relates to loyalty (Wang et al., 2021), motivations, experience, and post-behavioral intention (Chanuanthong & Batra, 2017).

Also, evidence of the impact on the quality of the tourist experience is not related to behavioral intention. At the same time, destination image, perceived value, and satisfaction positively affect behavioral intention. Satisfaction is the most important antecedent for behavioral intention (Ghorbanzadeh et al., 2021). In terms of macabre tourism, awe is essential for satisfaction. Satisfaction enhances the intention of revisiting, an aspect that museums always desire because they always need more visitors. Dark sites should vary and utilize a variety of means, to enhance perceptions, especially fear (Wang et al., 2021) that can contribute to satisfaction.

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### 3 METHODS

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The study employed a descriptive, explanatory, non-experimental, and transversal type with a quantitative method involving a questionnaire for domestic and foreign attendees. The instrument was administrated face-to-face at the MUMOG in Spanish by a group of experts.

#### 3.1 Questionnaire

The questionnaire consisted of three sections. It was adapted to Mexico from a version used in Colombian museums (Autor 2 et al., 2012 and 2013). In the first section, information on the visit, previous visits to the MUMOG, museums previously visited, characteristics of the visiting group, reasons for visiting the museum, opinion on aspects and services, feelings of the visit to the museum, intention to visit other museums, degree of satisfaction with the visit, probability of recommending the museum and probability of return visit were collected—responses on opinions and feelings organized according to a five-point Likert scale.

The second section contained characteristics of the trip to Guanajuato, including the intention to visit the museum, the main reason for visiting Guanajuato, accommodation, daily expenses, means of transportation, probability of returning to Guanajuato, and recommendation as a tourist destination.

The last section included information on the visitor's socio-demographic profile (gender, age, educational level, marital status, occupation, and income level).

#### 3.2 Data collection

The museum's number of visitors per year is approximately 700,000 (Presidencia Municipal, 2020). In May 2017, a pilot survey was administered at MUMOG employing random sampling. Appropriate adjustments were made to the questionnaire. From July 14 to 26, 2017, 425 surveys were obtained, of which 392 usable surveys were selected.

Data via random sampling was used, a group of pollsters was trained, and a face-to-face survey was carried out. The selection strategy was to propose the filling out of the questionnaire to random people upon leaving the MUMOG, considering as a requirement that they be over 16 years of age. Another of the selection requirements consisted of the fact that the visitors could read and communicate in written form in Spanish. The study did not consider other factors.

#### 3.3 Data analysis

The descriptive statistics analysis of the visitors to the museum is in Table 1. Note that three quarters had done previous visits to the MUMOG, visitors are domestic, half of

the visitors within 25 to 45 years and had an educational level of undergraduate and graduate. Regarding occupation, almost half of the visitors are employees, and one quarter is students. The majority visited the museum with a couple or family.

Table 1: Sample

Variable	No.:% Of total	Variable	No.:% Of total
Gender		Education	
Men	208; 53%	Specialization	31; 8%
Women	184; 47%		
Age		Undergraduate	170; 44%
< 20	50; 13%	Graduate	50; 13%
20-29	155; 40%	High School	70; 18%
30-39	85; 22%	Elementary	8; 2%
40-49	55; 14%	Middle School	24; 6%
50-59	31; 8%	No title	4; 1%
≥ 60	16; 4%	Technical	35; 9%
Activity		Country	
Independent job	74; 19%	Mexico	353; 90%
Employee	157; 40%	United States	20; 5%
Student	102; 26%	Colombia	8; 2%
Occasional Job	12; 3%	Others	12; 3%
Home	24; 6%	Former visits	
Unemployed	4; 1%	One time	145; 37%
Retired	12; 3%	Two times	86; 22%
Other	8; 2%	Three or more times	63; 16%
Companion		Never	98; 25%
Alone	27; 7%	Last year museums	
Couple	55; 14%	None	51; 13%
Family	81; 21%	1-5	267; 69%
Other relatives	127; 33%	> 5	73; 19%
Friends	85; 22%		
Group	16; 4%		

Source: own elaboration

Table 2 shows the variables obtained from the questionnaire and each item's scales. Note that scales may vary according to the item. Different variables are introduced, in line with the ones observed in the literature, such as profile, visit, trip, services, feelings, and sensations during the visit.

Considering the visitors' opinions on services used in the museum, Table 3 presents descriptive indicators of central tendency and variation; the highest scale is very much (5), much (4), indifferent (3), bad (2), very bad (1) as the lowest. The highest average is for the treatment received by staff, and the lowest is for the documentation center or library (Table 3). The average for all factors is near the media, and they consider indifferent opinions with approaching a good evaluation slightly. However, the bathrooms and the documentation center/library fell into the unsatisfactory category. Regarding feelings and sensations experienced during the visit to MUMOG are taken into account, Table 4 presents the corresponding descriptive statistics.

Concerning the dimension of sensations and feelings of the museum, the scale is much (5), quite (4), indifferent (3), little (2), and nothing (1) as the lowest. Half the questions are assessed in reverse since they present a negative factor. As can be seen in Table 3, the highest score is having learned something and having felt comfortable and satisfied. Also, according to data, having lost or disoriented and having the feeling of wasting time obtained the lowest rate, which is a positive evaluation for the museum; people did not feel lost or wasting their time at the MUMOG.

Table 2: Description of variables

Variables	Definition
<b>Visitant profile</b>	
[Gender]	Men/ Women
[Age]	< 20/ 20-39/ 30-39/ 40-49/ 50-59/ ≥ 60
[Education]	No title/Elementary/MS/HS/Undergraduate/Technical/Specialization/Graduate
[Marital status]	Single/Married; free union/Separated; divorced/Widow/Widower
[Activity]	Independent job/Employee/Student/Occasional Job/Home/Unemployed/Retired/Other
[Income]	≤ \$2,401/\$2,402 - \$4,802/\$4,803 - \$7,203/\$7,204 - \$12,006/\$12,006 - \$24,012/\$24,012 - \$36,018/\$36,018 - \$48,024/> \$48,024 (monthly income, Mexican Pesos)
[Country]	Country of residency of the respondent
<b>Information about the Museum Visit</b>	
[Former visits]	One time/ Two times/ Three or more times/ Never
[Last year museums]	None/ 1-5/ >5
[Intention]	Yes/No
[Transportation]	Subway/Public Bus/Taxi/ Bus/private transportation/Car/On foot/Other
[Difficulty]	No difficulty/Lack of signal/Signaling to be corrected/another type of difficulty
[Purchases done]	No/Yes
[Recommendation]	Very improbable/Improbable/Probable/Very probable/Do not know
[Repeat visit]	Very improbable/Improbable/Probable/Very probable/Do not know
[Companion]	Alone/Couple/Family/Other relatives/Friends/Group
[Mummies visit]	Yes/No
[Store visit]	Yes/No
[Satisfied]	Very unsatisfied/Unsatisfied/Satisfied/Very satisfied/Do not know
<b>Traveling Information</b>	
[Guanajuato Recommendation]	Very improbable/Improbable/Probable/Very Probable/Do not know
[Coming Back Guanajuato]	Very improbable/Improbable/Probable/Very Probable/Do not know
<b>Opinions of services used in the museum</b>	
[Disabled Facilities]	Very bad/Bad/Indifferent/Good/Very good
[Library]	Very bad/Bad/Indifferent/Good/Very good
[Guided Visit]	Very bad/Bad/Indifferent/Good/Very good
[Rest zones/Restrooms]	Very bad/Bad/Indifferent/Good/Very good
[Museum Activities]	Very bad/Bad/Indifferent/Good/Very good
<b>Feelings/sensations experimented on during the visit</b>	
[Tired Uncomfortable]	Nothing/Little/Indifferent/Quite/Very Much
[Lost track of time]	Nothing/Little/Indifferent/Quite/Very Much
[Bored Lethargic]	Nothing/Little/Indifferent/Quite/Very Much
[Learned something new]	Nothing/Little/Indifferent/Quite/Very Much
[Losing time]	Nothing/Little/Indifferent/Quite/Very Much
[Enjoyment Serenity Happiness]	Nothing/Little/Indifferent/Quite/Very Much

Source: own elaboration

Note: MS=Middle School; HS=High School

Table 3: Opinions on services of the MUMOG (mean and standard deviation)

Item	Media	Desv. St.
Signaling inside the museum	3.839	1.086
Explanations and information at the rooms	3.936	1.060
Treatment by staff	3.974	1.115
Access and facilities for disabled	3.579	1.450
Received treatment at the Ticket Office	3.832	1.102
Documentation Center/Library	2.839	1.801
The guided visit provided by the museum	3.582	1.455
Rest zones/Restrooms	2.855	1.661
Museum activities	3.140	1.630

Source: own elaboration.

Likert scale from 1 (Very bad) to 5 (Very good)

Table 4: Sensations of the visit to the MUMOG (mean and standard deviation)

Item	Media	Desv. St.
You had lost or disoriented	1.485	0.822
Have you felt tired or uncomfortable	1.531	0.875
Have you lost the sense of time	1.689	0.975
You felt bored or lethargic	1.584	0.940
Has learned something new	3.612	1.227
Has felt guided or directed	3.194	1.306
You have felt comfortable and satisfied	3.676	1.096
Has been amazed by something	3.744	1.244
You have felt stressed or nervous	1.862	1.204
You had the feeling that you were wasting your time	1.485	0.822
You have experienced feelings of enjoyment, serenity, and happiness	1.531	0.875
Has had fun	1.689	0.975

Source: own elaboration.

Likert scale from 1 (Nothing) to 5 (Much)

This study introduced an Ordered Logit model to explain the determinants of the degree of satisfaction in the museum visit based on socio-demographic variables, opinions, sensations, and information about the visit. The dependent variable used is [Satisfied], which measures the degree of satisfaction of the visitor according to a 5-Likert scale, ranging from 1 "nothing" to 5 "much" and 1 "very bad" to 5 (very good" equivalent to "Very unsatisfied" to "Very satisfied." The dependent variable is categorical and orders the degree of satisfaction of the MUMOG's visitor.

#### 4 RESULTS

The results obtained from the ordered Logit model in categories of explanatory variables were significant at 90%, 95%, and 99% regarding opinions of the services, feelings, sensations, profiles, and the visit. Following the relevant results are detailed.

As expected, in allusion to the service dimension, attendees with a good opinion about access and facilities for people with disabilities increase their chances of being more satisfied with the visit, as presented in Table 5. Meanwhile, if a visitor has a very good opinion about the documentation center and library service, it increases their satisfaction. Regarding the guided visit, according to the results, indifference does encourage satisfaction; it is good or very good, but it does not matter. The same for activities of the museum, attendees that score indifferent are more likely to be satisfied with the museum. Likewise, having a bad opinion of the resting zones and restrooms negatively affects the attendees' satisfaction. The rest of the items representing the opinions on services of the visitors were either insignificant or did not show conclusive results in the different response categories.

Table 5: Results of the ordered Logit model for services

Opinions of services used in the museum		
Item	Odds ratio	St. Error
<i>Access and facilities for disabled</i>		
Bad	5.29e-16***	5.81e-15
Indifferent	4191*	21129.43
Good	1155601**	6684816
Very good	3543.827*	17213.73
<i>Documentation Center/Library</i>		
Very bad	3.62e-14**	4.83e-13
Very Good	1979573*	1.70e+07
<i>Guided visit</i>		
Indifferent	1.77e+10**	2.17e+11
<i>Resting zones/restrooms</i>		
Bad	6.24e-12**	6.31e-11
<i>Museum activities</i>		
Indifferent	.000019**	.0000973
Good	.0000886**	.0003703

Source: own elaboration

Note: \*, \*\* and \*\*\* indicate significance at 90%, 95% and 99%

Concerning sensations and feelings, results show that if a visitor feels quite tired or uncomfortable during the visit, it will be more likely to negatively affect his satisfaction (Table 6). Also, the visitor who felt that he lost track or waste time, even if he is a little indifferent, will have a higher level of satisfaction. Time is essential for satisfaction. For visitors, time spent at the museum is undoubtedly satisfying.

According to data, if a visitor gets bored or lethargic, it is more probable that it decreases his level of satisfaction, especially if he feels tired. On the other hand, data show that learning something new at the MUMOG significantly, when considered much, positively affects attendees' satisfaction (Table 6).

If the visitors feel enjoyment, serenity, and happiness, even if little increases their satisfaction, the greater the feeling, the more satisfaction. It is one of the indicators of the data more significantly rated.

Table 6: Results of the ordered Logit model for feelings/sensations

Feelings/ sensations experimented on during the visit		
Item	Odds ratio	St. Error
<i>Tired-uncomfortable</i>		
Quite	2.23e-12**	2.51e-11
<i>Losing track of time</i>		
Little	6.51e-06***	.0000301
Indifferent	1.44e-07**	1.06e-06
<i>Bored-lethargic</i>		
Indifferent	514979.9*	3982327
Quite	1.02e-15***	1.08e-14
Much	2.42e-33***	6.08e-32
<i>Learn something new</i>		
Indifferent	3.16e+07**	2.82e+08
Much	1327687**	1.01e+07
<i>The sensation of wasting time</i>		
Little	26601.7*	148371.2
Indifferent	1059.777*	4255.534
Quite	2602600**	1.73e+07
<i>Enjoyment Serenity Happiness</i>		
Little	7.04e+07**	4.98e+08
Quite	3.96e+09***	2.81e+10
Much	1.31e+13***	1.25e+14

Source: own elaboration

Note: \*, \*\* and \*\*\* indicate significance at 90%, 95% and 99%

As with the variables referring to the visitor's profile, the following results. First, being a male visitor is more likely to impact satisfaction positively. On the contrary, those visitors with a technical level of education experienced a lower level of satisfaction; nevertheless, being a graduate promotes satisfaction (Table 7). Regarding marital status, if the visitor is separated or divorced, the level of satisfaction will be higher than if he is single. Finally, those visitors with minimum, low, and high incomes have a higher level of satisfaction.

Table 7: Results of the ordered Logit model for the profile

Profile of visitors		
Item	Odds ratio	St. Error
<i>Gender</i>		
Male	.0001739***	.0005268
<i>Education</i>		
Graduate	2.71e-06**	.0000137
Technical	5.40e-09**	5.19e-08
<i>Marital status</i>		
Separated or divorced	3.82e+07**	3.24e+08
<i>Income</i>		
\$2,402-\$4,802 (Minimum wage)	.0004189**	.0016639
\$24,013-\$36,018 (High wage)	2055.8*	8674.187
\$4,803-\$7,203 (Low wage)	.0009389*	.0038274
\$7,204-\$12,006	2921837***	1.47e+07

Source: own elaboration

Note: \*, \*\* and \*\*\* indicate significance at 90%, 95% and 99%

Next, according to information about the museum visit, those visitors who intended to visit this museum before arriving in the city experienced a higher level of satisfaction than those who did not (Table 8).

On the other hand, if the visitor made purchases, the level of satisfaction is higher than if they did not. Furthermore, regarding the visit repetition, the results are conclusive; those respondents who said it was improbable, probable, and very probable are less satisfied. Finally, about the companion, if the visitor goes accompanied by couple, family, or friends, the impact on satisfaction is more significant compared to having visited the museum alone.

Table 8: Results of the ordered Logit model for information about the visit

Information about the Museum visit		
Item	Odds ratio	St. Error
Intention	344846.7**	1947213
Purchases done	.0008424**	.0025286
Visit Repetition		
Improbable	1.92e-07***	1.10e-06
Probable	1.17e-08***	5.66e-08
Very probable	2.47e-11***	1.32e-10
Companions		
Couple	2902924**	1.98e+07
Family	3.26e+10***	3.01e+11
With other families	3.29e+07**	2.60e+08
With Friends	413214.8*	2828462

Source: own elaboration  
 Note: \*, \*\* and \*\*\* indicate significance at 90%, 95% and 99%

The value of the chi-square likelihood ratio and its associated p-value (Table 9) verifies that the model as a whole is statistically significant compared to the null model without predictors. Finally, regarding the goodness-of-fit measures, the pseudo-R-square value and the Log-likelihood show us a model representing a crucial fit to the data.

Table 9: Results of the ordered Logit model

Indicator	Value
LR chi2(204)	505.04
Prob > chi2	0.0000
Pseudo R2	0.7285
Log-likelihood	-94.129934

Source: own elaboration

## 5 CONCLUSIONS

### 5.1 Theoretical implications

This study aimed to define factors that affect attendees’ satisfaction with the Guanajuato Mummies Museum in Mexico to determine needs and experience. The results showed that the opinions about the general services of the mummies influence the satisfaction of the visitors, positive or negative; in this case, resting zones and restrooms must have attention. Having deficient services is a factor that reduces satisfaction in concordance with Hume (2011). In this regard, museum activities and disabled facilities contribute to satisfaction. Also, time spent at the museum will certainly affect satisfaction, and it should manage efficiently.

Moreover, it was noticed that the learning sensation also contributed to greater satisfaction at MUMOG. Learning is one of the main elements of the museums and cultural experience and in this case, as it enhances satisfaction, the enclosure should try to maintain that sensation. Literature has studied this phenomenon deeply in museums and dark tourism as well. Learning is a variable highly presented in fright sites (Zheng et al., 2020) (Chang, 2017). People may go to the museum for curiosity, but they learn about the site. It is not only about death, according to Stone (2012) or, in this case, the mummies.

Besides, in dark tourism, the tourist seeks a sensation of a scare for pleasure or fun (Wang et al., 2021) (Bristow & Newman, 2005), the sinister history of the mummies of Guanajuato. The results show that enjoyment, serenity, and happiness contribute to higher satisfaction and are present in the mummies museum, similar to Kang et al. (2018). Although this aspect contributes to the literature on the importance of generating these sensations in macabre museums, MUMOG must continue to improve the sensations of learning and enjoyment.

In the sociodemographics variables, graduate education, being separate and divorced, and three levels of income are determinants of satisfaction for the MUMOG in concordance with Del Chiappa et al. (2013), who found that socio-demographics and length of the visit influenced satisfaction. While having made purchases in the museum and visiting the company of others had a favorable impact on satisfaction. Regarding the male gender, it would be interesting to address whether this has to do with gender stereotypes manifesting in dark tourism. According to the visit, the most excellent satisfaction was for those who already came to Guanajuato intending to visit the museum.

Indeed, this study contributes to the finding that attendees’ revisit intention is not related to satisfaction in concordance with Hume (2011). Also, it contributes to the gap regarding the definition of satisfaction in dark tourism. Besides, it is crucial to determine how the Mexican dark tourism perception differs from other cultures, such as the Anglo-European perspective proposed by Speakman (2019).

### 5.2 Practical implications

This research has some practical implications; for instance, access and facilities for people with disabilities and the documentation center and library and museum activities contribute to satisfaction. The store needs particular attention; people who buy souvenirs are more satisfied than those who do not. Facilities such as the store need strategies that improve the service. Also, it could be an excellent strategy to establish a better-guided tour and design an efficient tour inside the museum, looking for a fluid visit. Finally, of course, poorly evaluated services must be enhanced.

It is also recommendable to refine a marketing strategy for MUMOG considering visitors’ profiles and factors—attendees’ enjoyment, serenity, and happiness are the base of satisfaction. Management should pay close attention to this need; filling this demand requires strategies to achieve satisfaction, as visitors want to be delighted at the museum. In dark tourism, a scare for pleasure is together. A strategy could be to put the experience as the core of the visit to the museum and try to develop more feelings and sensations for



the visitors. Managers and authorities of the museum should design a memorable visit and a well-developed museum experience. It should be related to touring inside the museum, and it must be creative, intuitive, rapid, and fluid to avoid feelings of boredom that decrease satisfaction. As mentioned, the greater the joy, the more satisfaction will be achieved.

Results also show that learning contributes to satisfaction; stakeholders should be aware of this and must strengthen the education variable by implementing learning tools to acquire knowledge as part of the visit and experience. Nowadays, the MUMOG needs plenty of learning strategies for visitors; for example, technology has been an instrument for achieving so in other museums.

Therefore, managers should concentrate on developing an integral and complete museum visit experience that includes affection, cognition, and novelty, as proposed by some researchers (Richards, 2019).

Future research should address ethics regarding the exposition of dead bodies, changes in behavior after the visit, personal interpretation of the museum, and the impact of the museum's online publications. It is acknowledged that the sample limits the scope of the findings. However, dark tourism research is limited in Mexico, and this study contributes to understanding its perception and satisfaction factors according to Mexican culture. The results obtained from the ordered Logit model in categories of explanatory variables were significant at 90%.

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