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Characterization of the potential demand of geotourists in Lençóis, state of Bahia, Brazil: Serra do Sincorá Geopark Project

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Abstract

Geotourism has in its geodiversity its main touristic use. Understanding consumer demand is essential to direct strategies for the elaboration of touristic products and plan the touristic offer, aiming to serve tourists effectively and satisfy their preferences and needs. The characterization of the tourist serves to segment the touristic market, contributing to make geotourism a touristic segment in Brazil and worldwide. This research aimed to analyze the demand of geotourists to provide a contribution to the management and planning of geotourism in the territory of the Serra do Sincorá Geopark Project, Lençóis, Bahia, Brazil. A self-administered questionnaire was used as a research instrument, which was distributed at random to 135 tourists approached on the Baderna Street, Pedras Street, Pedras Square, and Sete de Setembro Avenue Square (Horácio de Matos Square) who were seated at the tables between 19:30 and 22:30 h during 15 days of the second semester of 2018. The demand of geotourists – the one with a strong affinity for the practice of geotourism – was determined from the hierarchical cluster analysis and multiple comparisons between groups based on attitudes, behaviors, preference, and importance of travel analyzed from the perspective of social psychology. The results allowed identifying that 29% of tourists are geotourists; with female predominance; they do not seek luxury or elite environments, but singularity and authenticity; protected environment; good touristic service with a fair price; basic infrastructure in the attractions; and they do not have geoscientific knowledge. It is expected that our results will be used by public and private managers in the territory of the Serra do Sincorá Geopark and the Serra do Sincorá Geopark Association, and that the characterization of the demand will contribute to the consolidation of geotourism as a touristic segment in Brazil. This research can be expanded to other geopark territories.

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1. Introduction

The Serra do Sincorá Geopark Project is located in Chapada Diamantina, the central region of the state of Bahia, and comprises the municipalities of Andaraí, Palmeiras, Lençóis, and Mucugê. The history of the occupation of the territory and socio-spatial formation goes back to the diamond mining that existed in the 18th and 19th centuries (Nolasco 2002, Teixeira and Linsker 2005). Located in the São Francisco craton, it has sedimentary and metasedimentary sequences of Proterozoic age, with a low degree of metamorphism (Pereira 2010). The area integrates elements from the Caatinga, Cerrado, and Atlantic Forest biomes (ICMBio 2007).

Tourism was encouraged in the region with the prohibition of mining and occurred in the same period of the delimitation of the Chapada Diamantina National Park. From this, the touristic infrastructure has developed differently in each of the municipalities, which have different socioeconomic

characteristics (Eschiletti and Lanzer 2019). The relationship with geodiversity and activity under the focus of geotourism is developed due to these geological, biological, scenic, and historical elements, in addition to the presence of touristic offer.

Geotourism is a concept defined by several authors under three approaches: geological (Hose 1995, 2000, 2012, Brilha 2005, Newsome and Dowling 2006, Azevedo 2007, Gray 2008, Robinson 2008, Moreira 2008, Dowling 2011); geographic (Stueve et al. 2002, Stokes et al. 2003, Buckley 2003); and holistic, as it refers to the notion of belonging to the Earth Mother (Arouca 2011). However, everyone agrees that geotourism should promote educational experiences, interpretation, and knowledge about what they are experiencing. Considering that most of the attractions of the municipalities of the project are related to the abiotic typology associated with history and biodiversity (Eschiletti 2020), it appears that there is potential to provide the interpretation of the natural and historical processes related to these touristic attractions.



However, the demand needs to be known to prepare the offer and geotouristic products, understanding what type of tourist has an affinity with the practice of geotourism and, consequently, whether geotourists consider it important to interpret and understand the place they are visiting. Quantifying, characterizing, knowing the profile of tourists, and knowing which activities serve each demand of those who visit geosites in the proposed area for geoparks is essential to guide planning, implementation, and management actions (Pereira 2010, Castro et al. 2017).

The city of Lençóis was the capital of Lavras Diamantinas and today concentrates the largest number of services and equipment for tourism (Eschiletti 2020) and, consequently, the highest number of tourists in the region. The local identity of the municipalities and the promotion of what is authentic and unique in the territory need to be recognized and strengthened to guarantee, through geotourism, sustainable economic development, social justice, and the achievement of environmental integrity (Arouca 2011).

Considering that geotourism has a geological form (geodiversity), its processes can be seen as a primordial aspect for its development, and that the socio-spatial formation in Lençóis goes back from the mining of diamonds to tourism, it is questioned: What are the attitudes, behaviors, preferences of travel, and affinity with the 3G knowledge (geological heritage, geotourism, and geopark) tourists of Lençóis that visit geodiversity attractions in the territory of the Serra do Sincorá Geopark Project (PGSS) have?

Thus, the objective of this research was to analyze the demand of geotourists to provide a contribution to the management and planning of geotourism in the PGSS territory, aiming at a better use, adequacy, and expansion of the offer of geodiversity and the historical and cultural aspects of the municipalities included in the proposal. The profile of the geotourist, the one with "strong affinity for the practice of geotourism," was determined from the statistical analysis of cluster and multiple comparisons between groups based on attitudes and behaviors analyzed from the perspective of social psychology (Braghirolli et al. 2011).

2. Theoretical framework

2.1. Geotourism

There are different ways of understanding geotourism when considering its characterization, either through the geological and geographic bias or as Earth Mother. Therefore, the discussion about this term started to take place in 1995, when Thomas Hose, in the United Kingdom, defined geotourism for the first time, which should go beyond aesthetic appreciation, allowing tourists to acquire knowledge and understanding of geology through interpretive facilities. The author emphasizes again the importance of interpreting heritage as a form of protection, pointing out that there is little public awareness about the wealth, cultural significance, and threats "of geological and geomorphological places and materials" (Hose 2000), emphasizing the educational use and the essential component of geological conservation in geotourism.

According to the Australian authors Newsome and Dowling (2006) "[...] the prefix 'geo' of the word geotourism belongs to geology, geomorphology, and the other natural resources

of the landscape" (Newsome and Dowling 2006). Also, most geotourism occurs in the natural environment and can happen in urban environments.

In Brazil, Azevedo (2007) and Moreira (2008) considered that geotourism has a geological heritage as its main attraction and emphasizes the interpretation of heritage and the motivation of people interested in knowing more about the geological and geomorphological aspects of a given location. On the other hand, according to Mantesso-Neto et al. (2012), geotourism is an activity that combines natural and cultural elements. Australians Robinson (2008) and Dowling (2011) pointed out that geotourism is sustainable and geological tourism related to ecotourism.

On the other hand, the definition provided by the National Geographic Traveler and The Travel Industry Association of America considers the term geotourism closely related to sustainable tourism, with a concern to preserve the geographic character of a destination, being the whole combination of natural and human attributes that make one place distinct from the other, encompassing cultural and environmental concerns related to travel, as well as the local impact that tourism has on communities and their individual economies and lifestyles (Stueve et al. 2002).

The definition established in the Arouca's "Geoletter" understands geotourism with a holistic Earth Mother approach because "we are all connected to the Earth and it is the link between us" (Digne 1991), defining it as "the tourism that sustains and values the identity of a territory, taking into account its geology, environment, culture, aesthetics, heritage, and well-being of its residents" (Arouca 2011), encouraging territories to develop geotourism with a focus on cultural, historical, and scenic value, in addition to the environment and geological heritage. This concept has a clear relationship with Geoparks, the conservation of geodiversity (Gill 2017), and is also in line with the objectives of the 2030 Agenda (ONUBR 2016) for Sustainable Development and the document of the World Tourism Organization for Sustainable Tourism (UNWTO 2017).

Martini et al. (2012) highlight that geology remains a fundamental point in geotourism, with "the interpretation of the geological character of the territory is always the main objective of this type of geotourism," and understand that the broader approach of the concept should improve the public appreciation for geology. The advantages of expanding the concept of geotourism beyond geological tourism are related to the fact that tourists need to understand that geology/geodiversity is closely related to other elements of the territory, such as biodiversity and archaeological, cultural, and gastronomic values because the number of people interested in geology is low and geotourism is an economic activity that needs tourists to ensure sustainability.

According to Dowling (2013), geotourism is based on the geological environment and the difference between the geological and geographic definitions lies in the fact that the former understands geotourism as a "form" or type of tourism, while the latter sees geotourism as an "approach" to tourism. Thus, the best way to understand geotourism would be from the two understandings, firmly related to the geological nature of the "sense of place" of an area.

Dowling and Newsome (2018), in turn, created a defining spectrum for geotourism, in which its focus at one end of the spectrum is on geological tourism and, at the other end of

the spectrum, there would be a broader geographic situation, which still has its geological basis that is used to inform the biotic and cultural elements of a geosite.

In addition, tourism is “an economic, political, social, cultural, and environmental phenomenon whose basic components for reflection are human, space, and time” (Ueda and Vigo 2000) and should be considered as an important global phenomenon in the 21st century, which was responsible for generating US\$ 8.9 trillion (equivalent to R\$ 51.26 trillion today) for the world gross domestic product (GDP) and 330 million jobs in 2019 (WTTTC 2020). Moreover, an estimated 100.8 million jobs have been put at risk due to the 2020 pandemic, generating a 30% drop in world GDP revenue.

2.2. Geotourist

Nascimento et al. (2008) pointed out that many places of geotouristic interest in Brazil (even without defining and elaborating touristic products) are already geotouristic attractions. It is worth noting that the touristic product “is composed of tourist attractions plus infrastructure, services, and equipment marketed in an organized manner to satisfy the needs and desires of the tourist” (MTUR 2011). Also, “products and touristic itineraries, in general, are defined according to supply and demand to characterize specific touristic segments” (MTUR 2011).

A segment requires touristic identity, supply, and demand, but geotourism cannot be considered a touristic segment in Brazil because there is still an incipient identity for geotourism, and the demand is not fully characterized (MTUR 2010). The World Tourism Organization (UNWTO 2019) also does not recognize geotourism as a segment. Therefore, quantifying and characterizing the profile of tourists who visit the geosites of geopark projects are essential for effective implementation and management (Pereira 2010), developing touristic products, and contributing to a possible segmentation.

The studies by Lourenço (2012) showed the need to know the behavior of the consumers to adapt the available itineraries to their preferences. According to the author, “adapting marketing strategies to consumer preferences can be a competitive advantage in relation to other competitors” and “the consumer, in general, has a behavior regarding consumption that can be determined to suit the marketing strategies to it” (Lourenço 2012).

Castro et al. (2017) contributed to this sense by stating that knowing the tourist profile contributes to guiding planning and management actions, allowing to know which activities serve each tourist demand. In addition, Nascimento et al. (2008) added that tourists need to interpret the heritage they are visiting to practice geotourism. We will present below several studies that tried to define and describe the geotourist profile.

British geotourists are usually casual, few are competent in Earth Science (Hose 1995). Thus, users of specific attractions of the geological heritage tend to be above the national educational average and have some particular interest in the subject, are unaware of the importance of the geological heritage, are over 30 years old, and travel in couples or small family groups with children. Satisfying the educational needs perceived in children motivates adults to be users.

The author (Hose 2000) also analyzes that there is a difference between specialized and occasional geotourists.

Specialized geotourists would be “individuals who intentionally select visits to places and exhibitions of geological and geomorphological interest for their personal education, intellectual improvement, and enjoyment,” while occasional geotourists would be “individuals who visit places and exhibitions of geological interest with the fundamental aim of personal pleasure and some limited intellectual stimulation” (Hose 2000).

Stueve et al. (2002) carried out a study on the profile of American tourists and obtained eight profiles of tourists, three of them being geotourists. They are also called sustainable tourists, vary in age range, being partly young and partly older, have higher education, high income, are frequent and environmentally conscious travelers, are of working age and working, 40% have children under 18 years old, have strong preferences for the cultural and social aspects of travel, and most live in urban areas.

Buckley (2003) states that geotourists choose the place they will visit and travel to see particular scenery and wildlife, experience specific local culture, and practice sports such as climbing and kayaking. Moreover, Robinson (2008) found that 72% of respondents were between 45 and 70 years old and men, 96% of respondents had a first or second level education, social needs and desires, different esteem, and a good gross income, which would make it possible to pay for trips to geotourism sites in Australia and abroad. In addition, the most important purposes for travel would be to increase knowledge of geological sites and landforms; satisfy curiosity; have a memorable experience; obtain intellectual stimulation; and visit destinations that offer a unique set of resources, such as ecology, the experience of different cultures and history, satisfying your curiosity. The interviewees attribute a higher level of importance to the visited destinations, offering an exclusive package of these resources, as well as tasting good foods and wines.

Mao et al. (2009) analyzed the study by Robinson (2008) and concluded that geotourists prefer to travel alone, without organized tours or excursions, and most of them want to increase their knowledge about geological sites and landforms.

Dowling (2011) notes that defining geotourism is easier than defining who the geotourist is and points out a spectrum of geotourists from the study by Grant (2010 apud Dowling 2011), which defined five levels ranging from geoexperts to general visitors who are not aware of what they are visiting.

Hurtado et al. (2014) adapted the typology of tourists from cultural tourism to geotourists, creating a model with five types of geotourists based on a survey conducted with 119 respondents and based on the experience and satisfaction of tourists when visiting the Crystal Cave, in Australia. Allan et al. (2015) carried out another study on the same attraction to define the profile of geotourists based on their motivations and concluded that the main motivations were relaxation, escape from the hectic life, the feeling of admiration, and to gain knowledge.

Božić and Tomić (2015) defined the profile of pure (dedicated) geotourists and general (accidental) geotourists who visit canyons and gorges in Serbia. When applying a geosite assessment model, the experts evaluate it and consider the opinion of tourists on the importance of each indicator and which geosites they would choose to visit. They conclude that pure geotourists prefer basic touristic infrastructure, while general geotourists prefer comfort.

In Brazil, surveys on geotourists are more recent and seek to characterize their profile relating to the motivation and interest in the knowledge of 3G (geological heritage, geotourism, and geopark), with three studies on the geotourist profile pointing out characteristics for the Brazilian territory, both in Conservation Units (CU) that are part of a geopark proposal.

According to Fonseca Filho and Ribeiro (2016), knowing the tourist profile is fundamental, as tourism is a complex activity and, for this reason, it has been segmented to understand the identity of the supply and the specificities and variables of the demand. Thus, Fonseca Filho and Ribeiro (2016) classified the potential geotourists into three levels: casual and curious visitors are in the first two levels, respectively, and those who decided to consciously visit the park are in the third level. The authors concluded that geotourism in the Serra do Rola-Moça State Park (MG) is not a consolidated segment in the park, being possible that geotourists have been practicing geotourism unconsciously, as well as there may be potential tourists to this practice, also clarifying that the geotourist appreciates the geological characteristics and features and acquires knowledge about the heritage.

Visitors were interviewed at Itacolomi State Park, Minas Gerais, to present results on “[...] origin, stay in the municipality, transportation, monitoring, information, means of accommodation, motivation, attractions, satisfaction, unprecedentedness, and returnability” (Fonseca Filho and Moreira 2017), considering that “the attraction needs to be consistent with the visitor, as well as the entrepreneur with the client” (Fonseca Filho and Moreira 2017), but many managers do not know their clients. According to these authors, the profile of tourists, regarding the affinity with geotourism, is “geologically motivated; knows what geological heritage is, has the interested in getting to know geological heritage better; does not know what geotourism is; do not know what a geopark is and do not know that the Itacolomi State Park is in the proposal for the Quadrilátero Ferrífero Geopark (Fonseca Filho and Moreira 2017).

Fonseca Filho et al. (2018) carried out a study in the National Park (PARNA) of Serra do Cipó (MG) to define whether the demand was for geotourists. The authors correlated the visitors' knowledge about 3G and conclude that tourists who know the concepts of Geological Heritage, Geotourism, and Geoparks are considered typical geotourists (4%) and those who have heard about it are considered accidental geotourists (34%) with the potential to become aware. Thus, geotourism would be a niche since the tourist from PARNA Serra do Cipó (MG) has an authentic behavior of geotourists, as they seek waterfalls, which are geomorphological geosites. However, this tourist aims at more contemplation than interpretation and understanding, being an “ecotourist by segmentation, but geotourist by market niche” (Fonseca Filho et al. 2018).

Hose (2012) points out that, in general, readily observable characteristics attract geotourists more than the complex geological history, and that it is possible to take more complex messages to geotourists by developing appropriate ways of communicating the knowledge of 3G (geological heritage, geotourism, and geopark). Also, the biggest desired change in geotourism and geotourists is the enjoyment nature of the relationship between modern geotourists with the landscape compared to their predecessors. In other words, it is possible to qualify the leisure of tourists, placing greater emphasis on

pleasure and leisure than on intellectual effort and spiritual awareness, which does not prevent the adoption of geotouristic practices to educate them about the scientific and cultural significance of geology in the past and the present. These geotouristic practices must seek to harmonize relationships in the touristic space and must value the local identity and well-being of residents, as suggested by Arouca (2011). These characteristics make up the structure of a geopark, a place of excellence for the occurrence of geotourism and destinations for geotourists.

2.3. Serra do Sincorá Geopark Project

The most important feature of this territory is Serra do Sincorá, “located on the central-eastern border of Chapada Diamantina” (Pedreira 2002) and the northern portion of Serra do Espinhaço. The Bahia's municipalities of Andaraí, Lençóis, Mucugê, and Palmeiras, located between the coordinates 41°69'–40°69' W and 12°14'–13°42' S (Figure 1), are inserted in a very old portion of the Brazilian territory, the São Francisco craton, which has been consolidated since the beginning of the geological history of the planet (Pereira 2010). Chapada Diamantina occupies about 10% of the area of occurrence of sedimentary and metasedimentary sequences (with a low degree of metamorphism) in Brazil, illustrating the succession of environments and the landscape evolution on the South American Platform since the Proterozoic (Pereira 2010). This territory has geotouristic potential due to the geological constitution, the shape of relief, and the cultural relationship with mining and biodiversity, which presents characteristics of the Atlantic Forest, Caatinga, and Cerrado biomes, and all these associated elements can be observed in the main tourist attractions (Eschiletti 2020).

It is worth noting that the city of Lençóis is considered the gateway city for tourists to enter Chapada Diamantina (Brito 2005, Santos 2006) (Figure 1) and has the largest number of touristic equipment and service providers (Eschiletti and Lanzer 2019), being the main responsible for sending tourists to the other municipalities of the Serra do Sincorá Geopark Project, Bahia.

3. Methodology

Geotourism supports and values the identity of a territory, taking into account its geology, environment, culture, aesthetics, heritage, and well-being of its residents (Arouca 2011). Geotourists would be individuals interested in learning about geodiversity, with “general attitudes about leisure travel,” “environmental/cultural attitudes,” “cultural behavior,” “travel and destination preferences,” and “importance of travel aspects” (Table 1) (Stueve et al. 2002), showing affinity with the 3G concepts (geological heritage, geotourism, and geopark) (Fonseca Filho and Moreira 2017), analyzed from the perspective of social psychology (Braghirolli et al. 2011).

The geotourist demand was analyzed using 20 statements (Table 1) on a Likert scale (1934) Likert et al. (1993), between 1 (“strongly disagree”) to 5 (“strongly agree”). The statements were elaborated from the dimensions “general attitudes about leisure travel,” “environmental/cultural attitudes,” “cultural behavior,” “travel and destination preferences,” and “importance of travel aspects” (Stueve et al. 2002). The answers to the questions of the structured instrument were

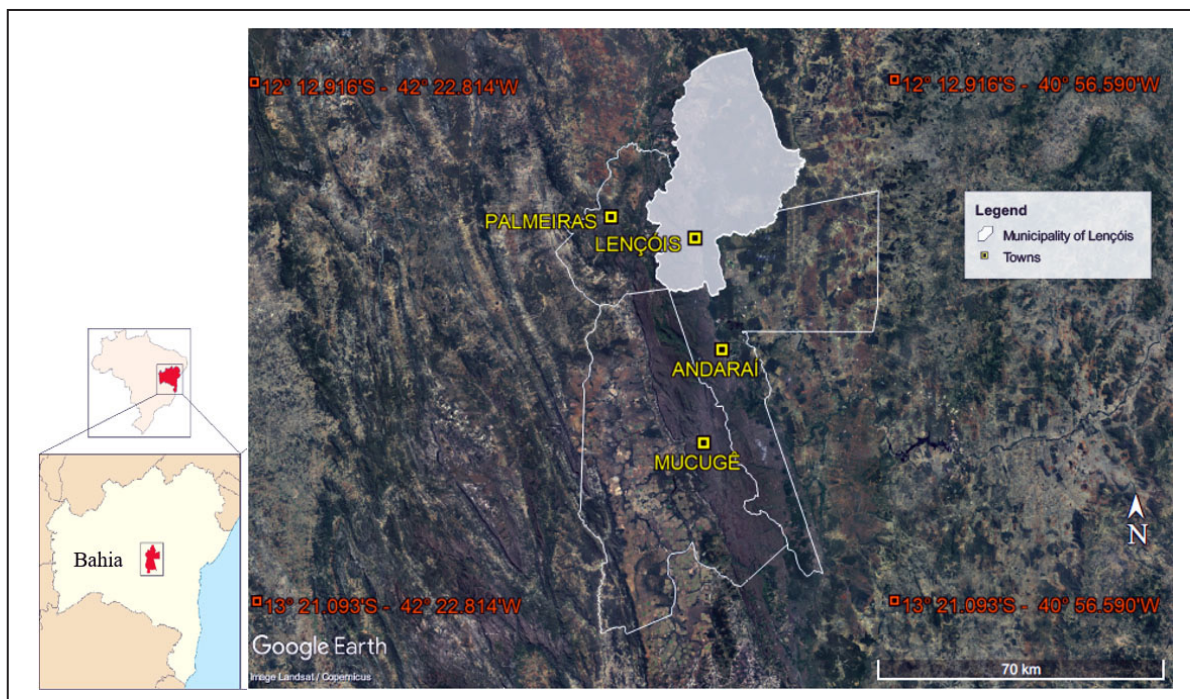


FIGURE 1. Location map of municipalities in the territory of the Serra do Sincorá Geopark Project, Bahia. Modified from Google Earth (2020).

considered to perform the hierarchical cluster analysis using Euclidean similarity and distance. The Shapiro and Francia (1972) normality test was performed for each group generated from the cluster analysis to verify the data distribution. Subsequently, the non-parametric Mann-Whitney U test was carried out for multiple comparisons between dimensions and between groups.

The descriptive characterization of geotourists was carried out followed by the cluster analysis considering the affinity with the concepts of geological heritage, geotourism, and geopark (3G), elaborated from Fonseca Filho and Moreira (2017), the socio-economic profile, the reason, and the developed activities (CET-UNB 2008). The inventory of geosites, developed by Pereira (2010) for Chapada Diamantina and which indicates accessibility and the touristic, didactic, and scientific values, was used to list the geodiversity. The affinity analysis with 3G and the sociodemographic profile were carried out using multiple-choice questions. Aiming to deepen the description, the mean and standard deviation were also calculated for each of the 20 questions used in the cluster analysis to describe the statements with which the tourists have a greater agreement for the value of the mean cluster.

The questionnaire was applied in the second half of 2018, totaling 135 participants in Lençóis. The questionnaires were distributed at random to tourists who were seated at bars and restaurants on the main streets of the city between 19:30 and 22:30 h. A total of 124 responses were used (92% of the sample universe), as tourists who had not visited any touristic attraction related to geodiversity (11 respondents) were excluded from the sample because, according to Brilha (2005) and Gray (2008), geotourism makes use of geodiversity to happen.

4. Results and discussion

Knowing the profile of the tourists/clients who frequent the touristic destination contributes to the planning of tourism

management, aiming to minimize negative impacts arising from this activity and promoting positive impacts and the tourist experience (CET-UNB 2008). Segmenting the demand allows directing strategies to serve the tourist effectively, planning the offer and elaborating touristic products adapted to their preferences and needs, in addition to being competitive in the tourism market (Keller and Kotler 2006, MTUR 2011, Castro et al. 2017). Additionally, geotourism needs a volume of buyers of geotouristic products and a touristic offer with defined characteristics to become a touristic segment in Brazil and worldwide.

Thus, four groups, arranged in a dendrogram, were generated to characterize the demand for geotourists in the Serra do Sincorá Geopark Project (Figure 2). The data did not present a normal distribution and the non-parametric Mann-Whitney U test indicated a difference between groups (Table 2). This test showed a difference for all dimensions between groups 3 (n=36) and 4 (n=9).

The results show that group 3 (n=36) presented a higher value in the dimensions "general attitudes," "cultural behavior," "travel and destination preferences among travelers" and "importance of travel aspects" compared to the other groups through the measure of central tendency (Table 3). The other groups were not considered to have a strong affinity for the practice of geotourism because they did not present significant values for all dimensions. Groups 1 (n=24) and 2 (n=55) showed significant differences between the dimensions "environmental and cultural attitudes" and "importance of travel aspects." Group 1 has a higher value for "importance of travel aspects" than group 2, which indicates that education and learning during travel are important for tourists in that group, while group 2 has "environmental and cultural attitudes" with a higher value than group 1. Group 4 (n=9) presented the lowest values in all dimensions compared to the others (Table 3), with the lowest affinity for the practice of geotourism.

The highest value for the dimensions of groups was considered relevant because it is understood that "a person's

TABLE 1. Questions corresponding to each dimension for the definition of the geotourist profile.

General attitudes about leisure travel (GA)	Q1	My travel experience is better when my destination preserves its natural, historical, and cultural sites and attractions.
	Q2	My travel experience is better when I see or do something unique.
	Q3	My travel experience is better when I learned as much as possible about the customs, geography, and culture of my destination.
	Q4	My travel experience is better when I learned as much as possible about the landscape and geology of my destination.
	Q5	It is important to me that the travel companies I use employ local residents and support the local community.
	Q6	It is important to me that my visit to a destination does not damage its environment.
	Q8	It is important to me that the attractions of my interest are easily accessible to me and those who are with me.
	Environmental and cultural attitudes (EC)	Q7
Q9		I agree that there should be more public and/or private funding for the preservation of the country's historic sites, fauna, and flora.
Q10		I agree that there should be more public and/or private funding for the conservation of the country's geological heritage and natural monuments.
Q11		There must be more careful monitoring of the use of our National Parks and public lands.
Q12		I agree to control access to National Parks and public lands so that the environment can be preserved and protected.
Cultural behavior (CB)	Q15	Very/extremely likely to buy products and services from specific companies because I know they donate part of their profits to charitable organizations.
	Q16	Very/extremely likely to participate in art events (e.g., theater, symphony, opera, and ballet) in my local area.
	Q17	Very/extremely likely to visit historical sites and/or museums in my local area.
Travel and destination preferences among travelers	Q14	Very/extremely important that the trip offers the opportunity to be in luxury and be pampered (i.e., luxury hotels and good restaurants).
	Q18	It is very likely I travel to places where I can experience people, lifestyles, and cultures very different from mine.
	Q19	Very/extremely likely to trip to destinations that have authentic historic or archaeological buildings and sites.
	Q20	Very/extremely likely to travel to destinations that have natural areas and authentic geological features.
Importance of travel aspects	Q13	Very/extremely important that the trip provides educational experiences for me and my family.

behavior is usually consistent with their attitudes” and that “knowing someone’s attitude about something can assist in understanding and, to a certain extent, predicting their actions in relation to this ‘something’” (Braghirolli et al. 2011). Thus, the presented dimensions were considered to point out the trend towards the practice of geotourism. Therefore, tourists who have a “strong affinity for the practice of geotourism” also have an affinity with the concept of Arouca (2011), which considers the search for sustaining and valuing the identity of the territory, covering geology, environment, culture, aesthetics, heritage, and well-being of the inhabitants of the territory.

The agreement for the statement “Very/extremely important that the trip provides educational experiences for me and my family,” inserted in the dimension “importance of the travel aspects,” showed that tourists with “strong affinity for the practice of geotourism” value the educational experience and increased knowledge during the trip, which is very desirable for geotourists (Hose 1995, 2000, 2012, Stueve et al. 2002, Stokes et al. 2003, Newsome and Dowling 2006, Nascimento et al 2008, Robinson 2008, Mao et al. 2009, Dowling 2011, 2013, Arouca 2011, Martini et al. 2012, Dowling and Newsome 2018).

According to Braghirolli et al. (2011), “we are more exposed, and we are better at learning what is not inconsistent with our attitudes” when we have positive attitudes about something. It implies that tourists in Lençóis present attitudes in line with the educational aspects of geotourism. Thus, these 36 tourists (group 3), 29% of respondents, are considered geotourists (Figure 2).

4.1. Reason for travel and developed activities

Most trips are motivated by leisure, corresponding to 97.1% of occurrence in the responses of tourists. Nature (37.1%), sport (17.1%), visits to relatives/friends (14.3%),

history (11.4%), and architecture (11.4%) appear as indirect reasons for geotourism to happen. Geology, which would be the direct motivation for the practice of geotourism, appears in 8.6% of the responses (Figure 3). These results on motivation are in line with what Allan et al. (2015) identified as reasons for geotourists, ranging from escaping the hustle and bustle of everyday life, relaxation, pleasure, and a sense of wonder to gaining knowledge.

According to Braghirolli et al. (2011), reasons trigger the action to visit, while attitudes predispose to visit. Thus, considering the “general attitudes towards leisure travel” that did not show the dispersion of responses and have a high mean, one can observe the high agreement of tourists to the statements “My travel experience is better when my destination preserves its places and natural, historical, and cultural attractions” and “My travel experience is better when I learned as much as possible about customs, geography, and culture of my destination.” Social and cultural aspects are relevant to tourists, even if there is a geological motivation due to the visit to the attractions of geodiversity (Fonseca Filho and Moreira 2017). These tourists, when traveling from their cities of origin, are also motivated by history, architecture, and nature, strongly agreeing that “It is important that my visit does not damage the environment.”

The motivation related to the sport can be identified when considering the developed activities since trekking practices stood out, as this option was mentioned in 95.1% of the responses of tourists. Tourists can observe the geodiversity, biodiversity, and historical and cultural characteristics when performing this activity. According to Stueve et al. (2002), the profile of geotourists who are newer than 35 years old has a touch of adventure, corroborating the result of the developed activities (Figure 3).

The activities city tour (42.9%), contemplation of scenic beauty (34.3%), and cultural tourism (34.3%) were related to

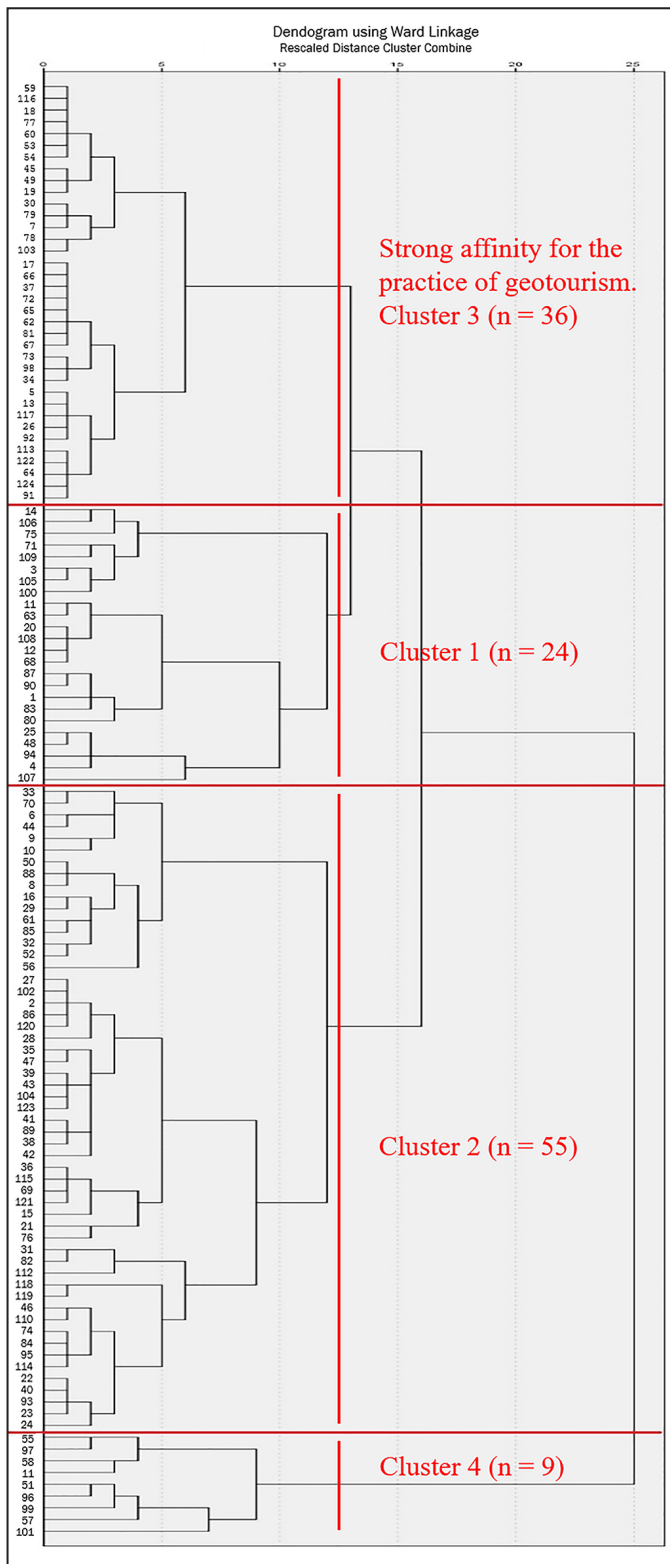


FIGURE 2. Dendrogram with the four tourist groups in the territory of the Serra do Sincorá Geopark Project, Lençóis, Bahia.

the reasons “architecture,” “nature,” and “history,” which are related to “general attitudes to leisure travel.” Geotourism (11.4%), caving (8.6%), and rural tourism (8.6%) are the activities that appear less prominently due to the choice of tourists with “strong affinity for the practice of geotourism” (Figure 3). Even though touristic activities focusing on the abiotic portion of nature were not the most mentioned, tourists agree that

“My travel experience is better when I learned as much as possible about the landscape and geology of my destination.” This statement directly shows the geological reason, but it is possible to infer that knowledge about the geological shape and processes (Newsome and Dowling 2006, Dowling 2011) are more difficult for tourists to understand, possibly due to the language, which is not accessible, as pointed out by Hose (1995, 2000, 2012), or because this knowledge is still a bottleneck to be extended to what concerns the geosciences and the reach to society.

The “environmental and cultural attitudes” showed a positive agreement without the dispersion of responses regarding “public and private financing for the preservation of historic sites, fauna, and flora and conservation of the country’s geological heritage and natural monuments.” Thus, this agreement corroborates with the creation of a geopark, which requires a public-private articulation for planning and managing the territory. In addition, the geological and sociocultural character appears again as fundamental, relating the non-dissociation of geology, geography, and history in the context of Chapada Diamantina. “Attitudes include a behavioral component” (Braghiroli et al. 2011, p. 82) and it is more likely for a person to have a coherent behavior if s/he has an attitude favorable to natural and cultural aspects. Considering the dimension of the “cultural behaviors” carried out in the tourists’ place of origin (Stueve et al. 2002), a positive agreement was evidenced for “participation in art events” and “visitation of museums in the place of origin”, thus showing that these tourists appreciate the culture and learning in their different possibilities.

4.2. Affinity with 3G (geological heritage, geotourism, and geopark)

Morro do Pai Inácio (Figure 4) was visited by all tourists and is located in the municipality of Palmeiras, the same municipality where the Fumaça waterfall and Vale do Capão, which were also visited. The two most visited attractions in the municipality of Lençóis were Mucugezinho River Balneario and Serrano (Figure 4), located downtown (Table 4).

According to Fonseca Filho and Moreira (2017), the attractions of geodiversity are associated with the geological motivation and the attractions/geosites are highly visited by tourists, such as waterfalls, rivers, caves, hills, and places with exposed rocks. On the other hand, nature, history, archeology, architecture, and sports can appear as indirect motivations for geotourism to happen.

A positive agreement is observed in the statement “It is important to me that the attractions of my interest are easily accessible to me and to those who are with me” when considering accessibility as a “general attitude”. In practice, it is not fully confirmed, as some tourists visit attractions with difficult access (Eschiletti 2020), while others are poorly accessed, even if easily accessible, such as the Luís Santos neighborhood, Donana waterfall, Marimbus wetland, and Monte Tabor (Pereira 2010). It is possibly due to the lack of planning for touristic attractions and promotion.

Material and immaterial cultural attractions, such as the Senhor dos Passos Festivity, are the connection point between geology and culture. In this sense, geotourists have a positive agreement with “travel and destination preferences”: “Take trips to destinations that have natural areas and authentic

TABLE 2. Mann-Whitney U test and significance by groups of visitors of the territory of the Serra do Sincorá Geopark Project, Lençóis, Bahia. Significance by groups is identified when the p-value is <0.05 and is highlighted with gray color.

Group	p-value				
	General attitudes about leisure travel	Environmental and cultural attitudes	Cultural behavior	Travel and destination preferences	Importance of travel aspects
1 and 2	0.487	0.005	0.596	0.336	0.007
1 and 3	0.000	0.068	0.001	0.003	0.091
1 and 4	0.041	0.001	0.347	0.029	0.062
2 and 3	0.000	0.414	0.000	0.000	0.000
2 and 4	0.062	0.000	0.499	0.069	0.909
3 and 4	0.000	0.000	0.011	0.000	0.001

TABLE 3. Mean, median, and standard deviation of attitudes, behaviors, preferences, and importance of travel per group in the territory of the Serra do Sincorá Geopark Project, Lençóis, Bahia.

Dimension	Metrics	Group	Group	Group	Group
		1	2	3	4
General attitudes about leisure travel	Mean	4.52	4.48	4.83	4.10
	Median	4.57	4.57	4.86	4.14
	Std. Dev.	0.30	0.29	0.16	0.56
Environmental and cultural attitudes	Mean	4.48	4.68	4.63	3.98
	Median	4.60	4.80	4.60	4.00
	Std. Dev.	0.29	0.23	0.25	0.39
Cultural behavior	Mean	3.71	3.58	4.26	3.26
	Median	3.67	3.67	4.33	3.33
	Std. Dev.	0.62	0.63	0.54	1.13
Travel and destination preferences among travelers	Mean	3.88	3.75	4.22	3.42
	Median	3.88	3.75	4.25	3.25
	Std. Dev.	0.48	0.53	0.35	0.48
Importance of travel aspects	Mean	4.67	4.11	4.83	4.22
	Median	5.00	4.00	5.00	4.00
	Std. Dev.	0.48	0.92	0.45	0.67

geological aspects” and “Destinations that have authentic historic or archaeological buildings and sites.” Therefore, a geotourist would be someone with an interest in learning that the construction and transformation of the geographic space were due to the human being actions in the natural object geodiversity, modified by the technique throughout history (Santos 2011), both during the diamond mining cycle (Nolasco 2002, Iphan 2014a, b, c) and during tourism (Brito 2005, Santos 2006). The Senhor dos Passos Festivity can be a bridge between Religious Tourism and geodiversity (Guimarães et al. 2009), as Senhor dos Passos is the patron saint of miners.

The preference for the destination to maintain its identity and uniqueness was pointed out in “My travel experience is better when I am seeing or doing something unique.” In addition, travel should provide social and cultural experiences, as found in “Experimenting people, lifestyles, and cultures very different from mine.” However, still considering the “travel and destination preferences,” there is disagreement regarding the statement “Very/extremely important that the trip offers the opportunity to be in luxury and be pampered (i.e., luxury hotels and good restaurants)”, corroborating with Božić and Tomić (2015), who stated that pure geotourists

demand basic infrastructure at the destination, giving more importance to geosites without major touristic and protected infrastructures. Among the geotourists defined by Stokes et al. (2003), the means of accommodation vary from small-scale accommodation, managed by the local community, to high-quality accommodation, options available in Lençóis.

Although geotourism must be the engine for sustainable development in geoparks, it is necessary to emphasize that it is not yet a touristic segment (MTUR 2010, UNWTO 2019), just as it is not a “new” product of ecotourism (Robinson 2008), as it does not depend on seasonality (Hose 1995). Moreover, geotourism is broader than geological tourism, which favors rock formations in its activity (Dowling and Newsome 2018), as it can happen in urban, natural (Newsome and Dowling 2006), and cultural environments (Mantesso-Neto et al. 2012), while ecotourism is only performed in natural environments (Ceballos-Lascuráin 1998). Ecotourism is the second most popular tourist activity in Lençóis (Figure 3) and advocates that the community should be benefited socioeconomically (Ceballos-Lascuráin 1998), but it is necessary to review the reasons why the community of Lençóis has not been benefited over the years, as the social gap increased in the municipality from 1999 to 2010 while per capita income more than doubled (Eschiletti and Lanzer 2019).

Part of the tourists mentioned that they know what a geological heritage is (58.3%) and part of them have heard about it (27.8%), which corroborates with Fonseca Filho and Moreira (2017). All tourists with a “strong affinity for the practice of geotourism” would like to know more about the geological heritage of Chapada Diamantina. It is a great opportunity to qualify the type of tourism practiced for leisure, as pointed out by Hose (2012), as most tourists affirmed their interest in obtaining and expanding knowledge. About 44.4% of the tourists mentioned to know what a geopark is, but they are unaware that geoparks are in the territory of the Serra do Sincorá Geopark Project (77.8%), indicating the need for disclosure in the media and actions in the municipalities of Lençóis, Andaraí, Mucugê, and Palmeiras.

Although geotourism is not an activity widely practiced among the tourists who exhibit attitudes, behaviors, preferences, and importance of travel consistent with the desired profile for geotourism, most of them (83.3%) mentioned they have heard or known what geotourism is, a result that meets the geotourist found by Fonseca Filho and Moreira (2017). Most respondents (91.4%) believe that the creation of the Serra do Sincorá Geopark will contribute to local conservation. Moreover, according to Fonseca Filho and Moreira (2017, p. 18), geotourists at Itacolomi State Park

“believe that the geopark brings benefits to the community, especially for teaching and research purposes” (Table 4).

Considering the perspective of Stueve et al. (2002) and the understanding of Braghirolli et al. (2011) that a set of attitudes,

behaviors, and preferences of travel is necessary for the action of visiting, we can agree with the statement of Allan et al. (2015) that the experience in geotourism consists of geotourists going to a place with geological or geomorphological

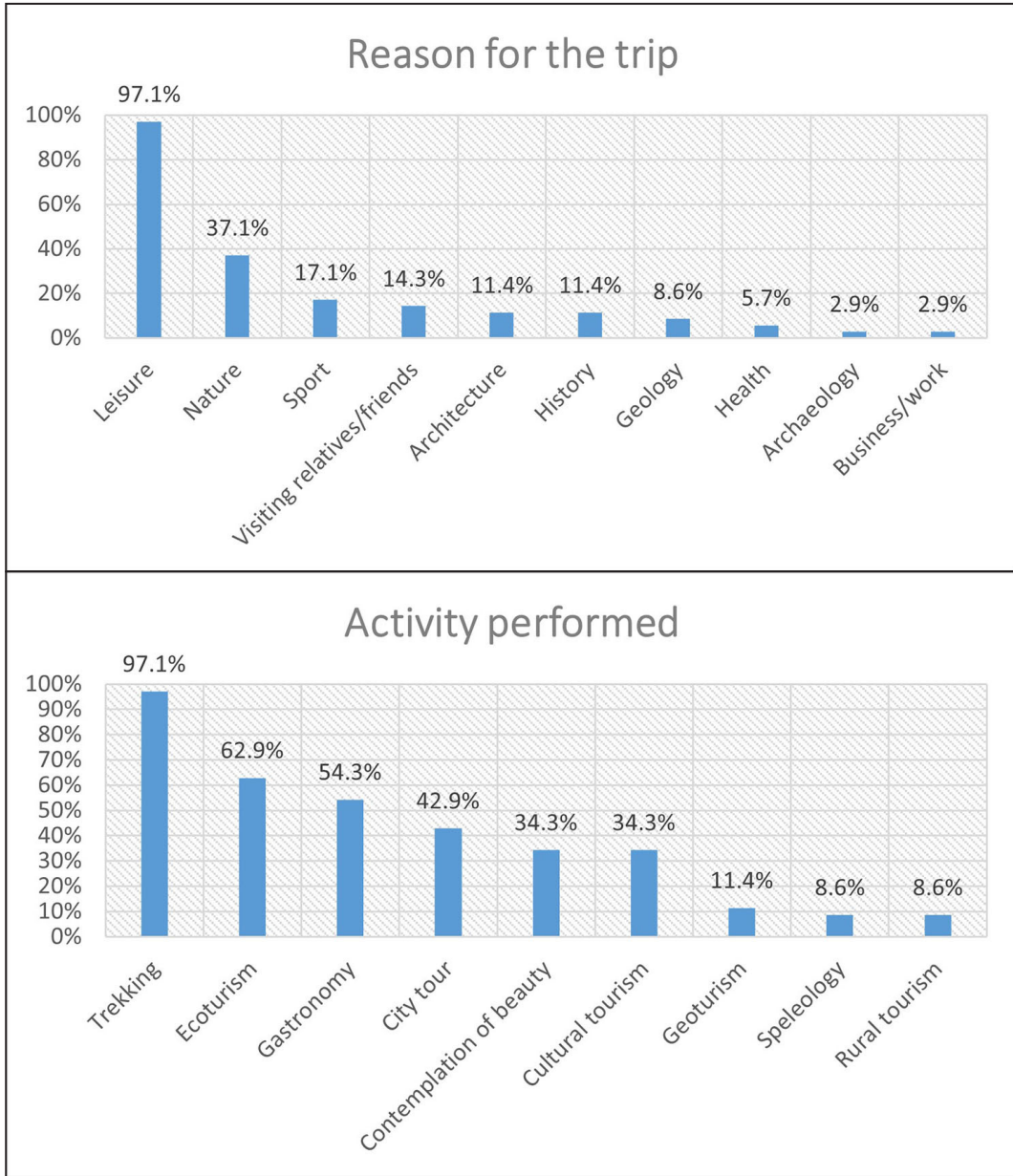


FIGURE 3. Reason for travel and activities carried out by tourists with a strong affinity for the practice of geotourism in the territory of the Serra do Sincorá Geopark Project, Lençóis, Bahia.



FIGURE 4. Most visited attractions. A – Morro do Pai Inácio, B – Mucugezinho River balneario, C – Serrano. Photos by the author (A and C) and Açony Santos (B).

TABLE 4. Affinity with 3G (geological heritage, geotourism, and geopark) of tourists considered to have a strong affinity for the practice of geotourism in the territory of the Serra do Sincorá Geopark Project, Lençóis, Bahia.

AFFINITY WITH GEO'S (GEOLOGICAL HERITAGE, GEOTURISM, AND GEOPARK) (n=36)					
Variable	Category	%	Variable	Category	%
Visited natural attractions	Luis Santos neighborhood	2.8	Visited cultural attractions	Cemetery	23.1
	Donana waterfall	2.8		Historical center	46.2
	Fumaça waterfall	30.6		Fair	38.5
	Andorinhas waterfall	2.8		Museum	19.2
	Riachinho waterfall	16.7		None	19.2
	Tiburtino waterfall	8.3	What is a geological heritage?	Yes	58.3
	Poço Encantado cave	16.7		No	13.9
	Torras cave	2.8		I have heard	27.8
	Diamictites of the Bebedouro formation	2.8	Learn more about the geological heritage of Chapada Diamantina	Yes	100
	Paixão cave	5.6	Do you know what a Geopark is?	Yes	44.4
	Marimbus	2.8		No	19.4
	Monte Tabor – Morrão do Capão	2.8		I have heard	36.1
	Morro do Cruzeiro	2.8	Proposed area for Serra Sincorá Geopark	Yes	22.2
	Morro do Pai Inácio	100		No	77.8
	Mucugezinho	63.9	What is geotourism?	Yes	38.9
	Poço Azul	55.6		No	16.7
	Paraguaçu River – Mucugê Balneario	5.6		I have heard	44.4
	Serrano	33.3	Creation of Serra Sincorá Geopark for conservation	Yes	91.4
				No	8.6

TABLE 5. Sociodemographic profile of tourists considered to have a strong affinity for the practice of geotourism in the territory of the Serra do Sincorá Geopark Project, Lençóis, Bahia.

SOCIO-ECONOMIC PROFILE (n=36)					
Variable	Category	%	Variable	Category	%
Gender	Female	58.3	Occupation	Administrator	5.6
	Male	30.6		Lawyer	2.8
	I prefer not to say	11.1		Systems Analyst	5.6
Age range	20 to 24 years	11.1		Software Test Analyst	2.8
	25 to 29 years	30.6		IT Analyst	2.8
	30 to 34 years	22.2		Administrative Assistant	2.8
	35 to 39 years	8.3		Designer	2.8
	40 to 44 years	13.9		Entrepreneur	5.6
	45 to 49 years	2.8		Nurse	2.8
	50 to 54 years	8.3		Engineer	8.3
	Above 60 years	2.8		Beautician	2.8
Marital status	Single	66.7		Student	8.3
	Married/common-law marriage	16.7		Government Employee	5.6
	Separated/divorced	13.9		Physician	2.8
Income in Minimum Wages (MW)	Other	2.8		Pedagogue	2.8
	1 MW and under	5.6		Teacher/Professor	13.9
	More than 1 MW to 2 MW	2.8		Cultural Programmer	2.8
	More than 2 MW to 3 MW	19.4		Psychologist	8.3
	More than 3 MW to 5 MW	41.7		Industrial Chemist	2.8
Education	More than 5 MW	30.6		Technician	2.8
	High school	2.8	Occupational Therapist	2.8	
	Incomplete higher education	19.4	Tourism specialist	2.8	
	Complete higher education	25	Region of Brazil	South	8.6
	Postgraduate studies	52.8		Southeast	31.4
		Midwest		2.9	
		Northeast		57.1	

characteristics to observe and gain knowledge. However, also considering a more comprehensive perspective of geotourism, in which geological tourism is another component added to the environment, culture, and aesthetics (Martini et al. 2012), the mean value showed that tourists in Lençóis have a positive agreement for “cultural behaviors” and “learning as much as possible about the landscape, geology, customs, geography, and culture of the destination”, showing that geography, geology, and history are inextricably linked in the territory proposed for the Serra do Sincorá Geopark. It places geotourism in a broader approach, as mining shaped (and shapes) in this territory over time, culture, and society, as well as the landscape currently visited by tourists.

4.3. Sociodemographic profile

The sociodemographic profile (Table 5) of the group with “strong affinity for the practice of geotourism” regarding gender, education, and marital status is similar to the profile found by Stueve et al. (2002) and Hurtado et al. (2014). The average age of these tourists (between 25 and 34 years old) is lower than the age found in studies that portray the geotourist profile (Stueve et al. 2002, Robinson 2008, Mao et al. 2009) and the age range from 31 to 55 years old found by the Brazilian Micro and Small Business Support Service of Bahia – Sebrae (2018) in Lençóis. The results of this research corroborate with Sebrae (2018) regarding gender, income, and regional origin (Table 5). The most frequent professions refer to tourists without geoscientific training (Hose 1995), but some individuals have a possible affinity to geosciences (teachers and engineers), as observed by Mao et al. (2009).

Finally, geotourism in the territory of the Serra do Sincorá Geopark Project tends to be an excellent tool for sustainable development if well planned, with the possibility of making fundamental contributions to the economic resumption of the touristic activity in the post-pandemic of the new coronavirus (SARS-CoV-2), because the UNWTO (2020) guidelines include domestic tourism, promotion of experiences to tourists, focus on nature, and sustainable products, that is, some of the main characteristics found as preferences of geotourists.

5. Final considerations

Knowing the demand is essential to plan the geotourism offer in Lençóis, Andaraí, Mucugê, and Palmeiras. The study allowed identifying, from the perspective of social psychology and based on the dimensions “general attitudes of leisure travel,” “environmental and cultural attitudes,” “cultural behavior,” “travel and destination preference,” and “importance of travel aspects,” a potential demand of 29% of tourists corresponding to the criteria used to distinguish geotourists. These tourists present significant values for each of the mentioned dimensions and, therefore, for the practice of geotourism.

About three geotourists out of 10 tourists know what geological heritage is, showing interest in knowing more about the geological heritage of Chapada Diamantina and demonstrating knowledge about the meaning of geotourism and geopark. However, these tourists did not know they were in the territory of the Serra do Sincorá Geopark Project, but they believe that the Project will contribute to the conservation of the area. Motivation made them visit the geosites, showing an interest in learning about the geological, geographic, and cultural characteristics of the destination, with attitudes and

behaviors repeated at home and when they travel. They are motivated by geology/geodiversity, but they do not know it and the activities carried out are related to geotourism. The dominance of the female gender was identified, which points to a differentiated demand that better meets the expectations of not seeking luxury or elite environments, but rather unique and authentic places, with a protected environment, good touristic service at a fair price, and basic infrastructure in attractions, being geotourists without professional affinity with geosciences.

The demand for geotourists tends to increase although still incipient, as the territory must present well-defined geotouristic characteristics related to the offer of touristic products to attract this type of tourist to receive the seal of the United Nations Educational, Scientific and Cultural Organization – UNESCO. The articulated and integrated planning for geotourism associates natural and cultural heritage, strengthening culture without mischaracterizing the place, aiming to provide tourists with an enriching, educational, and unique experience in the territory of the Serra do Sincorá Geopark Project. Geotourism emerges as another touristic activity because it takes place in both natural and urban environments, necessarily involving the community. However, geotourism is not yet a recognized touristic segment and the characterization of demand, in addition to contributing strategically to the consolidation of the activity at the destination, also serves to segment the offer of geotourism.

Moreover, the pandemic of the new coronavirus (SARS-CoV-2) caused a decrease in the search for the tourism practice. Therefore, the results of this research also contribute to the planning of the resumption of the touristic activity, as the research showed that the tourist of Lençóis is domestic, regional, motivated by nature, and seeks experiences and education, which are trends pointed out by UNWTO as guidelines for the resumption of tourism. The Serra do Sincorá Geopark Project could be an excellent tool for territorial development in the municipalities of Lençóis, Andaraí, Mucugê, and Palmeiras in the medium and long term, as it can specialize and integrate the tourism offer that already exists and insert geotourism.

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