

# EXPLORING PERSPECTIVES AND EXPECTATIONS OF EL YUNQUE NATIONAL FOREST VISITORS

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# Exploring perspectives and expectations of El Yunque National Forest visitors

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# Abstract

The Rio Sabana Recreation Area is located on the southern side of El Yunque National Forest in Puerto Rico. While visitor activity is well-documented on the northern side of El Yunque, much less is known about the experiences and motivations of visitors to the south. To bring the United States Forest Service and the local community of Cubuy a deeper understanding of visitors to the south, especially those who come to the Rio Sabana Recreation Area, the team examined online visitor reviews

and conducted interviews with visitors, tour guides, and other key parties, and through analysis developed six typologies of visitors to the area. This report offers recommendations regarding increased signage and trail maintenance, sale of food and beverages, and solicitation of public attitudes.





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# Authorship

<b><u>Section</u></b>	<b><u>Subsection</u></b>	<b><u>Primary Writer(s)</u></b>	<b><u>Primary Editor(s)*</u></b>
<b>Abstract</b>	—	Rachel	Chloe
<b>Executive Summary</b>	—	All	Chloe, Rachel
<b>Introduction</b>	—	Celeste, Chloe	Celeste, Chloe
<b>Background</b>	--	--	--
	<b>El Yunque National Forest</b>	Celeste	Rachel, Chloe
	<i>Overview of EYNF</i>	Celeste, Akhil	Chloe, Rachel
	<i>Overview of Southern Features</i>	Rachel	Chloe, Celeste, Akhil

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	<b>Community Proposal</b>	Rachel	Chloe, Akhil
	Understanding Tourists' Motivations and Expectations: A Conceptual Framework for Tourists to Protected Areas	Akhil	Rachel, Chloe, Celeste
<b>Methods</b>	—	--	--
	Introduction	Chloe	Rachel
	Explore Perceptions of El Yunque National Forest Visitors Through Social Media Analysis	Rachel	Chloe, Akhil, Celeste
	Identify perspectives of tour operators to El Yunque and how they anticipate the needs of their clients	Celeste	Chloe, Rachel

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	Compare Perspectives of Key Informants, Including USFS Employees, Community Leaders, and Business Owners, About Visitors to Cubuy, Naguabo	Chloe	Rachel, Akhil, Celeste
	Understand the Motivations and Experiences of Visitors to Cubuy and the Rio Sabana Recreation Area and Its Associated Trails	Akhil	Celeste, Rachel, Chloe
<b>Results and Analysis</b>	--	--	--
	Introduction	Celeste	Chloe
	What do Social Media Posts Reveal about Tourists' Attitudes Towards EYNF?	Rachel	Chloe, Akhil, Celeste
	What Kinds of Experiences Do Tour Operators Perceive as Desirable to Their Customers?	Celeste	Rachel, Chloe, Akhil
	What are the Insights of USFS Employees, Business Owners, and a Key Community Leader Regarding Visitors to EYNF?	Chloe	Rachel, Akhil



# Authorship

<b><u>Section</u></b>	<b><u>Subsection</u></b>	<b><u>Primary Writer(s)</u></b>	<b><u>Primary Editor(s)*</u></b>
	Range of Visitor Experiences	Akhil	Rachel, Chloe
	Limitations	Rachel	Chloe
<b>Conclusions and Recommendations</b>	–	–	–
	Recommendations	Rachel	Celeste, Akhil
	Areas for Future Research	Celeste	Rachel, Akhil



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# Executive Summary

El Yunque National Forest (ENYF), Puerto Rico's only tropical rainforest, has long been utilized for its valuable resources and for various research and recreational purposes. It has been managed by the United States Forest Service (USFS) since 1903 (Rivera, 2021; McGinley 2017). The USFS manages national forests and grasslands throughout the United States and Puerto Rico (USDA, n.d.j). In 2012, the USFS began to develop a new management plan for El Yunque under the leadership of Pedro Rios, USFS Ecosystems Management and Forest Planning Team Leader, which was finalized in 2019. This plan promoted the shift from a top-down management approach to a more community-oriented one.

The new management approach resulted in several changes, including a recent proposal submitted to the USFS by the local community of Cubuy, Naguabo. The neighborhood of Cubuy would like to manage the Rio Sabana Recreation Area (the only recreation area in the southern region of El Yunque) as it would increase their opportunities for economic growth and engagement with visitors. As of December, 2021, the proposal has yet to be finalized, but a signed agreement is in the works (M. Vázquez, personal communication, October 28, 2021; Comité Pro Desarrollo, 2021).







El Yunque is a major attraction for visitors to Puerto Rico (M. Tirado, personal communication, December 2, 2021). Tourism to the forest is concentrated in the northern region, with comparably few tourists visiting the southern area. The USFS and local communities are aware that visitors come to the southern part of the forest, but are not clear about their motivations and expectations (M. Vázquez, personal communication, October 28, 2021). Visitor (or tourist) typologies are a way of categorizing visitors. They provide a way to do so more specifically than simply labeling visitors as “internal” and “domestic,” but broadly enough to allow one to make predictions or draw conclusions about behavior. They are not comprehensive, but they give management a way to segment the market in order to more effectively cater towards given types of visitors (Cochrane, 2006).

The goal of our project was to explore the perspectives and expectations of visitors to El Yunque National Forest in order to assist the USFS and local community in developing more comprehensive responses to visitors. To achieve this goal, we developed the following objectives:

1. Explore perceptions of El Yunque National Forest visitors through social media
2. Identify perspectives of tour operators to El Yunque and how they anticipate the needs of clients
3. Compare perspectives of key informants, including USFS employees, community leaders, and business owners, about visitors to Cubuy, Naguabo
4. Understand the motivations and experiences of visitors to Cubuy and the Rio Sabana Recreation Area and its associated trails

To understand visitor motivations and perceptions, we gathered information from online review websites Google Maps Reviews, AllTrails, and TripAdvisor, and the social media platform Instagram. We selected reviews for locations in addition to the recreation area to better understand the types of visitors that come to Cubuy, Naguabo. We also analyzed TripAdvisor reviews of nearby bed-and-breakfasts Casa Cubuy and Casa Flamboyant. We used frequency analysis and thematic content analysis to identify common themes, attitudes, and experiences from the reviews. We used frequency analysis to create word clouds to provide a visual representation of the most frequently expressed thoughts, concerns, and experiences. This helped us to form an outline for the questions we wanted to ask in visitor interviews and key informant interviews. We also used thematic content analysis to support these.

We interviewed seven tour company owners and guides. During these interviews, we asked tour operators about the tours they offered, their clients (including age range and other relevant information), and what they saw as the reasons

visitors took their tours, as well as what they believed drew tourists to tours in general. We also asked if there were logistical differences between smaller or specialized tours and larger, more general tours. Finally, we asked about advantages or disadvantages and logistical considerations regarding tours in El Yunque, both as a whole and in the south specifically (for a full list of interview questions, see Appendix A). We analyzed these interviews using thematic content analysis to identify themes among tour operators.

"Tourism to the forest is concentrated in the northern region, with comparably fewer tourists visiting the southern area"

To gain a more nuanced understanding of El Yunque visitors, we interviewed USFS employees, a prominent community leader, and local business owners about their perceptions of visitors to

El Yunque (and to Cubuy, Naguabo in particular) (see Figure 10). We asked USFS employees questions regarding their perception of El Yunque tourism and about the permit system in El Yunque in order to get a better idea of how it influences tour operators and in turn visitors.

We asked community leader Mariny Vázquez questions about her perception of tourists in the area, about the community proposal submitted to the USFS, and about her view of the relationships between the community and the USFS and the community and visitors to the area. On site visits, we asked local business owners questions relating to their clients, including how many visitors they received in a given time frame, what they perceived as their guests' wants and needs, how they catered to those wants and needs, etc. (For complete lists of interview questions for USFS employees, business owners, and the community leader, please refer to Appendices B1, B2, and B3, respectively.) We transcribed recorded interviews and analyzed them using thematic analysis in the same way as for the visitor interviews.



To explore the perspectives and expectations of visitors to Cubuy, Naguabo, we sought to address the following research questions: Who visits the Cubuy, Naguabo area of El Yunque; why do they select this location; and what are their perceptions and expectations of the area? To answer these questions, we conducted semi-structured interviews with 21 El Yunque visitors and evaluated their responses through the lens of the Recreation Demand Hierarchy (adapted by McCool from Driver & Brown) and Cochrane's tourist typologies, as discussed earlier.



To find visitors to interview, we first identified El Hippy Waterfall, the Rio Sabana Recreation Area, and the bed-and-breakfast Casa Cubuy, three locations within the southern region of El Yunque that were likely to attract visitors, and visited those areas over the course of five weeks (see Figure 11). We asked visitors questions such as where they were coming from, what they were expecting to see, whether this was their first time visiting El Yunque, etc. (for a complete list of visitor interview questions, please refer to Appendix C). We also conducted a virtual interview with a visitor who had stayed at Casa Cubuy and been to the Rio Sabana Recreation Area (see Figure 11).



To analyze our findings, we used the Recreation Demand Hierarchy (adapted from Driver & Brown by McCool) and Cochrane's tourist typologies. We found that there are competing ideas about the benefits of tourism to the area. While some feel that the Rio Sabana Recreation Area is unmaintained and that the hiking trails are unusable, others enjoy it for its hiking trails, the river, or the picnic pavilions. Some interviewees enjoy the area's quiet, tranquil atmosphere and don't want it changed, but others enjoy being able to socialize. We adapted Cochrane's tourist typologies to help us identify different visitor inclinations among the people we interviewed (Figure 15). Our adapted typologies included the following visitor types: Exclusive, Tranquil, Social, Hiking, Hiking Plus, and Special Interest. This allowed us a somewhat broad categorization of visitors. In order to gain a more nuanced understanding of individuals, we also created visitor profiles that are more in-depth than the typologies. We created five of these profiles across a range of visitor types.

Limitations of our research include the language barrier we sometimes encountered between us and the people with whom we interacted, where we conducted our research, time of day, days of week, and the time of year we were able to conduct research.

In conclusion, we recommend that the USFS add signs (both educational and directional) and increase trail maintenance. We also suggest that the sale of food and beverages at the Rio Sabana Recreation Area and in the Cubuy area would increase those locations' attractiveness to visitors. We also offer recommendations for soliciting public attitudes: the gate at the entrance to the Rio Sabana Recreation Area path was an effective place to stop visitors and conduct interviews on their way out. It would also be beneficial to conduct interviews across a variety of days and times in order to get information for a wider range of visitors who come to the area than we were able to in our research.

Areas for future research include exploring appropriate entrepreneurial and tourism development opportunities connected to the Rio Sabana Recreation Area, and identifying sustainable and local business practices that could be applied to the Rio Sabana Recreation Area.



# Introduction



El Yunque National Forest (ENYF) is Puerto Rico’s only tropical rainforest. Throughout its history, El Yunque has been utilized for its valuable resources and for various research and recreational purposes. It has been managed by the United States Forest Service (USFS) since 1903 (Rivera, 2021; McGinley 2017). The USFS is a part of the United States Department of Agriculture (USDA) and manages national forests and grasslands throughout the United States and Puerto Rico (USDA, n.d.j). In 2012, the USFS began to develop a new management plan for El Yunque under the leadership of Pedro Rios (USFS Ecosystems Management and Forest Planning Team Leader), which was finalized in 2019. This plan promoted the shift from a top-down management approach to a more community-oriented one, and since then, the USFS has endeavored to facilitate collaborative management of El Yunque in order to “guide future projects, practices, uses, and protection measures to ensure sustainable multiple-use management of El Yunque” (USDA, 2018, p. 1).



The new management approach has resulted in several changes thus far, including a recent proposal submitted to the USFS by the local community of Cubuy, Naguabo. The neighborhood of Cubuy would like to manage the Rio Sabana Recreation Area (the only recreation area in the southern region of El Yunque), including oversight of road closures and openings, developing of amenities for visitors in Cubuy, such as groceries, artisanal craft shops, lodging, and other opportunities for the community to engage with visitors. As of December, 2021, the proposal has yet to be finalized, but a signed agreement is in the works (M. Vázquez, personal communication, October 28, 2021; Comité Pro Desarrollo, 2021).

El Yunque is a major attraction for visitors to the island (M. Tirado, personal communication, December 2, 2021). Tourism to the forest is concentrated in the northern region, with comparably few tourists visiting the southern area. The USFS and local communities are aware that visitors come to the southern part of the forest, but are not clear about their motivations and expectations (M. Vazquez, personal communication, October 28, 2021). Visitor (or tourist) typologies are a way of categorizing visitors. They provide a way to do so more specifically than simply labeling visitors as “internal” and “domestic,” but broadly enough to allow one to make predictions or draw conclusions about behavior. They are not comprehensive, but they give management a way to segment the market in order to more effectively cater towards given types of visitors (Cochrane, 2006).







To assist the United States Forest Service (USFS) in gaining a more in-depth understanding of visitors to El Yunque, we analyzed online reviews and social media postings and conducted interviews with tour guides, El Yunque visitors, owners of local bed and breakfasts, USFS employees, and a community leader. Through the lens of the Recreation Demand Hierarchy, adapted from Driver & Brown by McCool, and Cochrane's tourist typologies, we determined the perspectives and expectations of visitors to El Yunque, and we developed 6 visitor typologies (adapted from Cochrane's typologies) as well as 5 visitor profiles, which served to provide insight into El Yunque visitors.



# Background





## **El Yunque National Forest**

El Yunque National Forest, managed by the United States Forest Service (USFS), is a well-visited attraction with a wide variety of natural and man-made features. In 1970, a landslide permanently divided PR-191, which was the rainforest's north south artery. The two sections of the forest are considered to be distinct from one another. Below we give an overview of the forest, discuss its features and the differences between the north and the south, and discuss how these relate to tourism.





Overview of EYNF

El Yunque is the only tropical rainforest managed by the USFS. With approximately 600,000 visitors a year, El Yunque is the most visited attraction in Puerto Rico (Rivera, 2021). The rainforest comprises 28,516 acres, and is home to hundreds of small animals and thousands of native plants, including “88 of [which] are endemic or rare and 23 [that] are exclusively found in this forest” (USDA, 2013, para. 2). El Yunque is 35% wilderness (USDA, n.d.k), a designation that, according to Congress, is “an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain” (Yonk et al., 2016, p. 5).

Tourism is concentrated in the northern region of the forest. The northern region has more attractions than the south, and is covered in trails that extend to mountaintops, waterfalls, lagoons, ravines, and more. The main entrance to the northern sector is in the municipality Rio Grande on highway PR-191 North that provides an easy way for cars to access many of the

Figure 1  
Map of Attractions Along PR-191 North



Note. A map showing the details about attractions along PR-191 North, parking areas, and PR-988, as of December 2021 (USDA, n.d.i).

attractions (see Figure 1). El Portal Visitors Center, the major visitor center of El Yunque, is located at this entrance. It has amenities including parking, bathrooms, a gift shop, and fod concessions, although it is still undergoing repairs as of November 2021 and is inaccessible to visitors (USDA, n.d.e). Many of the trails, facilities, and roads were built by the Civilian Conservation Corps (CCC) between 1935 and 1943, and are still in use today (USDA, n.d.g). These include various towers, a man-made pool, and an area with picnic shelters, tables, grills, water faucets, and trash cans (USDA, n.d.h). The Luquillo Entrance is located in the northern side of the forest on PR-988 (along which there are also a variety of attractions), which connects with PR-191 North just south of the El Portal Visitors Center (USDA, n.d.f).

Route 191 North, which stretches 13.2 km (Google Maps, n.d.a), and Route 191 South, which stretches 10.8 km (Google Maps, n.d.b), were once one connected road that ran from the municipality of Rio Grande to Naguabo. In the 1970s, a landslide separated the road into two sections, and due to unstable soil, there have



been no recent efforts to reconnect the roads between former kilometers 13 and 21 (USDA, n.d.b; USDA, n.d.c). This makes it impossible to drive all the way through the forest; to drive from one side to the other, or to get to the rest of the attractions on another side, one must go all the way around.

**Overview of Southern Features**

The southern part of the forest is less traveled than the north, but has similar natural features. There are several waterfalls and swimming holes, including El Hippie Waterfall, located in northern Naguabo. This is a natural feature accessible via a dirt road, but it is not maintained by the USFS. There are also petroglyphs located within walking distance of the falls (Puerto Rico Day Trips, n.d.). There is one recreation area and one trailhead in the Southern part of El Yunque, called the Rio Sabana Recreation Area and the Rio Sabana Trail, respectively.

***The Rio Sabana Recreation Area***

The Rio Sabana Recreation Area, shown in Figure 2, was opened in 2011 and is located off of PR-191 South next to the community of Cubuy, Naguabo. Approximately 0.8 miles before the recreation area, there is a gate on PR-191 that restricts motor vehicle access (see Figure 3). The municipal government of Naguabo is responsible for opening and closing this gate from 9am to 5pm Thursday through Sunday (USDA, n.d.d).

According to community leader Mariny Vázquez, the gate is not open as scheduled (M. Vázquez, personal communication, October 28, 2021). The Rio Sabana Recreation Area is a cleared and mowed grassy space next to the Sabana River. In this space there are ten pavilions that are used for picnics and barbecues. There is a paved, central pathway that branches out to each pavilion. There are also bathrooms and paved parking with spots for 25 vehicles (USDA n.d.d).



**Figure 2**

*Photos of the Rio Sabana Recreation Area*

*Note. Left: A photo of the sign at the entrance to the Rio Sabana Recreation Area. Right: A view of some of the pavilions in the Rio Sabana Recreation Area.*



**Figure 3**

*Photo of Closed PR-191 South Gate*



*Note.* The closed and locked gate on PR-191 South that visitors park near.

## Co-Management and the USFS

In 2019, the USFS approved a land management plan that focused on co-management styles and community involvement (USDA, n.d.a). As discussed below, the USFS management of El Yunque began with a custodial approach, meaning management was centered on conservation and not multiple use. Over time,

this approach slowly shifted, and now El Yunque management is focused on achieving an adaptive and collaborative approach (McGinley, 2017).

A key concept of the 2019 Management Plan is shared stewardship, described as the process of collaboration between the local communities and the USFS working together on management operations and conservation and restoration efforts (USDA, 2018). Core features of this plan include promoting a strong regional identity relating to the forest; providing for the ecosystem; incorporating collaborative management; defining a system for recreation, access, and tourism; and increasing regional environmental education (USDA, 2018). The Forest Ecosystem Management and Planning Team Leader for El Yunque is Pedro Rios, who led the development of the 2019 Plan and its crucial elements of community involvement, economic development opportunities, and conservation (USDA, 2017; USDA, n.d.c).

The area around El Yunque is referred to as the Community Interface Resource Management Area, or the CIRMA (see Figure 4). The CIRMA is

made up of the forest that had plantations for timber products under previous management plans as well as lower elevation areas, and, in total, the CIRMA encompasses approximately 7,187 acres. There are nine municipalities in the region surrounding El Yunque, eight of which have land within the forest (see Figure 5). The CIRMA is a prime example of the shift to collaborative management. Connecting these communities to the forest through the management plan can help the development of various opportunities, including those that are educational or recreational. With the shared stewardship approach, communities can make use of forest product utilization opportunities and implement sustainable practices (USDA, 2018).

## Community Proposal

Cubuy, Naguabo is the closest community to the Rio Sabana Recreation Area. The residents value the forest and the recreation area, but, according to one spokeswoman for the community, people do not feel as though the rainforest is theirs (M. Vázquez, personal communication, October 28,

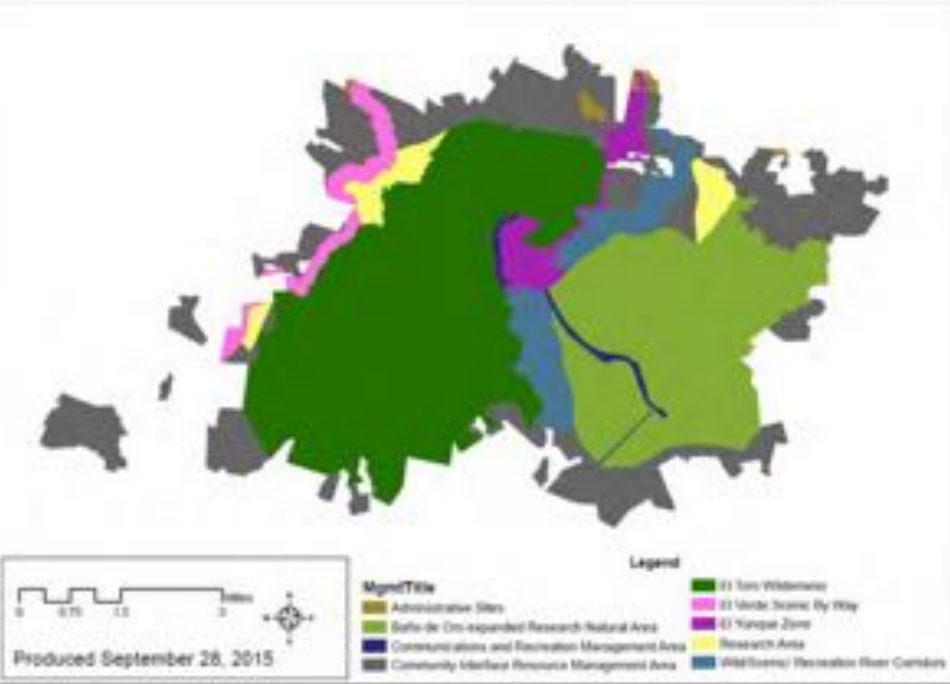


2021). While the USFS is dedicated to co-management of the recreation area, the community sees co-management as a vehicle to help them reclaim a part of the forest and to derive benefits from tourism. Both groups understand the resources available and the possibilities of developing the recreational opportunities in the area in the future. However, information about visitors to the area is extremely limited (P. Rios, personal communication, October 21, 2021).

In July of 2021, the community of Cubuy submitted a proposal, entitled La Propuesta and dated August 5, 2021, to the USFS requesting to co-manage the Rio Sabana Recreation Area. This proposal came after years of work by the community and the USFS. The promotion of Keenan Adams to Forest Supervisor in 2019 and his efforts have led to a formal review of the proposal and a plan to implement it (P. Rios, personal communication, November 4, 2021).

The proposal puts forward the following management principles:

**Figure 4**  
*Forest Management Plan Areas*

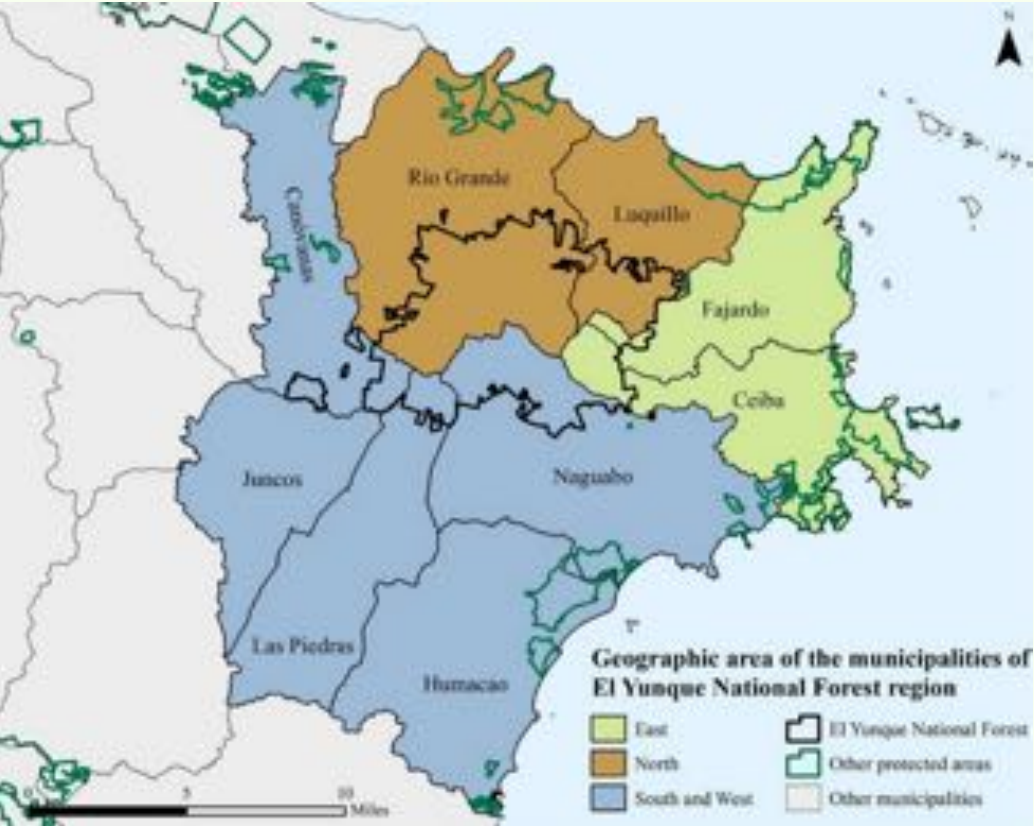


*Note.* This map shows the El Yunque management areas, with the CIRMA in gray (USDA, 2018).

“[c]ommunity land use with an emphasis on environmental education and community-based business” (Comité Pro Desarrollo, 2021, translated from Spanish). The community of Cubuy, Naguabo, requested the authority to preserve and manage the land and facilities throughout the Rio Sabana Recreation Area.

The proposal states that the community plans to develop destination #191 as a tourist point, with a focus on El Yunque and the Rio Sabana Recreation Area, in part through providing services, food, and other products to visitors.

**Figure 5**  
*Municipalities in the El Yunque Region*



*Note.* A map showing the municipalities and what land lies inside the borders of El Yunque National Forest (USDA, 2018).

The community wants to have more opportunities for local artisans, restaurants, markets, and farmers to sell their goods in order to generate local economic activity. They also hope to develop opportunities for locals to benefit from tourism as guides and educators.

Three community-based organizations have dedicated efforts to co-management as it pertains to the USFS and communities in Naguabo. The Committee for the Development of the Neighborhood of Cubuy Inc. (Comité Pro Desarrollo del Barrio Cubuy Inc.) and We Are Naguabo (Nosotros Somos Naguabo) are both organizations dedicated to the socio-economic development of neighborhoods in Naguabo, Puerto Rico. There are three main objectives that these organizations have been placed in charge of, and they are outlined in the proposal: create the Cubuy visitor center, the Rio Sabana Recreation Area, and the security and safety plan (see Table 1). The Committee for the Development of the Neighborhood of Cubuy focuses on development in the neighborhood of Cubuy specifically.

It was registered as an organization in May 2011 and is led by president Jimmy Piña. This organization is responsible for creating the Cubuy visitor center. We Are Naguabo is an organization that works with communities throughout Naguabo and is led by coordinator and founder Mariny Vázquez. This organization is responsible for the Rio Sabana Recreation Area. The third organization is La Mina CERT Inc., which is a Community Emergency Response Team organization. It was registered in May 2011 and is led by President Richard W. Washburn Staas. This group is responsible for the security and safety plan.

As of late October 2021 the proposal had not been officially approved by the USFS, so progress to transfer the property to the community has stalled (M. Vázquez & G. Morales, personal communication, October 28, 2021).

**Table 1**  
*Schedule from La Propuesta - August 5, 2021*

Objective	Activity	Date	Responsibility
Create the CUBUY Visitor Center	<ul style="list-style-type: none"><li>• Clean Mina CERT</li><li>• Prepare the Area</li><li>• Collect Available Information</li><li>• Identify Digital Tools for Maps</li><li>• Select volunteers and identify incentives</li><li>• Set Hours</li><li>• Promotion and opening</li></ul>	<ul style="list-style-type: none"><li>• September 2021</li><li>• September 2021</li><li>• September 2021</li><li>• September 2021</li><li>• October 2021</li><li>• October 2021</li><li>• October 2021</li></ul>	Jimmy Piña
Rio Sabana Area	<ul style="list-style-type: none"><li>• USFS Community Agreement Signing</li><li>• Area maintenance</li><li>• Lettering</li><li>• Evaluation of safe pathways and routes</li><li>• Training for volunteers on the Flora and Fauna of El Yunque</li><li>• USFS usage rules training</li><li>• Promotion of Co-management and use of facilities for Summer 2022</li><li>• Inauguration of Co-Management</li></ul>	<ul style="list-style-type: none"><li>• October 2021</li><li>• October 2021</li><li>• October 2021</li><li>• November 2021</li><li>• November 2021</li><li>• January 2022</li><li>• January 2022</li><li>• March 2022</li></ul>	Pro Development Committee Team (Neighborhood) Barrio Cubuy Inc.
Security Plan	<ul style="list-style-type: none"><li>• Meeting with the state police on the neighborhood council</li><li>• Meeting with forest rangers</li><li>• Meeting with OMEM</li><li>• Establish neighborhood safety council together with the regulations of the forest guard</li><li>• Train CERT on incident management in the Sabana areas</li><li>• Establish and promote teams</li><li>• Safety and education itinerary</li></ul>	<ul style="list-style-type: none"><li>• September 2021</li><li>• September 2021</li><li>• September 2021</li><li>• November 2021</li><li>• November 2021</li><li>• January 2022</li><li>• January 2022</li></ul>	Richard W. Washburn Staas and team

*Note.* Schedule from La Propuesta, translated into English. This schedule shows the plans put forth in the proposal to take steps towards meeting its goals. As of November, 2021, the plans had not been implemented, since the proposal was still waiting to be signed by the USFS (M. Vázquez, personal communication, October 28, 2021; P. Rios, personal communication, November 16, 2021).



# Understanding Tourists' Motivations and Expectations: A Conceptual Framework for Tourists to Protected Areas

The community wants to understand visitors to the area in order to be able to effectively cater to different consumer groups. One way to understand visitors is through visitor typologies. Visitor typologies are a form of market segmentation, which is the concept of classifying consumers into groups with similar characteristics (Liu et al., 2019). “Market segmentation consists of viewing a heterogeneous market (one characterized by divergent demand) as a number of smaller homogeneous markets” (Smith, 1956, p. 6). Segmentation can be determined by many factors: age, location of origin, behavior, activity, etc. As Cochrane, an academic researcher from Leeds Beckett University, puts it, “[w]ithout a more thorough understanding of visitor motivation and behavior, there is little hope of

managing parks successfully and sustainably in terms of resource conservation, developmental goals for local residents, and a satisfying experience for visitors” (Cochrane, 2006, p. 10). Characterizing tourists into different groups can help park managers--in our project the USFS--and local communities like the Cubuy community develop appropriate activities and programs aimed at specific groups. As Figure 6 shows, Cochrane developed a seven group international tourist typology: Elite, Special Interest, General Interest, Mass, Backpacker, Backpacker Plus, and Explorer tourists” (Cochren 2006, p. 12). Figure 7 includes the typology of domestic tourists with six distinct groups.

“Elite” tourists tend to be wealthy with prestigious jobs. In Cochrane’s framework they expect top of the line services during their stay and tend to stay disconnected from other travelers. “Special Interest” have a particular activity that they are looking for, such as birdwatching, waterfall chasing, petroglyphs, and more. They are willing to adventure, but are mainly focused on their hobby (e.g., architecture hunting). Usually they travel by themselves or in

a small group of people with similar interests. “General Interest” tourists want soft adventure. Points of interest, nature, and wildlife are important, but access and safety of these activities is critical. For example, These tourists usually travel in tour groups for convenience and require modest accommodations. “Backpacker Plus” travelers tend to be well off and experienced. These visitors are genuinely interested in learning about the culture of the surrounding area . “Backpacker Plus” tourists don’t require luxurious accommodations but prefer them if the option is given. “Backpacker[s]” are a similar typology to “Backpacker Plus” while stretching their boundary. They travel as long as possible with a low budget. They get immersed in local culture and live accordingly. Both “backpackers” and “backpacker plus” have a range of activities and are very flexible during their trip. Surprisingly, “backpackers” tend to frequent popular destinations. “Backpacker plus” frequent more remote areas as they have the assets to pay for it. “Mass” tourists consist of usually inexperienced travelers. Often traveling in groups and tours, they frequent similar places to “backpackers.” “Explorer tourists” is the

**Figure 6**  
*Cochrane's*  
*International*  
*Typology of Tourists*

Tourist type	Demographic and behavioural characteristics	Preferences for facilities and experiences
Elite	Rich, perhaps sports or entertainment celebrity, CEO of major company, or royalty. Willing to pay large sums for exclusivity.	Need top-class facilities and services, e.g. luxury lodges / camps, rapid transport connections and good communications, good-quality wildlife and wilderness experiences.
Special interest	Dedicated to a particular hobby, fairly adventurous, often wealthy, prepared to pay to indulge hobby and have others organise logistics. Travel independently or with a small group of like-minded others.	May have little interest in culture unless part of the tour focus or hobby. Require special facilities, e.g. fishing-boats, bird-guides, dive equipment. May have active involvement, e.g. research project. Accept discomfort and long travel where necessary to achieve aims.
General interest	Often prefer security, company and convenience of group tour, although increasingly travel as individuals on tailor-made itinerary with a tour operator. Relatively wealthy, often active, perhaps busy professionals with limited time. Includes expatriates resident in developing countries.	Keen on nature/wildlife when not hard to see, and on easily-accessible cultural aspects. Need facilities and organised activities for 'soft' adventure and accessing park, e.g. easy hiking trails, whale-watching, low-grade white-water rafting. Dislike travelling long distances without points of interest. Need good amenities, although may accept basic conditions for short periods.
Backpacker Plus	Often experienced travellers and generally in a well-paid job or career; may have taken sabbatical to travel for longer periods.	Genuinely desire to learn about culture and nature, and require good information. Accept basic facilities, but prefer more upmarket accommodation when available; can pay for additional services to facilitate and intensify experiences.
Backpacker	Travel for as long as possible on limited budget, often taking a year off between school/university and starting work. May join organised project for all or part of the trip.	May perceive rigours of local transport, cheap accommodation, etc. as travel experience rather than understanding local culture. Enjoy trekking and scenery, but often cannot visit remote areas because of expense. Require low-cost facilities.
Mass	Often inexperienced at travelling, prefer to travel in large groups, may be wealthy. Includes cruise ship passengers and some safari tourists.	Like superficial aspects of local culture, enjoy natural scenery and wildlife if easy to see. Need good facilities, and will only travel far if in comfort.
Explorer	Individualistic, solitary, adventurous. May be relatively well-off but prefer not to spend much money.	Require no special facilities; reject purpose-built tourism facilities in favour of local ones.

*Note.* Cochrane's  
International  
Typology of  
Tourists  
(Cochrane, 2006).

highest end of adventurous. They are usually isolated travelers and have no specific preference of amenities (Cochrane, 2006).

“Economy” tourists are usually large groups of students looking for engaging activities. They are often on a budget, and require affordable and sturdy accommodations. This type of tourist often appreciates adventure and can gain an increased sense of peer bonding and freedom. “Aspirational” tourists are similar to “Economy” in that they are often students or other young adults, but they are more interested in nature-centric activities and often travel in smaller groups. They can benefit by experiencing an increased sense of calm and connection with nature and with peers. The third tourist type, “Mass Budget,” focuses mainly on day trips or shorter excursions, and often makes use of family-oriented facilities. They often seek out others and can benefit from an increased sense of social connection and a break from daily work or other stress. The “Family” type consists of large multigenerational families that travel to enjoy nature and fun activities in the area. Complex facilities to accommodate these activities "such as



pony-rides and scuba-diving” (Cochrane, 2006, p. 15) are necessary. “Incentive” tourists are usually “work-related groups” (Cochrane, 2006, p. 15) that need facilities and locations to inspire team bonding. “Pilgrimage” consists of a large range of people usually on a spiritual journey. These types of visitors usually visit “caves, mountain tops, [and] shrines” (Cochrane, 2006, p.15) in order to receive some sort of spiritual gain.

The typologies are used to obtain insights into the motivators and interests of visitors to protected areas. Although visitor typologies, including Cochrane’s, are not comprehensive and the characteristics that define different tourist types may blur across categories, they are useful frameworks because they can enable planners to “catering to specific needs so that specific needs can be addressed, and to avoid creating conflicts between different visitor types” (Cochrane, 2006, p. 16).

While Cochrane’s framework can allow for fairly broad characterizations of visitors, the Recreation Demand Hierarchy adapted from

**Figure 7**  
*Cochrane's Domestic Typology of Tourists*

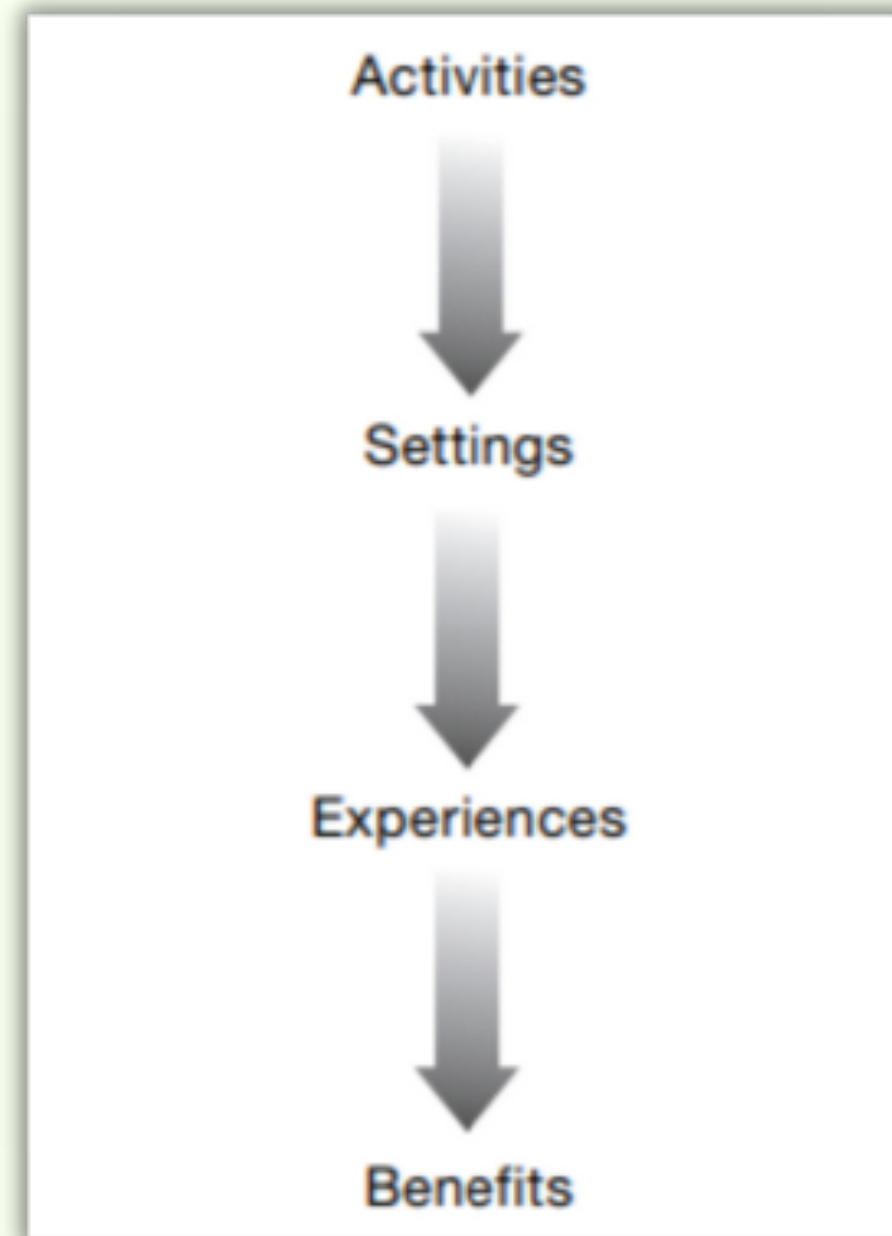
Tourist type	Demographic and behavioural characteristics	Preferences for facilities and experiences
Economy	Often high school or university students, travelling in large groups by public transport or motorbike.	Need campsites or hostels, cheap eateries and robust facilities such as erosion-tolerant mountain trails. Enjoy natural surroundings, with active sports such as mountain-climbing or 'tubing' often preferred to a more knowledge-seeking engagement with nature.
Aspirational	Young professionals, better-off students, active and adventurous. Generally travel in small groups of like-minded friends, and will avoid more intensively used sites.	Require good campsites or other inexpensive accommodation. Enjoy natural surroundings, increasingly willing to engage with nature from a biocentric stance. Often enjoy nature-based activities such as bird-watching, cycling, or rafting.
Mass Budget	Large family, neighbourhood or work-related groups. Travel generally by public or chartered transport, mostly for day-trips. Tolerant of high densities of people.	Enjoy fresh air, natural surroundings, and the company of others. Occasionally need cheap guesthouses for overnight stays, as well as facilities such as picnic and relaxation areas, souvenir shops, playgrounds.
Family	Nuclear (or slightly extended) families with private transport, often exploring more widely afield because of availability of better transport and other facilities.	Enjoy natural surroundings but unlikely to walk far; need similar facilities to Mass Budget tourists but with a greater range, i.e. better quality accommodation and restaurants and more activities, such as pony-rides and scuba-diving.
Incentive	Small or medium-sized work-related groups on company incentive or team-building programmes.	Need mid-range accommodation and facilities, perhaps with challenging activities such as problem-solving, 'outward bound' games.
Pilgrimage	Participants are from all walks of life, and may stay for a few hours to several weeks.	Visit holy or sacred places (caves, mountain tops, shrines) for spiritual refreshment or guidance, or to pray for a specific gift or blessing. A range of accommodation types is needed.

*Note.* Cochrane's Domestic Typology of Tourists (Cochrane, 2006).

Driver and Brown (see Figure 7) focuses more on tourist experiences. The hierarchy outlines four levels of “demand:” activity, settings, experiences, and benefit. Activity is “ the form of recreation that we observe” in a particular setting (McCool, 2006, p. 4). This includes hiking, fishing, swimming, camping, and more. Settings are the areas in which the above activities are performed. These are the recreation areas, parks, or national forests that are being managed by policy makers. The third level of demand is experiences. A crucial concept to understand in this demand is “satisfaction.” Satisfaction is defined by McCool as “the realization of expectations” (2006, p. 5). When engaging in an activity, visitors conjure an idea of the experience they expect to have; whether these expectations are met or not determines the level of satisfaction they experience. The last level of demand is benefit. This level of demand is unique in the regard that it is dependent on the third level of demand. Benefits can range anywhere from family bonding to conquering fears, but does not occur unless a satisfactory experience is had. These two typologies will serve as useful theoretical lenses to analyze tourists.

**Figure 8**

*McCool's Recreation Demand Hierarchy*



*Note.* McCool's Recreation Demand Hierarchy: Activities, settings, experiences, and benefits (McCool, 2006).



# Methods





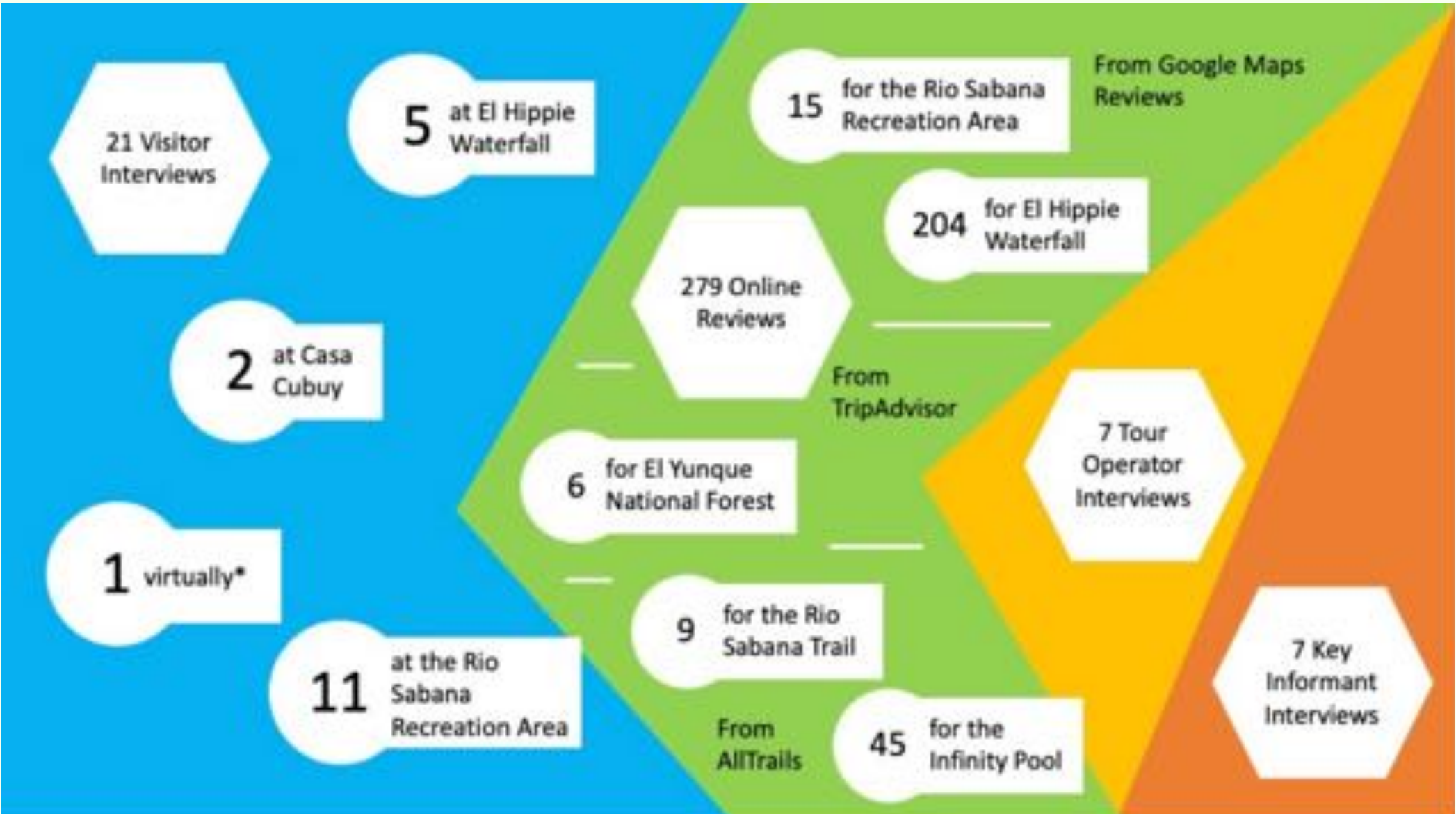
The goal of our project was to explore the perspectives and expectations of visitors to El Yunque National Forest in order to assist the USFS and local community in developing more comprehensive responses to visitors. To achieve this goal, we developed the following objectives:

- 1. Explore perceptions of El Yunque National Forest visitors through social media
- 2. Identify perspectives of tour operators to El Yunque and how they anticipate the needs of clients
- 3. Compare perspectives of key informants, including USFS employees, community leaders, and business owners, about visitors to Cubuy, Naguabo
- 4. Understand the motivations and experiences of visitors to Cubuy and the Rio Sabana Recreation Area and its associated trails

In this chapter, we detail the methods we used to obtain and analyze the information from online reviews, El Yunque visitors, tour operators, and key informants (Figure 9).

**Figure 9**

*Visual of Interviews Conducted, Reviews Used, and Locations*



*Note.* The visual shows the number of interviews by location, the number of reviews by location, and the total number of each. It also shows total tour operator interviews and total key informant interviews conducted. \*This interviewee stayed at Casa Cubuy and visited the Rio Sabana Recreation Area



# Explore Perceptions of El Yunque National Forest Visitors Through Social Media Analysis

To understand visitor motivations and perceptions, we gathered information from online review websites and social media. We selected the review websites Google Maps Reviews, AllTrails, and TripAdvisor, and the social media platform Instagram, to collect this information. We decided to use Google Maps Reviews for the Rio Sabana Recreation Area because it is the most popular search engine worldwide (Chris, 2021) and would allow us to access reviews from the widest audience. We also used TripAdvisor because the reviews were more detailed and included where visitors came from. The Google Maps reviews and TripAdvisor reviews of the Rio Sabana Recreation Area refer to the recreation area itself, and do not include the trails that branch off of it. We used AllTrails, an online review website specifically for trails, to analyze reviews from visitors who came to the

area specifically to hike. We used Instagram to understand visitor motivations and experiences for the Rio Sabana Recreation Area and surrounding trails.

We selected locations outside of the recreation area and its trails to better understand the types of visitors that come to Cubuy, Naguabo. We analyzed and coded Google Maps reviews of El Hippi Waterfall, which is close by. There were significantly more Google Maps reviews of El Hippi Waterfall than of the Rio Sabana Recreation Area. There are 672 reviews of El Hippi Waterfall, with 204 having a written component (as opposed to simply a star rating), and 54 reviews of the Rio Sabana Recreation Area, with only 35 having a written component, many of which had very little content (Google, n.d.a; Google, n.d.b). This discovery led us to develop questions for our visitor interviews to identify why El Hippi had significantly more visitors than the Rio Sabana Recreation Area despite the two areas being relatively similar. We also analyzed TripAdvisor reviews of Casa Cubuy and Casa Flamboyant, nearby bed-and-breakfasts.

We used frequency analysis and thematic content analysis to identify common themes, attitudes, and experiences from the reviews. We used the frequency analyses to create word clouds to provide a visual representation of the most frequently expressed thoughts, concerns, and experiences. In order to create word clouds that displayed accurate data about the selected area, we read through each interview to identify the context of the statement. At times, words and phrases were modified to show a repeated idea that had been expressed slightly differently between visitors.

The frequency analysis helped us form an outline for the questions we wanted to ask in visitor interviews and key informant interviews. We further developed these questions by using thematic content analysis to analyze the text. We coded the reviews and Instagram posts to identify topics and ideas that represented the range of visitor experiences.

## Identify perspectives of tour operators to El Yunque and how they anticipate the needs of their clients

We interviewed seven tour company owners and guides. We visited the Puerto Rico Tourism Company and interviewed a staff member who gave us the contact information of local tour companies, whom we called to set up interviews. Additionally, we used convenience sampling to identify interviewees when possible--for example, we approached a tour guide while we were completing a site survey at the popular El Yunque attraction Yokahú Tower and set up an interview. Our interviews ranged from 10 to 20 minutes and were semi-structured in order to give us consistent information from our range of tour guides, while still allowing for the exploration of unprepared topics.



During these interviews, we asked tour operators about the types of tours they offered, the types of tourists who took their tours (including age range and other relevant information), and what they saw as the reasons visitors took their tours, as well as what they believed drew tourists to tours in general. We also asked if there were logistical differences between smaller or specialized tours and larger, more general tours. Finally, we asked about advantages or disadvantages and logistical considerations regarding tours in El Yunque, both as a whole and in the south specifically. For a full list of interview questions, see Appendix A. We analyzed these interviews using thematic content analysis to identify themes among tour operators.



# Compare Perspectives of Key Informants, Including USFS Employees, Community Leaders, and Business Owners, About Visitors to Cubuy, Naguabo

To gain a more nuanced understanding of El Yunque visitors, we interviewed USFS employees, a prominent community leader, and local business owners about their perceptions of visitors to El Yunque (and to Cubuy, Naguabo in particular) (see Figure 10). We identified interviewees through snowball sampling. The interviews with key informants were either semi-structured (flexible but involving pre-prepared questions) or unstructured (meaning no questions were prepared ahead of time). We were able to obtain consent to record many of these interviews.

**Figure 10**  
*Key Informants Interviews*



*Note.* An image showing the 7 key informants we interviewed, including their titles and/or affiliations.

To gain a more nuanced understanding of El Yunque visitors, we interviewed USFS employees, a prominent community leader, and local business owners about their perceptions of visitors to El Yunque (and to Cubuy, Naguabo in particular) (see Figure 10). We identified interviewees through snowball sampling. The interviews with key informants were either semi-structured (flexible but involving pre-prepared questions) or unstructured (meaning no questions were prepared ahead of time). We were able to obtain consent to record many of these interviews.

In the interviews with USFS employees, we asked questions regarding their perception of tourism as it related to El Yunque National Forest, and about the permit system in El Yunque, in order to get a better idea of how it influences tour operators and in turn visitors. We asked Mariny Vázquez, a community leader, questions about her perception of tourists in the area, about the community proposal submitted to the USFS, and about her view of the relationships between the community and the USFS and the community



and visitors to the area. Specifically, we sought to understand what impact visitors did have and could have on the community (for a full list of interview questions, see Appendices B1-B3).

On site visits, we asked local business owners questions relating to their clients--for example, how many visitors did they receive in a given time frame, what did they perceive as their guests' wants and needs, how did they cater to

those wants and needs, etc. (For complete lists of interview questions for USFS employees, business owners, and the community leader, please refer to Appendices B1, B2, and B3, respectively.)

We transcribed recorded interviews in one of two ways. The first was solely manual transcription, in which one researcher would use word processing software and the audio or video of the interview to transcribe. The second was done partly using Descript, an automatic transcription software, after which the auto-generated transcripts were manually revised for mistakes and clarity. Once we transcribed the interviews, at least one other researcher who was not the initial transcriber edited the transcript for clarity. For interviews that were not transcribed, we compiled our handwritten notes from the interviews.

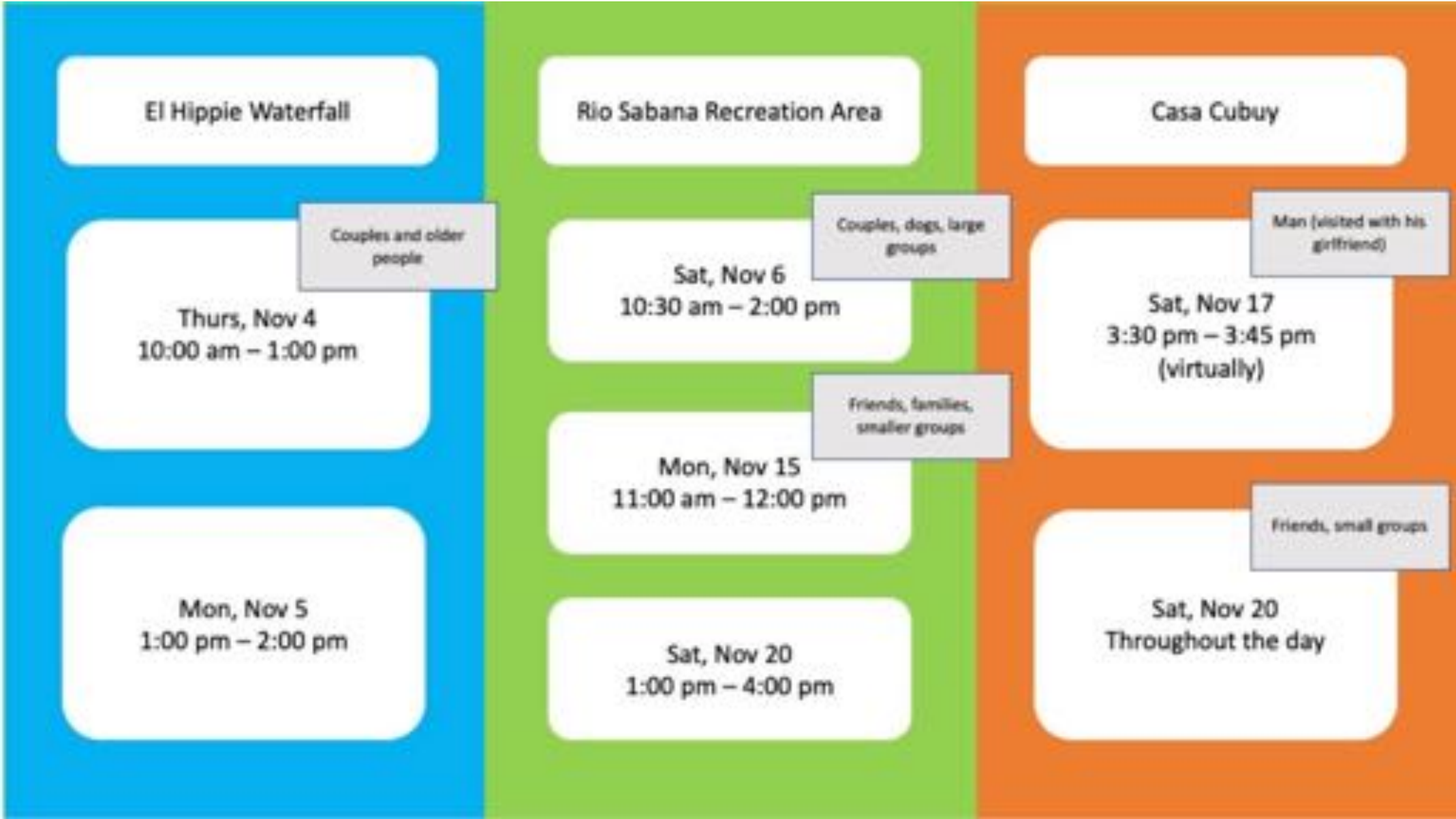
We then analyzed the interviews using thematic analysis in the same way as for the visitor interviews, and identified the themes in our key informant interviews.



# Understand the Motivations and Experiences of Visitors to Cubuy and the Rio Sabana Recreation Area and its Associated Trails

Our objective was to explore the perspectives and expectations of visitors to the southern section--specifically, in Cubuy, Naguabo. We sought to address the following research questions: Who visits the Cubuy, Naguabo, area of El Yunque; why do they select this location; and what are their perceptions and expectations of the area? To answer these questions, we conducted semi-structured interviews with 21 El Yunque visitors and evaluated their responses through the lens of the Recreation Demand Hierarchy (adapted by McCool from Driver & Brown) and Cochrane’s tourist typologies, as discussed earlier.

**Figure II**  
*Locations, Dates, and Times That Visitor Interviews Were Conducted*



*Note.* This image shows the locations visitor interviews were conducted, as well as the dates and times we visited each location. Additionally, shown in the small gray boxes are examples of the sorts of visitors we encountered on each visit.

To find visitors to interview, we first identified three locations within the southern region of El Yunque that were likely to attract visitors and visited those areas over the course of five weeks (see Figure 11). We selected El Hippy Waterfall, the Rio Sabana Recreation Area, and the bed-and-breakfast Casa Cubuy as our interview locations because of their popularity. We then used convenience sampling to identify visitors to interview at each location. We asked visitors questions such as where they were coming from, what they were expecting to see, whether this was their first time visiting El Yunque, etc. (for a complete list of visitor interview questions, please refer to Appendix C). We conducted interviews at El Hippy Waterfall on two different occasions: a Thursday and a Monday (see Figure 11 for an overview of interview locations, dates, and times). We conducted interviews at the Rio Sabana Recreation Area three times, we conducted interviews with visitors at Casa Cubuy once, and we also conducted a virtual interview with a visitor who had stayed at Casa Cubuy and been to the Rio Sabana Recreation Area (see Figure 11). We adapted Cochrane's tourist typologies and used

them in conjunction with McCool's Recreation Demand Hierarchy to analyze the data.





# Results & Analysis





## Introduction

To analyze our findings, we used two frameworks, noted earlier. We used the Recreation Demand Hierarchy adapted from Driver and Brown by McCool and Cochrane's tourist typology to explore the complexities in our data related to tourists' expectations and experiences. We found that there are competing ideas about the benefits of tourism to the area. While some feel that the Rio Sabana Recreation Area is unmaintained and that the hiking trails are unusable, others enjoy using it, either for the challenging nature of the hiking trails, the river, or the picnic pavilions. Some interviewees enjoy the area for its quiet, tranquil atmosphere and don't want it changed, but others enjoy it for socializing. We have found that visitors prefer smaller and more specialized or educational tours, and are interested in learning more about the area when they visit, though they commonly run into a lack of information. Multiple visitors have expressed that their expectations of the area did not align with their experiences.

## What do Social Media Posts Reveal about Tourists' Attitudes Towards EYNF?

As a first step to analyze social media posts, we created a word cloud through frequency analysis, which revealed common observations and experiences of visitors. . The most common words and phrases from the Rio Sabana

Recreation Area were *beautiful, family, walk/hike along road, nature, quiet, recreation, swim, and trails* (Figure 14). We first thought the phrase *walk/hike along road* was a complaint for several visitors. However, reading the reviews helped us see that while the walk from the gate to the Rio Sabana Recreation Area was worth acknowledging, not every visitor was bothered by the walk, and some even enjoyed it. Some of the lesser-used words and phrases were *not crowded, signs, and facilities*





are detrimental (Google, n.d.b). We developed questions to identify how the lack of crowding affected their experience and how it compared to other areas. We also wanted to understand how the signs and facilities affect visitor experiences and what types of visitor may be affected by unmanaged facilities versus which types are not likely to be affected.

Some of the most common words and statements of relevance from the reviews left for the Rio Sabana Trail were long pants and overgrown (See Figure 15). Many of the hikers who wanted to explore were frustrated with the state of the Rio Sabana Trail. Analyzing these lesser used words revealed that while many visitors mentioned that



Figure 12: Review of the Rio Sabana Trail on AllTrails

the Rio Sabana Trail was overgrown, not all of them felt as though it had detracted from their experience. One reviewer on AllTrails gave the trail five stars and wrote, “Loved it. Make sure to have long sleeves and long pants. It's muddy but with the right gear you won't have trouble. Enjoy!” (AllTrails, n.d.b) (See Figure 12). This visitor came prepared with the proper equipment based on their expectations of the trail. They believed it was worth mentioning the state of the trail for other visitors who might come and have different expectations, but it did not negatively affect their experience. Another visitor had a very different experience on the same trail, doing the same activity. The second visitor gave the trail one star and wrote, “We were only one kilometer [in]. There is a path but a machete is needed and the jungle covers all parts of the path” (AllTrails, n.d.b) (See Figure 13). This visitor had a negative experience because of the overgrowth and was frustrated with the state of the trail.

The most common words and phrases from the Infinity Pool Trail reviews were difficult, bring water, bring snacks, worth it, mud, and dangerous (See Figure 16). A deeper analysis of



Figure 13: Review of the Rio Sabana Trail on AllTrails

the reviews revealed that these comments were straightforward and there was no missing context behind the word or phrase. At the end of this difficult and dangerous hike, in which hikers frequently expressed the need to bring food and water, they might be likely to purchase food at a local shop or concession stand if it were available. Lesser used words were rewarding, risky, and no signs (AllTrails, n.d.a). We were particularly interested in further investigating how a lack of signs affected visitor experiences. Our analysis of online reviews and social media posts on Instagram revealed that visitors come to the Rio Sabana Recreation Area for a variety of reasons. The majority of reviews were about hiking and relaxing, but even within those

categories there were a variety of motivations and experiences. Some of the hikers came to exercise without a set plan and just wanted to explore, while others had a specific hike or destination in mind (typically a challenging one). Visitors who enjoyed relaxation also fell into different groups. Some visitors to the Rio Sabana Recreation Area mentioned spending time with family and friends. One man wrote in a TripAdvisor review about how he came to the Rio Sabana Recreation Area with a group of twenty senior citizens. They found the wide, paved path that is the closed off end of PR-191 an easy and comfortable walk. In the recreation area they enjoyed listening to the rain showers and were able to take shelter in the pavilions. They played card games and dominoes together and enjoyed the company of one another. The experience allowed them to socialize with friends and it may have helped them feel young and capable again. They had an activity and a setting which met their needs and expectations creating a positive experience. The shelters protected them from the rain which made a potentially negative experience positive. The positive experience

created benefits for them as they may have created a tighter friendship and it may have made them feel youthful and capable. Cochrane's Typology of International Tourists to National Forests and his Typology of Domestic Tourists to National Forests both lack a category broad enough to fit this group or specific enough to accurately categorize their activities and experiences. Our adaptation of the typologies allows us to place them in a category that can encompass their activity and experience and the activities and experiences of many others without restricting our description and the reader's understanding. We created the visitor type "Social" to fit visitors who came to the recreation area with the intent of spending time with others and participating in social activities, typically groups of five to twenty. Other visitors found relaxation in different ways. Many reviews and social media posts talked about the quiet peacefulness of the area and connecting to nature in a spiritual way. These visitors often talked about solo hiking or going with just one other person (Google, n.d.b). An instagram post explained how a group that visits the forest for spiritual bathing and connecting with nature

(forestbathingpr, 2021).

We also analyzed reviews of areas outside of the Rio Sabana Recreation Area to better understand other visitors that come to Cubuy, Naguabo. We analyzed Google Maps reviews of El Hippie Waterfall, another public area in the region. Experiences were similar to those in the Rio Sabana Recreation Area with many visitors relaxing, swimming, and exploring.

Our analysis of Casa Flamboyant and Casa Cubuy reviews gave us insight into visitors who engage in activities such as hiking and swimming on private properties in the area. Many of the visitors were more than satisfied with the amenities available to them on these properties. They enjoyed the private waterfalls, trails, and swimming holes and didn't often mention exploring outside of their private getaway. The places they stayed were relatively expensive and one bed-and-breakfast in the area, Casa Flamboyant, even had its own infinity pool, which visitors often mentioned (TripAdvisor, n.d.b).





**Figure 14**

*Word Cloud from Rio Sabana  
Recreation Area Visitor Reviews*

*Note. Some of the most frequently mentioned words and phrases are: family, quiet, beautiful, nature and walk/hike along road. Less mentioned words and phrases are: not crowded, signs, and facilities are detrimental.*



**Figure 15**

*Word Cloud from Rio Sabana Trail Visitor Reviews*



*Note.* Some of the most frequently mentioned words and phrases are: *overgrown and long pants*. Less mentioned words and phrases are: *worth it*.

**Figure 16**

*Word Cloud from Infinity Pool Visitor Reviews*



*Note.* Some of the most frequently mentioned words and phrases are: *bring water, bring snacks, difficult, and worth it*. Less mentioned words and phrases are: *rewarding, risky, and no signs*.



## What Kinds of Experiences do Tour Operators Perceive as Desirable to Their Customers?

In our thematic content analysis of tour operator interviews, we identified eight common patterns of discussion: types of visitors, types of tours, tour guide preferences, visitor preference for certain tours, general visitor preferences, benefits of El Yunque/nature tourism, challenges of El Yunque/nature tourism, and operating logistics.

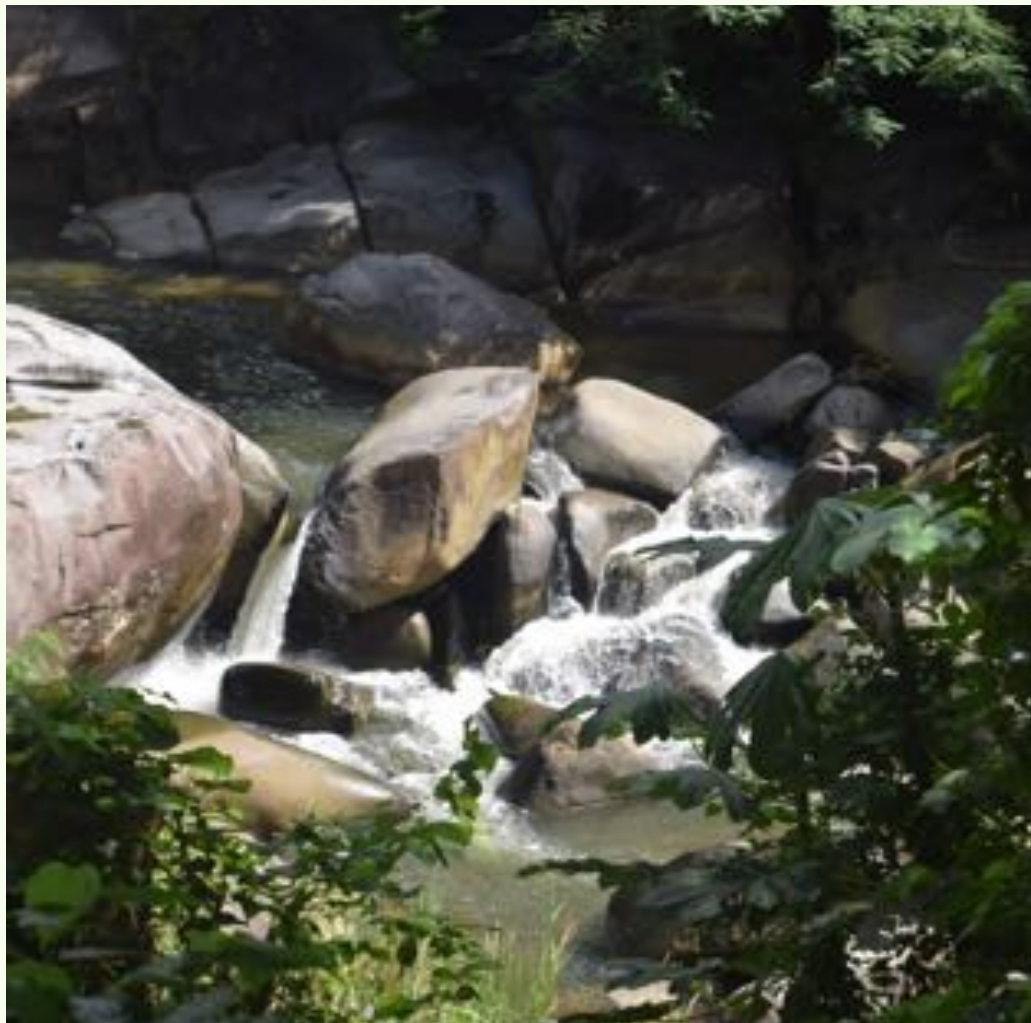
From our analysis of the types of visitors, we learned that most visitors to Puerto Rico are from the United States, and that tourists have a variety of motivations and interests. We also found that newer styles of tours, such as themed, self-guided tours, attract younger customers than more traditional tours (Puerto Rico Tourism Company Employee, personal communication, December 1, 2021; Clue Murder Mystery, personal communication, December 1, 2021).

The majority of tour operators and tourist officials we interviewed believed the rainforest is a popular tourist destination, and that El Yunque is one of the top 5 attractions tourists ask about. They noted that there is a movement among tourists towards outdoor adventure and experience, which is supported by the findings of Cavagnaro et al. (2018). (Puerto Rico Tourism Company Employee, personal communication, December 1, 2021). This interest in outdoor adventure tourism is not well served in the south of EYNF, according to the two tour guides we interviewed who travel to El Yunque. Both only operate in the north because there is less demand for tour operators in the south, in part because the trails are not adequately maintained for tours, and in part because the area is less developed in terms of attractions or facilities. Guides see El Yunque tourists as interested in areas that are more equipped for tourism than the south (PR Paradise Tours, personal communication, October 29, 2021; Enchanted Eco Tours, personal communication, December 2, 2021).

We found that visitors prefer specialized and educational tours. Specialized and educational tours are tours that focus on a specific niche or subject, or educate people about a certain knowledge base. They include: educational El Yunque ecology tours, nighttime El Yunque tours, historical tours, cultural tours, culinary tours, self-guided walking tours, and architectural tours. The two guides we talked to about tour style stated that people like to know what they are seeing, which is one of the reasons why visitors like their tours, and that being a guide feels similar to being a teacher (PR Paradise Tours, personal communication, October 29, 2021; PR Historical Buildings Drawings, personal communication, December 2, 2021).

Additionally, after analyzing guide preferences and visitor preferences for certain tours, we found that guides prefer smaller tours and believe that visitors prefer the same. The two guides we talked to who discussed the size of their tours stated that smaller tours were better for the customer, as it is more fun and private for visitors to do a small tour, and more fulfilling for

the guides themselves. Tour guides also described how smaller tours require the same effort as larger ones and that it was more fulfilling to conduct small tours because it is easier to travel with the clients and lead a group with less people, allowing for a better visitor experience (Get Shopped PR, personal communication, December 1, 2021; Las Tortugas, personal communication, December 2, 2021).



## **What are the Insights of USFS Employees, Business Owners, and a Key Community Leader Regarding Visitors to EYNF?**

Visitors to El Yunque National Forest mainly come from Europe, the U.S., and other parts of Puerto Rico (M. Vázquez, personal communication, October 28, 2021). The majority of Casa Cubuy's guests usually come from the northeastern U.S., something that hasn't changed much since the pandemic (M. Kavanaugh LaForce, personal communication, November 19, 2021). Before Covid-19, the majority (approximately 70%) of Casa Flamboyant's guests were from the United States; Post-Covid, about 60-65% of Casa Flamboyant's guests have been from Puerto Rico--an increase of around 59% from before the pandemic (R. Miranda, personal communication, November 9, 2021).

Mariny Vázquez said that tourism is changing—millennials want experiences (M. Vázquez, personal communication, October 28, 2021; Cavagnaro et al., 2018). Visitors who come to the south come because they seek it out. For example, they may desire a less crowded or wilder experience than what they would find in the north.

Additionally, Mariny views community-based tourism as the tourism of the future. She said that tourism can become “fragmented” (e.g., visitors may book one tourism company for one experience and another for another experience). In contrast, community-based tourism would be more cohesive and comprehensive, able to offer multiple experiences through one “operator” (the community). Mariny also mentioned that currently, tourists are like “ghosts” to the community; they often leave and enter without the community knowing, since there are not many shops or other places to stop in the area (M. Vázquez, personal communication, October 10, 2021). The community wants to understand who comes to enhance visitors' experience and to



find opportunities for their own connection and economic growth. She said that the south needs a market where it is promoted. The community would like to offer a more cohesive tourist experience, as well as one that has a slower pace (in the north, tourism is fast-paced and often drive-by). People could come to the south and would visit the same forest, but experience it in a different way. The south mainly has informal tours—not many formal tours exist (M. Vázquez, personal communication, October 10, 2021).

When asked what would need to occur in order for a new recreation area to be created, Pedro Rios said that “the driver to get there has to be either the community or the [public] asking for something” (personal communication, November 4, 2021). This indicates that public demand is not only influential but in fact the main impetus for the creation of new amenities (or at least recreation areas). Additionally, our interview with Myrna Tirado, USFS Realty Specialist (aka Special Uses Program Specialist), informed us that, compared to other forests in the region, El Yunque has a high demand for

recreational activities; specifically, it has a high demand for “outfitting and guiding” (M. Tirado, personal communication, December 2, 2021). Myrna also mentioned that tour operator and visitor demand influences the distribution of permits, which in turn influences visitor concentration, creating a sort of feedback loop (personal communication, December 2, 2021).

## Range of Visitor Experiences

We adapted Cochrane’s tourist typologies to help us identify different visitor inclinations among the people we interviewed (Figure 15). We were able to better recognize demographic and behavioral characteristics for each type and understand their preferences for facilities and experiences. One of the most significant changes we made to the Cochrane’s typologies was broadening the visitor base to all visitors at the El Yunque portion of Cubuy and Rio Blanco, as opposed to exclusively international or domestic tourists. We made this decision based on our findings about where visitors to the Rio Sabana

Recreation Area come from. A majority of the visitors we spoke to at this location were from Puerto Rico, United states, or even Europe. Since the Rio Sabana Recreation Area is a major focus of our project, we would be excluding a large portion of relevant visitors if we only looked at international or domestic tourists so we combined the two typologies into one.

The typologies that we developed allowed us to better understand the types of tourists that visit the southern part of El Yunque. Through these typologies, along with the Recreation Demand Hierarchy, we were able to better understand the motivations and expectations of the visitors. By combining our visitor interviews, online reviews, tourist operator interviews, and key informant interviews, we were able to build a typology to give us a framework through which to interpret visitors, and we used that framework, as well as other knowledge gained through the course of our research, to gain a deeper understanding of visitor perceptions and experiences.

# Adapted from Cochrane's Typologies of Tourists

## Exclusive

This category refers to visitors who are willing to pay high prices for comfort, exclusivity, and access to secluded areas. These tourists would most likely stay at Casa Flamboyant, the most expensive AirBnB in the area. They are able to engage in “secret” recreation activities such as hidden waterfalls, swimming holes, etc. on property where access is controlled by the bed and breakfast.



Casa Flamboyant

## Social

The “social” visitors are visitors that usually come in larger groups or multigenerational families. These visitors are not usually adventurous and want easily accessible places. Usually the families are from Naguabo and come for day trips. These visitors would appreciate informational signs throughout the area. There are seven out of 21 visitors who captured many qualities of this typology.



Pavilion in the Rio Sabana Recreation Area

## Tranquil

The “tranquil” visitors tend to be by themselves or in small groups. They want to connect with the forest in a meditative way. They stay on the path in the Rio Sabana Recreation Area and go on a groomed trail. These visitors tend to be worried about the peace being ruined by many people and loud people. Out of our sample of 21 visitors two shared the characteristics of a “tranquil” typology.



Blocked off PR-191



# Adapted from Cochrane's Typologies of Tourists

## Hiking

The “hiking” typology refers to visitors that want to go on short- to medium-distance hikes. This category can include a large age range but usually consists of ages 20-50. These people tended to walk through the recreation area on their way to an easy trail or at El Hippie exploring the waterfall. This typology prefers well-marked trails, food and beverage accommodations, directional signs, level ground, etc. six out of 21 of the visitors we interviewed portrayed the qualities of this typology.



*Hiking trail near Rio Sabana Recreation Area*

## Hiking Plus

The “hiking plus” category takes the “hiking” typology and stretches its boundaries. These visitors tend to be fit and in the range of 20-40 years old. They look for specific hikes and destinations and travel to them. They like more challenging trails that are not necessarily maintained. Four out of the 21 visitors illustrated characteristics of the “hiking plus” typology. Most of these visitors were going to the infinity pool.



Infinity Pool Trail

## Special Interest

“Special interest” visitors are visitors that are looking for something very specific while traveling. These visitors tend to form groups around this common factor and travel together. These interests might span from looking specifically for waterfalls to bird watching groups. This typology of visitors usually stays in the area of their interest for a few days. They are interested in tours in the area, especially if those tours involve their special interest. Two out of 21 visitors fit some or most of the criteria for being “special interest” visitors.



Petroglyph near El Hippie Waterfall

Visitor Type	Demographic and Behavioural characteristics	Preferences for facilities and experiences
Exclusive	Willing pay a lot for a secluded area and special experience, exclusive, small weddings/engagements, willing to explore but mostly stay at bnb, mostly relax	High-end location, "secret" recreation opportunities (ie swimming holes, waterfall, hiking trails), enjoy small tours with local guides
Tranquil	By themselves or with one other person, want to connect with the forest in a quiet and meditative way	Concerned about visitors being noisy and playing loud music in the recreation area, somewhat maintained trails
Social	Usually with family (kids and/or elderly), not particularly adventurous, may be from Naguabo, typically day trippers	Picnic area, easily accessible river, accessibility for those with physical limitations, safe activities, food and beverage options, clear directional/informational signs
Hiker	20s to 50s, although may come in family groups, come for short to mid length hikes,	Well maintained trail, clear trail signs and markers, relatively level terrain, casual hike/stroll, dog friendly spaces, clear directional/informational signs, food and beverage options, water bottle filler
Hiker-Plus	Physically fit, looking for a specific hike/destination and are willing to travel for it	Challenging trails, marked but not necessarily well maintained, trail leads to specific location (mountain top, waterfall, swimming hole, look-out point), water bottle filler
Special Interest	Dedicated to a specific hobby, travels in small groups of people with shared interests, range is age, fairly adventurous	Housing for a few days near their interest, small local tours, informational signs about flora, fauna, and history, food and beverage options

**Figure 17**  
Typology of Visitors which we adapted from Cochrane's typologies of tourists

The typology to the left allows for a somewhat broad categorization of visitors. As useful as these are for understanding the types of visitors that come to the Rio Sabana Recreation Area, they do not provide the whole story. In order to gain a more nuanced understanding of individuals, we created visitor profiles that dive deeper into their experiences during their time here. These profiles were analyzed and created through the Recreation Demand Hierarchy and provided insight into the complex stories of visitors.



## Will Silverstein

Will Silverstein is a tourist that came to Puerto Rico from Keene, New Hampshire. In New Hampshire, he is an innkeeper, and he came to vacation in Puerto Rico for seven days as a way to detach from the outside world. He spent two of his seven days in Casa Cubuy, which is located in the southern region of El Yunque. He wanted to appreciate the forest and go on a hike, and was referred to a trailhead in the recreation area by the owner of Casa Cubuy. However, once he arrived, he found the trail to be much more unmanaged than he had expected. He was not prepared for the overgrowth and blade grass on the trail. He stated that it was “hard hiking, we only spent, you know, 30 minutes bushwhacking” before he turned back with cuts on his feet, frustration, and disappointment (W. Silverstein, personal communication, November 17, 2021). Will had an expectation that he would be able to hike through the rain forest; however, his setting (an unmanaged trail) affected his experience in this particular activity. He was left dissatisfied. However, Casa Cubuy provided a private trail down to the river,

which Will said he really appreciated. He enjoyed exploring the surrounding area and traveling up and down the river.. rea. He ate lunch on the rocks, read books by the river. Will stated that “we went out there to you know kinda just detach, and read” though this was his main goal he still said that he “would’ve loved it if there had been more hiking trails” (W. Silverstein, personal communication, November 17, 2021). Despite his experience in the unmanaged trail, he went back to the continental United States satisfied with accomplishing his goal of escaping his high-stress job as an innkeeper and reconnecting with Puerto Rico from his childhood vacations. (W. Silverstein, personal communication, November 17, 2021).





## Michael Ciota

Michael (Figure 18) is a retiree that has lived in Cubuy, Naguabo, for the past two years. He is a former lawyer and has lived in many places around the world before moving to Cubuy. He used to live in Cabo Rojo, which is arid, but when he “saw the green wet of the forest [he] just fell in love and moved here” (M. Ciota, personal communication, November 6, 2021). He has walked from his house to the Rio Sabana Recreation Area (about a 30 minute walk) almost every day for the last two years.



Figure 18: Photo of Michael Ciota



He has befriended two dogs in the area that now walk with him wherever he goes. Michael loves how the southern region of El Yunque is more “quiet [with] a smaller trace of [human] intrusive input here” and he is not fond of disruptions to it (M. Ciota, personal communication, November 6, 2021).

He recounts a time when the gate was open and he saw countless cars driving up. He complained that “it disrupted the quiet” that makes the area so special (M. Ciota, personal communication, November 6, 2021). Michael enjoys the area as a place that is seemingly untouched by the outside world. After his many years working a high-intensity job, the peace and tranquility of the forest restores him (M. Ciota, personal communication, November 6, 2021).







**Figure 19: Photo of Cuban Dental Students**

## **Cuban Dental Students**

This group of 10 (Figure 19) are all from Cuba. They came to Puerto Rico for dentistry school and decided to stay in San Juan. The group ranged from first-time visitors to those who were visiting for the third time. Their goal for this particular trip was to attempt a hike to the infinity pool, which they were told about by a friend. At first, they had some trouble finding the trail, and once they got to it, they realized that it was too difficult for the majority of the group. Two of their group decided to keep going, and the rest of them turned back. The eight that turned back went to the Rio Sabana Recreation Area. They relaxed in the gazebo and ate food. They emphasized how bad the condition of the bathrooms was and that the lack of signs was confusing. After that, they walked down to the swimming hole by the gate and spent the rest of their time swimming while waiting for their last two members. Though they were disappointed by the infinity pool hike, condition of the bathrooms, and lack of signs for trails, they were happy to get out of the city and reconnect with nature (Friends from Cuba/San Juan , personal communication, November 20, 2021).



## Group of Senior Citizens

A group of twenty senior citizens visited the Rio Sabana Recreation Area to picnic and play cards, dominos, or other games. They said that if you want to spend time in the rainforest and are looking for a quiet place to play games, the recreation area is “well worth the visit” (Patti W, 2012). The review said the recreation area is “innovative” and “the place” for those who are



not “avid hiker[s] and just want to experience the wonders of nature” (Patti W, 2012). The group visited on a “perfectly rainy day” (Patti W, 2012) and took a “beautiful walk between the [rain] showers” (Patti W, 2012). They really enjoyed being immersed in nature and hiking through the forest. Additionally, spending quality time with friends made them grow closer and strengthened their bond.





## Andrea Caspari

Andrea is a resident of Massachusetts, United States, who stayed in Casa Cubuy for two nights and made plans to return in the future. She found Casa Cubuy when looking for an “eco style” stay in the forest (A. Caspari, personal communication, November 29, 2021). She spent most of her time enjoying the natural beauty of the area, and also spent time eating lunch by the river, walking through the Rio Sabana Recreation Area, and looking at flora and fauna. Similarly to Will, she tried to hike unmanaged trails and had to turn around due to them being overgrown, slippery, and covered in sharp grass. Andrea was also warned against certain trails by Marianne. Andrea said that she was interested in learning about the impact of Hurricane Maria as someone who has never lived through a hurricane of that severity. She was also interested in the variety of birds, butterflies, and other wildlife, but would have liked to find natural history guides to the area . She would have liked to have found guides on El Yunque birds, histories of local communities, and information about the impact of Hurricane Maria on the ecology of the region. Andrea (A. Caspari, personal communication, November 29, 2021).





## Limitations

A limitation of our research was the language barrier we sometimes encountered between us and the people with whom we interacted. Visitors that were on vacation from the U.S. typically spoke fluent English, so there was no language barrier. Many people that visited from across Puerto Rico spoke at least some English, and we were able to communicate with them. Most of the Puerto Ricans we spoke with who were roughly fifty and older did not speak English well or at all. When there was a multigenerational group, younger members, ranging in age from early teens to forties, tended to know more English than the older members and would speak for the group. Interviews conducted with fluent English speakers tended to be longer and more in-depth than interviews conducted with non-fluent English speakers.

Another limitation is where we conducted our research. Mariny Vázquez informed us that there is no central meeting or gathering space where local residents spend time and there is no local

store or restaurant that community members frequent.

The locations we selected to conduct research allowed us to meet with visitors from the U.S., visitors from Puerto Rico who had traveled to the location, and locals. However, our sampling strategy was limited by the locations we visited and the days and times of the week. We were only able to spend time at El Hippy Waterfall, the Rio Sabana Recreation Area, and Casa Cubuy. We went to El Hippy on a Monday and a Thursday, so we were able to speak to people who visit those locations during the week but are unable to make conclusions about who visits on the weekend. We went to the Rio Sabana Recreation Area once on a Monday and twice on Saturdays. The second Saturday we went we were able to stay later in the day, until 5pm, and spoke with more people than we had on the previous two trips. Since we only spent a very small portion of time at the Rio Sabana Recreation Area during the week, we cannot draw conclusions about who visits during the week. Due to language barriers and a lack of a

central meeting location we were unable to speak to many community members.

Another limitation of our research was the time of year that we were in Puerto Rico conducting fieldwork. Peak tourist season is mid-December to mid-April, and our research was conducted from mid-October to early December (Puerto Rico Travel Guide, 2021). Visitors who come to Naguabo from the U.S. and other countries during tourist season may have different motivations for coming and different perspectives than visitors who were there when we conducted our research. In order to address this limitation, we read through and coded online reviews about the Rio Sabana Recreation Area and El Hippy Waterfall. Because these reviews covered a wider range of dates than we were able to cover with in-person interviews, they were helpful for understanding common themes and opinions about the areas during other times, such as peak tourist season.



# Conclusion & Recommendations

## Recommendations

### Additional Signs

Online reviews and visitor interviews both revealed that visitors would like more signs that indicate where the Rio Sabana Recreation Area is and informational signs about the visitors and the trails. We identified three main locations for signs to be placed with this information (Figure 20). The first spot is in the barrio Florida at the point where PR-191 takes a sharp left. Visitors sometimes miss the turn and would benefit from a sign that simply says Área Recreativa Río Sabana, Rio Sabana Recreation Area, the distance from that point to the recreation area, and an arrow indicating that visitors should turn (Figure 21).

The second location is the entrance gate for the recreation area. This sign should explain the distance from the gate to the Rio Sabana Recreation Area and the activities and facilities that are located there. Placing a sign here would encourage visitors to take the walk to the recreation area because they know the distance and are aware of the recreation and hiking opportunities there (Figure 22).

The third location for signs is the Rio Sabana Recreation Area. The first type of sign that should be made is a sign for the Rio Sabana trail that includes the name of the trail, the length of it, and a map that shows where it goes and how it connects to the tradewinds trail (Figure 23). The next type of sign that should be placed in the area is signs about the flora, fauna, and history of the area. Several

visitors expressed interest in learning more about the area with one explaining that she wants to understand what she is looking at (Figure 24).

### Trail Maintenance

Lack of maintenance of the Rio Sabana Trail was mentioned by hikers in online reviews and in visitor interviews. Information from these sources revealed that while lack of maintenance was worth mentioning there were mixed reviews from visitors about how it affected their experience. Some visitors expressed that this negatively affected their experiences while others found it to be a worthwhile challenge. We found that nearly all of the visitors wanted the trail to be small and feel natural, but many wanted it to be easier to navigate. Based on visitor feedback we believe the best way to appeal to a wide range of visitors is to



**Figure 20**

Map Showing Potential Locations for Directional and Informational Signs, for the Rio Sabana Recreation Area, Along PR-191 (Google Maps, n.d.b).

maintain the trail more regularly but to keep it as small and natural as possible. We also believe it would be beneficial to add more trails that connect throughout the forest. A larger trail network could better connect the North and the South of the forest, a connection that has been lost since the division of PR-191.

### **Food and Beverages**

The sale of food and beverages at the Rio Sabana Recreation Area and in the Cubuy area would increase those locations' attractiveness to visitors. Many visitor groups interviewed explicitly mentioned that they would like it if there were restaurants and/or refreshments at the recreation area or at El Hippié, and bed-and-breakfast owners said that restaurants in the area would likely appeal to guests (see Figure 25 for an example of a concession stand in the north). The owners recounted a time there was a restaurant down the road which was very popular with the locals as well as tourists. Of the visitors who mentioned they would like to see food in the area, several specified that they would enjoy seeing a small grocery store with pre-made food or restaurants or stands that sell Puerto Rican food or other simple options.

### **Soliciting Public Attitudes**

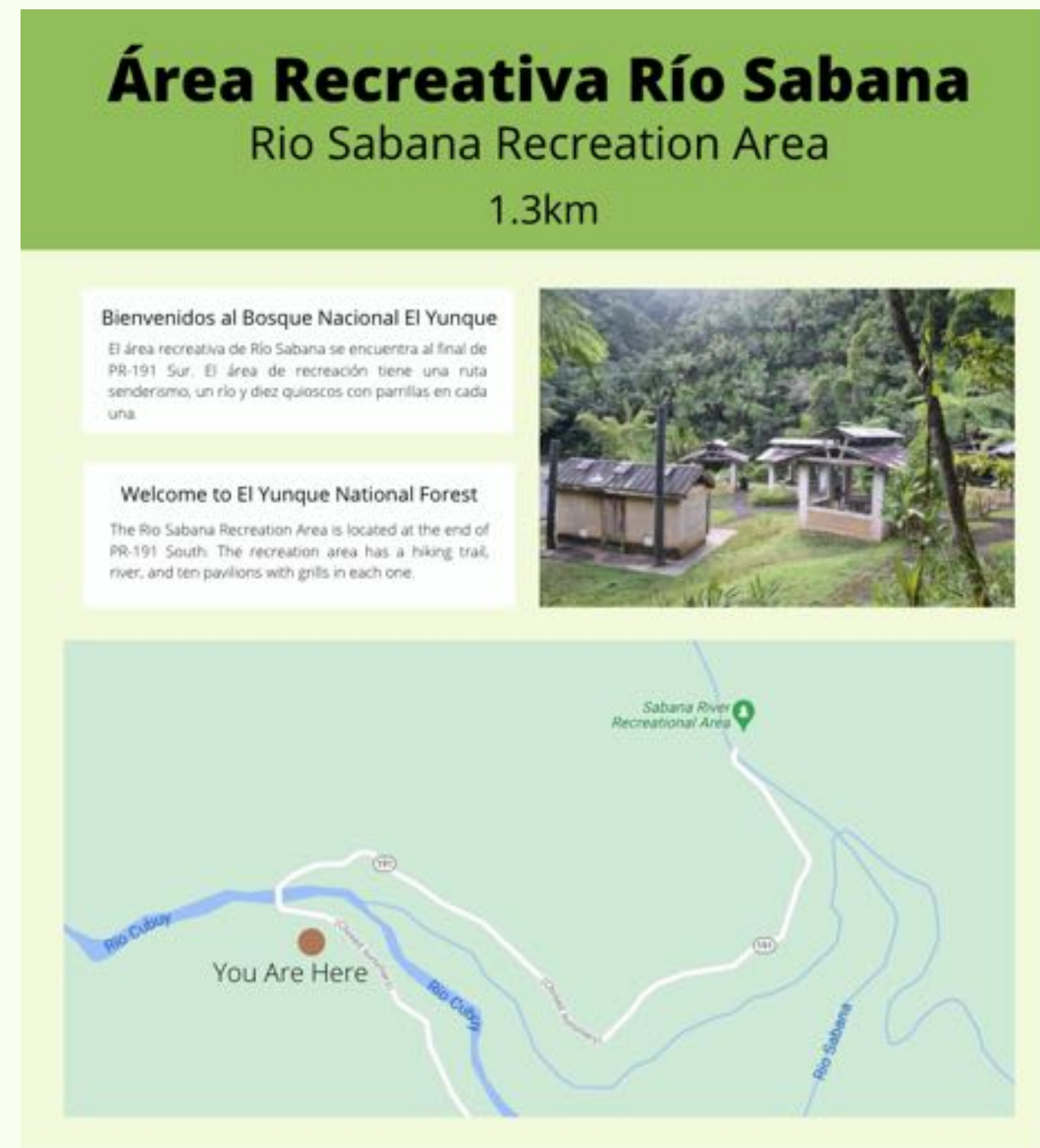
The gate where visitors park and walk past towards the Rio Sabana Recreation Area was an effective place to stop visitors and conduct interviews on their way out. People were not on their way to the recreation area, trail, or river, so it was easier to talk to them, and they had just had an experience they could discuss. It would also be beneficial to conduct interviews on a variety of days and at a variety of times in order to get information for a wider range of visitors who come to the area for different purposes, which could relate to the time or day they visit.





**Figure 21**

*Example of Directional Road Sign for the Rio Sabana Recreation Area*



**Figure 22**

*Example of Informative and Directional Road Sign for the Rio Sabana Recreation Area*

*Note.* Left: An example of a directional road sign for the Rio Sabana Recreation Area. Right: An example of informative and directional road sign for the Rio Sabana Recreation Area.

# Areas For Future Research

## Explore Appropriate Entrepreneurial and Tourism Development Opportunities Connected to the Rio Sabana Recreation Area

An area of possible future research is the exploration of entrepreneurial and tourism development opportunities connected to the Rio Sabana Recreation Area. The community of Cubuy plans to introduce activities and economic opportunities. They hope to develop opportunities for locals to profit off of tourism in the area through experiences, information, facilities and services. They would also like to create more opportunities for local entrepreneurship involving artisans, restaurants, markets, and farmers selling their goods. It could be beneficial to dedicate research to identify specific possibilities for tours, events, businesses, etc.

## Identify Sustainable and Local Business Practices that could be Applied to the Rio Sabana Recreation Area

The goals for the Rio Sabana Recreation Area

involve introducing activities and opportunities for locals to benefit from tourism involving experiences, information, facilities, services, and

goods for sale. All of this is intended to be done sustainably. It could be beneficial to dedicate research to identify sustainable practices that

*Note.* This is a map of Mt. Britton trails with information about the trails. A permanent map like this one can be added to the Rio Sabana Trails to help hikers understand the distance of the trail and where it leads to.



**Figure 23:** Map and Information for Mt. Britton Trails



*Note.* These images were taken of signs in northern El Yunque (upper-left and lower-right) and the bed-and-breakfast Casa Flamboyant (upper-right and lower-left).



**Figure 24**

Examples of  
Informational  
Signs about Flora  
and Fauna



could be utilized by the community in the development of tourism.

An area of possible future research is the exploration of entrepreneurial and tourism development opportunities connected to the Rio Sabana Recreation Area. The community of Cubuy plans to introduce activities and economic opportunities. They hope to develop opportunities for locals to profit off of tourism in the area through experiences, information, facilities and services. They would also like to create more opportunities for local entrepreneurship involving artisans, restaurants, markets, and farmers selling their goods. It could be beneficial to dedicate research to identify specific possibilities for tours, events, businesses, etc.

*Note.* The north had a stand with beverages and food near the parking lot of Yokahú Tower. The south does not have concession stands.



**Figure 25**  
Concession Stand in the Northern Area of El Yunque National Forest



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# Appendix A

## Interview Questions for Tour Operators

### **Consent Script:**

Hello \_\_\_\_\_,

We are students from Worcester Polytechnic Institute. We are doing a research project about entrepreneurship opportunities in and around El Yunque National Forest, as well as the perspectives and insights of visitors, with the United States Forest Service, the agency currently managing EYNF.

May we interview you about your visitor experiences in El Yunque, entrepreneurship in Naguabo, and the United States Forest Service?

May we take notes of this interview? The information you share with us for research purposes only. Do we have permission to quote you in our report?

Do we have your permission to use information that may identify you, such as your name? If not, what you tell us will remain confidential, meaning we will not record any of your personal information and will not use your name or other identifying information in our report.

When we are finished with our report, it will be available online on our school's database. If you would like us to email it to you when it is complete, please let us know and we can do that. If at any point we ask a question you do not want to answer or do not feel comfortable answering, let us know, and we will move on to another question. If you don't understand a question, let us know, and we will do our best to clarify or explain.

This interview will likely take between 10 and 30 minutes. Before we start, do you have any questions for us?

### **Questions:**

What sort of tours do you offer?

Who are your primary customers?

What kinds of tourists do you have as customers?

What are they usually looking for?

What would need to happen to develop a tour in the south of El Yunque?

# Appendix B

## Interview Questions for USFS Employees

### **Consent Script:**

Hello \_\_\_\_\_,

We are students from Worcester Polytechnic Institute. We are doing a research project about entrepreneurship opportunities in and around El Yunque National Forest, as well as the perspectives and insights of visitors.

May we interview you regarding visitors to El Yunque?

May we take notes of this interview? The information you share with us for research purposes only. Do we have permission to quote you in our report?

Do we have your permission to use information that may identify you, such as your name? If not, what you tell us will remain confidential, meaning we will not record any of your personal information and will not use your name or other identifying information in our report.

When we are finished with our report, it will be available online on our school's database. If you would like us to email it to you when it is complete, please let us know and we can do that. If at any point we ask a question you do not want to answer or do not feel comfortable answering, let us know, and we will move on to another question. If you don't understand a question, let us know, and we will do our best to clarify or explain.

This interview will likely take between 10 and 30 minutes. Before we start, do you have any questions for us?

### **Questions:**

What would it take to create a new recreation area?

Is there a limit on the number of permits? If so, is there a certain number per region or for the whole park?

What are the requirements to obtain a permit?

Are there different types of permits?

Does the permit process differ between the north and south of the forest?



# Appendix B2

## Interview Questions for Business Owners

### **Consent Script:**

Hello \_\_\_\_\_,

We are students from Worcester Polytechnic Institute. We are doing a research project about entrepreneurship opportunities in and around El Yunque National Forest, as well as the perspectives and insights of visitors, with the United States Forest Service, the agency currently managing EYNF.

May we interview you about your experience owning an AirBnB?

May we take notes of this interview? The information you share with us for research purposes only. Do we have permission to quote you in our report?

Do we have your permission to use information that may identify you, such as your name? If not, what you tell us will remain confidential, meaning we will not record any of your personal information and will not use your name or other identifying information in our report.

When we are finished with our report, it will be available online on our school's database. If you would like us to email it to you when it is complete, please let us know and we can do that. If at any point we ask a question you do not want to answer or do not feel comfortable answering, let us know, and we will move on to another question. If you don't understand a question, let us know, and we will do our best to clarify or explain.

This interview will likely take between 10 and 30 minutes. Before we start, do you have any questions for us?

### **Questions:**

When do visitors usually come?

How long do visitors usually stay?

What sorts of things are visitors usually interested in doing when they come?

Do you recommend any local tours to your guests?

Where do your guests usually eat?

# Appendix B3

## Interview Questions for Community Leader

### **Consent Script:**

Hello \_\_\_\_\_,

We are students from Worcester Polytechnic Institute. We are doing a research project about entrepreneurship opportunities in and around El Yunque National Forest, as well as the perspectives and insights of visitors, with the United States Forest Service, the agency currently managing EYNF.

May we interview you about the proposal submitted to the USFS in 2012?

May we take notes of this interview? The information you share with us for research purposes only. Do we have permission to quote you in our report?

Do we have your permission to use information that may identify you, such as your name? If not, what you tell us will remain confidential, meaning we will not record any of your personal information and will not use your name or other identifying information in our report.

When we are finished with our report, it will be available online on our school's database. If you would like us to email it to you when it is complete, please let us know and we can do that. If at any point we ask a question you do not want to answer or do not feel comfortable answering, let us know, and we will move on to another question. If you don't understand a question, let us know, and we will do our best to clarify or explain.

This interview will likely take between 10 and 30 minutes. Before we start, do you have any questions for us?

### **Questions:**

How do you imagine the community proposal will impact the community?

What does tourism look like in the south? How does it compare with the north?

What can you tell us about the Rio Sabana Recreation Area?



# Appendix C

## Interview Questions for Visitors

### **Consent Script:**

Hello \_\_\_\_\_,

We are students from Worcester Polytechnic Institute. We are doing a research project about entrepreneurship opportunities in and around El Yunque National Forest, as well as the perspectives and insights of visitors, with the United States Forest Service, the agency currently managing EYNF.

May we interview you about your visitor experiences in El Yunque, entrepreneurship in Naguabo, and the United States Forest Service?

May we take notes of this interview? The information you share with us for research purposes only. Do we have permission to quote you in our report?

Do we have your permission to use information that may identify you, such as your name? If not, what you tell us will remain confidential, meaning we will not record any of your personal information and will not use your name or other identifying information in our report.

When we are finished with our report, it will be available online on our school's database. If you would like us to email it to you when it is complete, please let us know and we can do that. If at any point we ask a question you do not want to answer or do not feel comfortable answering, let us know, and we will move on to another question. If you don't understand a question, let us know, and we will do our best to clarify or explain.

This interview will likely take between 10 and 30 minutes. Before we start, do you have any questions for us?

### Questions:

What brought you to [this location]?

Have you ever visited El Yunque/[this location] before?

Where are you from?

Have you made use of any of the amenities in the area? Are there any you would like to see?

Would you return to [this location]? Why or why not?