UNIVERSITÀ DEGLI STUDI DI PADOVA

Dipartimento Territorio e Sistemi Agro-forestali

Department of Land, Environment Agriculture and Forestry

Corso di laurea magistrale/Second Cycle Degree (MSc)

in Forest Science

Financing ES & Managing Congestion: Exploring the Role of Parking Fee with A Stated Preference Approach in Cansiglio Forest, Italy

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Summary

List of Figure

List of Table

List of Acronyms and abbreviations

ES	Ecosystem Services
TEV	Total Economic Value
CVM	Contingent Valuation Method
DCE	Discrete choice experiment
WTP	Willingness to pay
PES	Payment for ES

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Abstract

This thesis delves into an innovative approach to addressing parking congestion in Cansiglio Forest, Italy, while financing essential ecosystem services (ES). It highlights the significance of valuing ecosystems in urban planning and offers a practical method for setting parking fees based on the non-market value of these services.

In response to the growing demand for nature-based solutions, the Cansiglio Forest, like many other natural areas, faces challenges from increasing visitor numbers. This research seeks to analyze and find a solution to the parking congestion issue, which often results in an overcrowded and unpleasant experience for visitors and takes a toll on ecosystem services. To achieve this, the thesis thoroughly explores the potential benefits of implementing parking fees as a management tool.

A central component of this study involves gathering empirical evidence and insights through a comprehensive online survey. By examining the preferences of visitors and those considering a visit, the research connects the dots between visiting patterns, objectives, and activity preferences, and the resulting parking congestion in Cansiglio. The thesis suggests a unique solution by advocating the integration of parking fees to effectively manage this congestion. It also explores how the revenue generated from these fees can be employed to finance ES and advance sustainable development.

In summary, this study contributes to our understanding of how ecosystem valuation and innovative financing strategies can be harnessed to tackle parking congestion and promote sustainable urban development in forested areas. It offers a pragmatic approach that can serve as a model for addressing congestion issues and underscores the vital role of financing ES in the face of rapid urbanization. This research goes beyond the academic realm; it presents an opportunity to embrace change and responsible stewardship of the natural world. It envisions a future where urban development and the conservation of Cansiglio Forest are in harmony, creating a sustainable environment for both visitors and the forest's invaluable ecosystem services.

1. Introduction

We live in a rapidly growing urbanization era. According to the United Nations study in 2018, the world's urban population was estimated to be around 55% and with the tremendous help of development, it is expected to rise to 68% by 2050 (United Nations, 2018). The world bank studies on urban population statistic has shown that from 1960 to 2022, world urban population has increased from 1.02 billion to 4.52 billion, making it 57% of the total world population (The World Bank, 2022).

Urbanization brings advancement of living life with economic growth, industrialization, social migration, political transitions but it certainly comes with a lot of disadvantages as well. Increased stressors and factors like an overcrowded and polluted environment, high levels of violence, and less social interaction are all effects of urbanization that have an impact on mental health (Lafortezza & Sanesi, 2019; Ventriglio et al., 2021). These issues led people to escape to nature as people in urbanized civilizations seem to frequently feel that encountering nature helps them unwind from stress and exhaustion and enhances their health and well-being (Akhoundogli & Buckley, 2023; van den Berg et al., 2007). As studies shows that spending time in natural areas can reduce stress and provide better physical health (Vujcic et al., 2017), more and more people started spending time in green areas. There are various motivations of the visitors for visiting Natural areas, it can be Escape, relaxation, personal growth, spiritual growth, adventure, learning, wildlife viewing, and cultural experiences or challenge excursion, social trip, nature tour, and getaway outing (Gullion & Stein, 2019). Although escaping to nature can be a positive aspect to the urban population but it can bring negative effects as well. One of these issues is traffic congestion in natural areas or protected areas. Problems with traffic congestion, parking shortages, visitor congestion, and air pollution have gotten worse as more people arrive by private vehicle (Ishikawa et al., 2013). These challenges frequently result in haphazard roadside parking and unauthorized use of silvopastoral lands (personal communication, Veneto Agricoltura, 2023). This not only harms the local ecosystem but also detracts from the picturesque experience that these parks aim to provide. Furthermore, it places financial burdens on park managers, who must address these issues (López-del-Pino & Grisolía, 2018b).

This situation has accentuated the need for effective problem management, particularly concerning traffic congestion and parking concerns. It has also brought to the forefront the pressing issue of securing financing for the essential ecosystem services that these nature parks provide (Hein et al., 2013; von Saltza & Kittinger, 2022). Despite the increasing attention garnered by the term "ecosystem services," the process of accurately valuing these services remains considerably complex (Menzie et al., 2012). This complexity is especially challenging when dealing with natural areas like Cansiglio, where the goods are classified as non-rivalrous and non-excludable (Czyżewski et al., 2021; Jorgensen & Syme, 2000; Menzel & Wiek, 2009).

Managing congestion during peak travel in natural areas is a challenge faced by many countries. Various congestion management methods are being used around the world, including Shuttle systems in Yosemite National Park in the US, reservation systems in NPS parks in the US, park and ride systems in Rocky Mountain National Park in the US, Road closures in Zion National Park, parking fees and many more economic and regulatory based measures (Lawson et al., 2011; Mace et al., 2013; White, 2007). However, the core problem persists. A significant debate and conflicts arise regarding whether fees should be charged for parking or access to natural areas. Some argue

in favor of free access, but this approach poses the risk of degrading the ecosystem services these areas provide, resulting in negative consequences (Nguyen & Jones, 2022; Qian et al., 2022).

Addressing this dilemma, both stated preference and revealed preference methods, including discrete choice experiments (DCE), have garnered attention for valuing non-market values (Acharya et al., 2019; Legesse et al., 2022). These methods bridge the gap when it comes to determining the value of public goods and understanding how people weigh the importance of payment for ecosystem services (Czyżewski et al., 2021; Kaiser et al., 2023). They offer a valuable tool for discerning people's preferences regarding financial contributions for the preservation and enhancement of ecosystem services (Velasco-Muñoz et al., 2022).

Italy is one of the most famous destinations for visitors seeking natural resources. This region offers various types of environments for those who want to relax and enjoy nature. The Pre-Alps are popular because they are easy to get to, have beautiful scenery, offer many activities, and are affordable (Dreon & Paoletti, 2009; Palli et al., 2023). Cansiglio Forest, like many other natural areas, faces a common problem. More and more people visit every year, and this has led to overcrowding and issues with parking. These problems are harming the environment and making it difficult for the organization in charge, Veneto Agricultural, to manage the area's finances (personal communication, Veneto Agricoltura, 2023)

To address these issues, Veneto Agricultural has decided to implement a system of parking fees. They will also create new parking facilities that come with fees. The goal is to reduce parking problems and generate income. This income can then be used to maintain and improve the services provided by the forest. Additionally, it will enhance the overall experience for visitors. This practical approach recognizes the growing number of people who visit Cansiglio Forest. It also acknowledges the importance of this unique natural area. By introducing parking fees, the aim is to strike a balance between preserving the environment and meeting the needs of the increasing number of visitors. The income generated from this initiative has the potential to provide a sustainable financial foundation for maintaining and enhancing the crucial services offered by Cansiglio Forest. Ultimately, the goal is to create a situation where both visitors and the natural environment can thrive in this beautiful part of northern Italy.

Studies have shown that Economic measures can be an effective tool to manage congestion in natural areas (Aboudina et al., 2016; Talukdar, 2013). Studies in England (Coleman, 1997) and in Singapore (Goh, 2002) found that parking fees reduce the number of vehicles entering nature reserves, leading to less congestion, and improved environmental conditions. In 2020 BIOΔ4 developed a study on measuring biodiversity and PES in Cansiglio forest and one of the suggestions from the study was to implement parking fee to finance the ecosystem in the area. Income from park fees can be used to fund conservation activities for ES. Studies like Bookbinder et al., 1998; Whitelaw et al., 2014found that revenue from parking fees and other tourism services in national parks can fund conservation activities such as restoring degraded ecosystems, conservation education programs and improve visitor facilities.

A thesis by Pellizzari (2022) was performed in connection with the Cansiglio Forest, investigating the potential for parking fees to manage congestion and generate revenue for conservation of ES. The study found that parking fees can be an effective tool to manage congestion during peak travel times while generating revenue for conservation of ES. The study also found that careful

planning and management are required to ensure the effectiveness and sustainability of parking fee systems.

Building upon Pellizzari's (2022) recommendations and insights, this thesis focuses on conducting a survey to address the identified gaps in understanding the preferences of visitors and potential visitors in the context of introducing parking fees as a congestion management tool and as a source of funding for ecosystem services in Cansiglio. The primary emphasis of this thesis revolves around examining the root causes of parking congestion in Cansiglio. It explores the influence of visitors' objectives, preferred activities, and visiting patterns on parking congestion. Furthermore, it delves into the feasibility of implementing parking spaces with associated fees as a means of addressing congestion issues, along with gauging visitors and potential visitors' interest in this approach.

This study will also assess their willingness to pay for such parking facilities and their broader interest in available services within Cansiglio. The ultimate objective is to ascertain the feasibility of financing ecosystem services through the revenue generated from parking fees, all the while enhancing the visitor experience within Cansiglio. Additionally, this thesis aims to offer recommendations for potential future research in this area.

The methodology employed in this thesis is based on a revealed preference approach, utilizing an online survey administered to a stratified sample of the Veneto population. By adopting this approach, the study seeks to obtain valuable insights into the behavior and preferences of visitors and potential visitors, as well as the broader population, in relation to parking fees, parking congestion management, ecosystem services, and the overall experience within Cansiglio. The goal is to shed light on how revenue generated from parking fees can be leveraged to enhance the sustainability and quality of ecosystem services, thereby fostering a harmonious coexistence between human visitors and the unique natural environment of Cansiglio.

1.1 Problem Statement

This thesis addresses the pressing issues of parking congestion and financing ecosystem services (ES) in Cansiglio. It investigates visitor and potential visitor preferences regarding parking fees as a congestion management tool and their contributions to the existing problem. The study also examines their willingness to pay for parking spaces integrated with various ecosystem services and service improvements. It proposes a Discrete Choice Experiment (DCE) for future understanding of the monetary value associated with their willingness to pay. This research aims to provide valuable insights into the intricate relationship between visitor preferences, congestion management, financing ES, and overall visitor experience, contributing to the sustainable management of Cansiglio Forest.

1.2 Research objectives and Questions

Understanding the role of parking system in solving the congestion problem and how can it be used to improve/integrate ES in Cansiglio forest is the main objective of this study. This objective will be fulfilled answering to the following research questions.

1. What are the visiting patterns of tourist visiting Cansiglio forest and factors determining their choices of visits.

2. What are the congestion levels and patterns of Cansiglio?

3. What are the importance of availability of parking place in Congestion reduction?

4. How are the tourists' Interest in Service Enhancement and Integration for ES at Cansiglio Forest?

1.2.2 Specific Objectives

Based on the general objective and the research questions mentioned above, the specific objectives of the study are as follows:

1. To identify key preferences and motivations of visitors and non-visitors affecting visiting patterns in Cansiglio Forest.
2. To comprehensively understand the levels and patterns of congestion in the forest.
3. To assess the importance of parking lots in influencing the choices and affecting the congestion in Cansiglio forest.
4. To gauge the interest of visitors and non-visitors in financing ES in Cansiglio Forest.

2. Theoretical Background

2.1 Ecosystem Services

Ecosystem Services (ES) represent the life-sustaining benefits that humans receive from the natural world (Adla et al., 2022; McElwee & Shapiro-Garza, 2020). These services are often taken for granted, yet they play a fundamental role in our survival and well-being (Kahui & Cullinane, 2019). Understanding the concept of ES, their origins, and definitions is crucial in appreciating the intricate relationship between nature and humanity. In this thesis, we delve into the historical origins and contemporary definitions of ES, shedding light on their significance in contemporary environmental science and policy.

The concept of ES has garnered increasing attention for its role in emphasizing humanity's profound dependence on the Earth's life-sustaining systems (Bouma & Van Beukering, 2015; McElwee & Shapiro-Garza, 2020). The modern history of ES finds its origins in the late 1970s, marked by a shift towards characterizing the beneficial functions of ecosystems as services, a strategic move aimed at kindling public interest in biodiversity conservation (Folke, 2006; Gómez-Baggethun et al., 2010; Oppitz & Tomsu, 2018). The concept of ES is deeply rooted in the history of human interaction with nature. While the term itself is relatively modern, the recognition of the benefits derived from ecosystems dates back centuries. Traditional societies and indigenous cultures have long understood the value of natural resources and ecosystems for their survival and sustenance. These societies recognized the connection between clean water, fertile soils, and bountiful harvests, an understanding that laid the foundation for the modern concept of ES (Salomon, 2008; Sekercioglu et al., 2010).

Numerous experts have recognized the challenges associated with precisely defining what constitutes an ecosystem service. Despite variations in their perspectives, there is a shared consensus that there exists a certain 'pathway' responsible for the delivery of ES (H. et al., 2017; Kline, 2015). This pathway begins with ecological structures and processes at one end and extends to impact human well-being at the other (M. Potschin & Haines-Young, 2018). To elucidate the distinctions between these endpoints and the intermediate stages, this process has been visualized as a 'cascade,' a representation that has been instrumental in clarifying the complex relationships between them (Figure 1).

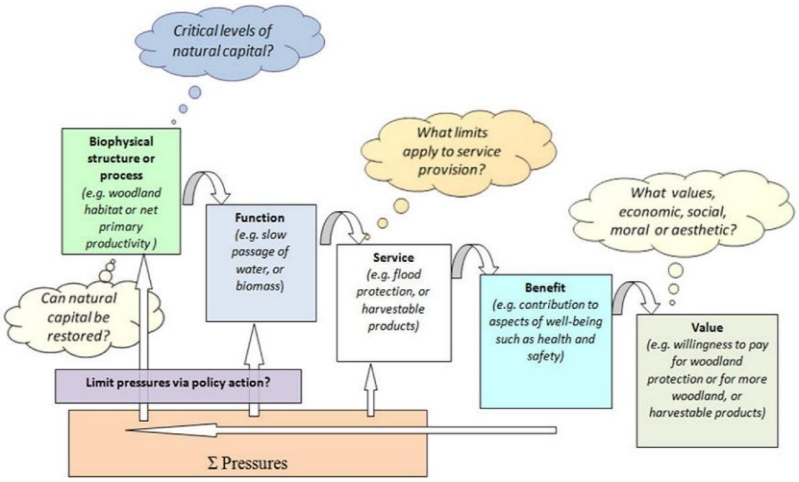

Figure 1: The Cascade Model Source: (M. B. Potschin & Haines-Young, 2011)

One can trace the origins of the term ES to the mid-20th century when ecologists and economists began exploring the interactions between nature and society more systematically (Peterson et al., 2010). However, it was not until the late 20th century that the term gained broader recognition.

Defining ES is a nuanced endeavor, as it involves not only the description of various services but also an understanding of their multifaceted roles in human well-being and environmental sustainability (Yee et al., 2020). The Millennium Ecosystem Assessment, a landmark international study completed in 2005, provided a comprehensive framework for understanding and categorizing ES (Millenium Ecosystem Assessment, 2003) as shown in Figure 2. This framework underscored the dynamic and interconnected nature of these services, emphasizing that they are not isolated but work in synergy to support human life.

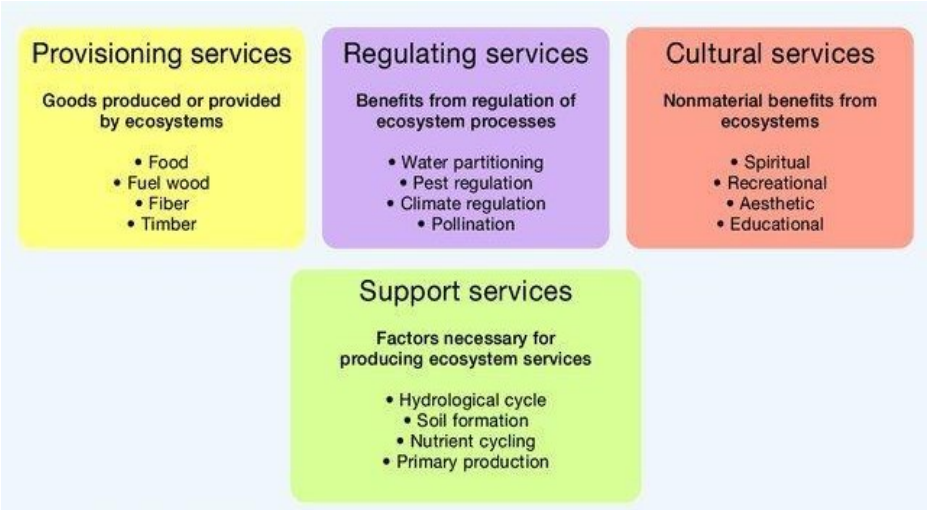

Figure 2: Ecosystem Service Classification Source: Adapted from MEA, 2003

2.2 Ecotourism: Congestion, Conservation, and parking in Natural areas

The burgeoning concept of ecotourism, which encourages visitors to explore natural areas and enjoy their intrinsic beauty, has inadvertently contributed to a complex issue – congestion in protected landscapes (Baloch et al., 2023).

The history of congestion in these natural areas reflects the evolving relationship between humans and the environment (Babri et al., 2023; Enseñat-Soberanis et al., 2020). In the early days, well before the advent of modern transportation, individuals living harmoniously with nature, enjoying the services from ecosystem without overusing or degrading it (Cassin & Ochoa-Tocachi, 2021).

As industrialization took root in the late 19th and early 20th centuries, transportation networks expanded, notably through the construction of railways and roads. This development enabled more accessible entry into natural areas, as travelers could now venture deeper into once-remote destinations (Ferdian et al., 2020). The emergence of the automobile era further revolutionized travel, affording city dwellers unprecedented personal mobility. The road networks began to stretch into natural areas, making them accessible to a broader audience. However, this newfound

accessibility brought with it a surge in visitor numbers, ultimately leading to the onset of congestion in these previously secluded havens. What was once a tranquil escape was now experiencing overcrowding and the strain of increased vehicular traffic (Kim & Kim, 2022).

The latter half of the 20th century witnessed an awakening of environmental consciousness. Concerns about the adverse effects of congestion on the fragile ecosystems of these natural areas began to emerge. Conservationists and park authorities recognized the need to strike a balance between allowing public access and preserving the pristine beauty and ecological integrity of these spaces (Jepson & Whittaker, 2002; Rohan, 2003). In response to these challenges, efforts to promote sustainable transportation solutions gained momentum. Various programs and regulations were introduced to reduce the environmental footprint of visitors while managing congestion effectively and to promote sustainable ecotourism (Aydin & Öztürk, 2023; Pavlidis et al., 2022; Sobhani et al., 2022). Innovative technological solutions, such as real-time traffic monitoring and dynamic pricing models for parking fees, were also employed to optimize traffic flow and encourage responsible visitation (Adach et al., 2023; Oleśniewicz et al., 2020; Yuxi et al., 2022).

Today, managing congestion in natural areas remains a complex and evolving task. The allure of these destinations continues to attract visitors, both for recreation and as an escape from urban life. Yet, the challenges persist, the increasing tourist flow also impact their parking behavior due to lack of enough structure to sustain the number of vehicles, this leads to an irresponsible behavior of parking outside the parking zones such as roadside, in Silvo pastural areas, unauthorized zones, degrading the ecosystem around it and the values attached to it (Kurek & Macioszek, 2022; Nastia et al., 2021)

2.3 Theories of congestion management in Natural areas

Congestion management theories encompass a range of strategies. Throughout the century new tactics have been developed and implemented to manage traffic congestions all over the world. Some approach focuses on limiting the demand or travel intensity within the transportation system, and others concentrates on optimizing the operational performance of the transportation system. This can entail actions such as improving traffic flow and implementing effective traffic operational strategies (López-del-Pino & Grisolía, 2018a; Talukdar, 2013).

These tactics are practiced all over the world but mostly in urban areas, there are very few types of traffic management theories or models that are being practiced in natural areas, below in the table 1 we will see various models/theories of traffic congestion management in natural areas, these might be called differently in different parts of the world, but their techniques and the main theory is the same.

Table 1: Theories for Congestion Management in Natural Areas Source: Own elaboration (2023)

Theories	Insights	Methodologies
1. Carrying Capacity Theories (Gao et al., 2022)	The traffic carrying capacity of urban road networks is their ability to handle the flow of	• Narrow road network capacity

	vehicles. It plays a crucial role in balancing traffic supply and demand, guiding urban planning, estimating vehicle ownership, regulating road network size, and improving service quality and road infrastructure design.	• Generalized road network capacity
2. Investment in transit facilities (W.Vickrey, 1969)	This study focuses on alternating the route network system in the congested zones and hence releasing traffic congestion and expansion of the road networks	• Investment in new routes • Expanding the existing routes and investing in facilities
2. Transportation Recreational opportunity theory (Xiao et al., 2018)	T-ROS theory classifies natural areas into different zones based on the potential for various types of recreational experiences, from low-use wilderness to high-use areas. Managing congestion involves aligning visitor expectations with designated ROS zones.	Methodology can involve various motivational theories to categorize the traffic into different groups according to their goals/ interests. For example, multi-use trails, promoting low impact activity like birdwatching, educational activities, bike sharing etc.
3. Transportation demand theory (Habibian & Kermanshah, 2013)	TDM theory focuses on strategies to reduce traffic congestion and promote sustainable transportation options in natural areas.	• Shuttle system • Park and ride • Carpooling • Bike/e-bike services
4. Variable pricing models (Button & Verhoef, 1998)	Variable pricing theories involve charging different fees for access or parking based on demand and congestion levels. Higher fees during peak times can incentivize off-peak visits and reduce congestion.	• Dynamic, peak and surge pricing • Segmented pricing • Peak-user pricing etc. • This dynamic pricing models are also applied in tools or road pricing.
5. Access control and quotas (Dissanayake & Lu, 2003)	The theory of access control and visitor quotas involves limiting the number of visitors allowed in a natural area at a given time. It aims to prevent congestion of vehicles, overcrowding and maintain ecological integrity.	This theory can include road closures, partial road closures by implementing different driveways, turns, medians (Full median opening & directional median opening) etc.

These above methodologies are generic for management of congest in natural areas but not all of them works on every natural area, it depends on type and pattern of congestion. In many cases parking congestion is the prime and most complex problem to tackle, it can be due to a mixture of overcrowding, Lack of structure, lack of regulation for parking behavior etc. Even though parking congestion can be a cause of transportation flow, there is a need to handle this issue separately.

The Variable pricing models are highly useful in case of managing parking congestion and behaviors. Introduction of pricing for parking, regulatory fines can change visitors' behaviors of irresponsive parking and keeping the parking congestion in control. The best part about these methods is that these generates revenue which can be reinvested to promote sustainable tourism and improvement of ecosystem services.

2.2.1 Elaboration on Parking fees studies as a tool on congestion management and parking behavior

The management of congestion and parking in natural areas is a multifaceted endeavor, requiring a careful balance between providing access for the public and protecting the ecological and scenic integrity of these precious landscapes. Among the array of strategies employed to address this complex issue, the implementation of parking fees has emerged as an effective tool. Charging visitors for parking not only serves as a potential revenue source but also acts as a regulatory mechanism to limit the influx of vehicles into these pristine environments, thereby mitigating the adverse impacts of congestion.

There are many natural areas that have started charging for parking fees as a management tactic to control the traffic congestion and overcrowd. Based on the thesis by (Pellizzari, 2022) In Italy, many of the natural areas has also adopted parking fee measure to control congestion and manage parking behaviors. On average they are charging € 9.6 vehicle/day, being Parco Nationale Cinque Terre in Liguria and, Parco Naturale Tre Cime in Trento Alto-Adige, highest charging natural areas in Italy for parking.

In an international level as well, there are many examples of natural areas charging for their parking fees and it helps managing the high level of parking congestion. They started by setting a fixed price for an entire day or per hour based on the standard market value. With time they have also included some services to make it cost/time effective, more sustainable and to enhance visitors experience at the same time.

Along with the development of parking fees, a payment system was developed and within the century as shown in table 2, many new technologies have immerged to make it more sustainable, focusing on improving visitors' experiences.

Table 2: Payment Vehicles Used for Parking Fee Source: Own elaboration (2023)

Mode of payment	Methods	Description
Manual	Cash	Drivers Park their vehicle and pay the parking fee in cash to a parking attendant (Evangelinos et al., 2018).
	Coin Operated Parking Meters	Drivers insert coins into a meter to pay for their parking time. In some places, meters may accept other forms of payment, such as credit cards or mobile payments (Cirianni & Leonardi, 2006).
	Pay and Display	drivers park their vehicle and purchase a ticket from a nearby

		machine. They then display the ticket on their dashboard to show that they have paid for parking (Awasthi, 2021).
	Pay by Phone	Drivers download a parking app, register their vehicle and payment information, and use the app to start and stop their parking session (Garra et al., 2017).
Automatic	License Plat Recognition	This is an advanced parking payment method that uses cameras to scan the license plates of vehicles entering and exiting a parking area. The system automatically calculates the parking fee based on the length of time the vehicle was parked, and the driver can pay using a mobile app or at a payment kiosk (Jawale et al., 2023).
	Contactless Payment	This is the most advanced parking payment method, using near-field communication (NFC) technology to enable drivers to pay for parking using their contactless credit or debit cards or mobile payments (Ratti et al., 2023)

2.3 Evaluation of ES

ES valuation has a rich history that has evolved over time. The formalization of ES valuation as an academic discipline began to take shape in the late-20th century. Economists such as Kenneth Boulding and Herman Daly introduced the idea of ecological economics, emphasizing the importance of natural systems in supporting human well-being (Câmara, 2014; Judy Lumb, 2002). This marked a significant departure from the traditional economic perspective, which often disregarded the value of natural capital (Simpson, 1998).

The 1990s witnessed a surge in ecosystem service research and valuation methodologies. Notably, the "Total Economic Value" (TEV) framework aimed to capture the full range of values associated with ecosystems. This framework classified values into use values (direct benefits like food and timber) and non-use values (indirect benefits such as existence and bequest values) (Figure 3). The TEV approach revolutionized the field by recognizing the diverse dimensions of ES (Dushin & Yurak, 2019; Plottu & Plottu, 2007)

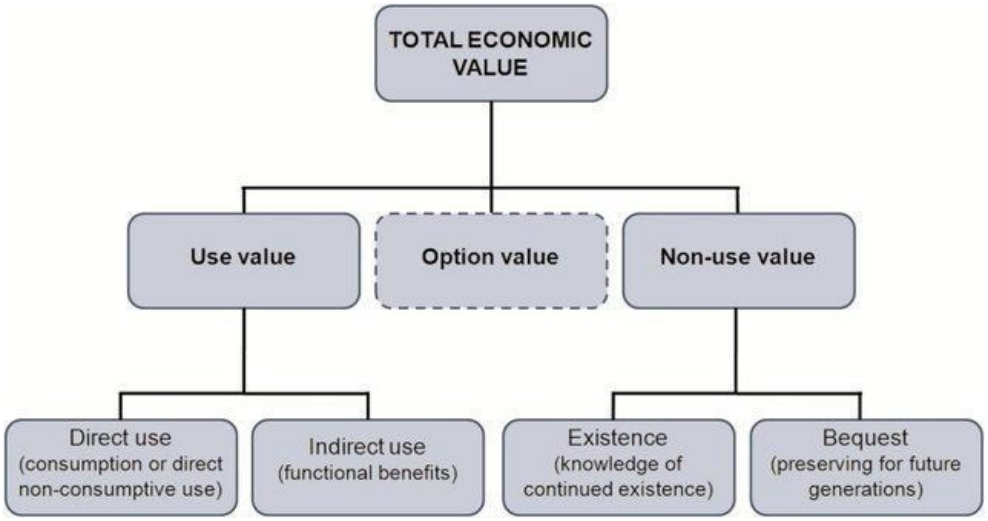

Figure 3: Total Economic Value Source: Adapted from Grant et al., 2013.

Based on these values, different ES are evaluated differently. The important part is to understand the meaning of "Value" we can apply the methods of valuing it according using the appropriate method of ecosystem service valuation (Kaua, 2015).

Evaluating the value of ecosystems involves various methods, each with its unique strengths and limitations. The choice of method depends on the specific information required and the context of the study. Ecosystem valuation typically falls into two categories: revealed preference approaches and stated preference approaches. Revealed preference methods gauge an individual's willingness to pay or accept by examining their choices within a market context. These choices reflect the value attributed to specific attributes, often centered on environmental quality or the goods and services offered by ecosystems (Koetse et al., 2015; Legesse et al., 2022).

Random Utility Theory serves as the cornerstone of the Stated Preference Methods, offering a systematic approach to understanding how individuals make choices when it comes to ES. This theory recognizes that when people are faced with various alternatives, they base their decisions on their preferences and the perceived utilities of these options (Cascetta, 2001). It acknowledges that individuals make rational choices that maximize their well-being, factoring in the attributes and characteristics of each option. By employing Random Utility Theory, ecosystem valuation studies can gain valuable insights into the underlying motivations that influence the choices people make (Masiero et al., 2018). This method is instrumental in unraveling the intricate web of human decision-making and how it relates to the perceived value of different ecosystem service attributes (Louviere et al., 2010).

2.3.1 From Contingent Valuation Methods to Discrete Choice Experiments:

In the realm of Stated preference methods, the Contingent Valuation Method (CVM) is a powerful tool within the realm of ecosystem valuation. It engages individuals in surveys and presents them with hypothetical scenarios designed to elicit their willingness to pay (WTP) or willingness to

accept (WTA) values for specific ES. This method becomes particularly invaluable when dealing with services that lack established market prices. By capturing individuals' stated preferences and values, it provides a window into non-market values (Choe, 1996), which often encompass the intrinsic worth of these services. CVM is a bridge that connects the economic dimensions of ES with the intricate tapestry of human values and perceptions (Mitchell & T. Carson, 2013; Nunes, 2022; Whitehead & Haab, 2013).

Discrete Choice Experiments (DCE) take the art of choice to a new level. They present respondents with various scenarios, each comprising different combinations of attributes linked to ES. In these scenarios, individuals are asked to make choices based on their preferences and priorities (Folkvord et al., 2022; Mariel et al., 2021). DCE allows researchers to understand the relative importance that individuals attach to different attributes, shedding light on what truly matters to them when it comes to ES in their recreational activities (Franceschinis et al., 2022). It goes beyond mere hypothetical questions and delves into the realm of actual choices, providing insights into the decision-making processes of individuals. DCE is a dynamic and interactive approach that captures the richness of human preferences, offering valuable data for ecosystem valuation (Hoyos, 2010).

2.3.2 Measuring Non-use Values through DCE:

Non-use values represent a complex dimension of ecosystem service valuation. These values encapsulate the worth that individuals attribute to services they may not directly experience or utilize but still deem essential. DCE serve as a robust quantitative method for delving into the intricate mathematical underpinnings of non-use values (Marre et al., 2015; Thiene & Scarpa, 2009)

In a DCE survey, respondents are presented with carefully crafted scenarios, each characterized by a unique combination of attributes associated with ES. The selection of these attributes is driven by the need to encompass the non-use values that individuals ascribe to the ecosystem (Hoyos, 2010; Szinay et al., 2021).

Mathematically, the DCE process involves constructing choice models based on utility theory. Each scenario is assigned a utility value, which represents the satisfaction or preference of the individual for that specific combination of attributes. These utility values are derived from respondents' choices, and the mathematical framework often relies on multinomial logit or other choice models (Franceschinis et al., 2017). To measure non-use values, researchers analyze the choices individuals make in response to various DCE scenarios. By dissecting the patterns of choices, mathematical models can quantify the relative importance of non-use values in comparison to other attributes. This quantitative approach enables researchers to assign numerical values to non-use attributes, shedding light on the strength of non-use values within the overall valuation framework. Furthermore, DCE can incorporate advanced mathematical techniques such as mixed logit models, which account for the heterogeneity of preferences among respondents. This adds a layer of mathematical sophistication to the analysis, allowing for a more nuanced understanding of the distribution of non-use values among the surveyed population (Hauber et al., 2016; Mokas et al., 2021).

3. Research Methodology

3.1 Study Area

3.1.1 General Information about Cansiglio Area and Forest:

Nestled within the northern Italian landscape, the Cansiglio Forest serves as a region of significant ecological importance, chosen as the study area for our scientific research. This forested plateau is situated in the Carnic Alps and spans the administrative regions of Treviso, Belluno, and Pordenone (Caudullo et al., 2003). Access to the forest is available through two primary routes, with the southern approach leading through the Crosetta valley from Vittorio Veneto in the Province of Treviso and the northern path winding through the Campon Alpago region in the Province of Belluno (Figure 4)(Caudullo, Ungulate damage and silviculture in the Cansiglio forest (Costantini & Girotto, 2023; Uboni et al., 2021).

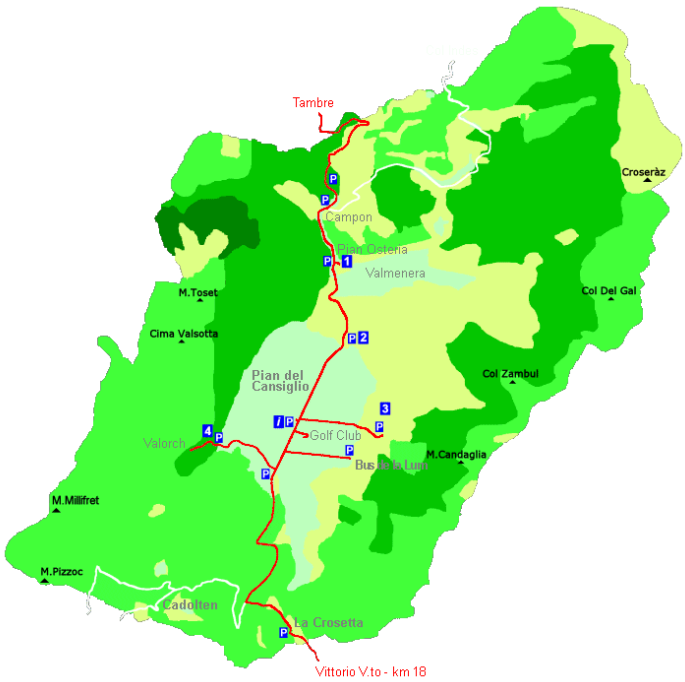

Figure 4: The Map of Cansiglio Source: Cansiglio.it, n.d.

Spanning approximately 7,000 hectares, the Cansiglio Forest ranks as the second-largest forest in Italy (Drábková, 2013). The forest landscape is primarily characterized by the presence of the beech tree (*Fagus sylvatica).* However, as one descends in altitude, the composition of tree species gradually transitions in response to the prevailing climatic conditions of the lowland regions. In these areas, human intervention has resulted in the establishment of monoculture patches, predominantly featuring spruce or fir trees (Veneto Agricoltura, 2011).

The historical context of forest management in Cansiglio is characterized by its role as a study area for ecological preservation within the context of our research. The Serenissima Republic of Venice recognized the forest's intrinsic value, particularly in terms of high-quality timber resources, which were crucial for replenishing the republic's formidable naval arsenal (Visentin, 2018). This tradition of active forest management continues to the present day, as it serves as a valuable setting for our

scientific thesis research (Veneto Agricoltura, 2011). Notably, there remain areas within the forest that are allowed to evolve naturally, offering a unique opportunity to study the interplay between natural processes and human intervention in this scientifically significant area.

3.1.2 Understanding Congestion problem in Cansiglio

Cansiglio has always been a tourist attraction for its unique beauty and nature. Due to the proximity for the visitors and availability of several activities, it brings a lot of tourists every year. A discussion made with Veneto Agricoltura implies that the number of visitors has been increasing much more rapidly and is creating a congestion problem in the area specially during the summer season. As we can see from the Figure 5, the parking behavior is very unpleasant, and the visitors park their vehicles on the roadside due to overcrowding.

Figure 5: Parking Congestion problem in Cansiglio forest Source: Own elaboration (2023)

We can see in the Fig 6, the trend of increasing visitors starting from 2015 to 2018, even during covid period (2019-2021) there were high number of visitors could be seen.

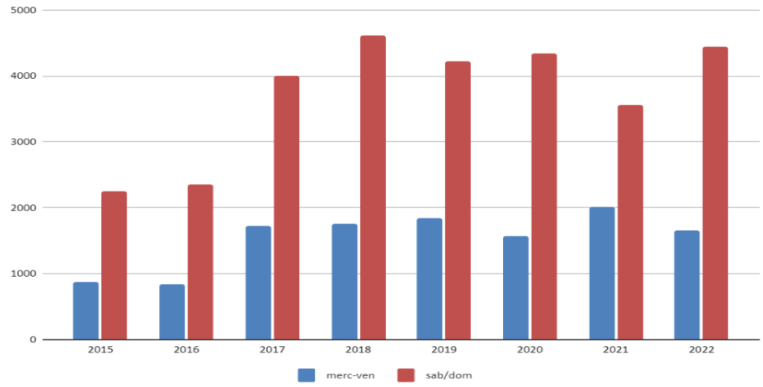

Figure 6: Distribution of Number of visitors for Botanical Garden in Cansiglio Forest Source: Personal comunicatino, Veneto Agricoltura, 2023

Similarly, In the Museo regionale dell'Uomo in Cansiglio, there is a noticeable upward trend in visitor numbers over the years (Figure 7). Consequently, congestion has reached its peak, demanding effective management in Cansiglio.

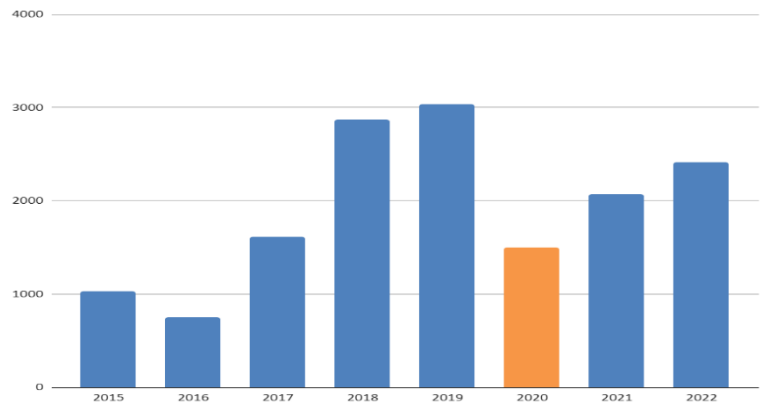

Figure 7: Distribution of Number of visitors for Museum in Cansiglio Source: Personal communication, Veneto Agricoltura, 2023

Alongside the surge in visitors, the influx of vehicles has also spiked in recent years, leading to irresponsible parking practices around Cansiglio. Observations during personal visits and personal communication with Veneto Agricoltura (2023), reveal that individuals are parking on roadsides, in silvopastoral areas, or in unauthorized zones due to inadequate infrastructure for the growing number of incoming vehicles.

The issue is exacerbated by a lack of regulations and surveillance on parking behavior. Consequently, visitors freely choose to park near picnic areas or playgrounds based on convenience. This collective behavior has given rise to an unfavorable environment, compromising the visitor experience, and causing damage to the ecosystem services (ES) of Cansiglio. Recognizing the urgency of the matter, Veneto Agricoltura has initiated a research project to comprehensively understand congestion patterns. The proposed solution involves integrating designated parking lots within the forest to alleviate congestion issues. Additionally, a parking fee implementation is considered, with the intention of reinvesting the proceeds into enhancing cultural ecosystem services in Cansiglio.

3.1.3 Understanding the ES in Cansiglio

Beyond the basic provisioning, regulating, and supporting ES's, Cansiglio Forest holds profound cultural and historical value. It has been a beacon of sustainable forest management dating back to the time of the Venetian Republic (Spada, 1995). The preservation of these cultural and historical aspects is invaluable and contributes to educational and research activities that enrich our understanding of the natural world. These services not only deepen our understanding of the forest but also strengthen our connection with its historical and cultural aspects:

1. Museums and Botanic Gardens: The forest is home to a splendid array of cultural sites, including museums and botanic gardens. These venues provide a unique opportunity to delve into the history and rich biodiversity of the region.

2. Archaeological Sites: Cansiglio's ancient past comes to life through its archaeological sites. Visitors can explore the remnants of bygone eras and gain insights into the historical significance of the forest.

3. Educational Programs: To foster knowledge and environmental awareness, Cansiglio offers educational programs. These programs are tailored to all age groups and serve as valuable resources for schools, universities, and nature enthusiasts.

4. Interpretive Trails: Cansiglio's interpretive trails are educational in themselves. These well-marked paths guide visitors through the forest, providing insights into its natural history, ecosystems, and the importance of conservation.

5. Workshops and Seminars: Regular workshops and seminars offer a deeper understanding of the forest's ecology, wildlife, and historical context. These events are excellent platforms for learning and interaction.

6. Guided Tours: Expert guides lead captivating tours that narrate the forest's story, its cultural heritage, and its ecological significance. These tours create a dynamic learning experience.

7. Research Opportunities: The forest's rich biodiversity makes it an ideal location for ecological and environmental research. Scientists and students can study and learn from one of Italy's most diverse ecosystems.

These cultural and educational ES are the foundation upon which a plethora of recreational and cultural offerings thrive in Cansiglio Forest:

Hiking and Mountain Biking: The interpretive trails and knowledge gained through educational programs enhance the hiking and mountain biking experiences. Visitors develop a deeper appreciation for the natural world surrounding them.

Climbing: The historical context and geological significance of the forest's rocky features elevate the climbing experience, blending physical challenges with cultural appreciation.

Photography: A deeper understanding of the forest's natural history and biodiversity enhances photography. Visitors capture not just pictures but stories of Cansiglio.

Wildlife Observation: The forest's educational programs and guided tours provide insights into wildlife behavior, making wildlife observation an enriching experience.

Picnicking: With a heightened awareness of Cansiglio's cultural significance, picnicking becomes a cultural exchange, fostering a deep connection with the surroundings.

Winter Activities: Educational opportunities and a grasp of the forest's ecology and history contribute to the appreciation of winter activities.

Cultural Events: Understanding the forest's heritage and its cultural offerings such as museums and archaeological sites adds depth to cultural events hosted in Cansiglio.

Dining and Local Product Purchases: Awareness of the forest's cultural and historical significance transforms dining and purchasing local products into cultural encounters.

Cansiglio's cultural and educational ES do more than just inform visitors; they enrich every aspect of their experience. The forest becomes not just a place of natural wonder but a living classroom that deepens our connection with nature, culture, and history. Visitors leave with not only memories but a profound appreciation for Cansiglio Forest's multifaceted value (Personal communication, Veneto Agricoltura, 2023).

3.2 Data Collection

The questionnaire is divided into several sections, each contributing to a logical flow of data collection. The introduction section sets the stage by providing a brief overview of the research's purpose and assuring participants of the anonymity and scientific nature of the study. It serves as an entry point, preparing respondents for the questionnaire.

The general information section is designed to collect essential demographic and socio-economic data. It includes inquiries about respondents' place of residence, age, gender, household size, education, income, occupation, and affiliations with relevant associations. These details offer valuable insights into the background of the respondents, which can be instrumental in interpreting their responses.

One of the critical components of the questionnaire is the classification of respondents as visitors or non-visitors to Cansiglio Forest. This classification acts as the starting point for tailoring subsequent questions to the respondent's status, ensuring the relevance of the questions asked.

For non-visitors, a dedicated section is provided to understand the natural areas they typically visit and the reasons behind their choices. Respondents are allowed to select multiple reasons, providing a nuanced understanding of their preferences. On the other hand, for those who have visited or plan to visit Cansiglio Forest, a section collects information about their past and future visits, travel plans, and the reasons for visiting. This section also explores the importance of weather conditions, visitor goals, and the influence of various factors on their choice to visit.

To capture a diverse range of information, the questionnaire employs various question types. Multiple choice questions are used to gather categorical data, such as reasons for not visiting Cansiglio Forest. Likert scale questions gauge the strength of agreement or disagreement with statements, as seen in the assessment of weather conditions, the importance of goals, and influences on visitation choices. Open-ended questions can be customized to allow respondents to provide qualitative feedback or specify 'Other' options when necessary. Demographic questions gather specific demographic and socio-economic information, enabling the classification of respondents into distinct groups and aiding in data analysis.

Clear and concise instructions are included at the beginning of each section of the questionnaire to guide respondents effectively. Like in figure 8, we present a graphical representation of the reported congestion levels categorized into five distinct levels:

- **Level 1**: No congestion (0%)
- **Level 2**: Low congestion (20-30%)
- **Level 3**: Moderate congestion (50%)
- **Level 4**: Significant congestion (70-80%)

- **Level 5**: Severe congestion (100%)

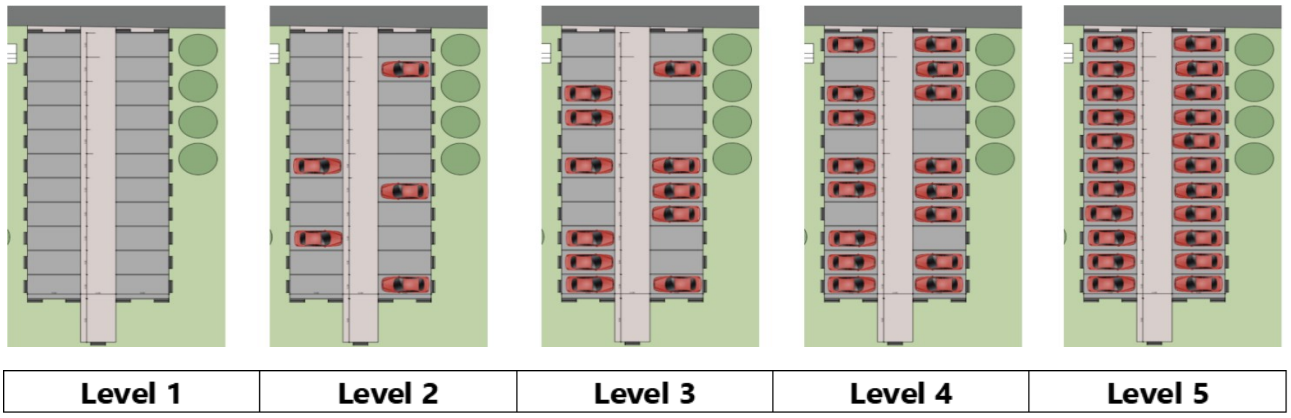

Figure 8: Instruction for Congestion levels Source: Own Elaboration (2023)

These instructions emphasize the importance of honest and anonymous responses, as well as the research purpose. The use of instructions is essential to ensure consistency in data collection and to prevent misunderstandings or misinterpretations by respondents.

Socio-demographic information is integrated into the questionnaire to gain a comprehensive understanding of respondents. This information encompasses key demographic factors such as place of residence, age, gender, household size, education, income, occupation, and affiliations with relevant associations. The inclusion of this socio-demographic information allows for the segmentation of respondent data, supporting the identification of patterns, trends, and correlations that may emerge in the analysis of the research findings.

In the initial phase of the research study, a pilot survey was conducted to assess the validity and effectiveness of the online questionnaire designed for both visitors and non-visitors to Cansiglio Forest. This pilot survey involved a stratified random sample of 50 respondents from the Veneto region (Figure 8).

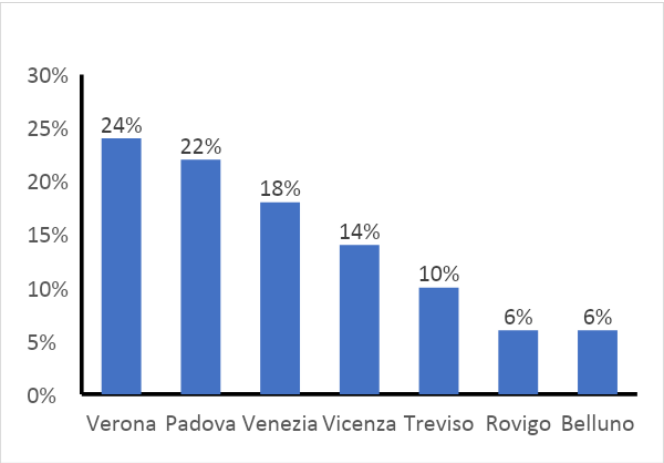

Figure 9: Distribution of Respondents of the Pilot Test Source: Own Elaboration (2023)

The pilot survey was conducted using the online questionnaire, accessible to participants through a secure web-based platform. Clear instructions were provided to guide participants on how to

complete the survey. They were encouraged to provide honest and detailed feedback on the questionnaire's content, structure, and overall user experience.

The data collected from the pilot survey was then analyzed, focusing on several key aspects. The clarity of survey questions was assessed to ensure that respondents could understand and respond to them effectively. The appropriateness of response options was examined to determine if they encompassed the range of possible answers. The completeness and relevance of the questionnaire were scrutinized to ensure that all necessary information was being gathered. The user-friendliness and navigation within the online platform were evaluated to identify any potential issues or difficulties that respondents might encounter.

The findings from the pilot survey indicated that the questionnaire was well-received by the participants. Respondents found the questions to be clear and relevant to the study's objectives. This positive feedback provided confidence that the questionnaire was suitable for the main data collection phase.

The full-scale data collection phase is a critical step in the research process. It was aimed to gather comprehensive data from a more extensive and varied group of respondents. The research employs a systematic approach to data collection, which is essential for accurate representation of the Veneto population and for achieving the specific research objectives. The survey is designed to gather insights from both visitors and non-visitors to Cansiglio Forest. To conduct the survey, an online mode was chosen due to several advantages it offers. The survey is administered in collaboration with the market research firm Demetra opinioni.net Srl, which also conducted the sampling process.

The total number of respondents in our study was 2027. This substantial sample size was carefully chosen to provide statistical robustness, enabling us to draw confident conclusions about the population. A larger sample size typically enhances the precision of our findings and contributes to the generalizability of the results. Our sampling strategy was intentionally designed to be stratified, which means that it covered various segments or strata of the Veneto population. By doing so, we ensured that the sample is not skewed towards any subgroup, but rather encompasses a balanced representation of the entire population.

3.6. Data Analysis

The data analysis for this thesis involved a meticulous coding process, where each question was assigned a numerical code to facilitate quantitative analysis. Responses were categorized based on data types (such as ordinal, nominal, or text) for streamlined processing. Excel served as the primary tool for data analysis, enabling the creation of two distinct datasets—one for visitors and another for non-visitors of Cansiglio. The analysis proceeded by separately scrutinizing the responses for each group based on the questions posed.

For ordinal data, calculations of mean and standard deviations were employed to gauge the central tendency and dispersion of responses within each dataset. This statistical approach provided insights into the average and variability of opinions expressed in ordinal scale responses. Additionally, percentages were calculated for discrete data, offering a clear understanding of the distribution and prevalence of specific responses among the respondents.

The analysis went beyond individual question responses; it delved into categorizing and linking various responses to explore associations between different sets of answers. This process aimed to unravel connections between distinct respondent viewpoints and discern how one response linked with or influenced others. By establishing these links, a comprehensive understanding of the interplay between different aspects of visitor and non-visitor opinions was attained.

Visual representation of the analyzed data was achieved through bar graphs. These graphs efficiently illustrated the outcomes of the analysis, offering a clear visual depiction of response patterns, differences between visitor and non-visitor groups, and trends within the datasets. Moreover, employing combined graphs enabled a comparative analysis between visitors and non-visitors, highlighting disparities and similarities in their respective responses to the posed questions.

4. Results

In this section, we present the findings of our multifaceted investigation into visitor motivations, preferences, and the implications of parking fees for congestion management in Cansiglio Forest, Italy. The whole result is based on two different groups of respondents of visitors and non-visitors of Cansiglio. Figure 9 implicate the percentage of respondents visiting Cansiglio and respondents who have never visited Cansiglio before.

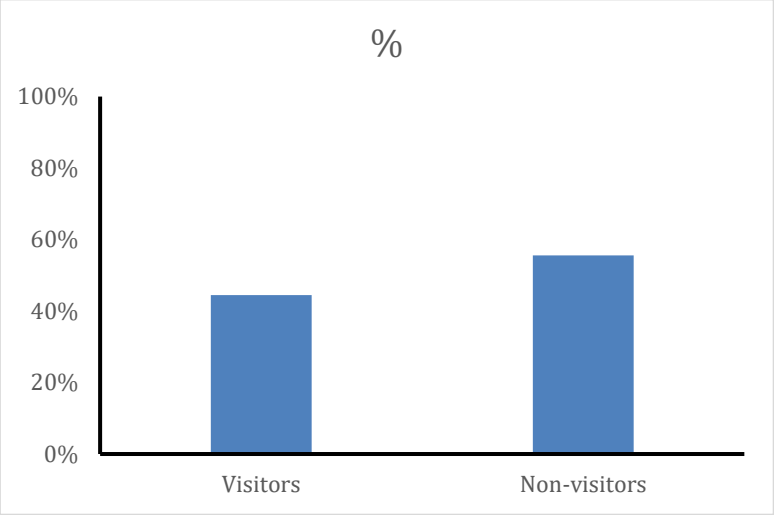

Figure 10: Distribution of Respondents as Visitors and Non-visitors

The results section of this thesis is structured into four cohesive parts, each aligning with the research questions and objectives. It begins by exploring visiting patterns and activities that contribute to congestion within Cansiglio. Following this, the section delves into the patterns and levels of parking congestion in the area, shedding light on the challenges associated with parking. Subsequently, it discusses the significance of parking lots in managing congestion and facilitating access to natural areas. Finally, the section emphasizes the importance of ecosystem services within Cansiglio and similar natural environments. This division allows for a comprehensive understanding of congestion, parking, and the role of ecosystem services in these natural landscapes.

4.1 Visitor Patterns and Contributing Activities:

In our analysis of visitor patterns within Cansiglio Forest, we aimed to uncover the diverse behaviors and activities that contribute to traffic congestion. Understanding these patterns is crucial for effective congestion management. The following insights are derived from the examination of visiting behaviors, reasons for visiting or not visiting, and the impact of climatic conditions on visitors' plans.

Figure 10 illustrates the percentage of visitors throughout the previous year, providing valuable information about the distribution of visitors across different months and days (weekdays or weekends) in Cansiglio. The data clearly shows that the highest number of visitors was recorded in August on weekdays, followed by June and July on weekends. Interestingly, in the remaining months, visitors tend to prefer weekends, suggesting a distinct visiting pattern likely influenced by holidays.

Upon closer inspection, it becomes evident that August sees the peak number of visits, primarily on weekdays. This trend is attributed to the fact that August is a holiday month for many employees and students. Following this, the data reveals a sequential decrease in the number of visits as the seasons transition from summer to autumn. However, a slight resurgence occurs during wintertime, particularly on weekends. It is important to note the substantial fluctuations in visitor numbers between weekdays and weekends, except during holidays.

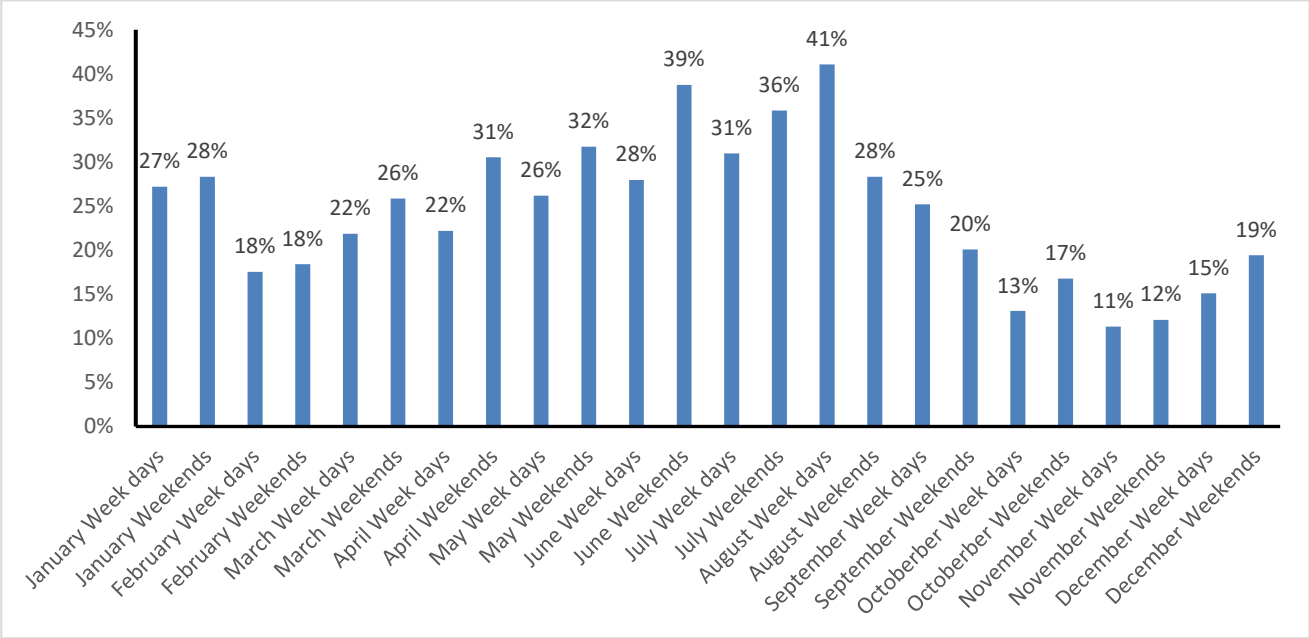

Figure 11: Percentage of Visitors from Previous Year

The non-visitors were asked why they have not visited Cansiglio, the figure 11 shows the reasons for non-visiting Cansiglio. The graph illustrates that most of the respondents who have never visited Cansiglio have recently heard about Cansiglio, it is followed by others, which also upon close inspection, the highest percentage of people mentioned that they have never heard of it, they do not know the place, Not interested in mountains, there was no occasions etc. So, all combined we can say that Cansiglio is not very publicly known in other parts of Veneto and It is very long to travel to reach Cansiglio are the primary reasons for the above graph. It was a bit unexpected result, being one of the nearest natural areas for people of Veneto, they have not heard about its existence.

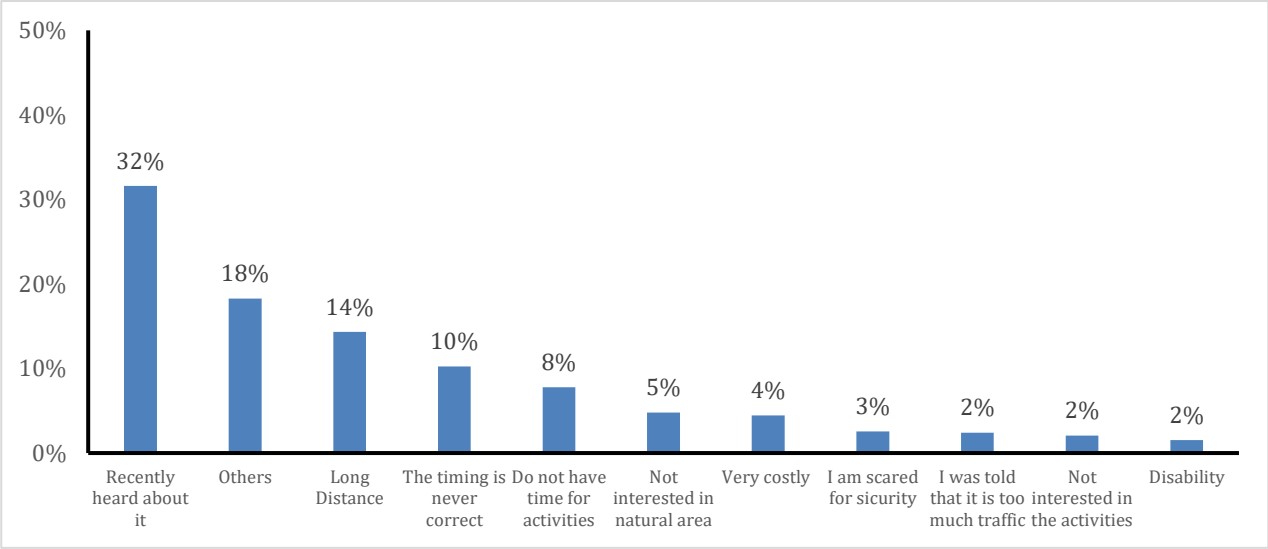

Figure 12: Reasons for Not Visiting Cansiglio

The next part will shed light on the activities visitors engage in when visiting Cansiglio, as depicted in Figure 10. These activities essentially represent the various things visitors do during their time in the forest.

As shown in Figure 12, the data indicates that the most popular activity among visitors is hiking, accounting for 59%. Following closely are Cross country skiing and photography, making up 35% and 32%, respectively. This suggests that hiking is the primary activity pursued by visitors in Cansiglio, potentially contributing to congestion issues.

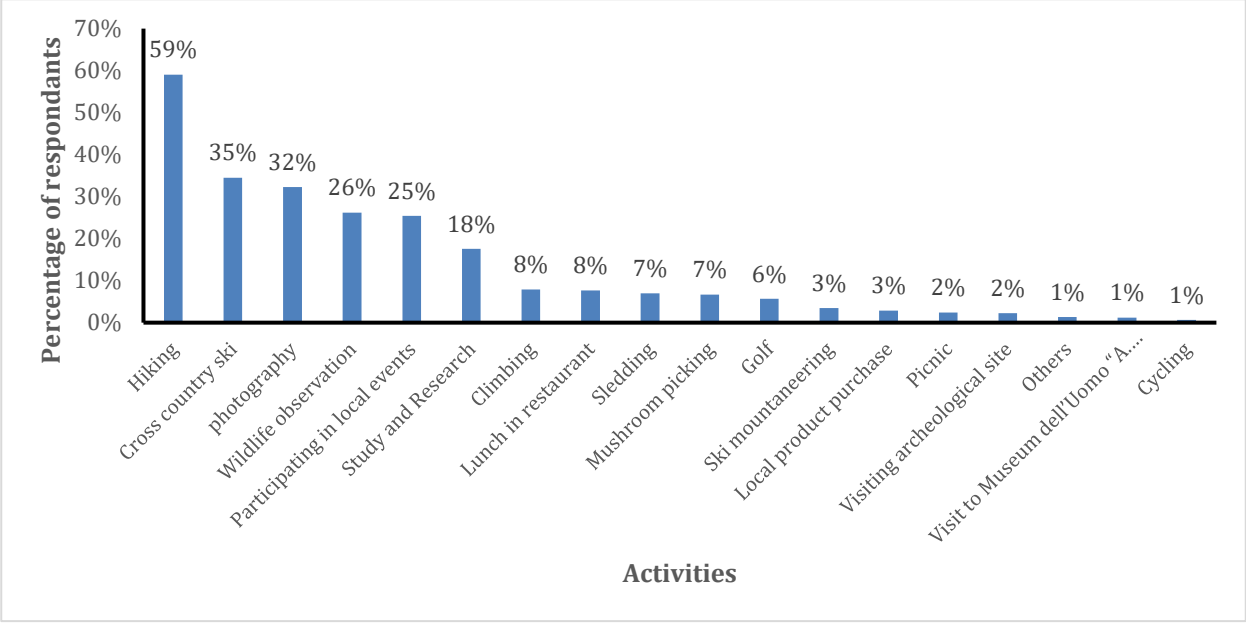

Figure 13: Scope of Visitors to Visit Cansiglio.

In the following part, the goals for visiting Cansiglio or a natural area is shown. For the better understanding respondents who have previously visited Cansiglio were asked their goals specifically related to their visit to Cansiglio whereas, the non-visitors were asked more general response related to their experience while visiting any natural area. Figure 13 shows the goals of visitors to visit Cansiglio. The graph shows bars from 0 to 100 meaning Non important at all and most important respectively. From the figure 13, it can be clearly stated that the most important goal to visit Cansiglio is to be in contact with nature followed by discovering new places and relax.

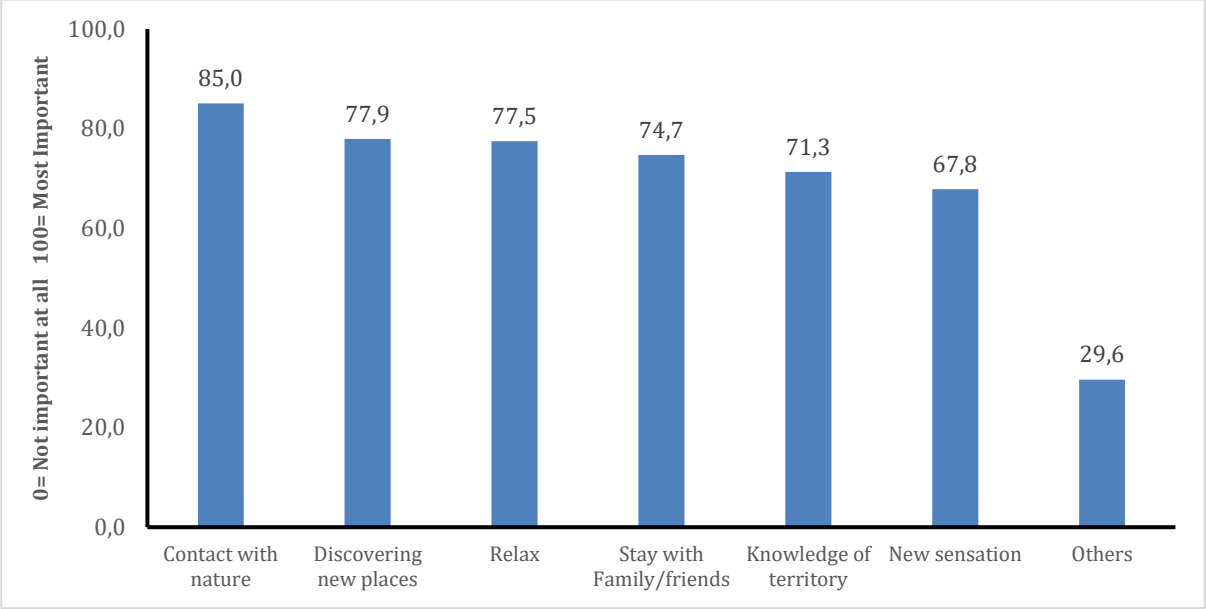

Figure 14: Goals to Visit Cansiglio by Visitors.

While figure 14 shows more general response from the non-visitors about their goals to visit any natural areas they have previously visited. These results show a bit variation from the visitor's response about their goals to visit Cansiglio. To know new places seems to be highest priority goals for visiting a natural area and it is followed by contact with nature and relax.

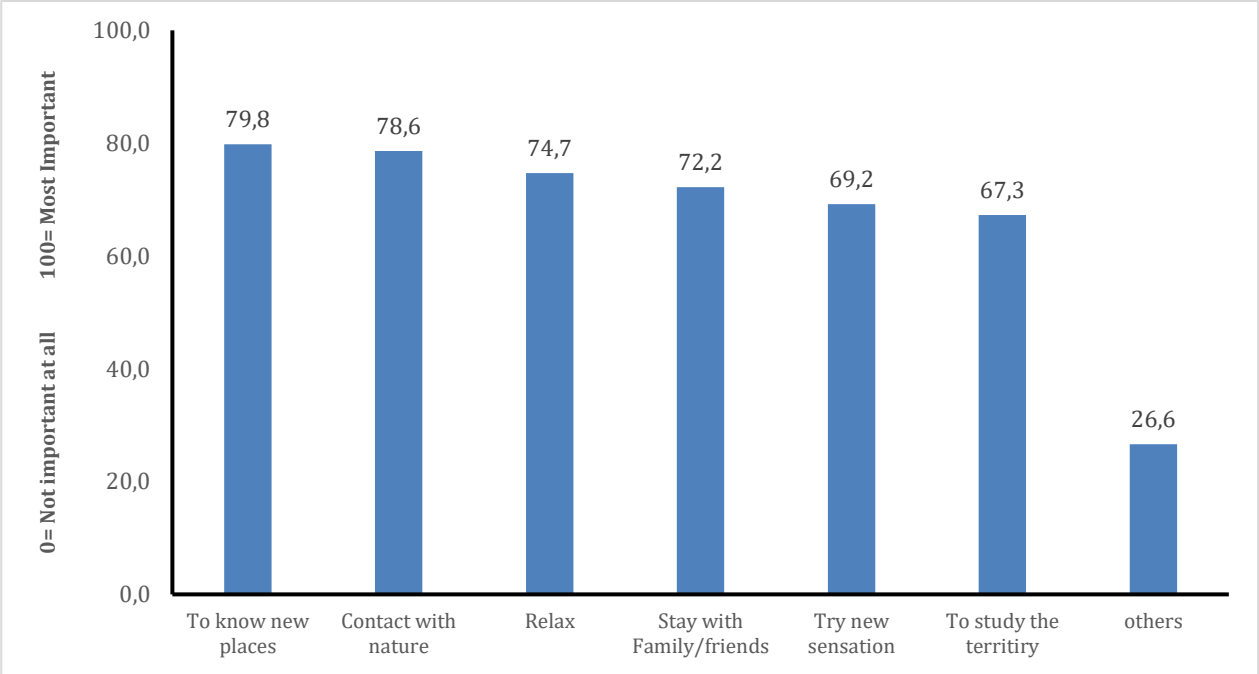

Figure 15: Goals to Visit a Natural Area by Non-Visitors.

To understand which activities are important to achieve the most important goals while visiting Cansiglio or a natural area, we asked the respondents to answer to a complex set of selection to get their preferences. Below we will see the graphs explaining the link between the goals Relax (Figure 15) Contact with nature (Figure 16), and Discovering new places (figure 17) with the activities done in Cansiglio or in a natural area in general for visitors and non-visitors. We will link the mostly mentioned common important activities with the above-mentioned goals, which will clarify their preferences for goals and the activities they carry out to achieve those, so we can point out which are the reasons for congestion and how it's dynamics changes accordingly.

The graphs show variations of bars starting from 1 to 3 meaning that 1= Very important and 3= Not important at all.

In the below graph (Figure 15), we can see two different color bars (Blue for visitors and orange for non-visitors) explaining difference in importance of common activities to achieve the goal relax. It interprets that Hiking, picnic and eating in restaurants are equally most important to achieve the goal of relax for visitors of Cansiglio whereas, picnic and eat in restaurants are equally important to achieve the goal of relaxing for non-visitors in a natural area, being hiking in the second most important along with wildlife observation.

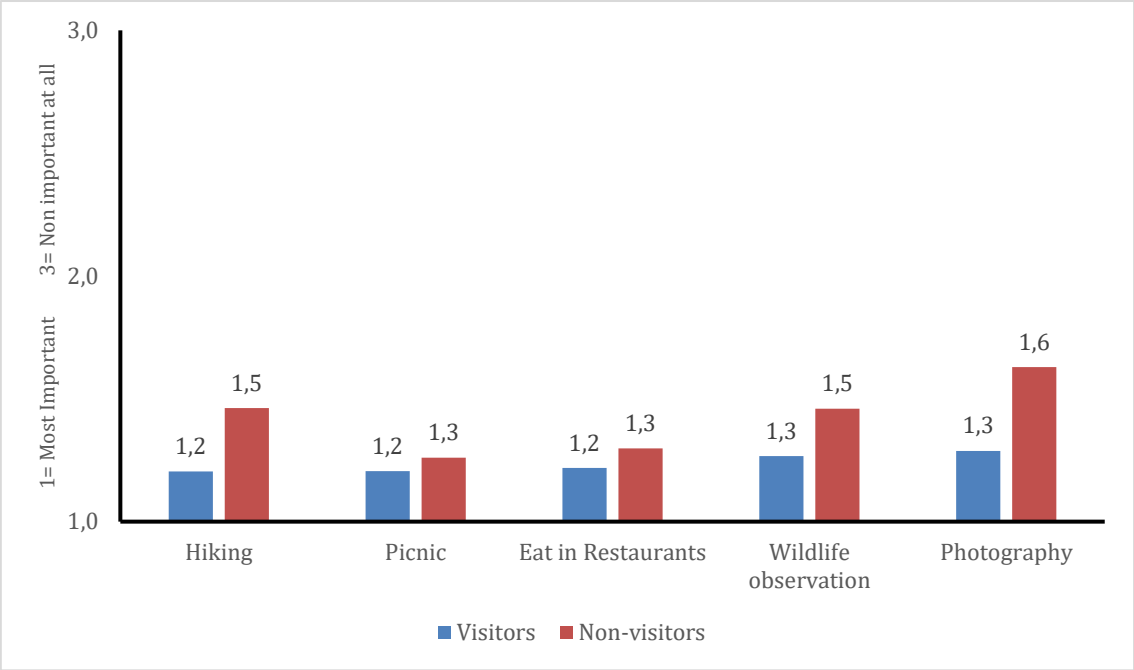

Figure 16: linking Relaxing with Most Important Activities for Visitors and Non-visitors.

If we look at the graph for the goal contact with nature (Figure 16), we see some different activities from the above graph, it explains that participating in local events, hiking and wildlife observation is equally most important for the visitors in Cansiglio, on the other hand for non-visitors, hiking, wildlife observation and picnicking is most important and attending local event is less important while visiting a natural area.

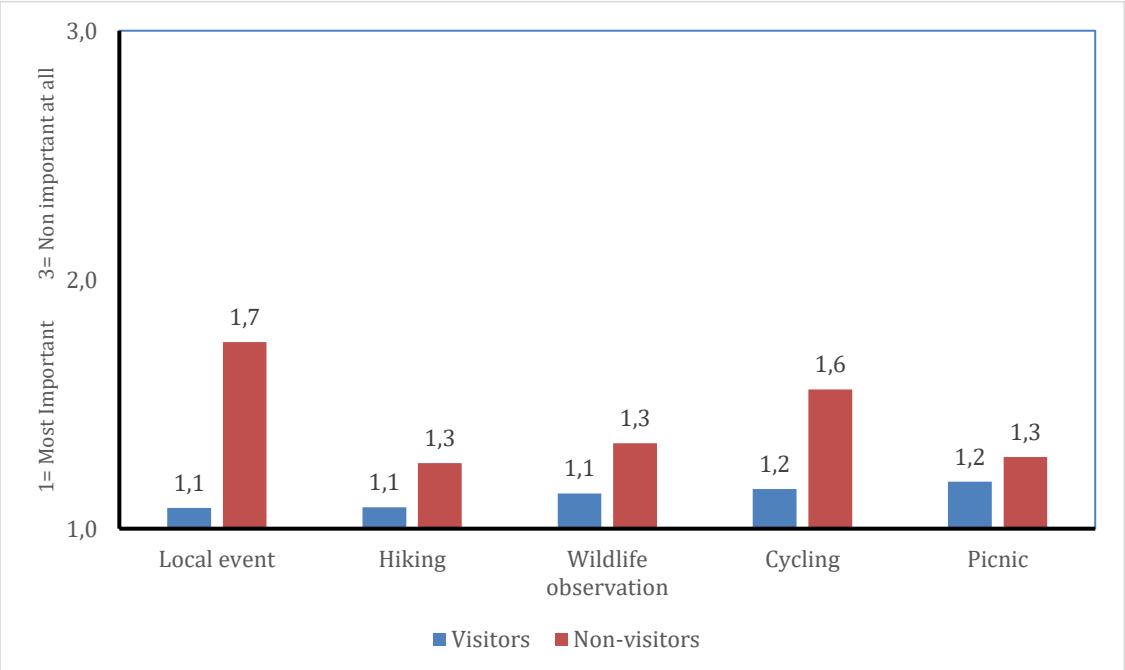

Figure 17: Linking Contacting with Nature with Most Important Activities for Visitors and Non-visitors.

The next graph (Figure 17) is for the goal of discovering new places linked to most common important activities to achieve that. It shows that Cultural visits, hiking, cycling, and picnicking are most important for the visitors while visiting Cansiglio whereas, for non-visitors visiting a natural area, hiking comes first and is followed by cultural visits.

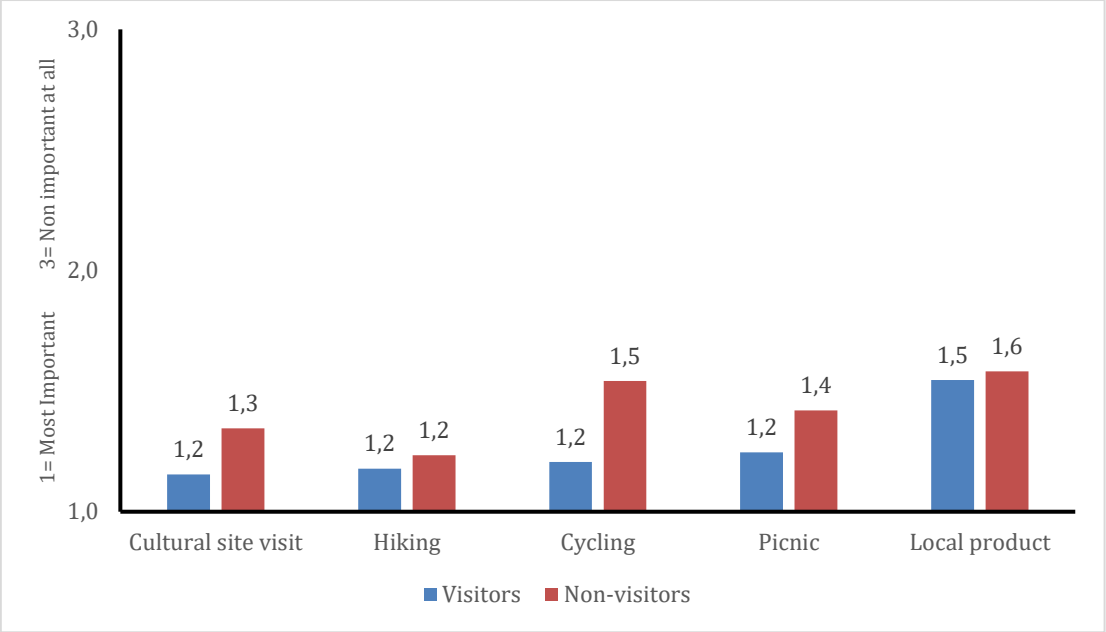

Figure 18: Linking Discovering New Places with Most Important Activities for Visitors and Non-visitors

In the following part, results containing data about visitors re-visiting to Cansiglio, and non-visitors possible future visit will be interpreted. In the graph below (Figure 18), it is shown that 98% of the visitors wants to revisit Cansiglio in the future. We will also have a look at their specific preferences of visiting Cansiglio.

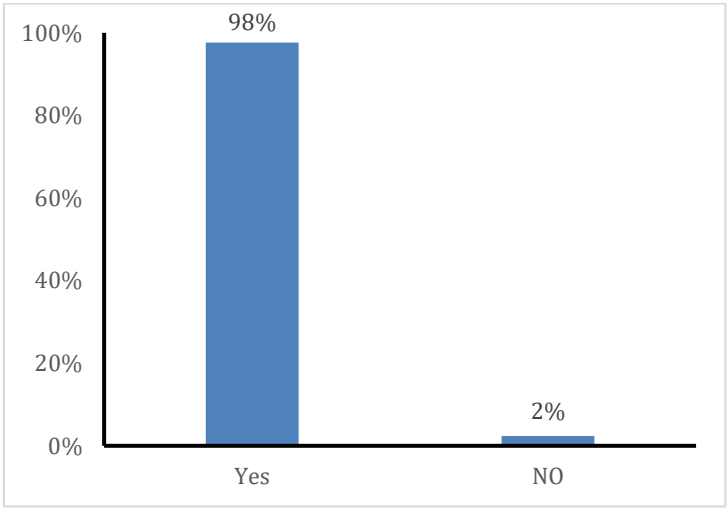

Figure 19: Percentage of Visitors Planning to revisit Cansiglio.

Now the reason we analyze this section is to see if there will be an increase in number of visitors in Cansiglio in the coming days, it clearly shows that there be a greater number of visitors in the coming month, six months and a year and it kept increasing in percentage (Figure 19). Together with Visitors revisiting Cansiglio and new possible visits for non-visitors, it can be assumed that the number of visitors will increase a lot in number in the coming days creating traffic and parking congestion in Cansiglio.

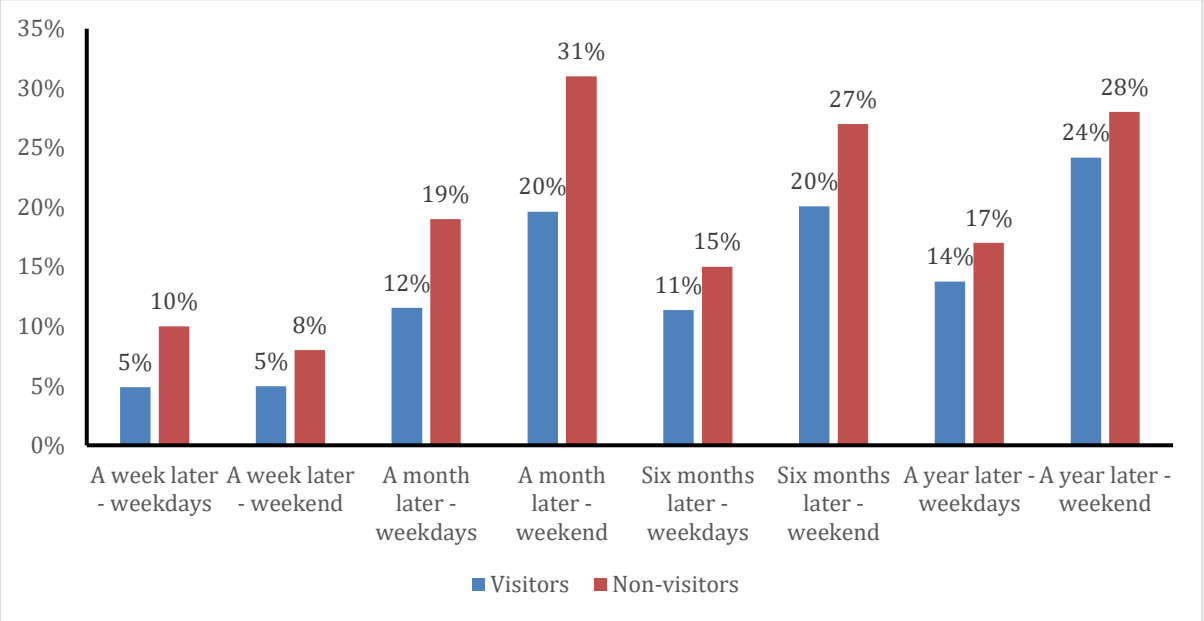

Figure 20: Future Visit to Cansiglio for Visitors and Non-visitors

Beyond individuals' intentions and objectives for visiting Cansiglio, an external factor significantly influencing their decision is the prevailing weather conditions. This factor holds considerable sway over whether individuals choose to visit or opt out.
Respondents were asked to rate, on a scale from 1 to 5 (where 1 implies a positive influence and 5 indicates a negative influence), how weather conditions impact their decision to visit Cansiglio or other natural areas. The data depicted in the graph (Figure 20) below illustrates the influence of various weather conditions on visitors and non-visitors to Cansiglio forest. For visitors, rain, fog, and extremely high temperatures are factors that notably deter their decision to visit, as indicated by their higher values compared to 3. Surprisingly, snow doesn't seem to have a significant impact on their decision either way, displaying a neutral value of 3. Intriguingly, extremely low temperatures appear to positively influence visitors' decisions to visit Cansiglio.

Conversely, the pattern for non-visitors follows a similar trend but with higher values across all variables, each surpassing 3. This higher value suggests that weather conditions such as rain, fog, extremely high temperatures, and even extremely low temperatures all negatively influence the decision-making of those who opt not to visit natural areas like Cansiglio.

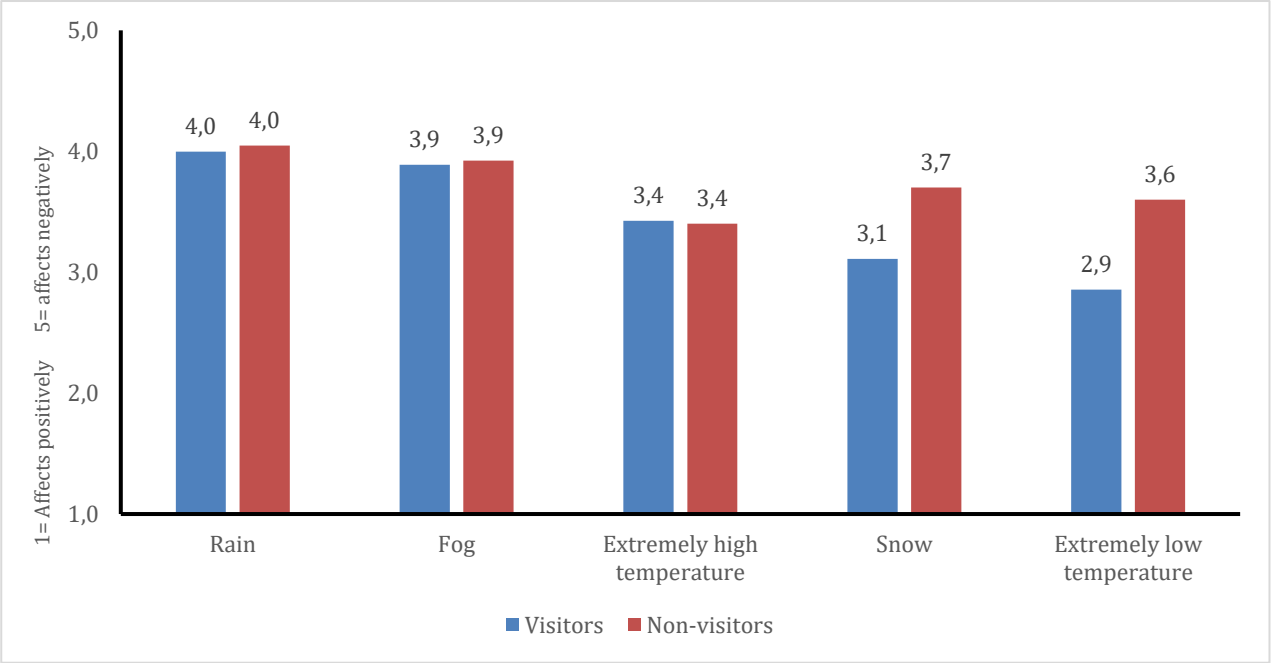

Figure 21: Weather Conditions affecting Interest in Visiting Cansiglio (visitors) and Natural area (non-visitors).

4.2 Understanding the levels and pattern of congestion.

In this section, we delve into an in-depth analysis of the congestion levels within the Cansiglio region, based on responses from visiting tourists. Understanding the intricacies of congestion patterns is vital for efficient management and ensuring a satisfying visitor experience.

As observed in the graph (Figure 22), the highest response from tourists pertains to Level 4 congestion, which represents a congestion range of approximately 70% to 80% within the Cansiglio area.

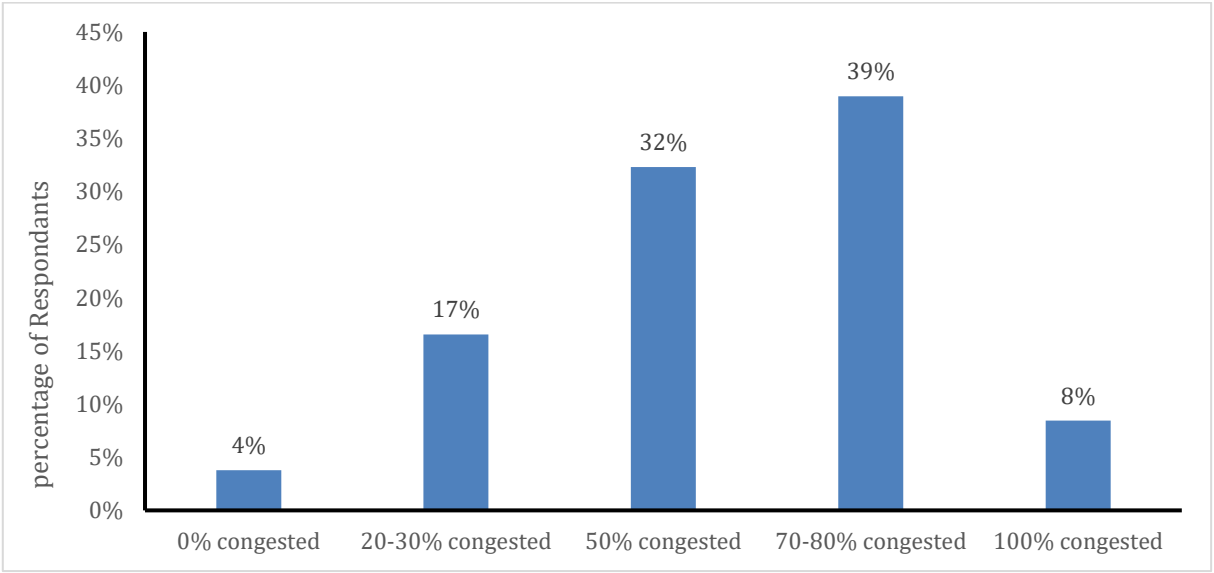

Figure 22: Level of Congestion Reported by Visitors in Cansiglio

To gain deeper insights into the congestion patterns, we have linked this data with visitors' visitation patterns. This linking allows us to discern the relationship between their visiting schedules and the corresponding congestion levels (Figure 23).

Our analysis extends to examining congestion levels on weekdays throughout the year. Remarkably, Level 4 congestion consistently emerges as the most frequently reported level across all months. December stands out as the month with the highest congestion, particularly at Level 4.

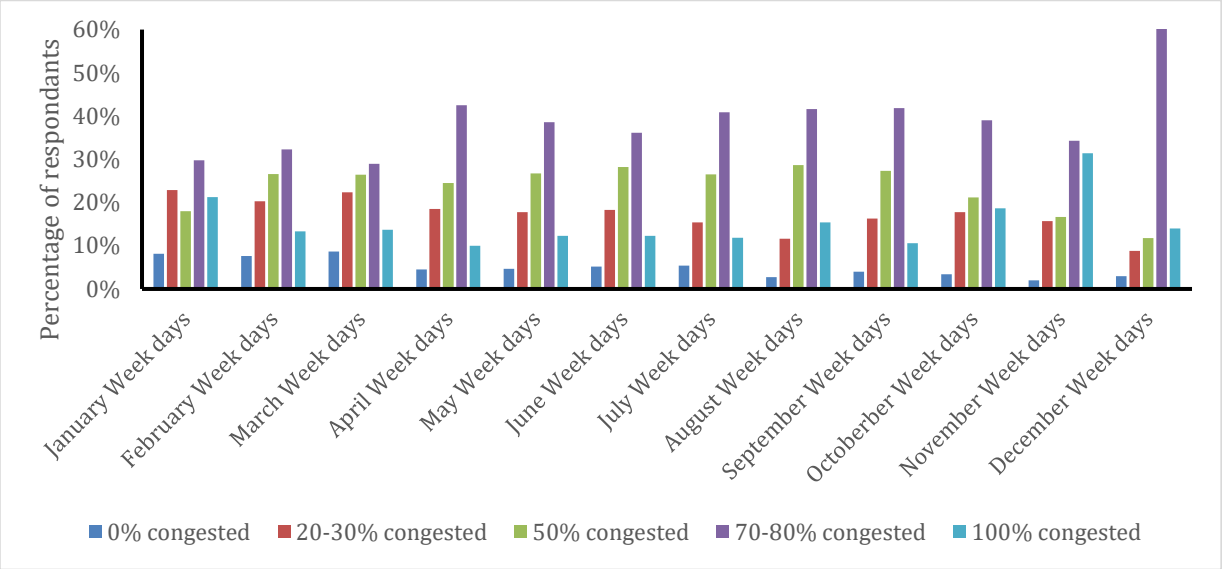

Figure 23: Weekdays Congestion Level and Patters Throughout the Year

Figure 24 reveals that a noteworthy distinction arises when we compare weekend congestion levels to those observed on weekdays. During weekends, approximately 50% of the respondents reported experiencing Level 4 congestion in the months of May and December, with January and July following closely. Furthermore, Level 5 congestion is most prominent in November, February, and May.

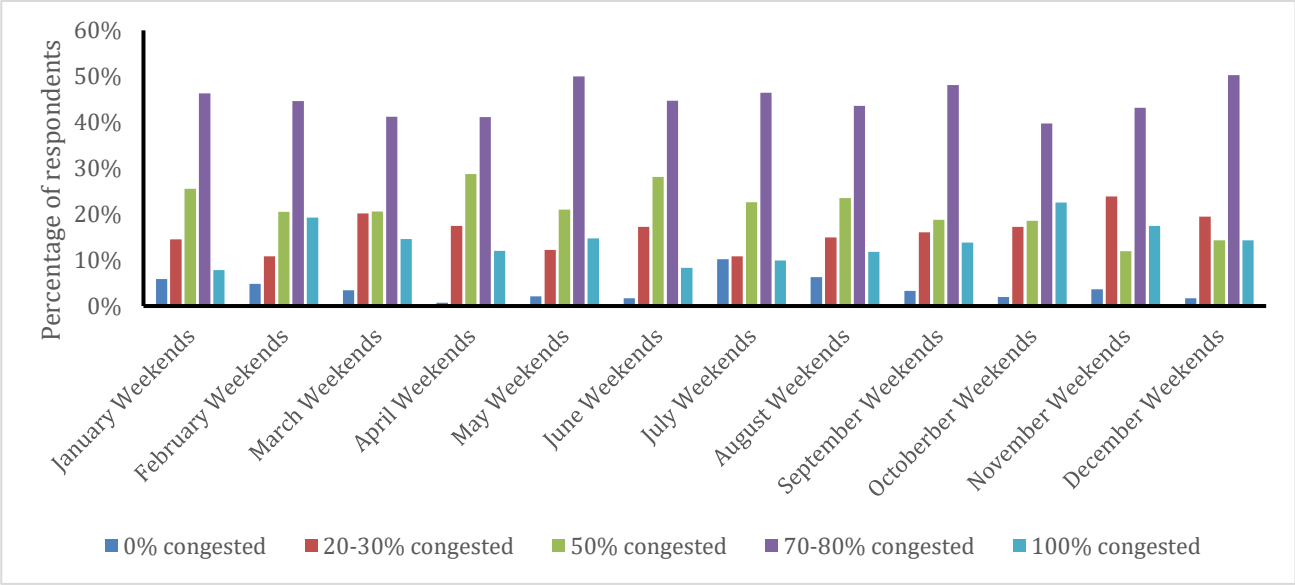

Figure 24: Weekends Congestion Level and Patters Throughout the Year

The highest congestion occurs during the peak tourist seasons, particularly during the summer months and the winter period, probably due to having holidays aligning with the reported Level 4 congestion. In contrast, the more moderate temperatures of spring and autumn see an uptick in Level 5 congestion.

4.3 Importance of parking lot in visitors and non-visitors' choices

In this section, we delve into the pivotal role of parking facilities in the behavior of tourists and non-visitors and explore their association with congestion in the Cansiglio region.

A crucial aspect of tourists' behavior pertains to their parking choices. The graph (Figure 25) presented illustrates that a majority of visitors opt for designated parking areas. However, it is noteworthy that a small percentage of individuals resort to parking by the roadside or in unauthorized silvo-pastoral zones.

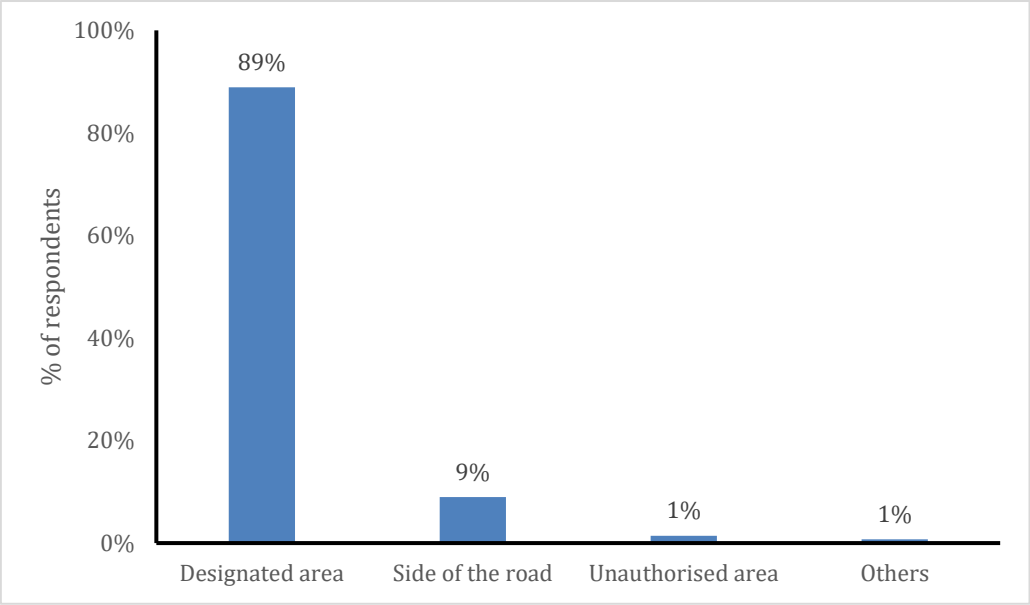

Figure 25: Parking Behavior of Visitors of Cansiglio.

Understanding the underlying reasons for these choices is vital. But before delving into the motivations, we need to assess the amount of time respondents spend searching for a parking area. Figure 26 reveals that most respondents had to wait for approximately 10 minutes to secure a parking spot. Only 8% of respondents reported finding a parking space immediately. This information sets the stage for our exploration of the intricate relationship between parking behavior and congestion levels within the Cansiglio area.

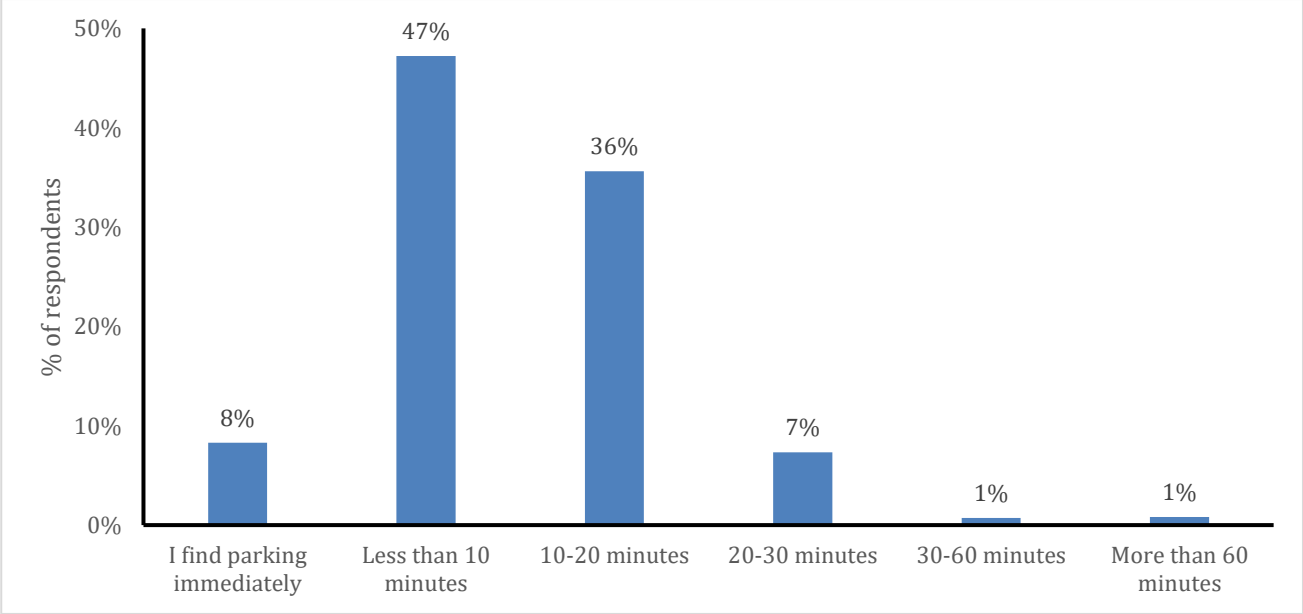

Figure 26: Time to Find a Parking Lot by Visitors in Cansiglio.

The graph (Figure 27) highlighting parking choices in roadside areas and unauthorized areas demonstrates a direct connection to moderate congestion levels. Notably, there were respondents who chose roadside parking or parking in unauthorized area even when congestion levels were not substantial. This could be indicative of either a lack of concern for parking in

designated areas or a consequence of insufficient signage and minimal regulations within Cansiglio.

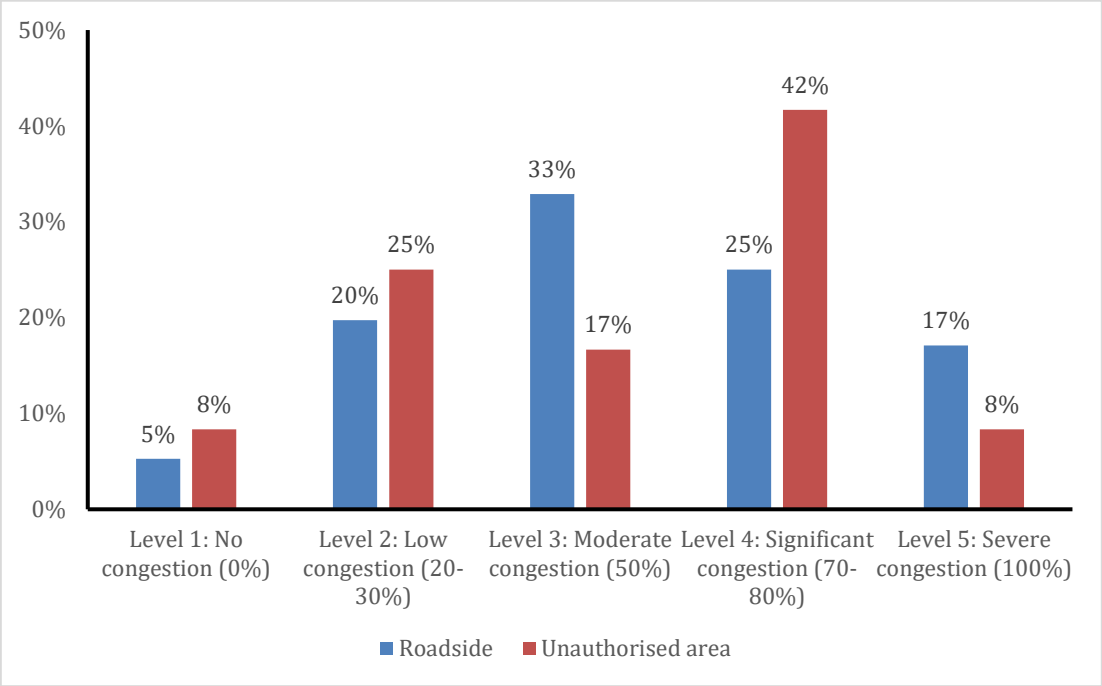

Figure 27: Level of Congestion Reported by Visitors in Cansiglio

To gain further insights, we examine responses related to what visitors do when they cannot find a parking area, especially during severe congestion (Figure 28).

The data indicates that most people opt to search for an alternate parking location, which may include roadside parking, as it does not fall under unauthorized areas in Cansiglio. In contrast, 31% of these respondents prefer to wait until a parking space becomes available.

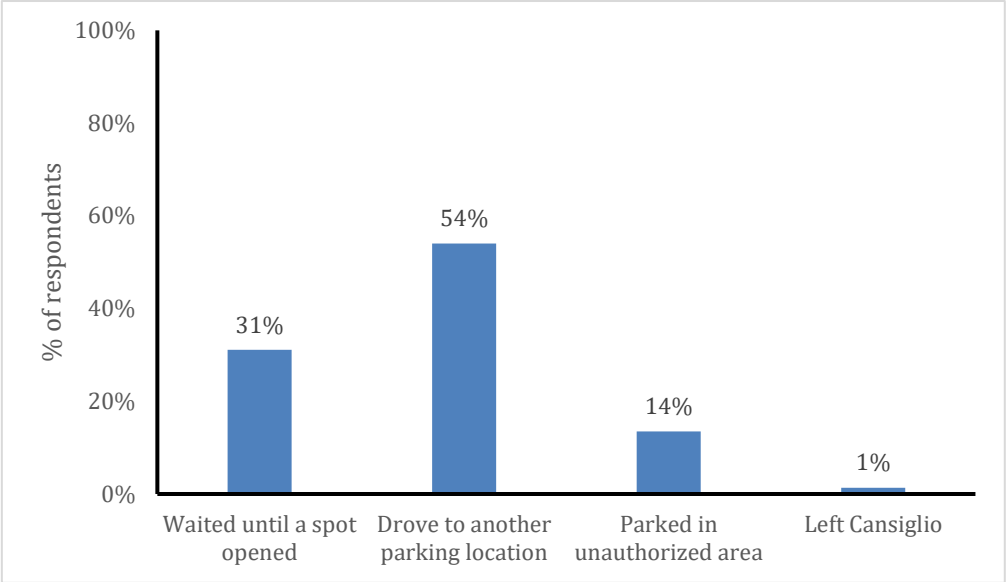

Figure 28: Reaction of Visitors When Unable to Find a Parking Lot.

A critical aspect of our research explores visitor willingness to pay a parking fee in exchange for a reduced wait time in finding a parking spot. This question serves as a pivotal point of interest, as it reflects the degree of willingness to invest in a more efficient parking experience, even though we do not discern the specific monetary value but gauge their interest.

Figure 29 reveals that respondents exhibit reluctance to pay a parking fee unless the time reduction is substantial (26-30 minutes), where the mean value registers at 3, indicating a neutral response to the idea of paying for parking.

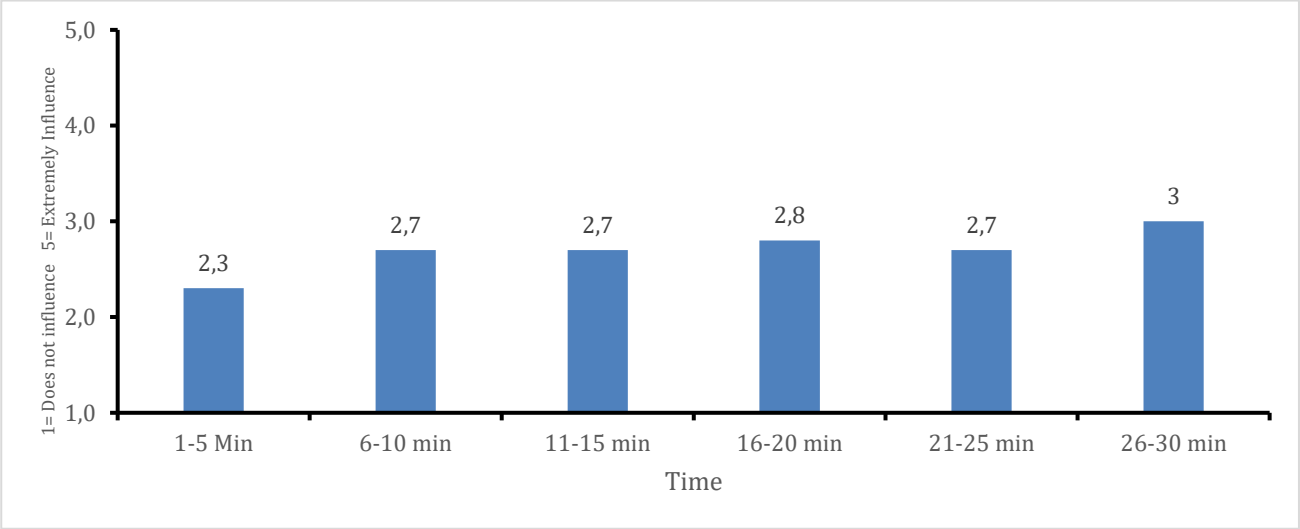

Figure 29: Interest in Paying Parking Fees to Reduce Time Finding Parking Lot for Visitors.

To delve further into the analysis, we focused on respondents who reported experiencing congestion level 5 (Figure 30). This specific subset demonstrates a slightly higher degree of interest in paying a parking fee for time reductions of 6-10 minutes. However, the substantial standard deviation in this category highlights the varied nature of responses, even among those who have experienced heightened congestion levels. This could be due to the previous response, where visitors mentioned that they had to wait less than 10 minutes to find a parking space in

Cansiglio, so they show highest variation on the option for “Time 6-10 Minutes” Nevertheless, a slightly elevated level of interest in paying parking fees is evident among respondents who have encountered congestion issues.

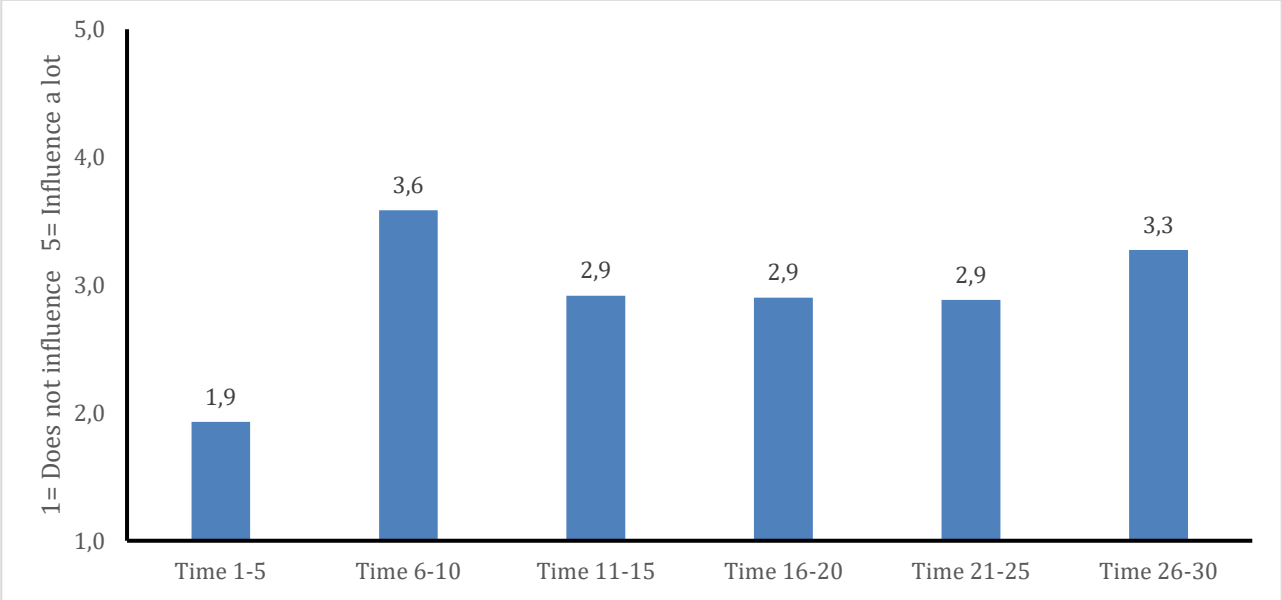

Figure 30: Interest in Paying Parking Fees to Reduce Time Finding Parking Lot for Visitors Reporting Level 5 Congestion.

The inquiry regarding willingness to pay for parking fees was not limited to visitors alone; non-visitors were also queried to assess their interest in this regard. This approach aids in understanding the pre- and post-visit characteristics of individuals concerning Cansiglio Forest.

The results in figure 31 demonstrate a clear pattern of increased interest and willingness to pay parking fees for time reductions as the duration extends beyond 15 minutes. Notably, non-visitors exhibit a mean value very close to 3 for time reductions of 1-15 minutes, but their willingness to pay for parking increases significantly for reductions exceeding 16 minutes. This graph underscores the evolving attitudes and preferences of individuals in response to changes in the availability and cost of parking facilities, shedding light on the evolving characteristics of non-visitors and visitors alike.

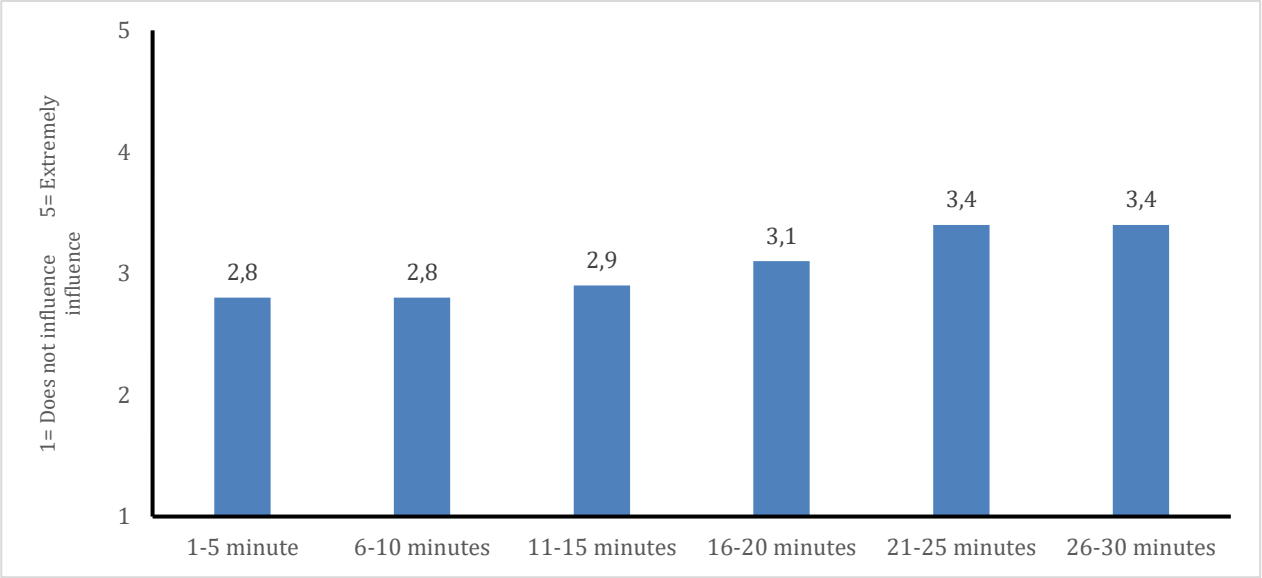

Figure 31: Time Reduction in Finding Parking Lot Influencing Visitors to Pay Parking Fee

In this section, we explore the discerning choices of both visitors and non-visitors concerning the preferred payment methods in the hypothetical scenario where parking fees are introduced within the scenic confines of Cansiglio Forest.

Non-visitors, like visitors, demonstrate a preference for mobile applications as their top choice for payment. This preference is followed by online reservations, telepass, parcometers, and others but the difference in their mean value does not seems to be very significant (Figure 32).

The remarkable consistency of the mean value at 3 for mobile applications indicates that this payment method garners a balanced response, reflecting a neutral sentiment among both visitors and non-visitors. Also, in case of Online reservation option for non-visitors, it shows a neutral interest in it. This shared neutrality suggests that mobile applications are the most universally accepted and perhaps the most convenient choice for payment within the context of Cansiglio Forest. In contrast, the remaining payment methods appear to generate less enthusiasm among respondents.

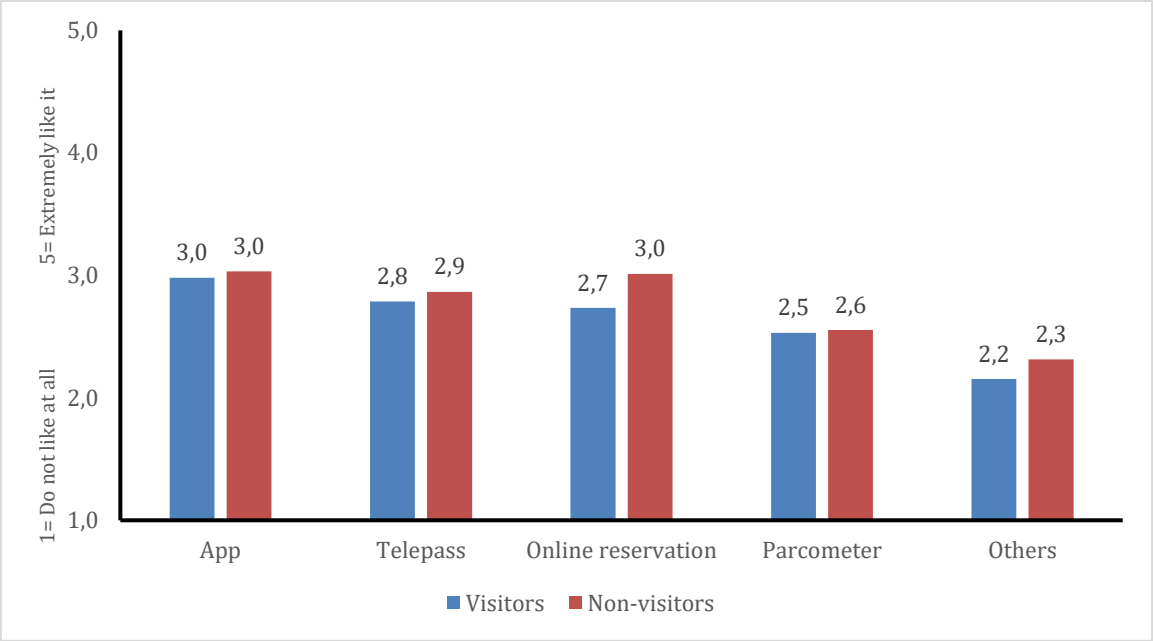

Figure 32: Preferred Payment Vehicle by Visitors and Non-visitors

4.4 Interest in Financing ES in Cansiglio

In this section, we aim to gain deeper insights into the priorities of both visitors and non-visitors regarding the allocation of revenue from potential parking fees. The focus lies on how this revenue can be harnessed to improve existing services and introduce novel offerings in Cansiglio, all with the goal of enhancing ES within this natural treasure.

The juxtaposition of two sets of bars (Figure 33) offers a remarkable glimpse into the preferences and aspirations of two distinct groups – visitors who have experienced the allure of Cansiglio and non-visitors who may yet embark on this adventure.

The data reveals an overwhelming consensus among both visitors and non-visitors regarding their priorities for improving existing services. Foremost among these is the desire to enhance the accessibility and quality of public toilets. These facilities play a pivotal role in ensuring a comfortable and hygienic experience, serving as a testament to the shared concern for the welfare of all who partake in the forest's offerings. In close pursuit, there is an unmistakable interest in refining trail mapping and signage. This emphasis underscores the essential need for clear and informative guides to navigate the forest's vast expanse, ensuring that visitors make the most of their experience while preserving the natural beauty. Furthermore, the commitment to improving accommodation facilities underscores the aspiration for a holistic, immersive experience in Cansiglio.

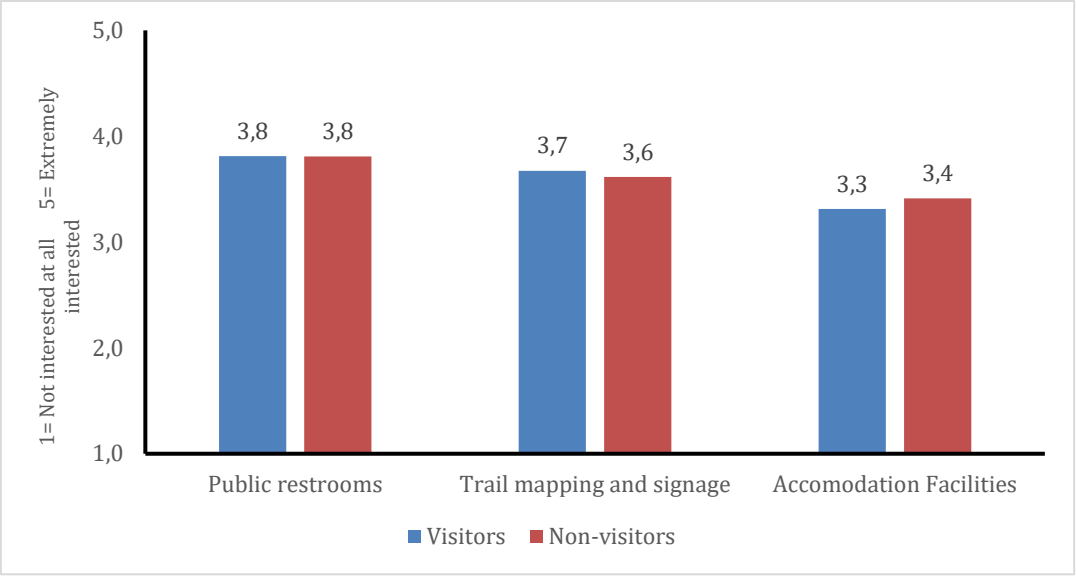

Figure 33: Interest of Visitors and Non-visitors in Improving Available Services in Cansiglio

The commitment to environmental responsibility and the integrity of the forest ecosystem shines through when considering the interest in developing new services. For both visitors and non-visitors, the resounding priority is the introduction of waste disposal services (Figure 34). This fervor stems from the collective acknowledgment of the imperative to minimize the environmental footprint and protect the forest's natural habitat. Additionally, visitors express a substantial interest in implementing a parking security system, highlighting their concern for the safety of both visitors and their vehicles. Concurrently, the demand for refreshment points along the forest trails aims to enhance the overall experience, offering respite and sustenance during this captivating natural wonder.

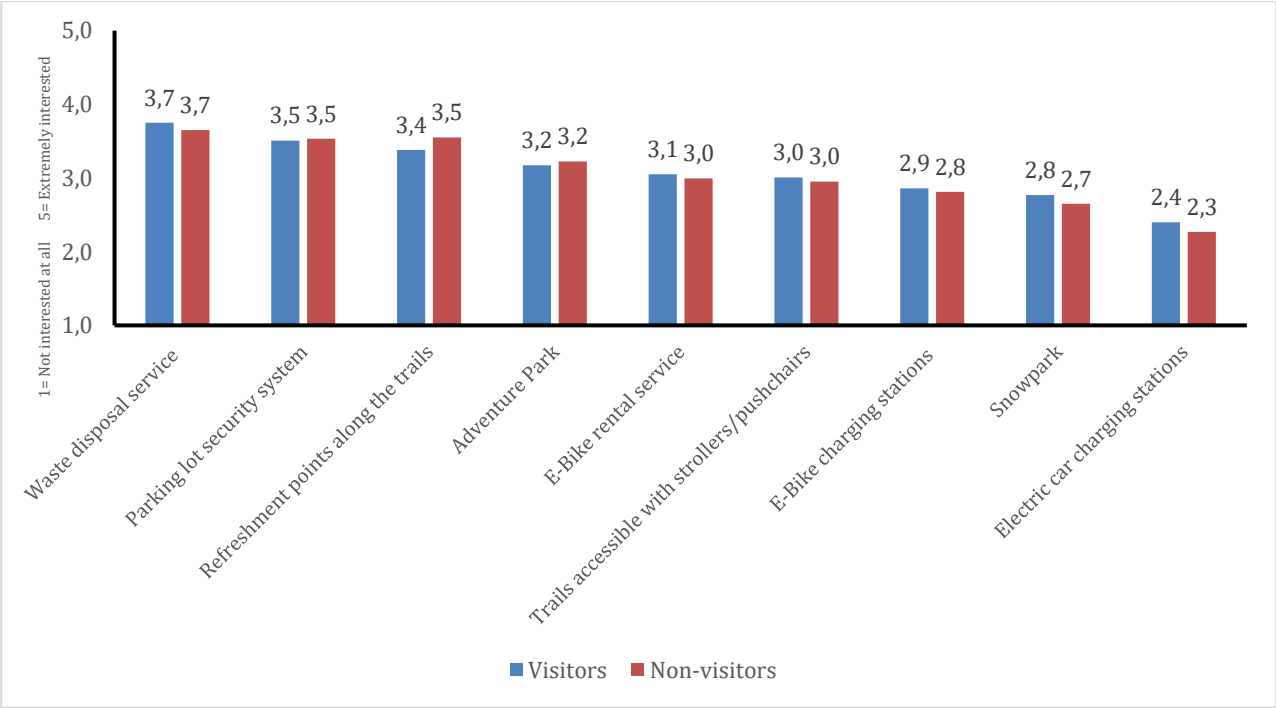

Figure 34: Interest of Visitors and Non-visitors in Developing New Services in Cansiglio

It is important to recognize that these priorities are very alike between visitors and non-visitors, reflecting their needs and expectations. This suggest that the interests and need of the tourists stays the same even though the non-visitors group has never visited Cansiglio before. The additional services, such as an Adventure Park and E-bike rental services, although ranked lower in interest, are nonetheless crucial to bolstering the multifaceted cultural ES that make Cansiglio an enchanting destination.

The responses captured in this survey portray a resolute commitment to conserving and enhancing ES within Cansiglio. Visitors and non-visitors alike are eager to see the potential parking fee revenue harnessed to ensure that the forest's charm is preserved and made more accessible. Their preferences encompass both the improvement of existing amenities and the introduction of novel services, reflecting a collective investment in the sustained vitality of Cansiglio's ecological and cultural treasures. The allocation of these resources serves as a testament to the shared vision of a harmonious coexistence between human enjoyment and the safeguarding of the forest's natural splendor.

In this coming section, we aim to gauge the environmental consciousness and engagement of the survey participants by investigating their affiliation with CAI (Club Alpino Italiano) and their affiliations with environmental associations. This inquiry allows us to gain insights into the broader environmental awareness of our respondents. The data illustrates that only a marginal percentage of respondents are acquainted with CAI (Figure 35), underscoring the limited awareness of this specific environmental association.

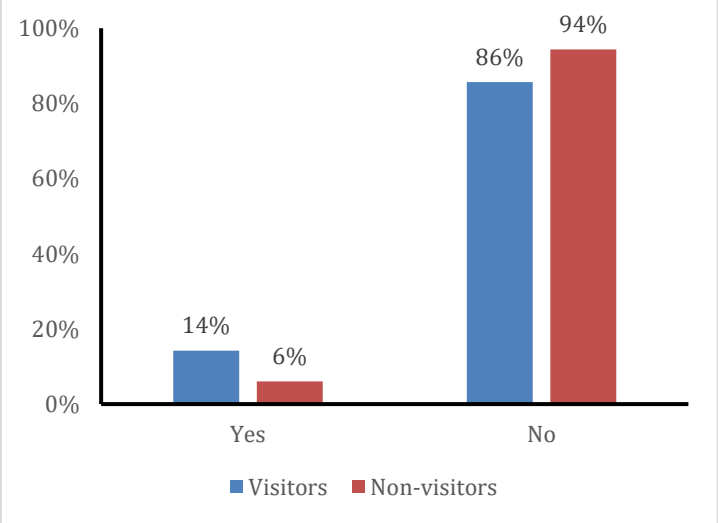

Figure 35: Visitor and Non-visitors Count of Being Member of CAI.

This revelation prompts further exploration of their involvement with other environmental organizations, providing a broader context for understanding their environmental engagement.

A relatively modest proportion of respondent's report being members of environmental associations (Figure 36). This finding suggests that while environmental engagement is vital for the preservation of natural landscapes and ES, it remains a relatively niche domain among the survey participants.

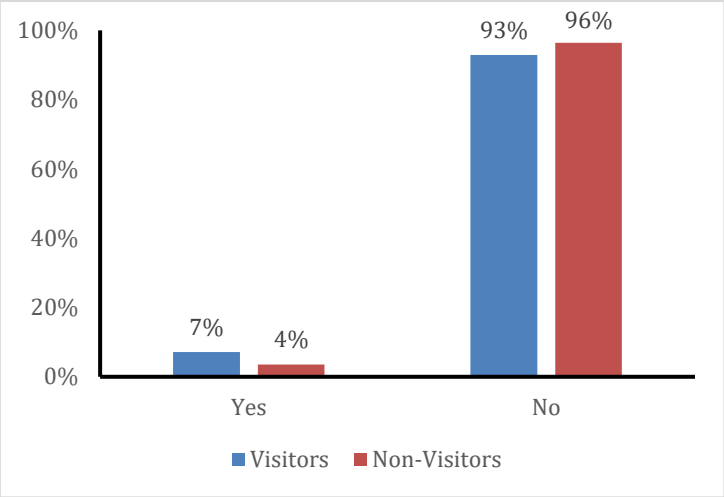

Figure 36: Visitor and Non-visitors Count of Being Member of Other Environmental Associations

Of those respondents affiliated with environmental associations, the majority are linked with WWF (Worldwide Fund for Nature) (Figure 37). This inclination towards WWF can be attributed to its global recognition and extensive efforts in environmental conservation. Alongside WWF, respondents mention participation in various other associations such as "FAI" (Fondo Ambiente Italiano), "Legambiente," "TCI" (Touring Club Italiano), and others.

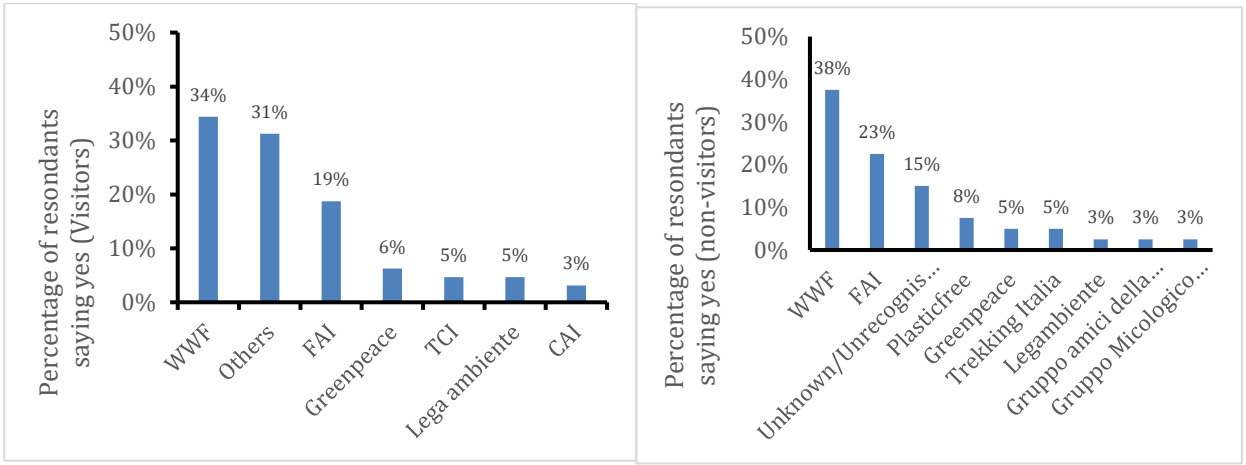

Figure 37: Distribution of Environmental Associations (visitors and non-visitors being members)

These affiliations reveal a diverse spectrum of interests and passions in the realm of environmental engagement. Each association is dedicated to distinct aspects of environmental conservation, demonstrating the multifaceted nature of respondents' commitments to preserving the environment.

5. Discussion

5.1 Theoretical and Managerial Implications:

Understanding visitor behavior within Cansiglio Forest offers profound theoretical implications. The seasonal variations in visitation numbers and their alignment with holiday periods underscore the temporal influence on visitor patterns. This synchronization resonates deeply with Push and Pull Theory, highlighting visitors' intrinsic draw towards nature and exploration rather than materialistic desires (Dann, 1977). The surge in visitor numbers during August, a holiday month, signifies the significant impact of temporal factors on visitation patterns, showcasing the substantial role of time-related considerations in guiding recreational choices. Similarly, the preference for weekend visits during other months accentuates the guiding role of temporal dynamics, emphasizing the influence of time-related factors on tourists' recreational activities.

Visitors' parking decisions reflect a delicate balance between convenience and the available options to manage congestion effectively. The reluctance to pay parking fees without substantial timesaving indicates a perceived value proposition, a significant facet of Consumer Behavior Theory (Hultman et al., 2015; Lorenzo-Romero et al., 2021; Perera & Vlosky, 2017). This reluctance underscores how visitors weigh the benefits of reduced waiting times against the cost of parking fees, shedding light on their decision-making processes and cost-benefit analyses.

The prioritization of enhancing existing amenities, such as public toilets and improved trail mapping, strongly echoes the ethos of Leisure and Tourism Studies (Mannell & Iso-Ahola, 1987; Rotherham et al., 2005; Su et al., 2020). These preferences underscore their emphasis on safety, comfort, and guidance during their experiences within the forest.

These implications hold significant relevance for devising effective management strategies and fostering heightened environmental engagement at Cansiglio Forest. Understanding these dynamics enables the tailoring of strategies aligned with visitors' intrinsic motivations, ensuring a more sustainable and gratifying visitor experience while concurrently safeguarding the ecological integrity of the forest.

On a managerial level, the implications are equally profound. The seasonal fluctuations in visitation and the correlation with holidays underscore the need for dynamic management strategies aligned with temporal variations. Implementing adaptive scheduling for resource allocation and staffing during peak periods, particularly in August and weekends, can optimize visitor experiences and infrastructure utilization. Insights derived can guide strategic placement of parking lots and ease congestion by providing convenient options aligned with visitors' preferences. Implementing efficient parking management systems that prioritize convenience without compromising forest integrity could mitigate congestion issues significantly. Offering tiered parking fee structures providing tangible benefits for visitors, such as time-saving incentives, while considering cost implications, could promote compliance with parking regulations. Moreover, the visitor-centric approach revealed by the emphasis on enhancing existing amenities suggests an imperative for continuous improvement. The parking fee payment method could be adopted on a multiple option basis, it could have Parcometer or Telepass but also having option for online reservation through website or App. Bridging the gap between environmental awareness and participation in conservation initiatives necessitates proactive engagement strategies. Collaboration with recognized environmental organizations, leveraging technology for interactive environmental education, and fostering community engagement programs can augment visitors' environmental consciousness and encourage active involvement in conservation efforts. These managerial implications pave the way for a holistic approach, aligning visitor satisfaction, ecological conservation, and sustainable management practices, thereby ensuring the long-term welfare of Cansiglio Forest as a natural treasure and enhancing visitor experiences. Decision makers and park managers can leverage these findings to formulate policies and interventions tailored to the specific challenges presented by Cansiglio Forest.

5.2 Policy Implementation:

Armed with the insights garnered from this study, policy implementation strategies can be meticulously designed to manage congestion effectively, thus striking a balance between visitor satisfaction and ecosystem preservation in Cansiglio Forest.

The findings emphasize the urgency of implementing strategies that redistribute visitors more evenly throughout the year. The prevalence of Level 4 congestion during December and summer months calls for incentive-based schemes to promote off-peak visits (Dornier & Mauri, 2020). Such programs can include discounts, special events, or packages that attract visitors during less congested periods. Effective congestion management policies will entail active collaboration between decision makers, park managers, and local businesses to create a year-round appeal and spread the visitor load, thereby protecting the forest's fragile ecosystem (Samal & Dash, 2023).

Moreover, the importance of parking facilities and the preferences for designated parking areas highlight the need for comprehensive parking management policies. Strategies can encompass optimizing parking locations, implementing digital solutions for parking management, and launching public awareness campaigns that promote responsible parking practices (Rahmani et al., 2021; Rajasekhar et al., 2021; Ujjwal et al., 2021). To alleviate parking congestion and ensure a sustainable visitor experience, parking facilities should be integrated with the broader management plan.

The integration of ES into the policy framework also deserves consideration. The revenue generated from potential parking fees can be allocated towards enhancing visitor services and safeguarding the forest's natural assets. Policies can prioritize the enhancement of public amenities, trail mapping, and the introduction of waste disposal services, which align with visitor preferences. In addition, consideration can be given to involving visitors in conservation efforts through eco-volunteering and education programs, creating a sense of shared responsibility for the ecosystem.

In conclusion, the results of this study provide a solid foundation for policy implementation that can ensure Cansiglio Forest remains a thriving ecotourism destination, effectively managing congestion while preserving its unique ES. The theoretical, managerial, and practical implications, alongside the acknowledgment of limitations and suggestions for further research, underscore the valuable insights provided by this study, which can guide not only the future of Cansiglio but also contribute to the broader discourse on sustainable tourism management.

5.3 Possible Limitations and Further Studies:

Although the results yield valuable insights, they stem from stated preferences, which may not always precisely mirror real-world behaviors. Thus, a natural progression for further research involves exploring the variance between stated preferences and actual actions. Investigating the alignment or disparity between what visitors express as their preferences and what they exhibit through their behaviors can provide a deeper understanding of the complexities underlying visitor choices.

Furthermore, this study focuses on Cansiglio Forest, Italy, and while the findings are insightful, it is essential to recognize their contextual specificity. Cansiglio's characteristics are distinctive and may not be universally applicable to all natural areas. To foster a more comprehensive understanding of visitor behaviors in various ecosystems, further research can encompass a broader range of natural sites from diverse regions and ecosystems. Conducting cross-cultural comparative studies can unveil cultural and contextual nuances in visitor patterns and congestion management, enriching the broader field of ecotourism.

A significant avenue for future research is to delve into visitors' willingness to pay for various attributes within Cansiglio Forest, including a playground, forest bathing opportunities, wildlife observation sites, thematic trails, and picnic areas. Understanding the monetary value visitors assign to these attributes is crucial for efficient park management. The use of choice experiments can be a powerful approach to elicit their preferences and willingness to pay for these amenities. By employing choice experiments, researchers can gather in-depth data regarding trade-offs between different attributes and the corresponding economic valuations. This information can serve as a foundation for designing and optimizing pricing strategies for various amenities within the forest.

Moreover, a future research avenue could delve into the precise ecological impacts of congestion on the forest's ecosystem and its services. While this study acknowledges congestion as a concern, a more detailed exploration of how increased visitor numbers influence biodiversity, soil quality, and vegetation health would be instrumental. Understanding the ecological ramifications of tourism congestion is vital for tailoring conservation and management policies that effectively protect the forest's natural assets.

6. Conclusion

This study aimed to unravel the challenge of parking congestion in Cansiglio Forest, investigating visitor behaviors and their role in exacerbating this issue. The primary focus was to understand visitor preferences and choices, particularly concerning the introduction of parking fees as a potential solution. It delved into the visitor response to this proposed remedy, considering its integration with time-saving incentives and funding for improving services within Cansiglio. Additionally, it emphasized the pivotal role of visitor awareness in shaping effective solutions.

Veneto Agricoltura's decision to implement parking fees for designated lots served as the backdrop for this investigation, forming the core basis for understanding the intrinsic problem and gauging tourist reactions.

Throughout this research, significant insights emerged regarding seasonal visitor trends, emphasizing the allure of nature over materialistic desires and guiding visitor choices throughout the year. Analyses of congestion patterns and parking behaviors shed light on the delicate balance visitors strike between convenience and congestion management, especially in evaluating the value of parking fees and their decision-making considerations.

The thesis proposed dynamic management strategies, including adaptable parking fee structures and improved visitor engagement on environmental issues. These strategies aimed to optimize visitor experiences while addressing congestion concerns.

Looking ahead, the thesis advocates for policies that encourage a more balanced distribution of visitors throughout the year and integrating ecosystem services into the framework aligns with the broader goal of balancing visitor satisfaction with preserving the forest's ecosystem.

In essence, this study serves as a guide for managing Cansiglio Forest as an ecotourism destination. It contributes not only to refining visitor experiences but also enriches the discourse on sustainable tourism management. By exploring visitor behaviors and ecosystem dynamics, the study lays the groundwork for continued exploration and a deeper understanding of effective strategies for managing and enhancing Cansiglio Forest, ensuring enriching experiences for future generations.

References

Aboudina, A., Abdelgawad, H., Abdulhai, B., & Habib, K. N. (2016). Time-dependent congestion pricing system for large networks: Integrating departure time choice, dynamic traffic assignment and regional travel surveys in the Greater Toronto Area. *Transportation Research Part A: Policy and Practice*, *94*. https://doi.org/10.1016/j.tra.2016.10.005

Acharya, R. P., Maraseni, T., & Cockfield, G. (2019). Global trend of forest ecosystem services valuation – An analysis of publications. In *Ecosystem Services* (Vol. 39). https://doi.org/10.1016/j.ecoser.2019.100979

Adach, S., Wojtkowska, M., & Religa, P. (2023). Consequences of the accessibility of the mountain national parks in Poland. *Environmental Science and Pollution Research*, *30*(10). https://doi.org/10.1007/s11356-022-24197-w

Adla, K., Dejan, K., Neira, D., & Dragana, Š. (2022). Degradation of ecosystems and loss of ecosystem services. In *One Health: Integrated Approach to 21st Century Challenges to Health*. https://doi.org/10.1016/B978-0-12-822794-7.00008-3

Akhoundogli, M., & Buckley, R. (2023). Outdoor tourism to escape social surveillance: health gains but sustainability costs. *Journal of Ecotourism*, *22*(1). https://doi.org/10.1080/14724049.2021.1934688

Awasthi, A. (2021). Mobility management in urban areas: Models and perspectives. In *Mobility Management in Urban Areas: Models and Perspectives*.

Aydin, I. Z., & Öztürk, A. (2023). Identifying, Monitoring, and Evaluating Sustainable Ecotourism Management Criteria and Indicators for Protected Areas in Türkiye: The Case of Camili Biosphere Reserve. *Sustainability (Switzerland)*, *15*(4). https://doi.org/10.3390/su15042933

Babri, S., Díez-Gutiérrez, M., Aspen, D. M., & Johansen, B. H. (2023). A simulation model to assess emission reduction policies in tourism transport: Case study of the Geiranger fjord UNESCO world heritage site in Norway. *International Journal of Sustainable Transportation*, *17*(9). https://doi.org/10.1080/15568318.2022.2137712

Baloch, Q. B., Shah, S. N., Iqbal, N., Sheeraz, M., Asadullah, M., Mahar, S., & Khan, A. U. (2023). Impact of tourism development upon environmental sustainability: a suggested framework for sustainable ecotourism. *Environmental Science and Pollution Research*, *30*(3). https://doi.org/10.1007/s11356-022-22496-w

Bookbinder, M. P., Dinerstein, E., Rijal, A., Cauley, H., & Rajouria, A. (1998). Ecotourism's support of biodiversity conservation. *Conservation Biology*, *12*(6). https://doi.org/10.1111/j.1523-1739.1998.97229.x

Bouma, J. A., & Van Beukering, P. J. H. (2015). Ecosystem services: From concept to practice. In *Ecosystem Services: From Concept to Practice*. https://doi.org/10.1017/CBO9781107477612.002

Button, K. J., & Verhoef, E. (1998). Road Pricing, Traffic Congestion and the Environment. In *Issues of Efficiency and Social Feasibility*.

Câmara, J. B. D. (2014). Reflections on the Green Economy (Redemption of the Principles of Mill and Pigou): A View of a Brazilian Environmentalist. *Journal of Environmental Protection*, *05*(12). https://doi.org/10.4236/jep.2014.512113

Cascetta, E. (2001). *Random Utility Theory*. https://doi.org/10.1007/978-1-4757-6873-2_3

Cassin, J., & Ochoa-Tocachi, B. F. (2021). Learning from indigenous and local knowledge: The deep history of nature-based solutions. In *Nature-Based Solutions and Water Security: An Action Agenda for the 21st Century*. https://doi.org/10.1016/B978-0-12-819871-1.00012-9

Caudullo, G., De Battisti, R., Colpi, C., Vazzola, C., & Da Ronch, F. (2003). Ungulate damage and silviculture in the Cansiglio Forest (Veneto Prealps, NE Italy). *Journal for Nature Conservation*, *10*(4). https://doi.org/10.1078/1617-1381-00023

Cirianni, F. M. M., & Leonardi, G. (2006). Analysis of transport modes in the urban environment: An application for a sustainable mobility system. *WIT Transactions on Ecology and the Environment*, *93*. https://doi.org/10.2495/SC060611

Coleman, C. (1997). Tourist Traffic in English National Parks - An innovative approach to management. *The Journal of Tourism Studies*, *8*(1).

Costantini, A., & Girotto, M. (2023). Professional LoRaWAN IoT Decentlab sensors: 1 year of data and analysis within the experimental project of meteorological monitoring in the Regional Forest of Pian Cansiglio (north-east region of Italy). *Bulletin of Atmospheric Science and Technology*, *4*(1). https://doi.org/10.1007/s42865-023-00059-2

Czyżewski, B., Matuszczak, A., Czyżewski, A., & Brelik, A. (2021). Public goods in rural areas as endogenous drivers of income: Developing a framework for country landscape valuation. *Land Use Policy*, *107*. https://doi.org/10.1016/j.landusepol.2020.104646

Dann, G. M. S. (1977). Anomie, ego-enhancement and tourism. *Annals of Tourism Research*, *4*(4). https://doi.org/10.1016/0160-7383(77)90037-8

Dissanayake, S., & Lu, J. (2003). Access management techniques to improve traffic operations and safety: A case study of a full vs. directional median opening. *MID-CONTINENT TRANSPORTATION RESEARCH SYMPOSIUM*, *August 2003*.

Dornier, R., & Mauri, C. (2020). Conclusions: implications for tourism sustainability in natural, residential and mountain locations. *Worldwide Hospitality and Tourism Themes*, *12*(4). https://doi.org/10.1108/whatt-08-2020-094

Drábková, A. (2013). Tourists in Cansiglio forest, Italy: Case study about forests visitors and their opinions. *Human Geographies*, *7*(2). https://doi.org/10.5719/hgeo.2013.72.35

Dreon, A. L., & Paoletti, M. G. (2009). The wild food (plants and insects) in Western Friuli local knowledge (Friuli-Venezia Giulia, North Eastern Italy). *Contributions to Natural History*, *12*(12).

Dushin, A. V., & Yurak, V. V. (2019). *Total Economic Value Concept: Essence, Evolution and Author's Approach*. https://doi.org/10.2991/iscfec-18.2019.21

Enseñat-Soberanis, F., Blanco-Gregory, R., & Mondragón-Mejía, J. A. (2020). Perception of congestion and social dimension of the carrying capacity in Yucatan cenotes. *Cuadernos de Turismo*, *45*. https://doi.org/10.6018/turismo.426051

Evangelinos, C., Tscharaktschiew, S., Marcucci, E., & Gatta, V. (2018). Pricing workplace parking via cash-out: Effects on modal choice and implications for transport policy. *Transportation Research Part A: Policy and Practice*, *113*. https://doi.org/10.1016/j.tra.2018.04.025

Ferdian, K. J., Idrus DM, I. A., & Tondo, S. (2020). DAMPAK EKOWISATA BAHARI DALAM PERSPEKTIF KESEJAHTERAAN MASYARAKAT DAN KELESTARIAN LINGKUNGAN PESISIR. *JIPAGS (Journal of*

Indonesian Public Administration and Governance Studies), *3*(1). https://doi.org/10.31506/jipags.v3i1.5480

Folke, C. (2006). Resilience: The emergence of a perspective for social-ecological systems analyses. *Global Environmental Change*, *16*(3). https://doi.org/10.1016/j.gloenvcha.2006.04.002

Folkvord, F., Lupiáñez-Villanueva, F., Febrer, N., & Gunderson, L. (2022). Discrete Choice Experiments. In *The International Encyclopedia of Health Communication* (pp. 1–5). Wiley. https://doi.org/10.1002/9781119678816.iehc0597

Franceschinis, C., Scarpa, R., & Thiene, M. (2017). A Monte Carlo Evaluation of the Logit-Mixed Logit under Asymmetry and Multimodality. *Working Paper*.

Franceschinis, C., Swait, J., Vij, A., & Thiene, M. (2022). Determinants of Recreational Activities Choice in Protected Areas. *Sustainability (Switzerland)*, *14*(1). https://doi.org/10.3390/su14010412

Gao, Y., Qu, Z., Song, X., & Yun, Z. (2022). Modeling of urban road network traffic carrying capacity based on equivalent traffic flow. *Simulation Modelling Practice and Theory*, *115*. https://doi.org/10.1016/j.simpat.2021.102462

Garra, R., Martinez, S., & Sebe, F. (2017). A Privacy-Preserving Pay-by-Phone Parking System. *IEEE Transactions on Vehicular Technology*, *66*(7). https://doi.org/10.1109/TVT.2016.2634785

Goh, M. (2002). Congestion management and electronic road pricing in Singapore. *Journal of Transport Geography*, *10*(1). https://doi.org/10.1016/S0966-6923(01)00036-9

Gómez-Baggethun, E., de Groot, R., Lomas, P. L., & Montes, C. (2010). The history of ecosystem services in economic theory and practice: From early notions to markets and payment schemes. *Ecological Economics*, *69*(6). https://doi.org/10.1016/j.ecolecon.2009.11.007

Grant, S. M., Hill, S. L., Trathan, P. N., & Murphy, E. J. (2013). Ecosystem services of the Southern Ocean: Trade-offs in decision-making. *Antarctic Science*, *25*(5). https://doi.org/10.1017/S0954102013000308

Gullion, M. E., & Stein, T. (2019). Opening the Door to Nature: Accounting for People's Constraints to Nature-based Recreation. *EDIS*, *2019*(4). https://doi.org/10.32473/edis-fr415-2019

Habibian, M., & Kermanshah, M. (2013). Coping with congestion: Understanding the role of simultaneous transportation demand management policies on commuters. *Transport Policy*, *30*. https://doi.org/10.1016/j.tranpol.2013.09.009

Hauber, A. B., González, J. M., Groothuis-Oudshoorn, C. G. M., Prior, T., Marshall, D. A., Cunningham, C., IJzerman, M. J., & Bridges, J. F. P. (2016). Statistical Methods for the Analysis of Discrete Choice Experiments. *Value in Health*, *19*(4).

Hein, L., Miller, D. C., & de Groot, R. (2013). Payments for ecosystem services and the financing of global biodiversity conservation. In *Current Opinion in Environmental Sustainability* (Vol. 5, Issue 1). https://doi.org/10.1016/j.cosust.2012.12.004

Hoyos, D. (2010). The state of the art of environmental valuation with discrete choice experiments. In *Ecological Economics* (Vol. 69, Issue 8). https://doi.org/10.1016/j.ecolecon.2010.04.011

Hultman, M., Kazeminia, A., & Ghasemi, V. (2015). Intention to visit and willingness to pay premium for ecotourism: THE impact of attitude, materialism, and motivation. *Journal of Business Research*, *68*(9). https://doi.org/10.1016/j.jbusres.2015.01.013

Ishikawa, K., Hachiya, N., Aikoh, T., Shoji, Y., Nishinari, K., & Satake, A. (2013). A decision support model for traffic congestion in protected areas: A case study of Shiretoko National Park. *Tourism Management Perspectives*, *8*. https://doi.org/10.1016/j.tmp.2013.05.001

Jawale, M. A., William, P., Pawar, A. B., & Marriwala, N. (2023). Implementation of number plate detection system for vehicle registration using IOT and recognition using CNN. *Measurement: Sensors*, *27*. https://doi.org/10.1016/j.measen.2023.100761

Jepson, P., & Whittaker, R. J. (2002). Histories of protected areas: Internationalisation of conservationist values and their adoption in the Netherlands Indies (Indonesia). *Environment and History*, *8*(2). https://doi.org/10.3197/096734002129342620

Jorgensen, B. S., & Syme, G. J. (2000). Protest responses and willingness to pay: Attitude toward paying for stormwater pollution abatement. *Ecological Economics*, *33*(2). https://doi.org/10.1016/S0921-8009(99)00145-7

Judy Lumb. (2002). Economic Valuation of Ecosystem Services. *QUAKER ECO-BULLETIN*, *2*(6).

Kahui, V., & Cullinane, A. (2019). The ecosystem commons. *New Zealand Journal of Ecology*, *43*(3). https://doi.org/10.20417/nzjecol.43.28

Kaiser, J., Haase, D., & Krueger, T. (2023). Collective payments for ecosystem services: a counterpart of commodification and privatization trends in nature conservation? *Ecology and Society*, *28*(1). https://doi.org/10.5751/ES-13549-280113

Kaua, C. (2015). The concept of total economic value in environmental management. *Environmental Sustainability*.

Kim, M., & Kim, G. (2022). Modeling and Predicting Urban Expansion in South Korea Using Explainable Artificial Intelligence (XAI) Model. *Applied Sciences (Switzerland)*, *12*(18). https://doi.org/10.3390/app12189169

Kline, J. D. (2015). Defining an economics research program to describe and evaluate ecosystem services. In *Management of Forests and Public Lands Through the Lens of Ecosystem Services*.

Koetse, M. J., Brouwer, R., & Van Beukering, P. J. H. (2015). Economic valuation methods for ecosystem services. In *Ecosystem services: From concept to practice*. https://doi.org/10.1017/CBO9781107477612.009

Kurek, A., & Macioszek, E. (2022). Impact of Parking Maneuvers on the Capacity of the Inlets of Intersections with Traffic Lights for Road Traffic Conditions in Poland. *Sustainability (Switzerland)*, *14*(1). https://doi.org/10.3390/su14010432

Lafortezza, R., & Sanesi, G. (2019). Nature-based solutions: Settling the issue of sustainable urbanization. *Environmental Research*, *172*. https://doi.org/10.1016/j.envres.2018.12.063

Lawson, S., Chamberlin, R., Choi, J., Swanson, B., Kiser, B., Newman, P., Monz, C., Pettebone, D., & Gamble, L. (2011). Modeling the effects of shuttle service on transportation system performance and quality of visitor experience in rocky mountain national park. *Transportation Research Record*, *2244*. https://doi.org/10.3141/2244-13

Lee, J. hyoung, & Lee, D. jae. (2015). Nature experience, recreation activity and health benefits of visitors in mountain and urban forests in Vienna, Zurich and Freiburg. *Journal of Mountain Science*, *12*(6). https://doi.org/10.1007/s11629-014-3246-3

Legesse, F., Degefa, S., & Soromessa, T. (2022). Valuation Methods in Ecosystem Services: A Meta-analysis. *Research Square*.

Lili, P., Lijuan, C., & Ming, W. (2010). Tourist behaviors in wetland park: A preliminary study in Xixi National Wetland Park, Hangzhou, China. *Chinese Geographical Science*, *20*(1). https://doi.org/10.1007/s11769-010-0066-4

López-del-Pino, F., & Grisolía, J. M. (2018a). Pricing Beach Congestion. *Tourism Economics*, *24*(4), 449–472. https://doi.org/10.1177/1354816617740065

López-del-Pino, F., & Grisolía, J. M. (2018b). Pricing Beach Congestion: An analysis of the introduction of an access fee to the protected island of Lobos (Canary Islands). *Tourism Economics*, *24*(4). https://doi.org/10.1177/1354816617740065

Lorenzo-Romero, C., Alarcón-Del-amo, M. D. C., & Crespo-Jareño, J. A. (2021). An explanatory model of the ecotourists behaviour: Management strategies for tourism sector. *E a M: Ekonomie a Management*, *24*(3). https://doi.org/10.15240/TUL/001/2021-3-013

Louviere, J. J., Flynn, T. N., & Carson, R. T. (2010). Discrete choice experiments are not conjoint analysis. *Journal of Choice Modelling*, *3*(3). https://doi.org/10.1016/S1755-5345(13)70014-9

Mace, B. L., Marquit, J. D., & Bates, S. C. (2013). Visitor assessment of the mandatory alternative transportation system at Zion national park. *Environmental Management*, *52*(5). https://doi.org/10.1007/s00267-013-0164-z

Mannell, R. C., & Iso-Ahola, S. E. (1987). Psychological nature of leisure and tourism experience. *Annals of Tourism Research*, *14*(3). https://doi.org/10.1016/0160-7383(87)90105-8

Mariel, P., Hoyos, D., Meyerhoff, J., Czajkowski, M., Dekker, T., Glenk, K., Jacobsen, J. B., Liebe, U., Olsen, S. B., Sagebiel, J., & Thiene, M. (2021). Environmental Valuation with Discrete Choice Experiments. In *Environmental Valuation with Discrete Choice Experiments*.

Marre, J. B., Brander, L., Thebaud, O., Boncoeur, J., Pascoe, S., Coglan, L., & Pascal, N. (2015). Non-market use and non-use values for preserving ecosystem services over time: A choice experiment application to coral reef ecosystems in New Caledonia. *Ocean and Coastal Management*, *105*. https://doi.org/10.1016/j.ocecoaman.2014.12.010

Masiero, M., Franceschinis, C., Mattea, S., Thiene, M., Pettenella, D., & Scarpa, R. (2018). Ecosystem services' values and improved revenue collection for regional protected areas. *Ecosystem Services*, *34*. https://doi.org/10.1016/j.ecoser.2018.10.012

McElwee, P., & Shapiro-Garza, E. (2020). Ecosystem Services. In *International Encyclopedia of Human Geography* (pp. 45–50). Elsevier. https://doi.org/10.1016/B978-0-08-102295-5.10781-4

MEA. (2003). Millennium Ecosystem Assessment: Ecosystems and Human Well-Being - A Framework for Assessment. In *Millennium Ecosystem Assessment*.

Menzel, S., & Wiek, A. (2009). Valuation in morally charged situations: The role of deontological stances and intuition for trade-off making. In *Ecological Economics* (Vol. 68, Issues 8–9). https://doi.org/10.1016/j.ecolecon.2009.04.012

Menzie, C. A., Deardorff, T., Booth, P., & Wickwirek, T. (2012). Refocusing on nature: Holistic assessment of ecosystem services. In *Integrated Environmental Assessment and Management* (Vol. 8, Issue 3). https://doi.org/10.1002/ieam.1279

Millenium Ecosystem Assessment. (2003). 6 Concepts of ecosystem value and valuation approaches. In *Ecosystems and Human Well-being: A Framework for Assessment*.

Mitchell, R. C., & T. Carson, R. (2013). Using Surveys to Value Public Goods: The Contingent Valuation Method. In *Using Surveys to Value Public Goods: The Contingent Valuation Method*. https://doi.org/10.4324/9781315060569

Mokas, I., Lizin, S., Brijs, T., Witters, N., & Malina, R. (2021). Can immersive virtual reality increase respondents' certainty in discrete choice experiments? A comparison with traditional presentation formats. *Journal of Environmental Economics and Management*, *109*. https://doi.org/10.1016/j.jeem.2021.102509

Nastia, N., Hastuti, H., & Sa'ban, L. M. A. (2021). GOVERNMENT STRATEGY IN MANAGEMENT OF PARKING RETRIBUTION IN NATURAL TOURISM AREAS. *Jurnal Inovasi Penelitian*.

Nguyen, M. H., & Jones, T. E. (2022). Building eco-surplus culture among urban residents as a novel strategy to improve finance for conservation in protected areas. *Humanities and Social Sciences Communications*, *9*(1). https://doi.org/10.1057/s41599-022-01441-9

Nunes, P. (2022). Values, Valuation Methods and Contingent Valuation: An Overview. In *The Contingent Valuation of Natural Parks*. https://doi.org/10.4337/9781035304745.00009

Oleśniewicz, P., Pytel, S., Markiewicz-Patkowska, J., Szromek, A. R., & Jandová, S. (2020). A model of the sustainable management of the natural environment in national parks-a case study of national parks in Poland. *Sustainability (Switzerland)*, *12*(7). https://doi.org/10.3390/su12072704

Oppitz, M., & Tomsu, P. (2018). Inventing the Cloud Century. In *Inventing the Cloud Century*. https://doi.org/10.1007/978-3-319-61161-7

Palli, J., Cagnetti, C., Emanuel, C., Ferrari, S., Filibeck, G., Forte, T. G. W., Franceschini, C., Giorgi, A., Leoni, V., Poponi, S., Ruggieri, A., & Piovesan, G. (2023). The environmental dimension of ecotourism in Italian protected areas: a comparison of two bio-geographical regions based on the assessment of accredited hiking guides. *Journal of Ecotourism*, *22*(1). https://doi.org/10.1080/14724049.2022.2080215

Pavlidis, G., Solomou, A., Stamouli, S., Papavassiliou, V., Kritsis, K., Kiourt, C., Sevetlidis, V., Karetsos, G., Trigas, P., Kougioumoutzis, K., Goula, K., Proutsos, N., Pistikos, G., Theodoridis, Y., Galanopoulos, E., Paraskevas, N., Foskolou, U., & Papadopoulos, M. (2022). Sustainable Ecotourism through Cutting-Edge Technologies. *Sustainability (Switzerland)*, *14*(2). https://doi.org/10.3390/su14020800

Pellizzari, C. B. (2022). *Financing nature conservation through ecotourism: Exploring the introduction of parking fees in Cansiglio forest*.

Perera, P., & Vlosky, R. P. (2017). Understanding ecotourist behavior: The case of forest-based ecotourism in Sri Lanka. *E-Review of Tourism Research*, *14*(5–6).

Peterson, M. J., Hall, D. M., Feldpausch-Parker, A. M., & Peterson, T. R. (2010). Obscuring ecosystem function with application of the ecosystem services concept: Essay. *Conservation Biology*, *24*(1). https://doi.org/10.1111/j.1523-1739.2009.01305.x

Plottu, E., & Plottu, B. (2007). The concept of Total Economic Value of environment: A reconsideration within a hierarchical rationality. *Ecological Economics*, *61*(1). https://doi.org/10.1016/j.ecolecon.2006.09.027

Potschin, M. B., & Haines-Young, R. H. (2011). Ecosystem services: Exploring a geographical perspective. In *Progress in Physical Geography* (Vol. 35, Issue 5). https://doi.org/10.1177/0309133311423172

Potschin, M., & Haines-Young, R. (2018). Defining and Measuring Ecosystem Services. In *Routledge Handbook of Ecosystem Services*. https://doi.org/10.4324/9781315775302-4

Qian, Y., Dong, Z., Yan, Y., & Tang, L. (2022). Ecological risk assessment models for simulating impacts of land use and landscape pattern on ecosystem services. *Science of the Total Environment*, *833*. https://doi.org/10.1016/j.scitotenv.2022.155218

Rahmani, H., Wafa, W., & Mazloum Yar, F. G. (2021). The Importance of Public Awareness in Environmental Protection: A Case Study in Paktika, Afghanistan. *Nature Environment and Pollution Technology*, *20*(4). https://doi.org/10.46488/NEPT.2021.v20i04.024

Rajasekhar, N., Maya, P., & Panday, S. (2021). IoT Enabled Multi-level Smart Parking System. *Proceedings of the 2nd International Conference on Electronics and Sustainable Communication Systems, ICESC 2021*. https://doi.org/10.1109/ICESC51422.2021.9532806

Ratti, S. A., Pirzada, N., Shah, S. M. A., & Naveed, A. (2023). Intelligent Car Parking System Using WSN. *2023 Global Conference on Wireless and Optical Technologies, GCWOT 2023*. https://doi.org/10.1109/GCWOT57803.2023.10064656

Rotherham, I. D., Doncaster, S., & Egan, D. (2005). Nature-based leisure and tourism in England's Humberhead Levels. *Current Issues in Tourism*, *8*(2–3). https://doi.org/10.1080/13683500508668215

Salomon, A. K. (2008). Ecosystems. In *Encyclopedia of Ecology* (pp. 350–360). Elsevier. https://doi.org/10.1016/B978-0-444-63768-0.00482-0

Samal, R., & Dash, M. (2023). Ecotourism, biodiversity conservation and livelihoods: Understanding the convergence and divergence. In *International Journal of Geoheritage and Parks* (Vol. 11, Issue 1). https://doi.org/10.1016/j.ijgeop.2022.11.001

Sekercioglu, C. H., Boyce, M. S., Tscharntke, T., Davidar, P., & Kremen, C. (2010). Ecosystem functions and services. In *Conservation Biology for All*. https://doi.org/10.1093/acprof:oso/9780199554232.003.0004

Simpson, R. D. (1998). Economic analysis and ecosystems: Some concepts and issues. In *Ecological Applications* (Vol. 8, Issue 2). https://doi.org/10.1890/1051-0761(1998)008[0342:eaaesc]2.0.co;2

Sobhani, P., Esmaeilzadeh, H., Sadeghi, S. M. M., Wolf, I. D., & Deljouei, A. (2022). Relationship Analysis of Local Community Participation in Sustainable Ecotourism Development in Protected Areas, Iran. *Land*, *11*(10). https://doi.org/10.3390/land11101871

Spada, G. (1995). Il gran bosco da remi del Cansiglio nei provvedimenti della Repubblica di Venezia. *Ministero Dell'agricoltura e Delle Foreste*, *p*, 370.

Su, X., Zheng, Q., Zheng, Q., & Xu, W. (2020). Effects of environmental attractiveness and tourism image cognition of ecotourism on customer satisfaction. *Journal of Environmental Protection and Ecology*, *21*(2).

Szinay, D., Cameron, R., Naughton, F., Whitty, J. A., Brown, J., & Jones, A. (2021). Understanding uptake of digital health products: Methodology tutorial for a discrete choice experiment using the bayesian efficient design. *Journal of Medical Internet Research*, *23*(10). https://doi.org/10.2196/32365

Talukdar, M. H. (2013). Framework for Traffic Congestion Management. *Economia. Seria Management*, *16*(1).

Thiene, M., & Scarpa, R. (2009). Deriving and testing efficient estimates of WTP distributions in destination choice models. *Environmental and Resource Economics*, *44*(3). https://doi.org/10.1007/s10640-009-9291-7

Uboni, C., Borsato, V., & Bacaro, G. (2021). Odonate fauna assemblages in the "Cansiglio Forest" (Insecta: Odonata). *Rendiconti Lincei*, *32*(4). https://doi.org/10.1007/s12210-021-01029-6

Ujjwal, J., Bandyopadhyaya, V., & Bandyopadhyaya, R. (2021). Identifying key determinants for parking management to reduce road traffic congestion for congested cities -a structural equation modelling approach. *Advances in Transportation Studies*, *54*. https://doi.org/10.53136/979125994054410

van den Berg, A. E., Hartig, T., & Staats, H. (2007). Preference for nature in urbanized societies: Stress, restoration, and the pursuit of sustainability. *Journal of Social Issues*, *63*(1). https://doi.org/10.1111/j.1540-4560.2007.00497.x

Vasan, S., Vasan, S., Damodaran, V., & Damodaran, V. (203 C.E.). Nature, Conservation and Environmental History: A Review of Some Recent Environmental Writings on South Asia. *Conservation and Society*, *1*(2).

Velasco-Muñoz, J. F., Aznar-Sánchez, J. A., Schoenemann, M., & López-Felices, B. (2022). The economic valuation of ecosystem services: bibliometric analysis. *Oeconomia Copernicana*, *13*(4). https://doi.org/10.24136/oc.2022.028

Veneto Agricoltura. (2011). *Foresta Demaniale Regionale del Cansiglio*. https://www.venetoagricoltura.org/2006/08/uncategorized/foresta-demaniale-regionale-del-cansiglio/

Ventriglio, A., Torales, J., Castaldelli-Maia, J. M., De Berardis, D., & Bhugra, D. (2021). Urbanization and emerging mental health issues. In *CNS Spectrums* (Vol. 26, Issue 1). https://doi.org/10.1017/S1092852920001236

Visentin, M. (2018). *The role of public forests in delivering ecosystem services: the case of Cansiglio forest (in Veneto, Italy)* [Master]. University of Padova.

von Saltza, E., & Kittinger, J. N. (2022). Financing conservation at scale via visitor green fees. In *Frontiers in Ecology and Evolution* (Vol. 10). https://doi.org/10.3389/fevo.2022.1036132

Vujcic, M., Tomicevic-Dubljevic, J., Grbic, M., Lecic-Tosevski, D., Vukovic, O., & Toskovic, O. (2017). Nature based solution for improving mental health and well-being in urban areas. *Environmental Research*, *158*. https://doi.org/10.1016/j.envres.2017.06.030

White, D. D. (2007). An interpretive study of Yosemite National Park visitors' perspectives toward alternative transportation in Yosemite Valley. *Environmental Management*, *39*(1). https://doi.org/10.1007/s00267-006-0061-9

Whitehead, J. C., & Haab, T. C. (2013). Contingent Valuation Method. In *Encyclopedia of Energy, Natural Resource, and Environmental Economics* (Vols. 3–3). https://doi.org/10.1016/B978-0-12-375067-9.00004-8

Whitelaw, P. A., King, B. E. M., & Tolkach, D. (2014). Protected areas, conservation and tourism - financing the sustainable dream. In *Journal of Sustainable Tourism* (Vol. 22, Issue 4). https://doi.org/10.1080/09669582.2013.873445

W.Vickrey. (1969). Congestion Theory and Transport Investment. *The American Economic Review*.

Xiao, X., Manning, R., Lawson, S., Valliere, W., & Krymkowski, D. (2018). Indicators for a Transportation Recreation Opportunity Spectrum in National Parks. *Journal of Park and Recreation Administration*, *36*(1). https://doi.org/10.18666/jpra-2018-v36-i1-8117

Yee, S., Cicchetti, G., DeWitt, T. H., Harwell, M. C., Jackson, S. K., Pryor, M., Rocha, K., Santavy, D. L., Sharpe, L., & Shumchenia, E. (2020). The Ecosystem Services Gradient: A Descriptive Model for Identifying Levels of Meaningful Change. In *Ecosystem-Based Management, Ecosystem Services and Aquatic Biodiversity: Theory, Tools and Applications*. https://doi.org/10.1007/978-3-030-45843-0_15

Yuxi, Z., Linsheng, Z., Ling-en, W., & Hu, Y. (2022). Measuring the conflict tendency between tourism development and ecological protection in protected areas: A study on National Nature Reserves in China. *Applied Geography*, *142*. https://doi.org/10.1016/j.apgeog.2022.102690