



# Impacts of the COVID-19 Pandemic on Cycling and Cycle Tourism in Santa Catarina, Brazil

Anderson Sartori <sup>a</sup>

**ABSTRACT:** The COVID-19 pandemic changed social structures on multiple scales due to social and sanitary restrictions. Tourism, like other sectors, was broadly impacted, experiencing a dramatic reduction in travel. In response, individuals sought alternative ways to maintain physical activity, with outdoor activities gaining popularity, and cycling becoming increasingly widespread under these circumstances. This study aimed to analyze the profile of cyclists and cycle tourists in Santa Catarina within the post-pandemic context. The research employed a mixed-methods approach, combining both quantitative and qualitative data for a descriptive analysis. A self-administered questionnaire was applied for data collection and measurement, analyzed within a theoretical framework. The study involved 185 respondents residing in the state, with a near-equal distribution of men and women, and a predominance of higher education and income levels. The findings indicate that the pandemic significantly encouraged cycling as a means of leisure, recreation, and physical exercise. A significant proportion of respondents began cycling due to social restrictions and continued the activity post-pandemic. Cycle tourism was almost unanimously regarded as a key driver for developing tourist attractions, with the potential to attract visitors and generate income for local communities..

**Keywords:** Cycling; Cycle Tourism; Motivations; Pandemic; Tourism.

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Ph.D. in Tourism and Hospitality; Federal Institute of Catarinense; Lattes Curriculum  
<http://lattes.cnpq.br/4927986821518916>; Email: [anderprof@hotmail.com](mailto:anderprof@hotmail.com)

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## INTRODUCTION

On March 11, 2020, the World Health Organization declared the disease caused by the SARS-CoV-2 coronavirus, commonly known as COVID-19 (and other names, depending on the context), a pandemic, triggering an international alert due to the level of contagion and deaths caused (Who, 2020). Although still present but now controlled, like other infectious diseases, with mass vaccination, mainly on May 5, 2023, COVID-19 ceased to be a public health emergency of international concern.

According to Oliveira, Fonseca, and Junior (2023), travel restrictions imposed during the pandemic had a significant impact on the global economy due to restrictions on the movement of people and other sanitary measures. The tourism sector was severely affected by the closures and/or suspension of establishments, destinations, and/or attractions. In addition, tourists' travel plans were disrupted, leading to a series of cancellations and rescheduling of previously purchased services, as well as a decline in regional, national, and international travel spending. When analyzing the impacts of COVID-19 in Brazil, Lima & Silva, Borges, and John (2022) identify that the context of tourism recovery provides an opportunity for managers to implement new practices in participatory planning and public policy management processes, redefining tourist destinations, and allowing the construction of relationship networks in the market, meeting the new demands and expectations of tourists.

Leichenko and Taylor (2024) highlight the COVID-19 pandemic and climate change as catalysts for social transformations, gradually altering ways of living in society due to the new pressures generated, especially in urban centers. The authors further present cycling as a response to these two crises, gaining popularity for its potential in transportation, exercise, and leisure, offering relative safety and low carbon emissions.

In the Brazilian context, the data on bicycle sales reveal a surge in interest during the COVID-19 pandemic, driven by the need to adhere to health and social restrictions aimed at reducing contagion and avoiding crowded spaces. According to retail sales estimates presented by Aliança Bike (2023), in the pre-pandemic years of 2018 and 2019, between 4 and 4.5 million units were sold, with no significant difference. In 2020, at the peak of the pandemic, sales reached 6 million units. However, sales declined slightly in 2021 to 5.8 million units. A significant drop occurred in 2022, with 3.77 million units sold, likely attributable to a combination of market saturation and economic concerns as the country emerged from the pandemic.

In the results of their research on cycling and leisure during the pandemic, Pacheco, Kronbauer, and Velozo (2023) found that cycling emerged as a significant alternative for leisure and physical exercise, driven by restrictions on indoor physical activities, such as access to gyms or team sports, and the need to avoid crowded public transportation. Faced with these new health and environmental demands, cycling has



become a significant niche market, with increased use for leisure and urban transportation, as well as, increasing interest in activities involving cycle tourism and, to a lesser extent, competitive cycling. It is important to note this movement extends beyond urban areas and presents a valuable tool for the sustainable development of rural regions. As analyzed by Saldanha, Fraga, and Balassiano (2021), cycle tourism routes can significantly contribute to the sustainable expansion of the Brazilian tourism sector while engaging with rural communities. The authors identify the development of such routes as a key challenge for the future of sustainable tourism in Brazil.

In this context, the research aims to analyze the profiles of cyclists and cycle tourists in Santa Catarina within the post-pandemic scenario. The specific objectives of this study are: identifying the socioeconomic panorama of cyclists and cycle tourists; understanding the interests and motivations in cycling; analyzing cyclists' perceptions of using monitoring applications and digital devices; identifying knowledge of cycle tourism routes; and evaluating the impacts of the pandemic on cycling patterns in Santa Catarina. It is important to note this research focuses solely on leisure and tourism cycling and excludes the use of bicycles for daily commuting or deliveries, as these aspects fall within the scope of urban mobility research. This paper is structured as follows. The Theoretical Framework explores the concepts of cycling and cycle tourism within the scientific literature, particularly examining the changes observed during and after the COVID-19 pandemic. The

Methodology outlines the research design, including the specific methods employed and their rationale. The Results and Discussion section presents the findings derived from the collected data, analyzes their significance, and discusses their practical and theoretical implications. The Final Considerations summarize the key characteristics of cyclists and cycle tourists in Santa Catarina, acknowledge the study's limitations, and suggest potential avenues for future research.

## THEORETICAL FRAMEWORK

Scientific research on cycle tourism, or the use of bicycles for tourism, as the term is defined in some countries, still requires greater attention, especially in Brazil. A search of databases such as Redalyc, Scielo, Periódicos Capes, and Elsevier reveals that cycle tourism is often discussed in publications outside the field of tourism, especially in journals focused on urban mobility/Transportation and ecology/sustainable development. This indicates that cycle tourism remains an open and expansive area for research, given the growth of cycle tourism routes and the increased use of bicycles observed during and after the pandemic.

This article aims to contribute data and insights to encourage further research in areas such as tourism, adventure, urban and rural mobility, and sustainability. The following section highlights pre-pandemic studies that directly address cycle tourism.

Resende and Vieira Filho (2011) highlighted the positive impacts of cycle tourism on



both the tourism sector and local communities. Neves and Esperança (2011) further elaborated on this concept, positioning cycle tourism as a novel approach in tourism, characterized by experiences rooted in nature, social interactions, and improved physical and psychological well-being. This perspective aligns with Resende and Vieira Filho's framework, which emphasizes the interconnectedness between the experiences of tourists and residents.

According to Lee, Chen, and Huang (2014), when studying the Asian context, bicycles have increasingly been used for leisure, recreation, and tourism, shifting from their traditional role as a primary mode of transportation. While the bicycle remains a dominant form of transportation in several Asian regions, its use for recreational purposes has grown significantly. For Kovačić (2015), cycle tourism involves the interplay of three key factors: people, the destination, and the activity undertaken, encompassing both leisure and sport dimensions.

Kovačić's analysis of the sporting use of bicycles aligns with Lamont's (2009) observations, demonstrating how tourism is also driven by races and competitions, as they mobilize teams, participants, and spectators.

Campos, Santos, and Alves (2016) highlight the potential of cycle tourism, in both rural and urban areas, emphasizing its primary aim of fostering contact with new cultures, gaining knowledge, and experiencing novel opportunities while exploring different

destinations. Klos, Miskalo-Cruz, and Moraes (2016) share this view, understanding cycle tourism as an emerging activity, dedicated to leisure and the perception of tourist spaces. These authors' research focused on analyzing how cycle tourists use images and photographs to convey their cycling experiences.

According to Slavić (2017), cycle tourism is now considered a significant tourism product, demanding policies and strategies to address its diversity and meet expectations. This requires cooperation, discussion, and financing, both public and private, to balance the interests of supply and demand. The professionalization of cycle tourism is crucial in the context of expanding routes and itineraries, as well as meeting user needs for rest, food, hydration, and bicycle maintenance, which demands additional infrastructure at tourist sites. During and after the pandemic, research on the topic of this article has been conducted from various perspectives, particularly addressing the relationship between cycle tourism, as an outdoor activity that avoids crowds and allows for social distancing, as an alternative to traditional tourism and a means of reducing environmental impacts amid growing concerns about global warming. Gil, Marques, and Andrade (2023) emphasize the need for international guidelines and national policies on climate change within the tourism sector. These are considered essential strategies to mitigate the risks of natural disasters, which disproportionately impact economically marginalized populations.



Mundet, Marin, and Figueroa (2022) note that cycling tourism remains an under-researched topic, when evaluating the conditions and factors involved in the development of tourist destinations using bicycles. It can be seen that cycling tourism is increasingly aligning with the growing interest in alternative forms of tourism that combine leisure, recreation, physical activity, and a unique perception of travel time, as well as enhanced interaction with nature and local communities (Resende & Vieira Filho, 2011). The COVID-19 pandemic, with its health and social restrictions, further contributed to the rise of cycle tourism in urban areas and, even more so, in rural areas, where lower population density often allows for greater isolation.

Given this, when approaching adventure and sports tourism, Weed (2020) identifies several analytical dimensions: the sense of movement and place, the activity developed and its interaction with the place, the experiences lived, the need (or lack thereof) for proximity, nostalgia for nature, and the contribution of these factors to tourists' well-being. Based on these categories, Weed (2020) highlights how the pandemic has created an opportunity to reassess certain tourism concepts, as the global confinement period showed people's need to escape routine and reinforced their desire to connect with nature and experience movement. In other words, activities such as hiking, running, water sports, cycling, and cycle tourism, according to the author, have increased in popularity during the pandemic period.

The research by Yu, Lin, Wang, and Huang (2022) reinforces this finding by identifying an increase in bicycle use during the pandemic in Taiwan, where cycling served as a key motivator for individuals. The authors argue that cycling during the pandemic was driven by attraction, identity, centrality, and social factors arising from confinement and the need for a change of environment. These factors, influenced by the psychological pressures of staying at home, directly affected motivation, involvement, and intention, attributes analyzed in the research.

Ciascai, Dezzi, and Rus (2022) emphasize the growing popularity of cycle tourism, especially its role in promoting economic and social development at various geographical scales (local, national, and regional). They highlight the challenges presented by increased accessibility demands and behavioral changes resulting from pandemic-related travel restrictions. The authors also note that developing cycle tourism can help reduce atmospheric pollutant emissions by encouraging ecological and sustainable travel patterns.

For Bosquetti (2023), cycle tourism is a way of generating income, in the low season, for small businesses involving means of lodging, food and beverage establishments, and handicraft vendors. Based on his study of a cycle tourism route along the coast of Santa Catarina, the author highlights its role in mitigating tourist seasonality by attracting visitors interested in local agroecology initiatives, environmental preservation, and education. This approach



also promotes and enhances the region's environmental and cultural heritage.

Carvalho and Sousa (2022) argue that cycle tourism enhances rural landscapes and fosters closer connections among tourists, heritage, and local communities. They emphasize that this activity allows visitors to experience the sociocultural dynamics of destinations from a unique perspective, promoting social interaction and the creation of personal meaning.

When analyzing the territorial transformations resulting from the implementation of the Vale Europeu Catarinense Cycle Tourism Circuit (the first in Brazil, established in 2006) until 2018, Busarello and Reis (2023) identified several positive outcomes: enhanced environmental conservation, improved communication between public and private authorities and the community, increased income generation in both urban and rural areas (depending on the region), improved quality of life for residents, greater appreciation of local culture, and a direct impact of tourism on regional development. When examining the relationship between cycle tourism and sustainable tourism, Serra and Serra (2016) highlight the potential for growth in bicycle tourism, by reducing environmental impacts and costs, making it an attractive option for several regions, especially those that are not typically considered tourist destinations.

With data collected in 2019, prior to the COVID-19 pandemic, Deus and Edra (2023) identified landscape, leisure, health, and tourism as the primary motivating factors for cycle tourists in Brazil. These findings

converge with the research discussed earlier, highlighting the growing use of bicycles for tourism in the Brazilian context. Moreover, the increase in bicycle purchases for various purposes during and after the pandemic, as mentioned in the Introduction, further supports this trend.

Regarding the definition of cycling and cycle tourism, to contribute to the analysis of the results, Lamont (2009) proposed parameters to help identify the needs, interests, and expectations of the audience, aiming to assess the activity's economic potential.

Teixeira and Edra (2020) investigated the use of the term "cyclotourism" in national and international scientific literature and suggested adopting "bicycle tourism", a term more closely aligned with the international terminology. The authors further categorized bicycle tourism into "urban cyclotourism, which involves short tourist trips by bicycle, and cyclo-travel, where the bicycle serves as the primary means of transportation throughout the journey" (Teixeira & Edra, 2020, p. 312).

This article adopts the concept developed by Sartori (2020), who reviewed the state of the art on the subject and distinguished cycle tourism from sports cycling, noting their differing objectives and purposes. According to Sartori, while sports cycling involves using the bicycle for performance, primarily to complete routes in the shortest possible time, it may also enable tourists to explore destinations or nearby areas where competitions take place. In contrast, cycle tourism can be defined as "trips to regions close to or different from the subject's fixed



abode, guided or not, individually or in groups, with active participation along the chosen route” (Sartori, 2020, p. 5).

Therefore, cyclists and cycle tourists are individuals who use bicycles for leisure, recreation, physical exercise, and/or tourism, as opposed to other purposes such as work, daily commuting, or deliveries. This research focuses on the tourist aspects generated by the interaction between the individual, the bicycle, and the route, whether it involves personal connection with nature or engagement with the local culture of the destination. In this context, the impacts of the pandemic must be identified to understand how cycle tourism routes and itineraries can adapt to the needs and expectations of both experienced cyclists/cyclotourists and new practitioners, many of whom were motivated by the pandemic to take up cycling as an alternative to social and health restrictions.

## **METHODOLOGY**

The research is considered quantitative and descriptive, as defined by Gil (2008), aiming to describe the characteristics of a population using standardized data collection techniques and analysis through descriptive statistics (Silvestre, 2007). Data were collected through an online questionnaire with closed-ended questions. The first section focused on the socioeconomic profile of the participants, while the second section addressed bicycle use, including three specific questions related to the impact of the COVID-19 pandemic. This study can be classified as survey research, following the perspective of

Marconi and Lakatos (2017). It aims to describe and explain the object or phenomenon under study through direct questioning of participants to determine their profile and/or behavior within the context under investigation.

Data were collected through a self-administered questionnaire using the free “Google Forms” platform via Google Docs. According to Gil (2008, p. 128), a questionnaire can be defined “as a research technique consisting of a more or less large number of questions presented in writing to people, to get to know their opinions, feelings, interests, expectations, situations experienced, etc.” Balassiano et al. (2019) and Sartori (2021) examined the profiles of cyclists and bicyclists across different dimensions but converged in identifying the motivation, interests, and needs of the individuals within the national and state contexts.

To disseminate the survey instrument, invitations were sent explaining the purpose and reliability of the information collected, along with a link and authorization to use the information. These invitations targeted individual cyclists and cycling groups in Santa Catarina through social media platforms (Instagram and Facebook) and messaging apps (WhatsApp) to reach various regions of the state. Although survey sharing was widely implemented, its reach across different regions of Santa Catarina was uneven. The results were concentrated in areas with a higher density of cycling groups or individuals who organize weekend rides for cyclists. The saturation caused by numerous surveys and research



forms during the pandemic, each with different objectives, likely limited the number of respondents. Furthermore, post-pandemic behavioral changes, including a decrease in the number of individuals adopting cycling for tourism or leisure purposes, following the lifting of health and social restrictions and the resumption of normal routines, could also have influenced the results.

The questionnaire was available for completion from July 9 to September 23, 2023, consisting of 28 closed-ended questions and one open-ended question for comments, suggestions, or critiques. A total of 185 valid responses were collected, which formed the basis for the analysis. All respondents were residents of various regions of Santa Catarina. The data were tabulated using Excel spreadsheets and analyzed based on the theoretical framework applied, contributing to the understanding of cycle tourism in the specific context of Santa Catarina in the post-pandemic period.

## RESULTS AND DISCUSSION

The questionnaire yielded 185 respondents, 98 of whom were male and 87 female, indicating near parity in gender interest in cycling. The growing interest of women in cycle tourism emerges as a significant trend, requiring more detailed and attentive analysis. Previous studies, such as those by Sartori (2021) and Deus and Edra (2023), also identified this growth, which may suggest emerging needs and

expectations regarding routes and tourism infrastructure at destinations. This study identifies the growing presence of women-only cycling groups (nine were identified, primarily located along the central-northern coast of Santa Catarina) or groups where women are the majority. These groups promote integration among female cyclists, aligning with their goals and expectations for cycling, while providing a safer environment to navigate cycling routes, addressing ongoing issues of harassment that persist in Brazilian society across various forms and scales. Health concerns, the pursuit of physical exercise in outdoor environments, and aesthetic motivations likely explain the increasing interest of women in cycling.

Moreover, improvements in the conditions of cycle tourism routes serve as a further attraction. The sharing of experiences through social media, often via images and videos, has also contributed to increased engagement and interest in cycling as a leisure activity.

The age group with the highest number of cyclists is 31 to 40 years old, comprising 35.7% of respondents, followed by the 41 to 50 age group at 24.9%, and individuals aged 51 to 60 years old, representing 17.8%. It is worth noting that the latter group surpasses younger cyclists in the 21 to 30 age range, who make up 11.4% of the total.

These data suggest that cycling and cycle tourism primarily appeal to individuals aged 31 and older, which is a significant consideration for planning by public authorities or private initiatives.



Regarding educational attainment, 73% of respondents hold a higher education degree, while 21.6% have completed secondary education, reflecting a population with a high level of formal education. This aligns with the reported income, as over 60% of respondents earn more than three times the minimum wage. The costs associated with bicycles and cycling equipment for medium- and long-distance routes may act as a limiting factor, shaping the demographics of interested participants.

The cities with the highest number of respondents are Nova Trento (19 responses), Itajaí (18 responses), São João Batista and Florianópolis (16 responses each), Blumenau and Caçador (13 responses each), Itapema (12 responses), Tangará (7 responses), and Sombrio (6 responses). The geographic distribution of responses is concentrated along the coast, the Rio Tijucas and Rio Itajaí valleys, and western Santa Catarina. The variability in survey dissemination among cycling groups may explain the higher concentration of respondents in these locations. The sample enabled the identification of variables that highlight the main characteristics of cyclists and/or cycle tourists in the state. Regarding the primary focus of this study, respondents were asked about the duration of their engagement in cycling as a physical, leisure, or recreational activity. The following chart presents the data collected. It is worth noting that the study excluded cycling as a daily means of transportation, such as for commuting or delivery services.

Figure 1: Duration of Cycling Practice



Source: Created by the author, 2024.

Approximately 20% of respondents began cycling during the pandemic, aligning with literature that identifies bicycle use as an alternative for leaving home during restrictions on gatherings, as well as for physical activity, leisure, and recreation. It draws attention that 55% of respondents have been cycling for over five years, with 30.4% cycling for more than ten years. Furthermore, 56% are members of a cycling group or sports team, highlighting the organized nature of practitioners.

Regarding cycling habits, 60% of respondents cycle with family or friends, highlighting the predominance of group activities. The preferred type of bicycle is the mountain bike (MTB), valued for its versatility across various terrains. Approximately 24.5% of respondents own both MTB and road bikes (designed for speed and asphalt), while other types, such as gravel or electric bikes, are less common, accounting for only 1.6% of the total.

In terms of terrain preferences, 52% of respondents enjoy cycling on both unpaved rural roads and in urban centers. Another 41% prefer exclusively unpaved rural roads, while 7% favor cycling in cities, on asphalt or

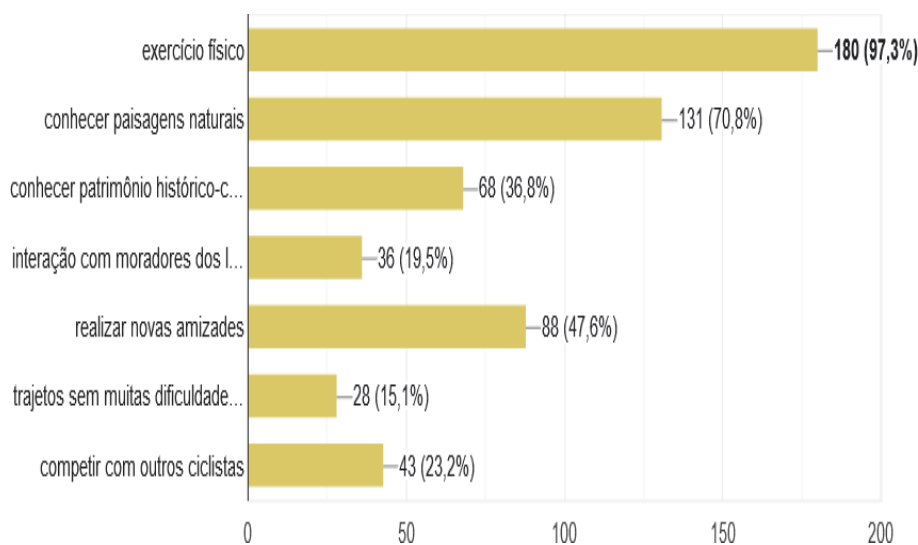


cobblestone/paved streets. 30.6% of respondents report a lack of bike lanes or cycle tracks in their cities, reflecting persistent challenges in urban mobility in Brazil. Despite decades of advocacy by activists and associations, significant gaps remain. Among respondents, 30.1% indicate the presence of bike lanes (painted sections of the road without physical separation), while 39.3% report access to cycle tracks (dedicated paths with physical separation from vehicular traffic) in their cities.

Regarding digital monitoring of activities, 83% of respondents use Strava while cycling. Strava is a mobile or GPS-based application that tracks metrics such as time, distance, average speed, and elevation gain. These data are shared on a dedicated platform that functions as a social network, connecting cyclists worldwide. Strava supports approximately 30 physical and sports activities and is widely regarded as a benchmark for exercise monitoring in the context of digital culture, as noted by Lima (2023).

With the ease of sharing data on social networks such as Instagram or WhatsApp, digital monitoring—whether through smartphones or specific devices—has become increasingly prevalent post-pandemic due to its ability to engage users and attract followers. Cycling and cycle tourism groups also use social media to promote their activities and brands, fostering the sharing and exchange of experiences, especially in the evaluation of routes. Virtual communities, operating at the intersection of the physical and digital realms, have expanded through advancements in technology and new tools to meet practitioners' needs. What were once costly resources available only to professionals are now accessible via smartphones, which have become more integrated into daily life through user-friendly interfaces and artificial intelligence, whose development accelerated during the pandemic and the increased use of the internet as a communication tool.

Figure 2: Motivations for Cycling



Source: Created by the author, 2024.



When asked about their primary motivations for engaging in cycling or cycle tourism, respondents identified physical exercise, exploring natural landscapes, and making new friends as the most significant factors, as shown in Chart 2. Since this question allowed multiple responses, the total number of answers exceeds the number of respondents.

The finding is notable, as many respondents participate in competitions, surpassing their interest in exploring historical and cultural heritage or interacting with local residents in visited areas. An important consideration for public tourism policies and local governance is respondents' preference for rural areas and natural landscapes, identified as the primary attributes of interest.

To this end, when asked: 'Based on your experience with cycling, can it be said that the development of cycle tourism as a tourist attraction can draw visitors and generate income for the communities involved?' 95.6% responded affirmatively, 3.8% were undecided, and only 0.5% responded negatively.

This suggests that the respondents have a clear perception of tourism potential, likely due to their experience cycling in various regions, whether near their homes or in distant locations, in search of new routes and destinations. Supporting this argument, 65% of respondents reported having experienced at least one cycle tourism route, while 35% had not.

When asked, 'Cycle tourism is a relatively new practice in Brazil. What do you consider to be the main challenge(s) in implementing cycle tourism routes? (You may select more than one option),' the most frequently selected options were: lack of interest from municipal administrations and sponsors (123 responses), inadequate infrastructure to accommodate cycle tourists (118 responses), safety issues on the roads (91 responses), and insufficient promotion of the routes tourism routes (59 responses). respondents identified physical exercise, exploring natural landscapes, and making new friends as the most significant factors, as shown in Chart 2. Since this question

Figure 3: Motivations for Cycling



Source: Created by the author, 2024.

allowed multiple responses, the total number of answers exceeds the number of respondents. The option, 'lack of interest from cyclists in this type of travel,' was selected by only 21 respondents, suggesting a strong interest in this type of tourism, contingent upon the availability of adequate infrastructure, as highlighted by the majority of responses.

Regarding the impacts of the pandemic on cycling and cycle tourism, Chart 3 illustrates respondents' perceptions of how they adapted to social and health restrictions:

The response, 'Health restrictions encouraged the use of bicycles as a way to maintain social distancing during leisure and sports activities' received the highest percentage of selections. This finding aligns with the theoretical framework presented in this study, which highlights the increased use of bicycles during the pandemic. In addition, 26.9% of respondents reported reducing their bicycle use due to concerns about potential contagion or stricter municipal regulations, while 25.7% indicated that their cycling activities were unaffected by the pandemic.

Significantly, 13.7% of respondents reported that health restrictions incentivized them to start cycling. This is consistent with the notable increase in bicycle sales in Brazil during 2020 and 2021.

Following the pandemic, only 1.1% of respondents ceased cycling altogether, while 11.1% indicated that the pandemic led to a reduction in the frequency or intensity of their cycling activities.

As illustrated in Chart 4, 29.4% of respondents reported that the end of the pandemic motivated them to continue using bicycles, marking the adoption of a practice they had not engaged in before the pandemic. In addition, 41.1% indicated that their cycling habits, in terms of rhythm and intensity, remained unchanged from pre-pandemic levels. These findings suggest that cycling and cycle tourism gained traction both during and after the pandemic, with 29.4% continuing the activity after starting it during the pandemic. However, 11.1% of respondents reported a decrease in their cycling activity, likely influenced by inconsistent sanitary restrictions across municipalities, which varied in their level of

Figure 4: The end of the pandemic and its impact on cycling



Source: Created by the author, 2024.



stringency. Social pressures regarding these measures may also have played a role. These findings may have practical implications for the development of governance strategies in destinations that feature cycle tourism as an attraction, whether through established routes or those still in the planning stages. In Santa Catarina, renowned for pioneering cycle tourism routes in Brazil with the European Valley route, other municipalities—individually or collaboratively—are actively working to structure routes and itineraries to promote cycle tourism. The presence of associations and cycling groups is also noteworthy, as these organizations independently advocate for route development and coordinate trips to explore destinations in other regions. The data can also inform public administrations and urban collectives advocating for adequate urban mobility infrastructure for cyclists. Nearly one-third of respondents reported a lack of bike lanes or dedicated cycling paths in their cities, reflecting a common challenge, particularly in smaller municipalities.

While these findings cannot be generalized, the post-pandemic context reveals a growing appreciation for cycle tourism, particularly due to its connection to natural and cultural spaces, as well as the distinct pace of travel it offers compared to other means of transportation. The pandemic introduced varying temporal perceptions among individuals and communities, which may have contributed to the increasing adoption of bicycles for tourism. This trend appears to be expanding at both

state and national levels, as supported by scientific studies.

The findings of this research also have theoretical implications, providing data and analyses that enhance the understanding of bicycle use in tourism—a field that demands further academic exploration, as highlighted in the theoretical framework. Cycle tourism is conceptualized differently in international studies compared to national contexts, and a comprehensive review of the literature can help elucidate these distinctions. Since cycling and cycle tourism are often addressed in other fields, such as transportation engineering, health and wellness, or sports science, this research provides conceptual and theoretical insights specific to tourism studies. It underscores the need for focused analyses, particularly concerning the during and post-pandemic periods, which require further investigation due to the significant transformations of recent years.

## FINAL CONSIDERATIONS

This study aimed to analyze the profile of cyclists and cycle tourists in Santa Catarina within the post-pandemic context. Using questionnaires grounded in theoretical frameworks, it sought to gather data and insights into the impacts of the pandemic on cycling habits and motivation. The pandemic introduced a new reality of mobility restrictions as a measure to mitigate the spread of a novel disease unprecedented in modern history. The rapid movement between cities, countries, and continents—critical to tourism—also facilitates disease transmission, particularly in densely



populated urban centers. Human-powered mobility, such as cycling, disrupts the accelerated pace of traditional travel, providing tourists and cycle tourists with new opportunities to engage with cultures, landscapes, and people in their destinations. The data analysis provided an overview of the socioeconomic profile of cyclists and cycle tourists, offering insights into their interests and motivations during and after the pandemic. The use of digital applications for activity monitoring and information sharing during cycling and cycle tourism emerged as a significant trend, particularly through social media platforms. These platforms have played a key role in disseminating information about attractions and facilities in visited destinations. Moreover, the popularity of photo and video-sharing platforms has driven the development of tourist attractions designed to generate shareable content, becoming integral to strategies for cycle tourism routes. This trend is particularly evident among cycling groups seeking to attract new members and expand their journeys to new distances and destinations.

Another significant finding was respondents' awareness of cycle tourism routes within the state and their perceptions of areas requiring improvement. Respondents also highlighted inefficiencies in public management related to cycling and cycle tourism more broadly. Growing recognition exists regarding the importance of cycle tourism as a component of local tourism strategies and the specific needs for its development and strengthening. These topics require continued debate and

advocacy by civil society. In the context of efforts to reduce environmental pollution and promote sustainable tourism practices, cycling emerges as a viable approach to restructuring public mobility policies and fostering tourism. Since 2006, cycle tourism routes developed in Santa Catarina have attracted growing interest from both locals and tourists, reflecting the increasing popularity of these attractions in recent years. The research also examined the pandemic's impacts on cycling within this context, revealing changes influenced by social and sanitary restrictions. The pursuit of alternative forms of leisure, recreation, and physical activity has expanded the role of cycling beyond transportation, adding value as a tourism activity.

Although the findings of this research does not allow generalizations to other states or national contexts, they can be an indicator for data comparison and for identifying the needs and expectations of cyclists and cycle tourists. The number of respondents represents a limitation, as does the geographical distribution, with some regions in the state lacking data. This may reflect a reduction in the number of cycling or cycle tourism enthusiasts in these regions or the absence of organized cycling groups to disseminate and respond to the survey. Furthermore, the saturation of online surveys and questionnaires during the pandemic might have contributed to the low response rate.

Future research may explore the identification and analysis of cycling routes developed in Santa Catarina over the past decade and their impact on local and



regional tourism, as well as the attractions that motivate cycle tourists to visit these routes. Another relevant research avenue is urban mobility challenges, considering the potential for bicycles to serve as a sustainable tourism option in both large cities and smaller towns, connecting urban and rural areas.

Investigating the everyday use of bicycles alongside their role in tourism could also address aspects of mobility and sustainability, particularly regarding pollution reduction and decreased reliance on private vehicles in urban centres.

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