

Impacts of Overtourism on the Protected Natural Area Jeseníky (PLA) in the Moravian-Silesian Region

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Abstract: Overtourism represents an increasingly pressing issue in numerous destinations worldwide, including protected natural areas. This article focuses on investigating the impacts of overtourism in the Jeseníky Protected Landscape Area (PLA) located in the Moravian-Silesian Region of the Czech Republic. The aim of the study is to examine the current level and trends of tourist visitation in the Jeseníky PLA, to assess selected economic benefits of tourism in the region—particularly its impact on local businesses and public finances—and to identify the environmental and sociocultural negative effects of overtourism in the area. Furthermore, the article proposes measures for regulating visitor flows and promoting the sustainable development of tourism. The analysis draws on secondary data from the final report “*Analysis of Visitation and the Impacts of Tourism in National Parks and Selected Protected Landscape Areas*” (2024), as well as statistical data provided by the Czech Tourism agency. The dataset includes figures on the number of domestic and international tourists, length of stay, number of day visitors, and visitation rates of key tourist attractions. The applied methodology comprises analysis and synthesis of the available data, interpretation of the findings, and comparison with similar destinations. The article concludes by highlighting both the advantages and drawbacks of the overtourism phenomenon and proposes specific strategies to mitigate its negative impacts.

Keywords: advantages and disadvantages, overtourism, sustainability.

JEL classification: Z32, R0, Q5

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Introduction

Overtourism refers to a phenomenon in which an excessive number of tourists in a particular destination generates adverse effects on the environment, infrastructure, local economy, and society. This concept has become a significant subject of academic research, particularly in the context of sustainable tourism. In this article, we focus on overtourism within the Jeseníky Protected Landscape Area, located in the Moravian-Silesian Region of the Czech Republic.

Tourism generates a range of economic benefits. It supports employment across sectors such as hospitality, transportation, tour guiding services, and retail. According to a 2023 study by the World Travel & Tourism Council (WTTC), tourism accounts for up to 10% of global GDP. Local businesses—including restaurants, hotels, and cultural heritage sites—benefit from increased visitation, which leads to higher revenues. In certain regions, tourism constitutes the primary economic sector (UNWTO 2021). Increased tourist activity also results in higher tax revenues for municipalities and national governments, which can be reinvested into public infrastructure.

Another positive aspect is the development of infrastructure and public services. Cities and regions with high levels of tourist visitation often invest in the expansion and modernization of transportation systems, including airports, roads, and public transit. Increased tourism can also contribute to the enhancement of public spaces, the maintenance of historical landmarks, and the development of environmentally sustainable projects.

Tourism also fosters cultural exchange and promotes the destination. It contributes to raising international awareness of local culture, traditions, and gastronomy. Tourists often seek authentic experiences, which in turn stimulates local artists and entrepreneurs.

Overtourism has several negative impacts, including environmental degradation. For example, Venice is experiencing erosion of its historic structures due to increased boat traffic and mass tourism (Seraphin et al., 2018). Destinations such as Bali and Barcelona face serious issues related to pollution and waste accumulation, largely caused by the insufficient capacity of sewage and waste management infrastructure (UNEP 2020).

The sociocultural impacts of overtourism include gentrification and rising housing costs. The growing demand for short-term accommodation—particularly through platforms such as Airbnb—has led to increased property prices and the displacement of local residents (Gutiérrez et al. 2017). The influx of tourists can also alter the character of a destination, as traditional neighbourhoods are transformed into commercial zones, resulting in a loss of authenticity. For instance, Amsterdam has implemented restrictions on the sale of souvenirs and fast-food chains in its historic city centre.

Another negative consequence is the diminished quality of the visitor experience. Overcrowding and long waiting times are common issues; for instance, Machu Picchu has introduced limits on the number of tourists due to excessive congestion and erosion damage. Tourist fatigue and local resistance are also frequent phenomena—many communities have expressed discontent with mass tourism, often staging protests, as seen in cities like Barcelona and Venice (Milano et al. 2019).

Many destinations are implementing measures to promote sustainable tourism. One such measure involves regulating the number of tourists, for example by introducing visitor quotas and limiting access to protected areas. Another strategy is dynamic pricing policies, which include higher fees for tourists during peak seasons and incentives to encourage off-season visitation. Tourism decentralization focuses on developing attractions outside of major tourist hubs, thereby reducing pressure on the most heavily visited sites. Educating tourists through responsible travel campaigns—such as the "Leave No Trace" initiative in national parks—also plays a key role in supporting sustainable tourism practices.

1 Literature overview

Honey and Frenkiel (2021) offer practical recommendations for sustainable tourism, focusing on ensuring sustainable livelihoods, nature conservation, and high-quality traveller experiences. Smith (2022) examines the growing importance of destination management and effective stakeholder engagement aimed at maximizing the economic benefits of tourism while avoiding the negative impacts of overtourism. Smith analyses the rapid growth of international tourism and its role in the emergence of the overtourism phenomenon. Milano (2019) explores the development of overtourism, analysing its causes, consequences, and potential solutions. The study provides an in-depth insight into the systemic dynamics behind overtourism and offers case studies from various destinations worldwide. Milano, Novelli, and Cheer (2021) provide

critical reflections on current tourism trends and propose strategies to address overtourism from the perspectives of tourism and planning. Their work discusses diverse approaches to tourism management and planning aimed at minimizing the adverse effects of overtourism. McClanahan (2024) investigates the profound impacts of tourism on global economies, cultures, and the environment, addressing contemporary challenges such as overtourism and unsustainable travel practices. McClanahan advocates for policy reforms and a shift in traveller mindset towards a more conscious and respectful approach to tourism.

In the Czech context, attention to the issue of overtourism has only emerged in recent years. Lenart (2023) analyses the historical and contemporary development of mass tourism in the Czech natural environment, highlighting the increasing number of visitors to natural sites and discussing the need for systemic solutions to promote sustainable tourism. Petráš and Jouzová (2020) address current challenges related to the protection of minority heritage sites in the Czech Republic and the risks associated with overtourism. The authors examine legal and cultural aspects of safeguarding these sites within the context of growing tourist numbers. Rončák (2023) also focuses on overtourism, analysing the measures undertaken by the city of Prague to promote more sustainable tourism and emphasizing the challenges Prague faces in striving for cultural sustainability.

2 Data and methods

This article is based on the most recent data from the Czech Tourism agency published in 2024. The evaluation of overtourism in the Jeseníky Protected Landscape Area (PLA) in the Moravian-Silesian Region relies primarily on the final report *Analysis of Visitation and the Impacts of Tourism in National Parks and Selected Protected Landscape Areas* (2024).

The presented analysis was conducted by T-Mobile Czech Republic, a.s., and is based on geolocation signalling data from the mobile network operator. The objective of the analysis is to assess the intensity and dynamics of visitation in the study area during the period from July 1 to November 30, 2023.

The analytical data are based on a methodology that utilizes geolocation signalling information from the mobile network operator, encompassing both domestic users connected to the operator's network and foreign visitors using roaming services within the operator's network coverage in the Czech Republic.

In the report "*Analysis of Visitor Numbers and the Impacts of Tourism in National Parks and Selected Protected Landscape Areas* (2024)," CzechTourism selected T-Mobile as its data provider due to the efficiency, reliability, and modern nature of mobile network-based monitoring. Leveraging its extensive network of base stations, T-Mobile enables the anonymized tracking of mobile devices, thereby facilitating accurate estimates of visitor numbers, movement patterns, length of stay, and seasonal fluctuations. These mobile data encompass both domestic and international visitors, offering a representative sample without the need for manual counting or field surveys. The data are fully anonymized and GDPR-compliant, ensuring privacy protection while significantly reducing operational costs. This approach provides a sustainable and minimally invasive method for monitoring tourism activity in ecologically sensitive areas. By partnering with T-Mobile, CzechTourism gains access to high-quality data that support strategic infrastructure planning, effective visitor management, and the sustainable development of tourism within protected natural environments.

In the interpretation of the data, terminology was adopted according to the methodological framework of CzechTourism (2024), which defines key concepts in the field of tourism. The category "day-tripper" refers to a visitor who spends a single day at the destination without overnight accommodation and stays for a minimum of three hours (referred to as a "day-trip"). The category "tourist" applies to a multi-day visitor who spends at least one overnight stay at the destination (referred to as a "tourist-day"). The aggregate category "visitor-day" encompasses both day-trips and tourist-days.

The analysis specifically focuses on selected aspects of visitation in the Jeseníky Protected Landscape Area during the period from July to November 2023. The following areas were examined: overall visitation based on mobile network (GSM) data; geographic origin of both domestic and international tourists; average length of stay of both groups; the number and origin of day-trippers; and visitation to specific tourist sites within the area.

Based on the obtained data, we evaluated the advantages and disadvantages of overtourism in this area. Furthermore, we proposed specific measures for the sustainable development of tourism aimed at minimizing negative impacts and maximizing benefits for the region. Analytical and synthesis methods were employed in the final processing of the results.

3 Results

In the first section, we focused on visitation in the Jeseníky Protected Landscape Area. From July to November 2023, a total of 209,000 tourists visited the Jeseníky PLA, with 96% of them being domestic visitors. The total number of tourist visits reached approximately 356,000, with an average of 2.82 overnight stays per person. During the same period, 410,000 day-trippers visited the area, some of whom returned multiple times, resulting in a total of approximately 746,000 day-trip visits. The highest number of visitors was recorded in July. Among Czech tourists, the majority originated from the Moravian-Silesian, South Moravian, and Olomouc Regions. Among international visitors, Poles represented the largest group, both in terms of tourists and day-trippers. The results related to visitation in the Jeseníky Protected Landscape Area are shown in Table 1 below.

Table 1: Visitation in the Jeseníky Protected Landscape Area Based on GSM Data, July – November 2023

Visitation	Domestic	International	Total
Tourists	200,222	9,155	209,378
Tourist visits	341,336	14,611	355,947
Overnight stays	567,972	22,934	590,806
Tourist-days	725,613	28,196	753,809
Share of tourists	96%	4%	100%
Number of overnight stays per tourist	2.84	2.51	2.82
Number of tourist visits per tourist	3.62	3.08	3.60
Day-trippers	379,034	30,903	409,937
Day-trip visits	705,441	40,913	746,354
Number of visits per day-tripper	1.86	1.32	1.82
Visitors	579,256	40,058	619,315
Visitor days	1,431,054	69,109	1,500,163
Share of visitors	95%	5%	100%

Source: Czech Tourism, Final Report: Analysis of Visitation and Tourism Impacts in National Parks and Selected Protected Landscape Areas (2024)

In the subsequent section, we utilized data illustrating the origin of domestic and international tourists. The largest share of domestic tourists visiting the Jeseníky Protected Landscape Area originates from the Moravian-Silesian Region, accounting for 20.55% of all domestic visitors. This finding is unsurprising given that the Jeseníky area is located within this region, facilitating access for local residents. The second largest share comes from the South Moravian Region with 18.96%, indicating that Jeseníky is also a favoured destination for tourists from southern Moravia. This is followed by the Olomouc Region with 17.15% and the capital city Prague with 8.43%. The relatively high proportion of visitors from Prague may be attributed to the region's good transportation accessibility and the interest of Prague residents in the natural beauty of the Jeseníky PLA. The Central Bohemian Region, which surrounds Prague, accounts for 8.17% of domestic tourists. Subsequently, the distribution includes the Zlín Region (6.40%), Pardubice Region (4.71%), Vysočina Region (3.23%), Hradec Králové Region (3.05%), and South Bohemian Region (2.05%). Lower percentages were recorded for the Ústí nad Labem, Liberec, Plzeň, and Karlovy Vary Regions. An additional category labelled "Unknown" comprises 1.72%, which may include tourists whose home region could not be identified. Overall, the majority of domestic tourists visiting Jeseníky come from nearby regions, which is consistent with the geographic location and accessibility of the area. Nevertheless, the Jeseníky PLA also attracts tourists from more distant areas, including Prague and the Central Bohemian Region. The following Table 2 related to the origin of domestic tourists summarizes these data.

Table 2: Origin of Domestic Tourists – Jeseníky Protected Landscape Area

Region	Percentages
Moravian-Silesian Region	20.55
South Moravian Region	18.96
Olomouc Region	17.15
Prague	8.43
Central Bohemian Region	8.17
Zlín Region	6.40
Pardubice Region	4.71
Vysočina Region	3.23
Hradec Králové Region	3.05
South Bohemian Region	2.05
Ústí nad Labem Region	1.92
Unknown	1.72
Liberec Region	1.55
Plzeň Region	1.47
Karlovy Vary Region	0.65

Source: Czech Tourism, Final Report: Analysis of Visitation and Tourism Impacts in National Parks and Selected Protected Landscape Areas (2024)

Data reflecting the origin of foreign tourists indicate that the largest share of international visitors to the Jeseníky Protected Landscape Area comes from Poland, accounting for 30.16% of all foreign visitors. This result is logical given the geographical proximity and historical ties between the Czech Republic and Poland. Slovakia ranks second with 19.39%, suggesting that the Jeseníky area attracts tourists from a variety of other countries. Ukraine holds third place with 13.37%, reflecting the impact of the current geopolitical situation on tourism. The category "Others," which may include tourists whose home country could not be determined, accounts for 12.84%. Germany contributes 11.66% of foreign tourists, a relatively high share that can be attributed to good transport connections and German interest in natural destinations. The United States represents 3.45% of foreign visitors, which is notable considering the greater distance, but may be explained by American tourists' interest in European natural attractions. The

Netherlands (3.31%), Austria (2.70%), Switzerland (2.06%), and Italy (1.06%) have smaller yet still significant shares. These countries are known for their interest in tourism and natural destinations, which may explain their presence in the Jeseníky area. Overall, it can be concluded that the Jeseníky Protected Landscape Area is an attractive destination for tourists from various countries, with the largest proportion coming from neighbouring nations such as Poland and Slovakia. The interest of tourists from Ukraine, Germany, the USA, and the Netherlands also indicates the potential of Jeseníky to attract visitors from greater distances. The data are summarized in the following Table 3 related to the origin of foreign tourists.

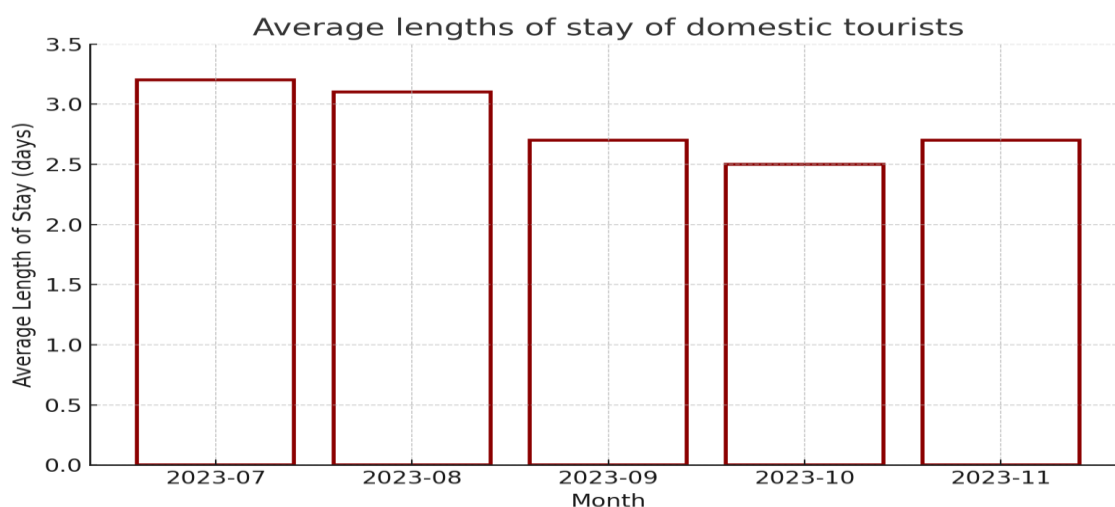
Table 3: Origin of Foreign Tourists – Jeseníky Protected Landscape Area

Region	Percentage
Poland	30.16
Slovakia	19.39
Ukraine	13.37
Others	12.84
Germany	11.66
USA	3.45
Netherlands	3.31
Austria	2.70
Switzerland	2.06
Italy	1.06

Source: Czech Tourism, Final Report: Analysis of Visitation and Tourism Impacts in National Parks and Selected Protected Landscape Areas (2024)

The data presented below in the Figure 1 reflect the average length of stay of domestic tourists in the Jeseníky Protected Landscape Area during various months of 2023. In July 2023, the average length of stay was 3.2 days. This figure decreased slightly to 3.1 days in August 2023. In September, the average length of stay further declined to 2.7 days. In October 2023, it dropped again to 2.5 days, followed by a slight increase to 2.7 days in November. These results indicate that the average length of stay among domestic tourists is highest during the summer months, peaking in July. This trend is likely influenced by favourable climatic conditions and the holiday season.

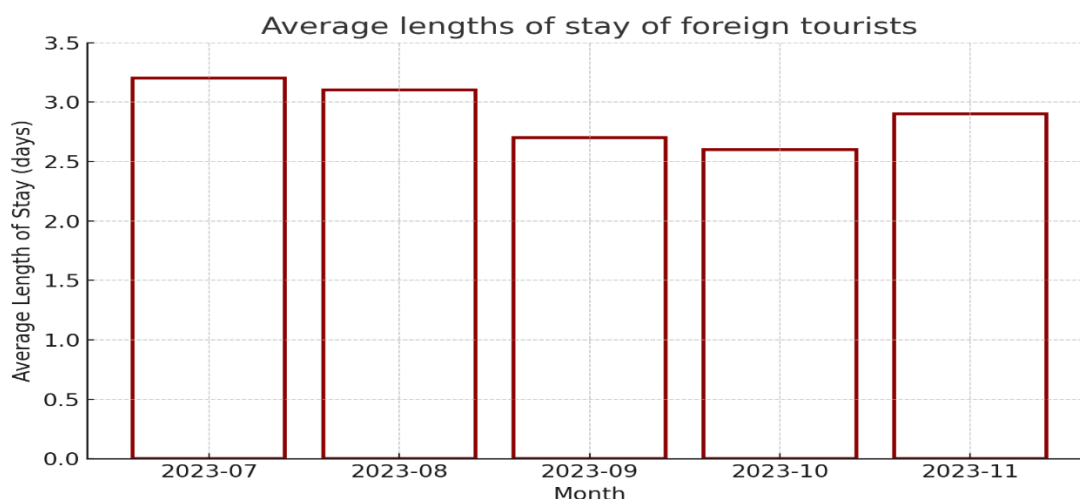
Figure 1: Average Length of Stay of Domestic Tourists



Source: Czech Tourism, Final Report: Analysis of Visitation and Tourism Impacts in National Parks and Selected Protected Landscape Areas (2024)

The data presented in the following Figure 2 reflect the average length of stay of international tourists in the Jeseníky Protected Landscape Area, based on monthly averages throughout 2023. In July 2023, the average length of stay was 3.2 days. This figure decreased slightly to 3.1 days in August. In September, the average length of stay declined modestly to 2.7 days, followed by a slight decrease to 2.6 days in October 2023. In November, however, the average length of stay increased again to 2.9 days. These findings suggest that, while the average length of stay for international tourists is generally slightly lower than that of domestic tourists, it follows a similar seasonal pattern. The longest stays occur in the summer months—particularly in July and August—likely due to the holiday season and favourable weather conditions. Overall, the difference in average length of stay between domestic and international tourists in the Jeseníky region is relatively small. Notably, international visitors tend to stay slightly longer in November. Both groups, however, exhibit a clear seasonal increase in the duration of their stay during the summer period.

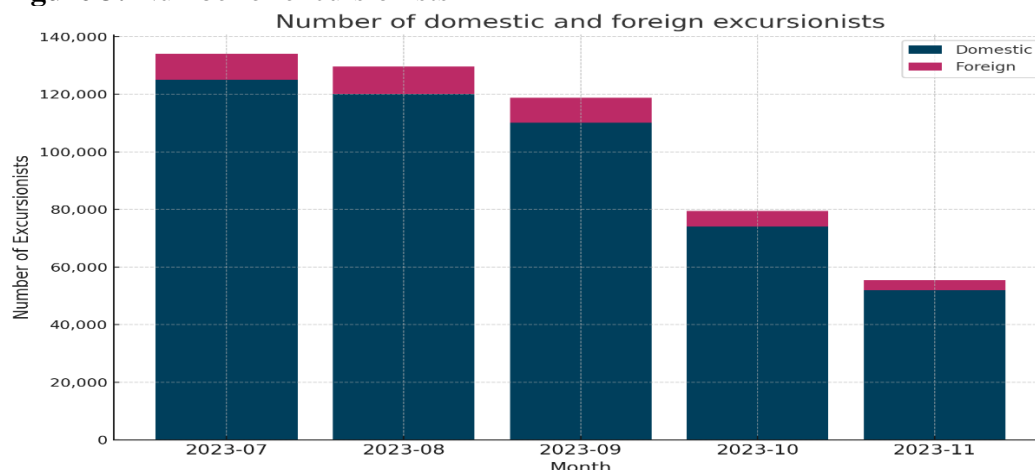
Figure 2: Average Length of Stay of Foreign Tourists



Source: Czech Tourism, Final Report: Analysis of Visitation and Tourism Impacts in National Parks and Selected Protected Landscape Areas (2024)

The diagram (Figure 3) below specifies the number of domestic and international day visitors (excursionists) to the Jeseníky Protected Landscape Area. The number of domestic excursionists also shows a clear seasonal pattern. In July 2023, slightly more than 120,000 domestic day visitors were recorded. This figure decreased marginally to around 120,000 in August, and further declined to just under 110,000 in September 2023. In October, there was a sharp drop to approximately 75,000, followed by a further decrease to around 55,000 in November. The highest number of domestic excursionists was recorded in July, likely due to the summer holidays and favourable weather conditions. Conversely, the lowest number occurred in November, which can be attributed to colder weather and the end of the main tourist season. International excursionists followed a similar seasonal trend. In July 2023, approximately 20,000 foreign day visitors were registered. This number remained stable in August, before slightly declining to just below 20,000 in September. In October, a more noticeable decrease brought the number down to around 10,000, and in November the lowest figure was recorded—approximately 5,000 visitors. As with domestic visitors, the highest volume of international excursionists occurred during the peak summer months of July and August, most likely due to holiday schedules and favourable climate conditions. The lowest numbers, observed in November, reflect the seasonal decline caused by colder weather and reduced tourism activity.

Figure 3: Number of excursionists



Source: Czech Tourism, Final Report: Analysis of Visitation and Tourism Impacts in National Parks and Selected Protected Landscape Areas (2024)

The results clearly demonstrate a seasonal trend among both domestic and international excursionists. The highest visitor numbers were recorded in July and August, corresponding to the summer holidays and favourable weather conditions. The subsequent decline during autumn and into winter is expected, as deteriorating weather and the end of the tourist season limit outdoor activities and travel incentives. An interesting finding is the more pronounced decrease among international excursionists during the observed period. While domestic visitors continued to arrive in relatively high numbers through September and October, the number of foreign excursionists declined more sharply. This suggests that international tourists are more dependent on the peak summer season, possibly due to longer travel distances, planned vacations, and the appeal of summer-specific activities. In contrast, domestic excursionists appear to be more flexible, willing to travel outside the core tourist season, likely due to proximity and easier access to the region.

The Table 4 below provides an overview of the origin of both domestic and international excursionists visiting the studied region. The majority of domestic day visitors come from the Olomouc Region (24.38%), followed closely by the Moravian-Silesian Region (24.19%), and the South Moravian Region (14.15%). This distribution reflects the geographical proximity of these regions to the Jeseníky Protected Landscape Area, facilitating short-term visits. In contrast, international excursionists are predominantly from Poland (66.17%), which is unsurprising given the shared border and cultural-historical ties. A significantly smaller share is represented by visitors from Ukraine (7.69%) and other countries. These findings illustrate that the region primarily attracts cross-border day-trippers, with a relatively modest presence of visitors from more distant foreign markets.

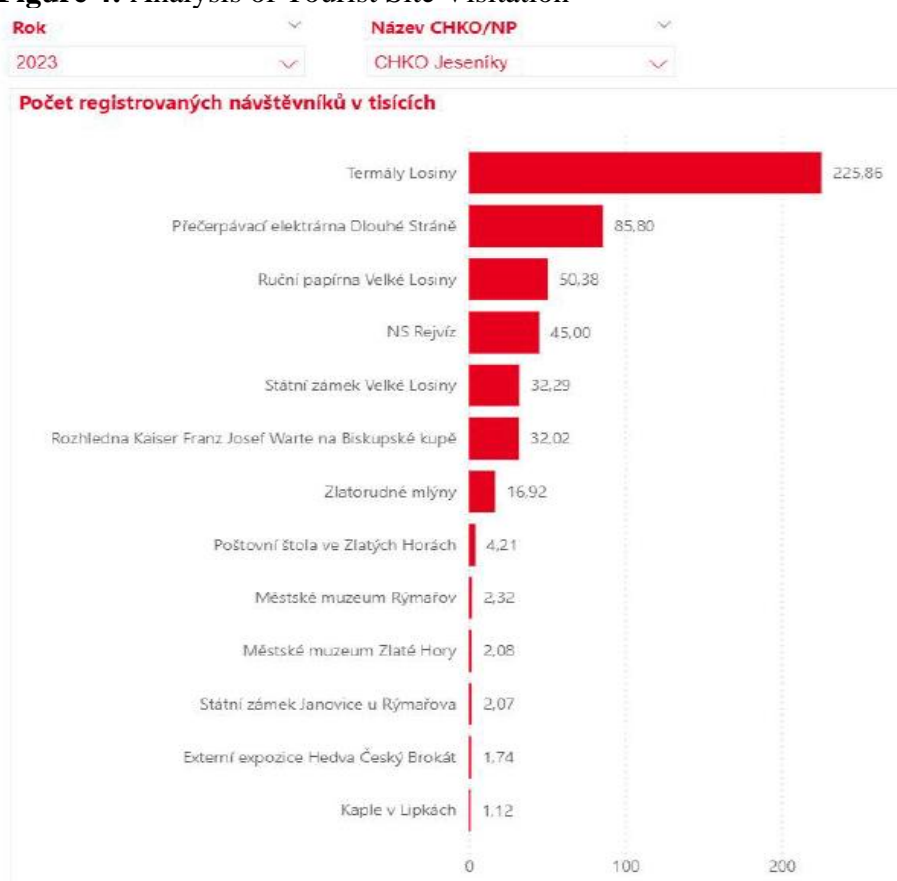
Table 4: Origin of excursionists

Region/Country	Percentage	Type
Olomouc Region	24.38	Domestic
Moravian-Silesian Region	24.19	Domestic
South Moravian Region	14.15	Domestic
Zlín Region	6.06	Domestic
Central Bohemian Region	6.00	Domestic
Prague	5.73	Domestic
Pardubice Region	5.30	Domestic
Vysočina Region	3.06	Domestic
Hradec Králové Region	2.67	Domestic
Unknown	2.42	Domestic
South Bohemian Region	1.74	Domestic
Ústecký Region	1.40	Domestic
Pilsen Region	1.29	Domestic
Liberec Region	1.11	Domestic
Karlovy Vary Region	0.48	Domestic
Poland	66.17	Foreign
Ukraine	7.69	Foreign
Others	6.86	Foreign
Slovakia	6.72	Foreign
Germany	5.81	Foreign
USA	1.95	Foreign
Netherlands	1.58	Foreign
Austria	1.37	Foreign
Switzerland	1.01	Foreign
Hungary	0.84	Foreign

Source: Czech Tourism, Final Report: Analysis of Visitation and Tourism Impacts in National Parks and Selected Protected Landscape Areas (2024)

In the final Figure 4 presented below, we analyse the visitation rates of selected tourist attractions within the Jeseníky Protected Landscape Area (CHKO Jeseníky) for the year 2023. The most visited destination was Termály Jeseníky, attracting over 225,000 visitors, confirming its popularity as a wellness and recreational site. Second in terms of visitor numbers was the Dlouhé Stráně pumped-storage hydroelectric power plant, with 85,000 visitors, followed by the Handmade Paper Mill in Velké Losiny, which recorded over 50,000 visits. Other notable attractions include the Rejvíz educational trail (45,000 visitors), the State Chateau Velké Losiny (over 32,000 visitors), the Kaiser Franz Josef Warte lookout tower on Biskupská kupa (32,000 visitors), and the Zlatorudné Mills (approximately 17,000 visitors). In contrast, the remaining attractions drew significantly fewer visitors. These include the Postal Adit in Zlaté Hory (4,210 visitors), the Municipal Museum in Rýmařov (2,320), the Municipal Museum in Zlaté Hory (2,080), the State Chateau Janovice near Rýmařov (2,070), the external exhibition of Hedva Český brokát (1,740), and finally the Chapel in Lipky (1,120 visitors). These findings suggest that tourist interest in the region is predominantly oriented toward wellness and relaxation facilities, as well as the natural beauty of the Jeseníky landscape.

Figure 4: Analysis of Tourist Site Visitation



Source: Czech Tourism, Final Report: Analysis of Visitation and Tourism Impacts in National Parks and Selected Protected Landscape Areas (2024)

Discussion

Based on the conducted survey it can be concluded that the phenomenon of overtourism in the Moravian-Silesian Region brings both significant economic benefits as well as environmental and social challenges. This finding aligns with insights derived from the relevant academic literature addressing this topic. The authors most clearly discussing both economic benefits and environmental/social challenges of tourism are Koens, Postma, and Papp (2018) and Honey, and Frenkiel (2021).

In academic discourse, overtourism is viewed as a complex phenomenon that extends beyond the mere overloading of destinations with tourists. Koens, Postma, and Papp (2018) emphasize that this issue primarily represents a social conflict arising from the disruption of local residents' daily lives, environmental degradation, and pressures on infrastructure. They argue that overtourism is not a new problem, as is often suggested, but rather the consequence of long-term uneven management of tourism. Additionally, they criticize the excessive reliance on technological solutions, which alone do not resolve the situation. What they mean by that are smart tourism, digital infrastructure and smart city.

The results of our investigation indicate that increased visitation brings economic benefits to the region, particularly through higher revenues for restaurants, accommodation providers, and other services. This finding is corroborated by studies such as the case analysis of the Big Sur area (Atzori 2020). However, the authors of that study also highlight that tourism growth without appropriate regulation can lead to environmental overload, increased waste generation, and congestion of transport infrastructure. This insight aligns with our observation that private

cars remain the predominant mode of transportation, while the share of public transit remains low. Data from CzechTourism further reveal poor connectivity of public transport services, which hinders the redirection of visitor flows toward more sustainable alternatives. We can build on the best practices from the above-mentioned study in the Big Sur area. We believe that these proposed measures form an integrated strategy combining demand management, mobility solutions, law enforcement and restrictions, monitoring and evaluation, and strategic planning. Demand management includes paid passes, parking quotas, and reservation systems. Mobility solutions involve shuttle services and improvements to traffic infrastructure. Law enforcement and restrictions consist of patrols, camping bans, and controlled access. Monitoring and evaluation use real-time counts and data-driven decision making to adapt policies effectively. Strategic planning focuses on limiting promotion and developing alternative attractions to reduce pressure on the area. Although not solely technology-based, these measures represent a holistic approach that stakeholders believe is essential to preserve Big Sur's environmental integrity, manage visitor behavior, and address social and infrastructural tensions caused by overtourism.

During the COVID-19 pandemic, there was a significant increase in domestic tourism, particularly from the South Moravian and Zlín regions. However, by 2024, the situation had returned to pre-pandemic levels. The highest visitor pressure in the Protected Landscape Area (CHKO) traditionally occurs during public holidays in the summer and autumn months. This peak visitation leads to overcrowding at key sites and results in conflicts among different visitor groups, such as hikers, cyclists, and users of electric bikes and electric enduro motorcycles.

An important aspect of overtourism is its impact on nature and biodiversity. Based on the conducted survey by Czech Tourism from 2024, it was observed that visitors frequently violate regulations by moving outside designated trails. During winter, the growth of ski mountaineering activities may disturb protected species, such as the hazel grouse (*Tetrastes bonasia*). These ecological impacts are corroborated by methodological studies on carrying capacity of destinations, such as Mihalič (2020), who emphasizes the necessity of comprehensive assessment encompassing environmental, social, economic, and cultural impacts of tourism. Similarly, the Santorini Framework (2024) advocates for measuring the intensity of overtourism not only by visitor numbers but also by its effects on the natural environment and spatial capacities of the area.

The Santorini Framework (2024) represents a comprehensive approach to sustainable tourism management, combining building regulation and landscape protection, visitor management, support for the local community, and infrastructure improvement. Key measures include limiting new construction based on traditional standards, implementing daily visitor and port capacity limits, supporting employee housing and regulating short-term rentals, as well as investing in public transport and parking facilities. This framework can be effectively applied to mountain areas facing similar ecological and social challenges, helping to protect natural and cultural heritage, improve local residents' quality of life, and ensure sustainable tourism development.

A positive trend can be observed in the changing behaviour of visitors. According to the findings based on the study by Atzori (2020), an increasing number of tourists are demonstrating more considerate and responsible attitudes towards the natural environment. This is further supported by other conclusions of a study conducted in Big Sur, which highlights the critical role of education and communication with visitors as key tools for sustainable management.

The management of the protected area is conducted in collaboration with municipalities, primarily through consultative groups. Addressed issues include, for example, parking and the routing of tourist flows. Tourist information centres play an important role as partners in both education and visitor management. However, at the destination management organization (DMO) level, discrepancies arise—collaboration with the Euroregion operates effectively, whereas at the regional and local levels, differing methodologies and weak coordination are frequently reported.

The differences in collaboration between destination management organizations (DMOs) stem from the fact that, at the Euroregion level, coordination functions effectively thanks to unified methodologies, shared objectives, and efficient communication. In contrast, at the regional and local levels, the study *Analysis of Visitor Numbers and Tourism Impacts in National Parks and Selected Protected Landscape Areas* shows that cooperation is weakened due to diverse approaches to data collection and evaluation, inconsistent methodologies, and a lack of capacity and funding. There is an absence of systematic coordination and standardization, leading to misalignment among stakeholders, limited information sharing, and weak tourism management at the local level.

The authors of the normative overtourism model (Tarrant et al. 2025) emphasize the importance of a participatory approach in destination management. They recommend involving all relevant stakeholders—land managers, municipalities, businesses, visitors, and non-governmental organizations—in decision-making processes. This model supports the development of sustainable strategies that consider not only the carrying capacity of the area but also the quality of life of local residents.

From the perspective of investment development, our research has shown that the current collaboration with entrepreneurs is stable but primarily focused on maintaining existing activities. At present, no new large-scale projects are being initiated, which may be related to a more cautious approach to development following the pandemic period.

This statement is supported by findings from the study *Analysis of Visitor Numbers and Tourism Impacts in National Parks and Selected Protected Landscape Areas*, which, based on data from 2019–2023, shows that cooperation with entrepreneurs is stable but primarily focused on maintaining existing activities. The study does not identify any new large-scale investment projects, and business stakeholders themselves report that a more conservative approach to development has prevailed in the post-pandemic period. This trend is reinforced by limited capacities, insufficient infrastructure, and uncertainty regarding the long-term sustainability of tourism, leading to cautiousness in planning new investments.

Conclusion

Our investigation confirmed that overtourism in the studied area is a complex phenomenon that brings both economic opportunities and environmental and social risks. These findings are fully consistent with the international scholarly literature.

The statement that overtourism in the studied area is a complex phenomenon bringing both economic opportunities and environmental and social risks is supported by numerous authors in the international scholarly literature. Koens, Postma, and Papp (2018) emphasize the multifaceted impacts of overtourism in urban contexts, while Honey and Frenkiel (2021) highlight the need for long-term sustainable solutions. Mihalič (2020) offers a conceptual framework viewing overtourism as a sustainability challenge, and Milano, Cheer, and Novelli

(2019, 2021) further expand the understanding of its effects on communities, nature, and cultural heritage. Atzori (2020) analyzes the case of Big Sur, confirming both the benefits and negative ecological and social consequences of overtourism, whereas Seraphin, Sheeran, and Pilato (2018) demonstrate through the example of Venice how insufficient visitor management can lead to the decline of a destination. Tarrant and colleagues (2025) stress the need for integrated overtourism management that considers environmental and social sustainability. Overall, the scholarly literature confirms that overtourism is a complex issue requiring a holistic approach to its management and resolution.

Effective management of this phenomenon requires combining direct regulatory measures (e.g., access restrictions, traffic management) with long-term strategies (participation, education, redefinition of success indicators). Collaboration among different levels of governance, municipalities, and the business sector is crucial. Sustainable tourism can only be achieved through an integrated and balanced approach that reflects the needs of visitors, local communities, and the natural environment.

Based on the above, we recommend the following measures to improve visitor management and infrastructure in protected areas, which will contribute to more sustainable tourism development and the preservation of the natural environment.

One of the main challenges is inadequate supporting infrastructure—particularly insufficient parking capacity, poor condition of access roads, and lack of adequate social facilities. Therefore, we recommend the construction of new park-and-ride facilities in suitable locations, connected to feeder transportation or environmentally friendly means of transit to tourist hotspots. Additionally, it is essential to improve the technical condition of access roads and ensure their regular maintenance. Significant emphasis should also be placed on providing appropriate social amenities—such as restrooms, shelters, and rest areas—that correspond to the actual usage levels of the area. To conclude, the public transportation system should be strengthened, especially on weekends and during peak seasons, with improved connectivity between routes.

To improve the applicability of our findings, we propose piloting selected measures in cooperation with relevant local stakeholders. For example, the introduction of a small-scale park-and-ride facility near a high-traffic entry point could be piloted by local municipalities or regional planning authorities within 12 to 18 months, using temporary infrastructure or modular solutions to test demand and operational logistics.

Simultaneously, increasing public transport frequency during weekends and peak tourist seasons could be trialed by regional public transport operators, in coordination with local governments, as a 6-month seasonal pilot, supported by targeted promotional campaigns and real-time passenger monitoring.

Furthermore, the installation of basic social amenities—such as mobile restrooms and temporary shelters—could be implemented quickly by park administrations or tourism boards within a 3 to 6-month timeframe, particularly in areas already experiencing visitor overload. These pilots would not only help validate feasibility but also provide practical insights for scaling solutions across similarly affected areas.

Another challenge is the lack of effective visitor flow management on-site. In many areas, there is a complete absence of systems for organizing and regulating tourist movements. A suitable

solution would be the implementation of reservation systems in the most heavily frequented locations, such as the Karlova Studánka – Hvězda section, which would allow better control over the number of visitors in a given area and reduce pressure on the natural environment. Furthermore, it is important to spatially separate different forms of tourism and recreational activities (e.g., hikers, cyclists, e-bikes, enduro riders) to prevent conflicts between visitor groups and enhance overall safety.

From a personnel perspective, the situation is also unsatisfactory. The number of active park rangers is very low (approximately 6–8), which does not allow for effective supervision of the extensive area. Therefore, we recommend increasing this number to ensure proper enforcement of regulations, prevention of inappropriate behaviour, and direct communication with visitors in the field.

In planning and implementing measures, it is important to build upon existing strategic documents, particularly *the Concept for Visitor Management*. The Concept for Visitor Management document in the Czech Republic outlines a strategy for managing visitor numbers in protected areas with the goal of minimizing the negative impacts of tourism on nature while ensuring a high-quality visitor experience. It includes key principles and tools such as visitor monitoring using modern technologies, implementing capacity limits and reservation systems, regulating access to sensitive areas, improving infrastructure and information services, involving local communities and fostering cooperation between protected area administrations and other stakeholders, and educating visitors about responsible behavior in nature. The aim of the document is to achieve sustainable tourism that balances nature conservation, visitor needs, and the socio-economic aspects of the regions. This document should serve as a foundational framework for the systematic management of visitor flows, infrastructure development, and communication among land management authorities, municipalities, destination organizations, and other stakeholders.

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