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Can Tourists' Preferences Determine the Direction of Sustainable Development in Mountain Landscapes?

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Abstract: Tourism and recreation development in naturally valuable mountain areas is a complex issue. On the one hand, it has a positive impact on the physical and mental health of modern society, especially after the COVID-19 pandemic. It also contributes to the economic growth of local communities, for which financial revenues from tourism are important sources of income. However, exceeding the limits of tourist absorption and improper trail management can lead to natural environment and landscape degradation. The Carpathians are marked by a dense and diverse network of tourist trails that can have an impact on biodiversity, which is often unique in this European region. The aim of the study was to determine tourists' preferences in terms of the attractiveness and development of the mountain trails of the Carpathian region. The research was conducted using a survey on 10 main hiking trails in the Beskids. The results were compared with the inventory carried out in the field based on tourist values. The results highlight the possibility of achieving a balance between the use of tourist trails and the protection of the natural and cultural environment. Our results can be useful for the sustainable tourist management of mountain landscapes, linking nature conservation and recreation requirements.

Keywords: sustainable tourism; mountain trails; mountain landscapes; tourist attractiveness; infrastructure; Carpathian Mountains

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Citation: Malec, M.M.; Ziernicka-Wojtaszek, A.; Kędzior, R. Can Tourists' Preferences Determine the Direction of Sustainable Development in Mountain Landscapes? *Sustainability* **2024**, *16*, 10133. https://doi.org/10.3390/su162210133

Academic Editors: Arthur F. De Araújo and Maria Isabel Andrés Marques

Received: 14 October 2024
Revised: 7 November 2024
Accepted: 16 November 2024
Published: 20 November 2024

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1. Introduction

Mountain trips, whether during summer or autumn holidays or winter skiing trips, are becoming a mass phenomenon, an adventure for millions. Everyone is affected in a different way or perceives landscapes differently, especially those close to nature. Such individual sensory experiences of surrounding phenomena are called perception [1–3]. They are experienced by everyone present in a certain environment because they are independent of the person, with the climate of the place having a particular effect on the subconscious. The participant can be more or less sensitive but cannot remain indifferent. When talking about the beauty of a mountain (or any other) landscape, we succumb to the qualities of the place [4,5]. Both the COVID-19 pandemic and the energy crisis have increased the importance of the Sustainable Development Goals of the EU, as well as those worldwide. One of the aims of the European Agenda for Tourism 2030 is to take advantage of the readiness of Europeans to change their habits regarding not only everyday life, but also travel and tourism [6]. These actions are to focus, among other things, on promoting responsibility for decisions when choosing the way or the place of rest. As an example, projects in the Polish mountains that irreversibly change the mountain landscape and negatively affect the functioning of ecosystems are becoming more and more frequent [7,8]. Land managers and project owners insert infrastructure into the environment that, on the one hand, "litters" it, and, on the other hand, is not at all accepted or used by tourists [9]. There is a need to assess the existing tourist infrastructure

and the hiking value of mountain trails, which will help us to avoid the introduction of unnecessary anthropogenic elements while taking into account the needs of hiking trail users. The impact of tourism on the environment can be both direct (e.g., trampling of trails, destruction of plants, noise, introduction of large-scale developments into the mountain landscape, synanthropisation of animals, littering, animal frightening, etc.) and indirect, by increasing or decreasing the likelihood of some phenomenon (e.g., increase in erosion processes, avalanches, or reduction in the reproduction or survival of various animal species) [10]. It is important that actions taken, especially in highly sensitive mountain ecosystems, be focused on the UN guidelines stating that the action "takes full account of its current and future economic, social, and environmental impacts, addressing the needs of visitors, the industry, the environment, and host communities" [11]. According to Santos et al. [12], in the post-pandemic COVID-19 era, with its image of ecosystems regenerating without human presence, tourism is under even more pressure to be sustainable.

Tourist attractiveness is usually assessed on the basis of characteristics such as tourist values, transport accessibility, and tourist development [13–20]. Various valorisation methods are often used for this purpose, usually based on the scoring of particular parameters. However, as some authors note, the assessment of tourist attractiveness is a complex and very difficult process [21,22]. Authors find that we have to deal with objective natural or anthropogenic elements that are measurable (e.g., saturation of the area with accommodation facilities, resting places, signage, etc.) along with their subjective perception by tourists visiting the place. Each tourist is looking for a different experience and will therefore evaluate the development of his/her trail differently. The occasional tourist with little knowledge of nature will also expect attractions related to gastronomy and entertainment (e.g., lookout towers, trails in the treetops, etc.). In addition, they will want to get as far as possible in their own car or to be driven (by horse-drawn carriage or another vehicle). Qualified or nature tourists will be looking for an experience of nature and will be ready for a long route on foot, on skis, or by bicycle, very often being "self-sufficient" in terms of food and drink. As a result, they will only need limited elements of trail management.

The objective of this study was to determine hikers' preferences regarding the attractiveness of mountain trails. The study was carried out using a questionnaire and field surveys on 10 major hiking trails in the Beskid Mountains. The results can help with decision-making when creating and developing hiking trails better suited to tourist needs and in line with the concept of the sustainable development of the mountain landscape. The study poses the following research questions: Is there a differentiation in tourist attractiveness between the hiking trails leading to the highest peaks of the Polish Beskids? Does the degree of development of hiking trails influence decisions made by tourists regarding the choice of the trail? Which elements of tourist infrastructure are preferred by tourists, and which are considered to have a negative impact on the environment and landscape?

2. Materials and Methods

2.1. Description of the Study Area

The study was carried out on tourist trails leading to the highest mountain peaks of the Beskid Mountains within the territorial boundaries of Poland, which geographically are part of the Carpathian Mountains (Figure 1). According to Richling et al. [23], the entire area of this macro-region, including the parts in Slovakia and Czechia, is 8828 km^2, with 5423 km^2 (61.4%) located in Polish territory.

According to the data of the Polish Tourist and Sightseeing Society (PTTK), the organisation which for many decades was the only institution designating, marking, and maintaining all tourist trails in Poland, the combined length of all the trails (lowland and mountain walking trails, thematic canoe, bicycle, ski, water, horse, and other trails) is about 76,000 km. As much as 11,000 km of the trails are mountain walking trails. The study was carried out on 10 hiking trails leading to the highest peaks of a selected mountain range of the Beskid Mountains (Table A1).

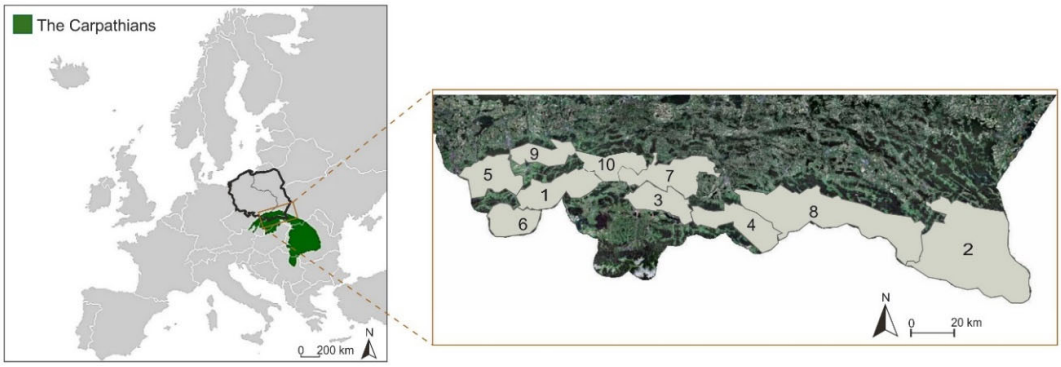


Figure 1. Map of ten mountain ranges surveyed for research. The mountain ranges of the Beskid Mountains are as follows: 1—Żywiec-Orawa Beskid, 2—Bieszczady, 3—Gorce, 4—Sądecki Beskid, 5—Silesian Beskid, 6—Żywiec-Kysuce Beskid, 7—Island Beskid, 8—Low Beskid, 9—Little Beskid, 10—Maków Beskid.

2.2. Methods

An inventory of all elements within three main categories which influence the attractiveness of trails (tourist values, communication accessibility, and tourist development) was carried out along selected tourist trails leading to the 10 highest summits of mountain ranges in the Polish Beskids (Table A1).

2.2.1. Tourist Values

- Landscape qualities (land cover and forms of legal protection of the area)

The touristic value of a route is determined, among other things, by landscape qualities. For the purposes of the study, land cover was taken into account as an important factor in the physiognomy of the area, along with the contribution of the various forms of legal protection of the area. A total of 16 categories of land cover were included in the study: forests, woodland (bushland), meadows/pastures/plains, meadows with bushland, arable land, developed areas, waters, rocks or other formations (boulder fields), dwarf pines, orchards and plantations, bilberries, bilberries with rare forests, mosaics (bilberry, forests, windbreaks, glades), ski slopes, windbreaks, and glades. Both sides (right and left) of each trail were included in the inventory. The percentage share of each land cover form was given separately for the right and left sides of the trails, and collectively the mosaic character of the land cover was expressed as the average number of the changes in forms, which indicates the diversity of the land cover. In addition, the inventory accounted for all surface forms of the legal protection of nature and landscapes that occurred along the studied section of the trail (national parks, nature reserves, landscape parks, protected landscape areas, Natura 2000 areas, ecological uses, and natural and landscape complexes) [13,14].

- Scenic value

The opportunity to enjoy beautiful views is an important factor that affects the choice of a hiking route. An analysis of scenic value was carried out, including the possibility of admiring the panorama from a particular spot or along a section of the trail. The presence of a so-called dominant feature (i.e., a distinctive element that stands out from its surroundings and draws attention) is also an important factor when assessing a particular view. In the case of large, wide panoramas, this is often the summit to which the route leads, which further influences the positive perception of the route. Both the number of viewpoints and the presence of dominant features are presented as the number per 1 km of the trail.

- Sightseeing values (attractions)

Sightseeing values (attractions) form the last element in the criteria of tourist values. Two groups of elements are declared here: natural and cultural (anthropogenic) [24]. Sightseeing values of cultural origin may include museums, memorial plaques, monuments,

chapels, monuments, etc. Natural features may include, among others, rock masses, cliffs, springs, waterfalls, springs, natural monuments, and other natural features. In the study, the total number of such attractions is given for the whole route, as in many cases it is the quality of the attraction that is decisive rather than the number of small elements.

2.2.2. Communication Accessibility

The study accounts for transport accessibility including the possibility of getting there by one's own car and parking it in a public car park, as well as access by public transport (bus or train). The third type of access was pedestrian access to the starting point, the destination, and the trails joining along the analysed section.

2.2.3. Tourist Development

The issue of tourism management for mountain walking trails is very complex and difficult to define clearly. This is due to the great disparity in approaches to the subject in different regions of Europe and the world and of the functions to be performed by hiking trails, especially in sensitive mountain areas. Hiking trails have both a tourism function and a protection (nature) function, and reconciling these two issues is often very difficult [17,25–27].

In order to compare the actual state of the surveyed trails with the expectations of tourists, an inventory of hiking development elements was made. Various types of infrastructure were included in the inventory along the trails: accommodation facilities, campsites, tourist shelters, catering facilities, shops, resting places without a canopy, resting places with a canopy, shelters (tourist shelters), free-standing benches, didactic boards, information boards, information points, lookout towers, artificial facilitation, car parks, waste bins, sports and recreational facilities, toilets. Their number is given per kilometre of the trail.

The second element of the development was the type of trail surface—which has a major effect on walking comfort and the feeling of the natural character of the trail. The type of surface and length over which it occurred were identified in order to later determine its percentage share in the total trail length, divided into three categories for greater clarity: natural surface (e.g., rocks, grass, earth road, etc.), artificial surface (e.g., asphalt, gravel, paving slabs, etc.) and semi-natural surface (e.g., stone and beams which are artificial aids on steep approaches, etc.). The proper marking of the route is a very important element of any trail, along with the measures employed to inform tourists, e.g., about topographical points or dangers. Therefore, during the course of the study, an inventory was carried out of all elements used to mark the course of the trail as well as other elements facilitating safe movement in the particular area, including the instructions for people who set out and mark trails in the field [16,17].

The elements taken into account during the inventory were assessed according to their occurrence (the number per trail) and per 1 km or percentage share of, for example, the type of land use. This compilation of data made it possible to homogenise the results for different lengths of hiking trails, which vary from 3.1 km to 15.8 km.

In addition, a survey was carried out to assess the current level of tourism development and the expectations of tourists using the infrastructure of the described trails (Appendix A.2). The inventory conducted on the trails only shows the current state of trail management. In order to make the management of these sites more sustainable, it should, on the one hand, protect nature and the landscape, and, on the other hand, be better adapted to the needs of tourists.

The study has some limitations that need to be taken into account when looking at the results. First, the survey method was based on the respondent's responses to the questions, which can be subjective or misguided. Moreover, it is hard to avoid problems with collecting individual personal information in the surveys.

A total of 188 subjects aged from 14 to 72 took part in the survey. The questionnaire was anonymous, available online among users of popular community groups on the subject

of tourism and sport in mountain areas. The questionnaire featured 10 main questions and 5 questions on the so-called "metrics" (age, sex, occupational status, form and type of education). Statistica 13.0 [28] was used for the statistical analysis of the survey results. The normality of the distribution of all variables was verified using the Shapiro–Wilk test. The non-parametric Kruskal–Wallis rank-sum ANOVA test for independent samples was used to compare the different parts of the questionnaire, due to the distribution being different from normal. The significance level of $p < 0.05$ was adopted.

3. Results

3.1. Infrastructure and Management of Hiking Trails

A total of 85.9 km of hiking trails leading to the 10 highest peaks of the Beskids mountain ranges in Poland were surveyed during the trail inventory (Figure 1). The existing tourist infrastructure on the trails was the first element considered, which included a total of 18 elements affecting the comfort and safety of use of the mountain space. The most popular development elements are accommodation facilities and information boards, found on all 10 surveyed trails. Elements such as car parks, free-standing benches, shops, and catering facilities were reported for nine trails. The least frequent types of infrastructure are shelters, or tourist shelters, lookout towers, and toilets, found in only three surveyed locations (Figure 2a).

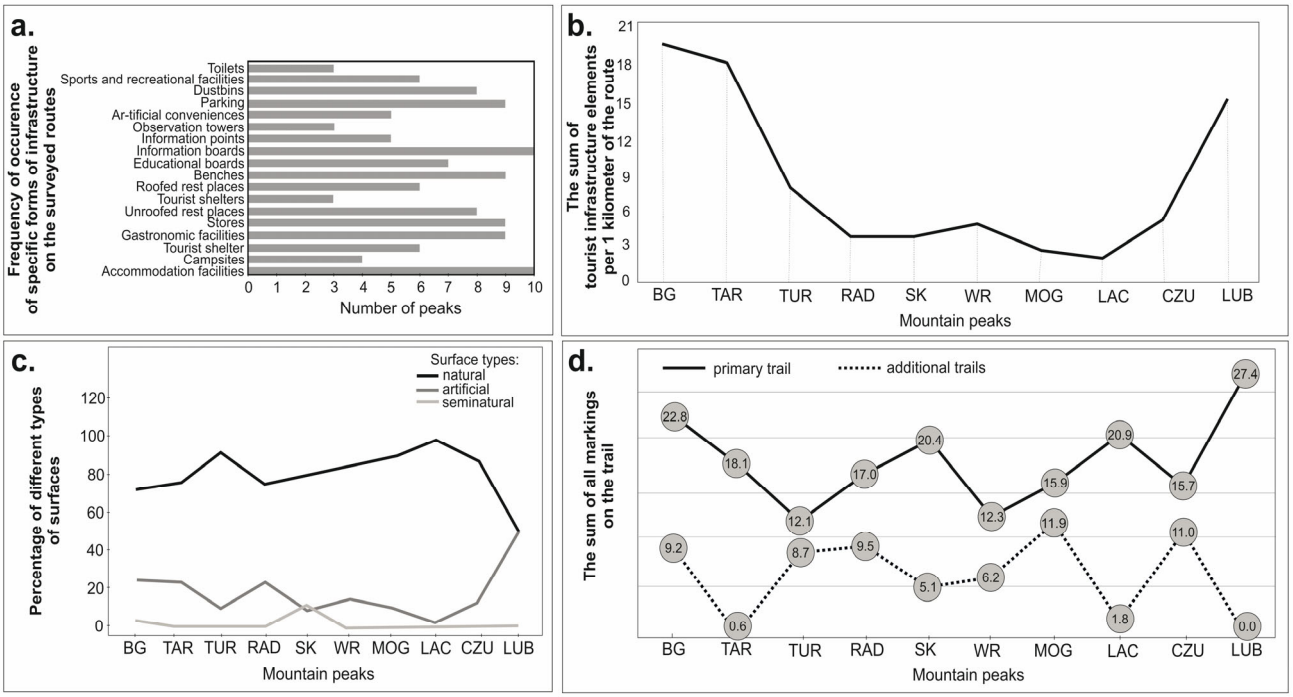


Figure 2. Results of infrastructure and management of hiking trails analyses regarding studied mountain peaks in terms of specific forms of infrastructure: (**a**) number of tourist infrastructure elements, (**b**), types of surfaces, and (**c**) number of markings on trails. (**d**) (BG—Babia Góra, TAR—Tarnica, TUR—Turbacz, RAD—Radziejowa, SK—Skrzyczne, WR—Wielka Racza, MOG—Mogielica, LAC—Lackowa, CZU—Czupel, LUB—Lubomir).

The best-developed trails, in terms of the highest number of tourist development elements per 1 km of trail, are the Babia Góra (19.22 elements per 1 km), Tarnica (17.86 elements per 1 km), and Lubomir (14.84 elements per 1 km) routes. The least developed trails in this respect are those to Lackowa (2.05) and Mogielica (2.70) (Figure 2b). In the case of these two trails, despite the total number of infrastructure elements, there is a small number of types. In the case of the Mogielica trail, only 7 out of all 18 types are present, with only 9 elements in the case of Lackowa. Of the three trails with the highest sum of elements per 1 km of the route, two—Babia Góra and Tarnica—are also characterised by

their great diversity. The Babia Góra trail lacks only a camping site, shelter, and viewing tower out of 18 types of infrastructure. In the case of the route to Tarnica, the infrastructure lacks a tourist shelter, a viewing tower, and sports and tourism facilities. It is different in the case of the trail leading to Lubomir, which is ranked third in terms of the number of elements, with a large total number of these elements, but little diversity (10 out of 18 types were reported in the inventory). The result of 14.84 elements per 1 km is mainly due to the large number of benches (as many as 4.52 per 1 km) and waste bins (4.19 per 1 km). There are also many educational boards on the surveyed trail (2.26 per 1 km). The route to Turbacz is distinguished by the greatest diversity of infrastructure types, despite the average total number of elements of 7.72 per 1 km. Of the 18 types of infrastructure elements, only shelters and a viewing tower are absent on this trail. There are artificial surfaces on the analysed trails in the form of a combination of stones and beams as well as sections of trails leading through ski slopes, where the earth surface is often interlaced with so-called road gravel. Semi-natural surfaces in this respect can be found on two trails: The first is the Babia Góra route, which has artificial facilitations made of surfaced stone and beams. This type of surface can be found on 3.13% of the route. The second trail is the route to Skrzyczne, with 11.10% of the trail leading along ski slopes (Figure 2c).

All other trails are of two types: artificial and natural. None of the analysed trails are 100% laid out on a natural surface. The most natural surface is on the route to Lackowa, where as much as 97.59% of it leads along such paths. The surface is the least variable there, as an entire 97.59% of it is on the base ground, with no facilities of any kind. As Figure 2c shows, the share of artificial surface in the case of nine trails does not exceed 25% and varies (except for Lackowa) from 9.36% to 24.84%. In the case of Lubomir, however, the share of artificial and natural surfaces is almost equal (50.65% artificial surface and 49.35% natural surface), with the first section being asphalt and road gravel and, about halfway through the route, changing to an earth surface.

According to the PTTK (Polish Tourist and Sightseeing Society), which until recently was the only organisation involved in marking and managing trails in Poland, there are approximately 76,000 km of trails in Poland. These include lowland walking trails, mountain walking trails, cycling trails, skiing trails, horse-riding trails, water trails, thematic trails, and others. The number of both so-called basic signs, i.e., signs guiding the tourist along the entire trail, and all other signs, is not adequate in terms of both the length and the difficulty of the trail. The highest number of signs (23.23 per 1 km, including both basic signs and all other signs) was reported on the shortest trail, leading to the lowest peak and covering more than 50% of its length along an asphalt road, i.e., Lubomir. In addition, no other trail joins this route, making the risk of a tourist getting lost negligible. On the other hand, the longest trail, which is joined in its course by numerous other trails, leading to Turbacz, has the lowest number of both basic signs and all signs per 1 km, with only 9.56 basic signs (Figure 2d).

3.2. Transport Accessibility

A very important consideration when planning to spend time on a hiking trail is how to get there, whether from the place of residence or holiday destination. In the case of self-drive access to the starting points of the trail, all 10 study regions are accessed via publicly accessible asphalt-paved roads. In the case of the nine towns from which the trails lead, it is possible to park a car in a publicly accessible car park. In the case of the Babia Góra and Tarnica trails, these are paid car parks organised by the national parks. In Rabka Zdrój (Turbacz) and in Piwniczna Zdrój (Radziejowa), parking is possible in street car parks in paid parking zones. On the trails to Skrzyczne, Wielka Racza, and Lackowa, tourists have free public car parks available. There is the possibility of parking at Lubomir and Mogielica, but these are unattended car parks; only in the summer season is a private paid car park organised in the area of the start of the trail to Mogielica. Only in the village of Wilkowice, from where the trail to Czupel runs, is there no public car park for tourists. All places can be reached by public transport (buses, private buses, and railway). The bigger the place,

the more possibilities there are; the worst access is to Mogielica and Lubomir. In both cases, there are only a few daily connections by private bus lines from larger towns, and their number decreases at weekends. As far as access by another hiking trail is concerned, there is at least one trail leading to the starting point in the case of all the peaks. A hiker will not reach the summit by another trail only in the case of Tarnica, and during the course of the trail, he or she will not join the trail to Lubomir.

3.3. Tourist Attractions

The most important tourist values include landscape values (the land cover and proportion of nature conservation forms), scenic values, and sightseeing attractions. Of the 16 types of land cover proposed by the authors, the most common is forest, which was reported on all 10 surveyed trails on both sides of the trails. This type of land cover is the dominant form on the Lackowa trail, where it accounts for 81.81% of the left side of the trail and as much as 83.37% of the right. Urbanised areas, which are not only found along the trail to Babia Góra, are also quite numerous. On most of the trails, various types of bushes and shrubbery, grasslands (meadows, pastures), and mid-forest clearings are present. The least frequent land cover forms are polonynas, dwarf pine, and rock formations, in this case represented by stone runs. This is related in this case not only to the type of land use, but more to the geology and the vegetation–climate stratification. The polonynas are only found along the route to Tarnica in the Western Bieszczady and are a typical vegetation story associated with the Eastern Beskidy, and the genesis of their origin is not fully known. It is currently hypothesised that this peculiar arrangement of vegetation floors in the Bieszczady Mountains is the result of both natural forces and human activity. The dwarf pine, i.e., the subalpine story, and the rocks comprising the alpine (mountainous) story are characteristic only of Babia Góra. This is due to the fact that it is the highest peak of all the mountain ranges of the Polish Beskids and therefore, only here, apart from other mountains (the Tatra Mountains, Karkonosze), can we find these plant-climatic stories. The highest number of land cover types is characterised by the trail to Turbacz (10 land cover types on each side), while the lowest number is on Babia Góra, with only 4 land cover types on both sides (Figure 3a). There are no major differences between the left and right sides of the trails for this element.

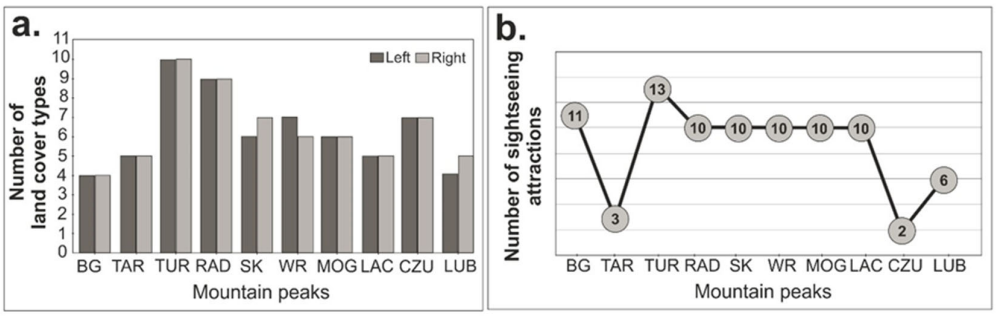


Figure 3. Number of land cover forms divided into left and right sides of the route (**a**), and sightseeing attractions along the entire route (**b**).

When assessing the mosaic character of the land cover, i.e., the number of land cover changes per 1 km of the route, most of the routes are characterised by medium diversity (Turbacz, Radziejowa, Skrzyczne, Wielka Racza, Mogielica, and Lubomir). The Babia Góra, Tarnica, and Lackowa routes are characterised by low land cover diversity, with the Czupel route characterised by the highest. A very important tourist asset is the fact that the trail runs through areas of natural and landscape value, which are often associated with the presence of various forms of nature conservation. This also makes the trail more attractive, although it affects both nature and the use of space. National parks are typically the highest-rated forms of nature conservation by tourists. Of the 10 surveyed trails, only 2 are set out entirely within the boundaries of national parks: the trail to Babia Góra in

the Babia Góra National Park and to Tarnica in the Bieszczady National Park. The route leading to Turbacz from the Pośrednia pass (approx. 50% of the route) is routed along the border of the Gorce National Park, while neither the peak itself nor the tourist hostel below is located within its borders. Other forms of nature conservation are present along the remaining trails, such as nature reserves, wildlife refuges, or Natura 2000. Only in the case of the Lackowa and Lubomir trails are no forms of nature conservation included in the inventory as marked and visible for tourists. The Mogielica trail is characterised by the highest number of various forms of nature conservation types per 1 km of the route: 0.27. Scenic value is usually assessed by the number of viewpoints and dominant features in the landscape. The analysed trails were very diverse in this respect. Some of them, after passing the upper border of the forest, e.g., the trails to Babia Góra and Tarnica, are characterised by wide, open panoramas, in most cases with a view of almost 360°. Others, such as the trail to Lackowa, almost entirely lack any views, due to the fact that they lead through forest areas for more than 80% of their length. The remaining trails offer a varying number of places where hikers can enjoy a panoramic view of the immediate or distant surroundings. The largest number of vantage points is along the trail to Wielka Racza (3 per 1 km) and Skrzyczne (2.67 per 1 km). However, these are often isolated places, not offering such extensive panoramas as in the case of Babia Góra or Tarnica.

In this respect, the trail to Turbacz was rated best, with 13 sightseeing attractions. The lowest numbers of additional attractions are along the route to Tarnica (only 3) and Czupel (2) (Figure 3b). However, the number of attractions is often not the most important—their quality or uniqueness are decisive factors. Some of the most interesting attractions attracting tourists include the stone runs on Babia Góra, the astronomical observatory on Lubomir, and the polonynas on Tarnica. Small boxes on some of the summits, in which special commemorative stamps are placed, are an interesting and unique element (located on the Radziejowa, Mogielica, Lackowa, Czupel, and Lubomir trails). On other peaks, or just below them, there are mountain huts of this type, with stamps provided inside. These stamps are usually created by the PTTK and are used, among other things, to document reaching the summit needed for the so-called mountain badges.

3.4. Tourist Preferences Based on Surveys

The question of how to use the mountain trails received 356 answers. Due to the fact that the same people may spend their time in different ways, e.g., depending on the season or the weather, more than one answer could be given. The results of the Kruskal–Wallis test indicated a statistically significant variation in the answers given to this question (Table 1).

Table 1. Results of the Kruskal–Wallis non-parametric test with statistical significance *p* for the survey responses.

Survey Question	Total Number of Responses	df	Kruskal–Wallis Test	*p*
What form of activity do you prefer?	356	13	1226.66	<0.0001
The most frequently visited mountain ranges	556	15	435.66	<0.0001
What influenced the choice of the trial?	571	15	463.54	<0.0001
How do you rate the trail marking?	187	5	289.25	<0.0001
How do you rate the trail's infrastructure?	188	5	266.78	<0.0001
What infrastructure element is missing on the trails you visit?	295	13	367.54	<0.0001
Are there any elements of the trail's infrastructure that, in your opinion, negatively impact the landscape and natural environment?	199	27	250.01	<0.0001

Among the respondents, trekking was the most popular activity, reported by 93.6% of tourists (mainly in the age group of 27–40 years), followed by cycling (19.1% of respondents, mainly in the age group of 27–40 years). A slightly smaller number of people reported jogging—17.6%, Nordic walking—16%, climbing—14.9%, skydiving—14.4%, and dog trekking—9.6% (Figure 4a,b).

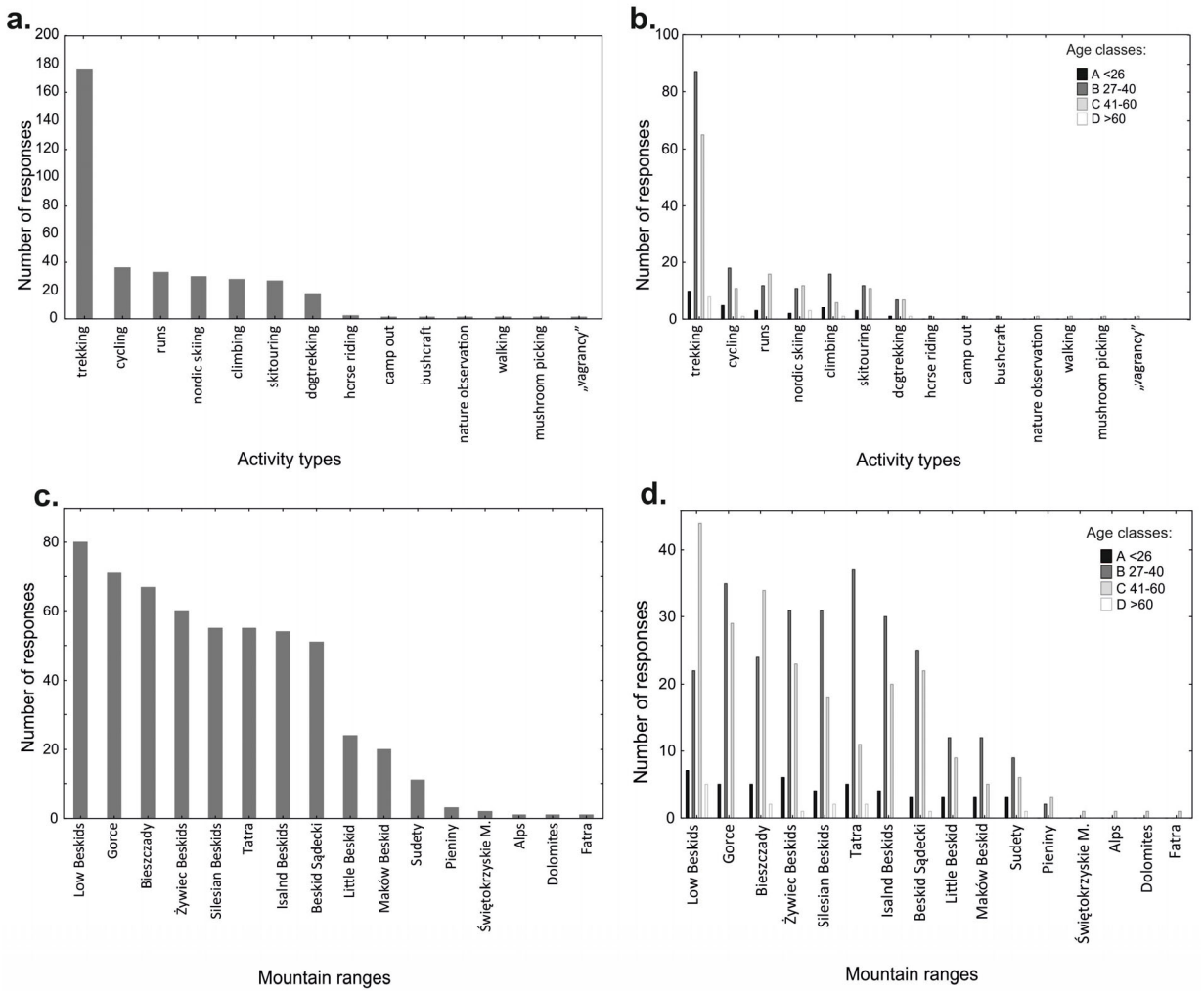


Figure 4. Preferred type of activity (**a**) and most visited mountain ranges (**c**) in total respondents and, respectively, in four age classes (**b**,**d**).

All 10 examined mountain ranges, apart from the Tatra Mountains, were among the most popular regions visited by respondents. The results of the Kruskal–Wallis test indicated a statistically significant variation in the answers given (Table 1). The most popular among the respondents was Beskid Niski, especially in age group C, which ranged between 41 and 60 years old, indicated by 42.6% of respondents as the most-visited location. Slightly fewer people indicated Gorce (37.8%, mainly tourists in age groups B and C) and Bieszczady (35.6%, mainly tourists in age groups B and C). Beskid Żywiecki in its entirety was ranked fourth, with no division into Beskid Żywiecko-Kusycki and Beskid Żywiecko-Orawski (Figure 4b,c).

This division, although valid in the physical–geographical division of Poland, is not more widely known and is rarely taken into account by ordinary tourists. The least-visited places are Beskid Mały (12.8%) and Beskid Makowski (10.6%). Beskid Śląski, Wyspowy, and Sądecki achieved similar results in the range of 27% to 29% (Figure 4c).

These results do not coincide with the answers to the question regarding the mountain peak climbed recently. The results of the Kruskal–Wallis test indicated a statistically significant variation in the answers given (Table 1). Babia Góra (Beskid Żywiecko-Orawski) was the most popular, with a response of 12.2%. It was followed by Tarnica (Bieszczady)—7.2%, Skrzyczne (Beskid Śląski)—6.7%, and Turbacz (Gorce) and Radziejowa (Beskid Sądecki) with 6.1% each. The highest peak of Beskid Niski was only ranked 6th, recently climbed by 10 respondents and accounting for 5.6%. The highest peak in Beskid Żywiecko-Kysucki, Wielka Racza, was not indicated by any respondents as a recently climbed peak. A

total of 25% of votes were for other peaks, however, located within the analysed mountain ranges. Survey participants named 67 mountain peaks in total, in different mountain ranges, 40 of which were listed with the highest elevations in the analysed ranges.

Very relevant to the management of tourist areas is the answer to the question of what affected the choice of the tourist trail the respondent went on recently (more than one answer could be given). The results of the Kruskal–Wallis test indicated a statistically significant variation in the answers given (Table 1). The most important element here was "landscape", reported by as many as 57.4% of respondents mainly aged between 27 and 40 (age group B) and 41 and 60 years old (age group C) (Figure 5a,b). The next most important element was "vantage points", reported by 41.5% respondents from the same age range as above (this did not mean viewing towers only, but any place, organised or not, from which one could admire the surroundings). This is obviously highly related to the landscape, as it is these places that make it easier to enjoy the mountain panorama. Slightly fewer people indicated elements such as good location in general (36.2%) or the possibility to park a car (31.9%), which proves that good access by one's own means of transport is still very important for mountain tourism (Figure 5a,b).

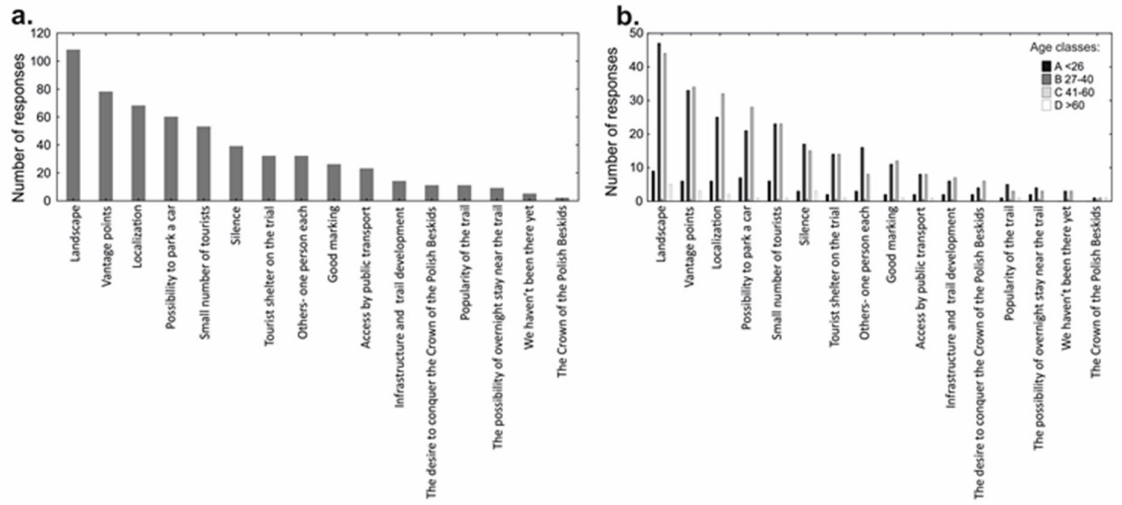


Figure 5. Reasons for route selection in respondents in total (**a**) and in four age classes (**b**).

The low number of tourists (28.2%) and the associated quietness, pointed out by 20.7% of respondents, were also very important to visitors. Only 7.4% of tourists paid attention to the overall good infrastructure and management of the trail, but as many as 17.0% of people took into account in their choice of trail whether there was a tourist shelter on the summit. Tourists consider good signposting of the trail (13.8%) and access by public transport (12.2%) to be quite important. Thus, it can be concluded that the relative naturalness and accessibility of the trail, as well as the possibility to use a hiking shelter at the summit, were the most important issues when choosing a trail (Figure 5). When asked about the quality of trail signage, respondents rated it as very good or good (Figure 6a,b).

The survey shows that respondents are significantly more likely to use catering services (66%), accommodation services (38.8%), and retail outlets. The least frequent use of tourist guide services is only 0.5%, which may be due to the feeling that the trails are well marked and relatively easy and thus tourists feel safe on them (Figure 6a,b, Table 1). In response to a question about small structures that would be useful on the trails, 36.2% of respondents suggested rain shelters. Slightly fewer (35.6%) do not need any facilities during their hike. This was followed by resting places like benches (23.9%), informative and didactic signs (16.5%), and hiking shelters (14.9%). A very important piece of information is that only 9.6% of tourists think that there are no lookout towers on the trails. This is important information, as in recent years, this has been the most common investment on trails in Poland, causing very extreme reactions among the public (Figure 7a).

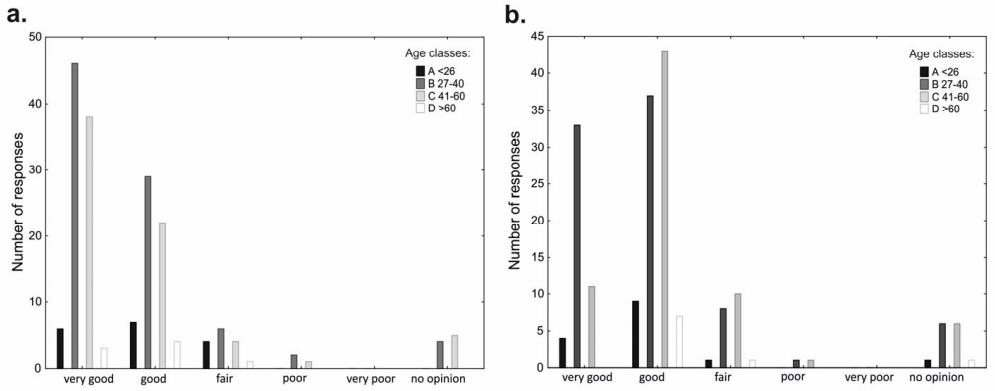


Figure 6. Evaluation of trail signage (**a**) and the infrastructure (**b**) on the trail.

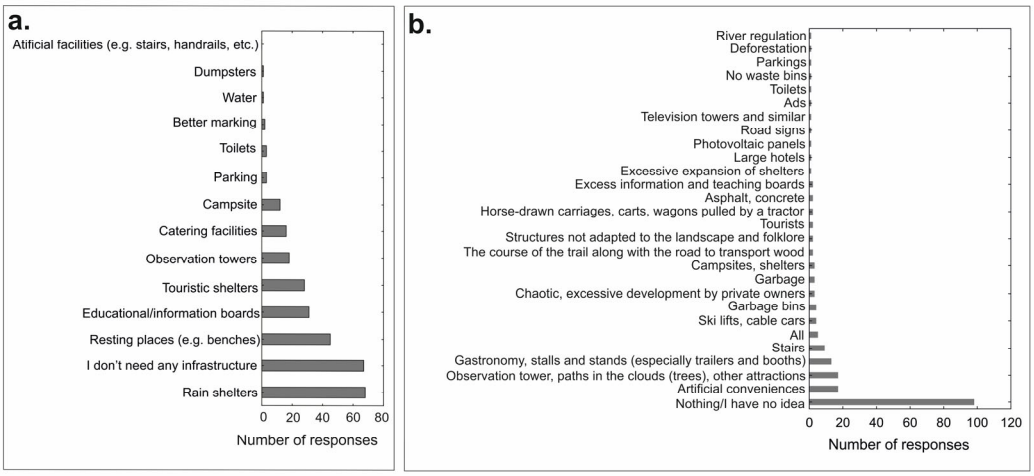


Figure 7. Useful elements of infrastructure that are not provided on the trails (**a**) and elements which tourists consider to have a negative impact on the landscape (**b**).

A final but very important question is, "Are there any elements of the infrastructure and development of the trail that you think negatively affect the landscape and natural environment?" In this question, as in the previous one, respondents could mark more than one answer and add their own suggestions. The responses were grouped into 28 categories. Many were single-item answers. There were also contradictory answers, e.g., some tourists were bothered by the lack of waste bins, while others complained about their presence. Very surprisingly, as many as 52.1% of respondents felt that nothing bothered them or had no ideas. Regarding the elements that tourists considered likely to negatively affect the landscape and the natural environment, responses related to artificial facilities in general and viewing towers, with paths among trees, were at 9.0% each. Any kinds of stands or stalls, were badly perceived, especially food trucks (6.9%), with stairs ranked highest (4.8%). A small number of tourists paid attention to litter, all kinds of structures not adapted to the natural environment, as well as the cultural landscape, or—unfortunately—the excessive felling of forests (very frequent in Polish forests) and the related regulation of streams and construction of paved roads for timber disposal (Figure 7b).

4. Discussion

Tourism plays a huge social and economic role all around the world. This does not only apply to developing countries, but also to areas such as mountains, which often lack other opportunities for development, especially in agriculture or industry. This entails changes in cultural behaviour and the environment [29]. The shift of local people from agriculture to tourism often results in significant changes in the landscape, e.g., the removal of pastures or mountain meadows [30]. Hiking trails are a linear component of the tourism

infrastructure of the region. They have recreational, safety-related, ecological (nature), cultural, economic, and social functions [16,17,31–33]. In basic terms, they are an element of tourist infrastructure that facilitates the safe movement of hikers, often over difficult terrain. The majority of trails, especially mountain trails, lead through poorly urbanised areas, which requires the development of elements to facilitate the enjoyment of local views and to ensure the safety of users. The ecological (nature) function is often ensured by concentrating tourist traffic along designated routes, which, together with the often-applied artificial facilitations, prevents the scattering of tourists to adjacent areas and may, as a result, limit the negative impact of tourist traffic on local nature (e.g., the disturbance of animals or trampling of valuable plant communities).

In the middle of the 19th century, the first marked hiking trails were established in Poland, which was related to the increasing popularity of hiking and skiing. The first trails were marked in the Tatra Mountains by Towarzystwo Tatrzańskie (Tatra Society). Nowadays, it is difficult to imagine tourism, especially in mountainous areas, without specially designated, marked, and often developed trails. Although the beginning of qualified tourism in Europe can be traced back to a similar time period (the early to mid-19th century), the system and network of hiking trails varies greatly. Poland and parts of Central Europe have a very dense and evenly distributed network of trails, while in other European countries, the network is small or located only in selected regions [16]. Issues related to the management of mountain hiking trails are very complex and difficult to define unambiguously. This is due to the large discrepancies in the approach to the topic in different regions of Europe and the world and the functions that hiking trails are supposed to perform, especially in sensitive mountain areas [34,35]. The complexity of tourism issues, especially in specific mountain conditions, is not only due to the different needs of hikers but, above all, to specific local characteristics, including natural, but above all cultural, social, and historical aspects. As a result, it is difficult to define and develop a single coherent tourism development strategy [36]. Hiking trails are of great importance due to their access to recreational areas, including those of natural importance, and therefore must be designed and managed in a sustainable way to ensure the protection of natural and cultural resources [37–40]. However, in many places, a large proportion of hiking trails are as they were laid out and developed many years ago. This makes them incompatible with sustainable tourism, both in terms of contemporary use and visitor numbers, but also in terms of reducing negative impacts on flora, fauna, soil, and water resources [41]. A very important issue, among others, is how tourists will reach the rest area. The results of the survey indicated the element "possibility to park a car" as important, which shows that tourists still prefer to arrive by their own means of transport. This can affect the natural environment by destroying habitats through parking cars or organising more car parks. This can be influenced by tourists' strong attachment to their own means of transport, but also by problems with the accessibility of public transport. In many cases, the start of the trail is in a small village with few buses per day, and even fewer at weekends, when there is potentially more tourist traffic, causing tourists to prefer to get there by their own car.

According to Kolodziejczyk [19], the designation of new trails can facilitate the scattering of tourist traffic, which could reduce the number of tourists in a small area. However, this method is questionable due to the unnecessary increase in the penetration of areas that are reserved for wildlife. Another aspect is the introduction of infrastructure in and around the trail, which, on the one hand, may have a negative effect on the natural environment and landscape, and, on the other hand, is not preferred by a large number of tourists [42,43]. Viewing towers are an example of a development element in the Polish mountains. There are about 43 lookout towers in the analysed 10 regions, and new ones are being built. Unfortunately, this is the most recently introduced infrastructure in this region of Europe. Local municipalities are trying to attract more "tourists" at a relatively low cost. However, this is not followed by other projects or proposals for visitors. As stated earlier, lookout towers are a rather controversial element of the mountain landscape [44]. The obvious downside of these projects is the destruction of the mountain landscape through the introduction of

an alien structure, especially as it relates to mountain peaks or significant elevations. It should also be noted that some of these developments are not simple buildings, but huge structures, often obscuring the landscape. Other factors that may have a negative impact on the landscape and the natural environment include damage caused during the construction of the facility and an increase in the number of tourists who usually want to drive to the tower itself by car (which may result in meadows, farmland, or tourist trails being torn up, the scaring of animals, etc.). There is often hit-and-run tourism, with a stop on the journey or an element to be seen without a second thought [45,46]. According to Ferraro [47], tourists staying in protected natural valuable areas are not aware of this fact. There is no benefit to local residents from this type of development. Visitors usually come for a day or a few hours, without benefiting from additional infrastructure (accommodation, catering facilities, etc.) and causing additional damage, e.g., with litter, bonfires, damaged soil and crops by vehicles (cars, motorbikes, quad bikes). As Paskova et al. [48] point out when considering Tourism Carrying Capacity (TCC), it is important to extend the research to consider how to achieve a balance between the economic and environmental sustainability of tourism.

Information on tourists' preferences, but also on existing infrastructure, can be helpful for decision-making by area management institutions. Nowadays, it is important that these are in line with the principles of sustainable tourism so as to minimise negative impacts on the environment, while at the same time developing the region economically and satisfying tourists [49,50]. The development of the tourism sector is linked to, among other things, tourist satisfaction, something that is increasingly driven by the quality of the natural and social environment [51]. According to Walla-Reiniusa and Bäck [52], the factors that motivate tourists to visit a place have changed over time since 1980. Compared to the 1980 study, where the most important factors were flora, fauna, marked hiking trails, and beautiful landscapes, nature, peace, and quiet were the most important factors for visitors after 2003. This thesis is also confirmed by later studies by, e.g., Merchan at all. [53] and Jinde Jinag [54].

At present, a large proportion of project owners, e.g., municipalities, do not take preferences of tourists into account when adding or maintaining elements of tourist infrastructure. To improve the current situation, measures should be aimed at promoting ecotourism and the development of public transport, which could influence decisions made by tourists to not use their own means of transport. Local authorities should stop creating tourist attractions which will attract random tourists for a "few hours" duration and contribute to the deterioration of the natural environment and landscape and have an additional negative impact on local communities.

5. Conclusions

The answers to the study questions in this paper show the possibility of achieving a balance between the use of hiking trails and the protection of the natural and cultural environment of mountain areas. Sustainable development of a hiking trail is important not only for preserving natural resources, but also for the economic development of local communities and for preserving the cultural and historical identity of the region.

The field surveys clearly showed that there is variation in the attractiveness of the trails, especially in terms of the amount of tourist infrastructure on and near the trail itself. The tourist attractiveness of the trails is influenced not only by the infrastructure but also, among other things, by the landscape or scenic qualities, which, according to respondents, were the most important elements affecting the choice of the mountain ranges visited.

Elements enhancing the natural scenery and values of the area, as well as the general location, the low number of tourists, and the quiet, were ranked first in the respondent's survey results. Among the lacking infrastructure, tourists most often reported infrastructure related to resting, so-called rain shelters, resting places, tourist shelters, and a small number of information and didactic boards.

The results of the survey indicate a great need to raise environmental awareness among tourists, explaining that "zero-emission" tourism, i.e., tourism with no negative impact on the environment and landscape, does not exist. Based on the obtained results, some actions can be recommended to achieve the healthy development of mountain tourism: greater promotion of low-impact and climate-sensitive tourism, investing in more environmentally friendly infrastructure, empowering mountain communities to take the lead in tourism development, monitoring tourism in mountain regions and its influence on the environment and biodiversity, as well as strengthening the role of tourists' opinions in decision-making regarding sustainable mountain tourism management.

Author Contributions: Conceptualisation, M.M.M. and A.Z.-W.; methodology, M.M.M.; software, M.M.M. and R.K.; validation, M.M.M., A.Z.-W. and R.K.; formal analysis, M.M.M., A.Z.-W. and R.K.; investigation, M.M.M.; resources, M.M.M.; data curation, M.M.M.; writing—original draft preparation, M.M.M. and A.Z.-W.; writing—review and editing, M.M.M., A.Z.-W. and R.K.; visualisation, M.M.M., A.Z.-W. and R.K.; supervision, M.M.M. and A.Z.-W.; project administration, M.M.M., A.Z.-W. and R.K. All authors have read and agreed to the published version of the manuscript.

Funding: This research was financed by the Ministry of Science and Higher Education of the Republic of Poland for the University of Agriculture in Krakow in 2024.

Institutional Review Board Statement: The Rector's Committee for the Ethics of Scientific Research Involving Humans, operating at the URK, issues opinions on applications for this type of research (online anonymous survey studies); however, submitting applications to the committee is not obligatory, which means that researchers may, but do not have to, submit them.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. The surveys were anonymous and the participants were informed about this.

Data Availability Statement: Dataset available on request from the authors.

Acknowledgments: The study was conducted with a subsidy from the Ministry of Science and Higher Education in Poland for the University of Agriculture in Krakow in 2024. The authors thank the unknown reviewers for their very valuable comments on a former draft of the manuscript.

Conflicts of Interest: The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

Appendix A.

Appendix A.1. Summary of Routes Assessed

Table A1. Summary of routes assessed.

Region	Mountain Peak	Height a.s.l. (m)	MDW * (m)	Starting Place	Hiking Trail	Length of the Trail (km)
Beskid Żywiecko-Orawski	Babia Góra (Diablak)	1725	1075	Zawoja Markowa	The green trail: Zawoja Markowa—PTTK shelter in Markowe Szczawiny; The red trail: PTTK shelter in Markowe Szczawiny—Diablak (Babia Góra), (from the Brona Pass parallel to blue and green trail)	6.40
Bieszczady	Tarnica	1346	494	Ustrzyki Górne	The red trail: Ustrzyki Górna—Pass under Tarnica; Szlak żółty: Pass under Tarnica—Tarnica	8.40
Gorce	Turbacz	1315	605	Rabka Zdrój	The red trail: Rabka Zdrój—Turbacz (from Pass Pośrednie to Stare Wierchy, parallel with yellow trail, from Stare Wierchy to Obidowiec with green trail)	15.8
Beskid Sądecki	Radziejowa	1262	533	Piwniczna Zdrój	The yellow trail: Piwniczna Zdrój—Niemcowa; The red trail: Niemcowa—Radziejowa	10.46

Table A1. *Cont.*

Region	Mountain Peak	Height a.s.l. (m)	MDW * (m)	Starting Place	Hiking Trail	Length of the Trail (km)
Beskid Śląski	Skrzyczne	1257	585	Buczkowice	The red trail: Buczkowice—Kaskada (from Becyrek, parallel green trail); The green trail: Kaskada—Skrzyczne (parallel with blue trail)	7.48
Beskid Żywiecko-Kysucki	Wielka Racza	1236	391	Zwardoń	The red trail: Zwardoń—Wielka Racza	15.0
Beskid Wyspowy	Mogielica	1170	421	Chyszówki (Pass Rydza Śmigłego)	The green trail: Chyszówki—Mogielica (from Pod Mogielica, parallel to the blue trail)	3.70
Beskid Niski	Lackowa	997	360	Wysowa Zdrój	The green trail: Wysowa Zdrój—Cigielka Pass (parallel red sacred trail);The red trail: Cigielka Pass—Lackowa	8.30
Beskid Mały	Czupel	930	523	Wilkowice	Black trail: Wilkowice—Smocza Jama (from "To Piotr" parallel to the red trail, from Rogacz it joins the yellow trail, at Pod Magurką it joins the blue trail, and together they continue to the PTTK shelter on Magurka). From the blue and black shelter to the exit to Smocza Jama;Blue trail: Smocza Jama—Czupel	7.26
Beskid Makowski	Lubomir	904	349	Węglówka (Pass Jaworzyce)	The red trail: Węglówka—Lubomir	3.10

* MDW—minimum relative deviation.

Appendix A.2. Questionnaire

1. What type of activities do you like to do?
• trekking • dogtrekking • climbing • skituring • nordic skiing • cycling • runs • horse riding • other.
2. What regions/mountain ranges do you go to most often? (you can select more than 1 answer):
• Gorce • Beskid Żywiecki • Bieszczady • Beskid Sądecki • Beskid Śląski • Beskid Wyspowy • Beskid Niski • Beskid Mały • Beskid Makowski • Other.
3. What mountain peak did you recently climb?
4. What affected the choice of the tourist trail? (you can select more than 1 answer):
• location • access by public transport • possibility to park your car • infrastructure and development of the trail • good marking • tourist shelter on the trail • possibility of overnight stay near the trail • landscape • beauty spot (vantage point) • small number of tourists • silence • the desire to conquer the Crown of the Polish Beskids • popularity of the trail • other.
5. How do you rate the trail marking?
• very good • good • average • bad • very bad • I have no opinion

6. How do you rate the trails infrastructure? Jak oceniasz infrastrukturę powyższego szlaku:

- very good
- good
- average
- bad
- very bad
- I have no opinion

7. What elements of infrastructure do you miss on the trails you visit? (you can select more than 1 answer):

- tourist shelter
- campsite
- catering facilities
- resting places (e.g., benches)
- rain shelters
- teaching/information boards
- tourist information points
- observation towers
- parking
- toilets
- dumpsters
- artificial facilities (e.g., stairs, handrails, etc.)
- other I don't need any infrastructure

8. What services do you use most often?

- accommodation services
- catering services
- tourist guide services
- sale of basic necessities, including food
- sale of souvenirs, maps, guides, etc.
- sale of regional products, e.g., handicrafts, regional cuisine products, handmade, etc.
- parking
- toilet
- I don't use it
- other.

9. What element of infrastructure is missing on the trails you visit: (you can select more than 1 answer):

- tourist shelter
- campsite
- catering facilities
- resting places (e.g., benches)
- rain shelters
- teaching/information boards
- tourist information points
- observation towers
- parking
- toilets
- dumpsters
- artificial facilities (e.g., stairs, handrails, etc.)
- other.
- I don't need any infrastructure

10. Are there any elements of the infrastructure and development of the trail that you think negatively affect the landscape and natural environment?

Sex:

- woman
- male
- different

Age (in years):

Education:

- primary education
- vocational education
- secondary education
- post-secondary education
- university education

Professional status:

- student
- working
- professionally inactive (Economically inactive people)
- pensioner
- parent on parental leave

Type of education (abilities):

- humanities
- technical
- artistic
- biological

other (please specify).

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