

TOURIST ATTRACTIVENESS OF RURAL COMMUNES IN THE FUNCTIONAL URBAN AREA OF OLSZTYN – A VOIVODSHIP CITY

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ABSTRACT

Motives: Tourist potential is determined by the presence of tourism-related assets, the level of tourism-oriented development and the transport accessibility of an area. The dominant role in lake zones is played by their natural assets, mainly in rural areas with potential for the development of ecotourism, nature tourism and the implementation of sustainable tourism. A position relative to an urban centre, especially a provincial city, is the decisive factor for development opportunities in rural communes.

Aim: The aim of the study was to analyse and compare the tourist attractiveness of rural communes in the functional urban area of Olsztyn – a provincial city.

Results: The study was conducted by means of multidimensional comparative analysis with synthetic measures. The commune of Stawiguda, rich in natural and cultural assets and with good transport accessibility, proved to be the area with the highest tourist attractiveness (0.662). On the other end of the spectrum, the commune of Dywity achieved the lowest score (0.475) despite the best utilisation of its position neighbouring an urban centre.

Keywords: tourist attractiveness, functional area, rural commune

INTRODUCTION

Tourist potential is determined by the presence of tourism-related assets, the level of tourism-oriented development and the transport accessibility of an area. According to Rogalewski (1974), tourist attractiveness is a consequence of natural and cultural assets and tourism-oriented development. Natural assets play a dominant role in the tourist potential in such regions as Warmia and Mazury. The tourist attractiveness of the voivodship is affected by the landscape: typical of deltas, morainic plains and hills and lacustrine hills, a considerable number of lakes, forest com-

plexes and agricultural cultures. This applies mainly to the region's rural areas, with a considerable portion of nature sites under legal protection and the diversity of their forms, which provides the potential for ecotourism development, nature tourism and implementation of sustainable tourism. However, the area location is a no less important element that determines the tourism development opportunities. A position relative to an urban centre, especially a provincial city, is the decisive factor for development opportunities in rural communes. The aim of the study was to analyse and compare the tourist potential of rural communes in the functional urban area

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of a provincial city – Olsztyn. The following communes were analysed: Dywity, Jonkowo, Gietrzwałd, Stawiguda, Purda.

Przeclawski (1997) defines tourism as a psychological, economic, social, spatial and cultural phenomenon. The communes that want to be regarded as ones with tourist attractiveness have to care about their natural and cultural assets and promote them constantly. It is equally important to develop tourism infrastructure and to take actions aimed at improving transport accessibility. Tourism development benefits not only tourists but also the people living in touristically attractive areas. It is not so obvious these days that rural areas must be associated with agriculture. Increasingly large portions of rural area populations decide to diversify their activities, often dealing with tourism. This trend is favoured mainly by city dwellers becoming fatigued and wanting to rest and relax among nature. Every year, there is a growing number of people who choose the country as a place for their holidays, especially near medium-sized towns. There is no doubt that suburban communes are becoming increasingly popular among tourists. Due to the dynamic growth of rural tourism, the areas visited by tourists begin to adapt to increasing numbers of tourists.

LITERATURE REVIEW

The literature on the subject does not provide a universally established definition of tourist potential. It should be made up of components which bring about qualitative and quantitative changes in tourism – now and in future. These include natural and anthropogenic assets, tourist attractions of various types, tourism infrastructure, location of accommodation facilities as well as the availability of various services and products without which tourists would not be fully satisfied. Such understanding of the tourist potential comprehensively covers the conditions for tourism development (mainly strengths and opportunities) in an area (Marciszewska, 2010). All of these features affect the level of tourist satisfaction. The income derived from tourism helps to improve the economic

situation at the local and regional levels. However, for it to perform this task and to contribute considerably to improving the quality of life of people living in areas visited by tourists, proper environmental conditions must be fulfilled, referred to as tourist attractiveness (Rogalewski, 1974).

The term “tourist attractiveness” comprises many factors: these include both social-cultural (anthropogenic) and natural features. Universal and relative attractiveness can be identified. An area is universally attractive when its natural, cultural assets and its tourism infrastructure are regarded as attractive by all. Relative attractiveness is determined in terms of various forms of tourism, e.g. conference tourism, business tourism, trade tourism or sailing tourism. Tourist attractiveness can be understood in three ways: as determined by various classifications (ideographic attractiveness), as arising from a specific technique of its assessment and as a result of its subjective perception (Page, 1995). Apart from objective tourist assets and proper items of tourist infrastructure, a significant role in determining the value of an area is played by a psychological factor – the subjective perception of infrastructure elements by tourists, investors and residents (Warszyńska & Jackowski, 1978; Seweryn, 2002; Kaczmarek et al., 2005; Potocka, 2009; Kruczek, 2011; Widz, 2019). Touristically attractive areas may include regions, towns and villages, but also individual objects situated in them or elements of the landscape. They play a great role in attracting tourists to an area or a place, thereby creating a base for tourist activity and the need to satisfy tourists’ needs (Kurek, 2007). Apart from the natural and cultural assets, accessibility and a destination’s ability to satisfy tourists’ needs can be decisive factors in the choice of a place to visit (Hu & Ritchie, 1993; Hall, 2000; Croy, 2005; Formica & Uysal, 2006). Tourism-oriented development should be understood as a combination of functional tourist devices and services in an area, which were created to provide the tourist with access to the natural assets and whose aim is to meet the tourism-related and physiological needs of a person (Cichocka & Krupa, 2017). Transport accessibility can be considered in two aspects: as facilitating or enabling visitors to get to

a destination or a network of roads or transport connections which facilitate moving around an area of interest to the tourist (Kołodziejczyk, 2012). All of these elements make up the tourist potential, i.e. the diversity of the economic features in an area that affect the development of the tourism economy (Sikora & Wartęcka-Ważyńska, 2010).

In recent years, the burdens of city life have been seen to result in growing fatigue, with city residents increasingly interested in rural areas and migrating to the suburbs. They are attractive due to their natural landscapes, forests and water bodies and different cultural values as well as unused residential potential and labour resources (Hakuć-Błażowska & Krauza, 2017). Rural tourism is becoming increasingly popular. City residents seek peace and quiet and leisure opportunities in the natural environment, far from pollution and noise. Gaworecki (2003) defines rural tourism as organised in rural areas, developed on a small scale, in contact with nature. The development of rural tourism is based on the natural, historical and cultural resources of an area, engaging various entities in the local community and the local economy. Locally, tourism can stimulate economic growth and create an atmosphere that favours the development of services and small-scale commerce. Potentially, it can replace earlier activities in rural areas (Hall, 2005). Rural tourism can be perceived as part of the tourism industry, which can play an effective role in the economic growth of areas visited by tourists. It can help in creating new career paths for rural populations. Rural tourism can create and diversify economic activities and various development trends in rural areas, especially in services (Sznajder & Przezbórska, 2004). Among the most important economic features of rural tourism is its impact on the private sector, especially small businesses, with simple and diverse activities (Holland et al., 2003). Cultural, natural and historical assets in rural tourism can be presented as tourist cultural goods. Rural tourism creates opportunities for economic growth, jobs, development opportunities for commerce and services and, in consequence, it stimulates income growth, both for individuals

and local governments. It also helps to develop the regional economy (Sharpley, 2002).

Rural tourism is changing and developing continuously. According to one definition, it denotes tourist activities in areas that are typically agricultural and with valuable natural features. It is adapted to the local conditions and uses the local assets effectively. Rural tourism fulfils the following types of objectives: educational, ethnic, cultural, specialist, social, leisure- and health-related (Matczak, 2015). One of the main issues related to tourism in rural areas is the planning of its development on the regional and local levels and the fact that it depends on the state policy regarding taxes and credits. It has an impact on the risk of conducting business activity, and it can reduce it. The regional authorities focus on defining a direction for tourism using marketing tools, investment in human resources as well as protecting the natural environment and the economic structures of the surroundings. Local authorities make efforts to improve the service quality by investments in technical infrastructure, the proper marking of the terrain, constructing tourist trails, etc. (Gołembski, 2009). The choice of rural tourism as a form of travelling and leisure is based on close relations of tourists with a local community, making use of the assets of a village and its surroundings and the buildings so that the natural environment is preserved as much as possible (Balińska, 2010). The development of rural areas is regarded as the main element of environmental, economic, social and cultural planning. Therefore, rural area development should be an element of local, regional and national development, and it requires coherent and integrated planning, which can identify the major developmental objectives (Strzelecka, 2016).

Tourism in rural areas is also important for the economic growth of communes. It can stimulate employment and, in consequence, improve the life of local communities. To see whether an area is attractive as a tourist destination, one has to look closely at its tourist space. This comprises several elements, such as natural heritage, cultural heritage, tourism infrastructure (accommodation, gastronomic, paratouristic facilities, transport accessibility) and

people (Włodarczyk, 2011). Determination of the tourist attractiveness of communes should be the basis for further planning of tourism development, assigning land for potential investment and systemising commune data – for the determination of the areas qualifying for regional tourism development (Tucki, 2007). Despite the common availability of attractions, many destinations do not use their tourist potential, as their promotion is not sufficiently effective (Rasoolimanesh & Jaafar, 2016). Local governments, with the participation of residents, should improve the tourist service quality and thereby improve the condition of the economy and the quality of the residents' lives (Szwacka-Mokrzycka, 2012). It is not so obvious these days that rural areas must be associated with agriculture. Increasingly large portions of rural area populations are opting to develop and diversify their activities associated with tourism. This trend is favoured mainly by city dwellers becoming fatigued and wanting to rest and relax among nature. Every year, there is a growing number of people who choose the country as a place for their holidays, and rural communes are becoming increasingly popular among tourists. Due to the dynamic growth of rural tourism, the areas visited by tourists are beginning to adapt to increasing numbers of tourists. The social and economic benefits which may be regarded as the most important in rural tourism and agritourism include: improvement of infrastructure, development of small and medium-sized enterprises, income increase and the goals that can be accomplished by supporting this form of tourism include preserving the traditional rural settlements and maintaining the landscape and ecological function owing to utilisation of the material base of farms and private farmers to earn additional income. Rural tourism means higher income in rural areas, the possibility of creating jobs, revitalisation and improving living standards (Holičínová & Holota, 2018).

According to a study conducted by Baum (2011), the future tourist potential of rural areas in Poland is limited and often overestimated. Considerable deficits on the supply side and poor financial resources are

combined with limited demand. Rural tourism in Poland can develop on a small scale and in niche markets, which require solid market research, regional tourist strategies, intersectoral organisations and partnerships in regions and a high level of interest and initiatives taken by local populations in order to develop creative ideas and overcome many barriers. It does not apply to the areas traditionally regarded as tourist destinations, such as the mountains or those in the vicinity of big cities. When studying tourist attractiveness, one's attention should be drawn to rural areas in the functional areas of provincial cities. Their location provides them with opportunities for development, facilitated because of the vicinity of a big city. According to the OECD (2011), there is a need to develop effective coordination mechanisms for urban areas, where the administrative borders do not coincide with those of functional areas. It is necessary to implement legislation and financial incentives encouraging local governments to cooperate. Urbanisation trends worldwide indicate a transition from administrative to functional areas (Szlachta, 2017).

Functional areas around provincial cities are mono- or polycentric urban agglomerations of proper size, also exhibiting other features of an urban settlement arrangement. Among other things, they are zones with direct everyday impact (jobs and place of residence) and large development potential as well as a large scale of internal functional integration (strong functional links) with a well-developed transport network. According to the National Urban Policy until 2023 (Journal of Laws of 2014, item 1235), provincial cities and their functional areas play a decisive role in the socioeconomic development of individual voivodships, as well as the entire country. Since 2014, they have been beneficiaries of the new instrument of Integrated Territorial Investments, launched as part of Regional Operational Programmes and funded by the European Regional Development Fund and the European Social Fund (Szlachta, 2017). Local authorities interested in tourism development should strive to support its development by preparing development plans for periods exceeding five to ten

years or supporting actions of public organisations and the private sector (Hakuć-Błażowska et al., 2018). Entrepreneurship in rural tourism has its own specificity. The involvement of local communities and enterprises in tourism development is affected by the goals that the tourists and the entrepreneurs want to accomplish. Visitors want to spend holidays in extraordinary places, linked with nature and traditional values. Rural areas represent these values; they have their own lifestyle, traditions, links with nature, enjoying physical activity, especially among children, full board, etc. Entrepreneurs – service providers – should be aware of these values (Svoradova et al., 2013).

It seems much easier to develop services for tourists within the range of a larger urban centre. It is assumed that the functional areas will be places where sustainable and effective transport will be developed, transport accessibility will be improved, plans for a low-emission economy will be executed, degraded residential quarters will be revitalised, the environment condition will be improved, research and technology development and innovations will be intensified and where towns will be networked with respect to socioeconomic development. It is of key importance to build a culture of partnership and coordination and to improve the management quality in all functional areas. This should weaken the development barriers, help to use the territorial potentials and to strengthen the role of these functional areas in the development process diffusion (Szlachta, 2017). All of these assumptions should be implemented mainly in less developed regions, and the rural communes of functional areas in Warmia and Mazury could benefit greatly by making use of their tourist potential and the opportunities provided by the vicinity of a large city. The rural communes adjacent to Olsztyn analysed in the study subject include: Dywity, Gietrzwałd, Jonkowo, Stawiguda, Purda.

MATERIALS AND METHODS

The Functional Urban Area of Olsztyn was delineated in 2013 in a document issued by the Minister of Regional Development, entitled “Rules of Implementation of Integrated Territorial Investments in Poland”, which identifies functional urban areas for all the provincial cities (Rules of Implementation..., 2013). This area is identical with the Strategic Intervention Area – Olsztyn Agglomeration – indicated in the “Strategy for the socio-economic development of the Warmińsko-Mazurskie Voivodship until 2030” as a manifestation of the territorialisation of the developmental goals (*Strategy...*, 2020). In the “Spatial development plan for the Warmińsko-Mazurskie Voivodship” (2018), the Functional Urban Area of the Provincial City of Olsztyn is located in the central part of the voivodship (Fig. 1). It has an area of 1450 km² (6% of the voivodship area), of which its core – the city of Olsztyn – occupies a little more than 6% of the FUA area (88 km²).

Although the concept of the functional urban area of a provincial city was removed from the Spatial Planning and Land Development Act (2003, consolidated text: Journal of Laws of 2021, item 741, 784, 922), according to the Inter-Communal Agreement of 29 January 2021 on cooperation aimed at executing Integrated Territorial Investments in the Functional Urban Area of Olsztyn (OJ of the Voivodship of Warmia and Mazury 2021.473), this area comprises the City of Olsztyn, the urban-rural commune of Barczewo and the rural communes of Dywity, Gietrzwałd, Jonkowo, Purda and Stawiguda (The Inter-Communal Agreement..., 2021).

The principal research method employed in this study required obtaining reliable statistical material and the possibility of comparing the areas under analysis. Therefore, the rural commune was taken as the basic unit. The area under analysis comprises seven administrative units, five of which are rural in nature: Dywity, Jonkowo, Gietrzwałd, Stawiguda and Purda (Fig. 2).

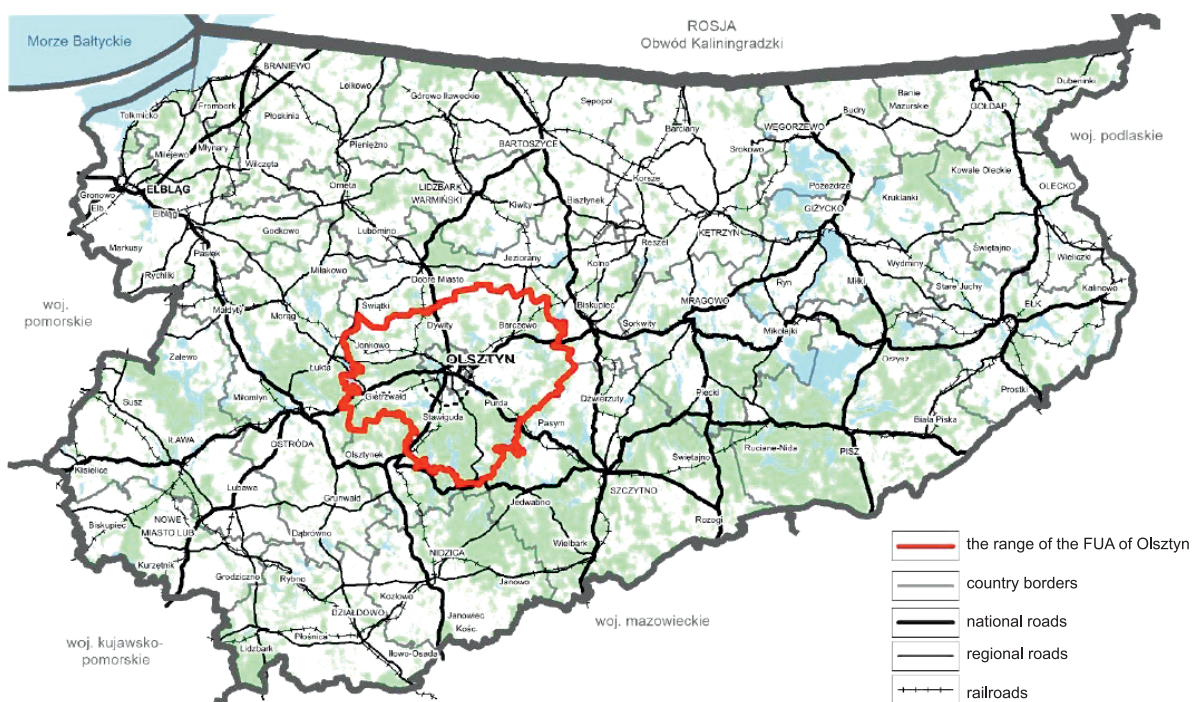


Fig. 1. Position of the Functional Urban Area of Olsztyn against the Warmińsko-Mazurskie Voivodship
 Source: *Spatial development plan* (2018).

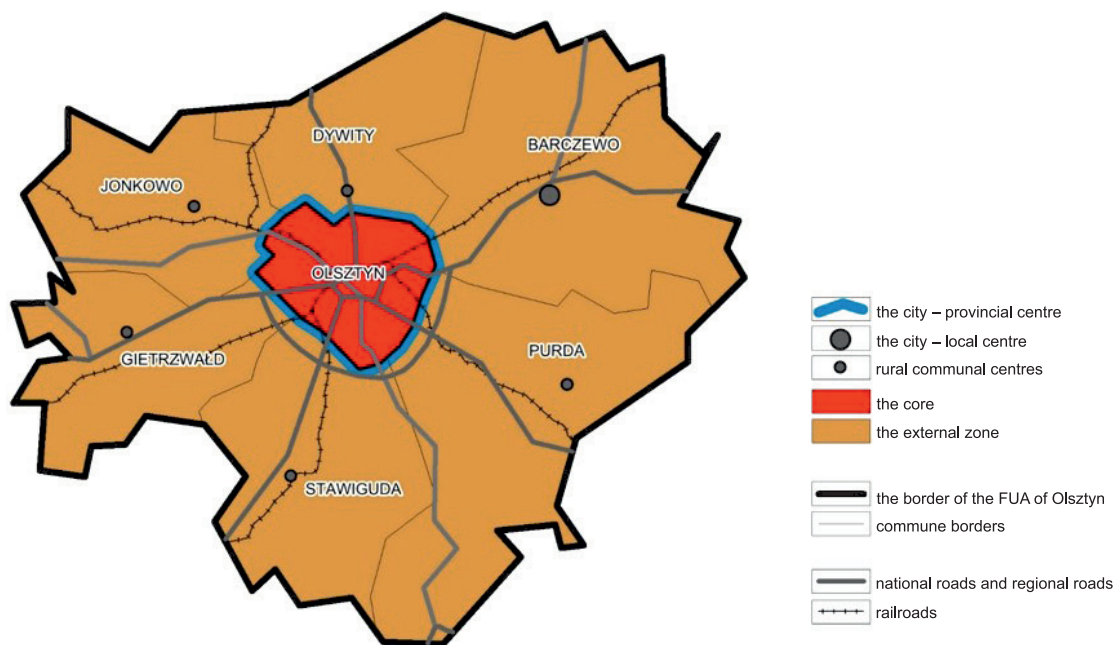


Fig. 2. The Functional Urban Area of Olsztyn
 Source: *Spatial development plan* (2018).

In order to obtain data for the study, a review of strategic and planning documents in communes was performed along with the literature of the subject. The literature study was expanded by information from public information bulletins, commune promotion folders and from Internet websites. Statistical materials used to prepare the dataset were obtained from Statistics Poland, by the author's own studies and from Internet websites.

The tourist attractiveness of the selected communes was evaluated by means of a multidimensional comparative analysis employing the synthetic measure method. This method is applied in many studies, and it allows for ranking and comparing multi-attribute objects (Tucki, 2007). It can be used to study complex phenomena, described by at least two (and usually more) variables (Borys, 1980; Gołembski, 1999; Dziechciarz, 2003; Widz, 2019). The attractiveness evaluation was performed with the use of synthetic indices (values ranging from 0 to 1), obtained as the outcome of the criteria applied. The following communes were analysed: Dywity, Jonkowo, Gietrzwałd, Stawiguda and Purda. The study

made use of 15 variable factors (Table 1), classified into four categories: natural assets, cultural assets, tourism infrastructure and transport accessibility. The determinants (attributes) were determined by the methodology applied by Gołembski (1999), Tucki (2007) and Hakuć-Błażowska and Krauza (2017). It was assumed that the indices would help to determine the tourist attractiveness of an area under study. At least three indices were assigned to each group.

The first group, natural assets, includes five indices, i.e. the portion of the commune area occupied by forests and meadows, score points for lakes larger than 25 ha in a commune (Table 2), the portion of the commune area occupied by protected areas, the number of natural monuments per 10 km² of the commune area.

The second group – cultural assets – is determined by such indices as the number of historical monuments per 10 km² of the commune area, the number of museums or regional chambers per 100 km² of the commune area and the number of cultural events taking place in the commune per year.

Table 1. Sections and selected indices of tourist attractiveness in communes under study

Section	Weight	Index	Unit	Weight
Natural assets	0.35	forests	ha/commune area in ha	0.3
		protected areas	ha/commune area in ha	0.15
		natural monuments	number/10 km ²	0.1
		lakes	score points	0.3
		meadows	ha/commune area in ha	0.15
Cultural assets	0.25	museums	number/100 km ²	0.2
		historical monuments	number/10 km ²	0.5
		cultural events	number/365*100	0.3
Tourism infrastructure	0.2	accommodation facilities	number/10 km ²	0.5
		sport facilities	number/10 km ²	0.15
		tourist trails	km/km ²	0.35
Transport accessibility	0.2	national roads and regional roads	km/km ²	0.4
		railway stations	number/100 km ²	0.2
		bus stops	number/10 km ²	0.2
		transport services to the provincial city	number/day	0.2

Source: prepared by the authors.

Table 2. Score points granted to lakes depending on their area

Lake area	Score points
25–50 ha	1
50.1–100 ha	3
100.1–150 ha	4
150.1–300 ha	5
> 300 ha	6

Source: Hakuć-Błażowska & Krauza (2017).

Three indices are employed in the third group, which characterises the tourism infrastructure: the number of accommodation facilities per 10 km² of the commune area, the number of sports facilities per 10 km² of the commune area, the length of tourist trails per 1 km² of the commune area.

The fourth group describes the internal and external transport accessibility of the areas under study. Four indices were selected: the length of national roads and regional roads in km per 1 km² of the commune area, the number of railway stations per 100 km² of the commune area, the number of bus stops per 10 km² of the commune area and the number of public transport services to and from Olsztyn per day.

In order to make attributes with various units comparable, the quotient transformation was applied, taking the maximum value of the variable as the reference point (Borys, 1980). After all the values were calculated and listed, the indices were normalised, i.e. each index was divided by the reference value. The highest values of each index in the communes were taken as the reference point (Hakuć-Błażowska & Krauza, 2017):

$$n_{ij} = \frac{y_{ij}}{y_{jmax}}$$

where:

- n_{ij} – normalised value of the j -th index in i -th commune
- y_{ij} – value of the j -th index in i -th commune
- y_{jmax} – maximum value of the j -th index with the stimulant quality in communes

Values of the normalised indices lay within a range from 0 to 1. If the value is 1, it means that

the commune under analysis fully meets the criteria of the attribute reference standard under analysis (Gołembski, 1999). The synthetic measure for the section was calculated in the next stage. It is based on the weighted average of the normalised attributes that comprise a given section (Hakuć-Błażowska & Krauza, 2017):

$$Md_i = \sum_{j=1}^n w_j \times n_{ij}$$

where:

- Md_i – a synthetic measure for section d in the i -th commune
- w_j – weight of the j -th index in section di
- n_{ij} – normalised value of the j -th index in i -th commune

Adequately, the general synthetic measure of the tourist attractiveness of each commune was expressed as the weighted average of the synthetic measures for the sections in a given commune.

RESULTS

Natural assets

The natural environment plays an important role in increasing the tourist attractiveness of an area and in creating good conditions for leisure. The forest cover index in the communes under study varies – from nearly 28% in the commune of Dywity to over half of the area in the communes of Stawiguda, Purda and Gietrzwałd (Table 3). Meadows, associated with an idyllic landscape of the country, account for a small percentage of the area. Naturally valuable sites, especially those under legal protection, are a very important element in evaluating tourist attractiveness. Such sites account for over 2/3 of the commune area in three of those under study, and for nearly 85% of the area of the commune of Stawiguda. The following protected sites are situated in it: the Napiwodzko-Ramucka Forest, the Pasłęka Valley, the Middle Łyna Valley, the Napiwodzko-Ramucka Sanctuary, the Pasłęka River, Pełnik in Ruś, Isles on the Mazurian Lakes, the Prof. Benon Połakowski Warmian Forest,

the Pasłęka River beaver sanctuary and the Marózka Valley. Moreover, there are 12 natural monuments in the commune of Stawiguda, including the yew in the Muchorowo forest district, “Napoleon’s Oak” in the Pluski forest district, a group of 40 oaks in the Stary Dwór forest district and a group of trees in Dorotowo. However, it is the commune of Gietrzwałd that can boast the largest number of natural monuments per unit area (Table 3). The 32 registered objects include mainly large trees – 2 small-leaved limes in the cemetery at the Evangelical church in Łęguty, a sessile oak and a pine tree in the Barduń forest district.

Water bodies constitute a natural asset desired by tourists. The largest number of score points in this category were granted to the commune of Purda, with 13 lakes affecting its tourist attractiveness (with the area exceeding 25 ha). Ranked by size, these are: Wardąg, Czerwonka Wielka, Dłużek, Kemno Wielkie, Silickie, Łajskie, Purda, Patryki, Kuklung,

Gim, Klebarskie, Serwent, Kośno. There are such fish as zander, whitefish, eel and pike in Lake Kośno (569 ha) – the largest one in the commune – but fishing is forbidden in it as it is part of a nature reserve. Its shores are steep, nearly completely covered with forests. There are only three lakes in the commune of Stawiguda, but they are large. Lake Łańskie, with the area of 1070 ha, is the largest, followed by Lake Pluszne (867.5 ha) and Lake Wulpińskie, also called Dorotowskie or Tomaszkowskie (683.5 ha). These lakes have a very well-developed shoreline – with many bays, peninsulas and isles. The forests surrounding the lakes provide perfect conditions for mushroom picking and the lake with its fish: bream, burbot, perch, roach, whitefish, vendace, pike and eel – for anglers.

After the indices for individual communes are normalised, the attributes characterising the natural environment in the communes can be compared (Fig. 3).

Table 3. Indices for the natural assets section

Index	Unit	Dywity	Gietrzwałd	Jonkowo	Purda	Stawiguda
Forests	ha/commune area in ha	0.277	0.516	0.391	0.541	0.565
Protected areas	ha/commune area in ha	0.369	0.753	0.274	0.703	0.843
Natural monuments	number/10 km ²	0.434	1.857	0.237	0.438	0.538
Lakes	score points	4.000	15.000	3.000	43.000	26.000
Meadows	ha/commune area in ha	0.162	0.100	0.170	0.100	0.065

Source: prepared by the authors.

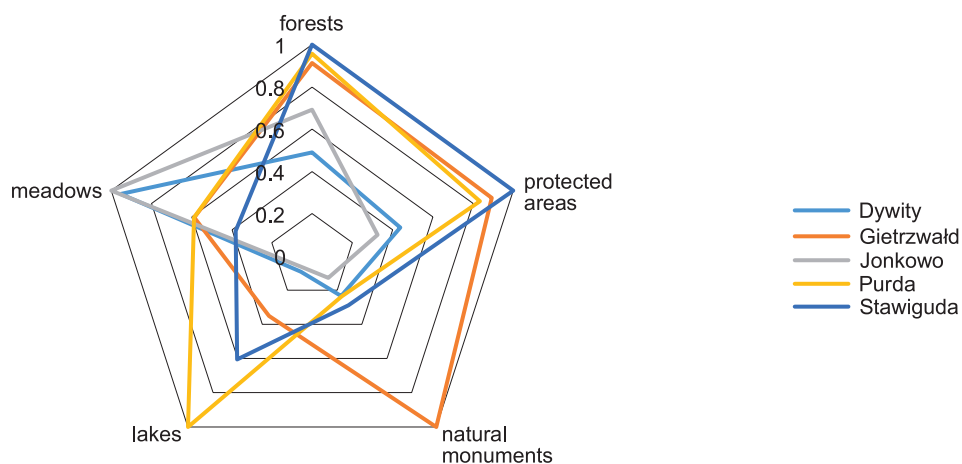


Fig. 3. The normalised values of indices concerning the natural assets in the communes

Source: prepared by the authors.

There are visible differences between the individual attributes in the communes under study. Two reference values were achieved by the commune of Stawiguda (forests and protected areas) and one value each – the communes of Gietrzwałd, Purda and Jonkowo. Meadows account for large portions of the commune area in Jonkowo and Dywity, which confirms their agricultural character.

Cultural assets

The historical monuments in the communes of the functional area of Olsztyn reflect the rich history of the area. The commune of Stawiguda stands out with its 172 objects listed in the Registry of Historical Monuments. They include churches, church cemeteries, vicarages, roadside shrines, railway flyover and the World War I cemetery in Dorotowo. There are a large number of cultural events, often cyclical,

in the commune. However, there is no official museum or a regional chamber in the commune (Table 4).

The commune of Purda is second place in terms of the number of historical monuments. However, since its area is the largest among the communes under study (318 km²), it is third in terms of the historical monuments per unit area, after the commune of Gietrzwałd, with the *Basilica* of the Nativity of the Virgin Mary in *Gietrzwałd* – a popular destination for pilgrimages. Although there are few museums in the area, the commune of Jonkowo has the largest number (2), with the Jacek Olędzki Living Lavender Museum being the most popular.

After the values of the attributes for cultural assets are normalised, the domination of the commune of Stawiguda becomes visible – even though it has no museums (Fig. 4). The indices for the other communes were comparable and similar.

Table 4. Indices for the cultural assets section

Index	Unit	Dywity	Gietrzwałd	Jonkowo	Purda	Stawiguda
Museums	number/100 km ²	0.621	0.580	1.186	0.258	0.000
Historical monuments	number/10 km ²	0.248	2.611	1.067	1.288	7.718
Cultural events	number/365*100	10.137	6.575	1.918	4.658	19.452

Source: prepared by the authors.

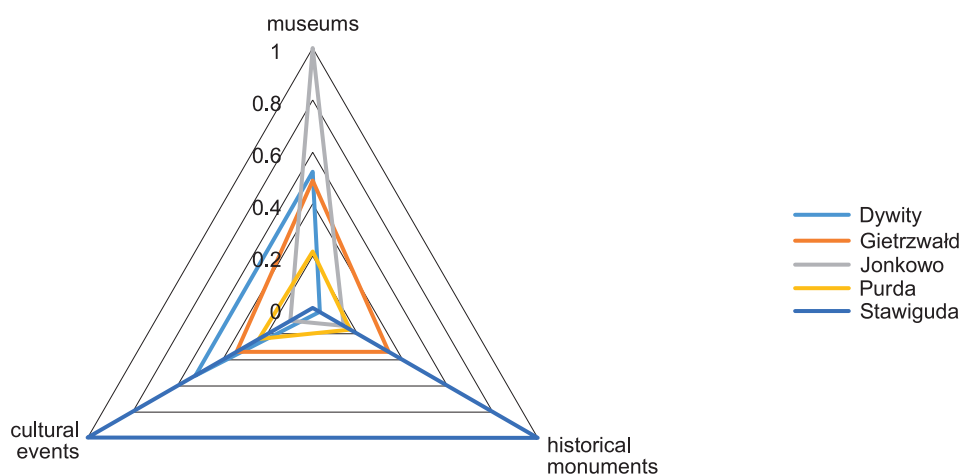


Fig. 4. The normalised values of indices concerning the cultural assets in the communes

Source: prepared by the authors.

Tourism infrastructure

Tourism infrastructure ensures that tourists can enjoy their leisure in proper conditions. Considering only the official, universally accessible accommodation facilities, their number per unit area in the communes under study is at a good level. The situation is the best in the commune of Gietrzwałd, with 36 such objects. Their number in the commune of Stawiguda is the smallest. However, it probably does not reflect the real accommodation potential in the commune. As it is close to the provincial city, there are many “second homes” situated in the area.

The index for sports facility density is intended to reflect the level of each commune’s interest in the development of auxiliary infrastructure. The highest index was recorded for the commune of Dywity, with nearly one sports facility per 10 km² (Table 5).

Accessibility of tourist assets that affect the tourist attractiveness is ensured by well-organised and properly marked tourist trails. The trail density is the highest in the commune of Gietrzwałd, where there are six bicycle trails with a total length of 116 km. For example, the blue trail, 10.7 km long, runs from Gietrzwałd, through Woryty, Nowy Młyn, then it crosses the border with the commune of Jonkowo and runs through Stękliny, Porbady, Wrzesina and returns to Gietrzwałd.

The indices related to tourism infrastructure indicate the absence of a direct relationship between the level of the tourist facilities development and the tourist assets in the commune. However, it is noteworthy that the communes with the highest tourist trail density are also those with the highest forest cover index and with a high percentage of areas under legal protection (Fig. 3, Fig. 5).

Table 5. Indices for the tourism infrastructure section

Index	Unit	Dywity	Gietrzwałd	Jonkowo	Purda	Stawiguda
Accommodation facilities	number/10 km ²	1.551	2.089	1.897	0.850	0.942
Sport facilities	number/10 km ²	0.931	0.348	0.415	0.232	0.404
Tourist trails	km/km ²	0.428	0.673	0.296	0.586	0.438

Source: prepared by the authors.

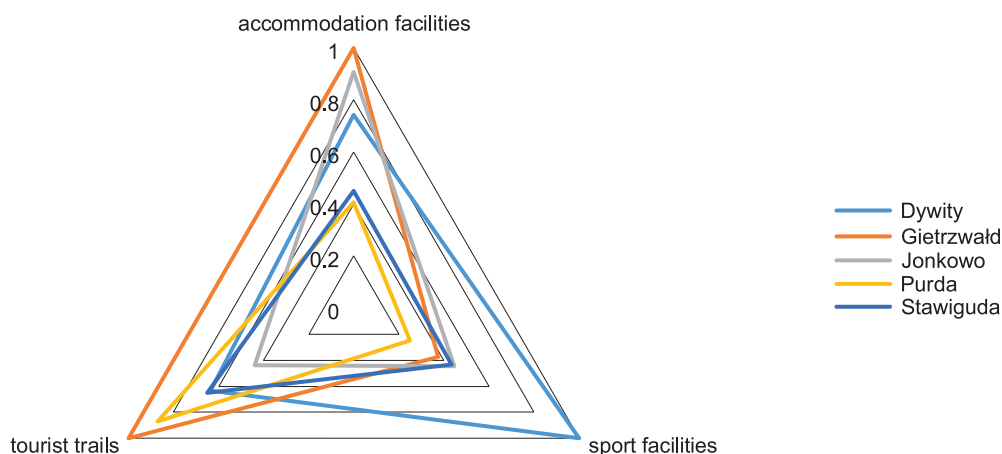


Fig. 5. Normalised indices for the tourism infrastructure section in the communes

Source: prepared by the authors.

Transport accessibility

Transport accessibility allows tourists to reach their destination and to move around the area that they are visiting. Accessibility by road and railway transport is of the greatest importance at the commune level. Among the communes under study, only Dywity does not have passenger railway facilities, with no railway station or stop in use (Table 6).

A surprisingly large density of the national and regional roads compared with the other communes is recorded in Purda, which also has the largest number of bus stops. The number of bus stops in the commune of Dywity is only slightly fewer, but their density is the highest. Moreover, the number of public transport services to the provincial city is nearly four times

larger than in the commune of Purda. It has the best transport accessibility in the functional area of Olsztyn. Public transport services in it are provided by companies from Olsztyn and from the communes as well as by private carriers.

The individual indices for transport accessibility are very similar in three communes (Fig. 6). The communes of Purda and of Dywity differ from them in terms of the number of railway stops. Moreover, the organisation of public transport in the commune of Dywity differs from other communes. With the lack of any railroad transport and a small density of roads ranked higher than county roads, the commune authorities organised efficient road public transport, making use of the organisational capacity of the provincial city and the lower-rank road network.

Table 6. Indices for the transport accessibility section

Index	Unit	Dywity	Gietrzwałd	Jonkowo	Purda	Stawiguda
National roads and regional roads	km/km ²	0.059	0.156	0.117	0.182	0.130
Railway stations	number/100 km ²	0.000	1.741	2.371	0.515	1.795
Bus stops	number/10 km ²	7.508	4.236	4.624	3.684	2.737
Transport services to the provincial city	number/day	108	35	51	29	35

Source: prepared by the authors.

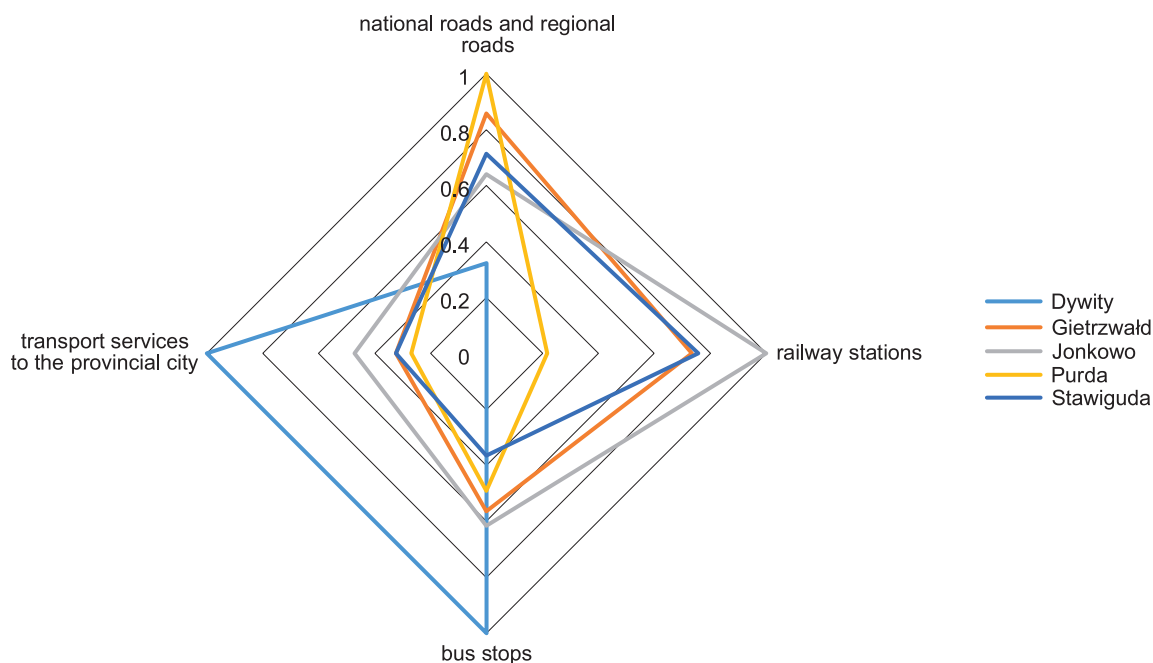


Fig. 6. Normalised indices for the transport accessibility section in the communes

Source: prepared by the authors.

Tourist attractiveness

The study results using the normalised synthetic measures obtained by document analysis are listed in Table 7 and the graphs show the synthetic measures for each commune and each section and the overall synthetic measure of tourist attractiveness of each of the communes under study.

The first section concerning the tourist assets in the natural environment includes five indices (Table 3). The forest cover in the commune of Stawiguda accounts for its largest portion (56%), whereas in the commune of Dywity it is the smallest (nearly 28%). The protected areas in the commune of Stawiguda also occupy a larger portion than in the other communes (84%), which is only a little more than in Gietrzwałd and Purda. The number of natural monuments per unit area is similar in all the communes under study, except in Gietrzwałd.

Water bodies attractive for tourism and leisure can be found in all the five communes under study. The commune of Purda stands out in terms of the number of lakes in it, whereas Stawiguda has the largest lakes, with the most diverse shoreline, which provide ample opportunities for practising water sports and fishing. The fact that meadows account for a large percentage of the Jonkowo and Dywity communes shows and confirms the traditionally agricultural nature of the landscape in those areas. The highest synthetic measure for the natural asset attractiveness was achieved by the commune of Purda, with its high lake- and forest-related indices. Considerable natural assets in the commune include a high percentage of land under legal protection and rather a high index related to the portion of meadows in the commune area. Meadows and forests account for 64% of the commune area.

Table 7. Normalised indices in the communes under study

Section	Weight	Index	Unit	Weight	Dywity	Gietrzwałd	Jonkowo	Purda	Stawiguda
Natural assets	0.35	forests	ha/commune area in ha	0.3	0.490	0.913	0.692	0.957	1.000
		protected areas	ha/commune area in ha	0.15	0.438	0.893	0.325	0.834	1.000
		natural monuments	number/10 km ²	0.1	0.234	1.000	0.128	0.236	0.290
		lakes	score points	0.3	0.093	0.349	0.070	1.000	0.605
		meadows	ha/commune area in ha	0.15	0.953	0.587	1.000	0.588	0.381
Cultural assets	0.25	museums	number/100 km ²	0.2	0.524	0.490	1.000	0.217	0.000
		historical monuments	number/10 km ²	0.5	0.032	0.338	0.138	0.167	1.000
		cultural events	number/365*100	0.3	0.521	0.338	0.099	0.239	1.000
Tourism infrastructure	0.2	accommodation facilities	number/10 km ²	0.5	0.743	1.000	0.908	0.407	0.451
		sport facilities	number/10 km ²	0.15	1.000	0.374	0.446	0.249	0.434
		tourist trails	km/km ²	0.35	0.636	1.000	0.440	0.871	0.651
Transport accessibility	0.2	national roads and regional roads	km/km ²	0.4	0.323	0.858	0.641	1.000	0.714
		railway stations	number/100 km ²	0.2	0.000	0.734	1.000	0.217	0.757
		bus stops	number/10 km ²	0.2	1.000	0.564	0.616	0.491	0.365
		transport services to the provincial city	number/day	0.2	1.000	0.324	0.472	0.269	0.324

Source: prepared by the authors.

The tourist assets associated with cultural heritage was another section under analysis. Only the commune of Stawiguda has no museums, but this deficit is compensated for by a large number of historical monuments and many cultural and sports events (Table 7). These resources and activities are sufficient to make the commune of Stawiguda the leader in the cultural asset section (Fig. 7). The poor result of the commune of Purda is not the result of a small number of historical monuments, but of its large area. It is nearly twice as large as the communes of Dywity, Gietrzwałd and Jonkowo, which has an impact on the indices related to the commune area.

There are large differences between the indices for the communes concerning the tourist infrastructure (Table 7). However, the synthetic measure values do not show this trend. It is higher than 0.5 in all the communes. The highest result for Gietrzwałd is a consequence of a large number of universally accessible accommodation facilities and the high density of tourist trails in the commune. The lowest values were calculated for two communes with the largest area.

Despite the large differences in the indices for transport accessibility, the synthetic measure for the communes is similar. There is a difference of only 0.138 points between the communes with the

highest and the lowest measures. It means that the level of transport accessibility is similar in the rural communes of the functional area of Olsztyn, although they achieve it in different ways.

In the final stage of the analysis of the results for evaluation of the rural commune tourist attractiveness, the overall synthetic measure was calculated for tourist attractiveness and its ranking was made for the communes in the functional area under study.

The analysis shows that the commune of Stawiguda is the most touristically attractive (Fig. 8). It is a consequence mainly of the high quality of the natural environment, a high forest cover index and a high percentage of protected areas, a large number of historical monuments and cultural events. It is followed by the commune of Gietrzwałd. Its high position is a result of the best-developed accommodation base and a network of tourist trails, as well as many natural monuments and a high forest cover index. The communes of Purda and Jonkowo were next in the rankings. The place of the former is a consequence of the presence of many large lakes and the density of the road network, whereas the latter can boast high indices related to the tourist development of the area – its transport accessibility and the accommodation base. The lowest synthetic measure for tourist attractiveness was calculated for

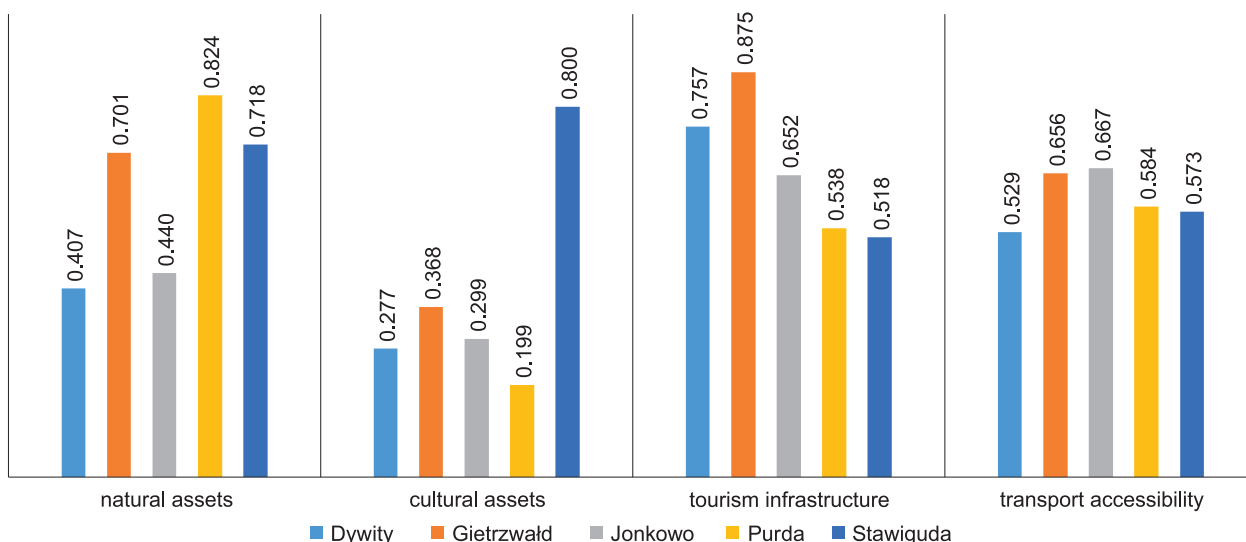


Fig. 7. Synthetic measures for communes in individual sections
Source: prepared by the authors.

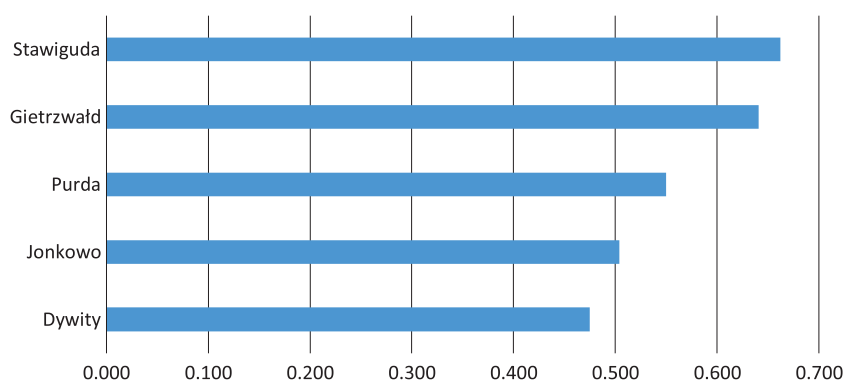


Fig. 8. Overall synthetic measure for tourist attractiveness of the communes under study

Source: prepared by the authors.

the commune of Dywity. It is a typically agricultural commune, with a low forest cover index and a small number of historical monuments. However, of all the communes under study, it shows the best indices related to its cooperation with the provincial city. It has the best indices in terms of the number of sports facilities and of bus stops and the number of bus services, making effective use of the public transport advantages in its link to the large urban centre.

Based on the overall synthetic measure of tourist attractiveness, one can identify communes of various degrees of attractiveness (Hakuć-Błażowska et al., 2018): of low attractiveness (<0.35), of medium attractiveness ($0.35-0.5$) and of high attractiveness (>0.5). According to these criteria, four of the communes under study can be classified as very attractive. However, one can note the advantage of the first two communes in the ranking: Stawiguda and Gietrzwałd, with valuable natural assets. The diagram of the attractiveness ranking can be expanded to a five-point numerical-conceptual scale, in which classification criteria for tourist attractiveness is developed with the use of arithmetic averages, enabling clear and comparable reference of class boundaries to the set of values (Brzezińska-Wójcik & Skowronek, 2018). The border values between different degrees of tourist attractiveness were isolated with the statistical value of 0.250 (half of the arithmetic mean for the set from 0 to 1). Thus, a commune can be termed as (Widz, 2019):

unattractive (0), of low attractiveness (0.001–0.250), of average attractiveness (0.251–0.500), attractive (0.501–0.750) or very attractive (>0.750). According to this diagram, four communes can be classified as attractive and the commune of Dywity can be regarded as being of average tourist attractiveness.

CONCLUSIONS

The study of the tourist potential of the rural communes in the functional area of Olsztyn shows its considerable diversity. Different communes achieved the reference values of the indices in different sections. Each of the communes had features that made it stand out against the others. Different communes achieved the highest value of the measure in individual sections under study. Similar values of the measures of tourism attractiveness (equal level of tourism attractiveness) with high diversification of results in particular sections indicate the uneven distribution of resources in the rural communes of the functional area of Olsztyn, as well as their different use by the authorities and civil society. The best results in terms of the natural assets were achieved by the commune of Purda. This is a consequence of the largest number of lakes with an area exceeding 25 ha, a high forest cover index and the percentage of protected areas. However, its potential is lowered by the lowest score in the cultural values section. While it is not possible to increase the number of monuments in the commune,

the local authorities should take measures to initiate and support social initiatives using the existing natural assets, organising educational events, shows and festivals connected with nature.

The commune of Stawiguda stands out in terms of its cultural assets (0.800 vs Gietrzwałd occupying the next position – 0.368), with numerous historical monuments in its area and many cultural events. It also ranks high in terms of natural wealth. However, it is the least developed in terms of tourist infrastructure among all studied communes. The activities of the commune authorities and entrepreneurs should focus on increasing the number of accommodation facilities and improving transport accessibility, especially by organising new tourist routes. The commune of Gietrzwałd proved to have the best-developed tourism infrastructure. It is a consequence of the largest number of accommodation facilities and a high density of tourist trails. Large forest cover and many valuable nature objects provide many opportunities for the development of tourism in this area. However, with a small number of monuments, the commune authorities or social organisations should undertake to organise events or other activities promoting cultural values in connection with the valuable nature of the commune.

The commune of Jonkowo proved to have the best external transport accessibility. With an average road and bus stop density, it has four train stops in a relatively small area. Jonkowo is a commune with a typically agricultural character, as evidenced by the highest score for the indicator related to meadows. The lowest indicators for protected areas and the number of nature monuments are also reflected in the small number of tourist trails running through the commune. However, it is in such areas that rural tourism should develop, with a particular focus on agrotourism. The commune authorities should create an appropriate climate, and entrepreneurs and associations should join together in clusters and put special emphasis on the organisation of cultural events.

Only the commune of Dywity did not achieve the best results in any of the sections under study.

Its final result was also the lowest, mainly because of the low lake- and forest-related indices and a small number of historical monuments. The commune also has a typically agricultural character, which can be used mainly for the development of agrotourism. Individual indicators show the activities of the local government in the direction of exploiting small natural or cultural assets. The number of events organised in the commune or the increasing number of sports facilities, as well as transport links with the voivodship city may serve as an example. Further activities in these directions, increased internal accessibility and extended cooperation, for example, in the form of clusters, may bring positive results. The commune of Stawiguda, rich in natural and cultural assets and with good transport accessibility, proved to be the area with the highest tourist attractiveness. The very good conditions of external transport accessibility should be better exploited, both to connect the commune with the voivodship city and to improve internal transport.

The functional urban area of Olsztyn creates a monocentric urban agglomeration with a broad zone with a considerable range of everyday impact on the way between the place of work/school and home. It is also characterised by a large scale of internal functional integration with the opportunities for creating a developed transport network, whose examples are transport links between Dywity and Olsztyn. Tourism (and recreation associated with it) is an economic sector with high development potential and a continuous growth tendency. Therefore, the authorities of communes that strive to benefit from the tourist sector should focus on creating a proper development policy or strategy and aim at reaching sustainable tourism by improvement of infrastructure, not only tourist-related, protecting historical monuments and architecture, but also promoting environmental protection. Local authorities interested in tourism development should strive to support its growth by preparing plans for periods exceeding five to ten years or supporting the actions of public organisations and the private sector, as well as concluding inter-communal agreements aimed at using the financial support from Integrated Territorial

Investments launched as part of Regional Operational Programmes and funded from the European Regional Development Fund and the European Social Fund.

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Note: the results of this study were presented in another form, such as a poster at a conference: XXXVI Seminarium Geografii Wsi. *Współczesne kierunki badań w gospodarowaniu przestrzenią wiejską*. Olsztyn, 21-22.06.2021.

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