

PRACE GEOGRAFICZNE, zeszyt 111

Instytut Geografii i Gospodarki Przestrzennej UJ
Kraków 2003

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EVOLUTION OF ACCESSIBILITY IN CARPATHIAN SPA RESORTS BETWEEN 1938 AND 2000

Abstract: The paper discusses accessibility of Polish Carpathian spa resorts. Accessibility is a factor in the spas' overall tourist appeal and indicates the reach of their hinterland. Until 1990s, Polish Carpathian spa accessibility was largely defined by the availability of public transport. The paper looks at the transport routes that begin in and pass through the spas; their paths, termini and the frequency of service. A detailed review of time-distances is provided. To assess the evolution of accessibility, four annual bodies of data were reviewed: 1938, 1950, 1970 and 2000.

Keywords: accessibility, time-distance, Carpathian spa resorts, public transport

Introduction

The paper looks at the accessibility of the Polish Carpathian spa resorts. According to the Longman Language Activator Dictionary (1998) Accessibility means "easily reached, especially by car, boat, plane, etc". W. Ratajczak (1992) notes that the relevant definitions commonly found in geographical publications stress the ability to cover distances. It is generally accepted that accessibility involves the geographical location a place in relation to other places and to the transport network pattern (Vickerman 1974). The authors subscribe to a very similar definition by J.Black and M.Conroy (1977), where accessibility measures the effort in reaching a certain spatially defined function from a given site using a certain means of transport.

The project covers resorts with an official spa status in the Polish Carpathian Mountains, including Iwonicz-Zdrój, Krynica, Muszyna, Piwniczna, Rabka, Rymanów-Zdrój, Szczawnica, Ustroń, Wapienne, Wysowa and Żegiestów-Zdrój (Atlas Uzdrowisk Polskich 1990). Zakopane, the largest tourist resort, but not a formal spa, in the Carpathian Mts. was also investigated.

The main aim was to assess the spa accessibility and its development between 1938 and 2000. Additionally, a time-distance matrix was developed and applied in the research.

The paper discusses physical accessibility of spas located in the Polish Carpathian Mountains. Accessibility is a component of the overall tourist appeal of a spa and an indicator of its hinterland limits. As such, it co-determines the development and operation potential of spas. This aspect of accessibility has recently gained in significance as the spa resorts began competing with each other. Until 1990s, accessibility was largely determined by the availability of public transport, which has remained an important factor despite having lost some ground to private car transport in recent years. Hence, the paper is looking at:

- the pattern and reach of transport routes beginning in and passing through the spas,
- the number of services connecting the spas.

Four years were selected for the review (1938, 1950, 1970 and 2000), to follow the evolution of accessibility and the diminishing role of public transport in providing physical accessibility to the Carpathian spa resorts.

Spas and the Transport Network

The location of spas on the national transport network has a great influence on their accessibility. The Carpathian spas were established in strong relation to the natural and healing resources, such as the climate and water; they can be described as raw-material determined, rather than market-determined. With the peripheral location of the Carpathian Mts., the spas established within the mountain range are far removed from the main urban areas.

The spas of Ustroń and Rabka are undoubtedly the best positioned on the transport network; they are located on international roads (E-75 and E-77) and railways. Iwonicz and Rymanów are located close to an international road (E-371), but ca. 10 kilometres from the nearest railway station. On the other hand, spa resorts founded in the Poprad River Valley are all located on an international railway line and a national (or provincial) road. The towns of Krynica and Zakopane feature a peculiar location at the termini of a national road and railway line each. However, by providing access to these resorts the routes have gained enough in significance for the resorts to be perceived as well positioned on the transport network. Wysowa and Wapienne, two spas located on local roads and with no access to railway, have the least favourable transport location.

The first railway line in Galicia (south-eastern Poland) opened as early as in 1847 (Kraków-Mysłowice). However, it was not until 1876 when the first Carpathian spa (Żegiestów Zdrój) gained railway access through a branch line connecting Tarnów, Muszyna and Preszów. Table 1, below, summarises all Carpathian spa resorts, their establishment and first access to modern public transport network.

The Tarnów branch line contributed to the establishment of two new spa resorts in Piwniczna and Muszyna. With the new additions to the rail infrastructure, more spas gained access to this modern mode of transport. A transversal line (Zwardoń–Chabówka–Stróże–Zagórz) connected several spas in 1884, while major resorts, such as Ustroń, Krynica and Zakopane had special branch lines opened at the turn of the 19/20th century. The spas of Wapienne, Wysowa and Szczawnica have been omitted by these developments altogether, but Szczawnica was among the first to receive a coach service in 1920s¹.

Tab. 1. First rail and coach services to the Carpathian spa resorts

Spa resort	Official spa status since*	Rail** or coach service opened	Comments
Ustroń	1882	18.12.1888	Goleszów–Ustroń railway line, station Ustroń Zdrój since 15.03.1928
Rabka	1864	16.12.1884	Transversal railway
Zakopane	-	25.10.1899	Private Chabówka–Zakopane railway line
Szczawnica	before 1858	1920s	Only coach service
Piwniczna	1931	18.08.1876	Tarnów–Muszyna–Čadca railway line
Żegiestów	1846		
Muszyna	1930/1956		
Krynica	before 16 th c. / 1856	29.05.1911	A branch of the Tarnów–Muszyna railway line
Wysowa	1814	After WW2	Only coach service
Wapienne	17 th c. / 1906	After WW2	Only coach service
Iwonicz	1578/1836	20.08.1884	Transversal railway line; ca. 8-10 km from each of the spas with stations at Rymanów and Iwonicz. Nowadays, main role played by coach/bus services.
Rymanów	1876		

Source: own research based on *(Kruczek, Weseli 1987); **(Lijewski, Koziarski 1995).

Public Transport to the Carpathian spas

The number of direct services is a measure of accessibility. Table 2 below summarises this indicator for the spas (and Zakopane).

The most popular of the spas (Ustroń, Krynica and Rabka) stand out from the rest of spas. However, they are much less accessible than Zakopane that has more services offered (also by small private operators) than the next three resorts combined. Other spas are served directly between several and less than 20 times a day; the better service frequency to the resorts located along the Poprad valley is explained by the international railway line rather than their own importance.

Direct services also influence the overall accessibility. They add to the travel comfort and define the perceived accessibility and perceived distance to a spa. Figures 1 and 2 present the direct service pattern to the Carpathian spas. Cracow and Katowice (and the rest of the Upper Silesia) were the best connected departure points, with the former having no services only to Wysowa and Rymanów. Warsaw and Rzeszów had direct connections with the majority of spas (7), while Lublin and Kielce had direct services to six spas. A poorer connection with the west of the country is probably explained

¹ Coach services connected with the rail at the stations in the towns of Nowy Sącz and Nowy Targ. At the time (1938) the fastest route from Warsaw to Szczawnica went through Sandomierz and Dębica with a switch at Nowy Sącz.

Tab. 2. Direct intercity* services to the Carpathian spas in 2000

Spa	Number of services			Including services beyond provincial boundaries
	Total	Rail	Coach	
Zakopane	97	31	66	38%
Ustroń	33	9	24	15%
Krynica	29	9	20	62%
Rabka	26	2	24	35%
Szczawnica	17	-	17	35%
Muszyňa	16	12	4	37%
Piwniczna i Żegiestów	14	11	3	36%
Iwonicz	9	-	9	66%
Rymanów	5	-	5	40%
Wysowa	3	-	3	33%

* services beyond the powiat boundaries (second rank administrative unit); in Zakopane and Rabka local services to adjacent powiats were excluded.

Source: own research based on PKP Polish Rail and PKS Coach timetables.

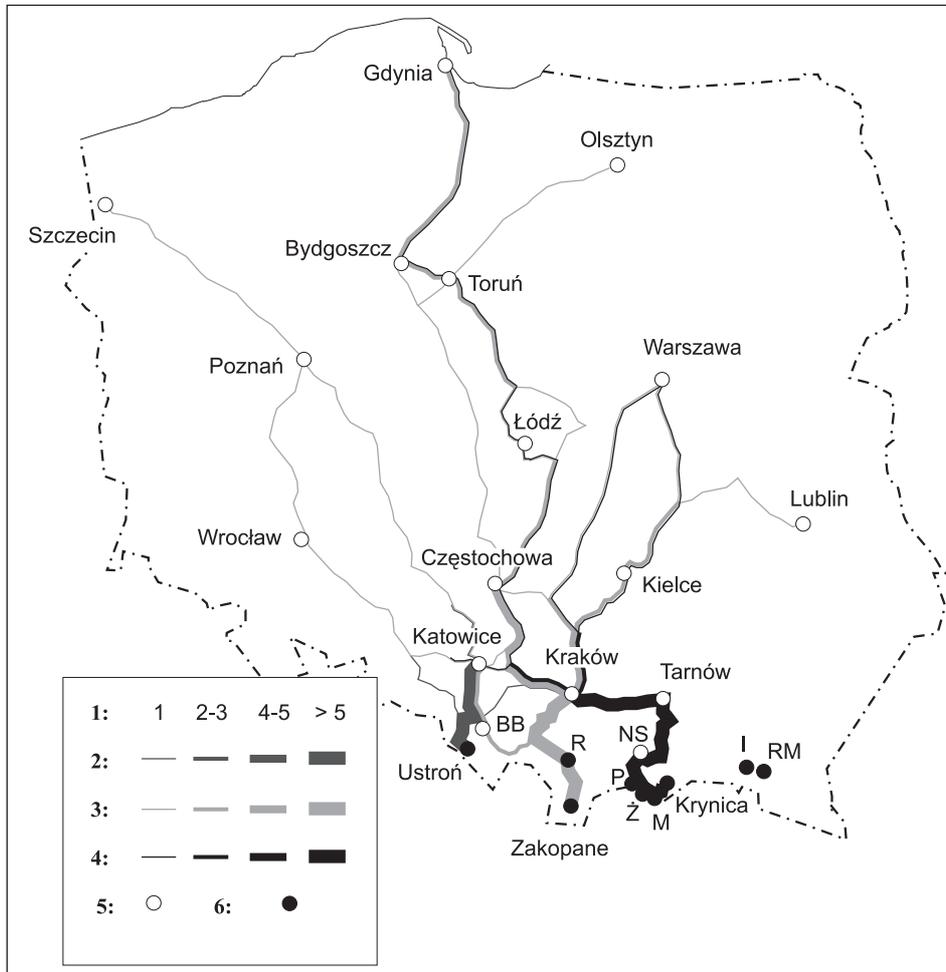
by the long distance and the competition of the nearer spas in the Sudety Mountains. The city of Białystok, in the northeast of Poland, has surprisingly no service to any of the spas.

Table 2 summarises an interesting comparison of direct services beyond the provincial boundaries of a given spa resort to the total services. With most of the spas, including Zakopane, the figure stands near 30%. This would suggest their regional and national significance. A surprisingly low ratio at Ustroń (15%) could be explained by the dominant position of the Upper Silesian industrial conurbation within the same province (also a formal dependency relationship with the numerous facilities formerly owned by Upper Silesian heavy industry). This, however, reduces the role of the spa to the regional level only. Krynica and Iwonicz posted very high ratios (ca. 66%), confirming their national level role.

Evolution of Accessibility

Geography of transport operates three measures of distance; length (physical accessibility), time (temporal-accessibility) and effort or cost of covering the distance (economic accessibility) (Krzyżanowski 1957). In an effort to provide a reasonably objective comparison of accessibility (static and dynamic), the authors employed one of those measures of the time-accessibility, i.e. the shortest travel time. Travel times² were measured between the spas and ten cities selected according to their size (Warsaw, Łódź, Cracow and Katowice including the conurbation, Poznań and Lublin) and proximity

² Wysowa and Wapienne were excluded from the analysis because during a portion of the period studied they were not connected at all.



- 1 – number of daily services
- 2 – direct services from Ustroń
- 3 – direct services from Zakopane and Rabka (Chabówka station)
- 4 – direct services from Krynica and the Poprad valley spas
- 5 – towns and cities with direct services to the spas
- 6 – the spas (incl. Zakopane)
- BB – Bielsko-Biała; NS– Nowy Sącz;
- R– Rabka; P – Piwniczna; Ż – Żegiestów; M – Muszyna; I – Iwonicz; RM – Rymanów;

Fig. 1. Direct railway services to the Carpathian spa resorts in 2000

Source: own research based on the PKP Polish Rail Timetable for 2000.

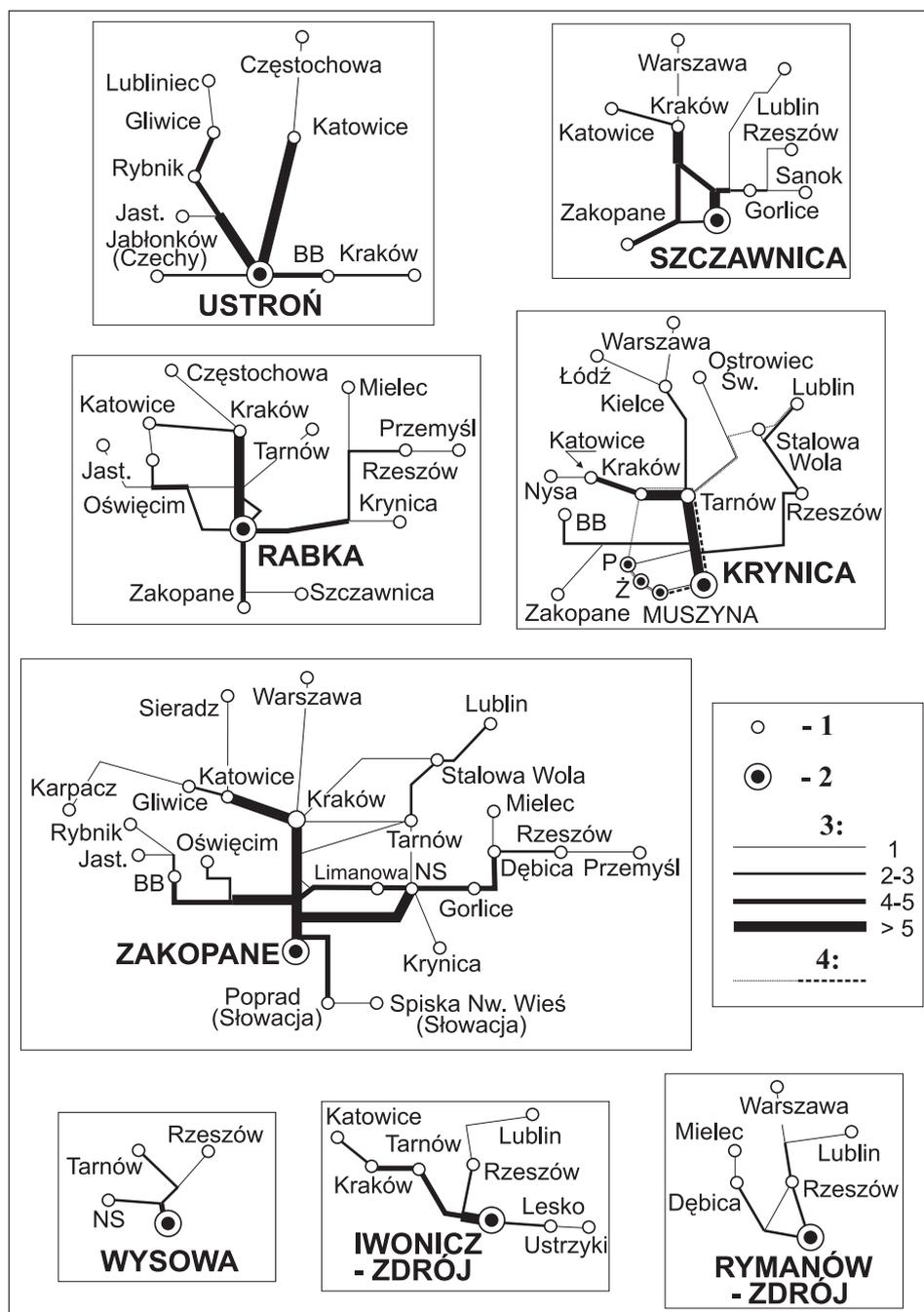


Fig. 2. Direct intercity coach services to the Carpathian spa resorts in 2000

(Kielce, Bielsko-Biała, Tarnów and Rzeszów). Cities, which had not been part of Poland during any portion of the research period, were excluded. (e.g. Wrocław).

The fastest connections were then found using the rail and coach service timetables (including combination of both modes of transport); direct services were given priority, because changeovers were regarded as more troublesome than up to 20% increase in the actual travel time. The authors analysed spa-bound services between 0:00 on Friday and 23:59 on Saturday during the first weekend of July. Separate matrixes were constructed for each of 1938, 1950, 1970 and 2000. A shortest road distance matrix was also constructed for 2000, so that it could be used in the calculation of the average speed in each of the years.

Accessibility was based on an index constructed for the purposes of the project, as a sum of the travel times from the listed cities; to underscore the importance of the largest cities (representing larger numbers of potential visitors) Warsaw, Cracow and Katowice were given the weight of three, and Łódź, Rzeszów and Lublin, the weight of two.

During 2000, Ustroń and Rabka had the best accessibility of all spa resorts; this can be explained by the proximity of the cities, which served as the departure points for the calculation (Tab. 3, Fig. 3). Also, these spas had a higher ratio of direct to total services (Tab. 2). Iwonicz and Rymanów had the worst accessibility factors; this cannot be explained by their physical distance from the selected departure cities, because the distance was comparable to that from Zakopane or Krynica. The problem lies in a very poor public transport connection.

Three periods were identified in the history of accessibility between 1938 and 2000:

- 1938-1950; deterioration of accessibility to all of the spas as a result of the war and its aftermath,
- 1950-1970; rapid increase in accessibility caused, alongside the general post-war recovery and railway improvement, by the growing popularity of coach services, as confirmed by the dramatically improved indices at spas without rail,
- 1970-2000; further, if slower, improvement of accessibility.

As opposed to the spa accessibility, the city accessibility indices depended to a greater extent on their geographical location. This is illustrated by the significant differences between the sums of distances to each of the cities (Tab. 4). The rate and scale of changes to the indices of the cities is similar, as in the case of the spas (Fig. 4).

1 – towns with direct services to/from a spa

2 – spas

3 – daily services

4 – direct services to/from spas in the Poprad valley

BB – Bielsko-Biała; Jast. – Jastrzębie; NS – Nowy Sącz; P – Piwniczna Zdrój; Ż – Żegiestów Zdrój.

Source: own research based on the PKS Coaches Timetable for 2000

Tab. 3. Index of accessibility from selected cities during 1938-2000

City	Combined distance (km)	1938	1950	1970	2000
Ustroń	2216	6999	8679	5592	5315
Zakopane	2447	8206	9461	6609	6200
Rabka	2088	6963	8495	5776	5411
Szczawnica	2391	9284	10972	7530	6543
Piwniczna	2332	8577	9628	7877	6324
Żegiestów	2472	9158	10368	8374	6974
Muszyna	2464	9421	10720	8648	6868
Krynica	2371	9989	11383	8196	6472
Iwonicz	2430	10403	13604	7523	7117
Rymanów	2478	10654	13733	8031	7827

Source: own research

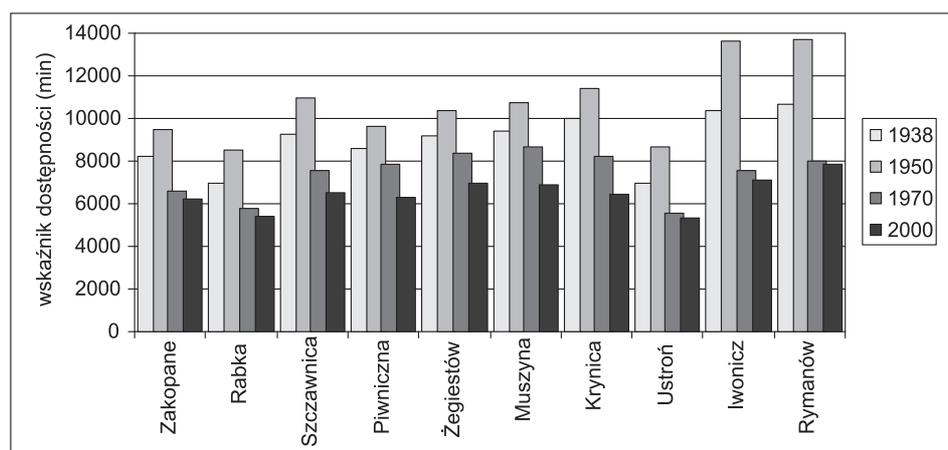


Fig. 3. Index of accessibility from selected cities during 1938-2000

Source: own research

Two interesting peculiarities emerged:

- a unique condition of Poznań after WW2, where accessibility actually improved; it can be explained by the shift in national borders shortening the distances,
- a great increase in the Warsaw index as a result of opening the fast, high-capacity trunk railway line (CMK – central trunk railway).

The average travel speed can be derived from the accessibility index and the physical distance between the places (Tab. 3 and 4). Figure 6 depicts the evolution of these values for Warsaw and Cracow. It clearly shows:

Tab. 4. Index of accessibility to selected cities during 1938-2000

City	Combined distance (km)	1938	1950	1970	2000
Tarnów	1080	2503	2864	2175	1656
Kraków	1185	2586	3108	1938	1891
Bielsko-Biała	1514	3428	4344	2984	2717
Rzeszów	1546	2977	4983	2761	2732
Katowice	1783	3691	4178	2992	2945
Kielce	1967	4693	5305	4213	3041
Lublin	2929	6858	8763	5807	4816
Łódź	3224	6483	7524	5084	4936
Warszawa	3641	6475	7356	5400	3989
Poznań	4820	8138	8064	6490	6194

Source: own research

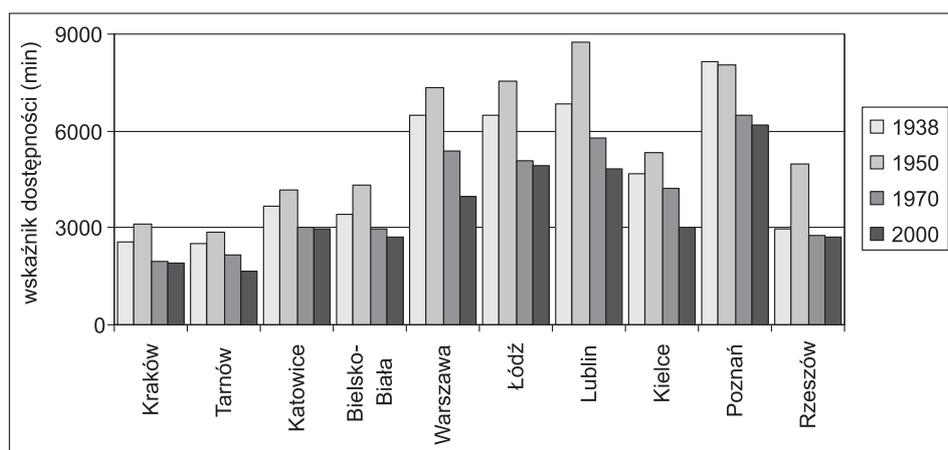


Fig. 4. Index of accessibility to selected cities during 1938-2000

Source: own research

- a generally improved travel speed over 1938-2000;
- faster connection of Warsaw compared to Cracow during both tested periods, with the gap increased in 2000 (owing to the trunk line);
- the same average travelling speed ranking of spas in both time sections in Cracow and Warsaw, also confirmed by the similar charts (Fig. 5).

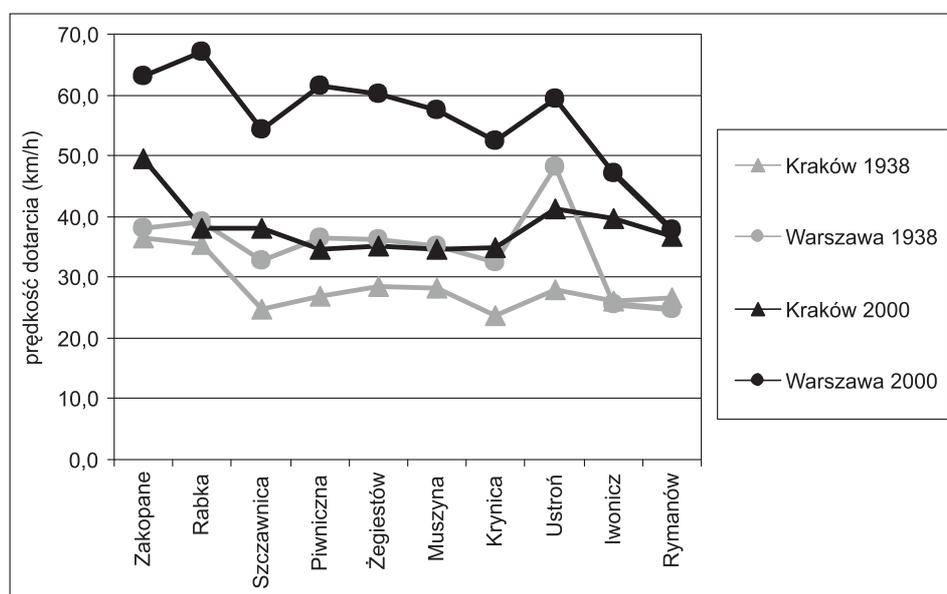


Fig. 5. Evolution of the average travelling speed from Warsaw and Cracow to spas during 1938 and 2000

Source: own research

Conclusions

The three best accessible spa resorts in the Polish Carpathian Mountains (Rabka, Ustroń, Krynica) have numerous services with a relatively short travel time. The non-spa resort of Zakopane, however, is by far the best accessible town of all resorts reviewed. The two smallest resorts of Wysowa and Wapienne have the lowest accessibility. There seems to be a clear connection between the size and importance of a spa resort on the one hand and its accessibility on the other. This relationship works both ways, as good accessibility contributes to the spa status, while the size of the spa has an impact on the number/starting point of transport connections, thus contributing to the improved accessibility. The current status of the spas owes much to their rail connection at the turn of the 19/20th century. The spas, which at that time failed to gain access to the railway, are now among the smallest and least accessible.

The history of the Carpathian spa accessibility shows a significant improvement after WW2, and especially during 1960s and 70s. However, the hierarchy of accessibility has not materially changed since 1938, with the exception of the improved accessibility from Warsaw.

Accessibility is an important contributor to the overall competitiveness that determines future development potential of each spa. It seems unlikely that the more than 100 years old structure and hierarchy of the Carpathian spa resort accessibility

is going to change much in the near future nor that its significance should diminish. A further improvement of Zakopane's position as the best accessible tourist resort in the Carpathian Mts. can only be expected, which would only be helped by the planned improvement to the Cracow–Zakopane motorway and the possible construction of a Podłęże–Tymbark branch railway.

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Przemiany dostępności komunikacyjnej uzdrawisk karpackich w latach 1938-2000

Streszczenie

Przedmiotem badań prezentowanych w niniejszym artykule jest dostępność komunikacyjna uzdrawisk karpackich. Autorzy niniejszego opracowania przychyłają się do definicji sformułowanej przez J. Black'a i M. Conroy'a (1977), którzy definiują dostępność jako łatwość osiągnięcia w przestrzeni określonej funkcji z badanego miejsca przy pomocy określonego środka transportu.

Badaniami objęto uzdrawiska statutowe, położone na obszarze Karpat w obecnych granicach Polski oraz Zakopane – jako największy ośrodek turystyczny w Karpatach.

Podstawowym celem niniejszego opracowania było określenie dostępności uzdrawisk karpackich i jej przemian w latach 1938-2000. Zrealizowano także cel metodyczny, polegający na opracowaniu i zastosowaniu indeksu dostępności czasowej. Chcąc w miarę obiektywny sposób porównać dostępność komunikacyjną uzdrawisk karpackich, autorzy artykułu posłużyli się jednym ze wskaźników dostępności czasowej – najkrótszym czasem dojazdu. Badano czasy dojazdu pomiędzy uzdrawiskami a 10 wybranymi miastami Polski.

Istotnym czynnikiem kształtującym dostępność komunikacyjną uzdrawisk jest ich położenie względem sieci komunikacyjnej kraju. W przypadku Karpat, które same położone są peryferyjnie, oznacza to lokalizację uzdrawisk z dala od głównych ośrodków i aglomeracji miejskich.

Dostępność komunikacyjna jest ważnym elementem konkurencyjności uzdrowisk, warunkującej ich rozwój i funkcjonowanie i nie wydaje się, aby ukształtowana w ciągu ostatnich stu lat struktura i hierarchia dostępności uzdrowisk karpackich mogła ulec w najbliższym czasie zasadniczym przemianom ani żeby jej znaczenie osłabło.

Wśród ogółu uzdrowisk karpackich można wyróżnić te bardzo dobrze dostępne (Rabka, Ustroń, Krynica) i te cechujące się najgorszą dostępnością (Wysowa i Wapienne). Jednakże najlepiej dostępną miejscowością spośród badanych okazuje się być Zakopane. Obserwuje się związek pomiędzy wielkością uzdrowisk, ich znaczeniem a dostępnością komunikacyjną do nich. Relacje te mają charakter sprzężenia zwrotnego, gdzie dobra dostępność pozytywnie oddziałuje na znaczenie uzdrowiska, zaś wielkość uzdrowiska wpływając na liczbę i wielość kierunków połączeń komunikacyjnych przyczynia się do poprawy dostępności. Na dzisiejszą pozycję uzdrowisk ogromny wpływ wywarło uzyskanie połączenia kolejowego na przełomie XIX i XX w. Uzdrowiska, które wówczas nie uzyskały dogodnego połączenia kolejowego, to te, które dzisiaj należą do najmniejszych i zarazem najgorzej dostępnych.

Zmiany dostępności uzdrowisk karpackich, jak prześlędzono w niniejszym opracowaniu, cechują się wyraźną poprawą po II wojnie światowej, szczególnie w latach 60. i 70. Jednocześnie obserwowana w 1938 r. hierarchia dostępności nie uległa zasadniczym zmianom, z wyjątkiem szybszej poprawy dostępności z Warszawy.

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Translated by LETTERMAN Ltd Translators and Interpreters