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Doctoral Thesis

Abstract

THE IMPACT OF DEVELOPMENTS IN TRANSPORT INFRASTRUCTURE ON TOURISM IN TRANSYLVANIA

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Key words: transport infrastructure, Transylvania, accessibility, tourist attractiveness, impact on tourism, area of influence, tourist roads.

The doctoral thesis "The Impact of Developments in Transport Infrastructure on Tourism in Transylvania" is part of the vast field of research in Human Geography, namely that of Geography of Tourism and that of Transport Geography through the aspects it analyses, more exactly issues of transportation infrastructure, of tourist potential, but moreover of the relationship transport-tourism in such a vast area as the one of Transylvania.

The purpose of this study is dual: first of all, it aims at analyzing and diagnosing the current degree of development of transport and tourism infrastructure in Transylvania. Secondly, it tries to foreshadow the impact on tourism development, based on the transportation infrastructure's directions of development in Romania.

The issues addressed in this paper are based on the transport-tourism relationship, which is characterized by a direction of interdependence between the two components, so that tourism can not be practised without transport - be it of long or short time or distance, while transport has mainly developed thanks to the tourisic supply and demand. The result of this relationship is the geographic accessibility of a destination, which is a key factor in choosing a tourist offer, or we can say that it is a key element within the tourist attractiveness of a destination.

Furthermore, it must me mentioned that the analysis of these elements has been made after reading the literature in this domain, by proposing and using new ways of quantifying the tourist attractiveness, with a much greater emphasis on the variable of transport (accessibility) indispensable to the tourist phenomenon. Therefore, the results portray the current state of development of tourism and of transport infrastructure in Transylvania. The quantification of the accessibility and the tourist attractiveness after applying the development scenarios of transportation infrastructure, are designed to analyze the central hypothesis of the study concerning the impact the development of transportation infrastructure shall have on tourism in Transylvania.

1. THE IMPORTANCE OF RESEARCH ON THE RELATION TRANSPORT – TOURISM

1.1 Motivation for the research

Transport is one of the world's most innovative economic sectors, an integral part of a tourist system and of a sector that is facing increasing economic pressures, starting from the major suppliers of fuel and continuing with the environmentalists and the authorities, which are striving hard to reduce global carbon emissions. The manner in which the global transport system responds to these challenges shall determine the future capacity of the transport system at a global scale, to maintain tourism at its current levels.

Although access to global transport networks is a prerequisite for the development of some destinations, transport systems analysis and the accessibility of some destinations have been largely ignored in tourist literature. This thesis has as a main purpose the identification of the most important aspects connected to accessibility to transportation infrastructure, which is on the basis of the functioning and development of a tourist destination.

This study is of great necessity to cover the lack of regional studies concerning the transport-tourism relation, as well as to establish a future useful study on the development of transportation infrastructure and tourist planning.

The delimitation of the area of study to the historic province of "Transylvania" comes as a continuation to the unique studies in the field, through the geographical, historic and ethno-cultural personality, which is of great importance in tourism.

Hypotheses

Taking into account the fact that transport is a key element in developing a destination, the focus on the accessibility factor has become one of great importance. This is one of the basic criteria in choosing a travel destination.

The hypothesis from which we have started is that accessibility has values equal to the natural and man-made tourist potential and the specific tourist infrastructure, which are in their turn key factors for the determination of an area's tourist attractiveness.

Infrastructure projects directly influence the degree of accessibility and, in its turn, the tourist attractiveness. Therefore, the development of the infrastructure shall have an impact on tourism in the area under observation. The analysis and its foreshadowing on the tourist areas is another hypothesis at the basis of starting this research.

1.2 General considerations on transport and tourism

The movement of persons, goods and information has always been the fundamental component of human society. Contemporary economic processes have been accompanied by a significant increase in mobility and higher levels of accessibility.

Transport systems and networks are usually represented through the usage of networks as an analogy to their structure and the existing flows. Transport networks, as many networks are generally included as a set of locations and a set of links which are connections between these locations.

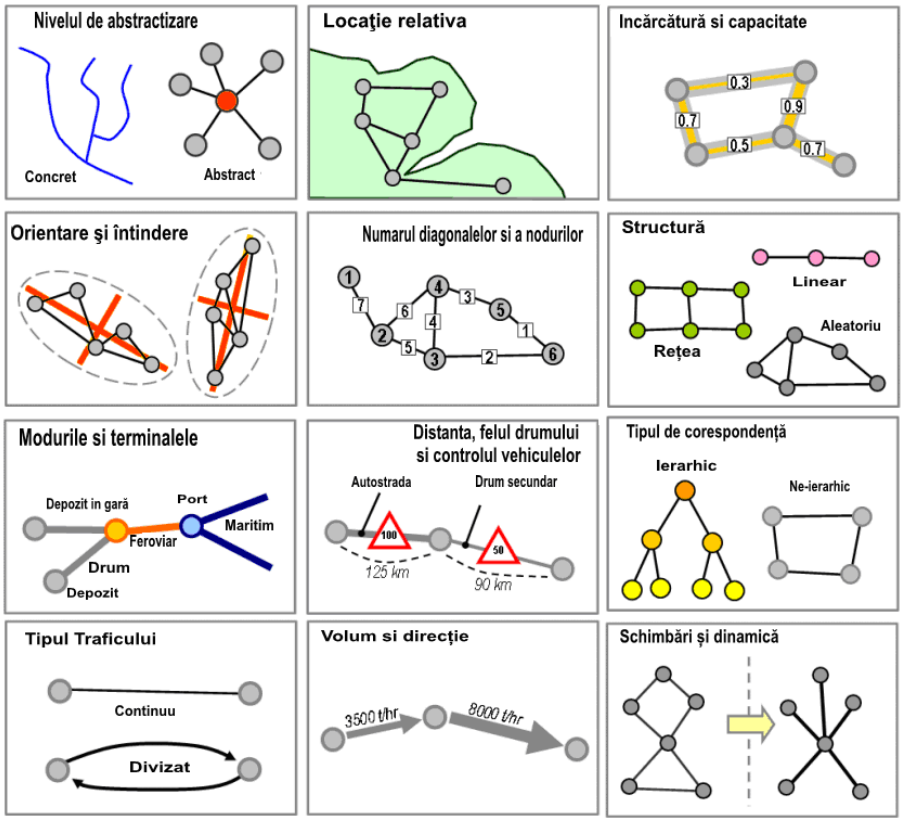


Fig. 5 – Types of transport networks and terminals.

Source: adapted from Rodrigue (2003)

Tourism

Tourism means travel for leisure, recreation or business. World Tourism Organization defines Tourists as people traveling to stay in places outside their usual environment for more that twenty-four hours and no more than one year for leisure, business and other purposes; all these are not related to remunerated activities in the place visited.

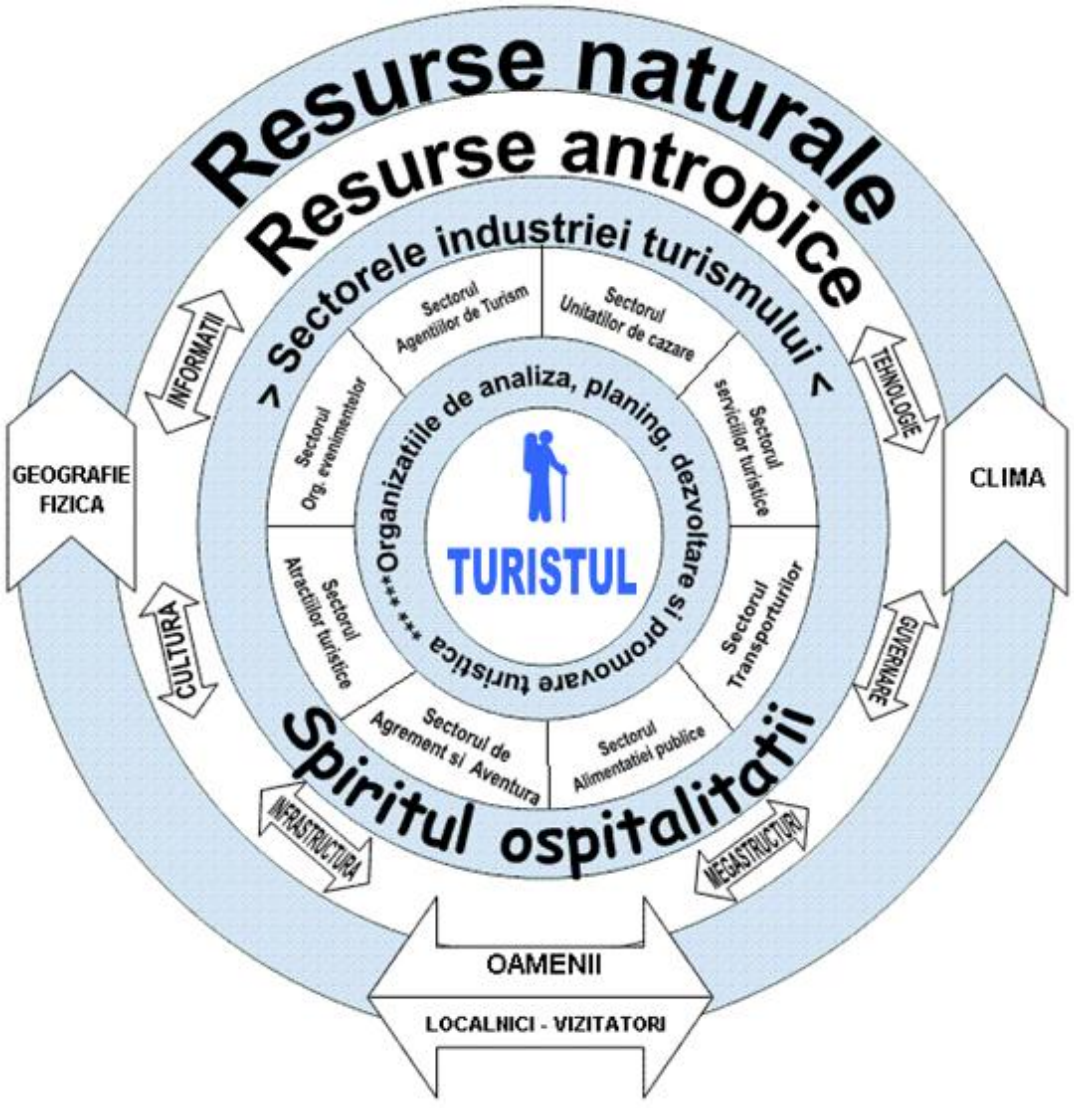


Figure 7 – The structure of the tourist phenomenon

The transport – tourism relation

It must be mentioned that there are numerous factors that have led to a complex infrastructure development. Among them, one can notice the structure

and transport capacity of the system, the destination's influences, its development of a number of ways, including: the ability to connect destinations with generating regions, the number of visitors that can be transported to destination and at what cost, the system capacity to transport tourists to the destination's attractions situated nearby within the shortest time possible and the ability to carry freight and fuel.

The transport-tourism relation is exemplified using the word "travel". In its research, various patterns of analysis and travel forecast have been issued. Having studied these theories, one can mention the most important four stages, namely: *travel generators*, *destination choice*, *the way of choice* and *route distribution*.

- The relation from a historical perspective
- The relation in terms of demand and supply

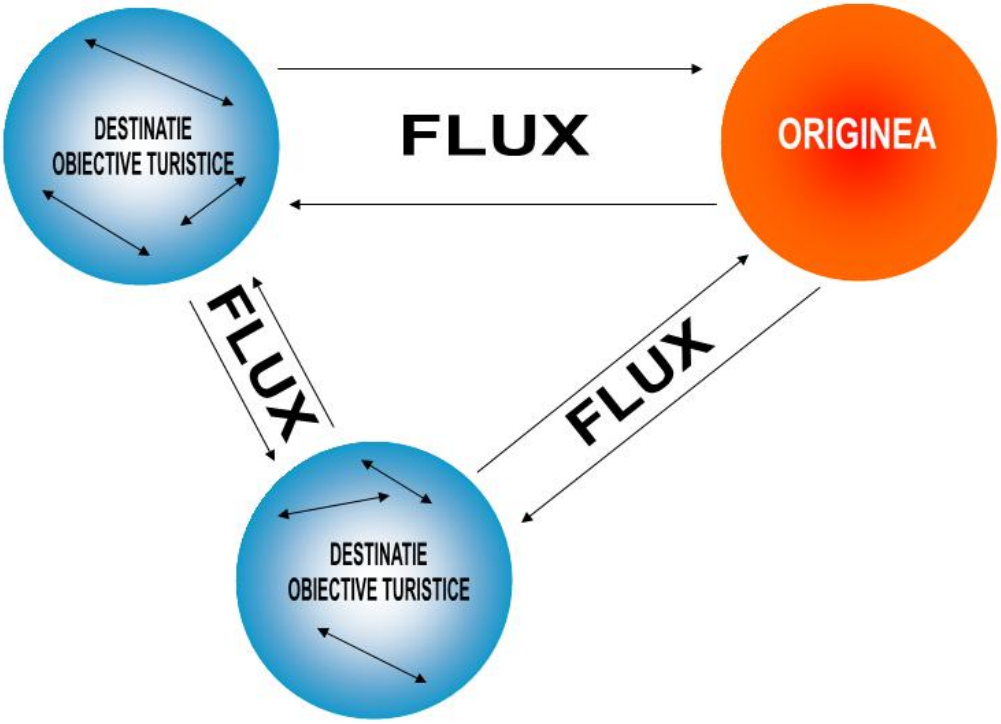


Figure 13: The transport-tourism relation
Source: Adapted from Duval T (2007)

Destination accessibility

Accessibility is a key word for a destination, since it is a direct expression of mobility, be it in terms of human beings, freight or information. Efficient transport systems offer high levels of accessibility, whereas the less developed ones have lower accessibility levels.

The basic measure of accessibility involves network connectivity, should the network be represented as a connection matrix that shows each node's connectivity with its adjacent nodes.

Based on the determination of the disintegration distance of tourist flows, the optimized space model as compared to time has been developed. It has been proved that there are many one-day trips on shorter distances, due to the high degree of accessibility; at the opposite pole are situated long-distance journeys that also require a greater time span.

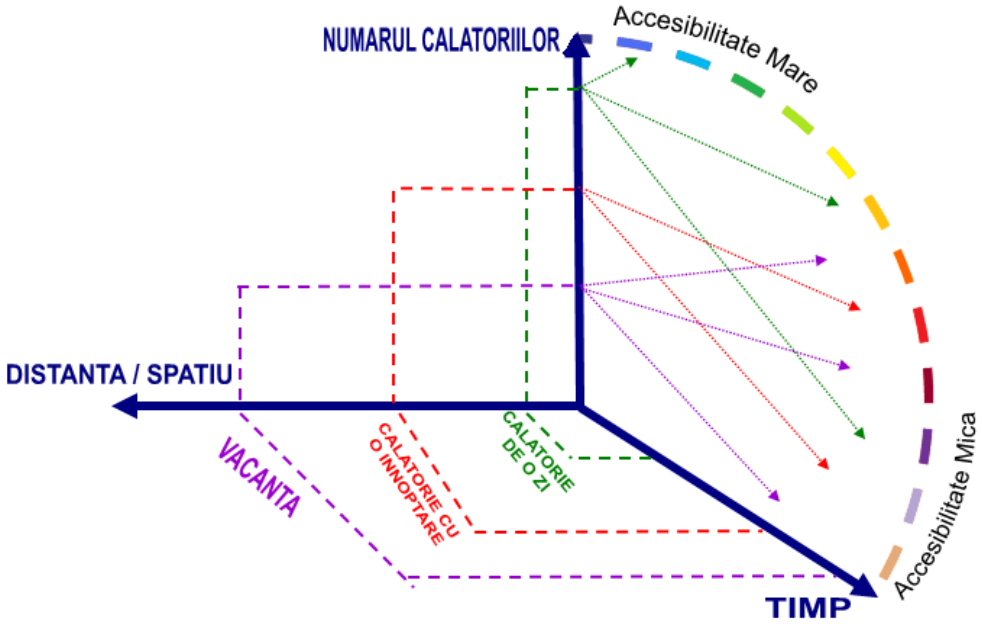


Figure 17 – The space and time optimization model in the context of accessibility. *Source: adapted from Duval T (2007)*

2. The evolution of transport and tourism in Transylvania

2.1 The evolution of transport in Transylvania

All civilizations, beginning with the oldest ones, have depended on roads and on factors such as their number and condition. Therefore, they had to be aware of their utmost importance, to make them prior issues and to invest resources in them.

Roads in the Roman times

The first roads were some natural ways of trodden ground. The idea of their planning and, ultimately, of turning them into a primary concern, by creating and maintaining road systems, seems to have been taken from the Etruscans, like so many other of their future civilization attibutes.

Types of roads

Ancient documents reveal many types of **viae**; the classification that follows aims at briefly presented the most known types of them.

- Imperial roads (sometimes called ***viae consulares***), linking the major cities of the empire. They were called ***viae munitae*** when paved and provided with various faclities

- Roads of regional interest (***viae semitae, viae vicinales, viae agrariae, viae terranae***)
- Roads within the cities (***viae urbicae***), which had a slightly different construction
- Rural roads, mostly unpaved, with minimal facilities (***viae agrariae, rusticae, paganicae etc.***)

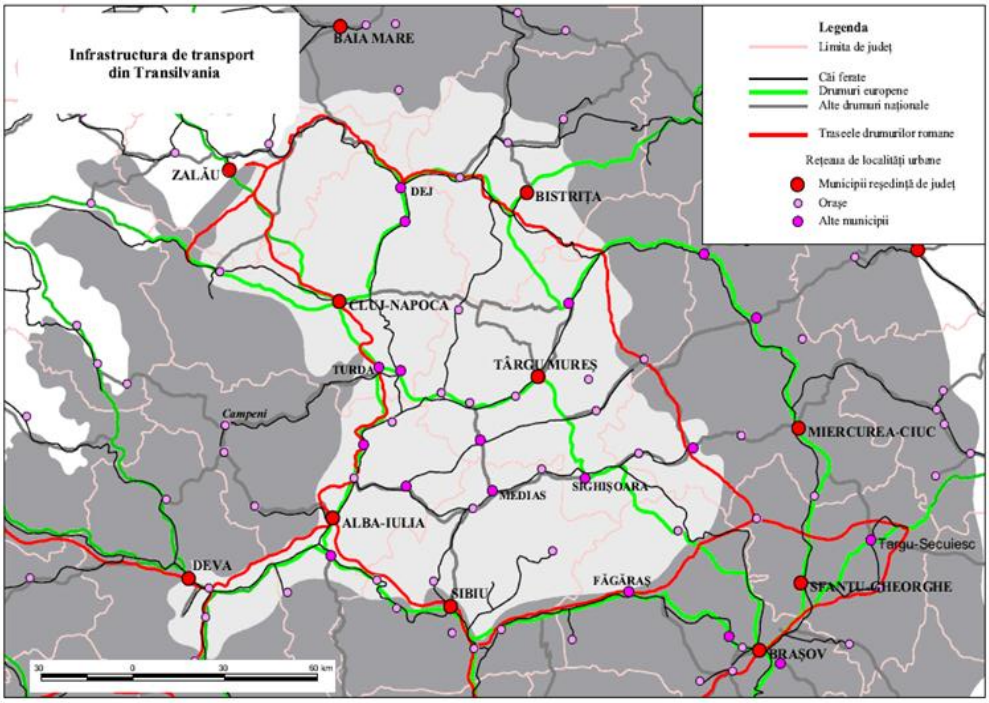


Figure 23 – Roman routes and contemporary roads in Transylvania

The evolution of rail transport

Rail transport is considered the technical revolution within human history through the movement of goods and people through economic exchanges which led to changes in cultural, social, political and economic aspects of some areas which were previously isolated and which thus facilitated exchanges between countries. At the basis of the development of the railway lines there stood the XVII century wooden lines functioning in the coal mines in England, France and Germany. Here the wagons were loaded using either human or animal traction. In 1738 in Whitehaven there was introduced the iron railway, in 1808 the pig iron one and in 1820 the steel one, in use today as well. Transylvania is located on the territory of The Austro-Hungarian Empire and it was thus favoured by their development. Soon, other railway lines were put into function: Timişoara-Jimbolia - border which linked to Seghedin (Szeged) in November 15, 1857, Timişoara line - Stamora Moraviţa to Jasenevo (94.1 km) in July 20, 1858, date after which one could travel by train from Baziaş to Vienna. The appearance of the extension Oraviţa - Anina, Borş - Oradea as well as Curtici - Arad lead to a stagnation in the construction of railway lines of about 10 years, period after which it was built: Arad - Alba Iulia (December 22, 1868), Vălcani - Periam (October 26, 1870), Simeria - Petroşani (August 28, 1870), Oradea - Cluj Napoca (September 8, 1870). Their development is concomitant with that of industry and agriculture, which has led to connections from the Western Plain and

Transylvania to Mureş Valley and Crişul Repede, as well as to the connections with Muntenia on the routes Oradea - Cluj Napoca - Mediaş - Braşov (in 1873) and Arad - Sibiu - Turnu Roşu (in 1892)

The evolution of air transport

The evolution of air transport in Transylvania is closely related to that in Europe and Romania, which started in the first decades of the twentieth century.

Passenger traffic would appear with the establishment of the "French-Romanian Company for Air Navigation" in 1920 by Nicolae Titulescu on the routes Paris - Bucharest – Istanbul. Likewise, in 1924 after the French company bought all the actions, the first internal passenger flights were introduced (Bucharest - Galaţi). Among the flight lines of that period there are: Bucharest - Turnu Severin - Timişoara, Bucharest - Sibiu - Arad, Cluj - Galaţi - Constanţa, Bucharest – Cluj - Oradea - Budapest etc. In 1936 (SARTA) launches the first international line Bucharest - Cluj - Prague. SARTA was abolished because it had foreign capital and its place was taken by LARES (Romanian Air Lines under the Exploitation of the State) who had quickly developed both the internal and the external lines. However, according to statistics, the first passenger traffic was small; in 1938 it only reached 12,000 passengers.

Once the establishment of the Romanian Air Transport Company (TAROM) in 1954, there is also a development in the domestic scheduled routes and a development of the airports in Transylvania Cluj, Sibiu, Târgu Mureş, Baia Mare, Satu Mare, Oradea, Arad, Timişoara and Caransebeş, that had international links through Bucharest with TAROM flights or its partners: Aeroflot (belonging to ex-USSR), Malev (Hungary), CSA (belonging to the ex-Czechoslovakia), BALKAN (Bulgaria), LOT (Poland), Air France (France), INTERFLUG (belonging to ex-East Germany), Lufthansa (German Federal Republic), Alitalia (Italy), Swissair (Switzerland), Panam (USA), SAS (Norway, Sweden and Denmark)

On September 11, 1933, Cluj Airport became an International Airport with a first flight of CSA Czech Airline on the route Prague-Cluj-Bucharest. The airplanes in use had eight seats, model Avia-Fokkers. In the subsequent years new routes were opened, such as that belonging to Aeroflot on the route Moscow-Cluj-Prague, from 15 November 1935 and operated with McDonnell Douglas Aircraft DC-2 model with two engines and 14 seats. There were also opened domestic flights, on the relations Cluj-Satu-Mare, Cernăuţi-Cluj-Arad with Lockheed L-10 Electra aircrafts (10 seats) and de Havilland Dragon Rapid (5 seats). Sibiu Airport was inaugurated in 1943. The flight activity is conducted on an area of 174 ha, on grass field located west to the border of Turnişor village. The planes used for flight belonged to the company LARES, namely Looked type, on the following routes:

Bucharest-Sibiu-Arad (round flight) and Bucharest-Sibiu-Oradea and (round flight)

Starting from 1944 there were introduced domestic civil flights linking Sibiu to Bucharest, Braşov, Deva, Oradea, Târgu-Mureş.

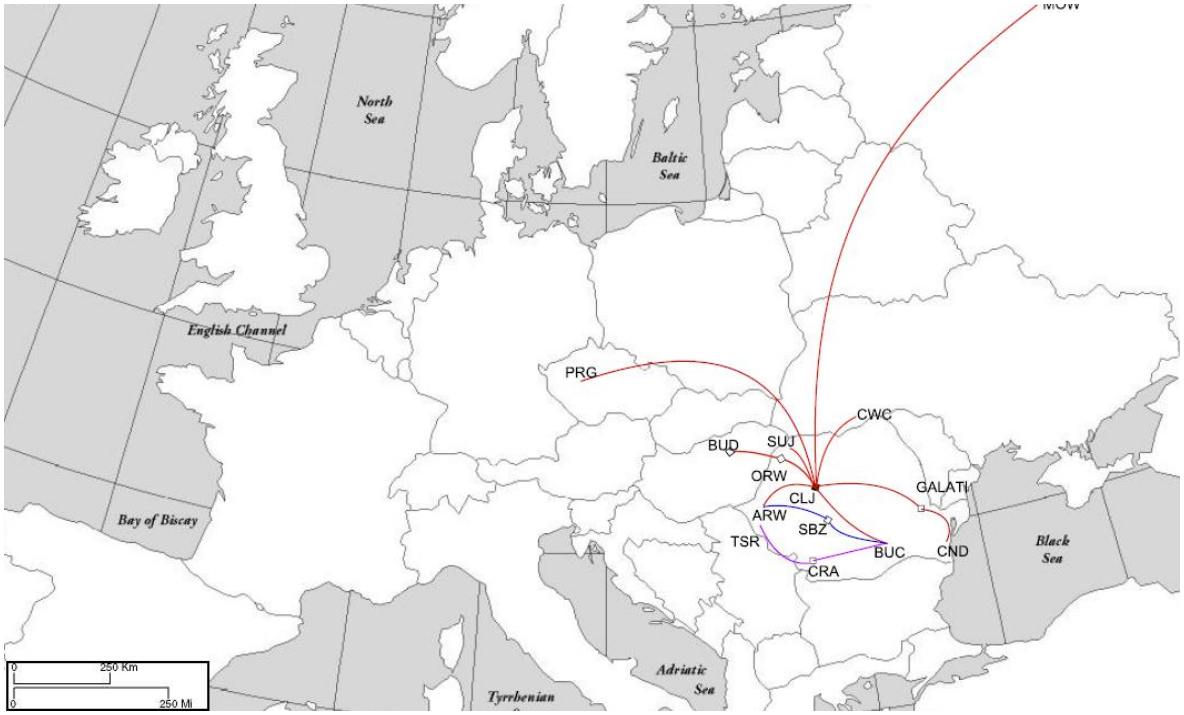


Figure 25 – Air-Lines for the airports in Transylvania in the Interwar period
Source : Adapted after Pop P.Gr. (1984)

1.3 The evolution of tourism in Transylvania

Ancient times

The oldest way to expoit natural resources for for recreational bathing and for leisure was the one of the thermo mineral water, an activity known and practiced even in the Roman Dacia, 106-271 AD. They have built thermae, often luxurious as compared to some modern spa facilities. Examples of such ingenious constructions are *Ad Aqua Herculi Sacras ad Mediam* -Băile Herculane, *Germisara* (Thermae Dodonae) -Geoagiu Băi, *Aque*-Călan etc.

The pseudo-tourist period of the Middle Ages

În lume acestă perioadă se suprapune Evului Mediu timpuriu şi mijlociu când perioada de glorie a turismului antic apune datorită fanatismului religios sau a deselor razboaie între diferitele formaţiuni statale.

Worldwide, this period overlaps the Early Middle Ages and the Middle Ages, when the glorious age of the ancient tourism set because of religious fanatism and of the frequent wars existent among various regions.

The period of the expanded tourism

This starts at the end of the Middle Ages, when the Renaissance and the Great Geographical Discoveries extend the spiritual horizon, by augmenting the frequency of travels and of cultural exchange.

The analysis of hydor- and thermal mineral water reveals several springs, such as Bazna, Moneasa, 1 Mai, Geoagiu-Băi, Borsec and Covasna. They get integrated into the Habsburg sanatoria or some of them complexly turn into resorts.

At the bottom of this whole development lies the beginning of the Industrial Revolution.

The growing interest towards the natural beauties has led to the establishment of several mountaineering associations that have encouraged the development of mountain tourism in areas such as Fãgãraşi, Cândrel, Şureanu, Bârsei, where the first refuges and chalets were built. In the area of Sibiu at Pãltiniş and in the Prahova-Bucegi region were developed the first mountain resorts. This period is characterized by a strong unitary development of tourism infrastructure in the Carpathian region, since it has also led to the development of some new resorts, such as Covasna, Malnaș, Zizin, Jigodin, Corund, Valea Vinului, Ocna Sibiului or Ocna Mureșului, along the ones already established.

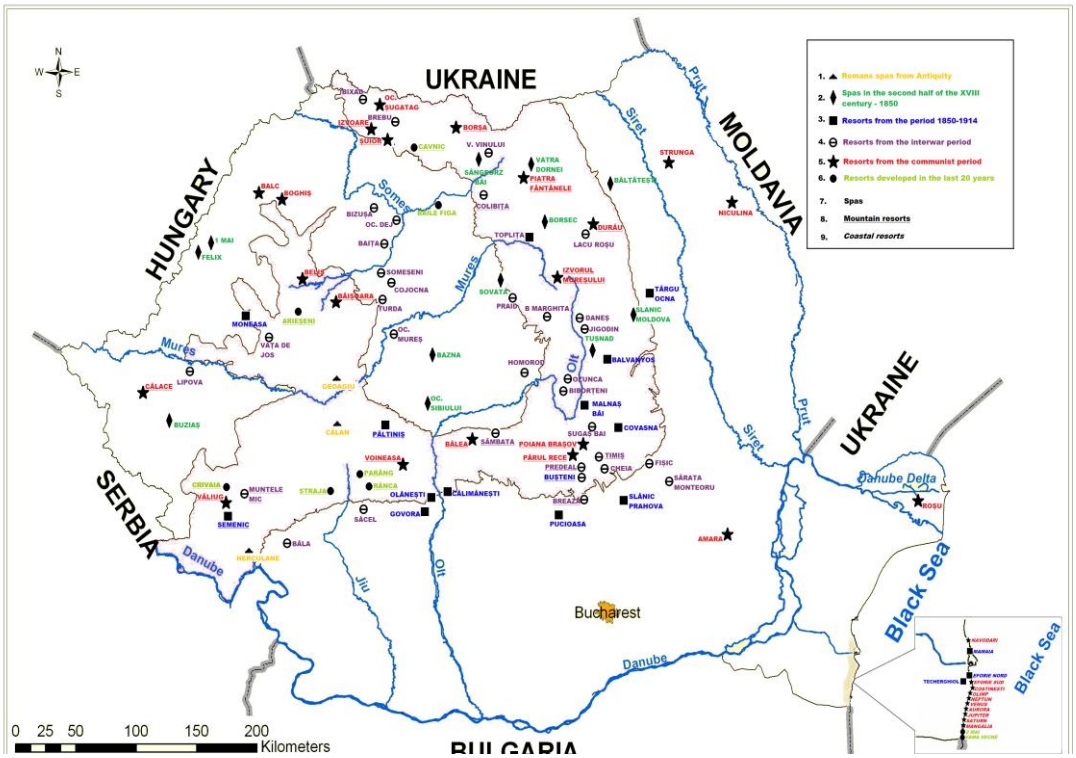


Figure 28 – The evolution of building bathing resorts in Romania
Source : N. Ciangă & M. Oprea (2010)

3. The specific tourism potential and infrastructure. Major factors of a destination's tourist attractiveness

3.1. Transylvania's natural tourism potential

This represents an attractiveness factor that is essential to link the main tourist activities in the mountains of Transylavia and beyond. This in turn can be classified according to the main components of the geographical space, these having a different contribution to the overall attractiveness of the natural potential, depending on the quantity and quality that characterize them.

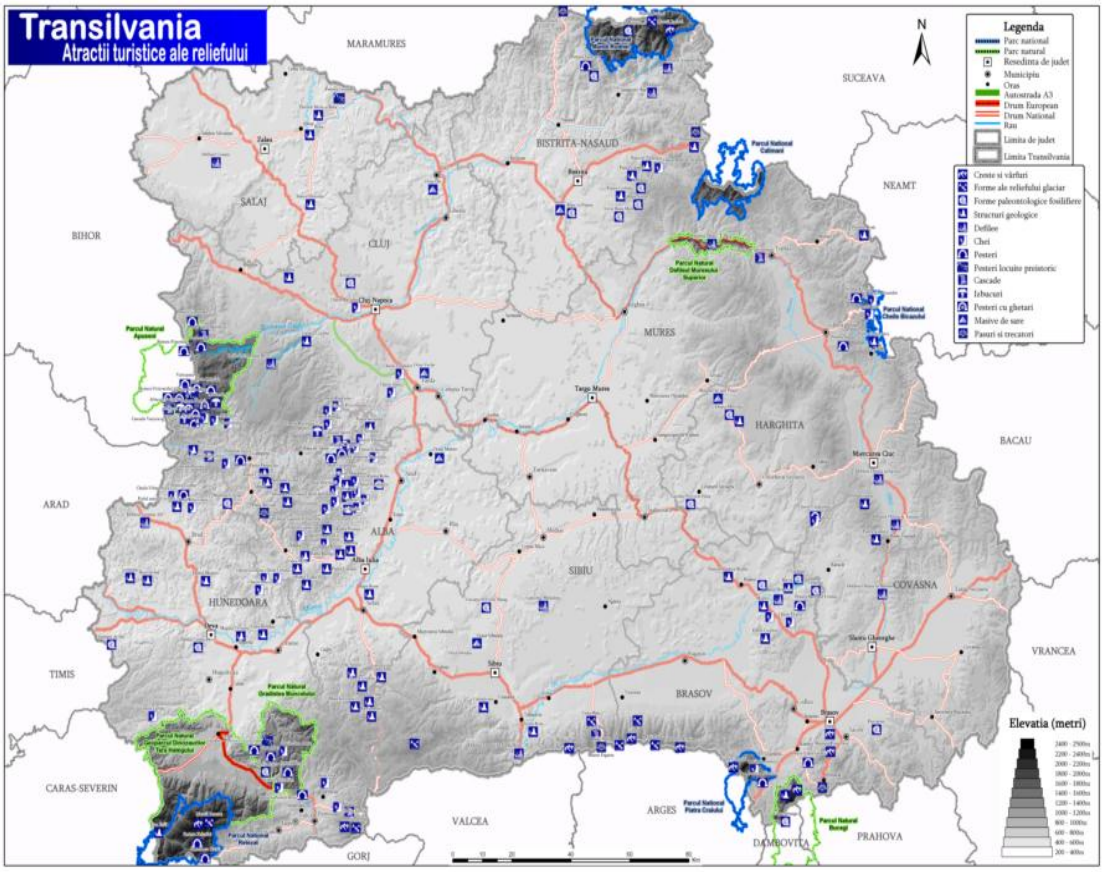


Figure 27. Transylvania's natural tourism potential

3.2. Transylvania's anthropic tourism potential

Însumează toate monumentele şi situ-urile arheologice; ansamblurile arhitectonice, urbanistice şi memorialiste; monumentele de artă plastică şi comemorativă şi alte locuri istorice , parcuri şi gradini. La acestă listă se poate adăuga muzeele şi bibleotecile care au în componeţa lor obiecte de o valoare nestemată.

Gathers all monuments and archaeological sites; urban, architectural and commemorative ensembles, fine art monuments, parks and gardens. To these, one can add the museums and libraries that possess rare valueable objects.

Transylvania's most representative tourist objectives are its fortified churches, especially characteristic of Southern Transylvania; they were built by the German communities and functioned so as to defend the villages and the great bourgs in case of invasion. In addition to these, they also had an ecumenical purpose.

Cultural aspects in the rural world are identified through the way in which human settlements and farm organization have evolved, all having specific features that differ from one ethnographic area to the other.

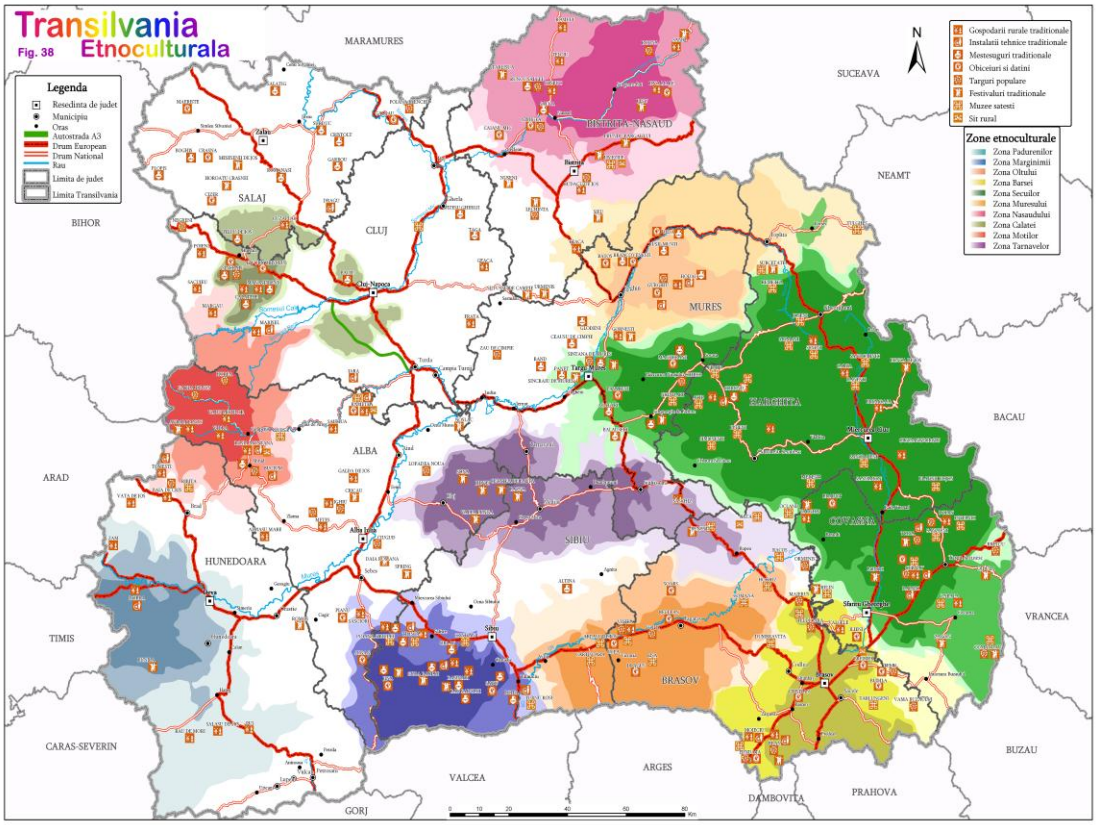


Figure 38. Transylvania ethno-cultural map

3.3. Specific tourist infrastructure in Transylavia

This includes all accommodation, leisure cleaning, catering or of special tourist transport, all these aiming at successfully meeting the tourist demand. They all generally play an important role in tourism, as they polarize the tourist flows of variable intensity that lead to the formation of a “secondary tourism offer” (O. Snak 1976), which is often the next tourist destination.

Accommodation units in Transylvania

The development of tourism was influenced by the particular historical and socio-economic conditions that have an important role in building tourist facilities over time.

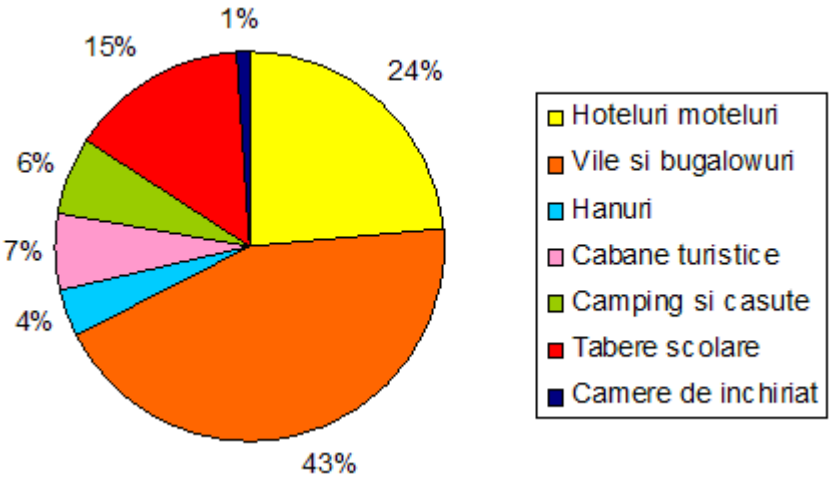


Figure 41. Transylvania –accommodation units in %

Table 5- The evolution of accommodation units in Transylvania between 1980 and 2011

Tip Unitati / Ani	1980	1989	diferenta 1980/1989	2002	diferenta 1989/2002	2011	diferenta 2002/2011
Hoteluri Moteluri	707	828	↗17%	974	↗17,6%	1592	↗63%
Hostel si Hotel pt tineret	0	0	0	12	↗120%	220	↗ 1733%
Vile si bugalowuri	1531	1525	↘ 0,2%	928	↘39,3 %	632	↘31,9%
Pensiuni turistice	0	0	0	492	↗	2950	↗ 499%
Pensiuni agroturistice	0	0	0	461	↗	235	↘ 52%
Popasuri turistice	0	0	0	11	↗	61	↗ 454%
Hanuri	105	134	↗27,6%	16	↘ 88%	0	↘
Cabane turistice	200	229	↗14,5%	140	↘ 39%	178	↗27,1%
Camping si casute	187	219	↗17,2%	129	↘ 41%	75	↘ 41,8%
Tabere scolare	431	514	↗19,2%	168	↘ 68%	0	↘
Camere de inchiriat	29	41	↗41%	0	↘	198	↗
Sate de vacanta	0	0	0	1	↗	14	↗ 1300%
Spatii de cazare pe nave	0	0	0	6	↗	26	↗ 333%
Total	3190	3490	↗ 9,4%	3338	↘ 4,35%	6181	↗ 85,1%

Tip Unitati / Ani	1980	1989	diferenta 1980/1989	2002	diferenta 1989/2002	2011	diferenta 2002/2011
Hoteluri Moteluri	146531	168895	↗ 15%	163095	↘0,50%	184606	↗ 13,1%
Hostel si Hotel pt tine	0	0	0	305	↗	11134	↗3550%
Vile si bugalowuri	47491	49009	↗ 3,2%	21253	↘56,6%	15681	↘26.20%
Pensiuni turistice	0	0	0	6974	↗	51829	↗ 643%
Pensiuni agroturistice	0	0	0	3623	↗	2530	↘ 30%
Popasuri turistice	0	0	0	785	↗	2668	↗ 239%
Hanuri	7208	8013	↗11,1%	422	↘94,7%	0	↘
Cabane turistice	12651	12325	↘ 2,5%	6176	↘49,9%	2530	↘ 59%
Camping si casute	53566	47121	↘ 12%	34440	↘26,9%	10883	↘ 68,4%
Tabere scolare	100971	111882	↗10,8%	34984	↘68,7%	0	↘
Camere de inchiriat	36014	21608	↘ 40%	0	↘	1817	↗
Sate de vacanta	0	0	0	36	↗	738	↗1950%
Spatii de cazare pe n	0	0	0	503	↗	449	↘ 10,7%
TOTAL	404432	418853	↗ 3,5%	272596	↘34,9%	284865	↗ 4,5%

Table 6 - Dynamics of the number of accommodation places in Transylvania between 1980-2011

Sources: Anuarul statistic 1993, 2002 and mdrt.ro

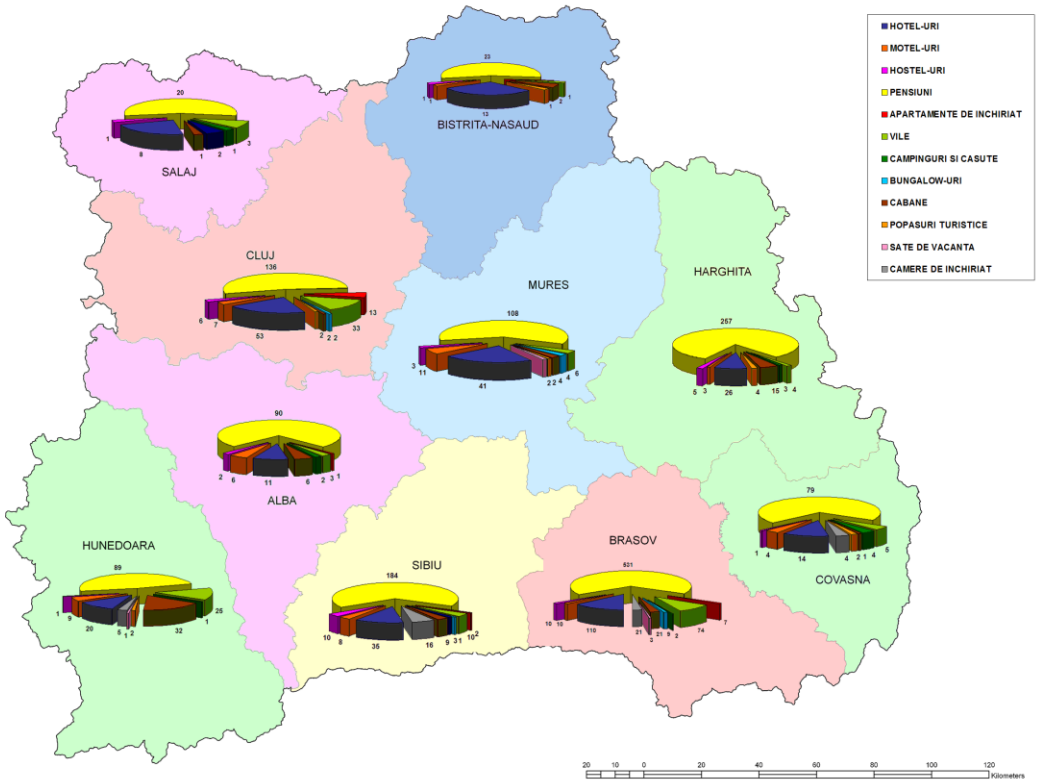


Figure 45- The structure of accommodation units on each county. *Source: mdrt.ro*

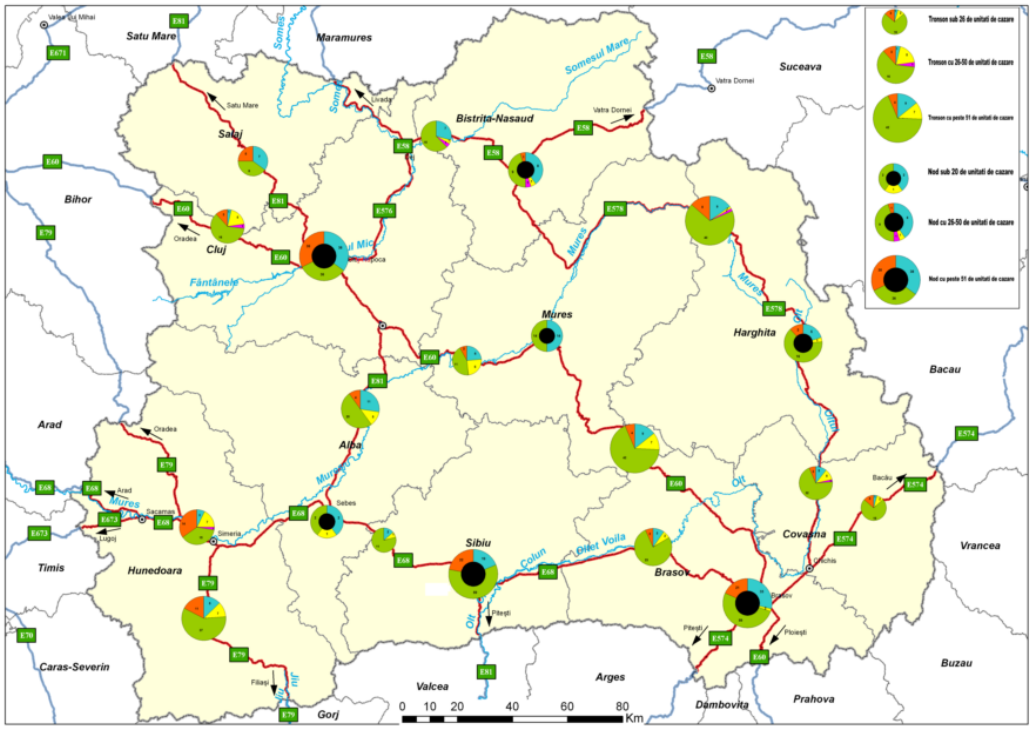


Figure 61 – Accomodation units near the main roads

Due to the complex geological structure of the Romanian territory, our country has large reserves of mineral belonging to all categories recognized by the World Health Organization (alkaline, alkaline-terrorism, sodium chlorine, iodine, sulphurous, arsenic, sparkling, radioactive minerals. This favoured the emergence of resort treatment and recovery facilities, especially in the Carpathian area.

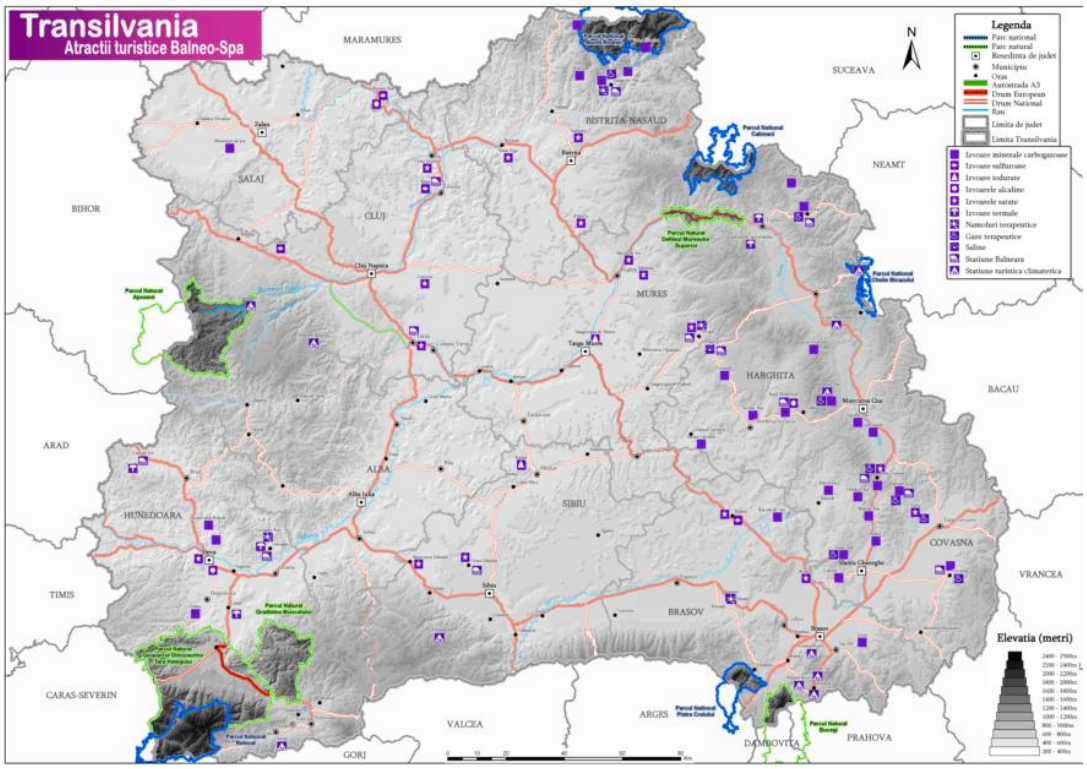


Figure 55 - Bathing, treatment and leisure resorts in Transylvania

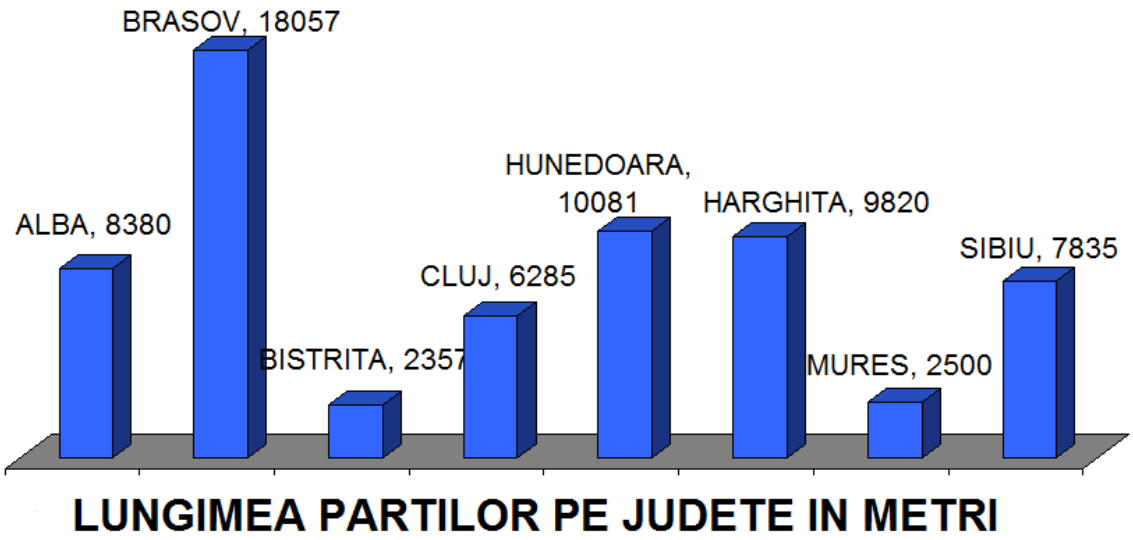


Figure 59 – The Length of ski paths for each county in meters

4. TRANSPORT- KEY ELEMENT IN DETERMINING THE ATTRACTIVENESS OF A TOURIST DESTINATION

The network is the essential constituent of the transport system. This is why it requires a detailed approach of its characteristics, in terms of network typology, as well as of the individualization of each type of network.

4.1 Transport infrastructure in Transylvania

4.1.1 Road transport

The road infrastructure in Transylvania is developed in terms of territory, reaching up to the most difficult areas. It is structured as follows: at the European level, there are European roads that overlapping the national roads' routes. The latter are the basis of the national road transport system. Out of them also stem secondary national roads, county and communal roads.

The average density of public roads in Transylvania is 33.81 km per 100 km2. At the county level, greatest densities have Hunedoara with 45km/ 100 km2, Alba with 42.8 km/ 100 km2 and Sãlaj with 40.9 km2. A slightly smaller density has Cluj with 39.5 km2. At the opposite pole, with rankings under the Transylvanian average, are situated the following counties: Mureş with 31.2 km2 and Braşov with 29.7 km2- data provided by the Regional Departments of Roads and Bridges in 2008, when the highway between Turda and Gilãu had yet to be finished.

Figure - Road network in Transylvania

4.1.2 Classification of road junctions and the annual average traffic

Classification of road junctions

Road junctions represent the meeting point of two or more roads. They are also crossroads of tourist flows. Due to the traffic and to the importance roads have at the national and at the European level, they have been classified and scored in ascending order. County roads have been given one point, the national ones-two points, the European ones- three points and the highways- four points.

Table 10 – The main road junctions in Transylvania

NR CRT	LOCALITATE	INTERSECTIE DE				TOTAL PUNCTAJ
		A3	DE	DN	DJ	
1	TURDA	1	2	1	3	**15**
2	BRAŞOV	0	3	1	4	**15**
3	CLUJ NAPOCA	0	3	0	4	**13**
4	DEJ	0	2	0	5	**11**
5	REGHIN	0	1	2	4	**11**
6	MIERCUREA CIUC	0	1	2	3	**10**
7	SEBEŞ	0	2	1	2	**10**
8	SIBIU	0	1	1	5	**10**

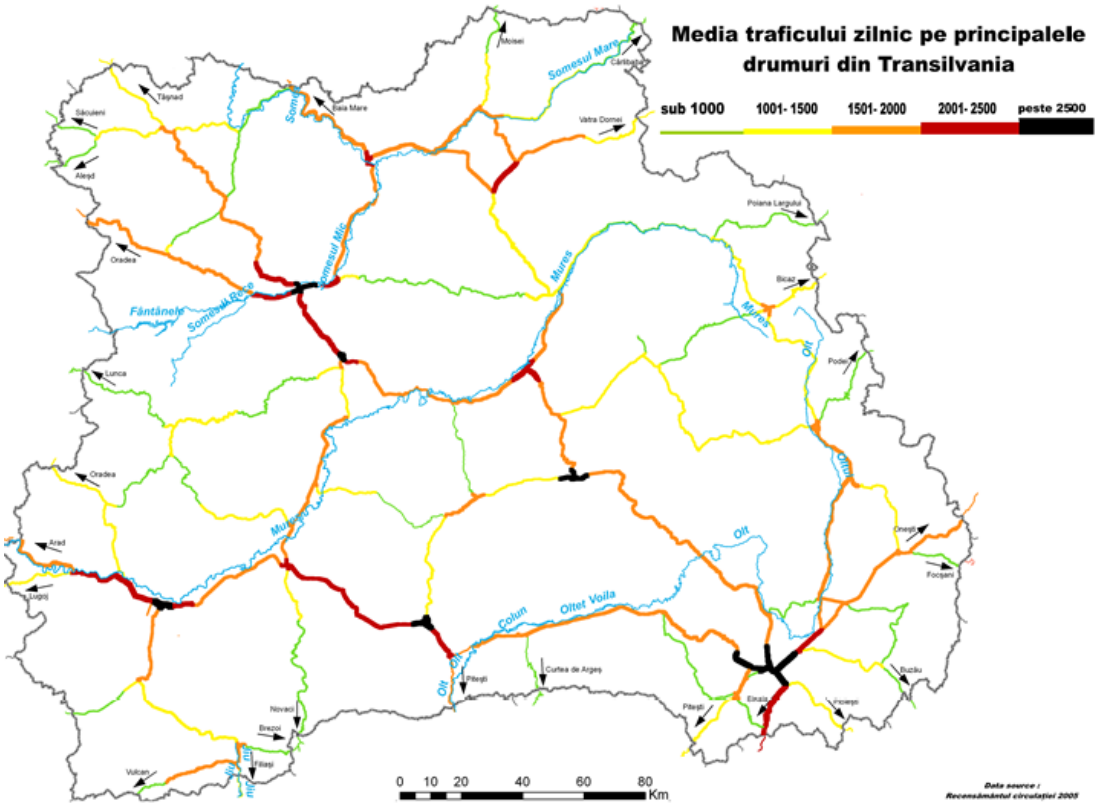


Figure 81 - Daily average traffic on the main Transylvanian roads. *Source: CESTRIN*

4.1.3 Rail transport

The train was one of the most popular means of transport during the communist period. There was a vast network of railways, which connected almost every city in Romania. Modernizing the infrastructure has been a work in progress by introducing new electrified lines and by increasing some of the lines with higher traffic.

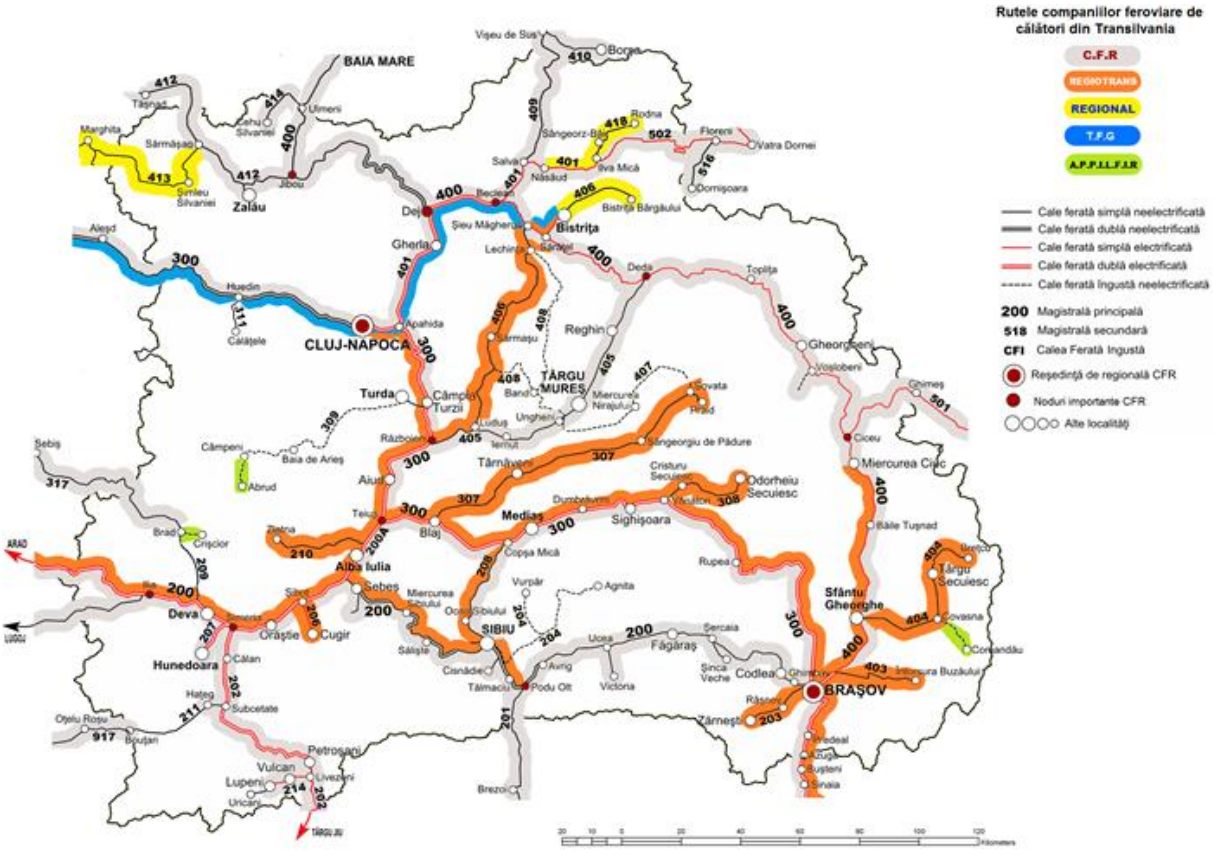


Figure 84 - Main routes rail operators in Transylvania

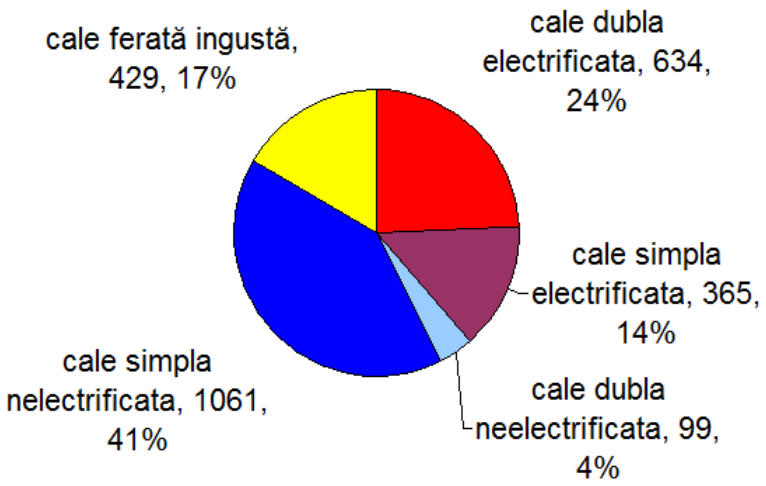


Figure 83 - Railway lines chart in Transylvania

4.1.4 Air transport

Air transport continues to be the fastest and the most reliable way of transportation, which allows the extension of socio-economic connections to many areas from all around the world. The most important gateways in Transylvania are based in Cluj-Napoca, Tirgu-Mures and Sibiu.

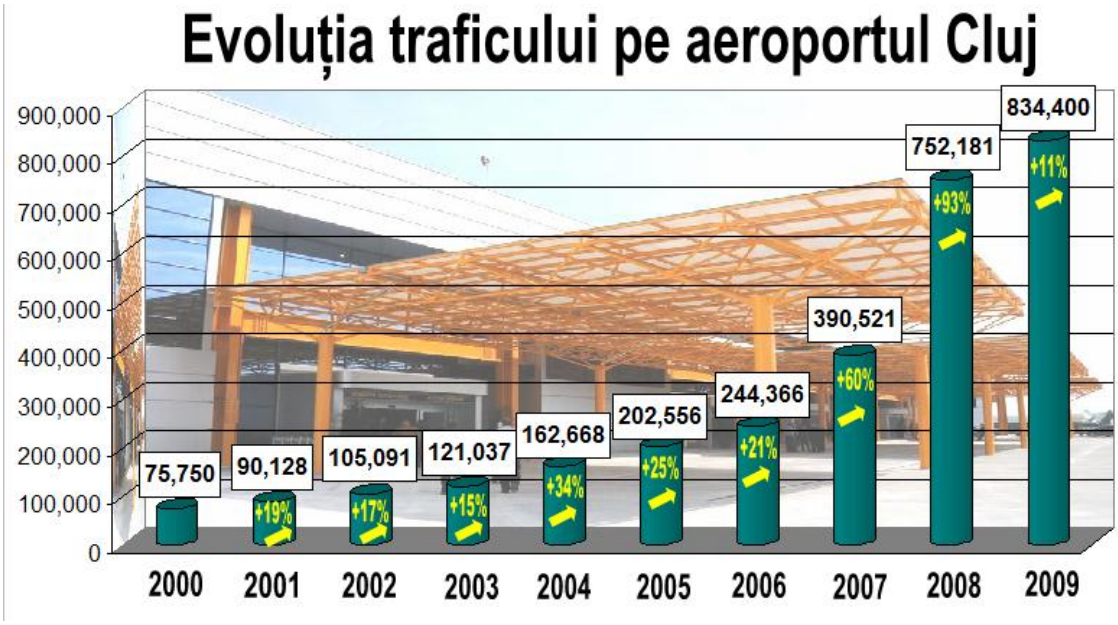


Figure 89 - Cluj airport traffic trends between 2000 and 2009, *Source data :Cluj Airport*

Figure - Cluj Airport destinations

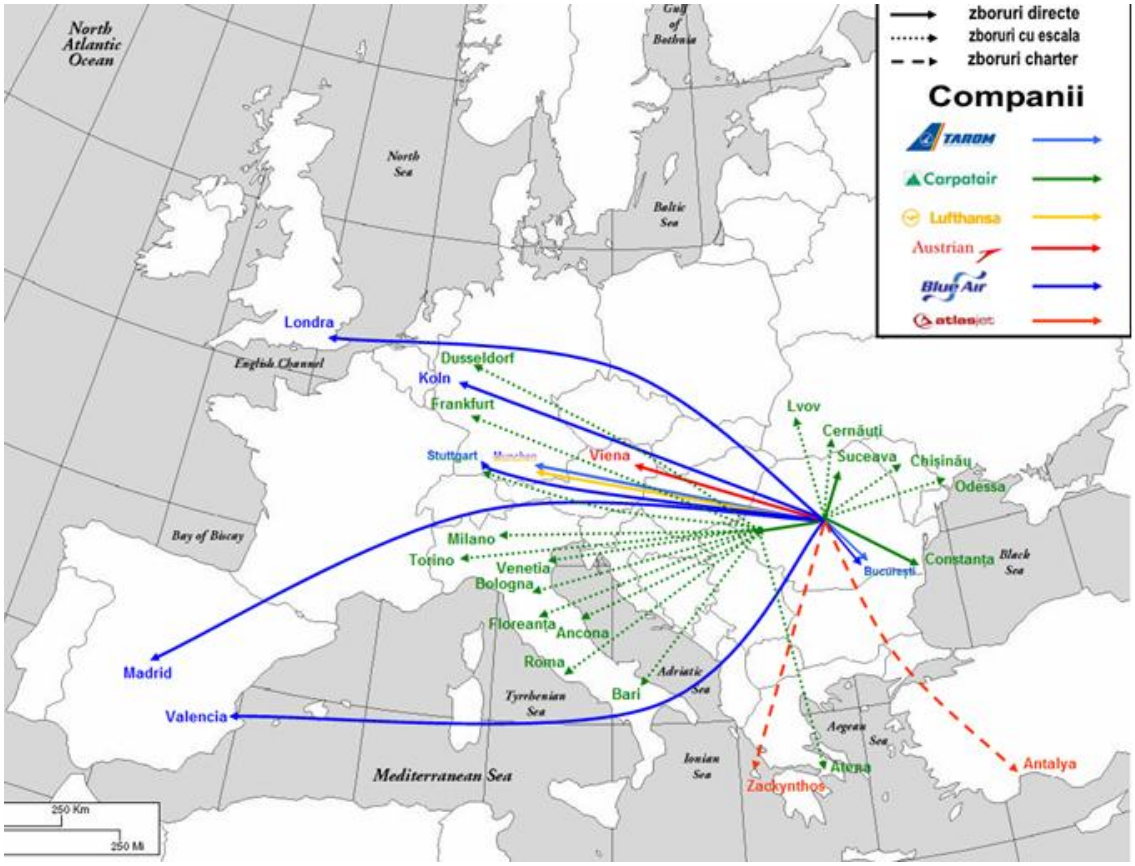


Figure 99 – Sibiu Airport destinations

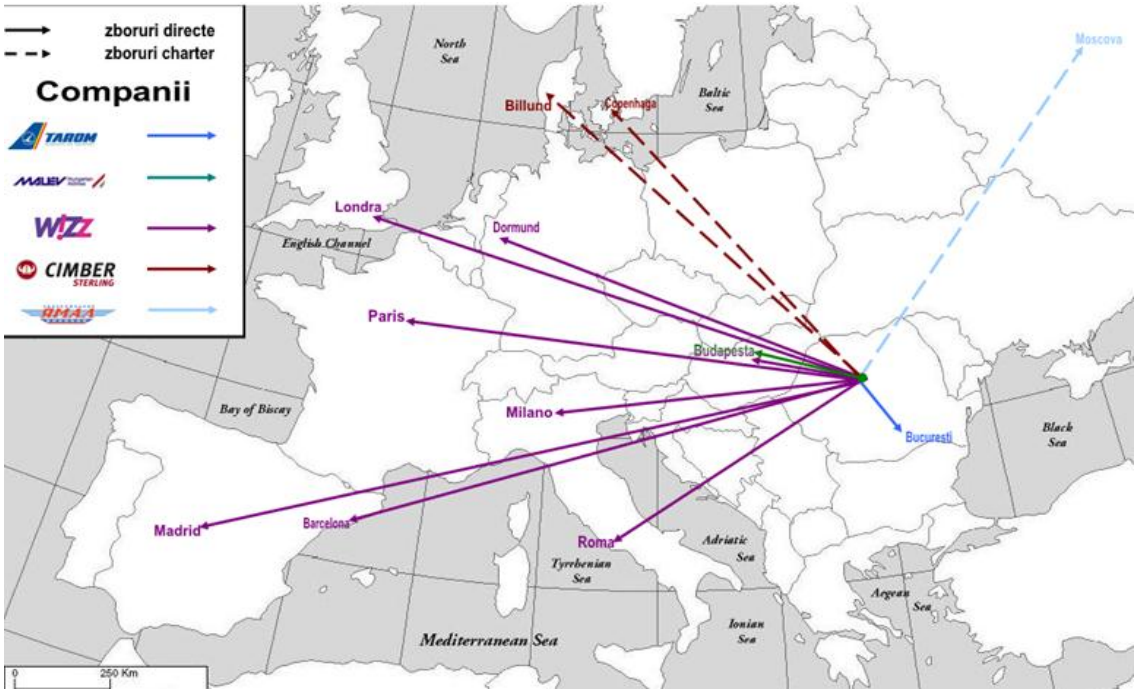


Figure 101 - Tg. Mureş Airport destinations

4.2 Determination of ATU accessibility to transport networks

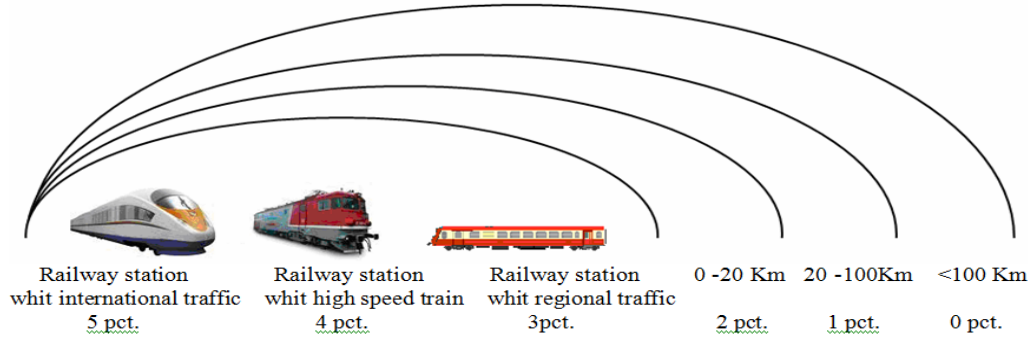
Providing the access to tourist attractions and (other significant) areas is one important premise for tourism development. Romania, and therefore Transylvania, loses annually millions of Romanian and foreign tourists because of bad transport infrastructure.

Accessibility quantification methodology

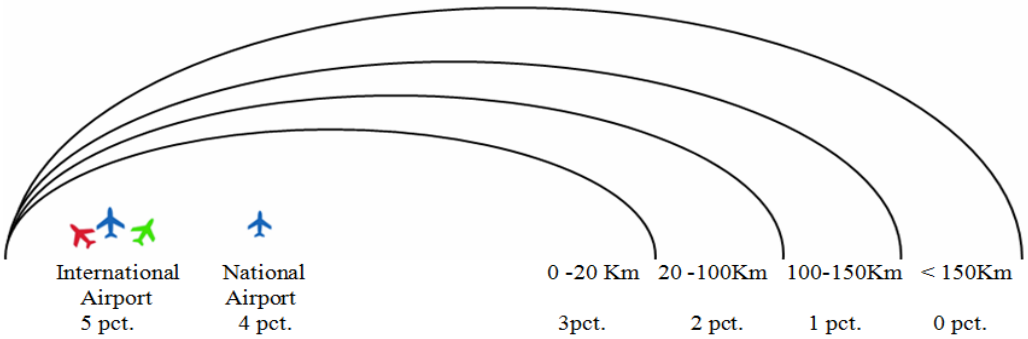
Calculation model of road accessibility

Roads	Location	Distance	Points
100	Distance to a county road	0 la 5 km	1 punct
14 B	Distance to a national road	0 la 20 km	2 puncte
		20 la 50 km	1 punct
E81	Distance to an european road	0 la 20 km	2 puncte
		20 la 50 km	1 puncte
	Distance to an express road	0 la 20 km	2 puncte
		20 la 50 km	1 punct
A3	Distance to a highway	0 la 20 km	3 puncte
		20 la 50 km	2 puncte
		50 la 150 km	1 punct

Calculation model of railways access



Calculation model of airways acess



Using the formula below, we calculated the total value of accessibility, as the sum of the values of accessibility by road, rail, air and water:

$$VA = \sum Ar + \sum Af + \sum Aa + \sum An$$

(0-10) (0-5) (0-5) (0-5)

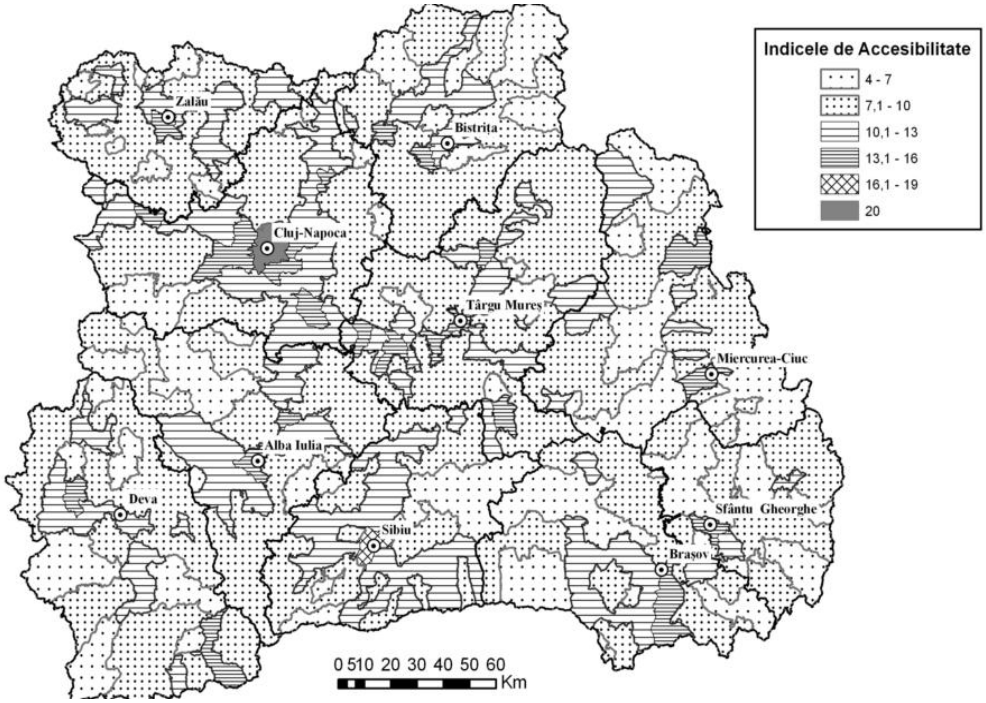


Figure 105 – Accessibility to the A.T.U. sites in Transylvania

Figure 106 - Airports influence area in Transylvania

5.1 Methodology of quantifying attractiveness

After evaluating the touristic potential of a territory, quantifying its attractiveness remains a challenging task due to its complexity, the importance of hierarchy of its component elements and the number of criteria that were taken into consideration.

Compared to other prior studies, we consider it is essential to pay more attention to the accessibility factor, which is one basic criterion in choosing a touristic destination.

CRIETERII DE BAZĂ	VALOARE ATRIBUITĂ %	SUBCRITERII
A. POTENȚIAL NATURAL	25%	Peisajul Relieful Clima și factorii climatici Rețeua hidrografică Fauna și Flora Factori terapeutici naturale
B. POTENȚIAL ATROPIC	25%	Vestigii arheologice Valori cultural-istorice Valori religioase Valori muzeale Valori etnografice Valori cultural-artistice
C. INFRASTRUCTURĂ SPECIFICĂ TURISTICĂ	25%	Structurile de cazare Structurile de alimentație Structuri pt evenimente Structuri de tratament Structuri de agrement
D. ACCESIBILITATEA	25%	Accesibilitatea rutieră Accesibilitatea feroviară Accesibilitate maritimă Accesibilitate aeriană
PUNCTAJ TOTAL	100% =>	ATRACTIVITATEA TURISTICĂ

Figure 107 – Quantification methodology for tourist attractiveness

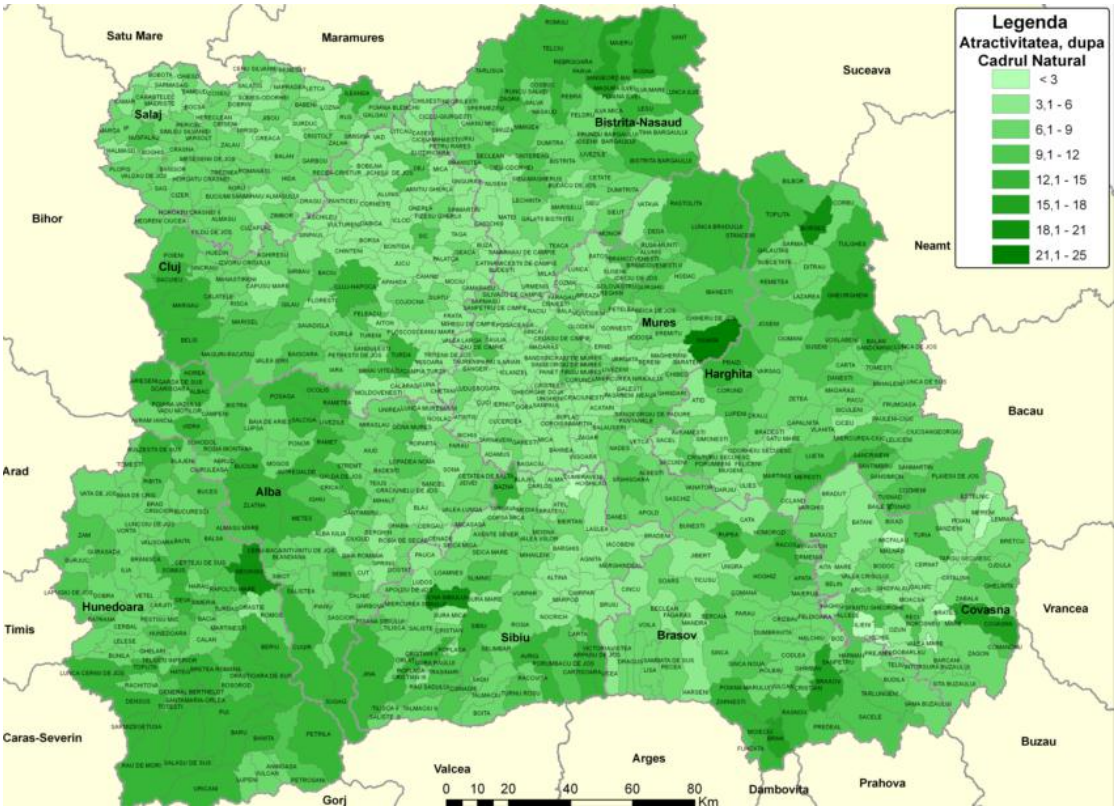


Figure 169 - The natural values in Transylvania

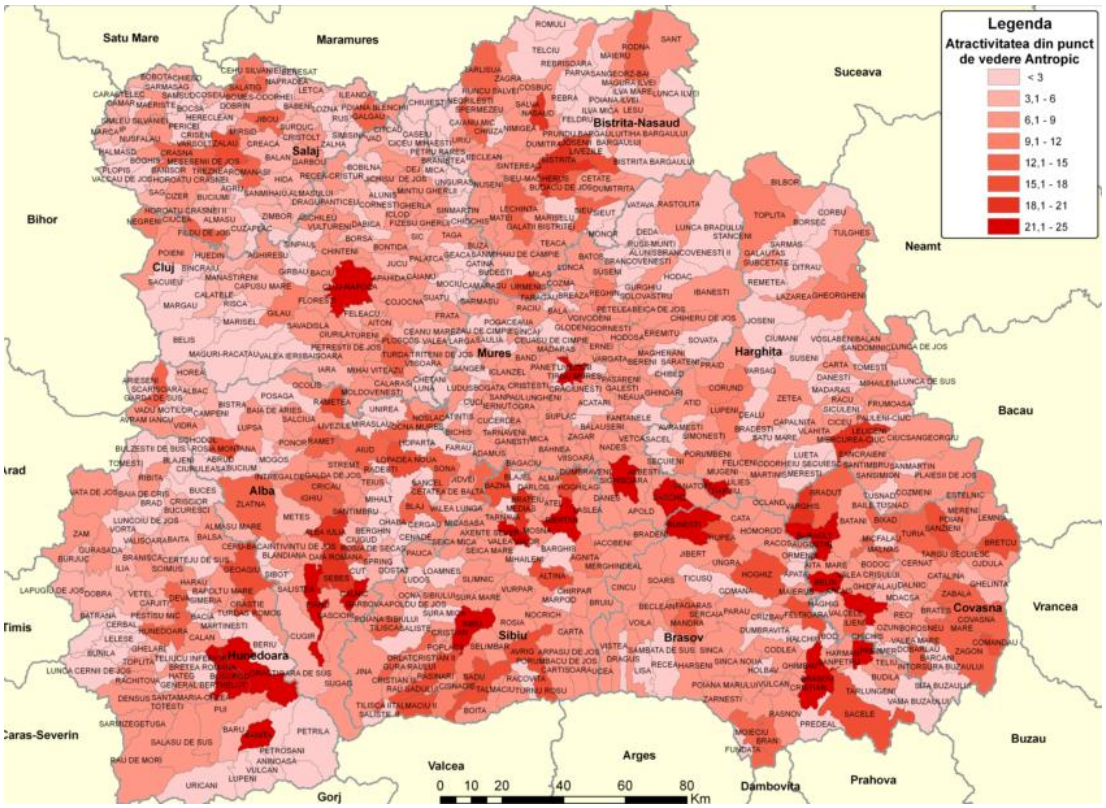


Figure 171 – Anthropic framework values in Transylvania

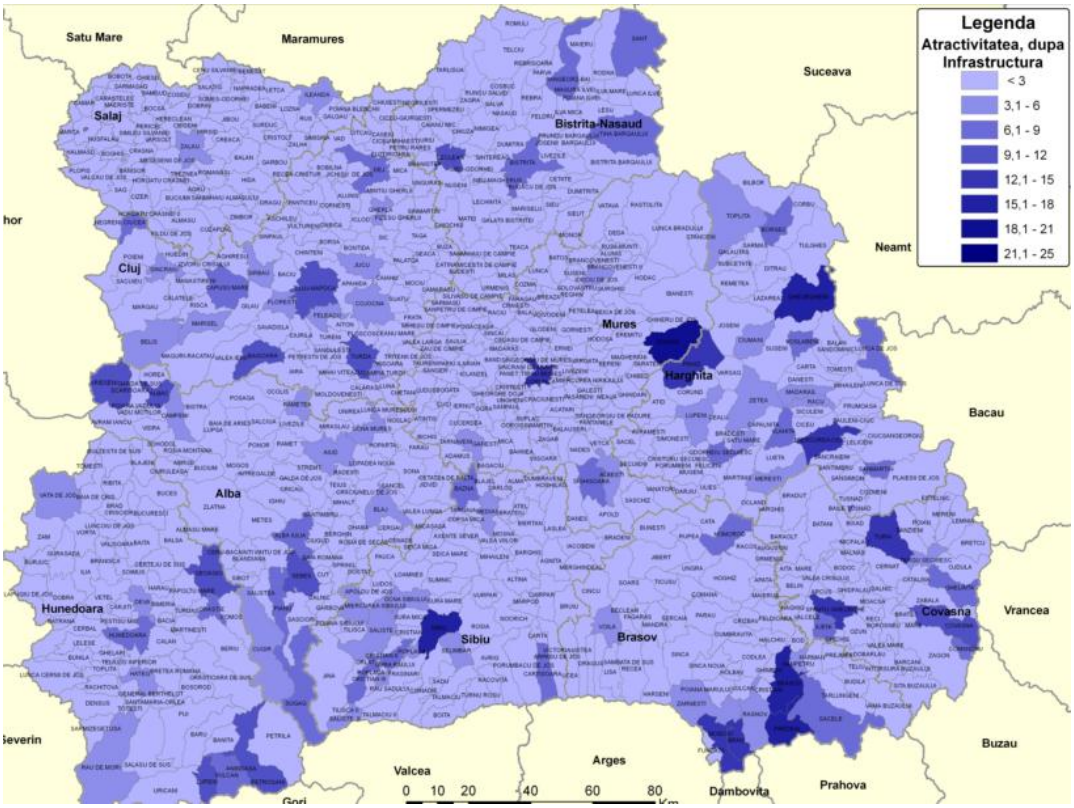


Figure 173 - The values of specific tourism infrastructure in Transylvania

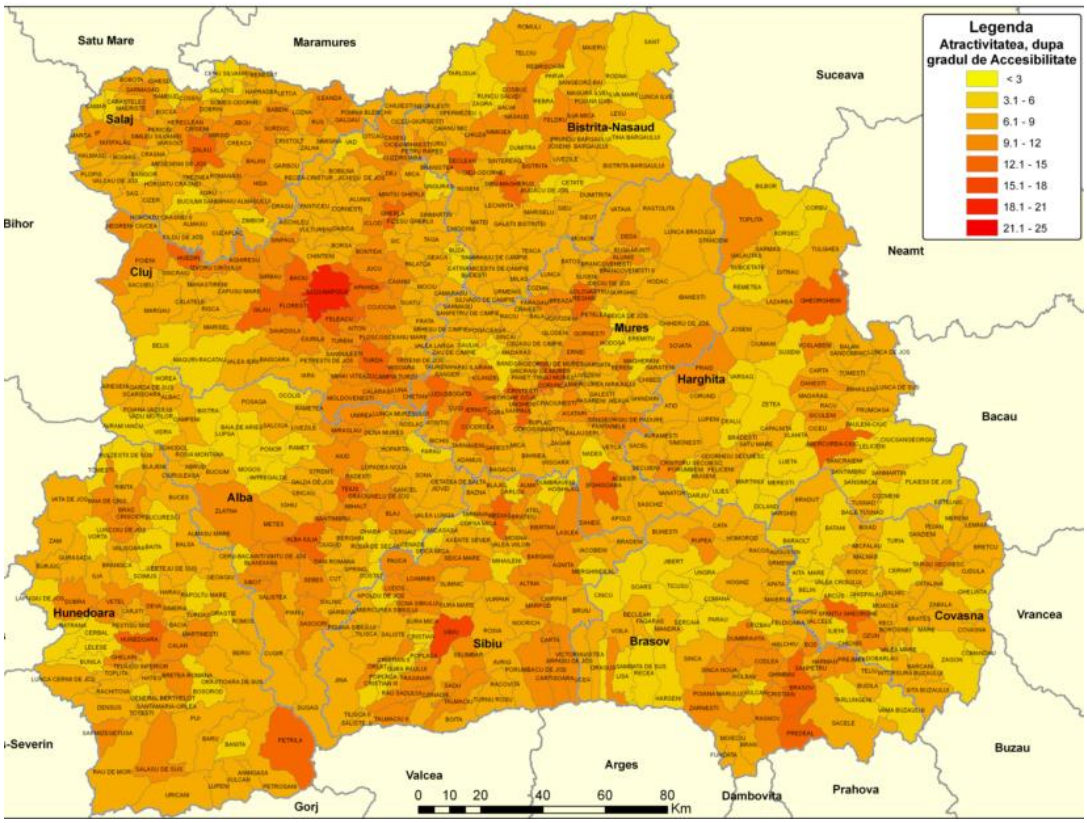


Figure 175 - Accessibility values in Transylvania

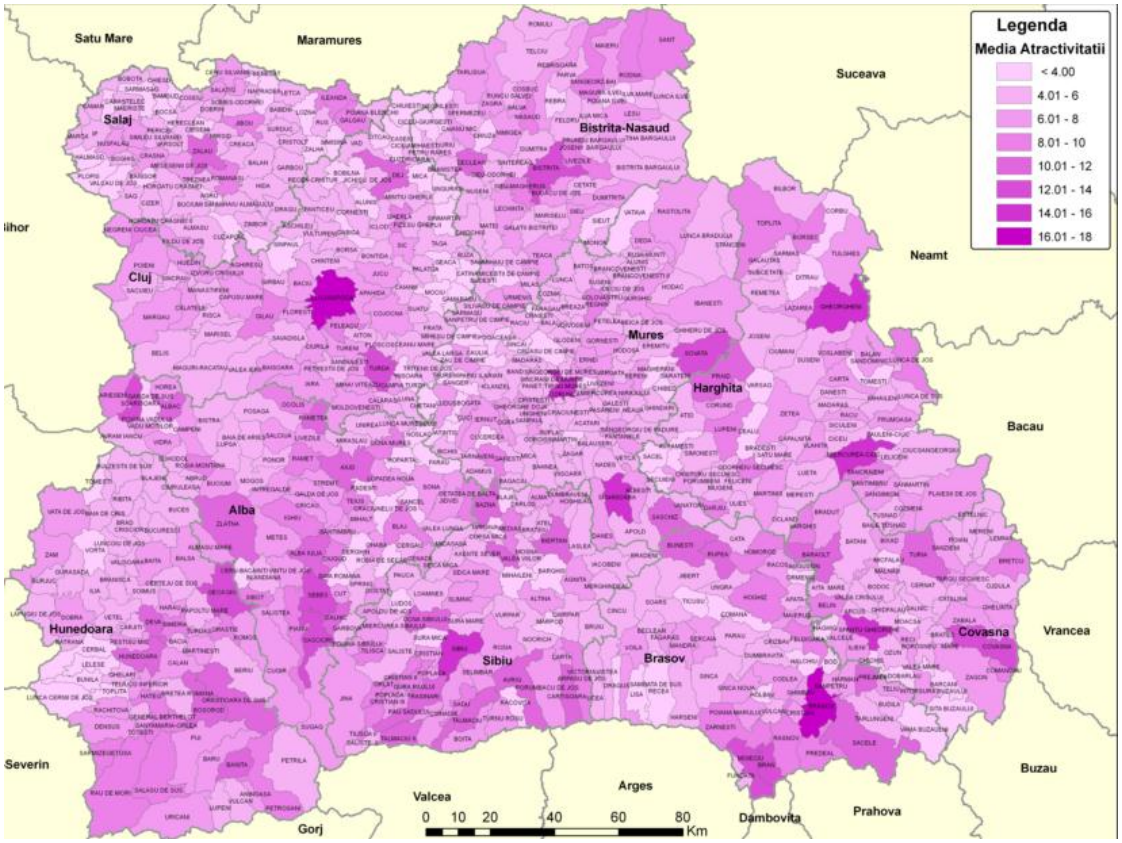


Figure 177 - Tourist attractions values in Transylvania

6.2 Undergoing projects with prior focus on the development of infrastructure in Transylvania

By 2020, Transylvanian road transportation will have a modern infrastructure, adapted to fast growing traffic in order to ensure the premises for socio-economic development of all areas and to contribute to reducing the negative effects which transportation has on the environment.

The main national projects regarding the transport infrastructure are:

- A3 Motorway Bucharest – Borş (sect. Predeal – Surplacu de Barcău)
- A1 Motorway Bucharest – Nadlac (sect. Turnu Roşu – Făget)
- A4 Motorway Târgu-Mureş – Iaşi (sect. Târgu-Mureş – Tulgheş)
- R2 Expressway Zalău – Baia-Mare (sect. Zalău – Cehu-Silvaniei)
- R4 Expressway Turda - Sebeş
- R5 Expressway Sibiu – Făgăraş
- R9 Expressway Gilău – Dej
- IVth railway corridor Ilia – Predeal
- Braşov Airport

Figure 181 – Fast road network projects in Transylvania

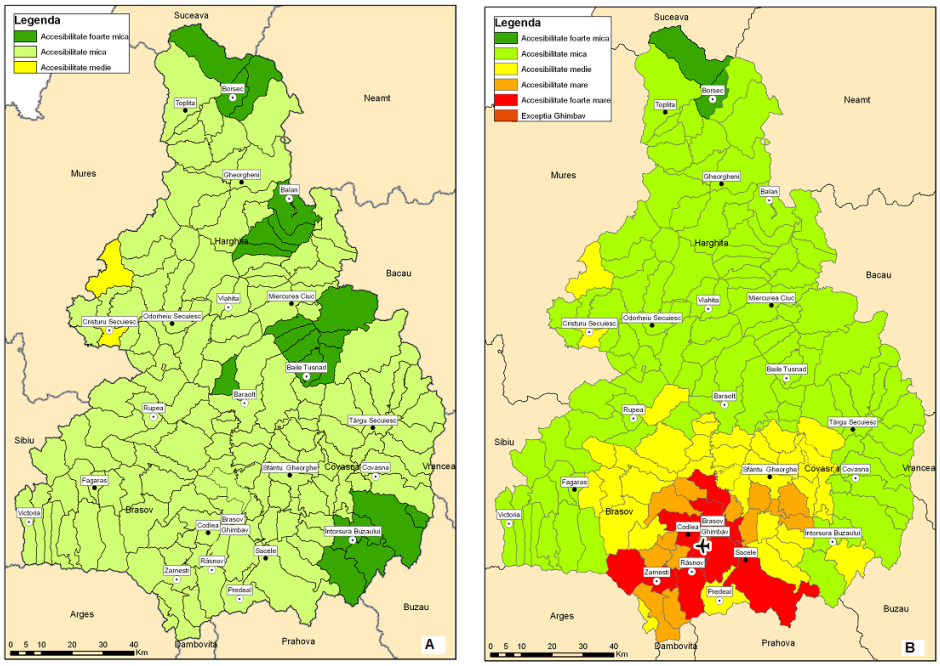


Figure 183 – Current accessibility (A) and after Braşov Airport construction(B)

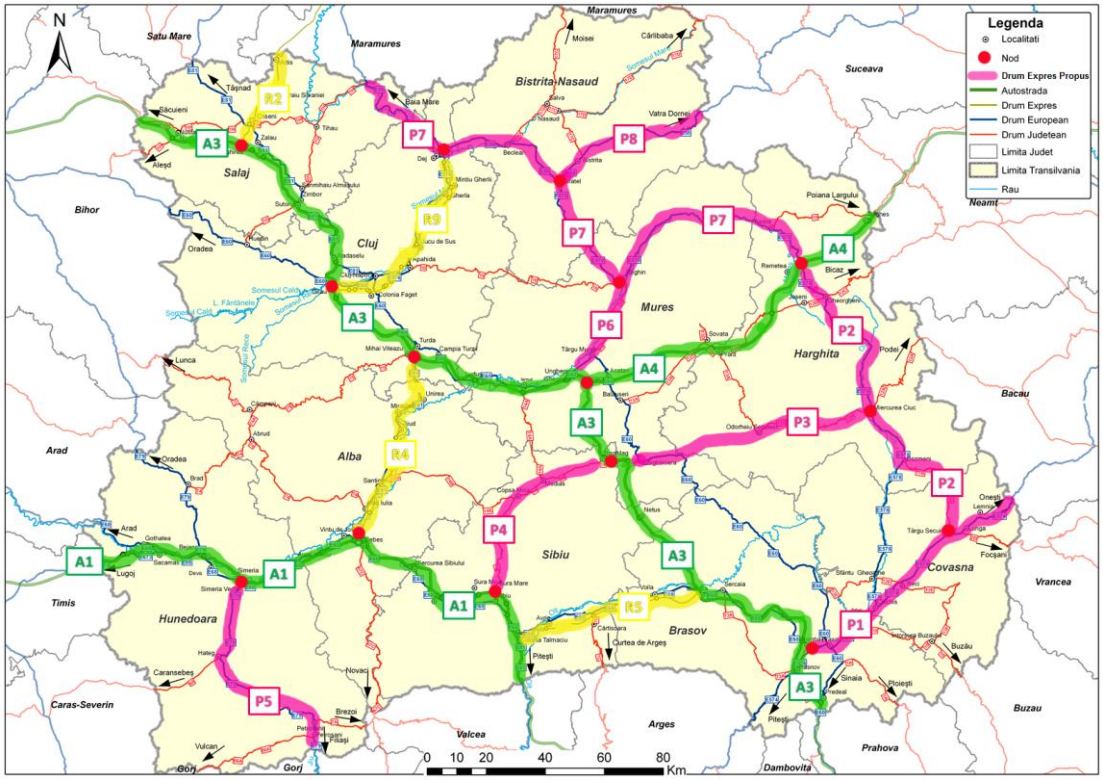


Figure 185 - Development directions of fast road network in Transylvania

7. IMPACT ON TOURISM TRANSPORT INFRASTRUCTURE DEVELOPMENT AND RECOMMENDATIONS FOR TOURISM DEVELOPMENT IN TRANSYLVANIA

7.2 Tourist attractiveness under the impact of possible changes in transport infrastructure

Due to the completion of new infrastructure projects in Transylvania, the index of accessibility and the factor of attractiveness will cause changes in many areas. The impact will be different from one place to another: for example, some areas will be more affected than others while some of them will not ‑suffer any changes, with a negative impact on local tourism.

Among the positively affected areas, there is the city of Braşov and its surroundings within the county: Bod, Codlea, Făgăraş, Harseni and Şercaia. Their level of accessibility and attractiveness will increase, due to the construction of a new airport, a motorway (A3) and the express road from Fagaras to Sibiu. Among the less affected areas will be Alba Iulia, Teiuş and Vinţu de Jos (in Alba County), Cristian, Mândra, Poiana Mărului, Predeal, Recea, Sâmbăta de Sus, Soarş and Voila (in Braşov County), Boiţa, Sadu, Şelimbăr and Tălmaciu (in Sibiu County). A number or 46 ATUs will be positively influenced and their level of attractiveness will increase with four points. In addition, I will list Sebeş, Ghimbav, Homorod, Prejmer, Rupea, Zărneşti, Ilieni, Orăştie, Crasna, Zalău, Avrig and Sibiu.

A number of 110 localities will be negatively affected, especially from Bistriţa-Năsăud County and the mountain area of Alba County.

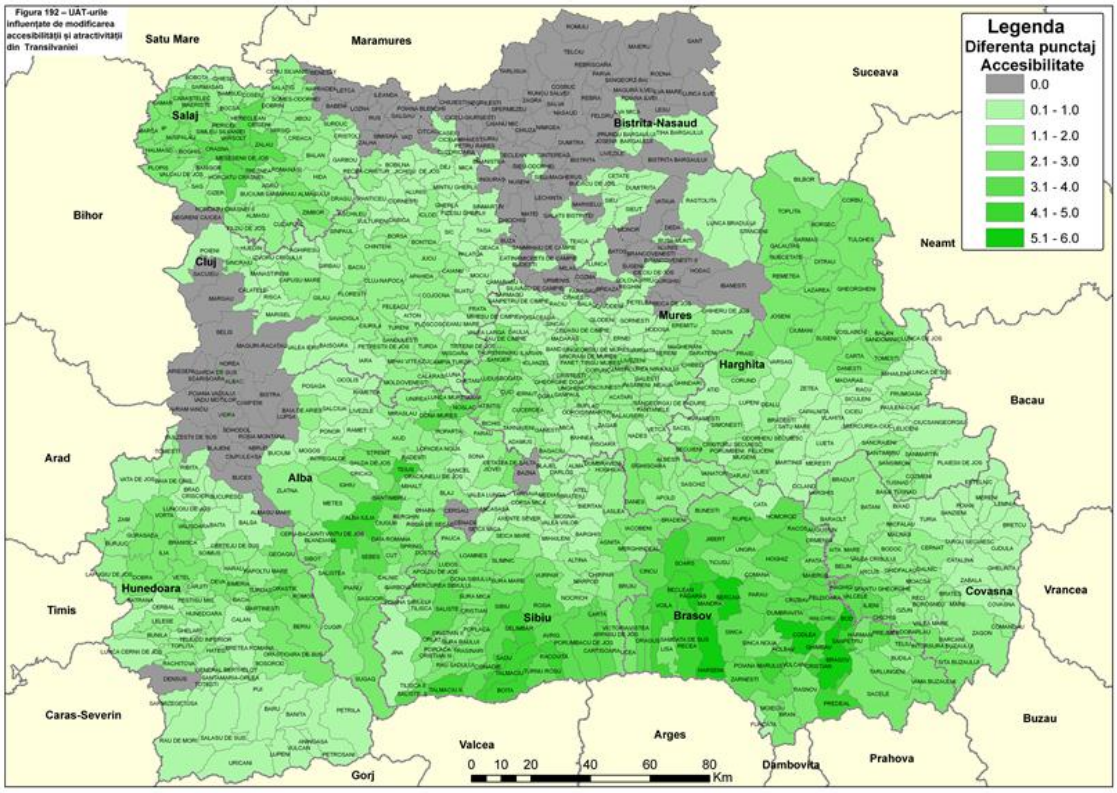


Fig 192 – ATU's influenced by accessibility and attractiveness changes in Transylvania

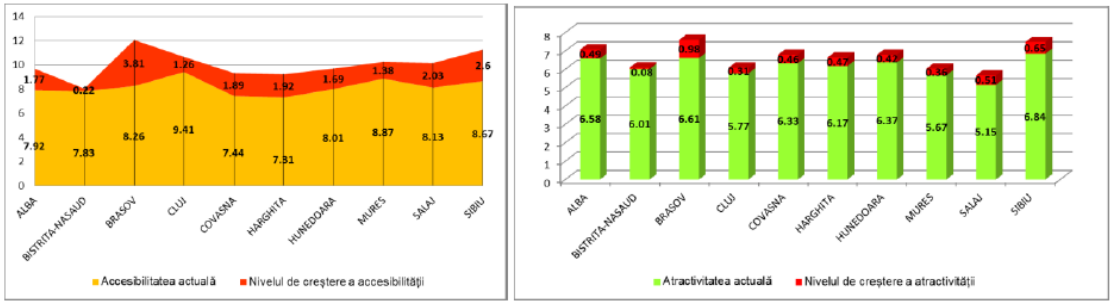


Figure 190 – Possible increases in accessibility and tourist attraction at county level

7.2 Turist traffic and hourly arrangement of potential emitting tourists areas

The tourist movement in Transylvania had a fluctuating trend, just as the national one did. Over the time, the number of tourists has grown as the Romanian tourist market started to develop and to focus on the exterior. During the inter-war period, the number of tourists was very small but in the '50s-'60s of the last century, tourist traffic began to increase alongside with paid leave and the development of transportation means, which made many tourist destinations more accessible. The number of Romanian and foreign tourists doubled in almost all the country, after the investments in the '60s-'70s. Between the '80s-'90s, political and economic changes led to the reshaping of the market only on the national component; but even so, there were significant increases. After the '90s, tourist arrivals were permanently decreasing and the down slope ended in 2002. At that time, the number of tourist arrivals in Romanian accommodation units reached 487.700. After this period, the

numbers started to increase again, so that in 2010 there were 606.300 tourists. The causes that led to these increases were mainly the absorption of European funds, the modernization of several tourist complexes and the external problems of destinations frequented by Romanians.

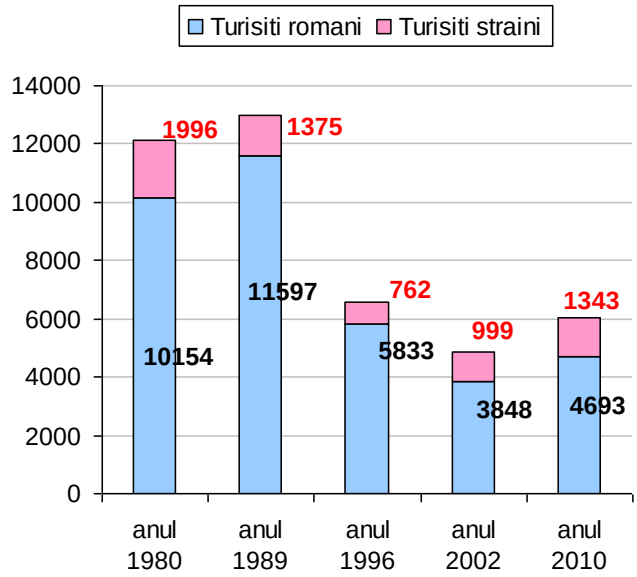


Figure 176. Number of foreign tourists in Romania 1980/2011
Source : Anuarele statistice 1993,2002 and mdrt.ro

Applying the method of calculating the accessibility, we identified Cluj-Napoca as a reference point, and used it for calculating the hourly arrangement of emitter areas of potential road tourists.

Based on this descriptive study, the map indicates an increasing of isochrones lines every two hours until the 12-hour arrangement (the maximum driving time without overnight, on legal maximum speed).

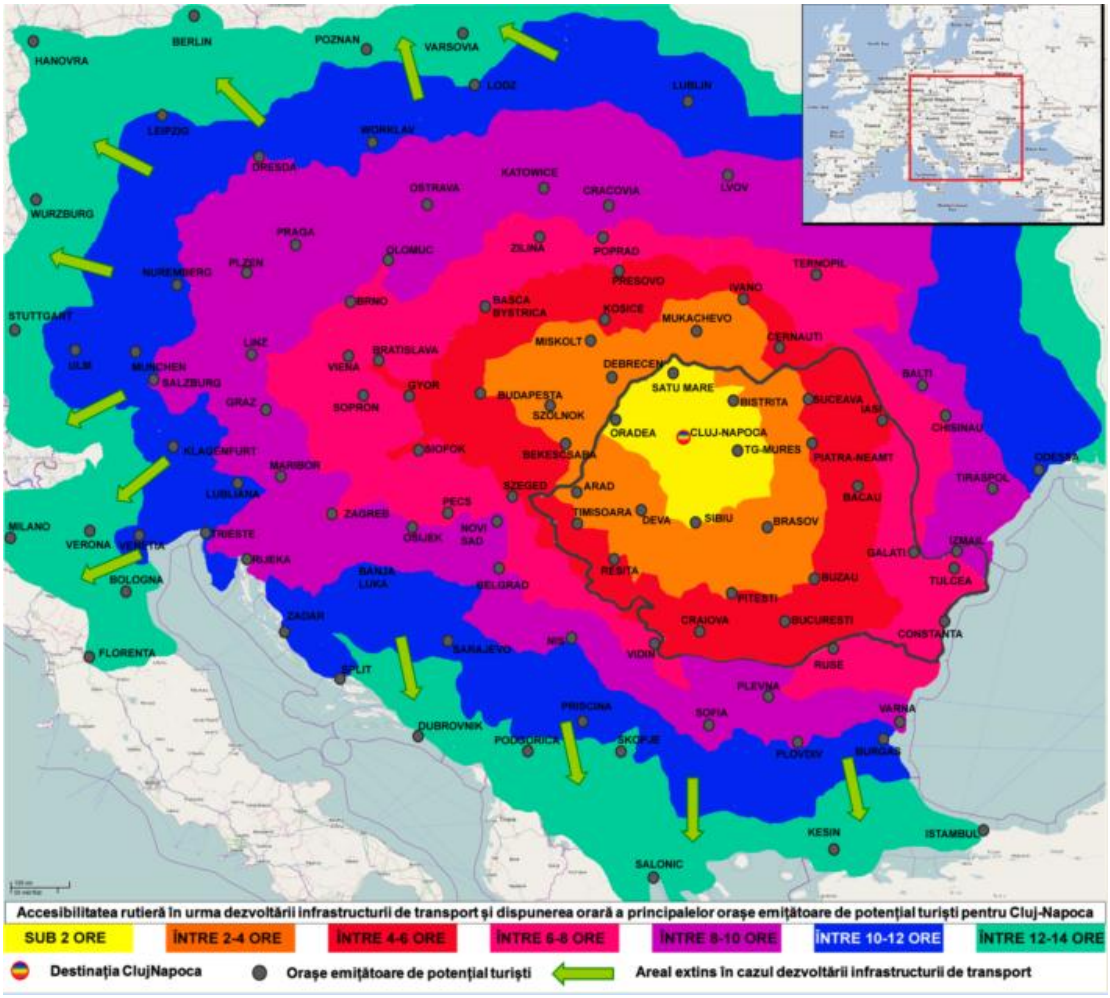


Figure 198 - Hourly layout of tourists potential emitting areas for Cluj destination

The graphic made in perspective for implementation of road infrastructure shows the time distance from Cluj-Napoca to the main closest cities

- 2 hours distance of Cluj-Napoca : North-Satu Mare, East-Gheorheni, South-Sibiu and West- Oradea;
- 2-4-hours distance of Cluj-Napoca: North-Ivano (UA), East-Piatra Neamt, South-Pitesti and West-Budapesta (HU);
- 4-6-hours distance of Cluj-Napoca: North-Presovo (SK), East-Iasi, South-Giurgiu and West-Bratislava (SK);
- 6-8-hours distance of Cluj-Napoca: North-Zilina (SK), East-Chisinau (MD), South-Plovdiv (BG) and West-Linz (AU);
- 8-10-hours distance of Cluj-Napoca: North-Lvov (UA), East-Tiraspol (MD), South-Plovdiv (BG) and West-Salzburg (AU);
- 10-12-hours distance of Cluj-Napoca: North-Lodz (PL), East-Odessa (UA), South-Kulata (GR) and West-Ulm (DE).

On the perspective of growing the limit with two more hours, the limit lines would extend: North-Berlin (DE), East-Kiev (UA), South-Salonic (GR) and West-Milano (IT).

7.2 Recommendations for tourism development under the impact of some possible changes in transport infrastructure:

Establishment of tourist roads

In the past few decades, tourism development trends have led to a shift from standardized mass tourism to more individualistic models, which are focusing on a larger flexibility and on lived experience by tourists. As a reward for their loyalty, tourists get individualized products and unique experiences. This aspect leads to the development of thematic tourist roads, having the role to promote similar tourist attractions in a specific area. Research in this field emphasizes the importance of scenic roads, tourist roads and thematic routes.

After an **early analysis** it was calculated the "tourism potential" of several roads for establishing a coefficient in order to be assessed as tourist roads. As most countries, there are European roads, national roads and county roads; there is a tourist road network, identified by its abbreviation "**DT**". In Transylvania, the main roads with attributes for **Scenic Tourist Roads** are: DN67C Sebeş-Novaci (Transalpina), DN7C Cârţişoara–Curtea de Argeş (Transfăgăraşan), DN12C Gheorgheni–Bicaz, DN 74 Abrud–Brad, DN 7A Petroşani–Brezoi and also some other sectors of county roads, scenic by their landscapes.

Natural Tourist Roads: are the ones that facilitate the access to National Parks (DN66A Petroşani–Valea Cernei, DJ685 Cârneşti-Râu de Mori, 667A Ohaba de sub Piatră–Cârnic for Retezat National Park, 668A Haţeg-Ciclovina for Gradiştea–Muncelului National Park).

Cultural and Historical Tourist Roads are many, but the ones with significant touristic elements are: DN 14 Sibiu–Sighişoara and some other county roads having fortified churches, DJ742 Gura Roşiei–Roşia Montană known for gold exploitation—"The Golden Way").

Ethno-Cultural Tourist Roads have an important tourist profile and lead to some destinations with significant ethno-cultural influence: DN75 Turda-Arieşeni (to „Ţara Moţilor"), DJ106E Sălişte a –Tilişca (to „Mărginimea Sibiului").

Tourist Roads with Archeological value have a major archeological impact: DJ705A Orăştie–Grădiştea Muncelului for dace fortress from Orăştiei Mountains.

Tourist Roads with leisure value are roads that connect leisure units: DJ107N and DJ107R that connect city of Cluj-Napoca and Băişoara, DN75 Turda-Arieşeni etc.

Tourist Roads with Balneal-Curative value, examples of roads that connect balneal and treatment units.

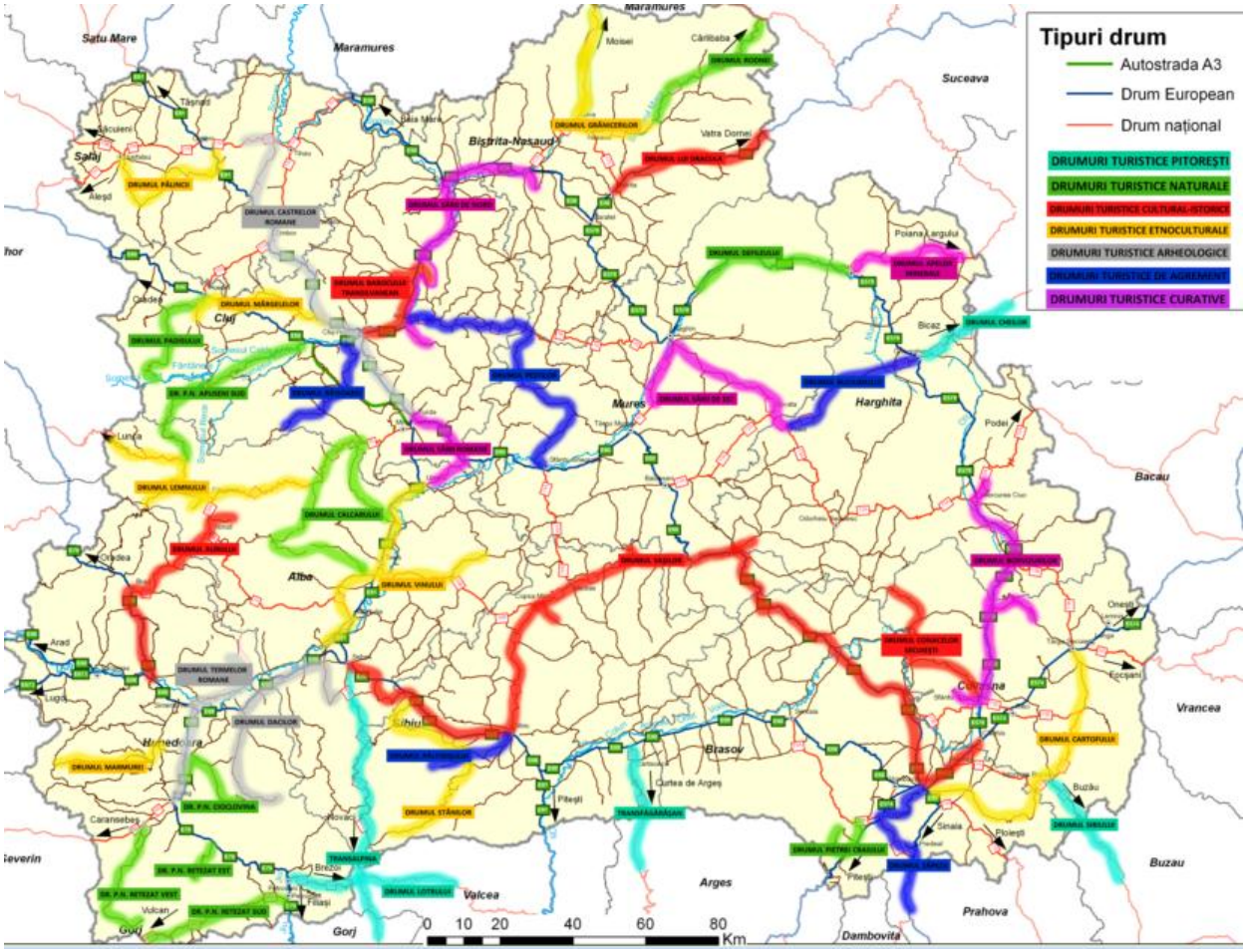


Figure 206 – Tourist roads in Transylvania

Conclusions:

The analysis of the developmental impact of tourism infrastructure in Transylvania was made by using a scientific approach with a great complexity. On the one hand, it required reading the scientific literature on tourism geography and transport geography, to find out the newest research methods for the chosen topic. On the other hand, it was an opportunity to propose new ways how to quantify tourist attractiveness and on how to calculate the accessibility of a tourist destination. The level of transport infrastructure development influences directly these attributes.

The conceptual model was useful to trace the lines of possible impact that projects on developing transport infrastructure might have on tourist destinations and to propose specific measures for the analyzed area.

The thesis was logical structured so that each objective of the project be analyzed and the central hypothesis be validated, proving that some tourist destination will benefit more from developing the transport infrastructure than others. In addition to the findings, I also offered some recommendations for tourism development.

The aim and the importance of the theme were presented in the paper introduction, as well as the motivation for the study and the layout of the subject.

The level of accessibility and tourism attractiveness of each area were determined based on the gathered information on infrastructure. The prediction of the impact of transport infrastructure development was achieved by determining the new accessibility and tourism attractiveness in different areas. Analysis and forecast for areas with significant changes in attractiveness offered solutions for tourism development and integration proposal of other areas in tourist circuits such as tourist roads. By applying a quantitative model of accessibility and of the impact on all Romanian tourist destinations, we could create a database for future tourism strategies on a local, regional and national level.

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