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INVESTIGATIONS OF SOCIAL INFRASTRUCTURE IN RURAL SETTLEMENTS OF BORSOD COUNTY

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Introduction

In the 40 years since World War II the national economy of Hungary has undergone a significant socio-economic transformation resulting from the building of socialism. In the recent phase of development, the main task of society and social policy has been to reveal the disproportions in the development of individual regions; and to highlight the variations in the living standards between the urban and rural populations. Current regional policy pays special attention to the development of infrastructure and settlement network. The inadequate development of social infrastructure and communication networks in rural settlements leads to undesirable phenomena such as outmigration ; distortion of the demographic structure of rural settlements; shortage in the supply of agricultural labour; and the emergence of depressed regions. All these facts inspired the present author to examine the social infrastructure in rural settlements.

The basic aim of research was to investigate the differences among regional levels of social infrastructure in rural settlements of Borsod-Abaúj-Zemplén County (North-Hungary) that has been chosen

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for the following purposes. Between 1979 and 1981, the typology of rural settlements of Hungary was elaborated by BELUSZKY, Pál and SIKOS, T. Tamás. The results of these researches indicated that almost all types of rural settlements which exist in the country as a whole can be found in Borsod County, too. Since social infrastructure is one of the most important elements of rural settlement development, this typology seems proper to be worked out for Borsod County.

The research was conducted along the following lines:

1. A typology of rural settlements for Borsod County was prepared using a new methodological approach which differed from earlier ones both in the composition of indices and in the mathematical-statistical methods which were adopted.
2. A typology was developed using factor- and cluster analyses.
3. An information data bank including information on the social infrastructure of rural settlements of Borsod County was established.
4. Functional connections which exist between rural settlements and those indices relating to the development of certain elements of social infrastructure were explored.
5. On the basis of factor analysis the elements and

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the extent of their contribution to shaping social infrastructure in rural settlements of Borsod County were distinguished.

6. Applying cluster analysis, the typology of social infrastructure in rural settlements of Borsod County was prepared.

A great number of studies by Hungarian researchers have been published recently investigating primarily public administration and economic problems, and the stratification and migration of population in rural settlements. In these studies attention has been given to the differentiation in regional development levels and the typology of rural settlements of Hungary, but a complex economic and economic-geographical research into the typology of social infrastructure of rural settlements has not yet been carried out.

The statistical data base for 1980 as well as data collected by the Council of Borsod-Abaúj-Zemplén County contributed largely to the present investigation.

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Description of tasks of research and compilation of the data bank

Tasks of research:

1. Determination of scope of elements as well as that of the extent to which they shape the development of social infrastructure of rural settlements.

2. Elaboration of the typology of social infrastructure of rural settlements.

The various stages and characteristics of this work can be traced in Figure 1. In the analysis, 26 indices were applied to 352 rural settlements of Borsod County. The 26 indices of the investigation were classified, to a certain extent conditionally, into 5 groups (A, B, C, D, and E) each presenting a definite aspect of social infrastructure investigations. The scope and list of indices applied in the analyses is presented below (subsequently, county mean values and standard deviations are put into brackets).

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A. The basic institutions and their level in rural settlements

1. Size of retail trade shops in 1979, m^2 (364 m^2; 631 m^2);
2. The value of consumer goods' turnover in retail trade in 1979 per capita (3,001 Ft; 4,584 Ft);
3. Institution network of basic services in 1980 (12.1 scores; 8.0 scores);
4. The number of small scale industrial workers in 1979 (11.3 persons; 15.9 persons);
5. 5. The capacity of nurseries per 100 children of 0-3 years in 1980 (1.3 persons; 5.9 persons);
6. The capacity of kindergartens per 100 children of 3-6 years in 1980 (33.5 persons; 44.0 persons);
7. The number of consulting hours in 1979 (0.9 hrs.; 3.9 hrs.);

B. Amenities of flats and basic services in rural settlements

8. Proportion of flats built after 1945 as a proportion of all flats in 1980 (52.5 per cent; 15.9 per cent);
9. Proportion of flats built between 1970 and 1979 as a proportion of all flats in 1980 (13.9 per cent; 8.5 per cent);

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10. Proportion of one-room flats to all flats in 1980 (26.5 per cent; 10.2 per cent);
11. Proportion of residential buildings having more than one storey to all residential buildings in 1980 (0.3 per cent; 1.7 per cent);
12. Number of flats with bathrooms or lavatories per 100 flats in 1980 (26.4 per cent; 15.3 per cent);

C. Provision of rural communities with public utilities

13. Proportion of flats supplied with electricity to all flats in 1980 (96.9 per cent; 2.9 p.c.);
14. Proportion of flats with water to all flats in 1980 (21.7 per cent; 14.9 per cent);
15. Proportion of flats supplied with gas to all flats in 1980 (53.3 per cent; 14.8 per cent);
16. Proportion of flats connected to a sewage system to all flats in 1980 (23.9 per cent; 15.4 p.c.);
17. Electricity consumption per capita in 1980 (kw-hrs.) (805.8 kw-hrs.; 281.2 kw-hrs.);

D. Transport characteristics of rural communities

18. Transport network in 1980 (4.5 scores; 2.5 scores);
19. Accessibility (in minutes) to nearest town or village (district seat) by most rapid means of transport in 1980 (40.3 min.; 27.4 minutes);

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20. Frequency of means of transport leaving for towns in 1980 (81.2/week; 89.2/week);

E. Educational and cultural characteristics of rural communities

21. Number of school rooms in elementary schools in 1979 (4.8 school rooms; 6.1 school rooms);
22. Number of pupils in elementary schools in 1979 (153 pupils; 228 pupils);
23. Number of students in secondary schools in 1979 (13 students; 147 students);
24. Proportion of those 15 years or older finishing 8 years of elementary school in 1980 (52.0 per cent; 8.9 per cent);
25. Proportion of those 18 years or older finishing secondary school in 1980 (9.6 per cent; 4.3 per cent);
26. Number of libraries in 1979 (3,968.4 libraries; 6,784.2 libraries).

During the compilation of indices, it was most difficult to determine the values of synthetic indices. A similar problem occurred in the determination of the value of index 3 (which gives a complex evaluation of the development level of social infrastructure

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in rural settlements). As is well-known, in similar cases the methods of scoring are frequently used. The application of the latter method requires two questions to be answered:

1. the precise delimitation of tne range of scoring elements;
2. the determination of scores.

The scores and basic elements of service that provide the complex evaluation of the development level of social infrastructure are presented below. The number of basic elements is 21. These elements were allotted the next scores: retail trade shops selling consumer goods:2; depots selling building material and fuel:1; market-place:1; restaurant:1; postoffice:1; bank:1; ambulance station:2; consulting room:1; dentist's room:1; kindergarten:1; nursery:1; cultural centre, club:1; home for elderly people:1; social care nurse:1; drug-store:1; cinema: 1; village library:1; elementary school (with classes for 1-4 years):1; elementary school (with classes for 5-8 years):2; number of small scale industrial workers: 4-10 people:1; 11-20:2; 21 or more:3.

As is clearly shown, the majority of the basic elements of the service sector were scored 1. It fol-

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lows from incomparable elements as post-office, drug-store, library, market-place, etc. that are unable to reconcile. In principle, the existence of each element would be of primary importance in rural settlements. Scoring is based on a double system:

1 - indicates the presence, while

0 - indicates the absence of a given element of basic service. The higher the level of service of a rural settlement, the higher are the scores of complex indices of social infrastructure. It should be noted that similar scores of social infrastructural development may have a widely differring structure of basic elements. There are naturally a few basic elements which are only provided in larger centres and are not worth operating in all settlements e.g. secondary schools, grammar schools, retail trade shops selling consumer goods, or ambulance stations. This group of basic elements was scored 2.

The complex evaluation of the development level of social infrastructure in rural settlements--as was presented--included also the scores referring to the administrative division of settlements: centre of a district: 5; large village with council: 3; village with council: 2; village without council: 0; headquarters of agricultural state farms: 3; centre of a cooperative ("ÁFÉSZ"): 2.

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In the opinion of the author of the paper, those settlements having administrative-management, and productive-trade- and distribution functions should have a car repair station, sewage purification plant, telephone centre, and other public utility institutions. Information in the data bank enabled a preliminary examination of the rural service sector to be made. The results of this investigation provided the basis for factor analysis. In the paper, a few draft maps of the area and the transport network of Borsod County will be presented which may contribute to the understanding of the other parts of the material (Figures 2 and 3).

The results and the interpretation of the contents of factor analysis

The 26 indices mentioned earlier were used in the procedure of factor analysis. In the course of investigations, principal-components analysis was accomplished using different eigenvalues (0.6, 0.7, 0.8, 0.9, 1.0). Out of the variables, that of 0.8 eigenvalue represents best the factors of basic differences; therefore, further analyses

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were based on it. The variable of 0.8 eigenvalue contains 8 factors accounting for 78.26 per cent of the original information. It is worth mentioning that the first 4 factors account for 64.05 per cent of the deviation square. The contents of these factors can be interpreted as follows:

F_1 = development level of basic elements of service;

F_2 = rate of house building and amenities of flats;

F_3 = transport characteristics;

F_4 = unfavourable conditions of provision of rural communities with public utilities.

Based on eigenvalue 11.2, factor F_1 accounts for 43.13 per cent of the deviation square.

Indices that comprise factor F_1	factorweights
22. Number of pupils in elementary schools	0.901
1. Size of retail trade shops, m^2	0.886
21. Number of school rooms in elementary schools	0.878
4. Number of small scale industrial workers	0.859

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26.	Number of libraries	0.838
3.	Institution network of basic services	0.751
7.	Number of consulting hours	0.665
2.	Value of consumer goods' turnover in retail trade per capita	0.605
18.	Transport network	0.478

Among the indices of factor F_1, there is a real connectionship which is clear logically and can be measured by means of mathematics. The strongest correlation (0.9) can be observed between indices 22 and 21, while the weakest correlation exists between indices 7 and 18; the existing connections do not require special explanations. There is a similarly trivial connection between index 3 and the remaining indices. The strong correlation between indices 1 and 21, 1 and 22, 1 and 26, 1 and 7, as well as 21 and 26 prove that rural settlements of the county possess with a number of basic elements of service such as shops, elementary schools, libraries, consulting rooms etc. Nevertheless, a mean correlation of indices 1 and 2 indicates that most shops cannot offer a great choice of consumer goods, so necessary items have to be purchased mainly in towns or rural centres of medium-level. Index 18

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(transport network) correlates with indices 22, 1, 21, 26, and 2 at an average level, while it is weakly connected to indices 2 and 7.

Regional distribution of factor scores shows that rural settlements that are allotted high scores (8.818-2.781 and 2.780-1.001) are dispersed settlements in the county; they constitute a contiguous belt only in the valley of Sajó, Bódva, and Hernád rivers. Low factor scores are characteristic of Hegyköz, Cserehát, Nort Borsod Karst and Mts. of Zemplén.

Factor F_2 accounts for 11.78 per cent of the deviation square using 3.6 eigenvalue.

Indices that comprise factor F_2	factorweights
12. Number of flats with bathrooms or lavatories per 100 flats	0.868
16. Proportion of flats connected to a sewage system to all flats	0.839
14. Proportion of flats with water to all flats	0.821
17. Electricity consumption per capita (kw-hrs.)	0.784
9. Proportion of flats built between 1970-1979 as a proportion to all flats	0.760

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24.	Proportion of those 15 years or older finishing 8 years of elementary school	0.754
8.	Proportion of flats built after 1945 as a proportion of all flats	0.684
25.	Proportion of those 18 years or older finishing secondary school	0.681
18.	Transport network	0.435

Evidently, the highest correlation exists between indices 12 (number of flats with bathrooms or lavatories per 100 flats), 14 (proportion of flats with water to all flats), and 16 (proportion of flats connected to a sewage system). The above mentioned three indices show strong correlation (0.7) with index 17 (electricity consumption per capita). Because indices 12, 14, and 17 characterize the technical level and amenities of flats, it is evident that index 25 (proportion of those 18 years or older finishing secondary school) correlates strongly (0.7) with indices 12, 14, and 16, while index 24 (proportion of those 15 years or older finishing 8 years of elementary school) shows an average correlation (0.6) with indices 12, 14, 16, and 17. All in all, the facts described above strengthen the a priori hypothesis that correlation may exist between the dynamism of housing and the amenities of

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flats; moreover, between people finishing 8 years of elementary school or having medium-level qualifications and flats supplied with bathroom, water, electricity etc.

A characteristic feature of regional distribution of the factor scores in factor F_2 is that extremely high values can be found in the settlements of the Miskolc agglomeration, those of the industrial axis of Ózd and Leninváros, and in the environs of Hollóháza and Pálháza in the Hegyköz. The development level of technological infrastructure is closely connected to the spatial location of the industry of the county. Lower scores are allotted the agricultural regions in Bodrogköz, Mts. of Zemplén, Hegyalja, Cserehát (excluding settlements laying at the fringe of the valley of Sajó and Hernád rivers), in the Borsod Highplains which is traditionally a good agrarian region; only settlements that are adjacent to the Sajó river can reach the average level where, however, industry makes its influence felt. There are also lower factor scores than the average in the majority of settlements of Harangod and the North Borsod Karst.

The area of Ózd Highlands can be considered an averagely developed region having flats supplied with bathroom, water, electricity, etc. built in the 1950s and 1960s. The majority of settlements are

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dormitary settlements of Ózd with good transport facilities. Only settlements of valley of Sajó river have higher scores than the average.

Factor F_3 accounts for 4.71 per cent of the deviation square using 1.22 eigenvalue.

Indices that comprise factor F_3	factorweights
18. Transport network	0.814
19. Accessibility to nearest town or village (district seat) by most rapid means of transport	-0.569
20. Frequency of means of transport leaving for towns	-0.436

It is beyond question that factor F_3 is that of transport facilities. Weak and medium-level correlation is characteristic of the inner correlations of the factor. The regional distribution of scores of factor F_3 shows that settlements with favourable transport facilities are situated next to or not far from the main roads, i.e. along the traditional radial major transport routes /Mezőkövesd-Miskolc-Tornyosnémeti; Miskolc-Szerencs-Sátoraljaújhely; Miskolc-Kazincbarcika-Bánréve-Ózd; Miskolc-Nyékládháza-Leninváros; Miskolc-Nyékládháza-Mezőcsát). Set-

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tlements having unfavourable transport facilities are mostly hamlets situated in the hilly and mountainous regions or in long distances from transport corridors.

It should be outlined that index 18 comprising factor F_3 contributes also to factors F_1 and F_2. Consequently, transport characteristics have a decisive role in the formation of differences among regional levels of settlement infrastructure. Research has led to the conclusion that a medium-level correlation exists between factors F_1 and F_2, as well as F_2 and F_3, while factors F_1 and F_3 correlate substantially.

High scores of factors F_1, F_2 and F_3 are characteristic of rural settlements tending to become urban and industrial, as well as of settlements in the industrial axis of valley of Sajó river, and Miskolc agglomeration, of district seats, and of settlements having favourable transport characteristics (Figure 4). Highest scores of factors F_1, F_2 and F_3 are characteristic of social infrastructure of Miskolc district. A similarly high level of social infrastructure is represented by settlements of districts of Mezőkövesd and Szerencs. Subsequently, settlements of district of Mezőcsát possess the less favourable facilities while districts of Sátor-

aljaújhely, Encs, and Edelény are said to have the most unfavourable transport facilities.

Factor F_4 accounts for 4.43 per cent of the deviation square using 1.14 eigenvalue.

Indices that comprise factor F_4	factorweights
10. Proportion of one-room flats to all flats	0.800
15. Proportion of flats supplied with gas to all flats	-0.574
13. Proportion of flats supplied with electricity to all flats	-0.557

Factor F_4 characterizes the unfavourable conditions of housing and communality. Regional distribution of factor scores points out that the lowest scores are given by 14.4 per cent of rural settlements of the county. These settlements are situated mainly in the Mts. of Bükk, North Borsod Karst, Cserehát, Mts. of Zemplén, Hegyköz, and Borsod Highplains. Settlements having high scores lie in Bodrogköz, Harangod, Taktaköz, the Miskolc agglomeration, the surroundings of Leninváros, and in the valley of the Sajó, Bódva and Hernád rivers.

Types of social infrastructure in rural settlements of Borsod County

Types of social infrastructure in rural settlements of Borsod County were determined by the application of cluster analysis (using MacQueen algorithm), and the results of factor analysis were also taken into account. In the course of calculations, multivariate analyses were completed. Finally, a variable having 13 clusters was selected to constitute the basis for further investigations. This decision was made by giving priority to the purposes of the investigation (the desirable level of analysis), the practical aspects of application, the comparison of partial results of examination, the empirical experience, and cluster analysis.

All in all, a variable including 13 clusters was divided into I-V. main types and 9 subtypes which are presented in detail below and illustrated by Figure 5.

I. Social infrastructure in the initial stage of development

This type of social infrastructure involves 3 clusters: 11, 6, and 12, and approximately 40 % of rural settlements of Borsod County. Most settlements are situated in the North Borsod Karst, the Highlands of Cserehát and Zemplén, and Bodrogköz; however, they happen to occur also in other, isolated, regions of the county. Table I registers a permanent decrease of the population in this group of settlements. The dominance of an aging population (over 60 years) is characteristic of all the three subtypes of this main type consistently exceeding county mean values.

Table I Major characteristics of clusters 11, 6, and 12

Variables	county mean values	clusters 11	6	12
Number of settlements		36	48	59
Average population of settlements in 1980	1263	389	632	697
Number of small scale industrial workers in 1979	11	2	5	5
Value of consumer goods' turnover in retail trade in 1979 per capita (Fts)	3001	1477	2175	1637

Scores of basic institution network	12.1	5.4	7.9	9.1
Capacity of kindergartens for 100 children of 3-6 years in 1979	33.5	19.3	14.6	3.7
Proportion of those engaged in agriculture and forestry in 1980	41.8	52.0	57.0	54.0
Proportion of daily employment in 1980	59.7	63.0	53.6	61.8
Proportion of flats built after 1945 to all flats in 1980	52.5	36.2	47.4	45.4
Proportion of flats built between 1970 and 1979 to all flats in 1980	13.9	40.4	22.7	23.4
Proportion of flats with water to all flats in 1980	26.5	8.5	12.0	13.2
Proportion of flats with bathrooms or lavatories to all flats in 1980	21.7	12.2	17.5	16.9
Proportion of flats supplied with electricity to all flats in 1980	96.6	91.5	96.8	97.8
Proportion of flats supplied with gas to all flats in 1980	53.5	32.6	49.6	59.0
Accessibility (in minutes) to nearest town (district seat) in 1980	40.3	57	81	33
Frequency of means of transport leaving for towns in 1980 (departures/week)	81.2	39.7	38.6	66.7

Change in population number between 1949 and 1980	-9.0	-36.3	-26.6	-24.0
Differences in migration between 1949 and 1980	-13.2	-21.1	-19.1	-17.7
Proportion of 60 years old people or older in 1980	19.5	25.8	22.6	21.3

Social infrastructure in the initial stage of development consists of only the major elements of services, incl. services for housing, communality, trade, transport, public health, and elementary schooling. Many of these elements such as shops, consulting rooms, kindergartens, nurseries, elementary schools, are provided not by one settlement, but by adjacent groups of settlements. This type of infrastructure represents a low pace of housing, a high proportion of one-room flats, a low proportion of flats supplied with gas and water, a low value of consumer goods' turnover in retail trade, unfavourable transport characteristics (long distances from transport network), poor communication, lack of nurseries, and insufficient capacity of kindergartens. The devolution of social infrastructure has a great effect on the decrease of population, the distortion of demographic structure, exodus, and hence, on the decreasing incomes from agricultural production.

Three subtypes (clusters 11, 6, 12) of social

infrastructure in the initial stage of development can be distinguished which is based on the existing differences in the basic institutions.

First subtype (cluster 11) involves hamlets situated in the hilly and mountainous regions of the county which are characteristic of the accumulation of backward conditions; underdevelopment of the basic institution network; low level of technical infrastructure; unfavourable transport facilities and a low level of amenities in the flats.

Second subtype (cluster 6) consists mostly of hamlets and small villages of a definite agrarian nature lying in hilly and mountainous regions providing unfavourable living conditions, an insufficient and unbalanced network of institutions, underdeveloped technical infrastructure, negative transport characteristics, and long distances from towns. These are the settlements of the North Borsod Karst, Cserehát, Mts. of Zemplén, Hegyköz, Bodrogköz, and Taktaköz.

Third subtype (cluster 12) is comprised of small villages and hamlets with insufficient basic institution network, underdeveloped technical infrastructure, but more favourable transport facilities than in the previous subtypes. These rural settlements are situated in every part of the county in smaller numbers; they

constitute a contiguous ring only north of Encs in a region closed by Mts. of Cserehát and Zemplén, and in Bodrogköz.

II. Poorly developed social infrastructure with communication networks of medium-level

This type of social infrastructure includes clusters 10, 13, and 7 which generate two subtypes. Almost 40 percent of rural settlements in Borsod County belong to this type; the majority of them can be found in the housing zones of large villages and more developed settlements. In general, the second main type is characterised by good transport facilities and indices for public utilities and basic services which are at least up to county mean values. Between these two subtypes there are significant differences in the development level of basic elements of services (as is illustrated by Table II).

Table II Major characteristics of clusters 10, 7, and 13

Variables	clusters		
	10	7	13
Number of settlements	78	3	58
Average population number of settlements in 1980	718	1507	1592

Number of small scale industrial workers in 1979	5	15	14
Value of consumer goods' turnover in retail trade in 1979 per capita (Fts)	1913	3741	4154
Scores of basic institution network	7.9	20.6	18.3
Capacity of kindergartens for 100 children of 3-6 years in 1979	6.7	87.0	71.0
Capacity of nurseries for 100 children of 0-3 years in 1979	0.2	0.1	38.9
Proportion of those engaged in industry in 1980	47.3	29.4	39.3
Proportion of daily employment in 1980	72.5	52.5	47.5
Proportion of flats built after 1945 to all flats in 1980	55.2	57.6	51.7
Proportion of flats built between 1970 and 1979 to all flats in 1980	27.0	26.8	29.0
Proportion of flats with water to all flats in 1980	20.5	29.1	24.1
Proportion of flats with bathrooms or lavatories to all flats in 1980	25.5	31.0	29.3
Proportion of flats supplied with electricity to all flats in 1980	96.2	96.9	97.9
Proportion of flats supplied with gas to all flats in 1980	49.0	62.2	58.0
Accessibility (in minutes) to nearest town (district seat) in 1980	22	30	26
Frequency of means of transport leaving for towns in 1980 (departures/week)	82.2	52.3	77.4

Change in population number between 1949 and 1980	-5.5	-6.1	-14.3
Differences in migration between 1949 and 1980	-11.5	-8.7	-12.3
Proportion of 60 years old people or older in 1980	18.0	18.2	19.3

The value of index 3, which is the complex index of basic services, amounts to 10 scores in cluster 10 while these values in clusters 13 and 7 amount to 18 and 20 scores accordingly exceeding considerably the county mean values.

The first subtype (cluster 10) includes small housing settlements having a decreasing population, insufficient institution network, poorer than average technical infrastructure, and an industrial-agrarian occupational structure. These settlements constitute contiguous, territorially homogeneous groups on the southwestern hillside of the North Borsod Karst, at the southern fringe of the Cserehát, and in the valley of Hernád river, in the northern part of Borsod Highplains in the environs of Leninváros, in the Hegyköz, and in other, smaller, isolated parts of the county.

The second subtype (clusters 13 and 7) is formed by small and medium-size settlements with a partly existing institution network, having housing and agrarian functions, and providing their inhabitants

with facilities at an average level. They are situated in the Highlands of Ózd, Mts. of Bükk, in the southern part of Borsod Highplains, in Hegyalja, in the southeastern periphery of Mts. of Zemplén, as well as in other smaller areas of the county. This subtype forms a homogeneous group regarding the development level of social infrastructure; however, these settlements showed disintegration in the course of investigations of types of rural settlements of Hungary (BELUSZKY, P.-SIKOS, T.T. 1982, 1984).

III. Social infrastructure at an average development level

This type of social infrastructure (clusters 8 and 9) covers about 14 per cent of rural settlements of Borsod County. They are dispersed settlements situated in the hilly and mountainous regions as well as in the industrialised valley of Sajó river and in the Miskolc agglomeration. Majos characteristics of the occupation structure of the 49 settlements of this type are: high proportion (about 50 %) of workers engaged in industry; 30 per cent in agriculture; and 20 per cent in the tertiary sector.

In general, this type presented a rapid rate of house building between 1945 and 1980; it can be characterised by an average level of services of housing and public utilities (see Table III.).

Table III Major characteristics of clusters 9 and 8

Variables	clusters 9	8
Number of settlements	28	21
Average population number of settlements in 1980	2675	1041
Number of small scale industrial workers in 1979	26	12
Value of consumer goods' turnover in retail trade in 1979 per capita (Fts)	3031	3102
Scores of basic institution network	18.6	13.6
Capacity of kindergartens per 100 children of 3-6 years in 1979	43.0	67.8
Capacity of nurseries per 100 children of 0-3 years in 1979	0.0	0.0
Proportion of those engaged in industry in 1980	52.0	49.7
Proportion of those engaged in agriculture in 1980	28.3	31.6
Proportion of daily employment in 1980	65.5	58.9

Proportion of rooms for tourists to all flats in 1980	2.2	45.1
Proportion of flats built after 1945 to all flats in 1980	69.6	67.8
Proportion of flats built between 1970 and 1979 to all flats in 1980	23.6	21.7
Proportion of one-room flats to all flats in 1980	19.9	21.7
Proportion of flats with water to all flats in 1980	40.7	39.7
Proportion of flats with bathrooms or lavatories to all flats in 1980	43.3	49.4
Proportion of flats supplied with electricity to all flats in 1980	98.6	97.7
Proportion of flats supplied with gas to all flats in 1980	63.6	57.0
Accessibility (in minutes) to nearest town (or district seat) in 1980	20.7	60.0
Frequency of means of transport leaving for towns in 1980 (departures/week)	235	77.7
Change in population number between 1945 and 1980	39.1	8.9
Differences in migration between 1970 and 1980	-4.8	-3.5
Proportion of 60 years old people or older in 1980	13.4	16.6

The two subtypes of clusters 8 and 9 differ first of all in the development level of transport facilities, tourist services and basic services.

The first subtype (cluster 8) involves housing settlements closely connected to the agglomeration of the Sajó river valley. These settlements, situated in the hilly and mountainous regions of the county, have an averagely developed institution and transport network, higher than average technical infrastructure, and an industrial-agrarian occupation structure. They do not constitute a larger, contiguos group except for perhaps a few smaller groups in the northern part of Mts. Bükk and Zemplén, and other regions of the county.

In the second subtype (cluster 9) there are the settlements of the agglomeration and housing zone in the Sajó river valley which have a dynamically increasing population, more favourable than average institution network and technical infrastructure, adequate transport facilities, and an industrial occupation structure. About 75 % of rural settlements of the cluster are situated along the industrial axis of the Sajó river valley, and about half of them are the settlements of the Miskolc agglomeration. Industrial activity does not have a long history in these settlements, on the contrary,

occupational restratification of settlements was initiated to meet labour force demands of the near-by towns. Earlier, agricultural activity dominated in these rural settlements except for a few of them where extractive industry played an important role.

IV. Social infrastructure at the advanced stage of development

This type (cluster 4) involves medium-size rural settlements that have an agrarian-mixed occupation structure, a stagnating or decreasing population, an adequate supply of basic facilities and a more favourable than average infrastructural network. The 11 settlements of this type do not constitute a contiguous group in the county; they are situated in different localities. The value of the complex index of basic services amounts to 25.5 scores which are twofold higher than county mean values (Table IV.).

Table IV Major characteristics of cluster 4

Variables	Cluster 4
Number of settlements	11
Average population number of settlements in 1980	3059
Number of small scale industrial workers in 1979	32
Value of consumer goods' turnover in retail trade in 1979 per capita (Fts)	7092
Scores of basic institution network	25.5
Capacity of kindergartens per 100 children of 3-6 years in 1979	61.7
Capacity of nurseries per 100 children of 0-3 years in 1979	18.5
Proportion of those engaged in industry in 1980	36.3
Proportion of those engaged in agriculture in 1980	41.6
Proportion of daily employment in 1980	45.5
Proportion of flats built after 1945 to all flats in 1980	52.5
Proportion of flats built between 1970 and 1979 to all flats in 1980	18.5
Proportion of one-room flats to all flats in 1980	23.7
Proportion of flats with water to all flats in 1980	33.6

Proportion of flats with bathrooms or lavatories to all flats in 1980	38.0
Proportion of flats supplied with electricity to all flats in 1980	97.8
Proportion of flats supplied with gas to all flats in 1980	64.7
Accessibility (in minutes) to nearest town or district seat in 1980	20.0
Frequency of means of transport leaving for towns in 1980 (departures/week)	68
Change in population number between 1945 and 1980	-1.8
Differences in migration between 1970 and 1979	-9.3
Proportion of 60 years old people or older in 1980	16.5

Five out of the 11 settlements of this type possess the necessary basic institutions while in six of them the institutional network needs improving. Both the size of retail trade shops and the value of consumer goods' turnover in retail trade shops in former small market towns (such as Abaújszántó, Gönc, Tarcal etc.) are above the average. There are nurseries, kindergartens, elementary schools (having at least 9 class-rooms), and, of course, libraries in each settlement of this type. An indicator of the development level of basic supply can be that in more than 50 % of these rural settle-

ments there are consulting rooms. The accessibility (in minutes) to nearby towns and district seats is easy, however, the frequency of means of transport is lower than mean values of the county. In short, social infrastructure of this type provides favourable living conditions for the rural population.

V. Social infrastructure characteristics of small towns

Rural settlements of the two clusters (3 and 2) have an institution network, occupational structure, the level of industrialization, as well as long-term demographic processes which can be found in small towns of Hungary (illustrated by Table V.)

Table V Major characteristics of clusters 3 and 2

Variables	Clusters	
	3	2
Number of settlements	2	8
Average population number of settlements in 1980	3703	8158
Number of small scale industrial workers in 1979	45	78

Value of consumer goods' turnover in retail trade in 1979 (Fts)	17,572	14,531
Scores of basic institution network	28.5	31.2
Capacity of kindergartens per 100 children of 3-6 years in 1979	54.9	47.1
Capacity of nurseries per 100 children of 0-3 years in 1979	37.7	6.4
Proportion of those engaged in industry in 1980	59.7	44.8
Proportion of those engaged in agriculture in 1980	21.5	27.6
Proportion of daily employment in 1980	18.9	40.0
Proportion of flats built after 1945 to all flats in 1980	84.0	62.2
Proportion of flats built between 1970 and 1979 to all flats in 1980	39.8	23.2
Proportion of one-room flats to all flats in 1980	70.2	26.2
Proportion of flats with water to all flats in 1980	70.2	46.1
Proportion of flats with bathrooms or lavatories to all flats in 1980	69.0	48.8
Proportion of flats supplied with electricity to all flats in 1980	98.5	98.3
Proportion of flats supplied with gas to all flats in 1980	74.2	59.3
Proportion of flats connected to a sewage system to all flats in 1980	74.3	49.3

Accessibility (in minutes) to nearest town or district seat in 1980	12.5	6.7
Frequency of means of transport leaving for towns in 1980 (departures/week)	81.5	128.8
Change in population number between 1945 and 1980	212.9	46.8
Differences in migration between 1970 and 1979	18.4	-3.3
Proportion of 60 years old people or older in 1980	8.5	13.8

Ten settlements of the county belong to this type, incl. 4 district seats (such as Edelény, Szerencs, Mezőcsát and Encs), and 3 former district seats (as Szikszó, Putnok and Sajószentpéter). In each of them there is a nursery, kindergarten, elementary school, library, and in 6 of them even a secondary school.

The provision of housing differs from settlement to settlement, which is partly explained by the significant state housing in addition to the private constructions in the 1960s and 1970s. State housing usually takes the form of flats built on estates, consequently the proportion of residential buildings having more than one storey has indreased (e.g. 11.9 per cent in Sajóbábony; 5.9 per cent in Sajószentpéter; 4.1 per cent in Edelény). The amenities

of flats are of high level, the proportion of flats supplied with water and connected to a sewage system is well above the county average.

Settlements of this type have good communication links with their environs; practically, all the settlements are situated along or next to main transport routes. All in all, the social infrastructure which characterises small towns provides favourable living conditions for the rural population. Indeed, these settlements increased their population by 1.5 times between 1949 and 1980.

It should be noted that two settlements were not ranged into clusters in the course of determining types of social infrastructure and they constituted independent clusters. One of them was Tokaj where the proportion of those engaged in the tertiary sector exceeds 40 per cent, and the other settlement was Ragály with 27.3 % of flats having more than one storey to all flats.

Conclusion

The following conclusion can be drawn as a result of investigations of social infrastructure in 352 rural settlements of Borsod-Abaúj-Zemplén County. More than 40 per cent of the settlements

have a social infrastructure which is in the initial stage of development; about 40 per cent of them have a poorly developed social infrastructure and a public utility network which is only at a medium level of development; only 17 per cent of rural settlements have developed or averagely developed social infrastructure; and there are only 10 dynamically developing rural settlements (less than 3 per cent) which can be characterized by social infrastructure of the small town type.

Investigations underlined the significant role of transport in the development of the social infrastructure of rural settlements. The analysis contributed to determining regions where rural settlements with poorly developed or underdeveloped social infrastructure are found in greater numbers. These settlements are situated first and foremost in the Cserehát, North Borsod Karst, Mts. of Zemplén, Hegyköz, Bodrogköz, Mts. of Bükk and Borsod Highplains.

The examination which was carried out in Borsod County as a model region pointed out that factor and cluster analyses can be applied in preparing the typology of social infrastructure of Hungary and other regions.

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APPENDIX

Sikos, T. Tamás: Investigations of Social Infrastructure in Rural Settlements of Borsod Country. Pécs: Centre for Regional Studies, 1987. 44 p. Discussion Papers, No. 4.

Block Diagram of Investigations of Social Infrastructure of Rural Settlements

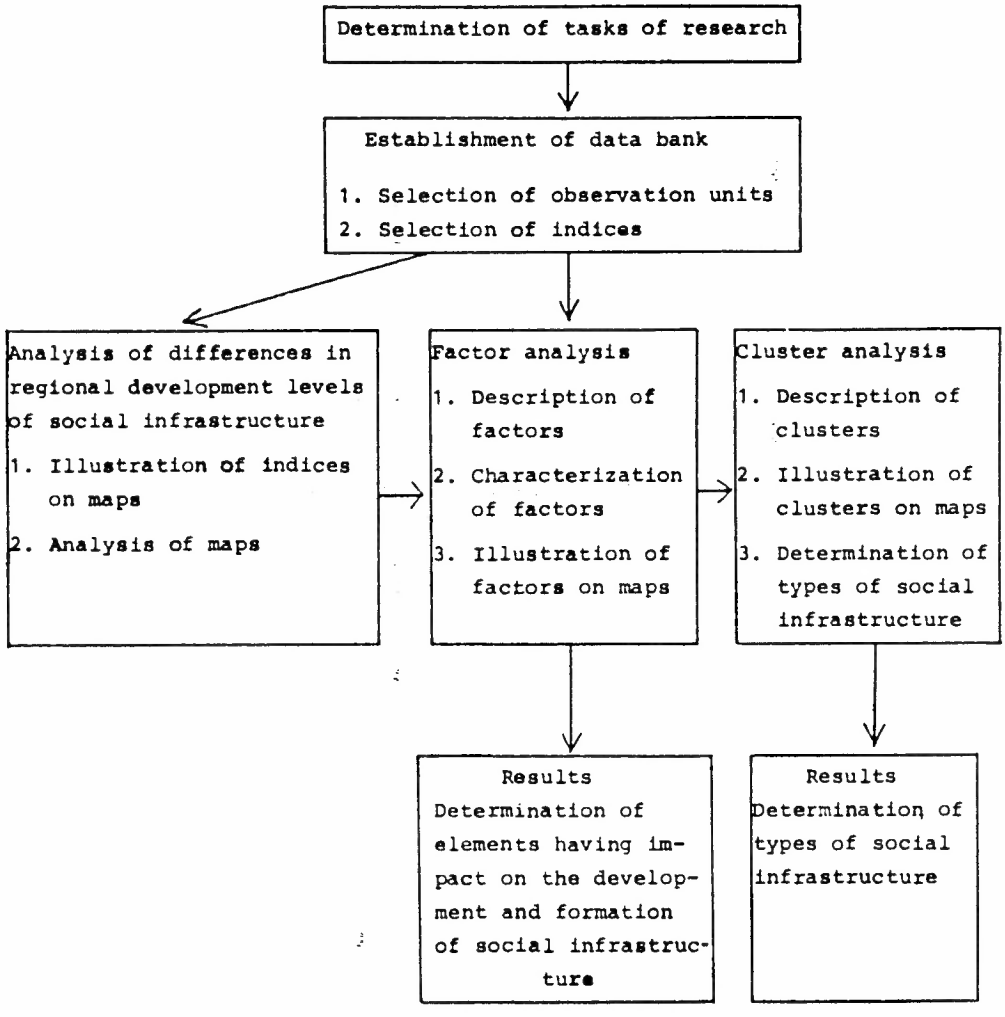

Fig. 1

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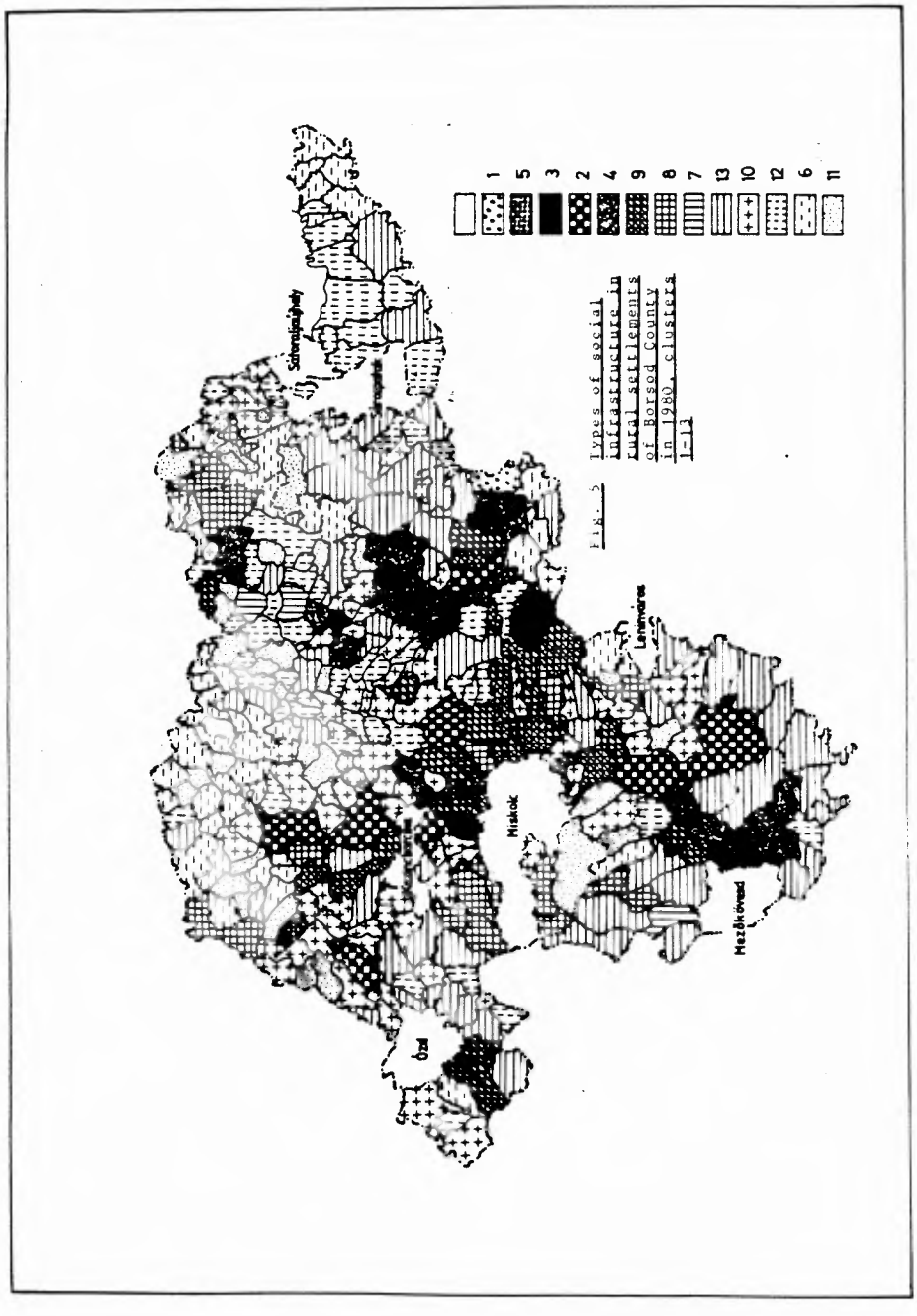

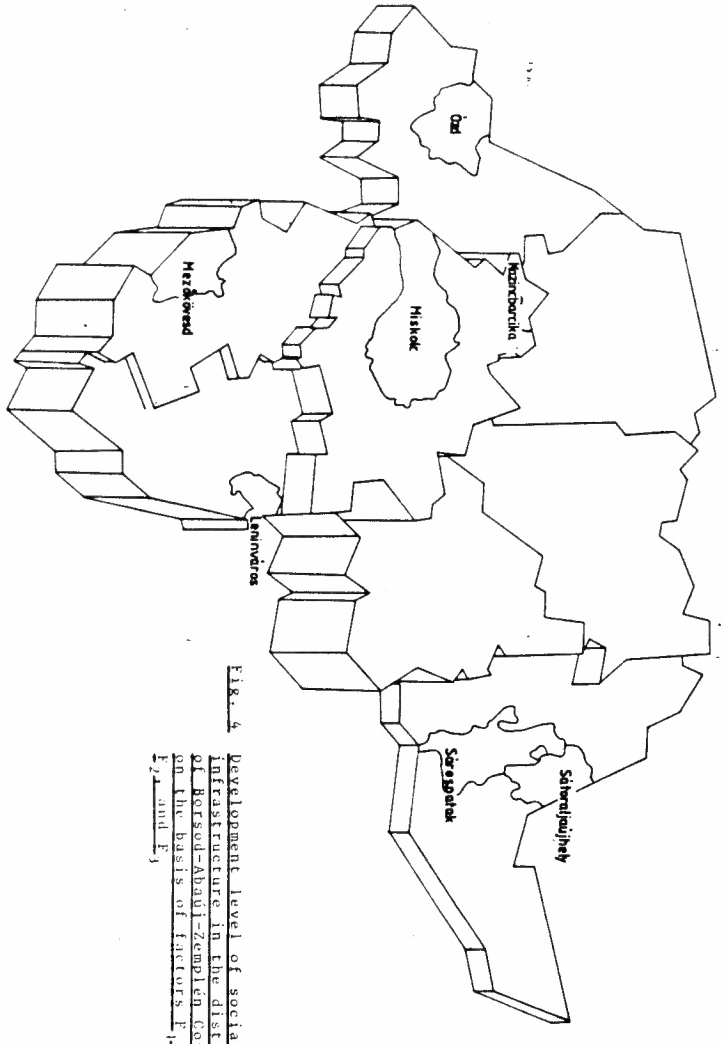

Fig. 4 Development level of social infrastructure in the districts of Borsod-Abaúj-Zemplén County on the basis of factors I, II and F

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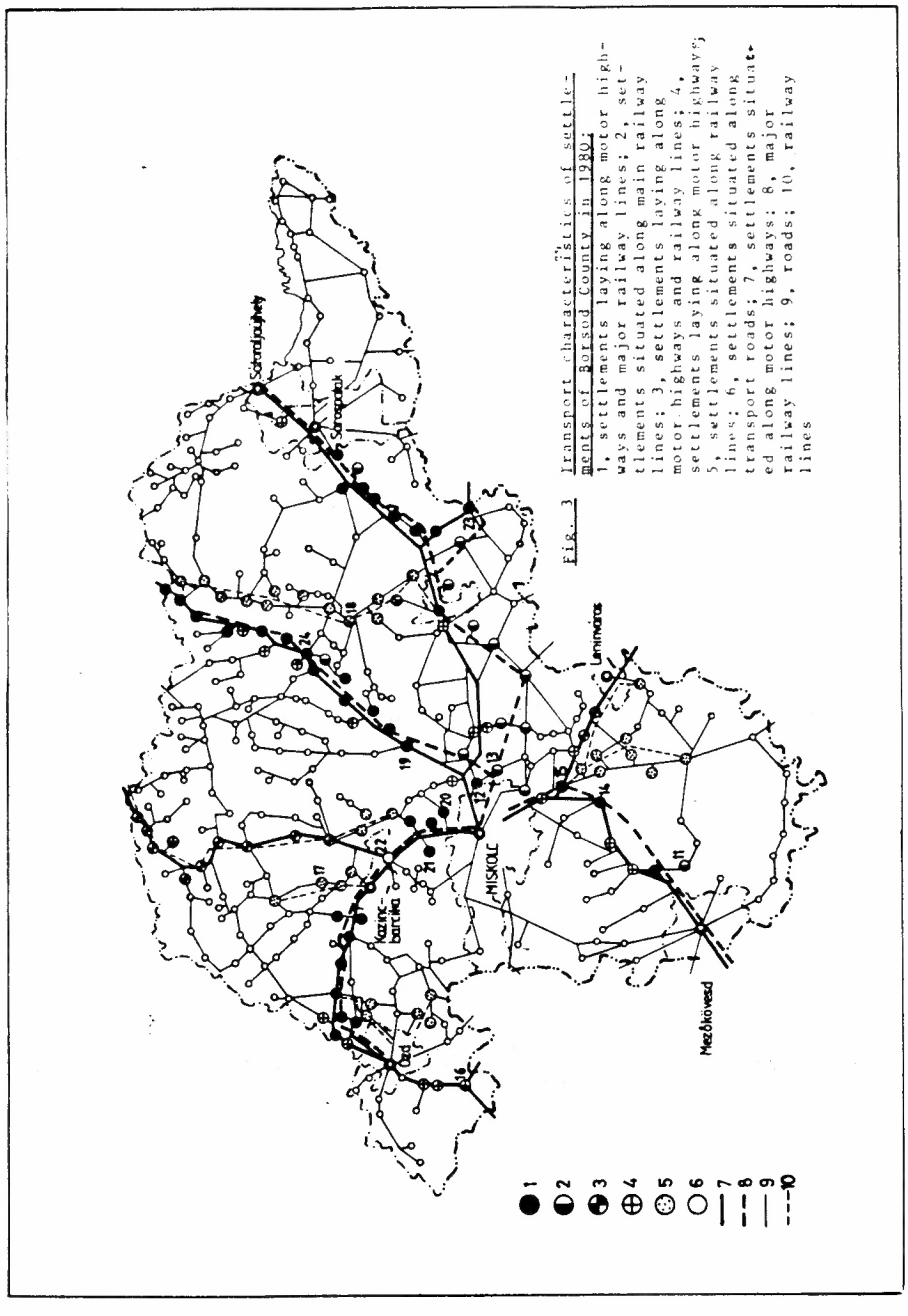

Fig. 3 Transport characteristics of settlements of Borsod County in 1980:
1, settlements laying along motor highways and major railway lines; 2, settlements situated along main railway lines; 3, settlements laying along motor highways and railway lines; 4, settlements laying along motor highways; 5, settlements situated along railway lines; 6, settlements situated along transport roads; 7, settlements situated along motor highways; 8, major railway lines; 9, roads; 10, railway lines

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Fig. 2 Landscape types of Borsod-Abaúj-Zemplén County, Northern Hungary

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