

ASPECTS OF HOSPITALS' ACTIVITY

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Hospital is the focal point of the health care system. Bz this study, we proposed to provide statistical evidence useful for health planning policy by highlighting the activity's aspects and territorial particularities.

The level of hospital utilization can be appreciated by measuring the activity, and also, the population accessibility to hospital care services can be indirectly estimated through measuring the solicited healthcare services by population.

In Romania, the hospital system meet an older territorial layout, which largely covers the needs of population, but which should take into account the current Romanian context characterized by the need of a European standards harmonization and by regional development.

Keywords: *hospital activity, episodes of hospitaliyation, days of hospitalization, lenght of stay*

Introduction

Hospital is one of the medical units which have the largest impact on the image of the entire health system. Almost everywhere in the world, and especially in the EU - European Union, the health system status is largely reflected in the hospital system status.

From many points of views, the Romanian hospitals away behind hospitals in the EU. A possible solutions, which is rather imposed by the membership in the EU, is to adopt and adapt the standards running the system at European level.

We can note with resignation the opinions of key managers of the health system which were recently made public: only 3 (in the opinion of the Minister of Public Health) and about 20 hospitals (in the opinion of the President of the Romanian College of Physicians) meet the European standards.

Improving the quality of care in the medical hospital system should also concern us as citizens of Romania, but also as EU citizens, in order to ensure a high quality health care that can be settled later.

The hospital activity in Romania provides specialized services in medical settings with beds like: institutes, hospitals, sanatoriums, health centres, medical centres, medical and social assistance facilities.

Among the main objectives of the hospital system activity should be included measures such as:

- reducing the avoidable hospitalizations (by disease prevention measures);
- reducing the time to resolve the case (by early treatment of patients);
- improving doctor-patient relationship (by improving communication);
- improving the professionalization of staff involved in the actual care of impatiens [3].

Quality of hospital care can be assessed also by the level and result of the activity in hospital; the purpose of this research is to provide a precise picture of hospital activities at national level in 2007, under two aspects: volume and outcome. To reach this goal, we intend to achieve two research objectives:

- Analysis of hospital activity in terms of volume;
- Analysis of hospital activity in terms of result.

Metodology

The present study is a cross-sectional analysis conducted for the year 2007.

In general, it is difficult to quantify hospital activity; any attempt to compare hospitals based on various activity's parameters and performance indicators is irrelevant, in the absence of a classification of hospitals.

Therefore, this study aims to provide useful evidence regarding the overall activity in all hospitals reporting data (Minimum Basic Data Set at patient level) for the DRG system, but without proceeding to compare different units each others. *Data source* was represented by the 2007 National DRG database.

Inclusion criteria: all hospitals that reported in the 2007 data to the National DRG database (in this respect were included 487 hospitals, some of which are financed as tariff per case, and others only report data having other types of reimbursement).

Details and quantification of the volume and result of hospital activity were made for this study by analysing the level of indicators such as: number of episodes of hospitalization, number of days of hospitalization, average length of stay and status at discharge.

Results.

1. Analysis of hospital activity in terms of volume

In 2007, Romanian hospital system included 487 hospitals reporting clinical data at the patient level by the DRG system.

There have been 5,137,237 total episodes of hospitalization accounting for a total of 39,795,912 days of hospitalization, which averagely represent 10,548 episodes per hospital, respectively 81,716 hospitalization days per hospital.

Taken together, these figures can indicate only the level of the activity, so the researches will focus on the descriptive analysis of the four indicators already mentioned in methodology and based on issues relating to: residence area, patient insurance status, criteria and type of admission, type of hospital departments; for certain variables, the description was done at the district and city level.

In the year 2007, the image of hospital activity in Romania can be sys-

tematized in the following figures (Figure 1), when is expressed by the number of episodes of hospitalization:

- 55.8% of hospitalizations are acquired by patients living in urban areas;
- 96.6% of hospitalizations were of patients who are insured for health care;
- around 50% of hospitalizations were emergency admissions;
- 44.2% of hospitalizations were recorded in department having a surgical profile.

a. The number of episodes of hospitalization was analyzed according to :

- Patient insured status

Hospital activity is one of the major resource consumers in the health system and an appropriate price must be paid/reimbursed for this consume; between activity, cost and reimbursement must be a such perfect correlation so hospital activity to be realized in optimum financial conditions, and so that during the period when the contract is

rolling out, there is no activity blocking which would endanger the service provision for the main beneficiaries, represented by patients.

Globally, there are several funding schemes, each with advantages and disadvantages.

In Romania, the main funding mechanism that attempts to link these issues (complexity of the case with resource consumption) is regulated and is grounded on a performance-based system (DRG system) which is quite commonly used worldwide.

This mechanism largely depends on the funds collected in the system coming primarily from the insurers' contributions.

Our analysis after the patient insured status leads to the conclusion that money reimbursed for hospital activity in the vast majority (about 95% of hospitalization episodes) are paid directly from the fund collected from the insurers' contributions; in the rest of situations (percentage under 5% of episodes of hospitalization), hospital activity is address to patients who are not insured and therefore they not pay a contribution in the fund from which hospitals are reimbursed (FUAS).

Taking into account that, in Romania, hospitals are the major medical institution which solve the emergencies, we can appreciate that this share of less than 5% of uninsured patients is a good weight; only for a few districts, uninsured patients are more than 5% of all hospitalized patients: Calarasi, Galati, Ialomita.

Figure 1. The % structure of no. of episodes of hospitalization, by different variables included into DRG National database, Romania, 2007

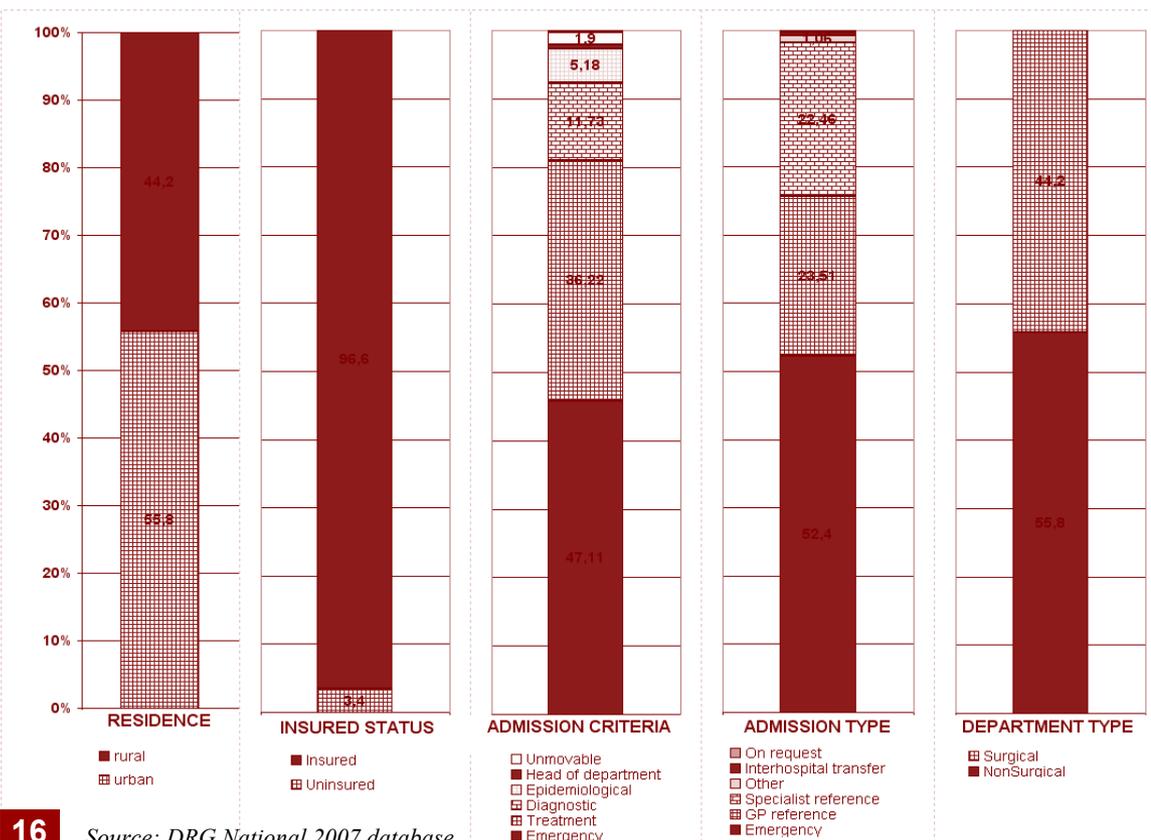
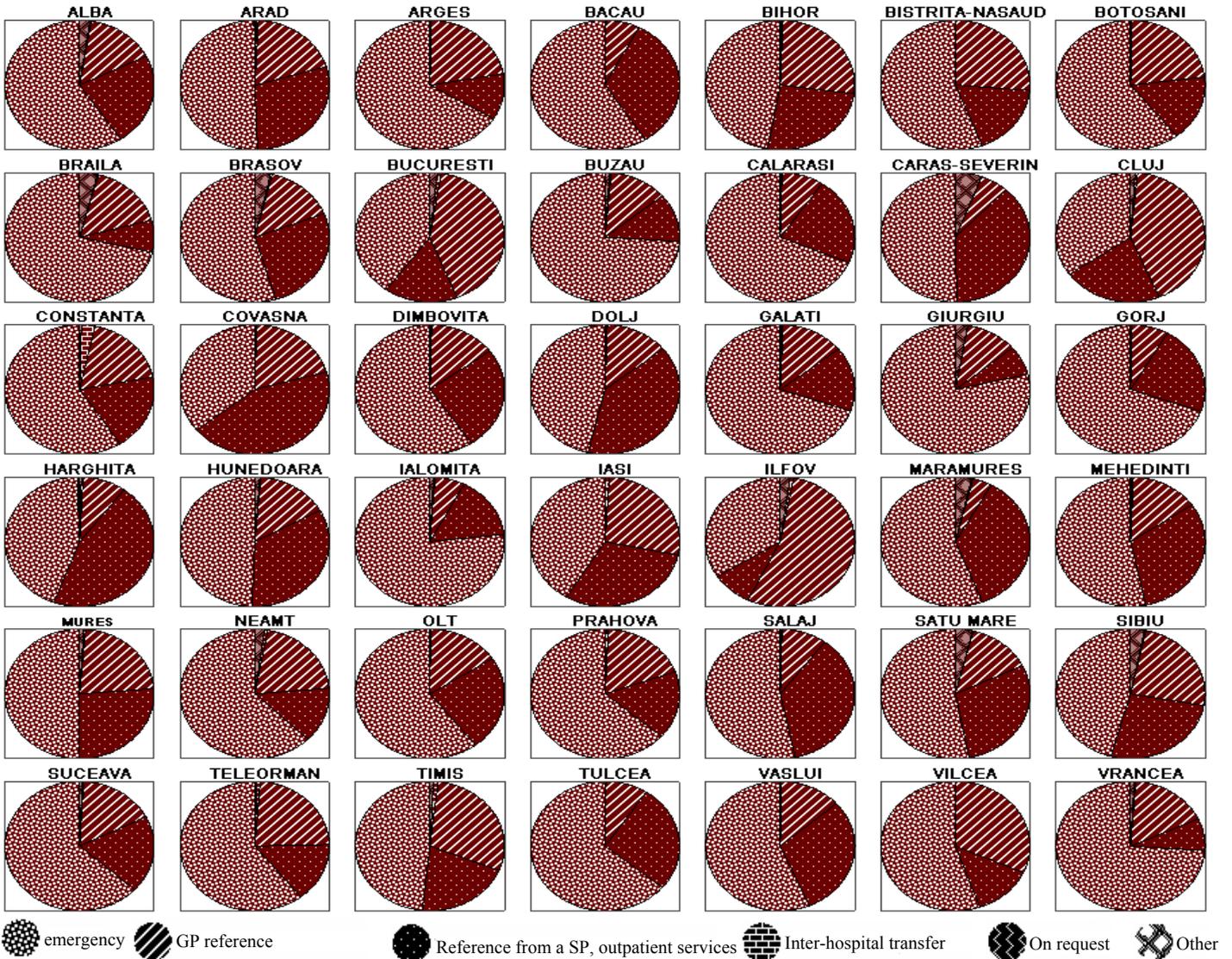


Figure 2. The % structure of no. of hospitalized episodes, by type of admission, by district, Romania 2007



Source: 2007 DRG National database

- Type of admission

According to the reference system and patient flow within the health system, tertiary care level (the hospital) is the highest level for patient's access (except for medical emergencies), while other levels of health care are designed to relieve the tertiary care from additional and inappropriate activity.

Analysis by type of admission could be appropriate, because it may indicate or suggest firstly the emergency character of the case, and on the other hand, the person who directed the patient to a hospital service. Thus, the person who directed the

patient to hospital services is: - either a doctor:

- family doctor/general practitioner (GP reference)
- specialist physician (reference from a SP in outpatient services)
- specialist physician (inter-hospital transfer by a practitioner from the hospital)

- or even the patient himself:

- in an emergency situation (emergency)
- on request (on request).

As you can see from the pie charts series illustrated in Figure 2, on average, about 50% of episodes of hospitalization are acquired by patients calling a hospital service in case of an emergency

As it can easily be observed, there are districts where the percentage of emergency admissions is much over 50% and this districts are: Braila, Buzau, Calarasi, Dambovita, Galati, Giurgiu, Gorj, Ialomita, Neamt, Olt, Prahova, Suceava, Teleorman, Tulcea, Vrancea

The following ways of hospitalization (by reference to the MF, and from the outpatient SP) account to 10-45% share of total hospitalizations. The reference from a GP was the main way to access hospital care in a higher weight in districts such as Bucharest and Cluj; the references from the SP in outpatient services was the second way for hospitalization in Harghita and Covasna districts where the share is over 40%.

- The type of hospital department

In the hospitals that reported patient's level clinical data in DRG system there were 58 different types of speciality wards. Given the diversity of medical specialities, in this article will be presented only data corresponding to two major types of departments defined in terms of their profile: surgical and non-surgical respectively.

Thus, the hospitalization episodes recorded in surgical departments were about 1.5 times more than in other hospital departments. The share corresponding to "surgical" hospitalizations varies among the Romanian districts in a range from 56% (Harghita) and 76% (Covasna).

There is no any statistically significant correlation (chi square test, $p\text{-value} > 0,05$) between these percentages and the total number of hospitalizations so the number of "surgical" patients does not depend on total number of patients; see the cartodiagramme no. 1.

- Locality

The territorial analysis after the number of episodes of hospitalization did not reveal any territorial aggregation of localities in terms of interquartile ranges localization. The cartogramme 2 highlights localities where there is more than one hospital; the colour intensity is increased as the hospital activity in that locality is more intense in terms of number of hospitalization episodes.

Thus, in quartile IV falls, in particular, the university centres and county localities; this is due to the district and emergency hospitals existing in these localities [2].

The few episodes of hospitalization (20) were identified in the village Podriga (Botosani district), while the largest were in Bucharest (about 1 million episodes of hospitalization).

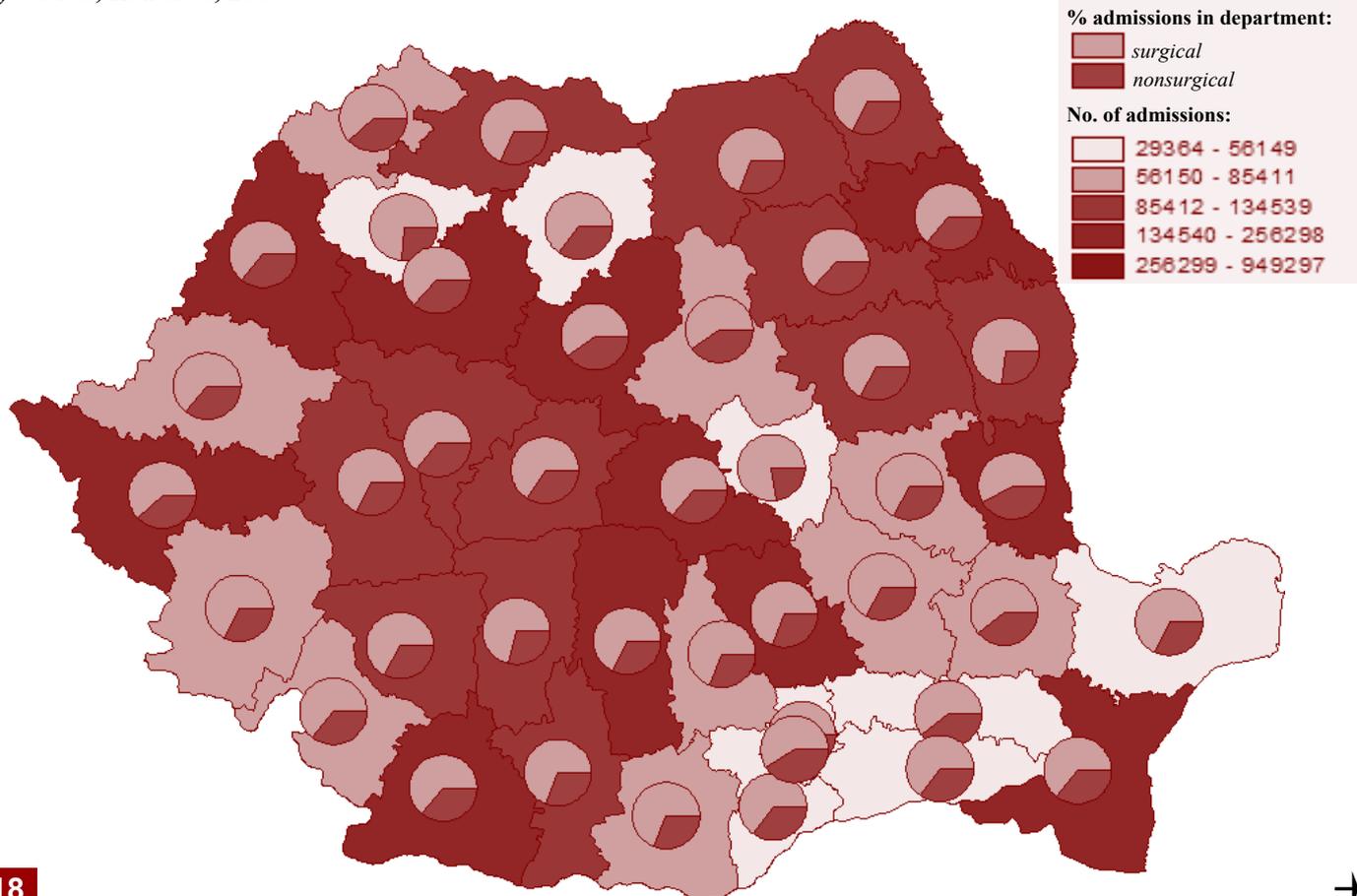
b. Number of hospitalization days

Among the basic indicators of hospital use and activity, the number of days of hospitalization reflect the activity's volume in a more accurately manner, because many expenditure and consumption (administrative and maintenance expenditure, pays for staff, etc.) are accounted per diem.

In this study, the hospital activity analysis in terms of days of hospitalization shows that, by far, the district with the highest number of the days of hospitalization is Bucharest (about 6.5 million days hospitalization), being followed by the districts with an university centre (cartodiagramme 3, areas shaded in the most intense red colour).

The fewer days of hospitalization were recorded in the districts surrounding these university centres and the border districts (districts represented in white in cartogramme 4: Ilfov, Giurgiu, Ialomita, Calarasi, Mehedinti, Salaj, Bistrita-Nasaud, Tulcea, Buzău, etc.)

Cartogramme 1. No and % of cases hospitalized by the presence or not of the surgical profile of the department, by district, Romania, 2007



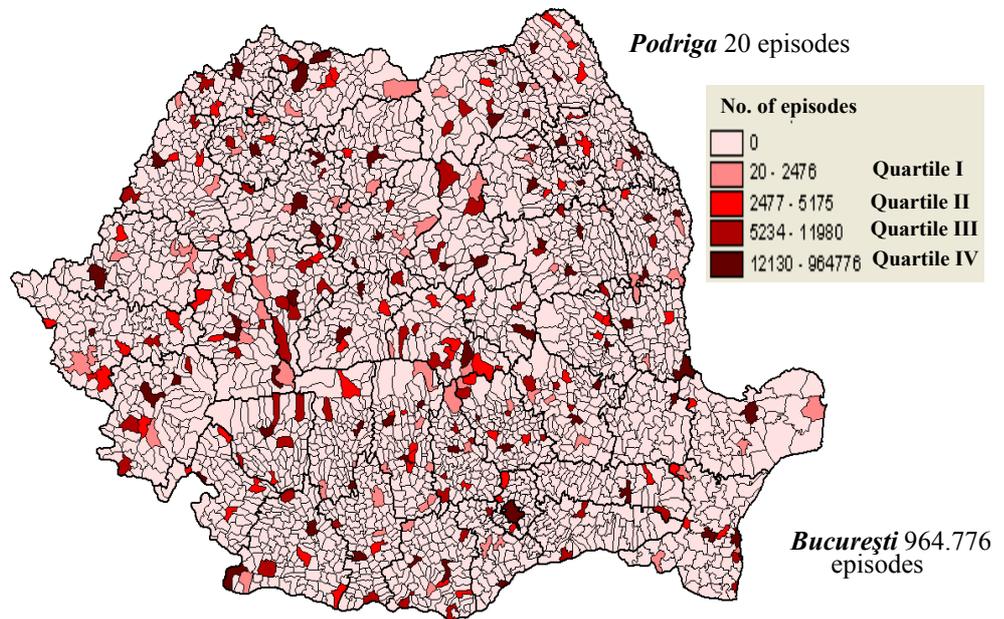
The distribution of hospitalization days by type of department is a more accurate indicator, because the length of stay varies by patient's pathology; in this respect, the highest number of days of hospitalization are recorded in surgical departments (index of department type = hospitalization days in surgical departments / hospitalization day in other departments) had a value of 1.4. It is noted that the value of this index, calculated using the number of episodes of hospitalization and number of days of hospitalization is not equal (1.5 times versus 1.4 times). This is because the average length of stay for the two types of sections is not equal (7.5 to surgical departments, versus 8.2 for non-surgical ones).

c. Average Length of Stay

The average length of stay (ALOS) is the ratio between number of hospitalization days and number of hospitalization episodes.

It represents also the indicator that is most often referred to the situations in which is intended a reconfiguration and restructuring of hospital beds and hospital de-

Cartograme 2. No of episodes of hospitalization, by locality, Romania, 2007



partments' redistribution plan of all hospital system.

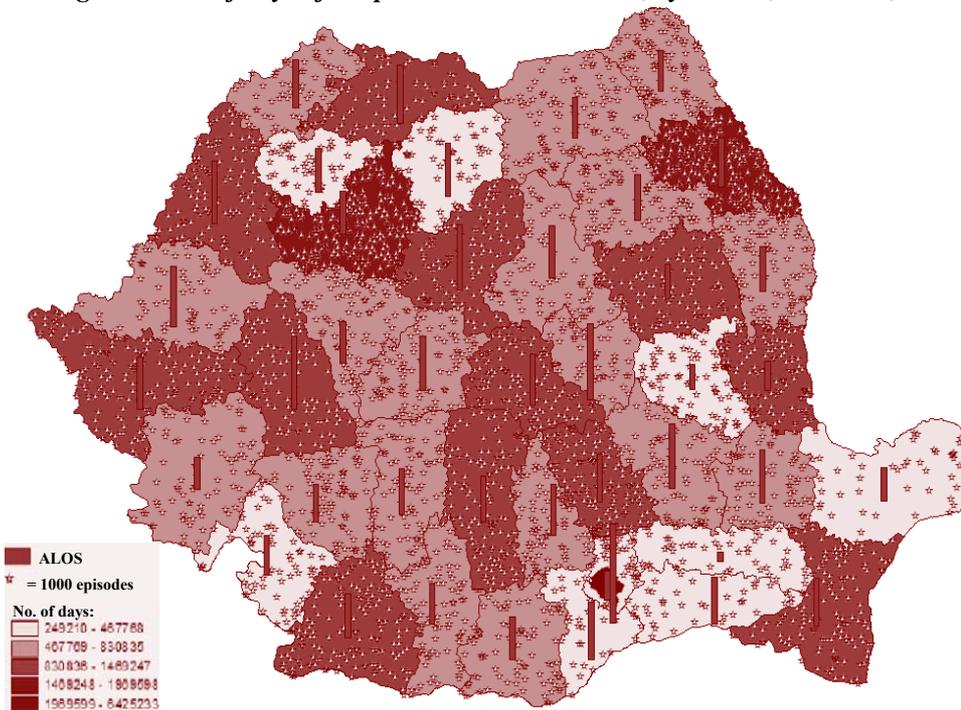
ALOS's value is also one of the criteria used as a standard to be met and represent a tool used both in hospital activity modelling and in its evaluation.

Cost-effectiveness analysis takes into account the value of this indicator and the decrease of its value sometimes represents one of the effects of the different financial mechanisms which are based on performance and economic efficiency.

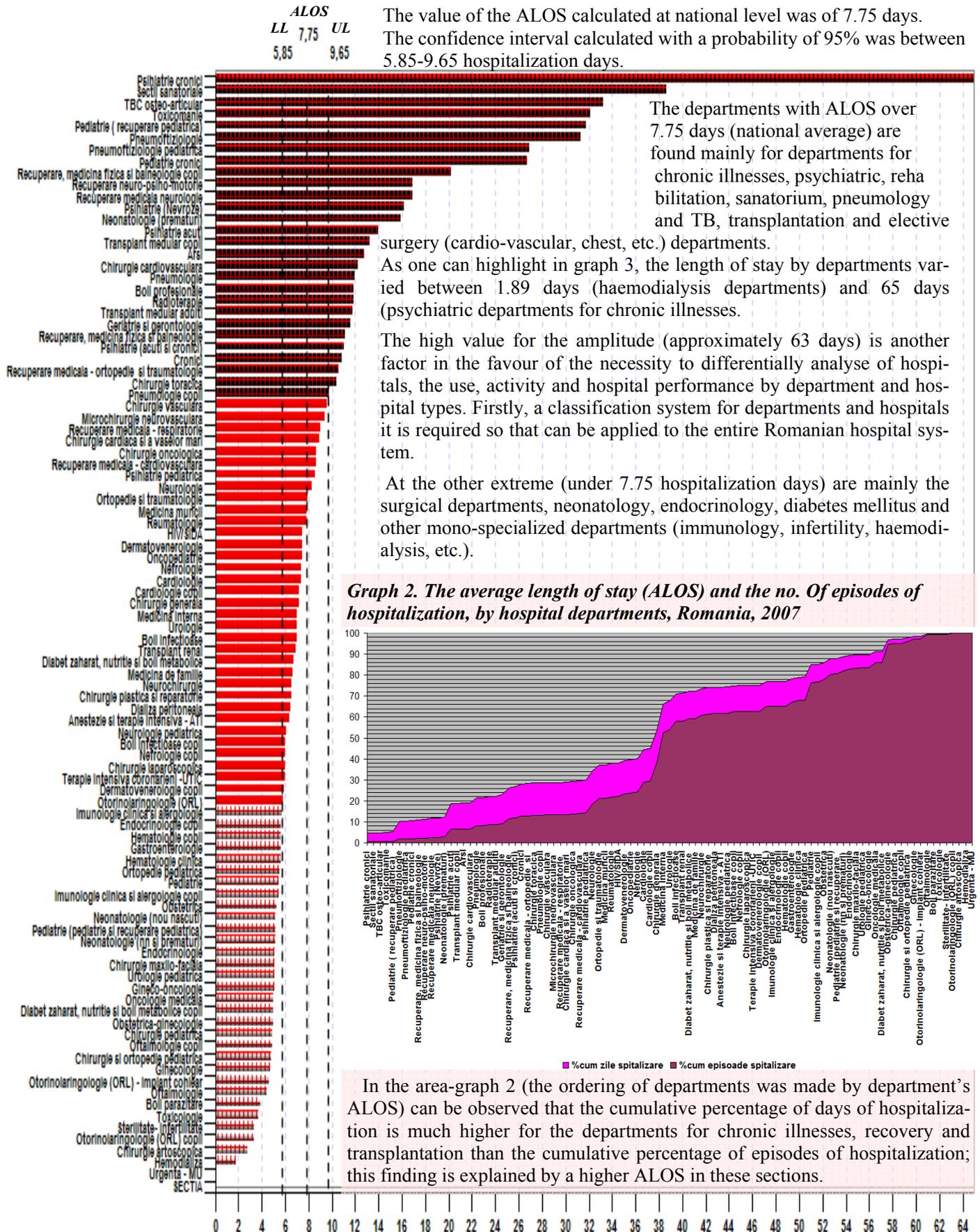
Table 1. The district situation on the values of the hospital activity indicators

DISTRICT	Hosp.	Hosp.	ALOS
Ilfov	338767	30413	11,14
Covasna	545838	56149	9,72
Hunedoara	1082727	113855	9,51
Mures	1261650	138646	9,1
Buzau	766577	85411	8,98
Bihor	1258068	141518	8,89
Arad	654812	74486	8,79
Maramures	941211	109480	8,6
Giurgiu	249210	29364	8,49
Sibiu	781890	93798	8,34
Bistrita-Nasaud	382061	46080	8,29
Braila	598387	72300	8,28
Timis	1469247	178061	8,25
Harghita	535843	65459	8,19
Brasov	1157703	141817	8,16
Dambovita	661386	81303	8,13
Iasi	1843169	229078	8,05
Satu Mare	528601	66025	8,01
Prahova	1336947	167748	7,97
Calarasi	364803	45883	7,95
Constanta	1201706	151561	7,93
Arges	1142185	145592	7,85
Valcea	740168	94440	7,84
Neamt	806492	102938	7,83
Vaslui	793809	101518	7,82
Salaj	391774	50773	7,72
Dolj	1295481	168097	7,71
Cluj	1969598	256298	7,68
Teleorman	585537	76503	7,65
Alba	720930	95089	7,58
Suceava	830835	110296	7,53
Botosani	757504	101118	7,49
Mehedinti	467768	62562	7,48
Olt	710470	95052	7,47
Gorj	666741	91189	7,31
Bacau	963427	134539	7,16
Tulcea	309093	43762	7,06
Caras-Severin	592367	84264	7,03
Galati	956227	140258	6,82
București	6425233	949297	6,77
Vrancea	448092	68705	6,52
Ialomita	261578	46512	5,62
TOTAL	39795912	5137237	7,75

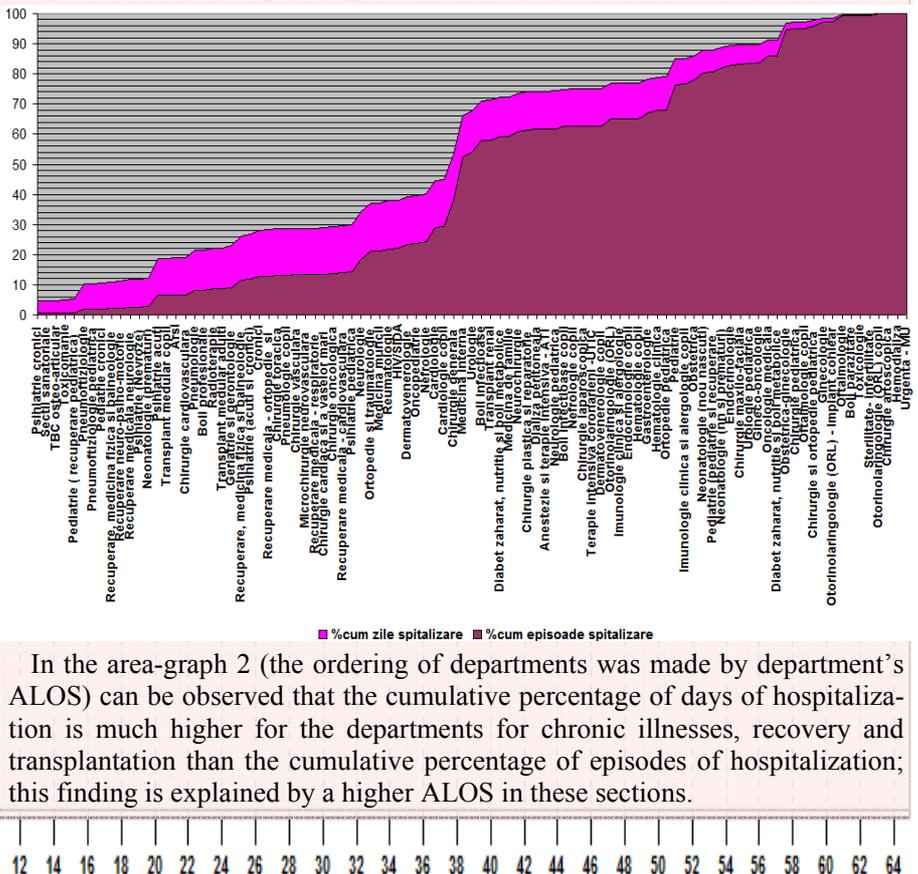
Cartogram3. No. of days of hospitalization and ALOS , by district, Romania, 2007



Graph 1. The average length of stay (ALOS), by hospital department, Romania, 2007



Graph 2. The average length of stay (ALOS) and the no. Of episodes of hospitalization, by hospital departments, Romania, 2007



2. Analysis of hospital activity in terms of result - Hospital discharge status of the patient

Status at hospital discharge represents a variable indirectly estimating the result of hospital activity; however, for a better approximation if hospital activity effectiveness, the hospital discharge status should be correlated with the severity and prognosis, and also with the analysis of hospital mortality.

From Figure 3 it may be noted that there are large differences between the district models representing the share of patients by their hospital discharge status.

In all districts, the hospitalized patients being declared as "cured" when they left the hospital is over 25%, and those whose the health status have been improved is between 50-75% of hospitalized cases. The deaths and aggravated cases are very few to raise a serious issue in a district. The situation is changing when we analyze hospital discharge status by different aspects. Thus, according to the admission criteria can be noticed more discordant results (figure 4):

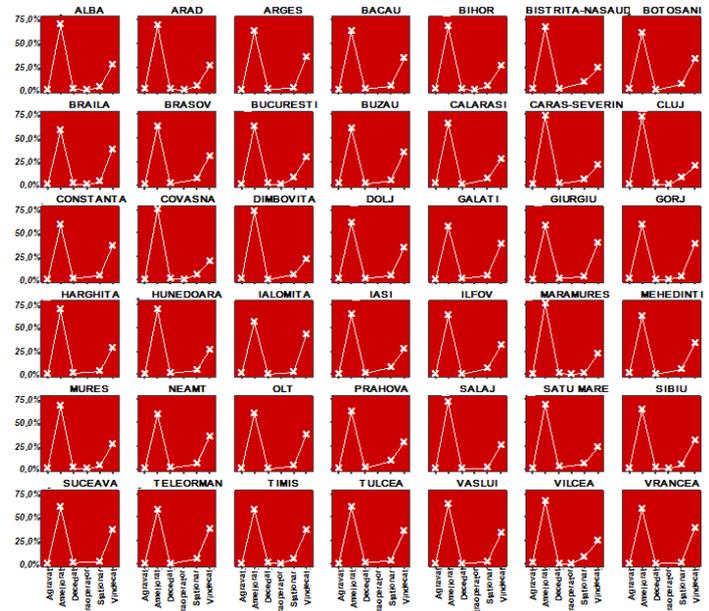
- the healing was completed in almost 90% of the patients who were admitted in order to receive specialized care in the moment of birth; about only 1/3 (32.5%) of emergency cases were completely cured; the remaining admissions were cured at the rate of below 30%;

- about 2/3 (between 62%-82%) of hospitalizations were discharged in an improved condition; in the case of healthcare provided in the moment of birth, the "improved" condition was recorded in 10% of patients;

- no any improvement or worsening of health status ("stationary") was obtained for 3% -8% of patients; the exception was represented by "legally compulsory admittance" admissions for which over 1/3 (37.7%) of patients were discharged in the same health status as in admission moment;

- death occurred in less than 2% of cases; the highest share of deaths was recorded for emergencies and patients which can not be moved (1.9% and 1.5%). Pretty obvious in this analysis is the structure almost identical for patients hospitalized for "diagnosis" and "treatment". Although the

Figure 3. The share of episodes of hospitalization, by the hospital discharge status of the patient, by district



Source: 2007 DRG National Database

two situations should greatly differ on the hospitalization outcome there was no statistically significant difference (chi square p-value > 0.05) between the two types of admission, expressed as percentage from total number of admissions.

The percentage of patients admitted in hospital by a "head of department" decision is similar with the national percentage (see category "all"); this finding argues that such hospital admission type is appropriate, and the head of department as coordinator of department activity may decide on admission or not of a patient.

Conclusions

The hospital activity is characterized by a large number of emergencies (over 50%), high addressability to surgical specialties and wide variations in ALOS.

Further analysis of cost-effectiveness and of the specific type of activities should be performed based on an adequate and relevant hospitals and departments classification (by acute/chronic care, specialized care, adult/child care).

The present study offers a descriptive overview of hospital activity at national level, and a more refined analysis could be performed in a second step, for different hospital types.

References

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Figure 4. The structure of hospitalizations by the admission criteria

