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## HOSPITAL ADMISSIONS AND MOBILITY IN THE VENETIA REGION. SOME GEOGRAPHIC CONSIDERATIONS.

*Introduction.* – The Health Service in the Venetia Region is divided into a number of basic, preventive and specialist services appointed to provide health care, and situated in the 36 USL (1) into which the region is divided. The Venetia Region possesses a large number of hospitals, evenly distributed throughout the area. However, alongside this figure there exists a fragmentation and segmentation of services which does little to promote efficient and well-organised hospital care.

Besides involving a waste of resources, this situation also implies considerable patient mobility within the region (infra-regional mobility). In some cases, however, the high standard of services also attracts flows of patients from other regions (inter-regional mobility).

The reorganisation of the health service foresees a reduction in the number of hospitals in order to enable the rationalisation of services and the re-evaluation and improvement of care.

The objective and its means of achievement are easily identifiable; not so, however, the end result, since the restructuring plans, dictated more by economic and political choices than by ones to do with territorial organisation, have already sparked off controversy and stand-taking (on the part of authorities, trade unions and communities), with the result that the plan's applicability, and therefore its effectiveness, are called into question.

*Hospital Facilities.* – Among the service infrastructures capable of determining the standard and quality of life of a given population, the health

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(\*) The first section is the work of S. Salgaro; the second section is the work of S. Vantini; introduction and conclusions are works of both the authors.

(1) Unità Socio-sanitarie Locali (Local Health Units which bring together a number of communes under one roof for the purpose of health administration).

TAB. 1

## STATE AND PRIVATE HOSPITALS, NUMBER OF BEDS AND AVERAGE OCCUPANCY OF BEDS.

| REGION        | State Hospitals |         |                      |                        | Private Hospitals |         |                      |                        |
|---------------|-----------------|---------|----------------------|------------------------|-------------------|---------|----------------------|------------------------|
|               | n° hosp.        | n° beds | beds per 1000 inhab. | average occup. per bed | n° hosp.          | n° beds | beds per 1000 inhab. | average occup. per bed |
| Piedmont      | 81              | 21,136  | 4.9                  | 74.3                   | 54                | 6,390   | 1.5                  | 70.0                   |
| Valle d'A.    | 1               | 628     | 5.4                  | 92.9                   | -                 | -       | -                    | -                      |
| Lombardy      | 148             | 50,062  | 5.6                  | 71.5                   | 95                | 19,086  | 2.1                  | 62.1                   |
| Trentino-A.A. | 22              | 5,967   | 6.7                  | 74.1                   | 21                | 1,491   | 1.7                  | 68.4                   |
| Venetia       | 102             | 31,781  | 7.2                  | 72.5                   | 33                | 4,262   | 1.0                  | 60.5                   |
| Friuli-V.G.   | 26              | 9,703   | 8.1                  | 69.2                   | 9                 | 1,137   | 0.9                  | 62.9                   |
| Liguria       | 42              | 11,969  | 7.0                  | 78.9                   | 25                | 1,763   | 1.0                  | 53.0                   |
| Emilia-R.     | 107             | 23,423  | 6.2                  | 77.9                   | 51                | 6,041   | 1.5                  | 73.7                   |
| Tuscany       | 80              | 20,877  | 5.9                  | 69.5                   | 35                | 3,505   | 1.0                  | 71.2                   |
| Umbria        | 18              | 4,970   | 6.0                  | 70.6                   | 6                 | 437     | 0.5                  | 47.2                   |
| Marche        | 52              | 8,836   | 6.2                  | 68.7                   | 15                | 2,380   | 1.7                  | 51.1                   |
| Latium        | 89              | 23,954  | 4.6                  | 76.7                   | 148               | 19,957  | 3.8                  | 68.0                   |
| Abruzzo       | 24              | 8,288   | 6.5                  | 67.3                   | 12                | 2,439   | 1.9                  | 81.1                   |
| Molise        | 6               | 1,565   | 4.7                  | 75.7                   | 3                 | 220     | 0.7                  | 51.8                   |
| Campania      | 75              | 21,318  | 3.6                  | 68.4                   | 93                | 9,420   | 1.6                  | 70.1                   |
| Apulia        | 82              | 23,733  | 5.8                  | 67.4                   | 49                | 7,008   | 1.7                  | 73.5                   |
| Basilicata    | 13              | 2,580   | 4.1                  | 64.2                   | 2                 | 913     | 1.5                  | 96.7                   |
| Calabria      | 42              | 9,963   | 4.6                  | 58.5                   | 31                | 3,723   | 1.7                  | 78.7                   |
| Sicily        | 103             | 23,748  | 4.6                  | 65.5                   | 56                | 4,224   | 0.8                  | 73.0                   |
| Sardinia      | 35              | 8,065   | 4.8                  | 66.8                   | 14                | 2,053   | 1.2                  | 65.5                   |
| ITALY         | 1,148           | 313,576 | 5.4                  | 71.1                   | 752               | 96,450  | 1.7                  | 68.0                   |

service plays a primary role. The area taken into consideration here (the Venetia Region) is particularly dynamic from a socio-economic point of view, with a high standard of health services. In fact, the level of care guaranteed by public clinics and hospitals in the Venetia is remarkable, if compared to other regions. Statistical data (fig. 1) clearly show how the region benefits from a high number of hospital beds overall (it comes second after Lombardy) and an equally high number of beds per inhabitant (coming second to Friuli-Venezia Giulia).

Most of the services are provided by state hospitals, even if it exists a number of «classified» hospitals (2) (8 units with a total of over 1,430 beds)

(2) Hospitals run by religious institutions, and therefore private, but recognised by the State as being of public utility.

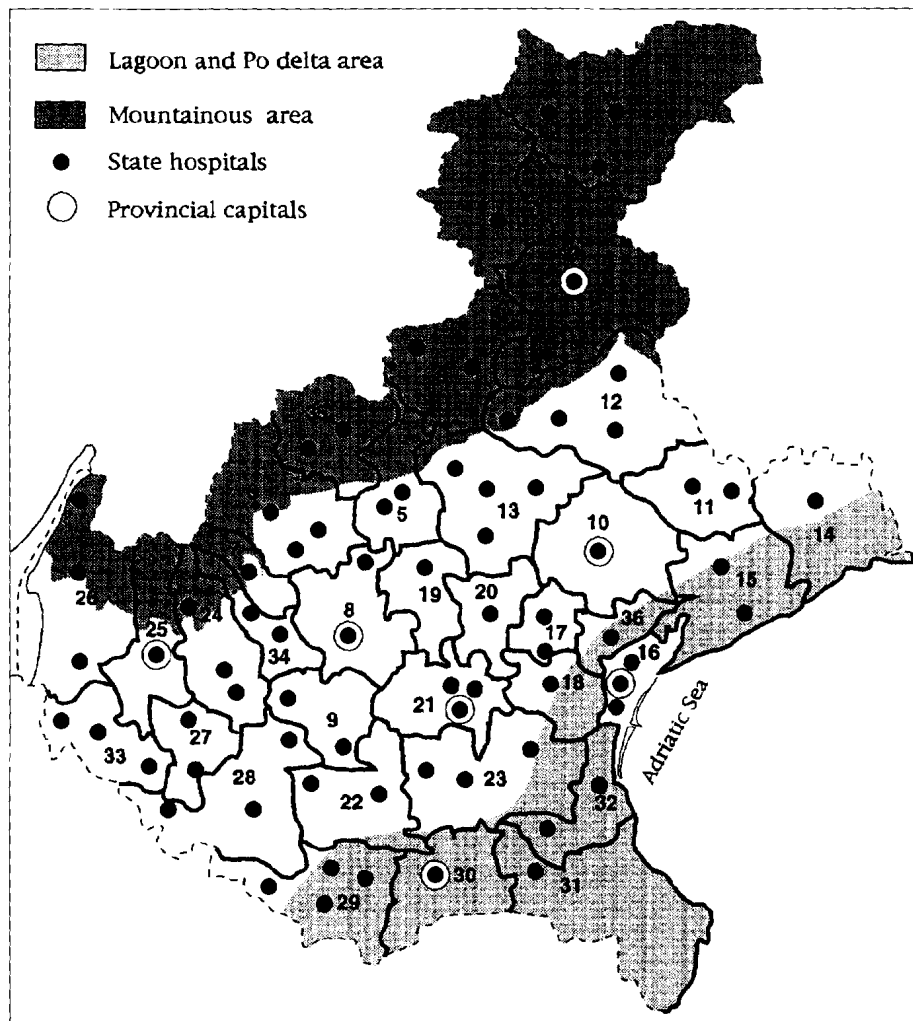


FIG. 1 - LOCATION OF STATE HOSPITALS IN THE LHU AREAS OF THE VENETIA REGION.

and private clinics (24 units with a total of 3,194 beds, 2,214 of which are *convenzionati*) (3).

There are 75 state hospitals with a total of 29,933 beds. As can be seen in fig. 1, these are distributed evenly throughout the region, even in areas where the presence of high ground might suggest the contrary. In some marginal areas, however, because of the height and shape of the land (as in

(3) This means that they operate special tariffs, in agreement with the National Health Service.

TAB. 2

## ADMINISTRATIVE BODIES AND HOSPITAL FACILITIES IN THE PROVINCES OF THE VENETIA REGION.

| Province       | Population<br>at 1991<br>Census | Administrative Bodies<br>and Hospital Facilities |           |               |                    |
|----------------|---------------------------------|--------------------------------------------------|-----------|---------------|--------------------|
|                |                                 | N° of<br>LHUs in<br>the area                     | Hospitals | Hospital Beds |                    |
|                |                                 |                                                  |           | Total         | Per 1000<br>inhab. |
| Belluno        | 212,085                         | 4                                                | 7         | 1,896         | 8.9                |
| Vicenza        | 747,957                         | 7                                                | 14        | 4,548         | 6.1                |
| Treviso        | 742,470                         | 4                                                | 11        | 4,182         | 5.6                |
| Venice         | 809,310                         | 7                                                | 12        | 5,378         | 6.6                |
| Padua          | 830,130                         | 5                                                | 10        | 6,612         | 8.0                |
| Verona         | 788,343                         | 6                                                | 15        | 5,759         | 7.3                |
| Rovigo         | 250,502                         | 3                                                | 6         | 1,558         | 6.2                |
| <i>Venetia</i> | <i>4,380,797</i>                | <i>36</i>                                        | <i>75</i> | <i>29,933</i> | <i>6.8</i>         |

the Belluno area, shown in light grey) or due to environmental characteristics (as in the Po delta and the river-valley and lake areas, shown in dark grey) the presence of hospitals has always been scarce and centralised.

The origins of the almost homogenous distribution of hospitals in the region can be traced both to the distant and not so distant past. Because of their geographical position and their role in history, towns and cities of Venetia have always been affected by flows of goods and people. In the past, therefore, the spread of infectious diseases was not uncommon, and it became essential to isolate or at least move patients away from inhabited areas in order to avoid contagion and the spread of disease. As a result, people were received and treated in the hospices and lazzarettos which began to grow up in peripheral areas and near to religious institutions situated away from centres, along the main communication routes, and in many cases these became the original nuclei of today's hospitals.

With the reform act of the *Servizio Sanitario Nazionale* (National Health Service) (Act n° 833/78), and the launch at the beginning of the 1980s of the LHUs most hospitals came together under state management and, thanks to its past, Venetia found itself with a hospital structure which was well-distributed throughout the region, hierarchically structured, qualitatively valid, and equipped with a decidedly higher number of beds per inhabitant than the national average (7.1). Records show that at that time there were 42,495 hospital beds (as well as a further 4,624 available in private

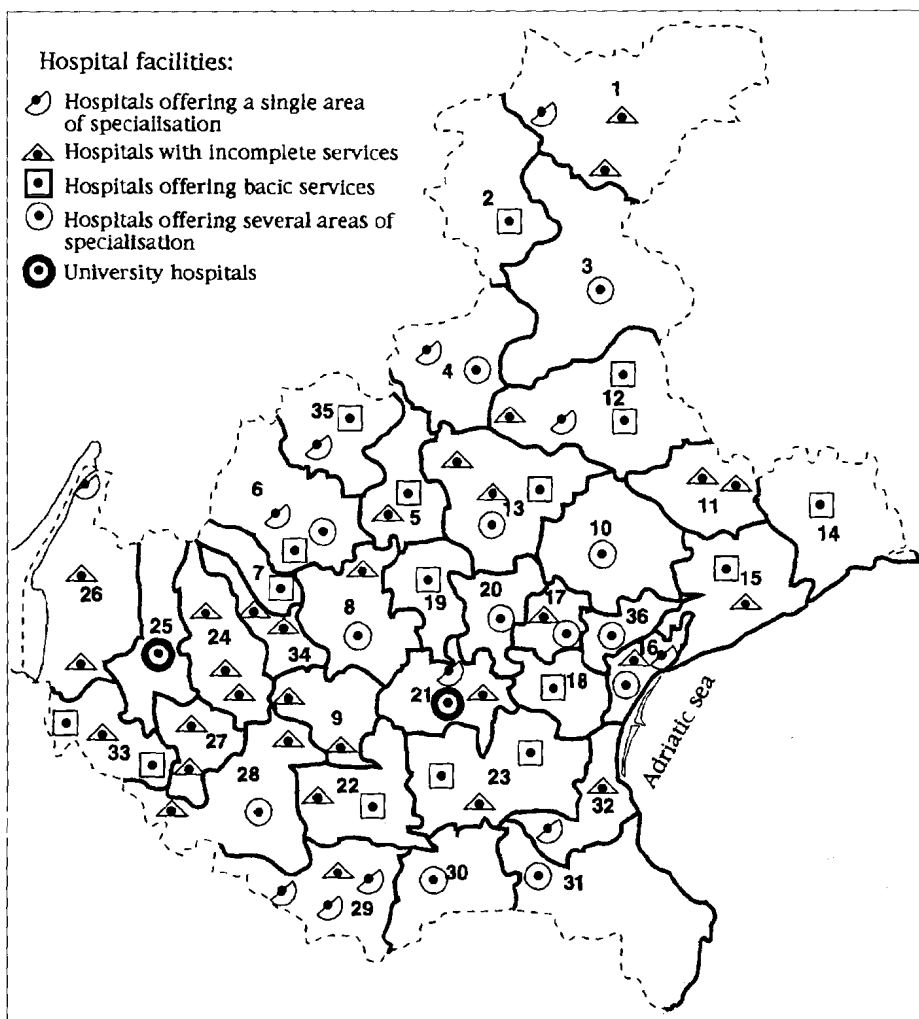


FIG. 2 – LEVEL OF FACILITIES IN STATE HOSPITALS.

'state-linked' clinics), meaning 10.9 beds per 1000 inhabitants, 9.7 of which were available in state hospitals. The subsequent reorganisation of the health service through the regional health plans has led to a progressive reduction in the number of hospital beds, so that the present figure is 6.8, still higher, however, than the national average (5.4).

The approval of the 1991 financial bill (with restrictive expenditure criteria renewed in subsequent financial laws) indicated that the regions should reach an objective of 6 hospital beds per thousand inhabitants (4) (tab. 2).

(4) See art. 4 «Disposizioni in materia sanitaria», Financial Act 30.12.91, n° 412

The large number of existing hospitals and their distribution in the region have contributed to the creation of a network of Local Health Units of contrasting characteristics. In fact, while a study of the kind of facilities available allows us to identify a fairly wide range of hierarchic levels (in terms of services offered) (fig. 2) (from the two university hospitals at LHU 25 and 21 at the top of the hierarchy, to units specialising in one area only), specialisation or the dividing up of specialised services leads to considerable hospital mobility.

*Hospital Mobility.* – Despite the variable figures regarding flows from one year to another, it is significant to point out that in 1991 71.7% of patients (572,570 out of 798,803 admissions) were attracted by services in LHUs outside their own area. This figure rises to 75.9% if we also consider those patients admitted to hospitals outside the region (this statistic does not include users of services not requiring hospitalisation).

The average figures regarding attraction and outward movement within the region over the last three years (5) clearly point to the different levels existing between the various hospitals.

Only 13 LHUs (36%) register a positive balance of admissions between attraction and outward movement. Fig. 3, however, shows a rather unique phenomenon. We would be justified in assuming that the LHU in which attraction prevails over outward movement are those of the provincial capitals where the level and types of specialisation on offer are capable of almost completely satisfying medical and health-related needs. Instead, it is the intermediate hospitals that exert strong powers of attraction, or, at least, those offering a high standard of basic specialised services (LHU 26), or those where, in addition to the level of facilities and areas of specialisation on offer (fig. 2), there is a high standard of service (LHU 4).

It should be remembered that the widespread presence of hospitals with limited specialisation facilities has created high expectations of quality among the public. This high quality is the result of the ease with which staff are managed since they are motivated to work harder by the competition between hospitals, but above all it is the result of the direct personal relationships which often exist between patients and health service employees.

The smaller, peripheral hospitals are therefore more popular, their success being linked to the fact that they are all situated close to communes in the urban belt where, compared to hospitals of a higher level, they are attractive because of the quality of service offered in basic areas of specialisation (LHUs 20, 26, 13).

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(5) The many and varied reasons for hospitalisation (variations in seriousness, typology, pathology, etc.) has led us to use the average of the figures available. The only data available to us refer to 1989, 1990 and 1991.

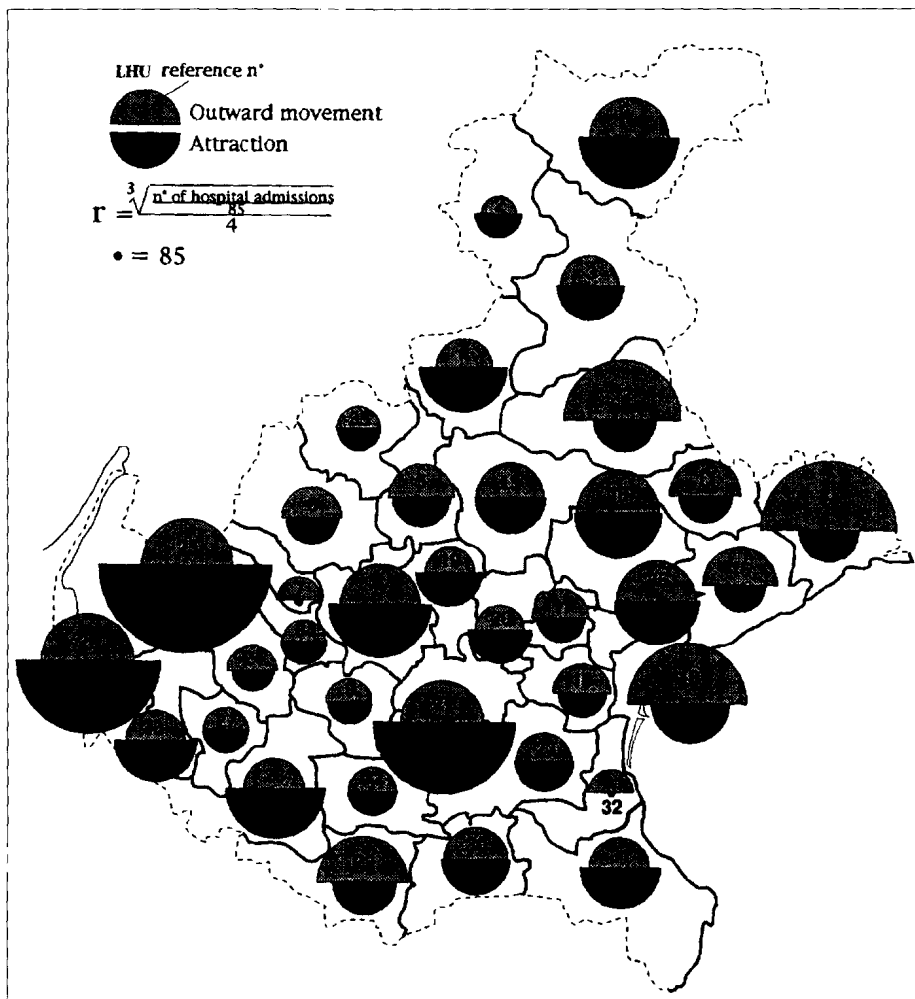


FIG. 3 – INTER-REGIONAL HOSPITAL MOBILITY.

The marginal LHUs, such as nos. 7, 11, 12, 14, 22, 23, 24, 29, 31 and 33, are those which register the highest rates of outward movement. The scarcity of specialisation facilities, along with often difficult communications and elevated journey times due to tortuous roads, all frequently lead to the search for better-equipped and more easily accessible hospitals in neighbouring areas.

A macroscopic example of this situation is LHU 32. Even though it is equipped with two hospitals (Cavarzere and Chioggia) with 78 and 278 beds respectively, the LHU only registers outward flows. As well as being determined by the position of the hospitals, this state of affairs is also caused, in the case of Cavarzere, by its size and therefore its level, and in the case of Chioggia, by its location (although Chioggia is connected to the mainland by a bridge, it is still an island, and in order to reach it via land it is necessary to cover a long distance around the lagoon).

A relatively similar situation is presented by inter-regional mobility flows. The distribution and level of hospitals in the Venetian Region represents a considerable attraction factor: this is clearly shown by the balance between the number of Venetian residents admitted to hospitals in other regions (outward movement) and the number of residents from other regions admitted to Venetia hospitals (attraction), which registers a credit figure of 23,446 units.

The most substantial outward movement is registered towards the neighbouring regions of Friuli-Venezia Giulia, Trentino-Alto Adige, Lombardy and Emilia Romagna, in descending order. Only the first of these, however, shows a credit balance, because of easy access and efficient services, and 63% of this comes from the attraction exerted on LHU 12 and 14 alone.

On the other hand, the regions where the Venetia Region exerts most attraction are Lombardy, Trentino Alto Adige, Emilia Romagna, Apulia, Friuli, Sicily, Campania, Piedmont, Latium, Tuscany and Calabria (fig. 4).

This high credit balance is determined by the LHUs of the provincial capitals and in particular the two university centres of Verona (LHU 25) and Padua (LHU 21), where the hospitals are equipped with better facilities. In fact, the ratio between attraction and outward movement, as regards the level of specialisation involved, confirms that the average value of 1.6 rises to 1.9 for high-level areas of specialisation, and to 2.1 for intermediate ones, while it falls to 1.2 for basic areas of specialisation (6). Indeed we can say that some LHUs, by virtue of the high level reached in certain areas of specialisation, manage to exert a proportionally higher attraction.

In general, the LHUs affected by this phenomenon are above all those in peripheral areas (26, 28, 33) towards which the adjoining areas may gravita-

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(6) The figure of 34,325 emigrants to 57,771 immigrants refers to 1988, the latest data available from the *Regione Veneto*; however, a comparison with some indirect data does not seem to indicate any great variation in figures from year to year.

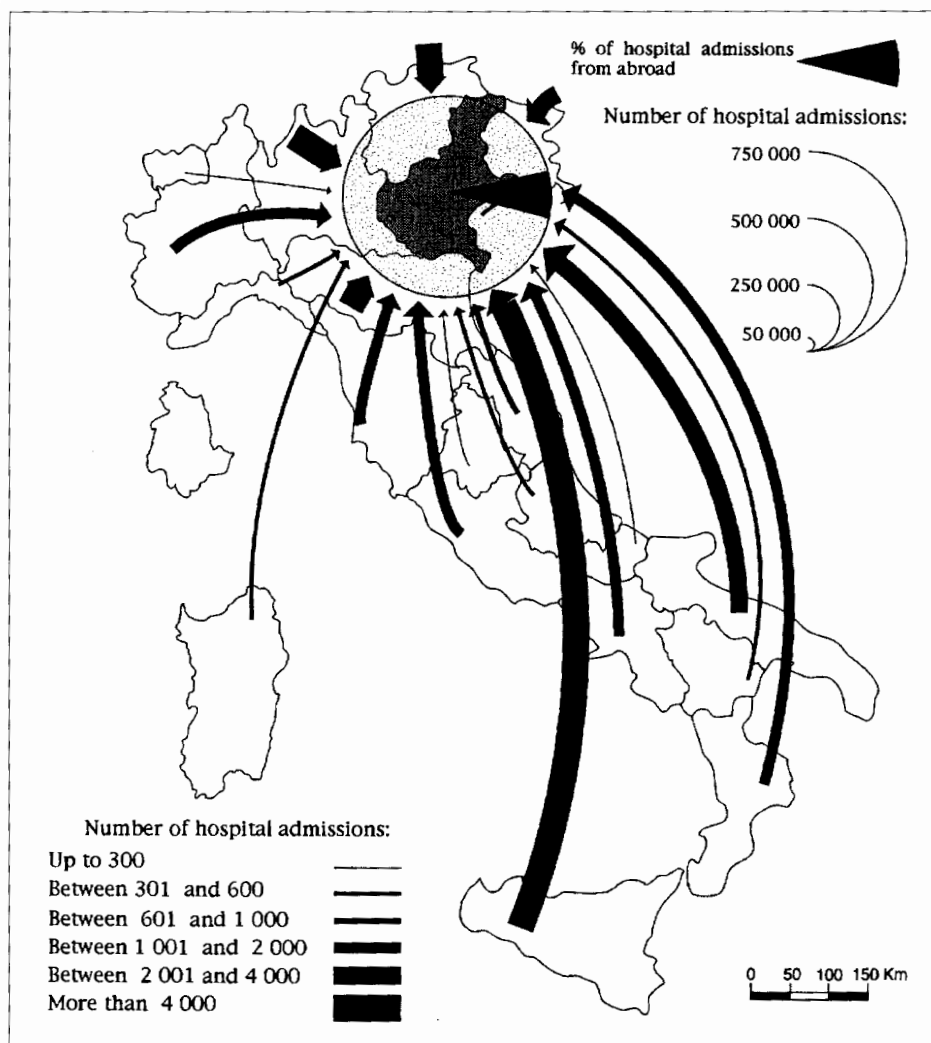


FIG. 4 – EXTRA-REGIONAL HEALTH CARE ATTRACTION EXERTED BY HOSPITALS IN THE VENETIA.

te (7), for obvious reasons of distance and time, among others.

In addition, we should also take into account the role played by the tourist phenomenon, and especially by that connected to winter sports. LHUs 1 and 4 are those registering the greatest flows in this field, not least because of the type of specialisation offered. In the case of the other LHUs, flows are sometimes determined by the return of emigrants who, in the case of planned operations, prefer to be hospitalised near family members who can provide support and comfort. Furthermore, we should not underestimate migration induced by the fact that many efficient hospitals are staffed by doctors from the southern regions where well-equipped hospitals (e.g. heart surgery units) in peripheral areas are usually scarce; this leads to a kind of enforced migration.

It follows that while immigrants from neighbouring regions gravitate mainly towards the nearby LHUs 1, 4, 26, 28, 31 and 33 (as well as towards LHUs 10, 21 and 25 which offer a higher level of specialised services), those from the other regions gravitate towards LHUs 1, 8, 10, 16, 21, 25 and 26, university centres and provincial capitals, as well as towards LHUs 1 and 26 equipped with high level single specialisation units (figg. 3 and 5). While immigrants are almost equally divided between adjoining and distant regions, (though the former, with 57.4%, prevail over the latter, with 42.6%), 85.7% of emigrants from Venetia, from LHUs 1, 10, 12, 14, 25, 26, 29 and 36, are admitted to hospitals in neighbouring regions.

*Conclusions.* – Emigrants are decidedly unbalanced: those emigrating to neighbouring regions (85.7%) are from LHUs 1, 10, 12, 14, 25, 26 and 36 (8).

The fact that the facilities of the hospital network in Venetia Region are excessively fragmented is unquestionable, and some LHUs are undoubtedly over-equipped (in relation to their limited catchment areas) without offering the guarantee of an adequate standard of health care, since the individual hospitals are modestly equipped and offer a restricted range of specialisation.

It is precisely this fragmentation that leads to imbalances in the use of available resources, both human and financial. There is currently a high use of human resources. In 1991 the number of people employed in state hospitals amounted to nearly 46,000 (including 6,300 doctors and 21,000 nurses); with a ratio of 13.4 employees per 1000 inhabitants, and 1.6 per bed, this figure represented 77% of all health service staff.

On the regional level, however, there are many varied situations which, in relation to the progressive restructuring programme and the reduction in bed numbers, have witnessed an increase in this ratio [LHUs 31 (2.6), 14 (2.4), 35 (2.1), 25 (2.3)], bringing expenditure for personnel to 48% of avai-

(7) Although there are no official data, for the same reasons some LHUs of the neighbouring regions exert a similar attraction on those of the Venetia Region (the area of Rovereto, TN on LHU 26; Primiero, TN on LHU 2; Ferrara on Adria 31-32).

(8) With values higher than 1000 units.

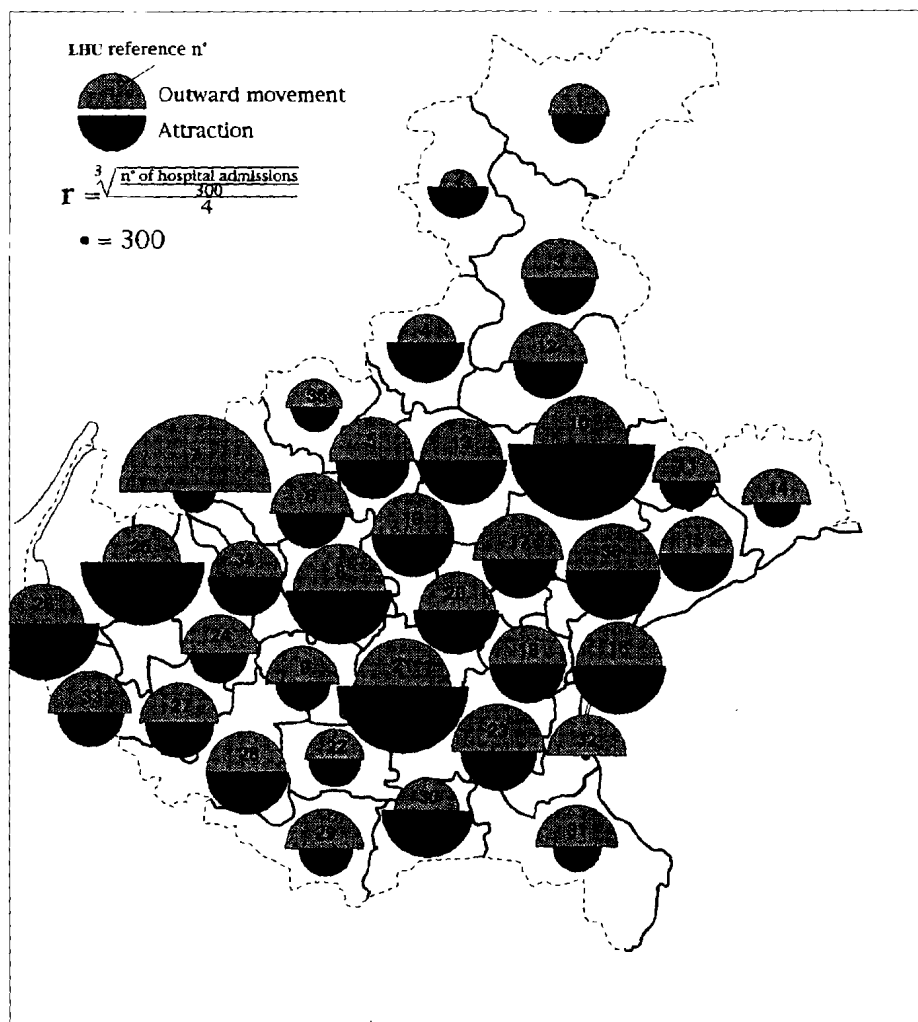


FIG. 5 – INFRA-REGIONAL HOSPITAL MOBILITY.

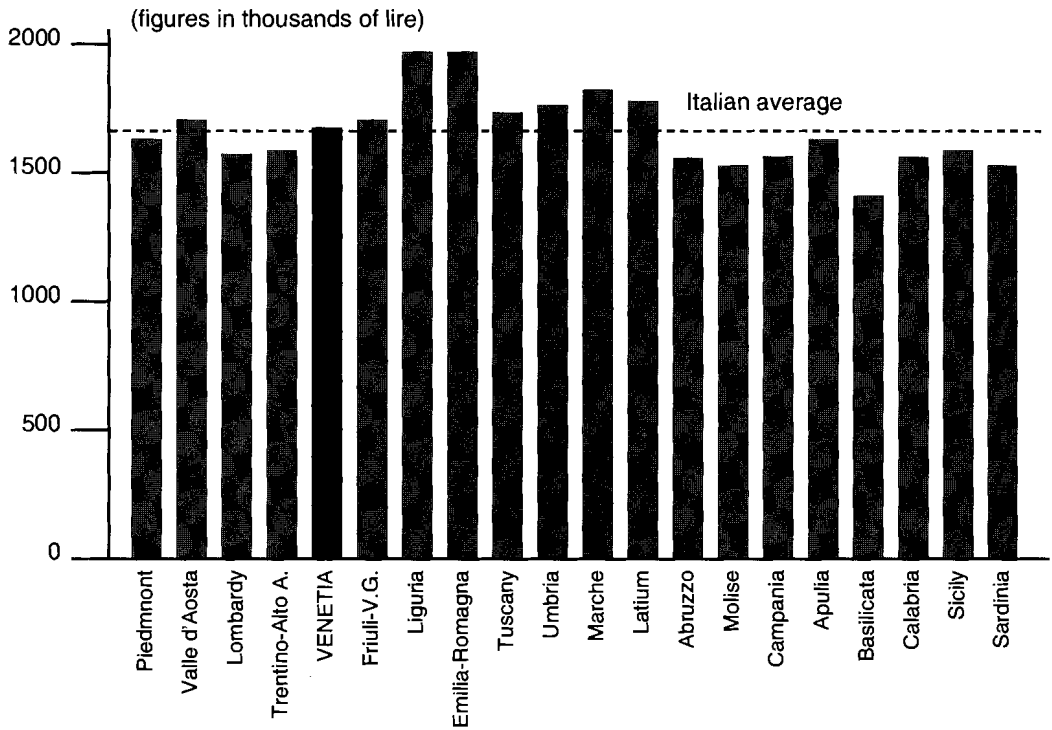


FIG. 6 – AVERAGE HEALTH ESPENDITURE PER INHABITANT (1991).

lable resources (8% more than the Italian average).

The deficiencies in the health service obviously influence expenditure which takes up about 50% of current S.S.R. (9) expenditure. A hospital stay costs on average 4.5 million lire; while a day's stay costs 479,000 lire, average hospital costs amount to 900,000 lire. However, while current Regional Health Service expenditure of 1,650,000 lire per head may seem to be in line with the national average (1,640,000 lire), it is in fact 14.2% higher than the figure indicated by the National Health Service Fund for 1992, in order to guarantee every citizen uniform levels of health care (fig. 6).

In those LHUs at a geographical disadvantage because of mountainous areas and a low, scattered population (1, 2, 35) the basic services have to be over-equipped in relation to population numbers; as a result, this excess of facilities creates demand (a high level of hospitalisation) which weighs heavily on financial resources.

Recent legislation has laid down plans for the major restructuring of the hospital service: while many hospitals would be transformed into R.S.A. (10),

(9) *Servizio Sanitario Nazionale* (National Health Service).

(10) *Residenze Sanitarie Assistite* (rest homes with health care facilities).

others would be subjected to closure.

This reorganisation is linked to the redefining of the regional LHU areas which are to be reduced from 36 to 22.

The extension of catchment areas and the simultaneous closing down of some hospitals is creating considerable inconvenience to the public, since the changes have been made mainly on the basis of economic and demographic criteria rather than in terms of geographic regionalisation.

For the moment, the only clear result of this is an increase in infra-regional mobility between the various LHUs, a fact which raises a question mark over the economic effectiveness of the reform.

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