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The catchword

Methodological publications of the Federal Statistical Office

The publication system of the Federal Statistical Office serves not only the purpose of presenting and disseminating statistical data; among other things, it also has the function of informing users about methods applied and methodological developments. Thus the publication system both fulfils the general information function and supports the exchange of experience and the discussion between the official statistical community, users in business and administration, and science and research for the benefit of all parties involved. This function is fulfilled also by the scientific colloquium, which is organised every year by the Federal Statistical Office and the German Statistical Society and deals with different methodological issues, and by methodological papers contributed by staff members of the Federal Statistical Office, for instance, for the Statistical Week.

Among the methodological publications, the monthly periodical *Wirtschaft und Statistik* (Economy and Statistics) is the one with the longest tradition. The first issue of any year includes the "structured list of contents". In issue 1/1997, which contains selected contributions from the years 1949 to 1996, that list of contents shows 238 methodological texts dealing with methods currently applied in official statistics.

For ten years now, the half-yearly information service *Methoden...Verfahren...Entwicklungen* has been distributed free of charge particularly to scientific and research institutions that deal with applied statistical methodology. The circulation currently is 800 copies. Since 1989, the present English-language version *Methods...Approaches...Developments* has been produced, which is published with a circulation of 250 copies and is distributed mainly to statistical offices of other countries and international organisations.

The two publication series *Forum der Bundesstatistik* (Forum of Federal Statistics) and *Spektrum Bundesstatistik* (Spectrum of Federal Statistics) have become an integral part of the methodological publications. The first was started with a volume published in December 1984 on the occasion of the 70th birthday of Dr. Hildegard Bartels, the former president of the Federal Statistical Office, entitled *Bundesstatistik in Kontinuität und Wandel* (Continuity and Change in Federal Statistics). The papers published in this series, which today comprises a total of 29 volumes, are for instance those presented at the colloquiums mentioned above and methodological papers on issues and problems which refer to more than one subject-matter or to subject-matter concepts. The series *Spektrum Bundesstatistik* has been published since late 1993, replacing the *Ausgewählte Arbeitsunterlagen zur Bundesstatistik* (Selected working papers on federal statistics), which were discontinued with number 26. This series, which was described already in the 2/94 edition of the present publication, serves particularly the purpose of presenting and discussing specific methodological problems. The first seven issues of *UGR-Materialien – Beiträge zur Umweltökonomischen Gesamtrechnung* (UGR Materials – Contributions on Environmental-Economic Accounting), too, are of a mainly methodological nature.

In addition, all *Berichte zu Erhebungen nach § 7 Bundesstatistikgesetz* (Reports on surveys based on Article 7 of the Federal Statistics Law) as well as all Series and Numbers of the 19 *Fachserien* (Subject-Matter Series), which present the results of official surveys, contain methodological explanations and notes helping the users to apply and interpret the data material. For large-scale censuses, specific methodological volumes are sometimes published as part of the *Fachserien*; this was done, for instance, for the latest population census held in the Federal Republic of Germany in 1987.

Detailed information on the entire range of publications of the Federal Statistical Office, which are offered through all types of media, is provided in the *Verzeichnis der Veröffentlichungen*

(English-language version: List of Publications). The *Statistisches Jahrbuch für die Bundesrepublik Deutschland* (Statistical Yearbook for the Federal Republic of Germany), too, includes a comprehensive list of publications. A list of new print publications of the Federal Statistical Office is contained in the *Bundesanzeiger* (Federal Bulletin) and in every edition of *Wirtschaft und Statistik* and the *Statistischer Wochendienst* (Information on Statistics, Weekly). New volumes of the two methodological publication series, including a brief abstract, are also presented as part of the book reviews or book information in the *Allgemeines Statistisches Archiv* (General Statistical Archives) published quarterly by the German Statistical Society.

Methods in federal statistics – Further development

Finance statistics – Quo vadis? – Public budget statistics at the crossroads of cameralistics and business accounting

In the Federal Republic of Germany with its federal structure, public finance statistics have to fulfil the most important task of producing a consistent picture of all the independent government and municipal budgets which shows the overall budget of general government and serves as a basis for decision-making in the spheres of financial, economic and monetary policy. As typical secondary statistics, they are based directly on existing budgetary, cash and accounting records of public administrations and thus are a very efficient set of statistical instruments.

The uniform classifications for public budgets in Germany introduced as part of the far-reaching budget reforms at the beginning of the seventies do not only guarantee a high degree of data consistency and reliability but also make the processing of such information for statistical purposes quite inexpensive. It should also be mentioned, however, that drawing upon secondary sources requires a considerable input of methodological and technical knowledge before the statistical work as such can begin. The Federal Statistical Office has to guard the subject-matter and methodological interests of statistics in the joint Federation and Länder bodies responsible for public budget classifications and regulations. Owing to its overview and well-founded technical knowledge, the Federal Statistical Office fulfils an important and appreciated coordinating function for these bodies.

However, a large part of the public sector's economic activities is not shown in public budgets but in separate business accounting systems. Although this sphere, which basically includes institutions and enterprises of public transport, energy and water supply, is also covered in terms of finance statistics, it is not regarded as part of the public sector (government) but of the enterprise sector due to the delimitations of national accounting and thus does not belong to the overall public budget.

At the end of the seventies, the so far stable foundations of reporting in the field of public finance statistics were for the first time severely shaken. By introducing business accounting first gradually but then almost completely, university and other hospitals' finances were excluded from public budgets. Finance statistics managed to have hospital finances recorded in a manner which permitted statistical reintegration into the overall public budget. From the beginning of the eighties, there has been a growing tendency to use business accounting systems and thus exclude institutions from public budgets due to increased financial pressure, especially in the spheres of municipal waste and waste water disposal. Consequently, gaps appeared in the overall picture of public finance statistics. The amendment to the finance and personnel statistics law adopted at the end of 1992 enabled continued statistical *coverage* of these excluded parts on the basis of the annual statements of accounts. However, the growing tendency to cover costs and the related use of business accounting systems made the fundamental problem of public sector *delimitation* ever more pressing. For the sake of a complete and – in terms of subject-matter – comparable representation, public finance statistics

will develop an institutional delimitation of the government sector in contrast to national accounting, including all financial transactions of the central, regional and local authorities reflected in the core budget itself but also in business accounting systems of independent public enterprises and institutions. To what extent the two spheres will be integrated depends on the information requirements of important users but also on the chances to combine the two different systems statistically. A first simple step would obviously be to use the two separate spheres parallel, but for the sake of uninterrupted temporal and regional comparability, rather complete statistical integration would be desirable.

At the municipalities, the tightening budget situation does not only lead to an increased cost and performance-orientation of individual tasks but also to a growing tendency to convert the entire municipal budgetary, cash and accounting system to business accounting. First indications of a similar development can also be found in the Länder budgets. However, a business accounting system for all public budgets serving as a common reporting basis will remain a distant aim for some time, so finance statistics will have to prepare for a difficult period of transition with cameralistic and commercial systems existing side by side.

European Echo

Continuing vocational training survey in enterprises under the FORCE activity programme of the EC

In 1991 to 1994, the European Commission addressed private sector enterprises in the EU member states with its FORCE activity programme (Formation Continue en Europe) to support enterprises' efforts in the field of continuing vocational training. Under this activity programme, a survey of in-company continuing vocational training was executed in twelve member states to obtain reliable data for comparing the quality and quantity of continuing vocational training activities organized in the enterprises of the individual member countries. Until that time, there had been no such comparable data base at European level, and not all of the statistical data required in this context had been available at national level, either.

In Germany, the Federal Statistical Office conducted the survey in cooperation with the Federal Institute for Vocational Training (BIBB) and several statistical offices of the Länder. The survey covered enterprises in the economic sectors of "production industries", "trade", "hotels and restaurants", "financial intermediation (except for auxiliary activities)" with ten employees or more. The legal base of the survey was Article 7 Par. 1 of the Federal Statistics Law enabling the Federal Statistical Office to execute a survey without a specific legal base to meet short-term data requirements of a supreme federal authority; participation in Art. 7 surveys is voluntary. The enumeration unit used was the enterprise, i.e. the questionnaire was not to be completed by individual local units or the persons working in these units but rather by a central unit within the enterprise.

In Germany, a two-stage survey concept was designed, consisting of a preliminary survey and a main survey. The main purpose of the preliminary survey taken in the last quarter of 1993 was to obtain first results on continuing vocational training activities offered in enterprises. The main survey then provided more details and treated further topics. All enterprises were included which had provided information for the preliminary survey and not explicitly refused to participate in the main survey. In addition to continuing vocational training activities offered within an enterprise, information could thus be collected on participation (number of participants, hours participated) in the wide range of continuing vocational training activities taking the form of courses, job-related modes of continuing vocational training, independent learning and informative events, on the costs of courses and on some qualitative aspects (e.g. existence of an in-company continuing vocational training programme, continuing vocational training budgets, analyses made to ascertain qualification requirements).

The survey revealed that the majority of the enterprises are in fact willing to answer questions on continuing vocational training. However, for most enterprises it is quite difficult to provide detailed information on participants and the number of hours participated in the various forms of continuing vocational training, on the costs of continuing vocational training and their breakdown by individual components. Frequent non-response in these questionnaires is an indication that presently such data are either not recorded at all statistically in many enterprises or not available at the enterprise level but rather in the individual functional units of an enterprise. The results of the preliminary survey also showed that only very few enterprises can access statistical information on in-company continuing vocational training in computerized form. For reasons of data availability in general and data accessibility in particular, it would therefore have been better not to apply the enterprise principle but execute a survey at the local unit level instead, contacting both superior cross-section units (e.g. a department for initial vocational and further training) and subordinate units of organisation. Only very few enterprises answered the questions on quantitative aspects of continuing vocational training on the job. This fact revives the discussions conducted for a long time about the rather limited possibilities to cover these forms of continuing vocational training statistically. It is argued that there is no clear distinction between continuing vocational training on the one hand and work or production on the other, and that quantification of the share of continuing vocational training is either impossible or involves unreasonable efforts most enterprises are not quite ready to make, as the results of the FORCE survey have shown.

Statistics worldwide

United Nations examine concepts and definitions of foreign trade statistics

The international recommendations for concepts and definitions of foreign trade statistics issued by the United Nations in 1982 have been valid until today. Since, however, the conditions of international trade have changed considerably, the Statistical Commission, which is the supreme statistical authority of the United Nations, decided to commission a group of experts incl. representatives of international organisations and some member states to examine the extent to which the concepts and definitions of foreign trade statistics should be changed in view of most recent developments. The recommendations of the group of experts will have to be submitted to the Statistical Commission by 1997.

As has become clear in its discussion, the group of experts faces a great challenge, namely to adapt existing recommendations to new developments while at the same time ensuring that adverse effects on the statistical and methodological continuity will be minimised. Intensive discussion is also required to determine the extent to which the harmonisation of concepts and definitions can be based on the System of National Accounts revised in 1993 and the Balance of Payments Manual issued in 1995. Apparently, however, the changes to be made will not be of a dramatic nature. This seems to be certain, be it only for the fact that the methods and hence also the concepts of foreign trade statistics are very closely linked with customs formalities in almost all countries.

Consequently, the concept of collecting data on the cross-border trading of physical goods for compiling foreign trade statistics will not be changed. The criterion of property transfer used in national accounts and the balance of payments statistics will hence not be applied in foreign trade statistics. The definition of the statistical territory is very closely linked with the collection of data on the cross-border trading of goods, too. In this respect, the basic orientation by the customs territory will not be renounced, either. As regards the partner country, the group of experts recommends to record the last-known country of destination for exports and the country of origin for imports. In addition, it is considered to be desirable to record the country of dispatch, too. Apart from that, the Harmonised System is regarded as an adequate basis for the

classification of goods in the future as well. However, conversions to other classifications should continue to be possible. With regard to the central issue, namely the statistical value, the system of fob/cif-based valuation should be maintained, though the terms of delivery should be additionally inquired for certain cost delimitations. The only change will concern the valuation of so-called standard software. Instead of the value of the material, the total value of the electronic medium incl. the cost of the programme will be recorded. As regards the application of the concepts of either general or special trade, the group of experts prefers the use of the concept of general trade or of both concepts for reasons of better comparability.

To sum up, it can be stated that the revised concepts and definitions, provided they will be agreed to by the Statistical Commission, will not have a fundamental influence on the methodology, data collection and results of foreign trade statistics.

The new statistics of hospital diagnoses

1 Preliminary note

The official statistics of hospitals was reorganised by the Ordinance on the Federal Statistics for Hospitals (Ordinance on Hospital Statistics – KHStatV) of 10 April 1990 (*Bundesgesetzblatt I* p. 730). The contents of the entire statistics were adapted to the current information demand. Data collection is now based on an all-German catalogue of characteristics and uniform definitions. The survey programme of the hospital statistics comprises three parts:

- Part I: basic data
- Part II: diagnoses
- Part III: cost data

The hospital statistics is a yearly total enumeration covering all hospitals and prevention/rehabilitation facilities. While hospitals provide data for all survey parts, compulsory response for prevention/rehabilitation facilities is limited to the basic data and a reduced catalogue of characteristics.

The basic data¹ and cost data have been collected and published since reference year 1990.² The collection of diagnosis data was started with reference year 1993 in order to allow for sufficient preparation time for the the reporting units to introduce that sophisticated survey.

The results of the hospital statistics are the statistical basis for many health policy decisions of the Federal and the Länder governments; moreover, they serve as a planning basis for the institutions involved in hospital funding. The survey provides important information on the structure of in-patient treatment facilities, on the relations between the morbidity and cost developments in the hospital sphere, and on the regional frequency of disease types. Thus it also serves scientific and research purposes and contributes to the information of the population.³

The statistics of diagnoses is the last part of the hospital statistics information system. This contribution provides basic information on the methodology and contents.

1 Staff data as part of the basic data were collected for the first time for 1991. In the new Länder, the all-German statistics was introduced in 1991, so that complete data for Germany are available only from 1991.

2 See *Fachserie 12, Reihe 6.1 "Grunddaten der Krankenhäuser und Vorsorge- oder Rehabilitationseinrichtungen"*; *Fachserie 12, Reihe 6.3 "Kostennachweis der Krankenhäuser"*, and Gräb, C.: "Krankenhausstatistik 1993" in *Wirtschaft und Statistik* 4/1995, pp. 301 ff.

3 For the basis of the hospital statistics see Hoffmann, U.: "Neue Bundesstatistik über Krankenhäuser" in *Wirtschaft und Statistik* 10/1990, pp. 693 ff.

2 Bases of the statistics of diagnoses in terms of methodology and contents

2.1 Subject of the survey and survey characteristics

The new statistics of hospital diagnoses is based on a survey referring to the stay in hospital. For any patient discharged from hospital after full in-patient stay (including persons who died in the hospital), a data record is collected. For persons with several full in-patient treatments in the year concerned, every stay in hospital is recorded. Treatments preceding or following in-patient stays, as well as partly in-patient and out-patient treatments are not covered.⁴ The characteristics of the statistics of diagnoses are listed below:

- sex
- month of birth, year of birth
- date of admission (day, month, year)
- date of discharge (day, month, year)
- death (yes/no)
- main diagnosis (3-digit ICD-9 code)⁵
- surgery in connection with the main diagnosis (yes/no)
- department in which the patient stayed longest
- patient's place of residence (postal code, name of community)⁶

When the concept of the statistics of hospital diagnoses was developed, care was taken that the characteristics to be covered are largely those that the hospitals can take from their patient documentation. For instance, coding of the main diagnosis according to the 3-digit code of the International Statistical Classification of Diseases, Injuries and Causes of Death, 9th revision (ICD-9) is already performed by the hospitals for purposes of bargaining concerning hospital accommodation and treatment charges. To cover the diagnosis, the main diagnosis known at the time of discharge from hospital is asked for.⁷ Patients whose reason for entering the hospital was not disease, injury, poisoning or childbirth are coded according to the "supplementary classification for factors influencing health status and contact with health services" (V code), which is also a part of ICD-9.

The month and year of birth, in combination with the date of admission to the hospital, are used to determine the patient's age at the beginning of his/her stay in the hospital. The length of stay in the hospital is the difference between the date of admission and the date of discharge. The indication of the department in which the patient stayed longest is needed for compiling the age structure of patients per department. Including the place of residence permits to represent patient flows and hospital catchment areas as well as regional frequencies of diseases.

4 For several reasons, the data were not collected for prevention/rehabilitation facilities: Data collection would have been much more costly and time-consuming for such institutions; the data cover just a limited range of diagnoses; the loss of information for morbidity analysis caused by non-availability of these data is small; the statistics of rehabilitation measures already provides detailed material on the type of measures, the persons treated, and the diagnoses. See Hein, B.: "Rehabilitationsmaßnahmen 1993" in *Wirtschaft und Statistik* 12/1995, pp. 907 ff.

5 See *Der Bundesminister für Jugend, Familie, Frauen und Gesundheit* (ed.): "Internationale Klassifikation der Krankheiten, Verletzungen und Todesursachen (ICD) 1979, 9. Revision", 1979 (German version of the International Statistical Classification of Diseases, Injuries and Causes of Death - ICD).

6 According to *KHStatV* provisions, coding should be performed down to the level of municipal districts for patients from the city states, while for patients from abroad the country should be determined.

7 The person responsible for formulating the main diagnosis is the physician responsible for the patient's treatment. General principles regarding documentation and quality control at hospitals are contained in the "Leitfaden zur Erstellung der Diagnosenstatistik nach § 16 Bundespflege-satzverordnung (BPIIV)" published by the Federal Ministry of Labour and Social Affairs in 1986.

2.2 Conducting the survey

For data collection, it has been decided to collect individual data and to do this, where possible, on electronic data carriers. Since most hospitals have an automated system of patient data management, they are in a position to transmit the required data to statistical offices in an efficient way without changing the storage medium. Hospitals which still manage their patient data manually are requested to enter the information into specific questionnaires. The data should be transmitted to the statistical offices of the Länder annually, i.e. by 30 June of the year following the reference year.

Some 15 million individual data records are collected in the hospitals as part of the statistics of hospital diagnoses. Although such data can generally be obtained from the hospitals' patient data, the survey requires a suitable internal data organisation. The statistical offices of the Länder very early informed the hospitals about the new survey. Nevertheless, introducing a survey of this size will inevitably involve initial problems. In the first reference year, the statistical offices succeeded in processing a total of 96.2 % of the expected reports.

The type of data collection and the quantity of data records to be processed require special procedures of data processing. When the data have been received by the statistical offices of the Länder, they are subjected to a first check. This includes verification of whether the correct data format was chosen and a first check for errors. If there is just a small number of data errors, further processing, checking and error elimination can largely be performed by an automated process. Implausible data are corrected. Where automated error elimination is not possible, the implausible value is replaced by "value unknown".

Coding the communities according to the official community classification is a very special problem. The hospitals indicate the postal code and community of the patient's place of residence; for patients residing in city states, the municipal district is indicated, too. For patients from abroad, the name of the respective country should be indicated. The statistical offices developed comprehensive programs for processing and coding these data. Coding the community data was further complicated by the introduction of the new five-digit postal code in mid 1993.

When the individual data have been corrected at the statistical offices of the Länder, tabulation is performed in the Länder according to a harmonised tabulation program. The Federal Statistical Office links up the Länder results to arrive at the federal result.

2.3 Data quality

2.3.1 Non-response

According to the basic data collected, there were 14.8 mn discharges and 0.4 mn deaths in hospitals in 1993. In the first reference year, the statistical offices succeeded in covering 14.6 mn of these 15.2 mn cases also in the statistics of diagnoses.

The non-response rate of 3.8 % was due to various causes. First, there were some hospitals which in 1993 were not yet able to provide information, despite the intensive preparatory work. These were about 80 hospitals, most of which were smaller ones. Second, there were differences between basic data and diagnosis data, which were due to some delimitation problems.

Altogether, the result for the first reference year is very encouraging. Because of the low non-response rate, considerable biases for evaluation at the federal level are not expected. As regards regional evaluation, it should be taken into account that the results may sometimes not be representative, which is due to the unavailability of data for some hospitals. It should further be taken into account that such unavailability of data for specific disciplines may lead to biases for individual diseases.

2.3.2 Unavailability of data

Unavailability of data occurs where hospitals fail to indicate characteristics for some data records or where implausible values have been replaced by "value unknown" as part of automated checking processes. Thus the percentage of data records with unknown values allows to draw first conclusions regarding the quality of the data for the characteristic concerned. Characteristics with low non-response rates tend to be more reliable than characteristics with high non-response rates.

Among the 14.6 mn data records, the percentage of unknown values is not more than 1 % for any characteristic (see table). The percentage of unknown values was lowest for the patients' sex. Here, just 531 data were unavailable, which corresponds to a percentage of 0.002 %. Determining the length of stay from the dates of admission and discharge was not possible for 885 patients (0.006 %). A high degree of completeness was obtained also for the data on the patients' age, the question whether the patient died, and the question whether surgery was performed in connection with the main diagnosis; here the non-response rates were between 0.02 % and 0.06 %. For the question in which department the patient stayed longest during his/her entire stay in the hospital, no data were available for 0.6% of the data records. Obviously, this characteristic cannot in all cases clearly be obtained from the patient data available at the hospitals; this is because the information in this form is needed only for the statistics of hospital diagnoses. The non-response rate was highest for the main diagnosis (see chapter 2.3.3).

**Data records with unavailable characteristics in the statistics of hospital diagnoses, 1993
Germany**

Characteristic	Number	Percentage of all data records
Sex	331	0.002
Length of stay	885	0.006
Death (yes/no) ¹⁾	2,512	0.018
Age	4,391	0.030
Surgery (yes/no) ¹⁾	7,576	0.055
Department in which the patient stayed longest	87,704	0.603
Main diagnosis	123,335	0.850
Place of residence ¹⁾	112,756	0.815

1) Excluding "hour cases".

The evaluation of the patients' place of residence covered 13.8 mn data records.⁸ For 113,000 data records, the place of residence could not be determined. This is a percentage of 0.81 %. The share of data records that could not be coded in 1993 differed according to regions; this has to be taken into account for evaluation. Data records not coded referred in particular to the following cases:

- Due to initial problems, some hospitals were not in a position to provide valid data on the postal code and place of residence for 1993.
- The coding of patients residing abroad turned out to be particularly difficult because in many cases the patients indicated their place of residence instead of the country.

⁸ Out of the total of 14.6 mn data records, 800,000 "hour cases within one day" were not included. "Hour cases" refer to persons who received full in-patient treatment and were discharged at the day of admission and whose length of stay in the hospital thus was zero days.

- In some federal Länder, there is a high percentage of small communities that cannot be coded by the postal code. In these cases, coding by the name of the community is difficult, too, where the name of the community sub-unit was indicated instead of the official name of the community.

2.3.3 Reliability of the diagnosis data

Assessing the quality of the diagnosis codes as received at the statistical offices is much more difficult than for other characteristics. The non-response rate was 0.85 %, i.e. 123,000 data records for which the diagnosis data were unknown after error elimination. For the majority of these data records, the hospitals were not in a position to provide diagnosis data in the first year of collection because of initial problems. For the remaining data records, obviously wrong data were replaced by "value unknown" as part of the plausibility check. This is done where a wrong code was used for the main diagnosis or where the relation between the diagnosis and the age or sex is not plausible. In these cases, the demographic data were considered more reliable than the diagnosis data.

The statistical offices of the Länder cannot check whether the data on the main diagnosis are correct in every single case. Determining and coding the main diagnosis is done at the hospitals. Both for determining and for coding the main diagnosis, it must be assumed that there is some percentage of errors which cannot be detected even by the checks performed at the statistical offices. Comparing the results of the statistics of hospital diagnoses with those of other surveys (statistics of notifiable diseases, statistics of abortions) shows a very high degree of correspondence. Problems arise however for diseases that occur extremely seldom. Here, miscoding is particularly obvious. If rare diseases are particularly frequent at some hospitals, this information must be verified. However, it will never be possible to correct all miscodings, even with the greatest efforts. The issue of diagnosis data validity must be examined in detail in the near future so that the reliability of the results can be assessed more exactly. What has been found so far by examining the age and sex distributions of the 1993 results, however, permits to draw the conclusion that the quality of these results is rather good.

3 Outlook

The statistics of hospital diagnoses permits the official statistical system to provide data material which can be evaluated in manifold ways for highly different issues. For instance, it will be possible in the future to perform more evaluations of the patients' place of residence in order to examine the regional distribution of hospital treatments of specific diseases. The results of the catchment area statistics too should be presented in greater detail by the statistical offices. This would provide the institutions involved in hospital funding and planning with detailed data material on patient flows for specific main diagnoses with a detailed regional breakdown. For the supreme health authorities of the Länder, the hospitals, and the health insurances, the evaluations regarding the departments in which the patients stayed longest are important, too. The characteristics of the statistics of hospital diagnoses permit to perform examinations of the distribution of admissions to, and discharges from hospitals over time, by calendar days or months (evaluation of the admission and discharge dates).

For setting up a hospital information system, it would also be useful to place more emphasis on comparing the diagnosis results for different types of hospitals. For this purpose, the information on the patients' age and sex, on the frequency of surgery, and on the percentage of deaths must be included in the analysis. The collection of basic and cost data provides additional information on hospital equipment and costs, which should supplement such comparisons.

Many analyses will become possible by the efforts outlined, while the results of others will become much more reliable. They will lead to new findings which may have a positive impact on the health care facilities serving the population.

