HANS Project
Health Adriatic Network Skills

Final Report

Project Partner: Regional Health Agency
ASR Abruzzo, Italy - June 2008
1. INTRODUCTION

1.1 Rationale

With respect to the European health reform context, oriented towards forms of decentralisation and reorganisation based on economic efficiency, since the early ‘90s public health priorities seem to be focused more on managerial issues than on the health consequences of economic changes, and the strategies to prevent, avoid or reduce them. In particular, the cultural shift from the ethical principle of ‘health for all’ to the principle of ‘burden of disease assessment vs cost-effective health care’, has shown important implications for re-using epidemiology as a cultural tool - besides as a scientific/technical instrument - to support decision-making processes in health and social policy, and to re-orient public health research and activities at the European, national and local levels. In this respect, with the decentralisation of health systems, a greater responsibility has been given to local policy-makers for planning and managing public health resources. As a consequence, the use of epidemiology for health planning at the local level has rapidly changed from a traditional approach, to one more oriented to health services research, characterised by an increasing utilisation of administrative databases and other routinely collected health service data for epidemiologic analyses, evaluation studies, and assessments of clinical and managerial performance. Moreover, in the light of a well-documented increase of socio-economic inequalities in health and health care, this efficiency-driven reform orientation has shown difficult and ambiguous implementation characteristics in Countries where the scarcity of resources is combined with a poor tradition in healthcare planning and health/social policy-making, based on well controlled information systems. In this context, within the European Programme supported by FESR–NPPA INTERREG-CARDS/PHARE Funds (Code: 205 – Abruzzo Regional Authority – DGR no. 790, 08.08.2005), the “Health Adriatic Network Skills”/Project HANS has been proposed and conducted by seven Partners – four Italian Institutions (Regional Health Agency/ARS Marche, ASR Abruzzo, Marche Regional Authority, Local Health Authority/ASUR Marche), and three Croatian Counties (Zadar, Šibenik-Knin, Split-Dalmatia) - in order to contribute to the harmonization and the integration of the health and social systems involved, and to an increase of cooperation oriented to health protection and continuity of care in the Adriatic Region: Albania, Bosnia-Herzegovina, Croatia, Montenegro (PAO - Eastern Adriatic Countries, EAC), Italy (RAI - Italian Adriatic Regions, IAR). Therefore, in the framework of the HANS Project - by providing technical support, partner cooperation, training and data collection, for developing an Health-oriented Network in the European Adriatic Region, including Italy, Croatia, and some of the less socio-economically
developed European Countries such as Bosnia-Herzegovina, Montenegro, and Albania - a comprehensive analysis has been conducted in order to plan, starting from the effort to create the “HANS” Network, more specific projects; in particular, the implementation of an Epidemiological Observatory in the Adriatic Region seems to be the natural development of the network, through the conduction of an educational programme aimed at promoting: 1. an epidemiological orientation of public health professionals in using HANS data; 2. an active involvement of clinicians, and other personnel working in the routine conditions of care, in the development of an epidemiological culture. In fact, more than a merely scientific and technical instrument that “uses” information systems, the Epidemiological observatory could be considered and used as a training/cultural tool, a first step for developing an Health Agency in the Adriatic Region (“HANS” Network) made up of professionals, and Institutions, working for developing the local communities through policies aimed at meeting the diverse social and health needs, on the basis of a comprehensive and strategic between-Countries/regions socio-economic cooperation.

1.2 Specific aim and objectives of the Programme

Context - The European Community started a restructuring programme of Community initiatives aimed at obtaining better and more efficient cooperation among frontier Regions of the Union and neighbouring States. The Programme of Community initiatives called “Over the Adriatic borders Inter-regional III A” accepted the directions of the Union and adopted the perspective of working towards future developments of border policy, as well as pre-adhesion, scheduled for the next Programme period 2007-2013. The general objective of the Programme (Community initiative called “Over the Adriatic, PIC INTERREG III A”) is to promote social, cultural and economical developments, as well as cooperation among member Countries of the Adriatic Area. Consequently, it is an instrument that can contribute towards the formation of an Adriatic Euro-Region.

Aim – In this overall programme and context, the general aim of the HANS Project was “to create a social/health-oriented network in the Adriatic Region in order to contribute to the harmonization and the integration of the systems involved, and to an increase of cooperation oriented to guarantee the protection of health and the continuity of care in the Countries involved: Albania, Bosnia and Herzegovina, Croatia (seven Adriatic Counties), Italy (seven Adriatic Regions), Montenegro”.

Objectives - The specific objectives of the HANS Project were: to assess the health status of the population living in the Adriatic Area through shared and validated procedures, in order to obtain data for an integrated “net” planning; to create a database available to different local administrations in order to develop future projects; to create a permanent network of public subjects by sharing information, and to produce a framework of effective models for future programmes.

In order to implement a ‘basic data collection system’, by testing the feasibility of collecting available data, specific indicators and/or topic areas to be analysed were defined: demographic and socio-economic indicators at the regional, local, and small area levels; health status of the populations vs needs and demand; life-style related, and environmental determinants of health/disease; programmes and activities of prevention and health promotion; healthcare provision and activities in primary, and secondary care (health system organisation); computerisation of statistical systems: health information systems (HIS).
2. METHODS

2.1 Planning and data collection

The Italian Project Partner “ARS Marche” – Regional Health Agency – was given the task of co-ordinating the overall HANS Project, whereas the Italian Project Partner “ASR Abruzzo” – Regional Health Agency – was given the task of scientifically planning and co-ordinating the project, on the basis of general advices given by the HANS Steering Committee, and with the cooperation of the Scientific Committee and the Infrastructure Team Members.

In order to develop specific indicators by collecting available and reasonably comparable data, the HANS Scientific Committee has consulted reports, publications and documents produced by European projects for developing health databases; in particular: the 2005 version of ECHI shortlist (since the aim of the European Community Health Indicators Project was to develop a set of indicators in order to prioritise the work for harmonisation of data collection by EU Member State; by June 2006 the list contained approximately 400 items/indicators; the last ECHI shortlist contains better definition and data source specifications, as a product of discussion between content experts and data collectors) (definitions of Eurostat, WHO, OECD); the “Health for All” (HFA) database of WHO-Europe; the Italian version of the” Health for All” WHO database (ISTAT – National Institute of Statistics).

A work process was therefore developed by choosing and defining less than 100 indicators/topics, in order both to produce comparable information on health, determinants, and healthcare systems, with shared and validated procedures by using available data, and to test the feasibility of collecting available or partly available data (or available at greater aggregate levels, such as Regions, and Provinces/Counties vs Municipalities and small areas), or data with low standards of quality and completeness (comparability problems in Information Systems). The use of common indicators agreed Europe-wide on the definition, collection, and use of such information for comparable analyses, should have increased the scientific validity and transferability of the overall Project.

Specifically, during the planning phase of the HANS Project (from 11th October 2007 / Kick-off Meeting in Ancona, Italy, through 18th December 2007), the ASR Abruzzo Coordinator and Team, with the cooperation of the Scientific Committee, have faced and managed specific problems related to the feasibility of collecting comparable data in very different settings, with respect to the well-defined topic areas (demographic and socio-economic context; health status: needs and demand; determinants of health/disease; health system: preventive programmes; healthcare delivery system: hospital and primary care supply and activities). On the basis of Annex 6 to the ECHI-2 Report, June 20, 2005 (Section 1 - Indicators with readily available and reasonably comparable data; Section 2 - Indicators with partly available data and/or available data with comparability problems), integrated by indicators developed and/or proposed by the Countries participating to the HANS Project, data collection has been organised in the following Sections for quantitative data (whereas data concerning legislation on healthcare delivery, financing, organisation, and computerization of data in health information systems, have been qualitatively collected):
Section 1. Demographic and socio-economic context.
Section 2. Health status: needs and demand.
Section 3. Determinants of health/disease in lifestyles and environmental contexts.
Section 4. Health system: preventive programmes and activities.
Section 5. Healthcare delivery system: hospital and primary care supply and activities.

For each Section a data collection scheme has been developed, with rows related to the indicators/items selected for the specific topics, and three columns containing: name of indicator – definition (with calculation formula/method), classification, primary statistical data – type of source, and availability (in terms of computerisation, aggregation level - municipality, province/county, region, Country - years, periodicity, and notes concerning quality, completeness, other problems related to the information systems and/or the data sources). The initially 73 proposed indicators (73 rows/boxes) were either single indicators or groups of items belonging to the same family (see the proposed grid with Abruzzo as an example - 13th November 2007).

By the end of that process, a definitive ‘Minimal Information System (MIS)’, that is a Minimal Set of Indicators with 34 items (or groups of indicators), has been developed by the ASR Abruzzo Coordinator and Team (21st December 2007); this definitive MIS / HANS Grid has been approved by the Scientific Committee, and by the Steering Committee on the 31st December 2007. The Operational Manual for collecting data has therefore been prepared by the ASR Abruzzo by the 14th January 2008. Following the conduction of the Training Programme of five Surveyors, one for each Country (second half of January), and the Operational Meeting held in Split, Croatia (7th February 2008), overall data were collected in the period from 11th February through 4th April 2008.

The Operational Manual for Surveyors, with all the indicators included in the five Sections of MIS (MIS_S1-S5) (34 items/groups of indicators, for a total of 265 columns/fields including the stratifications by sex, age, diseases, standardisations, etc.), are reported in the CD-ROM version of the present HANS_Report (the initial proposed grid from Abruzzo, with 73 indicators, is also reported in the CD HANS Report).

Following data checking, data have been processed and analysed by the ASR Abruzzo Unit of Information Systems (14th April – 26th May 2008), with the coordination of the ASR Epidemiological Unit, and the cooperation of the international HANS Scientific Committee. The overall database has been then analysed by the Marche Infrastructure Team using a Geographical Information System. An “Executive Report” has also been planned by each Country Team.

2.2 Indicators and analyses

The Operational Manual for Surveyors, with all the indicators included in the five Sections of the Minimal Information System – HANS Grid (MIS_S1-S5), are reported in the CD-ROM version of this HANS Report. Moreover, the CD contains, for each Country, the Grid with the data collection Report (data availability, years, changes in definition or calculations of indicators, other problems).

The MIS-S1 includes 9 indicators/groups of items with related classifications (20 columns): basic demographic indicators and socio-economic indices (low education, unemployment, per capita income and gross domestic product). The MIS-S2 includes 8 indicators/groups of items with related classifications (191 columns): infant mortality, life expectancy, mortality and hospital morbidity,
morbidity/mortality in children/adolescents, mental disorders, infectious diseases. The MIS-S3 includes 7 indicators/groups of items with classifications (21 columns): lifestyles (smoking, alcohol consumption, obesity/overweight), and environmental factors. The MIS-S4 includes 3 indicators (6 columns): vaccinations and cancer screening. The MIS-S5 includes 7 indicators/groups of items with related classifications (27 columns): hospital supply and activity/efficiency indicators, health personnel (including general practitioners and nurses), public and private health expenditure.

Reported data availability by Country has been checked and completed by using the World Health Organisation - WHO/Europe HFA-DB - Health for All Database (HFA-DB), Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/hfadb) - a software with about 600 indicators that uses a similar section scheme as the HANS Grid MIS_S1-S5 (user: ASR Abruzzo, Unit of Epidemiology) (see CD version of present Report). Therefore, besides checking data availability, the HFA-DB has allowed inter-Country analyses to be displayed as charts, curves or maps, which can also be used to integrate the present Grid, and to develop future HANS indicators.

Since for Italy comparable mortality data, that is data available and standardised at regional and provincial level, at December 2007 were only available until 2001 at the national level (2002 for regional aggregations: ISTAT HFA Software, Italian version of WHO/Europe HFA-DB, by the National Institute of Statistics), and since such data were not completely available in the participating Regions (official registers were not available, for example, in Abruzzo, Marche, Molise), considering that mortality is one of the most important basic epidemiological indicators to assess health status, the Scientific Committee decided to choose 2001 as the baseline year for collecting data concerning demographic/socioeconomic and health status indicators (MIS_S1-S2).

The 2001 Census was used by Italy, Croatia, and Albania, the year 2003 for Montenegro, whereas for Bosnia-Herzegovina population data were estimated (see data collection Reports by Country in CD for details, and/or for changes from protocol; ex.: gross domestic product and income, from 2000 to 2005 as available year by Country; use of ICD-9 - Italy - and ICD-10 - Croatia, Montenegro - for morbidity/mortality data coding). Concerning sections MIS_S3-5, the year 2004 (or latest available year) was used as reference year, since determinants of health and intervention/healthcare system variables are concerned (as an example, for Italy, the most developed Country, at November 2007 data concerning hospital beds and discharges, that is, data comparable among Regions, were available only until 2004 at the national level).

Data collection was planned at the State, regional, and municipal level for Albania and Bosnia-Herzegovina, at the State and municipality level for Montenegro, at the State, regional, provincial, and municipality level for seven Adriatic Italian Regions (North to South: Friuli Venezia Giulia, Veneto, Emilia-Romagna, Marche, Abruzzo, Molise, Puglia), at the State, County, and municipality level for seven Adriatic Counties of Croatia (Zadar, Šibenik-Knin, Split-Dalmatia, Primorsko-goranska, Licko-senjska, Istarska, Dubrovacko-neretvanska). For all Countries, at least demographic data were planned to be collected at the municipality level (MIS_S1).

Performed analyses concerned: indicator frequency, variability at municipality and provincial/county level, correlations among indicators, morbidity-mortality variations at provincial/County level by deprivation indicators, geographical analyses at municipal and provincial levels (Geographical Information System – GIS).
3. RESULTS

3.1 Data availability and general comparisons: WHO/Europe “Health for All” Database

Besides providing a data availability check for HANS data, collected with respect to the years 2001 (MIS_S1-S2) and 2004 (MIS_S3-S5), the use of the WHO/Europe HFA-DB has allowed the conduct of inter-Country analyses for general comparisons (including average data of European Region and European Union), useful to introduce and integrate the HANS Database analyses with comparable indicators (see WHO/Europe HFA-DB outputs in the CD-ROM version of this HANS Report) (The documentation of HFA data availability is provided from 1970 through 2006).

Since 1996, as far as the five HANS Countries are overall concerned, the mid-year population is provided for each year until 2006: in 2001, figures range from 56,960,692 persons (Italy), to 4,437,460 (Croatia), 3,755,880 (Bosnia-Herzegovina), 3,069,275 (Albania), 658,223 (Montenegro). Instead, no disaggregated population data are available for Bosnia-Herzegovina since 1992 (for Italy data are available until 2002, whereas for Albania, Montenegro, and Croatia, data are provided until 2004, 2005, and 2006, respectively) (see all estimates in CD: WHO/Europe HFA-DB Report).

In 2001, elderly population ranges from 18% (Italy) to 16%, 12%, 8% of Croatia, Montenegro, and Albania, respectively; percentages of population aged 0-14 years are, respectively: 14%, 17%, 21%, 29%; live births per 1.000 for Italy, Croatia, Montenegro, and Albania are: 9, 9, 13, 17.

As far as socioeconomic indicators are concerned, in 2001, percentages of unemployed for Italy, Croatia, Montenegro, and Albania, are, respectively: 9%, 22%, 12%, 16% (see 2006 estimates in CD: WHO/Europe HFA-DB Report). Literacy rates are 98% for Italy and Croatia, and 85% for Albania. Per capita Gross domestic product (US$) are (2001): 19,440 (Italy), 4,625 (Croatia), 1,300 (Albania), 1,175 (Bosnia-Herzegovina); no data are available for Montenegro (EU: 18,806); estimates for 2004 are, respectively: 29,828, 7,724, 2,439, 2,183 (EU: 28,356); therefore, Italy’s p.c. GDP is from 4 times to 14 times higher compared to Eastern Adriatic Countries’ GDP. Data concerning the Human Development Index are also reported.

Before analysing the direct health status indicators, it is important to remind that socioeconomic indicators, being strongly related to health status, can be considered proxy indicators of health status when specific and direct data are not available (such as B&H) (that is, lower socioeconomic conditions are generally associated with worse health status, both at large and small area levels).

As far as infant mortality and all causes/specific causes death rates are concerned, for Italy data are available until 2002, whereas for Albania, Montenegro, and Croatia, data are provided until 2004, 2005, and 2006, respectively. Death rates for specific causes are not available for Montenegro.

In 2001, infant deaths per 1,000 live births for Italy, Croatia, Albania, and Montenegro, are, respectively, 4.6, 7.7, 11.4, 14.6 (EU: 5.8); last available figure for Bosnia-Herzegovina is 15.0 (1999); therefore, Eastern Adriatic Countries’ (EAC) rates are from 2 to 3 times higher compared to Italy’s rate; rates seem to decrease for all Countries until 2004 (8-10 per 1000 vs 4 per 1000). Compared to Italy, higher rates in EAC Countries are also reported with respect to maternal mortality, congenital anomalies, mortality <5 yrs from acute respiratory infections and pneumonia.
Life expectancy at birth in 2001 ranges from 80 years (Italy) to 75 years (Montenegro, Croatia) (EU: 78); last available figure for Bosnia-Herzegovina is 73 (1991).

In 2001, all causes standardised death rates per 100,000 (SDR; European standard population) are 585 (Italy), 703 (Albania), 830 (Montenegro), 921 (Croatia) (EU: 717, European Region – ER: 948); therefore, EACs’ rates are from 20% to 58% higher compared to Italy’s rate. Until 2005, SDRs seem to decrease in Croatia, and to increase in Montenegro and Albania; last available figure for Bosnia-Herzegovina is 1008 (1991). SDR in Italy show a decline from 1045 in 1970, to 571 in 2002. In males, 2001 SDRs range from 763 (Italy) to 1707 (Croatia; 123% higher); in females, SDRs range from 451 (Italy) to 711 (Croatia; 58% higher).

Compared to Italy, SDR from diseases of circulatory system are from 68% (Albania) to 116% (Croatia) higher; SDR from ischaemic heart disease are from 68% (Albania) to 125% (Croatia) higher; SDR from cerebrovascular diseases are from 114% (Albania) to 142% (Croatia) higher; SDR from respiratory diseases are from 19% (Albania) to 13% (Croatia) higher; SDR from malignant neoplasms are from 85% lower (Albania) to 18% higher (Croatia); SDR from infectious diseases are from 9% lower (Albania) to 128% higher (Croatia); SDR from injury are from 33% (Albania) to 65% (Croatia) higher; SDR from selected alcohol related causes are from 8% lower (Albania) to 65% (Croatia) higher; SDR from selected smoking related causes are from 34% (Albania) to 100% (Croatia) higher. (See HFA-DB Report in CD for details: SDR from specific causes by gender).

Strong associations are shown when analysing health status in relation to socio-economic indicators; among EAC, EU and European Region Countries, per capita GDP is positively associated with life expectancy (correlation coefficient: 0.78), and inversely related to infant mortality rates (0.64) and all causes standardised death rates (0.74) (a figure between $ 6-10.000 seems to be a cut-off for observing increasing rates of mortality). Even though inversely related to GDP (0.44), unemployment shows a weaker association with health status indicators (0.19).

As far as morbidity, disability, and other health needs/demand indicators are concerned, data are hardly available and comparable. While for AIDS higher incidence rates are reported in Italian Adriatic Regions (IAR), compared to Italy the incidence of infectious diseases is higher in EAC: tuberculosis incidence is up to 7 times higher in EAC (Bosnia-Herzegovina); cancer incidence and prevalence estimates are higher for Italy (although high incidence rates are also reported in Croatia), as well as diabetes frequency, whereas the prevalence of chronic obstructive pulmonary disease seems higher in Albania than in Croatia (data on mental disorders are hardly available and comparable). Even though Italy shows very high and increasing rates of disability (new cases per year), due the highest and increasing aging of population, figures of social benefits are from 2 to 4 times lower compared to rates of Croatia, European Region and EU (averages). Hospitalisation figures are not standardised, and therefore rates are also related to new cases due to elderly populations, beside being related to prevalence rates due to higher survival (Italy), as well as to the incidence of diseases, and to the beds supply with its different utilisation (efficiency); nonetheless, compared to Italy, in EAC higher rates of hospitalisations due to infectious diseases are reported (up to 100%), whereas, among chronic diseases, high rates from cancer (Croatia) and ischemic heart disease (Montenegro, Croatia) are also observed in EAC, besides the high rates observed in Italy.
As far as determinants of health indicators are concerned, data are hardly available and comparable, particularly for environmental exposures (PM10 data are available only for Italy; concerning the few data on water, the percentage of population whose homes are connected to water supply system ranges from 68% of Albania to 82% of B&H, 93% of Croatia, 99% of Italy; % in rural areas are: 46, 69, n.a., 96). Smoking is up to 60% more prevalent in EAC compared to Italy, whereas alcohol consumption (litres p.c.) seems higher in Croatia and B&H compared to Italy and Albania (2001/3). As far as indicators of resources, services utilisation and health expenditure are concerned, HFA macro-data show important differences among Countries. Hospital supply is higher for Croatia and Italy compared to Albania and B&H, particularly concerning acute care (Montenegro figures are in between); physicians figures are higher in Italy compared to, respectively, Croatia, Montenegro, B&H and Albania, whereas B&H and Montenegro show the lowest figures concerning general practitioners; the lowest figure for nurses is reported in Albania. Accordingly, higher acute care hospital admission rates are reported in Italy and Croatia (with slightly longer length of stays in Croatia and Montenegro), while higher occupancy rates are reported in Croatia compared to Italy. In 2004, total health expenditure as % of GDP ranges from 6.7% (Albania) to 8.7% (Italy) (PPP $ per capita: 339 and 2414, respectively, with a sevenfold difference); public sector expenditure as % of total health expenditure ranges from 44-49% (Albania, B&H) to 75-81% (Italy, Croatia); private households' out-of-pocket payment on health, as % of total health expenditure, is 56% (Albania), 51% (B&H), 18% (Croatia), and 21% (Italy).

3.2 Data availability and comparisons among EAC and IAR of the HANS Project

Following the Countries’ profile comparisons by using WHO/Europe-HFA data, the HANS European Adriatic Countries (EAC-PAO) and Italian Adriatic Regions (IAR-RAI) are here analysed, with respect to the specific objectives of disaggregating/qualifying data at smaller levels. Overall results (Tables 1-23, Figures 1-7, Maps 1-34) are reported in the Sections of the Minimal Information System – HANS Grid (MIS_S1-S5) (CD-ROM version of this HANS Report). The CD contains the Grid with available indicators, the data collection Report for each Country, and the complete All-Countries Database: Health Adriatic Network – HANS Database MIS_S1-S5.

HANS-MIS_S1 - Demographic and socio-economic context – Out of the 20 Italian Regions (107 Provinces and 8,101 Municipalities, with a population of about 57 million), the seven Italian Adriatic Regions have been involved in the HANS Project (IAR-RAI: 35 Provinces and 2,086 Municipalities, 16.8 million people) (Table 1). Similarly, out of the 20 Croatian Counties (plus the City of Zagreb; 426 Municipalities, with a population of around 4.4 million), seven Croatian Counties have been involved in the HANS Project (219 Municipalities, 1.43 million people). The mean Italian Municipality population is 8,000, whereas the Croatian Municipality mean is 6,600. Therefore, in order to compare data, following level 1 (Municipalities), Croatian Counties (ranging from about 54,000 to 464,000 people; mean: 204,000) have been labelled level 2, as the Italian Provinces (ranging from about 90,000 to 800,000 without Bari; mean: 479,000 with Bari) (see HANS-DB MIS-S1 for details). Compared to Italy (IAR with four levels - 1: Municipalities, 2: Provinces, 3: Regions, 4: State) and Croatia (with three levels - 1: Municipalities, 2: Counties, 4: State), Montenegro (population: 620,145) is divided in 21 Municipalities (mean: 30,000 people);
therefore, since Montenegro has two administrative levels (1: Municipality, and 4: State), the level 1 has also been used for comparing Montenegro data with level 2 of other EAC/IAR (Provinces, Counties) (see geographical analyses: 34 maps related to 13 demographic and socioeconomic indicators, and 7 health status and needs/demand indicators). As far as Albania is concerned (levels: 1, 2, 3, 4), following level 1 (374 Municipalities, mean population: 8,300), level 2 is made up of 36 Districts (population range: 11,000-523,000; mean: 88,000), whereas level 3 consists of 12 Prefectures with a population mean of 257,000; this level 3 could also be used, if any, when comparing Albania data with level 2 of other EAC/IAR (Provinces, Counties), although for geographical analyses (34 maps) Albania’s level 2 Districts have been used (Albania p.: 3.0 million). Out of the 156 Municipalities of Bosnia-Herzegovina (State, level 4: about 3.8 million people), with two first-order administrative divisions (level 3: Federation of B&H, and Republika Srpska, with population estimates of, respectively, 2.3 and 1.5 million), 19 Municipalities have been involved in the HANS Project (population of about 400,000, mean: 21,000 - level 1), included in 3 Cantons of B&H (out of 10 Cantons and 7 Regions): level 2 (pop. mean: 131,000) (see Table 1).

Therefore, the HANS population is made up of (rounded): 16.7 million (7 IAR, 21 Provinces with Adriatic coast: 8.5 million), 1.4 million (7 Croatia’s Counties), 3.0 million (Albania: all Country), 620,000 (Montenegro: all Country), 400,000 (19 Municipalities, 3 Cantons of Bosnia-Herzegovina). Montenegro population is about twice the Molise and half the Abruzzo Italian Regions, and it is also comparable to the 35 Italian Adriatic Provinces (as well as the HANS population of B&H: 400,000), whereas Albania population is almost the same size of the three largest Italian Regions (Veneto, Puglia, Emilia-Romagna); moreover, the overall population of the 7 Croatian Countries, comparable to the Italian Provinces, is about the same size as the Marche Italian Region population.

As far as demographic and socio-economic indicators are concerned (ref. year: 2001 – S1_C1-C20), disaggregated data are available at levels 1-2, besides 3-4, although not always completely available within the same Country (whereas concerning Income and GDP, only for Italy and Croatia data are available for provincial areas / level 2). The 2001 Census is used by Italy, Croatia, and Albania, the year 2003 for Montenegro, whereas for Bosnia-Herzegovina population data are estimates; for Italy income and GDP data are 2000 and 2005, for Montenegro 2003) (see data collection Reports by Country in CD for details; see also WHO/Europe HFA-DB for comparing data at the State level).

In Tables 2-10 (EAC/IAR) and Tables 11-14 (IAR), and in Maps 1-34, S1-indicators variability and correlations are reported (together with MIS-S2 indicators). The aging of Italian population (elderly index: 19%), with a total dependency ratio for Italy of 49% mostly due to over 65 people (compared to similar total dependency ratios in EAC, 49-58, mostly due to children/adolescents), shows a large variation by provinces and municipalities, with a variation coefficient (CV) of 39% for very old people (75+: 8.4%, from 3.5 to 38.6%; indicator of healthcare burden due to increasing aging of population); the highest variation of 65+/<15 index (131%, CV: 92%) is observed in Abruzzo (147%, CV: 129%), with 305 municipalities out of 2,086 (mean index: 280%) vs Veneto (135%, CV: 37%). The opposite demographic profile is observed when moving from Italy to Albania, with a birth rate of 17.2 per 1000 (vs 9.2 of Italy and Croatia), a vital index of 349% (vs 93 and 83 of Italy and Croatia), and a <15 years population index of 29% (vs 14% of Italy); accordingly, among the 36 Albania’s districts, the 65+/<15 index (24%, CV: 40%) varies from 63% to 11% (Tab. 2-5).
Among socio-economic indicators, lower educational status ranges from 27% (Italy) to 59% (Albania, from 47% to 70% by districts), whereas the Croatian estimate of 40% varies from 31% to 91% by the 219 municipalities of the seven HANS Counties. As far as Italy is concerned, the unemployment rate (considered a good indicator of social inequalities in rich Countries), is 11.6% at national level, whereas in the Adriatic Regions the indicator shows an average value of 7.6%, ranging from 4.1% of Veneto (Northern Italy) to 20.1% of Puglia (Southern Italy) (estimates vary up to 51% by the 2,086 municipalities of the 35 IAR). With respect to the observed huge economic disparities among HANS EAC and IAR, measured by using Income/GDP indicators and the HDI, see national estimates in the previous WHO/Europe HFA-DB Report (per capita GDP in US$ for Italy, Croatia, Albania and B&H, in 2004, are, respectively: 29,828, 7,724, 2,439, 2,183 - EU: 28,356; therefore, Italy’s p.c. GDP is from 4 times to 14 times higher compared to EAC ’s GDP). As far as Italy and Croatia are concerned, those indicators are available also at level 2; per capita income in 2000 (Italy: € 14,393) ranges from 11,123 (Puglia, Southern Italy) to 17,278 (Emilia-Romagna, Northern Italy), whereas per capita GDP in 2005 (Italy € 17,982) ranges from 11,816 (Puglia) to 22,840 (ER); at provincial level, figures are up to 150% higher (10,525 – 25,303); for Croatia, pc GDP varies from 1840 to 3888 at County level (Tab. 4) (see HANS-MIS-S2 for details). With respect to S1-indicators correlation-analyses (Tab. 14), while the very old people index (75+) at the Italian inter-provincial level is inversely related to unemployment (c. coeff.: -0.59) and directly related to income (0.55) (that is, Northern populations are older, with lower unemployment rates and higher income, compared to Southern ones), at smaller levels (analysis in Abruzzo: 305 municipalities), the yrs 75+ index is directly related to lower education (0.72), and inversely associated to income (-0.32) (that is, smaller municipalities in rural areas with older population, have lower income and lower education, vs larger urban centres) (see Tab. 14c in CD).

On the other hand, in the HANS EAC with very low socioeconomic conditions measured at large area level with GDP and HDI, infant mortality and cultural/educational-related variables seem to be more useful indicators for operationally analysing and mapping social inequalities at small area level (both in health/healthcare and access to resources), in order to plan ad hoc interventions by re-orienting national and local health/social policies.

**HANS-MIS_S2 - Health status: needs and demand** – The MIS-S2 includes 8 indicators/groups of items with related classifications (S2_C1-S2_C191). In Tables 2-10 (EAC/IAR) and Tables 11-14 (IAR), and in Maps 1-34, MIS-S2 indicators variability and correlations are reported (together with MIS-S1 indicators) (Year: 2001, Montenegro: 2003) (see HANS DB MIS-S2 for details). Infant mortality by Countries ranges from 4.4 (Italy) to 18 per 1000 (Albania); at levels 3-2, infant mortality varies from 5 to 25 (Albania’s Prefectures), and to 36 per 1000 by districts (B&H: from 6 to 19 per 1000); data at municipality level are reported for Montenegro (9.3, up to 52 per 1000), and B&H (19 municipalities; 24 per 1000, from 9 to 79) (for geographical details see Maps).

Life expectancy at birth (EU: 78) ranges from 80 years (Italy; m.: 77; f.: 83) to 75 years (Montenegro; m.: 71; f.: 76 - Croatia; m.: 71; f.: 78) (Albania - m.: 72; f.: 79) (last available figure for Bosnia-Herzegovina is 73, year 1991). Estimates at level 2 are available for Italian provinces (m.: min 75 max 79; f.: min 82 max 84) and Croatian counties (m.: min 70 max 79; f.: min 72 max 80) (see HANS DB MIS-S2 for details).
As far as total mortality is concerned, the standardised national estimates (European population) are shown in the previous WHO/Europe HFA-DB Report; briefly, in 2001 all causes standardised death rates per 100,000 - SDR - are 585 (Italy), 703 (Albania), 830 (Montenegro), 921 (Croatia) (EU: 717, European Region – ER: 948); therefore, EACs’ rates are from 20% to 58% higher compared to Italy’s rate (from 58% to 123% higher in female and male populations, respectively).

In order to analyse the most frequent mortality causes in the HANS Countries, the WHO/Europe HFA-DB Report can also be consulted, together with crude rates by causes reported in the HANS Database (Tab. 10). Diseases of the circulatory system are the most frequent group of causes (all ages, males plus females) in Albania, Croatia and Italy (52%, 53%, 39%; with higher frequency of cerebrovascular diseases in Albania compared to Croatia and Italy, 19-16-10%, that show, instead, higher mortality from ischemic heart diseases), whereas, mortality from cancer is a more frequent cause of mortality in Italy (31%) compared to Croatia (23%) and Albania (14%) (even though absolute standardised rates are higher for Croatia and Albania - except cancer - compared to Italy: see HFA Report). Analysing HANS data (death rates for specific causes are not available for Montenegro in the HFA-DB), the profile for Montenegro is similar to that of Croatia and Albania concerning mortality from diseases of the circulatory system (males: 47%, females: 54% of all causes), and mortality from cancer (males: 20%, females: 13%) (see HANS DB). In the WHO HFA-DB, last available all causes-SDR for Bosnia-Herzegovina is 1008 per 100,000 – year 1991. Instead, in the HANS DB mortality data (estimates) are reported both for Bosnia-Herzegovina at the national level (level 4), and for the Federation of B&H and the Republika Srpska (source: B&H Statistical Yearbook 2007, see Report on data collection in CD for details); among the most frequent groups of causes, in B&H (national level) diseases of circulatory system are 46% and 57% (m., f.) of all causes, cancer 21% and 16% (see Table 10a and Figure 7d). Therefore, in relative terms, diseases of circulatory system and cancer are the most frequent causes of death in the HANS populations, ranging from 65% (Albania) to 70% (Italy) and 75% (Croatia).

To summarise those general estimates, depending on the different population structures (oldest: Italy, youngest: Albania), crude death rates (HANS) and standardised death rates (SDR: European population) are here reported, respectively, for males and females (per 100,000 – yr 2001): Italy: 1000, 939 (SDR Italy: 763, 451); Croatia: 1174, 1064 (SDR Croatia: 1207, 712); Montenegro: 949, 892 (SDR Montenegro – yr 2003: 1143, 844); Albania: 569, 418 (SDR Albania: 851, 544) (Table 10) (see WHO HFA-DB Report for other years).

On the basis of those national profiles (showing problems in comparability), the intra-Country variability can be analysed in the HANS-DB (Tables 6-9). Besides crude rates (available at level 2 for Croatia and Albania, and at level 1 for Montenegro and Croatia), only for Albania and Italy intra-Country and World population standardised rates are available at the regional level; therefore, in Albania standardised (intra-Country) mortality rates (large groups of causes) show a 26-40% variability by prefectures (variation coefficient, CV, up to 48% by districts), whereas compared to Albania, in Italy the variability is lower by regions (CV: 10-17%) (for the present project, no standardisation of mortality rates by level 2-3 was possible, due to lack of data stratified by age-groups, and the shortage of time to make those data available for each Country).
As far as mortality in children/adolescents is concerned (<15 yrs, per 100.000), rates are lower for Italy (46, 38: males, females) compared to EAC Countries (Montenegro - males, females: 91, 82 – Albania - males, females: 73, 50 - Croatia - males, females: 68, 55) (see Tables 6-10 and related Maps); at smaller levels, in Albania maximum rates reach, for males and females respectively, 127 and 96 (among prefectures), 146 and 149 (among districts); the most frequent causes of mortality in children/adolescents are injuries and neoplasms (Italy, Croatia), diseases of circulatory and respiratory systems, and injuries (Albania) (see HANS DB MIS-S2 for details by Counties).

Hospital morbidity (hospital discharge rates by causes) is a complex crude indicator of both frequency of disease (incidence and prevalence, with implications of survival and of younger/older population structure), and health needs/demand characteristics (hospital burden of disease), which are also related to hospital supply, efficiency in beds utilisation, and delivery of alternative services in the primary care setting. Bearing in mind those problems, and on the basis of the previous health needs assessment based on mortality data, a general analysis of hospital morbidity can be performed (see Tables 6-10, and Maps). Compared to Italy, showing the highest discharge rates for all causes (also due to older population), in Albania hospitalisations rates due to infectious diseases are 25-30% higher (m, f: 65, 50 x 10.000, 8,9% and 4,9% of all hospitalisations), whereas in Montenegro rates are 48, 39 (4,6%, 3,7%), i.e. the same as Italy (52, 37 – only 2,5%, 1,7% of all causes) (in WHO HFA-DB, compared to Italy rates from infectious diseases are 100% higher in Albania and 50% in Montenegro). Among other conditions, high rates from diseases of digestive and respiratory systems are reported in Albania (most of them infectious). The most frequent causes of hospitalisation in Italy are due to diseases of circulatory system, diseases of digestive systems, cancer, injuries, and diseases of respiratory system. In Montenegro, the most frequent causes are due to diseases of circulatory, respiratory, and digestive systems. The variability analysis of hospitalisations is shown in Tables 7-8: in high frequency areas (Italian regions) variability is lower (12-14%) compared to low frequency areas (Albania’s prefectures: 22-34%) (see HANS DB).

Hospital data are not available in the HANS DB for Croatia and Bosnia-Herzegovina. With this respect, in the WHO/Europe HFA-DB hospital data are instead made available for Croatia up to 2006 (compared to Italy: data available up to 2004) (in any case, the official data source is not reported in the “WHO HFA-DB/definitions” for Croatia and Montenegro, whereas for Italy and Albania the mentioned data source is the Ministry of Health). Analysing those HFA data, high rates from diseases of circulatory system (included ischemic heart disease and cerebrovascular diseases) and from cancer are in fact reported, at the hospital discharge level, in Croatia (see WHO/Europe HFA-DB Report for details on hospital discharge rates by cause).

In order to assess the frequency of mental disorders, as an indicator of health needs/demand in the HANS populations, available hospital data are used as well (bearing in mind the caution in interpretation of this indicator of service utilisation). With respect to the Italian rates of 52-54 per 10,000, Montenegro shows higher discharge rates from mental disorders (24-36 per 10,000) compared to Albania (12-17), with higher frequency in men of both Countries. The variability analysis of hospitalisations from mental disorders is shown in Tables 7 and 8: in Italian regions and provinces the variability is lower (21-24% - 24-28%) compared to Albania’s prefectures and districts (75-108% - 134-173%) (see HANS DB MIS-S2 for details).
As far as morbidity in children/adolescents is concerned (<15 yrs, hospitalisations per 100,000), rates are twice for Italy compared to Albania (Countries with available data). Rates variability at regional/prefecture and provincial/district levels, which are levels 3 and 2, is higher in low frequency areas (Albania: 74%) compared to high frequency areas (Italy: 22%) (see Tables 6-10 and related Maps). In Italy the most frequent causes of hospitalisation are due to diseases of respiratory system, whereas in Albania the most frequent causes are infectious diseases, and diseases of respiratory and digestive systems (see HANS DB MIS-S2 for details).

In order to analyse the indicators of infectious diseases of MIS-S2, besides the previous data concerning mortality and hospital morbidity from infectious diseases, available data from national / regional registries are used. Concerning AIDS, the highest incidence rates are reported in Italy (2.5 per 100,000), and therefore, in the HANS Italian Adriatic Regions, compared to HANS EAC (Italian national rate is from three to thirteen times higher than Montenegro’s and Croatia’s rate). Among IAR, lower rates are reported in Friuli (0.7) and in southern Regions, higher rates in Emilia-Romagna (3.8) and northern Regions (in IAR the variability of rates is 62%, compared to Croatian counties - 134% - and Albania’s prefectures and districts – 139-288%) (see Tables 7-8 and Maps).

As far as tuberculosis incidence is concerned, the highest rates are reported in EAC compared to Italy (7.6 per 100,000): 45.8 per 100,000 in Bosnia-Herzegovina (58.5 in the Federation of B&H), 33.2 in Croatia, 28.4 in Montenegro, 18.6 in Albania (EAC: WHO estimates, 2004). Variability in rates are: 48% (Italy), 51% (Croatia), 90% (Albania), and 159 (Montenegro’s municipalities) (Tables 7-8), that is, rates varies from 2 to 39 per 100,000 among Croatian Counties, up to 50 among Albania’s districts, and to 146 per 100,000 among Montenegro’s municipalities (see HANS DB MIS-S2 for details).

HANS-MIS_S3 - Determinants of health/disease in lifestyles and environmental contexts - The MIS-S3 includes 7 indicators/groups of items with classifications (21 columns: S3_C1 to S3_C21): lifestyles (smoking, alcohol consumption, obesity/overweight), and environmental factors (population exposure to PM10, indoor radon, sea water quality, population supplied with safe drinking water); reference year: 2004 (Table 15) (see HANS DB MIS-S3 for details, and Countries’ Data collection reports for ref. year).

Data on lifestyle-related factors are collected through national or local surveys. The prevalence of regular smokers /Tab. 15) is higher in Albania (39%, males: 60%, females: 18%), compared to Croatia (27%, males: 34%, females: 22%) and Italy (22%, males: 29%, females: 16%). Italian estimates (Istat survey: 22%) varies from 17% to 24% by Adriatic regions, with differences by gender: higher prevalence figures are shown for females in northern regions vs southern ones (from 19% to 9%) and for males in southern regions vs northern ones (31% - 19%). Available Croatian data by counties show that that prevalence of regular smokers is similar throughout the Country.

HANS data on alcohol consumption are less comparable; in Italy, the percentage of total population 11+ yrs drinking >= 1 drink of alcoholic beverage per day, is 30% (males: 43%, range in IAR: 42-55%; females: 17%; range in IAR: 15-23%). Figures for alcohol consumption are 17% in Croatia (official source and indicator definitions are not reported), and 8% in Albania (males: 15%, females: 1%); percentage of general population with every day alcohol use in the past four weeks (IPH – ISOP – ISAID 2006 Report; see specific sources in CD: Albania’s Explanation note book, page 30).
With respect to those lifestyle-related factors, in the WHO HFA-DB data are consistent for smoking, that is up to 60% more prevalent in EAC compared to Italy, whereas alcohol consumption (litres p.c.) seems to be higher in Croatia (10.3) and B&H (8.3) compared to Italy (7.6) and Albania (1.7) (2003: see HFA-DB for details).

In the HANS DB, the prevalence of obesity in Italy is 9.8% (males: 10.5%, females: 9.1%), ranging from 8% to 13% among IAR. Analysing data available from the Istat HFA-DB, the Italian version of WHO HFA, in 2006 the prevalence of obesity (average: 10.5%) is, in females, < 11% in northern regions and > 11% in southern regions, whereas in males is up to > 12% in regions both of southern and northern Italy (Puglia, Veneto, Emilia-Romagna) (for further details see the Italian - Istat HFA-DB in the HANS Report - CD version). The prevalence of overweight in Italy is 34% (males: 43%, females: 27%), ranging from 33% to 38% among IAR. In Croatia the prevalence of obesity, 20% as national estimate, varies by the seven HANS counties from (males and females respectively) 16-18% - 9-14% (Šibenik-Knin, Primorsko-goranska, Dubrovacko-neretvanska), to 27-38% - 55-37% (Zadar, Licko-senjska); estimates for overweight are available in the County of Dubrovacko-neretvanska; 52% (males: 56%, females: 46%). Therefore, concerning the frequency of obesity/overweight, higher figures are reported in Croatia compared to Italy. For Albania, very high estimates of obesity prevalence are shown in Tirana: 29% (males: 25%, females: 33%).

In the HANS DB, environmental factors (population exposure to PM10, indoor radon, sea water quality, population supplied with safe drinking water) are hardly available and comparable; for Italy data are reported at national and regional level, whereas for Albania some data are reported also at district and municipality levels; no data are available in B&H, whereas for Montenegro and Croatia only data concerning drinking water are collected in the HANS DB.

The percentage of population supplied with safe drinking water is (national estimates): 98% in Montenegro, 77% in Croatia (73%-100% by county), 96% in Italy (in Abruzzo, the average of 99% comes from reported values in 4 provincial districts, ranging from 97% - ATO Pescarese - to 100% - Chietino, Peligno A.S.) (see data sources in CD); for Albania, data are reported at the municipality level (values from 79% to 100%). As far as determinants of health indicators are concerned, data are hardly available and comparable also in the WHO/Europe HFA-DB, particularly for environmental exposures; concerning the few data on water, in 2001-2002 the percentage of population whose homes are connected to water supply system ranges from 68% of Albania to 82% of B&H, 93% of Croatia, 99% of Italy; percentages in rural areas are: 46, 69, n.a., 96).

In the HANS DB, data concerning the quality of sea water for Italy are reported at national and regional level, whereas for Albania data are reported at prefecture and district levels. In Italy, the not swimming allowed length of beach due to bad quality (pollution), over the total length of beach, is 6.4%, ranging from 0 (Friuli) to 7.6% (Abruzzo) by IAR, whereas in Albania is 48.4 (ranging from 17% to 74% by prefectures, and from 17% to 85% by districts); in Albania, the proportion of not swimming allowed length of beach is 29% - 16-64% - whereas in Italy is 33% (3% - 44%); with this respect, by reading carefully the Albania’s Explanation note book at page 41, it seems that the Albania’s comparable figure for “not swimming allowed length of beach due to bad quality (pollution), over the total length of beach” should be 19% (48% minus 29%) vs the Italian estimate of 8% (7.6%) (that is, anyway, still more than two times higher compared to the Italy’s estimates).
As far as other environmental factors are concerned, the average radon indoor concentration (radon-222 Bq/m³ - Becquerel – national average) for Italy is 70, ranging from 29 to 99 among regions (national study in 232 cities from 1989 through 1997, see Explanation note book in CD), whereas the percentages of houses > 200 Bq/m³, and, respectively, > 400 Bq/m³, are 4.1% (0 in one region, range 0.8% – 9.6% by IA regions) and 0.9% (0.3 and 4.8 in two regions, 0 in the others). In Albania average values are not reported in the HANS DB, since data on radon concentrations comes from a study performed in 10 urban cities, that do not represent the national average (yr 2000, see Explanation note book in CD for details); the average radon indoor concentration values (radon-222 Bq/m³) range from 58 to 179 among the ten cities, whereas the percentages of houses > 200 Bq/m³, and, respectively, > 400 Bq/m³, range from 0 to 25%, and from 0 to 19% and 25% (values detected in two cities: Tirana, Delvine). Data concerning the population exposure to PM10 are available for Italy and Albania. The indicator “population / no. of PM10 detection system points (% of regional population)” in Italy ranges from 6% to 33% by IAR; the average of days with exposure exceeding limit value of 50 µg/m³ (24 h average) is 53 (from 14 to 91 by IAR). The population exposed to ambient concentrations exceeding limit value - 50 µg/m³ - on 35 or more days, is 83.9% in the Marche Region (ARPA data 2006: 15 cities with 24 detection points - exposed pop. 494,179 / total detected pop. 589,273: 83.9%), 97.2% in the Veneto Region (21 cities with 29 detection points, tot. pop. 1,307,145), and 100% in the Abruzzo Region (APAT - ARTA data 2006: 1 city with 3 detection points - exposed pop. 122,402 / total detected pop. 122,402: 100%; 2007: 2 cities with 5 detection points, pop. 175,665, 100%). In the Albania’s HANS DB section, data are reported at the national and municipality levels; at national level, the indicator “population / no. of PM10 detection system points (% of population)” is 40% (60-80% for the monitored municipalities) (therefore, these figures do not seem comparable to the Italian regional percentages); the average of days with exposure exceeding limit value of 50 µg/m³ (24 h average) is 240 (from 200 to 330 by municipalities) (higher than Italy’s values), whereas the population exposed to ambient concentrations exceeding limit value - 50 µg/m³ - on 35 or more days - is 30% (from 35 to 80 by municipalities) (see Albania’s and Italy’s Explanation note books in CD for details).

**HANS-MIS_S4** - Health system: preventive programmes and activities – The MIS-S4 includes 3 indicators (6 columns: S4_C1 to S4_C6): vaccination coverage in children; breast cancer screening coverage; cervical cancer screening coverage; reference year: 2004 (Table 16) (see HANS DB MIS-S4 for details, and Countries’ Data collection reports for ref. year).

Vaccination data are reported at municipality level in Montenegro and in some Croatian counties (completely reported in the Primorsko-goranska County), and at level 2-3 in Albania (districts, prefectures) and in Croatia (counties), whereas for Italy only regional estimates are readily available at national level (that is, published on web site by the National Institute of Health – Istituto Superiore di Sanità - and the National Institute of Statistics – Istat HFA Software). As far as national estimates are concerned, figures between 92-95% and 98% are reported in HANS EAC, and between 87% and 97% in Italy (S4_C1-C4: poliomyelitis - diphtheria, tetanus, pertussis – dtp - measles, mumps, rubella); in particular, coverage for MMP varies from 87% (Italy, IAR: 86-92%) to 96% (Albania, 95-99%); Croatian counties: 90-99% (national: 96%); Montenegro’s municipalities: 85-100% (national: 92%).
National estimates for breast cancer and cervical cancer screening coverage are available only for Italy (National Observatory of Screening, 2004 - 2006); concerning breast cancer, the national average of 51% ranges from 32% (Abruzzo) to 93% (Emilia-Romagna) by level 3 (regions); whereas concerning cervical cancer, the national average of 25% ranges from 19% (Molise) to 34% (Abruzzo). Analysing similar data available from the Istat HFA-DB, the Italian version of WHO HFA, in 2005 the frequency of women with 25+ years (without symptoms) reporting a pap-test is 65%, ranging from more than 80% in northern regions to less than 50% in southern regions (from Marche through Abruzzo, Molise and Puglia); the same north-south inverse gradient is shown for the frequency of women with 40+ years (without symptoms) reporting mammography: national average of 56%, ranging from more than 70% to less than 40% (Abruzzo, Molise and Puglia) (for further details see the Italian - Istat HFA-DB in the HANS Report - CD version).

In Croatia cancer screening data are available at the county level: concerning breast cancer, coverage rates are 18% (Šibenik-Knin) and 33% (Primorsko-goranska), whereas concerning cervical cancer, coverage rates are 26% (Šibenik-Knin), 29% (Split-Dalmatia) and 46% (Primorsko-goranska); estimates of cervical cancer screening coverage are also reported in three municipalities of the Šibenik-Knin County: 20%, 24%, 28%.

HANS-MIS_S5 - Healthcare delivery: hospital utilisation, health resources and expenditures - The MIS-S5 includes 7 indicators/groups of items with related classifications (27 columns: S5_C1 to S5_C27): hospital supply and activity/efficiency indicators, health personnel (including general practitioners and nurses), public and private health expenditure; reference year: 2004 (Tables 17-23) (see HANS DB MIS-S5 for details, and Countries’ Data collection reports for ref. year).

Data concerning human and financial resources, hospital beds supply and utilisation, and health expenditure, in Italy are available at national and regional level (between-region comparable data are made available, in 2007, up to years 2003-2004 by official sources: Ministry of Health, etc., see Explanatory note books in CD), in Croatia, Albania and Montenegro are partly available also at district/county and municipality levels (beds, health personnel and hospital utilisation), whereas data are not available for B&H in the HANS DB (data concerning B&H are instead available in the HFA-DB: see the WHO HFA-DB Report).

Total hospital supply is higher in Croatia (5.5 per 1000) and Italy (4.6) compared to Montenegro (4.2 – 0-6.5 by municipalities) and Albania (2.5 – from 0.4 to 5.4 by districts); figures for acute care are 4.1 per 1000 in Italy (IAR: from 3.6-3.9, Puglia and Veneto, to 4.7-5.1, Abruzzo and Molise) and 3.6 in Croatia (seven Counties: from 2.0 to 4.3); long-term care beds are 0.2 per 1000 in Italy and 1.9 in Croatia (indicators: S5_C1 - S5_C4, HANS DB). Those figures seem to be generally consistent with the Countries’ population structures (oldest: Italian and Croatian ones; although the long-term care supply is lower in Italy, whereas data are not reported for rehabilitation in Croatia as a State); in fact, the rehabilitation care stock is reported at national level only for Italy (S5_C3): 0.4 per 1000 (ranging at regional level from 0.2 – Friuli V.G., including intensive/high rehabilitation care, to 0.5 – Abruzzo, without intensive/high rehabilitation) (including both levels of care, Italy’s beds are 0.6 vs 1.9 per 1000 in Croatia, ranging from 0.6 to 3.9 by HANS Croatian Counties); with this respect, rehabilitation care beds are instead reported in three Croatian Counties: figures are <0.5, 1.5 and 1.6 per 1000 for Šibenik-Knin, Istarska, and Primorsko-goranska, respectively.
Hospital utilisation indicators (S5_C12 - S5_C20) are related to the previously reported supply figures. At the national level, higher acute care hospital admission rates (inpatients discharges) are reported in Italy (143 per 1000) compared to Montenegro (111) and Albania (86) (from 59 to 129 by Albania’s prefectures), whereas figures for rehabilitation (4.7) and day-hospital care (day cases: 65.6) are reported only for Italy (total hospital discharge rate: 213 per 1000) (acute care hospital admission rate for Croatia – HFA-DB 2004: 146 per 1000). Among IAR, acute care discharges rates vary from 121 per 1000 (Veneto) to 196 (Abruzzo), day-hospital rates from 40 (Friuli Venezia Giulia) to 69 (Abruzzo), whereas rehabilitation rates range from 2.5-2.7 (Marche, Friuli VG) to 10.0 (Abruzzo: fourfold higher rates, with a more than twofold bed supply rate vs FVG). Among HANS Croatian counties, acute care hospital admission rates varies from 83 to 150 per 1000 (Licko-senjska, Primorsko-goranska), whereas rehabilitation rates are reported in two Counties: 10.3 14.0 (Istarska, Primorsko-goranska). Longer length of stays (LOS) for acute care are reported in Montenegro (9.8 days vs 6.8 - 6.3, Italy and Albania, respectively), while longer LOS for long-term care are reported in Albania (public beds: 82 days) vs Italy (public: 26 days, private: 37).

As far as indicators of hospital supply and utilisation are concerned, WHO HFA-DB macro-data confirm the differences among Countries observed by HANS; hospital supply is higher in Croatia and Italy compared to Albania and B&H, particularly concerning acute care; accordingly, higher acute care hospital admission rates are reported in Italy and Croatia (with slightly longer LOS in Croatia and Montenegro), while higher occupancy rates are reported in Croatia compared to Italy (occupancy rates are not collected in the HANS-DB; see WHO HFA-DB for this indicator).

Concerning HANS health personnel indicators (S5_C5 - S5_C11), Montenegro reports the highest total figure (total employees per 100,000: 1202) (followed by Italy and Croatia, 1139, 839), while Albania reports the lowest figure (547); compared to Italy, Croatia and Montenegro, physicians and nurses figures are lower for Albania (100 and 213, respectively, vs 192 and 644 in Montenegro); compared to Italy, Montenegro shows the lowest figure concerning general practitioners (31 vs 81), whereas, notwithstanding the highest 0-14 yrs population index (and the related morbidity/mortality rates), the lowest figure for general paediatricians is reported in Albania (4.1 per 100,000), compared to Croatia, Italy and Montenegro: 5.9, 12.7, and 28.1, respectively (for analysing disaggregated data of HANS Countries at levels 1, 2, and 3, see HAND-DB). Compared to HANS-DB, in the WHO HFA-DB personnel figures are somewhat different (physicians and nurses): physicians are higher in Italy (ISTAT vs Ministry of Health in HANS) compared to, respectively, Croatia, Montenegro, B&H and Albania, whereas B&H and Montenegro show the lowest figures concerning general practitioners (consistently with HANS); the lowest figure for nurses is reported in Albania, consistently with HANS (see the WHO HFA-DB Report in CD for details).

HANS health expenditures indicators are S5_C21 - S5_C27 (state estimates; Italy also by regions). In Italy, per capita total expenditure is €1899 (2003), 8.1% of GDP (public: 6.3, private: 1.8); public % of GDP is higher in southern IAR: 8.2-8.8, whereas pc public expenditure, €1420, ranges from 1271 (Puglia) to 1638 (Molise). Total expenditure is 8.6% of GDP in Croatia (public: 86%) and 6.7% in Albania (public: 64%) (Italy, public: 77%); for Montenegro only the public figure is available: 7.3% of GDP (vs 7.4%, 6.3%, and 4.3% of Croatia, Italy, and Albania, respectively).
In order to better compare HANS data, the WHO/Europe HFA-DB estimates can be used; in 2003, total health expenditure estimates, as PPP$ per capita, are: 366 for Albania, 327 for Bosnia-Herzegovina, 838 for Croatia, 2266 for Italy (data are not available for Montenegro); in 2004, estimates are: 339 for Albania, 603 for Bosnia-Herzegovina, 917 for Croatia, 2414 for Italy (with a sevenfold difference between Albania and Italy). Public sector expenditure, as % of total health expenditure, ranges from 44-49% (Albania, B&H) to 75-81% (Italy, Croatia); private households’ out-of-pocket payment on health, as % of total health expenditure, is 56% (Albania), 51% (B&H), 18% (Croatia), and 21% (Italy).

3.3 HANS - Country profile: Italy – Italian Adriatic Regions (IAR – RAI)

Even though an “Executive Report” has been planned for each Country Team, in the case of ASR Abruzzo Team (responsible for the IAR), most of the Italian data have already been analysed when comparing Italy, and, more specifically, the Italian Adriatic Regions, with the HANS / European Adriatic Countries in the two previous reports (3.1 – 3.2). Therefore, in the framework of this Adriatic project context, a within/between-IAR profile can be analysed.

Before looking at specific results, the issues of data availability and comparability are here briefly summarised, since they represent a major concern (and, therefore, an objective for improving data collection) in the HANS Project. As far as mortality data availability is concerned, at January 2008 standardised data were available until 2001 at the provincial level (2002 for regions) in the most frequently used official source for Italy: the ISTAT HFA-Database, Italian version of WHO/Europe HFA-DB Software, managed by the Italian Institute of Statistics – Istat (data are coded in ICD-9; since January 2008, Istat is coding in ICD-10 starting from the year 2003). Since mortality data were not completely available in the participating Regions (official computerised registers were not available in Abruzzo, Marche, Molise), the HANS Scientific Committee has decided to choose 2001 as the baseline year for demographic/socioeconomic and health status indicators, whereas concerning sections MIS_S3-5, the year 2004 has been used as reference year, since determinants of health and healthcare system variables are concerned (for Italy, at January 2008 hospital data by Regions were available until 2004 in the Istat HFA-DB) (for details concerning information systems, and related computerisation of databases, see Italy’s Data collection Report in CD).

With this respect, besides allowing the conduct of inter-Country general comparisons, the use of the WHO/Europe HFA-DB has provided a data availability check for HANS data (documentation of WHO/HFA data availability is given from 1970 through 2006); as an example, in the WHO HFA-DB, for Italy demographic data are available until 2002, whereas for Albania, Montenegro and Croatia, data are provided until 2004-2006; concerning infant mortality and all/specific causes death rates, for Italy data are available until 2002, whereas for Albania, Montenegro, and Croatia, data are provided until 2004, 2005, and 2006, respectively.

As a result, besides managing comparable data locally collected at the central level (such as Istat HFA-DB, ISS-National Institute of Health, Ministry of Health), for the HANS Project the priority is to invest in implementing comparable information systems and indicators (and Projects) at an inter-regional level, i.e., among regions/health units sharing equal objectives of cooperation for developing “health rights oriented” health and social policies (for all, regions as well as citizens).
Looking at the macro data, Italy, and therefore the IAR, show a profile characterised by increasing aging of population, negative natural trend (with positive migration index), per capita GDP from 4 to 14 times higher compared to Eastern Adriatic Countries' GDP, the highest life expectancy, much lower infant, total and cause-specific standardised mortality rates compared to EAC, high healthcare burden of disease due to the older population, higher access to and utilisation of preventive and healthcare services (vs EAC), total health expenditure (75% public) up to seven times higher compared to HANS EAC (Albania 2004 figure, as PPPS pc, is 339 vs 2414, 44% public expenditure). A few more data for Italy/IAR show that: the elderly population is 19% vs 8% (Albania), 0-14 yrs population is 14% vs 29% (Albania), live births are 9 per 1.000 vs 17, vital index is 83% vs 349 (Albania), lower education is 27% vs 59%, infant deaths are 4 per 1000 vs 8-10 (HANS EAC), all cause SDRs are lower up to 123% (Croatia), life expectancy is 77 and 83 yrs (males, females) vs 71 and 76 (Montenegro), mortality in children is 46 and 38 per 100,000 (males, females) vs 91 and 82 (Montenegro), incidence of tuberculosis is until 7 times lower than in EAC (Bosnia-Herzegovina) (see Tables 1-10 and HANS-DB) (for Italy/IAR, see Istat HFA-DB in CD).

Following this general profile, the seven Italian Adriatic Regions are here analysed, with respect to the HANS specific objectives of disaggregating/qualifying data at smaller levels (Tables 10-14). Out of the 20 Italian Regions (107 Provinces and 8,101 Municipalities, with a population of about 57 million), the seven Italian Adriatic Regions involved in HANS Project are administrative divided into 35 Provinces and 2,086 Municipalities (16.8 million people) with a mean Municipality population of 8,000, and a provincial mean of 479,000 (ranging from about 90,000 to 800,000 without Bari) (Table 1) (out of 35 IAR Provinces, the population of the 21 IAR Provinces with Adriatic coast is 8.5 million) (with Taranto: 10 million). Therefore, within the HANS framework, the Montenegro population (620,000) is about twice the Molise (320,000) and half the Abruzzo Italian Regions (1,260,000), and it is also comparable to the 35 Italian Adriatic Provinces (as well as the HANS population of B&H: 400,000), whereas Albania population (3 million) is almost the same size of the three largest Italian Adriatic Regions (4/4.5 million: Veneto, Puglia, Emilia-Romagna), and the overall population of the 7 Croatian Countries, comparable to the Italian Provinces, is about the same size as the Marche Italian Region population (1.4 million).

According to ISTAT, Friuli Venezia Giulia, Veneto and Emilia-Romagna are Northern Italian regions, Marche is a Central Italian region, Abruzzo, Molise and Puglia are Southern regions. The aging of Italian population (elderly index: 19%), with a total dependency ratio for Italy of 49% mostly due to over 65 people, shows a large variation by provinces and municipalities, with a variation coefficient (CV) of 39% for very old people (75+: 8.4%, from 3.5 to 38.6%; indicator of healthcare burden due to increasing aging of population); the highest variation of 65+/<15 index (131%, CV: 92%) is observed in Abruzzo (147%, CV: 129%), with 305 municipalities out of 2,086 total IAR (mean index: 280%) vs Veneto (135%, CV: 37%) (see Tables 2-5) (HANS-DB/MIS_S1). Elderly index estimates (65+: 18.7%) by IAR are, Puglia: 15.9%, Veneto: 18.3%, Abruzzo: 20.5%; Molise: 21.1%, Friuli: 21.5%, Marche: 21.8%, Emilia-Romagna: 22.4%. Indicator estimates 65+/0-14 (131%) by IAR are, Puglia: 96, Veneto: 135, Abruzzo: 147; Molise: 148, Marche: 168, Friuli: 187, ER: 192. The natural trend (birth - deaths per 1000) (Italy: -0.7) shows positive values only in Puglia (2.1) and Veneto (0.2) (the lower value is observed in Friuli: -4.0).
Among socio-economic indicators, lower educational status is 27%, without variation by IAR. The unemployment rate (considered a good indicator of social inequalities in rich Countries), is 11.6% at national level (from 9.1% to 6.8% in 2002-2006; HFA-DB), whereas in the Adriatic Regions the indicator shows an average value of 7.6%, ranging from 4.1% of Veneto (Northern Italy) to 20.1% of Puglia (Southern Italy) (estimates vary up to 51% by the 2,086 municipalities of the 35 IAR). Per capita income in 2000 (Italy: € 14,393) ranges from 11,123 (Puglia) to 17,278 (Emilia-Romagna, Northern Italy), whereas per capita GDP in 2005 (Italy € 17,982) ranges from 11,816 (Puglia) to 22,840 (Emilia-Romagna); at the provincial level, figures are up to 150% higher (10,525 – 25,303).

With respect to MIS_S1-indicators correlation-analyses (Tab. 14), while the very old people index (75+) at the Italian inter-provincial level is inversely related to unemployment (c. coeff.: -0.59) and directly related to income (0.55) (that is, Northern populations are older, with lower unemployment rates and higher income, compared to Southern ones), at smaller levels (analysis in Abruzzo: 305 municipalities), the yrs 75+ index is directly related to lower education (0.72), and inversely associated to income (-0.32) (that is, smaller municipalities in rural areas with older population, have lower income and lower education, vs larger urban centres) (see Tab. 14c in CD).

As far as health status is concerned, indicators are reported in MIS_S2 and Tables 6-10 (Istat/HFA). Infant mortality rates (national figure: 4.4 per 1000) show a North-South gradient by IAR: 2.4 (Veneto), 3.6 (Emilia-Romagna), 3.7 (Friuli Venezia Giulia), 4.3 (Marche), 5.0 (Abruzzo), 5.6 (Puglia), and 5.8 (Molise); the variability by IAR is 28% (correlation coefficient, CV). Infant mortality rates vary by 35 Provinces from 1.6 to 6.8 per 1000, with a CV of 31%.

Mortality rates in children/adolescents (<15 yrs, per 100,000) are 46 in males (from 27 in Veneto, to 50 in Abruzzo, and 54 in Puglia), and 38 in females (from 28 in Veneto, to 41 of Abruzzo and Puglia); the most frequent causes of mortality in children/adolescents are injuries and poisoning (34% in males, 34% in females), and neoplasms (35% in males, 26% in female).

As far as morbidity in children/adolescents is concerned (<15 yrs, hospitalisations per 100,000) (168 per 1000 in males, 135 per 1000 in females), rates vary by 22% (see Tables 6-10 and related Maps), from 101 per 1000 males, 82 per 1000 females (in Friuli), to 205 and 167 (in Abruzzo); the most frequent causes of hospitalisation are due to diseases of respiratory system (19%, 18%, m, f).

Concerning all age population, in Italy, diseases of the circulatory system are the most frequent causes of death (39%), with high frequency of mortality from ischemic heart diseases and cerebrovascular diseases, whereas mortality from cancer is the second group of causes (31%) (most frequent specific causes: lung cancer in males, breast cancer in females, colon-rectal cancer). Standardised mortality rates (large groups of causes) show a 10-17% variability by IAR (CV) (for details see Tables 6-10, HANS-DB, and WHO / Istat HFA). Standardised mortality rates from cancer are higher in Northern regions compared to Southern regions, both in males and females (see specific neoplasms in HANS-DB); for ischemic heart diseases a North-South gradient seem to be observed only for males (Friuli: 196 - Puglia: 143), whereas higher rates are observed in Southern regions with respect to cerebrovascular diseases (particularly in males); no clear trend is observed for other groups of causes, with high rates also observed in Southern Regions (Puglia) (Table 12). Hospital morbidity (discharge rates by causes) is a complex crude indicator of both frequency of disease (incidence and prevalence, with implications of survival and population structure), and
health needs/demand characteristics, which are also related to hospital supply (public and private),
efficiency in beds utilisation, and delivery of alternative services in the primary care setting
(important differences among Italian Regions are observed for those characteristics, such as the
lower efficiency in hospital use, and pharmaceutical consumption, observed in Southern vs Northern regions: see overall discharge rates, and for acute and rehabilitation care, in MIS_S5). Overall, the most frequent causes of hospitalisation in Italy are due to diseases of circulatory system, diseases of digestive systems, cancer, injuries, and diseases of respiratory system (age-standardised discharge rates by regions and provinces, by gender, are reported in the HANS-DB, indicators from S2_C140 to S2_C169, while crude rates are reported in indicators from C110 to C139). The variability of hospitalisation rates is 12-14% (CV) (see Tables 7 and 8 for details).
Hospital discharge rates from mental disorders are 54 (males) and 52 (females) per 10,000; CV variability estimates among IAR and provinces are 21-24% - 24-28% (Tables 7 and 8): rates are 81 and 74 per 10,000 in Abruzzo (m, f) vs 38 and 40 in Friuli Venezia Giulia (twice higher rates). The national estimate of AIDS incidence is 2.5 per 100,000; among IAR, lower rates are reported in Friuli (0.7) and in southern Regions, higher rates in Emilia-Romagna (3.8) and northern Regions (in IAR the variability of rates is 62%). The national rate of tuberculosis incidence is 7.6 per 100,000, ranging from 0.9 (Molise) to 9.6 (Emilia-Romagna).
As far as lifestyle-related factors are concerned, the prevalence of regular smokers is 22% (males: 29%, females: 16%); estimates varies from 17% to 24% by Adriatic regions, with differences by gender: higher prevalence figures are shown for females in northern regions vs southern ones (from 19% to 9%) and for males in southern regions vs northern ones (31% - 19%)
In Italy, the percentage of total population 11+ yrs drinking >= 1 drink of alcoholic beverage per
day, is 30% (males: 43%, range in IAR: 42-55%; females: 17%; range in IAR: 15-23%). In the
WHO HFA-DB alcohol consumption (litres p.c.) is 7.6 in Italy (lower than in Croatia, 10.3, and
B&H, 8.3, higher than in Albania: 1.7) (2003; see HFA-DB for details).
In the HANS DB, the prevalence of obesity in Italy is 9.8% (males: 10.5%, females: 9.1%), ranging from 8% to 13% among IAR. Analysing data available from the Istat HFA-DB, the Italian version of WHO HFA, in 2006 the prevalence of obesity (average: 10.5%) is, in females, < 11% in northern regions and > 11% in southern regions, whereas in males is up to > 12% in regions both of southern and northern Italy (Puglia, Veneto, Emilia-Romagna). The prevalence of overweight in Italy is 34% (males: 43%, females: 27%), ranging from 33% to 38% among IAR.
As far as environment-related factors are concerned, in the HANS DB the percentage of population supplied with safe drinking water in Italy is 96%; in Abruzzo, the reported average of 99% in 2004 comes from reported values in 4 provincial districts, ranging from 97% (ATO Pescarese) to 100%
(ATO Chietino, ATO Peligno Alto Sangro) (see data sources in CD). Concerning the quality of sea
water, in Italy the not swimming allowed length of beach due to bad quality (pollution), over the
total length of beach, is 6.4%, ranging by IAR from 0 (Friuli Venezia Giulia) to 7.6% (Abruzzo).
The average radon indoor concentration (radon-222 Bq/m³) estimated in Italy is 70, ranging from 29
to 99 among regions (national study in 232 cities, 1989 - 1997, see Explanation note book in CD),
whereas the percentages of houses > 200 Bq/m³, and, respectively, > 400 Bq/m³, are 4.1% (0 in one
region, range 0.8% – 9.6% by IAR) and 0.9% (0.3 and 4.8 in two regions, 0 in the others).
The indicator “population / no. of PM10 detection system points (% of regional population)” in Italy ranges from 6% to 33% by IAR; the average of days with exposure exceeding limit value of 50 µg/m³ (24 h average) is 53 (from 14 to 91 by IAR). The population exposed to ambient concentrations exceeding limit value - 50 µg/m³ - on 35 or more days, is 83.9% in the Marche Region (ARPA data 2006: 15 cities with 24 detection points - exposed pop. 494,179 / total detected pop. 589,273: 83.9%), 97.2% in the Veneto Region (21 cities with 29 detection points, tot. pop. 1,307,145), and 100% in the Abruzzo Region (APAT - ARTA data 2006: 1 city with 3 detection points - exposed pop. 122,402 / total detected pop. 122,402: 100%; 2007: 2 cities with 5 detection points, pop. 175,665, 100%).

Data concerning preventive services are reported in HANS-DB MIS_S4. Vaccination indicators (S4_C1-C4: poliomyelitis - diphtheria, tetanus, pertussis – dt-dtp - measles, mumps, rubella) in Italy show values between 87% and 97% (see variation by IAR in HANS-DB).

The national estimate for breast cancer screening coverage, 51%, ranges from 32% (Abruzzo) to 93% (Emilia-Romagna), whereas the national average for cervical cancer screening coverage, 25%, ranges from 19% (Molise) to 34% (Abruzzo) (National Observatory of Screening, 2004 - 2006). Analysing similar data available from the Istat HFA-DB, the Italian version of WHO HFA, in 2005 the frequency of women with 25+ years (without symptoms) reporting a pap-test is 65%, ranging from more than 80% in northern regions to less than 50% in southern regions (from Marche through Abruzzo, Molise and Puglia); the same north-south inverse gradient is shown for the frequency of women with 40+ years (without symptoms) reporting mammography: national average of 56%, ranging from more than 70% to less than 40% (Abruzzo, Molise and Puglia) (for further details see the Italian - Istat HFA-DB in the HANS Report - CD version).

The HANS-DB MIS-S5 contains data concerning human and financial resources, hospital beds supply and utilisation, and health expenditure.

In Italy, total hospital supply is 4.6 beds per 1000, while the figure for acute care is 4.1, ranging by IAR from 3.6-3.9 in Puglia and Veneto, to 4.7-5.1 in Abruzzo and Molise; long-term care beds are 0.2 per 1000, whereas the rehabilitation care stock is 0.4 per 1000, ranging at regional level from 0.2 (Friuli Venezia Giulia, including intensive/high rehabilitation care) to 0.5 (Abruzzo, without intensive/high rehabilitation beds). Hospital utilisation indicators are related to these supply figures. In Italy, acute care admission rate is 143 per 1000, whereas figures for rehabilitation and day-hospital care are 4.7 and 65.6, respectively (total hospital discharge rate: 213 per 1000). Among IAR, acute care discharges rates (143 per 1000) vary from 121 per 1000 (Veneto) to 196 (Abruzzo), day-hospital rates from 40 (Friuli Venezia Giulia) to 69 (Abruzzo), whereas rehabilitation rates range from 2.5-2.7 (Marche, Friuli Venezia Giulia) to 10.0 (Abruzzo: fourfold higher rates, with a more than twofold bed supply rate vs FVG).

As far as health personnel indicators are concerned, in Italy NHS total employees per 100,000 are 1139, ranging from 886 (Puglia) to 1383 (Friuli); NHS physicians (181 per 100,000) are 220 in Abruzzo vs 151 in Puglia and 176 in Friuli; NHS nurses figures (454) vary from 336 (Puglia) to 609 (Friuli) (Abruzzo: 519); NHS administrative personnel figures is 129 per 100,000 (Puglia: 97; Emilia-Romagna: 143). General practitioners (81 per 100,000) are 88 in Molise, 86 in Friuli and 84 in Abruzzo, vs 76 in Veneto. Paediatricians (12.7 per 100,000) are 14.5 in Puglia and 9.4 in Friuli.
In Italy, per capita total expenditure is €1899 (HANS-DB: 2003), 8.1% of GDP (public: 6.3, private: 1.8); the public percentage of GDP (6.3%) is higher in southern IAR: 8.2-8.8, whereas per capita public expenditure, €1420, ranges from 1271 (Puglia) to 1638 (Molise).

In order to better compare HANS data, the WHO/Europe HFA-DB estimates can be used; in 2003, total health expenditure estimates, as PPP$ per capita, are: 366 for Albania, 327 for Bosnia-Herzegovina, 838 for Croatia, 2266 for Italy; in 2004, estimates are: 339 for Albania, 603 for Bosnia-Herzegovina, 917 for Croatia, 2414 for Italy (with a sevenfold difference between Albania and Italy). Public sector expenditure, as % of total health expenditure, ranges from 44-49% (Albania, B&H) to 75-81% (Italy, Croatia); private households’ out-of-pocket payment on health, as % of total health expenditure, is 56% (Albania), 51% (B&H), 18% (Croatia), and 21% (Italy).

To summarise, this within-Country/IAR analysis has shown important differences in socio-economic, as well as health status indicators, between northern and southern regions and provinces: even though those disparities are already known, they may acquire new and interesting implications in the context of HANS network. Compared to northern IAR, southern regions show higher values of unemployment (up to five times) and lower of pc GDP (up to 2.5 times), higher infant mortality rates (up to four times among provinces, from 16 to 68 deaths per 10,000), and higher mortality rates in children/adolescents (up to 80-100% higher, from, m. f., 27, 28 to 54, 41 per 100,000), with a positive correlation between unemployment and infant mortality across the 35 IAR provinces (40%), and an inverse correlation between GDP and infant mortality (-25%) (see Table 14b in CD); as far as all-age-mortality is concerned, same direction-correlations with unemployment and GDP are shown with standardised mortality rates from cerebrovascular diseases (and other causes, such as diseases of urinary system) (from 45% to 60%), whereas an opposite direction is observed for mortality rates from cancer and ischemic heart disease (45-71%), which show higher values in provinces with higher GDP and lower unemployment rates (richer areas of northern IAR: life-style and environment-related mortality) (see Tab. 14b in CD). Moreover (and partly related to the previously reported factors), southern regions show a less efficient use of healthcare resources compared to northern IAR: lower access to preventive services (see reporting mammography and pap-test), higher hospital supply vs primary care and preventive resources, higher hospitalisation rates (acute care, rehabilitation, from mental disorders: see Abruzzo vs Friuli), health personnel qualitatively/quantitatively incoherent, to some extent, with respect to demographic and health conditions of populations (physicians and GPs), scarcity of comprehensive facilities for specialties or age groups (Paediatric hospitals, Oncology / Orthopaedic centres, etc., instead provided in Northern regions) (even though centres of excellence are anyway provided in southern areas, such as Oncology/Haematology hospital departments, or Centres for intensive Rehabilitation care, etc.).

Consistently, patient and financial mobility data (not reported in HANS-DB) show a coherent picture of the North-South healthcare gradient: high and increasing positive mobility balances are observed in Emilia-Romagna, Veneto and Friuli Venezia Giulia (as well as Lombardy), mostly from southern regions; negative balances are instead reported in Marche and Puglia, whereas Abruzzo (although the balance is positive, but decreasing in 2004-2006) shows an increasing passive mobility to Marche (with a positive mobility from Puglia) (Molise is instead improving its performance since 2005) (see tables for Mobility - years 2004-2006 - in CD: Italy’s Section).
Even though a short qualitatively report concerning Health System organisation has been planned for each Country Team, in the light of the previously reported data and contexts, we here refer to the specific, complete, and also well-summarised, reports on health systems (available and easily accessible on Web), both of Italy (Health Care System in Transition: Italy. European Observatory on Health Care Systems, 3 (4)), and of other HANS Countries (see references).

Briefly, the Italy’s health care system is a regionally-based national health service (NHS) that provides universal coverage free of charge at the point of service. The system is organized at three levels: national, regional and local. The national level is responsible for ensuring general objectives and fundamental principles of the national health care system. Regional governments, through the regional health departments, are responsible for ensuring the delivery of a benefit package (appropriate “Basic healthcare services” called “LEA”: Livelli Essenziali di Assistenza) through a network of population-based health organizations (local health units, ASL, called “Aziende” – public enterprises at provincial or sub-provincial level), and a network of public hospital, private accredited hospitals, and other public and private facilities of primary, secondary, and tertiary care.

The parliament approves framework legislation, which lays out the general principles for organizing, financing and monitoring the NHS at the regional and local levels. In particular, the National Health Plan (1998–2000) prescribes that the whole NHS should be organized according to the following principles: human dignity (every individual must be treated with equal dignity and have equal rights irrespective of her or his personal or social characteristics); health need (everyone in need has a right to health care, and resources should be allocated with priority given to satisfying the basic needs of the population); equity (NHS resources should be used to eliminate geographical and/or economic barriers that constitute an obstacle to citizens’ demand for appropriate services; behavioural and information gaps among the population should be reduced to provide the same opportunity for access to health care services); protection (the NHS should give highest priority to protecting and promoting citizens’ health status) (Donatini A, et al. Health Care System in Transition: Italy. European Observatory on Health Care Systems, 3 (4) (2001).

At present, since May 2008 a new transition phase has started and is going on in Italy, with healthcare reform proposals characterised by more explicit forms of decentralisation and federal reorganisation, based on (partially) regions’ financial capabilities (i.e.: regionalautonomies; notwithstanding almost 1/3 of income/GDP is produced by Lombardy an Veneto, out of 20 regions), together with increasing economic efficiency in healthcare delivery at local level (appropriateness; private vs public services).

Again, public health priorities seem still to be focused more on financial/managerial issues than on the health consequences of economic changes, according to the principle of ‘burden of disease assessment vs cost-effective health care’, more than the ethical principle of ‘health for all’, regions and, most of all, citizens, Italian and not.

In this changing “scenario” (within an Adriatic region in transition), “if, and how” the new reform policies will produce more efficiency, efficacy, as well as equity in health and healthcare, remains a matter to be tested and studied, by conducting monitoring programmes, observational studies and, most of all, research projects for inter-regional cooperation and local development.
4. DISCUSSION

4.1 Analyses

Even though the present technical report has been organised as a formal paper, the “results” section already contains comments related both to the issue of data collection, and to some implications of results themselves; nevertheless, a first discussion is here outlined in order to introduce the official (as well as informal) discussion/debate planned for the Final Conference (29th July 2008, nine months after the kick-off meeting held in Ancona, 11th October 2007) by the Steering and Scientific Committees, in order to analyse, with the contribution of the participants to the HANS Project, the main critical aspects, and, most of all, the opportunities for improving and developing the Health Adriatic Network HANS (see the integrated Reports by other Partners’ and Countries’ Authors).

As a first effort, notwithstanding the short available time to conduct the Project, a network of professionals and institutions has positively tested the feasibility of collecting basic data for rapid epidemiological, socio-economic, and healthcare assessments. Therefore, according to the specific objectives defined for the HANS Project, an Adriatic-oriented basic Database (minimal information system), with related Surveyor’s operational manual, has been produced: HANS-DB / MIS_S1-5.

By doing that, starting from the most advanced European experiences in implementing and managing health-oriented databases at the State or other macro levels (see references), while checking the availability of information systems and other official routinely collected data, the HANS study group has explored the feasibility of producing comparable data at small area levels, within the framework of Adriatic inter-regional and inter-countries evaluations.

In fact, on the basis of the observed results concerning data availability by Country and administrative divisions and, most of all, of the related critical aspects and problems (see the interesting differences among - and within - Italy and the less developed Countries, such as Montenegro, Albania, and Bosnia-Herzegovina), the basic HANS-DB can now be improved both regarding the completion of the minimal system of 34 indicators/groups of items (completeness at large and small area levels, standardisations, more comparable definitions, update with 2006/7 data), and regarding the inclusion of further indicators (see the first proposal in CD with 73 indicators/items groups, such as migrants, prevalence of diabetes, hypertension and other chronic conditions, disabilities, drug/pharmaceutical indicators). On the one hand, as in the case of Italian Adriatic Regions with less developed information systems, the HANS-DB could be a potential tool both for improving within-region initiatives to harmonise/develop information systems, and for promoting further inter-regional cooperation to make databases available and comparable (for example: mortality data, hospital discharge records and drug prescriptions among Abruzzo, Marche and Molise, in order to assess specific interregional problems concerning chronic diseases, and the related economical and healthcare burden; or concerning the patients’ interregional mobility; see specific HANS proposals). On the other hand, obviously, a total different approach for different problems of data availability and, most of all, of resources, must be planned for Countries’ areas such as those of Bosnia & Herzegovina, in which data, when available, are mostly estimates (see B&H Overview by Dr. Semra Cavajuga; see Countries’ Data collection Explanatory note books).
With this respect, since the HANS objective was “to create a database available to different local administrations in order to develop future projects, and to create a permanent network of public subjects by sharing information, to produce a framework of effective models for future programmes”, it seems that the HANS-DB (and, overall, the “HANS approach”), can be mainly used, within activity and research-oriented educational programmes, as a cultural tool for training professionals in diverse community contexts of the Adriatic network (i.e. to guide, using data, evidence-based decisions for local actions and monitoring): public health and social workers, physicians, nurses, pharmacists, as well as personnel in charge of managing/improving information systems. Moreover, starting from descriptive analyses by gender, age, socioeconomic status and specific clinical conditions, routinely collected data can be considered the basis (denominators) for developing ad hoc clinical-oriented epidemiological evaluations (and effectiveness/outcome studies) within very different local health systems: maternal and child health, continuity of integrated care in chronic diseases (adults, children, elderly with disabilities), specialist/intensive care/interventions vs patient interregional/international mobility (cancer, cardiovascular diseases).

Therefore, as far as the feasibility of creating an Adriatic standardised database is concerned, the Explanatory note books for data collection are, for each Country, the most important product, being very informative and essential for using, improving and developing the HANS-DB itself.

By using available and comparable data, one of the specific objectives of the HANS Project was “to assess the health status of the populations living in the Adriatic Area through shared and validated procedures, in order to obtain data for an integrated ‘net’ planning”.

Therefore, using the HANS-DB, integrated by using the WHO/Europe HFA-DB with standardised indicators (on the basis of the ECHI Project as well), a basic, although comprehensive evaluation, has been performed between and within Countries.

With respect to the large (and well known) differences observed among HANS Countries concerning demographic, educational and socio-economic conditions, in the context of the European Region and the European Union, significant and unequal epidemiological profiles emerge from the health status analysis: infant mortality (although decreasing) varies 2-4 times across Countries (up to 10 times by inter-countries provinces and districts); compared to Italy, higher rates in EAC are reported with respect to maternal mortality and congenital anomalies; life expectancy at birth varies up to 7 years (Italy vs Montenegro); EAC all-causes standardised death rates are up to 58-123% higher than Italian rates (SDR seem to decrease in Croatia, and to increase in Montenegro and Albania) (whereas in Italy, all-causes SDRs show a progressive decline from 1045 per 100,000 in 1970, to 571 in 2002). Strong associations are shown when analysing health status in relation to socio-economic indicators (HFA-DB); among EAC, EU and ER Countries, per capita GDP is positively associated with life expectancy (0.78), and inversely related to infant mortality rates (0.64) and all causes standardised death rates (0.74). This means, as an example, that out of around 150 infant deaths expected in Abruzzo if rates from Montenegro and Albania were applied, “only” 50 deaths (per 10,000 live births) are in fact observed in Abruzzo (which would be 25 deaths if same infant rates from Veneto were applied/observed in Abruzzo).
As far as mortality in children/adolescents is concerned, rates are up to 100% lower for Italy compared to EAC; the most frequent causes of mortality are injuries and neoplasms in Italy and Croatia, diseases of circulatory and respiratory systems and injuries in Albania.

Concerning all-age mortality, diseases of circulatory system and cancer are the most frequent causes of death in the HANS populations, ranging from 65% (Albania) to 70% (Italy) and 75% (Croatia), although neoplasms range from 31% of causes in Italy, to 14% in Albania; in comparative terms, standardised death rates from specific-causes are much higher in EAC compared to Italy/IAR (2.5 times higher from cardio-cerebrovascular diseases), confirming the “epidemic” of chronic conditions in EAC, in addition to the problems related to infectious diseases and infant/child health.

With respect to morbidity, disability, and other health needs/demand indicators, data are hardly available and comparable both in HANS-DB, and in other databases at state level (WHO HFA-DB). AIDS incidence rates are higher in IAR, whereas, among infectious diseases, tuberculosis incidence is up to 7 times higher in EAC compared to IAR (Bosnia-Herzegovina); in HANS, hospitalisations from infectious diseases are much higher in Albania than in Montenegro. In HFA-DB, cancer incidence and prevalence estimates are higher for Italy (although high incidence rates are also reported in Croatia), as well as diabetes frequency, whereas the prevalence of chronic obstructive pulmonary disease seems higher in Albania than in Croatia; finally, concerning the ‘burden of disease’ implications, Italy shows very high and increasing rates of disability from chronic diseases in the elderly, due to increasing aging of population.

As far as determinants of health/disease are concerned (besides the educational, social, and economic factors already analysed), data are hardly available and comparable both in HANS-DB and HFA-DB, particularly for environmental exposures: data at regional (Italy) and prefecture/district levels (Albany) seem to show more important environmental problems in Albany vs Italy; with respect to drinking water, the percentage of population whose homes are connected to water supply system (that is also a socioeconomic indicator) ranges from 68% in Albania to 99% in Italy (46% to 96% in rural areas). Among lifestyle-related factors, smoking and obesity are more prevalent in Croatia and Albania compared to Italy, whereas less comparable data are reported concerning alcohol consumption.

Looking at indicators of resources, services utilisation and health expenditure, macro-data show important differences between HANS Countries; among them, according to HFA-DB, in 2004, total health expenditure as PPP$ per capita ranges from 339 (Albania) to 2414 (Italy) (a sevenfold difference); public sector expenditure as % of total health expenditure ranges from 44-49% (Albania, B&H) to 75-81% (Italy, Croatia); private households’ out-of-pocket payment on health, as % of total health expenditure, is 56% (Albania), 51% (B&H), 18% (Croatia), and 21% (Italy).

Starting from these inter-Countries macro-analyses, the HANS-DB represents an original resource since, most of all, it provides interesting basic data disaggregated at regional/provincial level (Italy), by prefectures/districts (Albany), by cantons (B&H), by counties (Croatia), and by municipalities (Montenegro). Therefore, as a first effort produced by this Adriatic Network, the HANS-DB represents a potentially effective training tool for evidence-based public health, since it is useful to conduct and plan ad hoc small area analyses, within, and, above all, between Adriatic areas (see the specific contributions and Reports by HANS Countries and Partners in the present Publication).
Before outlining potential proposals, let’s try to make an example with respect to child health, one of the most critical sectors, among many specific public health areas, chosen by the HANS Group for developing “economically sustainable”, although “health rights-oriented”, Adriatic social and health policies.

Analysing the HANS-DB, as far as child health is concerned at smaller levels, in Albania infant mortality varies from 5 to 25 (prefectures), to 36 per 1000 (districts) (in Montenegro, 9.3, up to 52 per 1000; in B&H, by municipalities; from 9 to 79 per 1000) (IAR provinces: 1.6-6.8); mortality rates in males and females <15 yrs are 73 and 50 per 100,000, with maximum rates, respectively, 127 and 96 (among prefectures), 146 and 149 (among districts); the most frequent causes of mortality are diseases of circulatory system, diseases of respiratory systems, and injuries (Italy and Croatia: injuries, cancer); at the same time, in Albania, the lowest educational level is 59%, vs 27 in Italy (see also comparative figures of economical resources previously shown).

Therefore, having obtained these data at macro and small area levels, according to the specific and previously defined HANS objective, what could it mean “planning at an integrated ‘net’ level”?

That is the most important question for significant health problems to deal with, since planning at the local level (for example, as far as infant and children mortality is concerned, planning educational interventions, and/or healthcare quality improvement programmes, and/or preventive interventions, and/or economic investments in healthcare with international cooperation) is different from cooperating among Countries in order to improve healthcare integration and continuity of care by organising patients’ flows (children with cancer, leukaemia or lymphoma, treated in foreign centres of excellence, i.e., patients’ mobility for transplantation and other therapies).

The same (and/or other) examples and problems can be applied for neoplasms, cardiovascular diseases, or other relevant health and healthcare areas in children, adults, and elderly.

4.2 Proposals

Premise and context - Within the EC’s restructuring programme of Community initiatives aimed at obtaining better and more efficient cooperation among frontier Regions of the Union and neighbouring States, the general objective of the Community initiative called “Over the Adriatic INTERREG III A” was to promote social, cultural and economical developments, as well as cooperation among member Countries of the Adriatic Area. Consequently, it was considered an instrument that could contribute towards the formation of an Adriatic Euro-Region. The planned area of the Programme included 5 European States: one member State, Italy, with the provinces of the seven Adriatic Regions, and four States located on the eastern coast of the Adriatic Sea: Croatia, Bosnia-Herzegovina, Montenegro, Albania. Within this programme, the HANS Project was borne. As a consequence, the approved plan foresaw the realisation of a social/health network among the seven IAR and the four EAC, in order to contribute to the harmonization, integration and cooperation of the health and social systems involved, and to guarantee both the protection of health, and the continuity of healthcare in the Regions/Countries involved.

The motivations of the HANS idea moved from the well-documented evidence that increased risk of diseases, as well as the related health/healthcare and social needs, are strongly related to the social and economical conditions of both States and within-country local communities, together
with the level of development and modernisation of the overall society. In fact, the Italian Regions involved, apart from being geographical neighbours, are mainly mature economies characterised, particularly in Northern Italy, by good use of their own productive capabilities, and therefore, they are receptive to the migratory flows from Eastern European Countries, among which are the Eastern Adriatic Countries of Croatia, Bosnia-Herzegovina, Montenegro and Albania.

In order to integrate interventions and cooperation-oriented policies, on the one hand the IAR needed a basic comprehensive assessment of population health status, socio-economic and health system indicators of EAC, on the other hand the EAC, characterised by geographical isolation, traumatic events and fragmentation of relations among local communities (problems that have caused a slower rate of development compared to other European Countries), were in need for instruments and information-based programmes to better develop regional relations and integration. With this respect, the HANS Project proposed to make available, by using routinely collected data, information concerning the peculiarities and the big differences of EAC from one another - and from the other European Countries and IAR - in order to prevent the growth of such disparities.

To make that scientifically coherent, the HANS Plan has proposed an initial survey of the current health status and needs of EAC and IAR, by using a common and shared methodology, in order to establish, on the basis of the produced data concerning health conditions and related critical areas, specific projects to allow future integrated interventions; in particular, the plan outlined that these projects should: 1. enable the Citizens living in the Adriatic Area, through an improvement of health/social planning and management, to use services more efficiently and effectively; 2. enable the involved Health Institutions to plan efficient and effective interventions and policies, by using appropriate and shared tools, skills, best practices, methodologies and technologies.

Adriatic inter-regional Epidemiologic Network (Epidemiological Observatory in the Adriatic Area)

On the basis of the previously reported premises and context concerning EC’s programmes for development and cooperation - having analysed in this report the main critical aspects, and, most of all, the opportunities for improving and developing the Health Adriatic Network, HANS Project - the implementation of an Epidemiological Observatory in the Adriatic Region seems to be the natural development of the Project, and of course, of the Network itself.

Within this Adriatic network, the HANS-DB represents an original resource mostly because it provides interesting basic data disaggregated at the regional, provincial, and municipality levels, and therefore it represents, besides being the minimal information system for the epidemiological assessment produced by the HANS Project, a potentially effective training tool for evidence-based public health, since it is the basis to conduct and plan ad hoc small area analyses, within, and, above all, between Adriatic areas.

On the basis of the observed critical aspects concerning data availability and comparability by Country and administrative divisions, the basic HANS-DB can be validated by using more specific quality control tools and methods, in order both to improve the completion of the minimal system of 34 indicators/groups of items (totally missing data, completeness at large and small area levels, standardisations, more comparable definitions, update with 2006/7 data), and to include further indicators (see the first proposal in CD with 73 indicators/items groups, such as migrants,
prevalence of diabetes, hypertension and other chronic conditions, disabilities, drug/pharmaceutical indicators). This proposed data-quality control programme can start by exploring the availability and use of primary statistical data (to computerised, if they are not): death certificates (data check, input and standardisation at provincial levels), hospital discharge records (information systems at local levels), morbidity registries (if available, besides infectious diseases); therefore, by doing that, the basic primary statistical data related to the HANS-DB indicators can be re-analysed, as well as updated, by the Scientific Committee of the Adriatic Epidemiological Network. Obviously, a total different approach, for different problems of data availability, will be adopted for Italian Adriatic Regions with less developed information systems (Abruzzo, Molise vs Emilia-Romagna, Veneto, Friuli), with respect to other areas such as those of Bosnia & Herzegovina; in any case, a similar strategy oriented to improve a within-network interregional cooperation, will be adopted. Therefore, the Explanatory note books for data collection are, for each Country, the most important HANS product, being very informative and essential for using, improving and developing the DB itself.

According to the HANS’ philosophy and practical approach, the Adriatic Epidemiological Observatory is a decentralised network made up of Units at local/small area level, not a centralised structure or institution; in fact, basic Units can be considered as epidemiological laboratories for “producing-and-using” data in the field, at that specific level: public health departments, hospital wards, general practices, nurseries, preventive departments, social/health services and facilities, etc. Therefore, particularly in the first phase, the HANS-DB can be mainly used as a cultural tool for training professionals, within well-planned activities and research-oriented educational programmes in diverse community contexts of the Adriatic network (i.e. to guide, using HANS data, evidence-based decisions for local actions and monitoring): public health and social workers, physicians, nurses, pharmacists, as well as personnel in charge of managing/improving information systems. With this respect, starting from descriptive analyses by gender, age, socioeconomic status and specific clinical conditions, routinely collected data can be considered the basis also for developing ad hoc clinical-oriented epidemiological evaluations (for effectiveness/outcome studies) within very different local health systems (besides the traditional epidemiologic studies): maternal and child health, continuity of integrated care in chronic diseases (adults, children, elderly with disabilities), specialist care vs patient interregional/international mobility (cancer, cardiovascular diseases).

Particularly in the first feasibility phase, the implementation of the HANS/Adriatic Epidemiological Observatory can be started through the conduction of an educational programme (with central and local/decentralised modules) aimed at promoting: 1. an epidemiological orientation of public health professionals in using HANS data; 2. an active involvement of clinicians, and other personnel working in the routine conditions of care (nurses, pharmacists, social workers), in the development of an epidemiological culture (data collection, information production, action).

In fact, more than a merely scientific and technical instrument that “uses” information systems, the Epidemiological observatory can be considered and used as a training/cultural tool, a first step for developing an Health Agency in the Adriatic Region (“HANS” Network) made up of professionals, and Institutions, working for developing the local communities through policies aimed at meeting the diverse social and health needs, on the basis of a comprehensive and strategic between-Countries/regions socio-economic cooperation.
Starting from intensively using the HANS-DB and the Project’s analyses (educational programmes, quality control and data validation processes, inclusion of further basic indicators), by improving DB and primary information systems themselves, the Adriatic Epidemiological Network can plan and conduct *ad hoc* reports and studies for developing social and health policies, both at the central level (regional/local) for planning purposes (Adriatic Health Agency), and in the routine conditions of care for better practicing (preventive services, hospitals, primary care facilities and GPs/paediatricians, long term facilities for disable people), by involving the direct actors of the systems (stakeholders: from public health to healthcare professionals, to Citizens’ involvement) (in fact, the use of epidemiology for health planning at local level has rapidly changed from a traditional approach, to one more oriented to health services research, characterised by an increasing utilisation of administrative databases and other routinely collected health service data for epidemiologic analyses, evaluation studies, and assessments of clinical and managerial performance).

Main public health/healthcare areas, topics and population subgroups studies that can be developed by the Adriatic Epidemiological Network, improving the HANS Project and Database MIS_S1-S5 in a perspective of Adriatic Network Health Agency (matter of discussion/debate for the final HANS Project Conference, together with HANS results on data availability and health assessment), are:

- Socioeconomic determinants of health and healthcare inequalities at small area levels.
- Migrants and disadvantaged groups: intervention strategies.
- Maternal and child health.
- Healthcare integration and continuity of care in index diseases of adults (diabetes, chronic obstructive pulmonary disease, hearth failure, myocardial infarction, stroke, neoplasms).
- Clinical epidemiology in primary care (GPs).
- Healthcare epidemiology of elderly with disabilities.
- Epidemiology and management of interregional/international mobility in the Adriatic Area.
- Development and cooperation projects, IAR – EAC, for investing in health (for all).
- Workplace-related injuries and diseases.
- Environmental studies.
- Infectious disease epidemiology and use of healthcare services in EAC.
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This HANS Report is dedicated to

*Miss Federica Vitullo*

(14.05.1990 – 15.09.2007)

*In memory of Federica,\n  wonderful daughter,\n  full of beauty,\n  and love.*