HOSPITALS IN EUROPE
HEALTHCARE DATA

2011

LIST OF CONTENTS

LIST OF TABLES

FOREWORD AND METHODOLOGICAL PREMISES

Hospitals are subject to increasing pressure. Scientific innovations and technological advances open up many opportunities to improve quality of care and patient satisfaction, but the financial constraints, consequence of the economic crisis, and the increasing number of chronic patients add to the natural complexity hospital and healthcare services are facing. In the next decade hospitals will be expected to be even more efficient, to continue reducing inappropriate admissions and length of stay and to further improve the coordination between inpatient care and out of hospital treatments. Moreover, they will be increasingly facing issues around healthcare workforce, such as progressive ageing of healthcare professionals and increasing mobility of personnel.

All over Europe, many efforts are being made to overcome these problems and face these challenges.

Looking at the past, with an eye towards the future, data and indicators presented in the next pages will be providing evidence of all the efforts already done to ensure a high value and quality of hospital care, to build more efficient and appropriate services, streamlining and rationalizing the supply of secondary care.

Trends regarding the core hospital provision and the structure of the workforce will illustrate how healthcare services and in particular hospitals across Europe have been addressing these problems and meeting their objectives. They testify how the changes in the clinical and demographical characteristics of population and the financial sustainability in the area of healthcare always represent a very topical issue for national healthcare systems, greatly affecting the features of hospital activity.

A few simple data concerning hospital activity will also provide some evidence about the amount of work performed within hospital and inpatient settings, and will hopefully represent a first step for a deeper analysis of quality and appropriateness of hospital care and the pathways of integration between primary, secondary and community/social care.

The aim of this publication is to increase awareness about hospital capacity and, more generally, secondary care provision, at the largest possible extent within the European countries. Yet, it does not want to provide answers, but look at some facts which can rather generate questions, stimulate debate, and, in this way, foster the exchange of information and knowledge sharing.

The report offers a picture of the hospital situation for which most recent data are available compared to the situation ten years before. The considered trend is normally the decade 1998-2008.

The source of data and figures is the Health For All Database of the World Health Organisation (WHO/Europe, European HFA-DB, January 2011) unless otherwise specified; while data referring to the expected trends of population in the upcoming decades have been taken from “Europe in figures-EUROSTAT yearbook”[1]. Some figures are disputed for not being precise enough but they at least give a good indication of the diversity.

[1] EUROSTAT database, updated at 09.09.2010 and “Europe in figures-EUROSTAT yearbook”:

All European Member States are considered plus Switzerland. Whenever appropriate two groups have been compared: EU15, the countries that joined the EU before 2004 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom) and EU12, the countries that joined the EU in 2004 and 2007 (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia).

http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-CD-10-220

1 HEALTHCARE SYSTEM AND POPULATION HEALTH

1.1 DEMOGRAPHIC TRENDS

From the sixties up to now the **population number** in Europe has steadily increased, growing at a faster pace during the 1960s, and slowing down after the 1970s.
Between 1980 and 2008 the European inhabitants have risen by about 9%, but the increase between 2000 and 2008 has only been close to 3%.
Conversely, during the next decades the number of European inhabitants is expected to increase rather slowly until 2035 (about +5% between 2008 and 2035), then to start falling until 2060. This trend will be strongly driven by the EU12, whereas the population in most EU15 is projected to continue expanding.

The most relevant aspect highlighted by the projections about the number of European inhabitants in the next decades is the considerable shift in the age structure.
The share of older persons in the total population is expected to increase significantly from 2010 onwards. The post-war baby-boom generation starts to reach retirement age, the life expectancy is still increasing and the birth rate sharply falls down.
Persons aged 65 or over will account for 30% of the EU27's population by 2060, compared to a 17% share in 2008. The ratio of the number of working-age people to those aged over 65 will be reduced from 4 to 1 in 2008 to less than 2 to 1 by 2060.

The rate of **people aged 80 and over** will shift in Europe from about 4,4% in 2008 to 8% in 2035 and 12,1% in 2060.
The highest rates of increase will be registered in most EU12 Member States, such as Cyprus (+169% between 2008 and 2035), Slovakia (+139% between 2008 and 2035), Slovenia (+134% between 2008 and 2035) and Czech Republic (+133% between 2008 and 2035).
Nevertheless the highest shares of inhabitants aged more than 80 years will be registered in some of the bigger European countries: Italy (9,1% in 2035 and 14,9% in 2060), Spain (11,3% in 2035 and 14,5% in 2060), Germany (8,9% in 2035 and 13,2% in 2060) and Greece (7,9% in 2035 and 13,5% in 2060).

These changes will have a strong impact on the future design of healthcare systems throughout Europe, since they will likely result in a considerable increase in the need for professional services, social care and healthcare provision.

1.2 FINANCIAL RESOURCES

The amount of **total health expenditure per capita** in 2008 was $2.877 in EU27, with wide variations around this average value: $3.320 in EU15, $1.195 in EU12.

Compared to the ten previous years, in 2008 the total health expenditure per capita has increased in all European countries. In most of them it has more than doubled, but major increases can be highlighted in Bulgaria, Romania and Slovakia, where the per capita health expenditure have tripled or nearly tripled, and in the case of the three Baltic countries, where the average increase have been higher than 150%.

A major part of health expenditure is handed over to the public finance (*Chart 1*). It includes expenditure incurred by state, regional, local governments and social security schemes, encompassing publicly-financed investment in health facilities and capital transfers to the private sector for hospital construction and equipment. In 2008, the share of **public sector health expenditure** was higher than 70% in all European countries, with five exceptions: Cyprus (45,1%), Bulgaria (57,8%), Latvia (59,6%), Switzerland (59,0%) and Greece (60,9%).

Between 1998 and 2008 the **share of public spending on healthcare** markedly rose in Romania (+18,9 percentage points), the Netherlands (+18 p.p.), Greece (+8,8 p.p.) and Ireland (+8.2 p.p.), whereas it sensibly declined in Slovakia (-24,8 p.p.), Bulgaria (-11,3 p.p.) and Estonia (-7,6 p.p.).

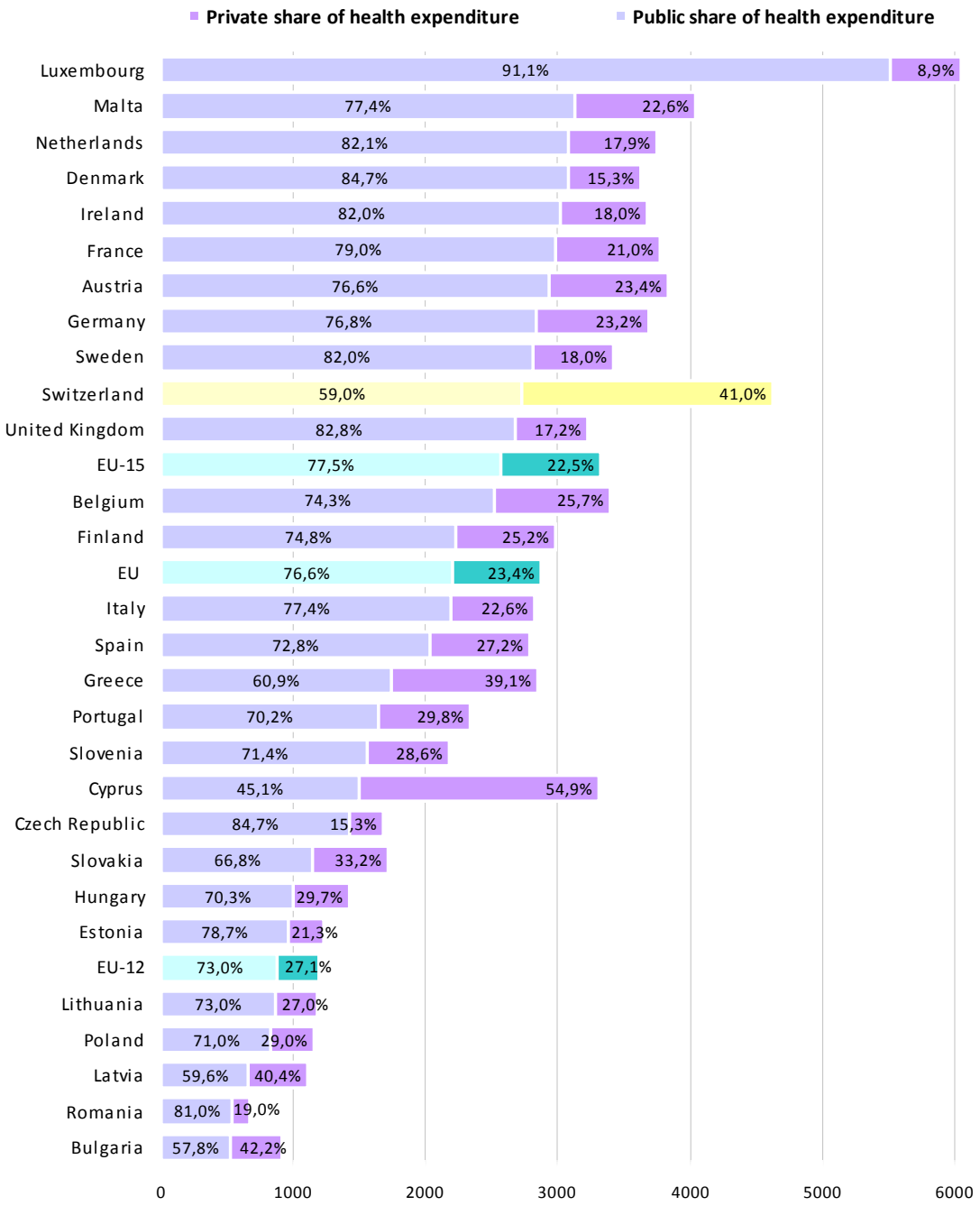

CHART 1. HEALTH EXPENDITURE, IN PPP$ PER CAPITA. SHARE OF PUBLIC AND PRIVATE - YEAR 2008

About a third of total **health expenditure supports the delivery of inpatient care**. This means that a third of health payments finances running expenses, excluding investments and capital outlays, of inpatient institutions for acute, chronic and convalescent care. All funds allocated to outpatient institutions or outpatient hospital departments are excluded from this computation. They are covered under ambulatory care expenses. Nevertheless, this separation is sometimes not statistically possible for some countries, hence a quote of overlap must always be assumed.

In 2008, expenditure on inpatient care represented on average 35% of overall healthcare spending, ranging from 19% and 21% respectively in Portugal and Slovakia, to 52% in Latvia and 44% in Switzerland (*Chart 2*).
Here, only those countries for which complete data are available are considered, but the information provided is sufficient to remark the importance of the inpatient sector in the overall health system.

A common feature to all the European countries is the massive predominance of **public funding in inpatient care**: even if a part of the total health expenditure is always funded by private insurances and out-of-pocket payments, almost the entire amount of inpatient health expenditure is publicly financed.

Between 1998 and 2008, expenditure on inpatient care has not been growing as fast as the total health expenditure. On the contrary, in most European countries spending on inpatient care as a percentage of overall healthcare spending remained the same or decreased, as a result in several cases of policies aiming at controlling expenses, gain efficiency and increase productivity in hospitals.

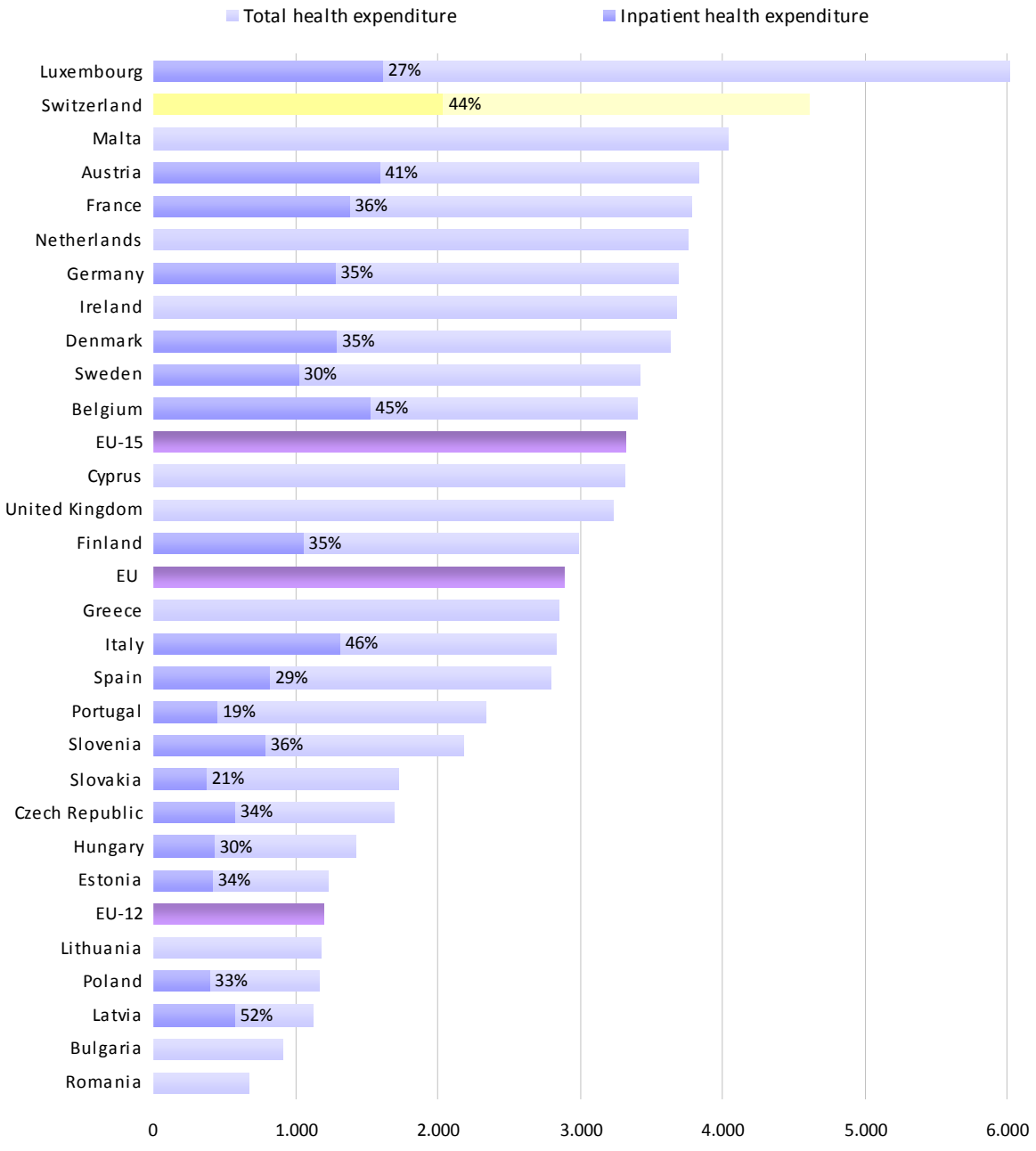

CHART 2. EXPENDITURE ON INPATIENT CARE AS PERCENTAGE OF TOTAL HEALTH EXPENDITURE, VALUES IN PPP$ PER CAPITA - YEAR 2008

2 HOSPITAL CAPACITY AND DELIVERY OF CARE

During the last decade almost all European countries made changes in their hospital services. The number of hospital facilities, as well as the number of hospital beds dropped off. Major efforts were addressed to delivering better services, increasing quality of care and safety of population and improving productivity.

The streamlining of care delivery started from a sharp reduction in the size of secondary care institutions and moved towards more integrated and efficient patterns of care, overcoming almost everywhere the hospital-centric model of healthcare system.
This was possible thanks to a package of financial and organizational measures addressed to improve coordination between acute care, tertiary care and social care, foster integration between primary, hospital and ambulatory care, increase the use of day-hospital and day-surgery and introduce new and more efficient methodologies of hospital financing in order to incentivise appropriateness (e.g. the replacement of daily payments - known to encourage longer hospitalization - by prospective payment).

More or less in all European countries these policies led to changes in the management of patients within hospitals and offered a possibility for reducing the number of acute care hospital beds.

These policies also resulted in a regular reduction of the acute care average length of stay and, in several countries, in the changes in the rate of acute care hospital admissions.

Bed occupancy rates, on the other hand, registered more disparate trends across Europe, depending also from the demographic and epidemiological structure of population and from the specific organization of local, social and healthcare systems, i.e. the structure of primary care, the presence and the efficiency of a gatekeeping system, the modality of access to secondary care, availability of home care and development of community care.

2.1 GENERAL HOSPITAL PROVISION

In 2008, in Europe there were on average 2,6 hospitals for 100.000 inhabitants, ranging from 1 in the Netherlands to almost 6 in Finland. There were on average 530 hospital beds every 100.000 inhabitants, ranging from about 320 in Spain and little more than 800 in Germany.

Between 1998 and 2008, the average **number of hospitals** decreased by about 6%, with values encompassed between -1,7% in Spain (equal to -13 hospitals) and -41,3% in Latvia (equal to -62 hospitals).
In the same period, the total number of hospital beds per 100.000 inhabitants decreased by about 18%. The only countertrend was registered in the Netherlands, where their number increased by about 31%.

In most countries, the decrease in the total number of beds was accompanied by an increase in the number of private inpatient hospital beds. However, in 2008 the share of private hospital beds was still quite low in most countries of EU12, while it reached values little higher than 30% in many countries of EU15.

2.2 ACUTE CARE HOSPITAL PROVISION

In almost all European countries **acute care hospitals** represent at least half of the total number of hospitals.

Between 1998 and 2008 the number of acute hospitals decreased significantly all over Europe. 274 acute care hospitals were closed in Germany, 249 in France, 130 in Italy; their number almost halved in Latvia and Estonia and decreased by about one-third in Hungary, Slovakia and Switzerland.

Between 1998 and 2008, the number of **acute care hospital beds per 100.000 populations** in Europe registered an average reduction of 18%, with a slightly faster decrease in the first five years:-10,9% between 1998 and 2003 and -8,1 % between 2003 and 2008. The only exception was Greece, with an increase by 4% in the whole period (*Charts 3.1 and 3.2*).

The decrease was remarkable in all European countries. In EU15 it ranged between -6,5% in Ireland and -40,2% in Italy, in EU12 it was encompassed between -3,7% in Romania and -34,1% in Estonia.

Still, in 2008 there was a difference little higher than 20% in the total number of acute care beds per 100.000 inhabitants between EU15 (on average 360 beds) and EU12 (on average 467 beds).

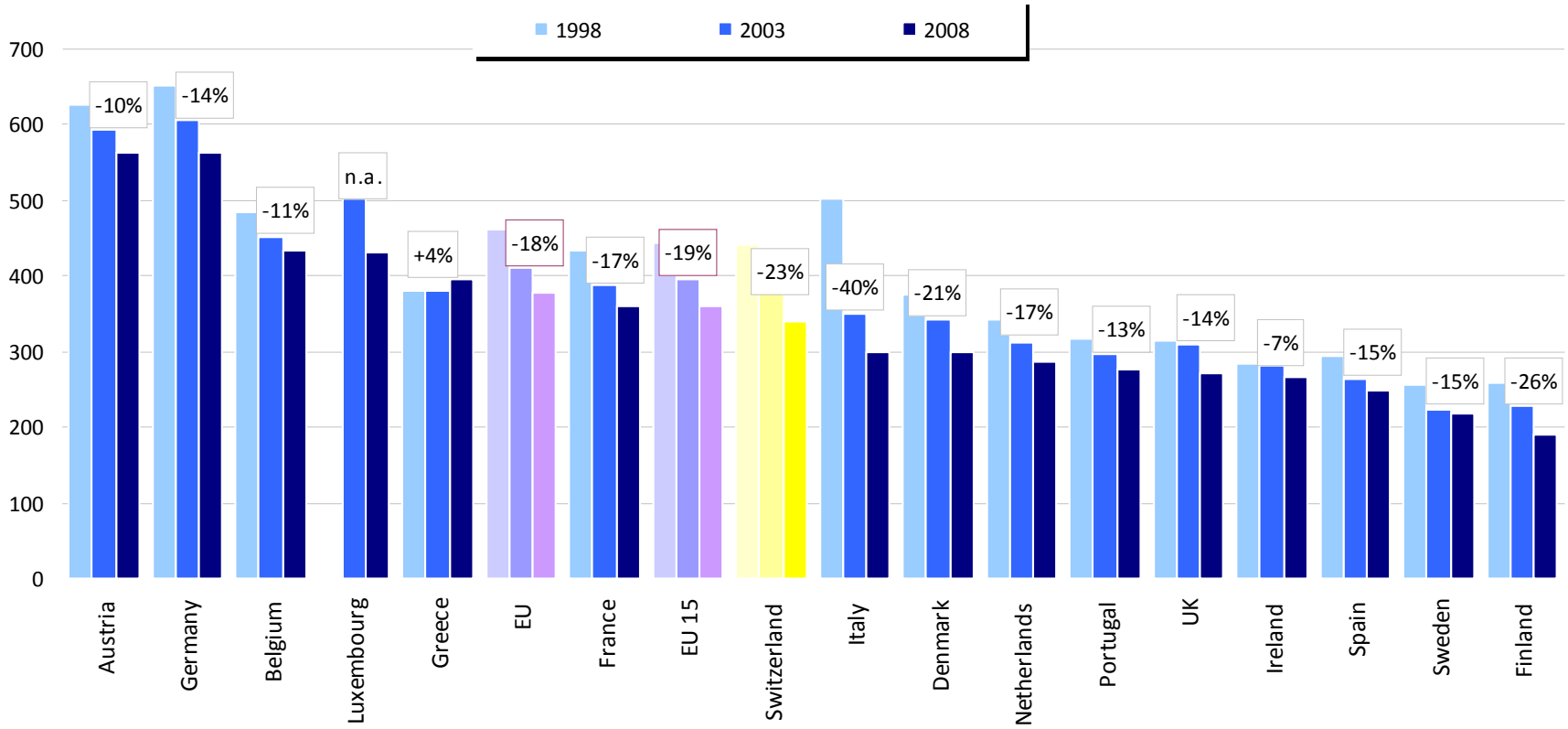

CHART 3.1. ACUTE CARE HOSPITAL BEDS PER 100.000 INHABITANTS. EU15 PLUS SWITZERLAND - TREND 1998-2003-2008

***Note**: data for Ireland refer to 2007; data for Sweden refer to 2005. UK: first available data refer to 2000.*

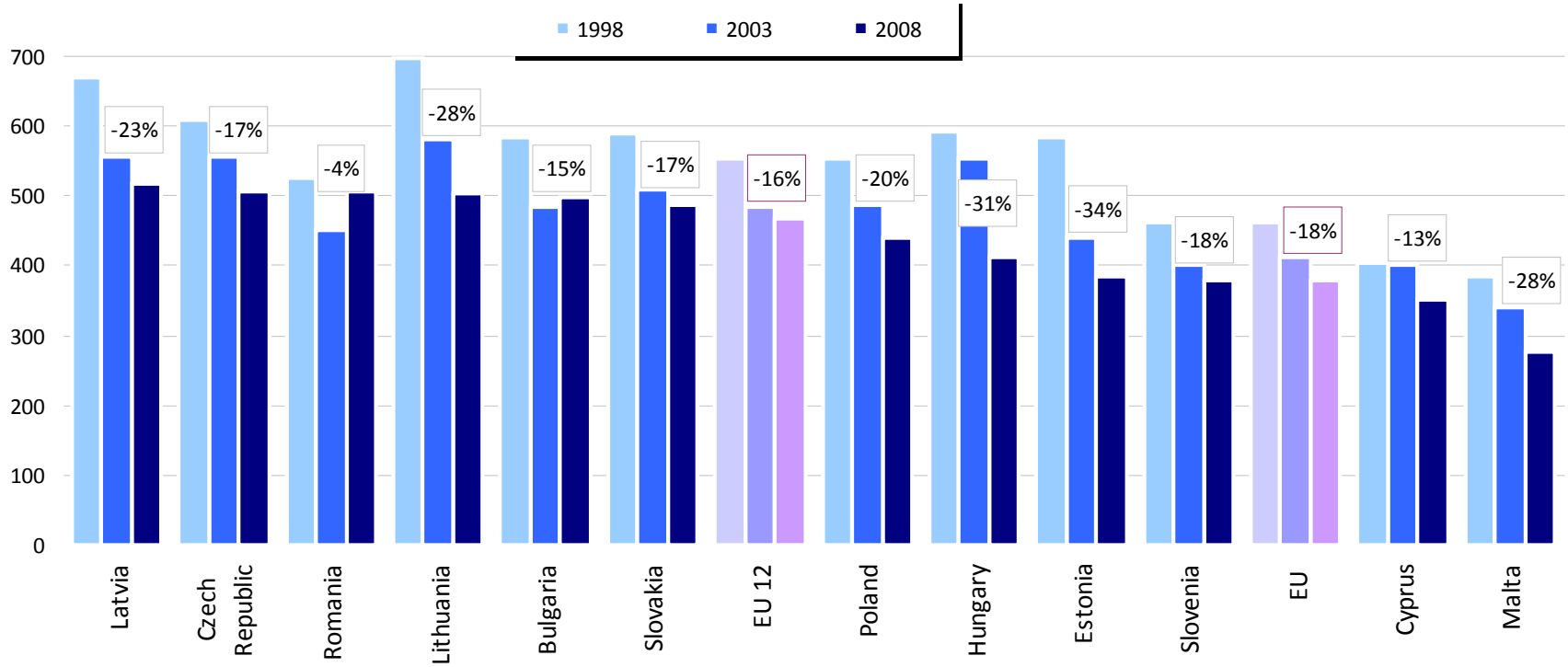

CHART 3.2. ACUTE CARE HOSPITAL BEDS PER 100.000 INHABITANTS. EU12 - TREND 1998-2003-2008

***Note**: data for Cyprus and Romania refer to 2006.*

2.3 USE AND EFFICIENCY OF HOSPITAL CAPACITY

In the last ten years the healthcare reforms implemented all over Europe aimed at rationalizing the use and provision of hospital care, improving its quality and appropriateness, and reducing its costs.
These reforms brought to a fall in the number of hospital beds and resulted in a broad reduction of acute care admissions and length of stay, as well as in improvements in the occupancy rate of acute care beds.

HOSPITAL ADMISSIONS/DISCHARGES

The number of **acute care admissions** involves the entire pathway of hospitalization of a patient, who normally stays in hospital for at least 24 hours and then is discharged, returning home, being transferred to another facility or dying.

In 2008, the rates of acute care hospital admissions in the European countries were quite dissimilar, ranging from 9,2% in Cyprus to 26,7% in Austria (*Chart 4*).

Between 1998 and 2008 almost all countries reduced their rate of admissions or at least stabilized it.
The European average decreased by almost 2 percentage points, from 17,5% to 15,7%. The most remarkable rates of reduction were registered in Italy, Denmark and France, respectively -4,6, -3,9 and -3,7 percentage points.
Conversely, Austria and Greece were the only countries having a significant increase: +6.9 percentage points in Greece and +2,9 percentage points in Austria.

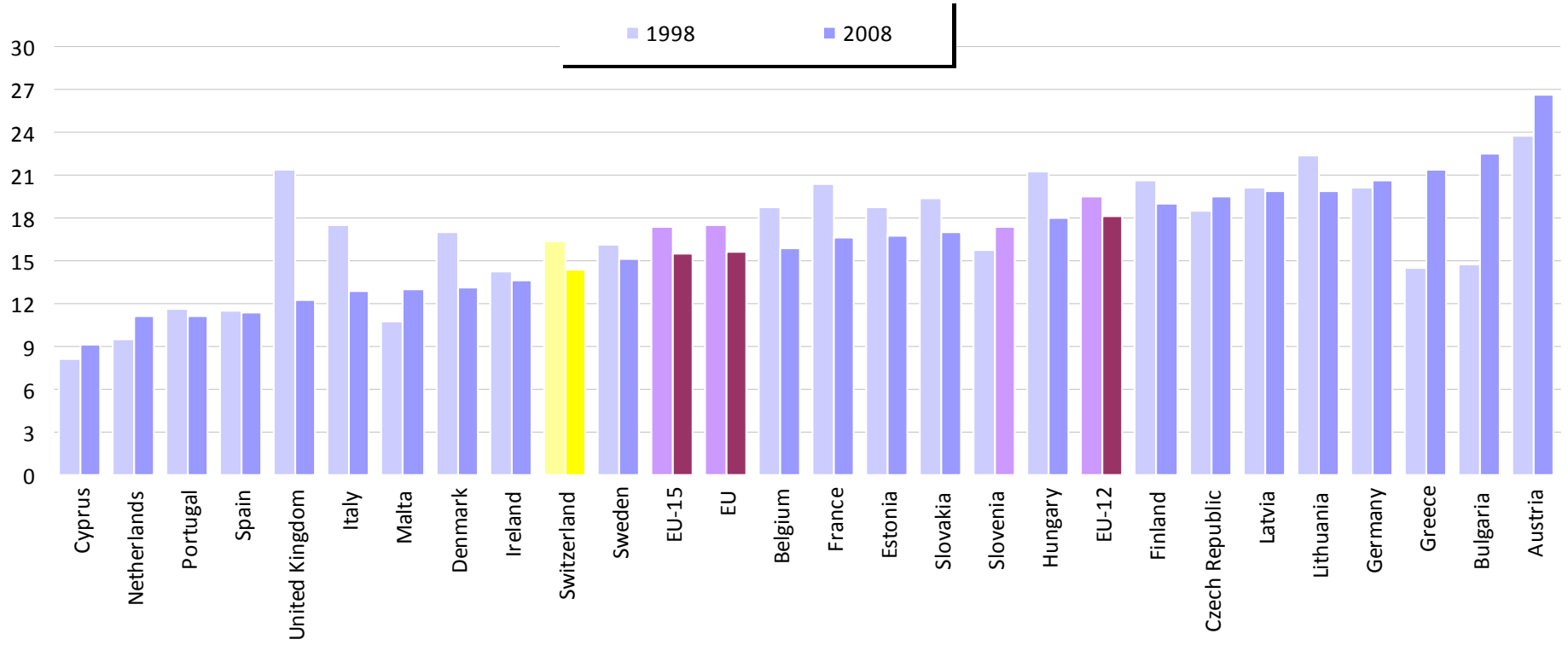

CHART 4. RATE OF ACUTE CARE HOSPITAL ADMISSIONS/DISCHARGES (PERCENTAGE) - TREND 1998-2008

***Note**: data for Luxembourg, Poland and Romania are not available. Data for Belgium, Portugal and Sweden refer to 2007, data for Greece refer to 2006. Data for Bulgaria have been provided by HOPE members. First available data for Bulgaria and the UK refer to 1996.*

LENGTH OF STAY

The **average length of stay** measures the total number of occupied hospital bed-days, divided by the total number of admissions or discharges.

In 2008, the average length of stay in acute care hospitals roughly ranged from 5 to 8 bed-days, with inferior values only in Denmark, Finland and Malta (from 3,5 to 4,3).

Between 1998 and 2008, almost all European countries were able to reduce the length of stay by at least 1 bed-day (*Chart 5*). The exceptions were the smallest countries - Denmark, Malta and Luxemburg - but also two big countries - France and Italy - whose variation were minors.

In EU12 the average reduction was of 2 bed-days. In fact, the most relevant improvements happened in Bulgaria (-4,8 bed-days), Slovakia (-3,4 bed-days), Estonia (-3,1 bed-days), Lithuania and Slovenia (-3,3 bed-days).

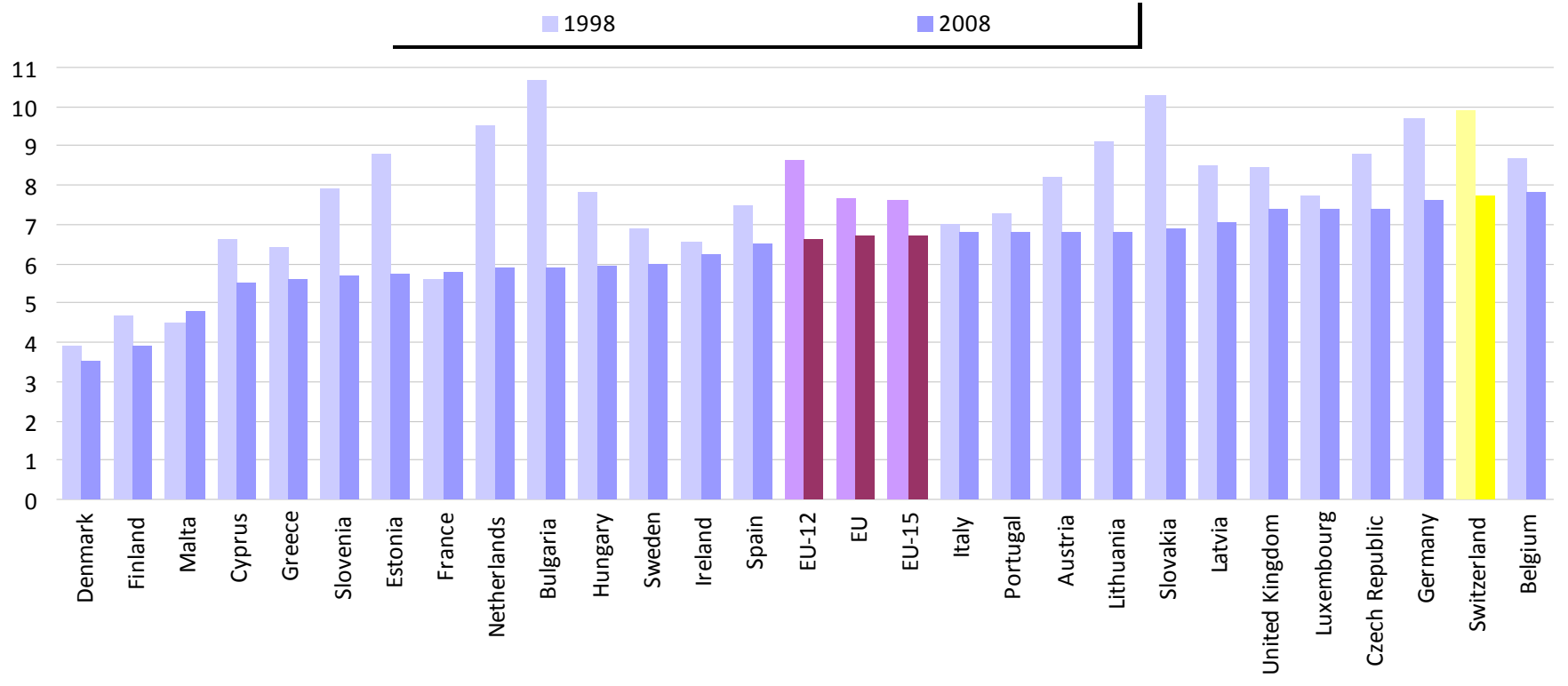

CHART 5. AVERAGE LENGTH OF STAY IN ACUTE CARE HOSPITALS - TREND 1998-2008

***Note**: data for Poland and Romania are not available. Data for Belgium, Portugal and Sweden refer to 2007, data for Greece refer to 2006. Data for Bulgaria have been provided by HOPE members. First available data for Latvia and the UK refer to 2000.*

BED OCCUPANCY RATE

The **bed occupancy rate** represents the average number of days when hospital beds are occupied during the whole year and generally mirrors how intensively hospital capacity is used.

In 2008, the average acute care occupancy rate in Europe was equal to 75,5%, but the gap between the highest and the lowest rate was close to 30 percentage points. However, the lowest values were registered in the Netherlands, with 55,7% and in Belgium, with 66,7%. The better rates were in Ireland (88,9%), Cyprus and Switzerland (88,2%) and the UK (84,8%).

Between 1998 and 2008 there was no clear trend across Europe (*Chart 6*). In some countries the rate of occupancy of acute care hospitals increased, like in many countries of EU15, in other cases it dramatically decreased, like in the Netherlands (-14,4 percentage points), Belgium (-13,2 percentage points), Slovakia (-10,4 percentage points).
These large variations are usually due to changes in the number of admissions, average length of stay and the extent to which alternatives to full hospitalization have been developed in each country.

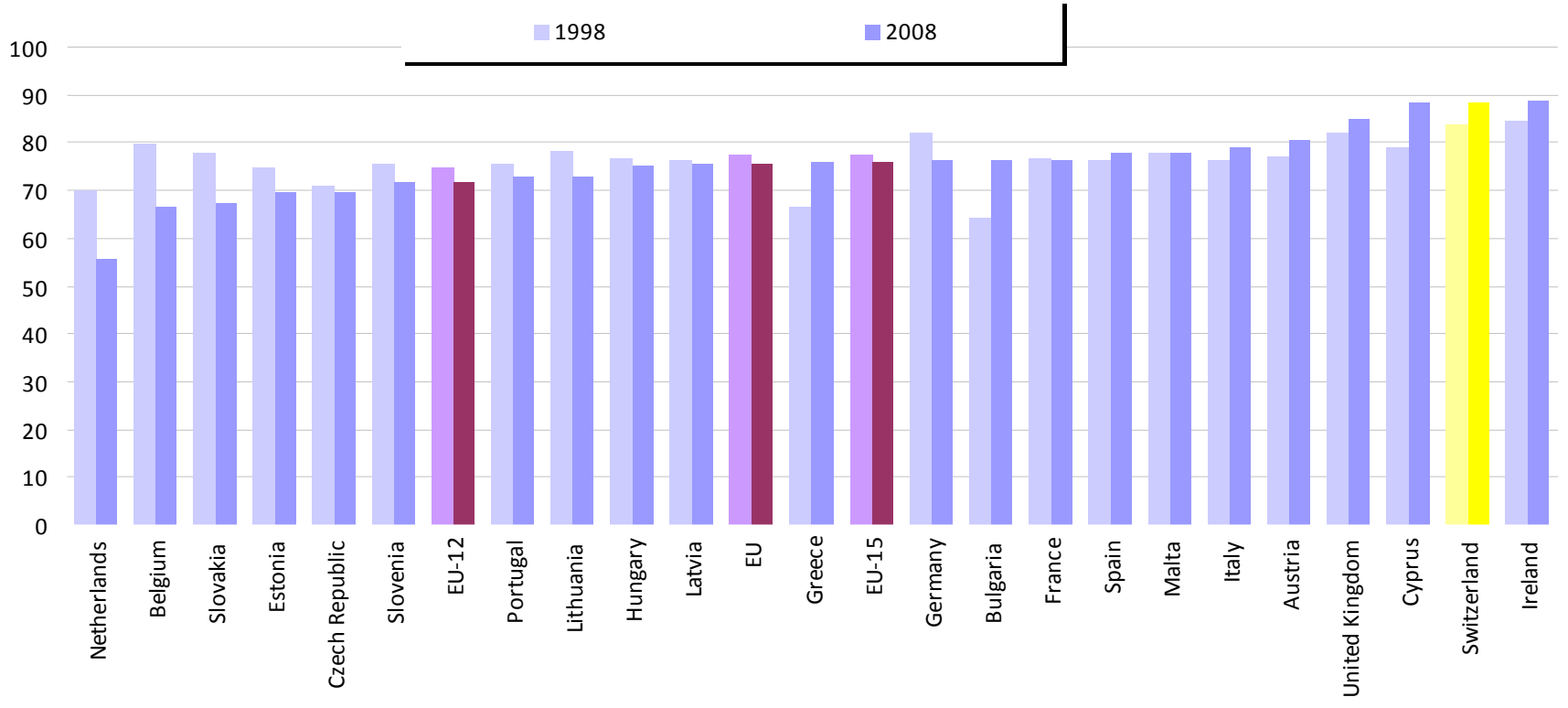

CHART 6. BED OCCUPANCY RATE FOR ACUTE CARE HOSPITALS (PERCENTAGE) - TREND 1998-2008

***Note**: data for Poland, Romania, Finland and Luxembourg are not available. Data for Belgium, Italy and Portugal refer to 2007. Data for Bulgaria have been provided by HOPE members. First available data for Latvia refer to 2000.*

2.4 HOSPITAL ACTIVITY

The amount of activities performed and the dimension of the use of hospital resources can vary a lot from one country to another.
To discuss this issue and to better analyse the different patterns of care adopted by hospitals in the European countries, some high-volume and high-cost procedures have been examined: surgical procedures, caesarean sections and a particular typology of cancer - malignant neoplasm of trachea, bronchus and lung.

Data and information presented in the following paragraphs actually allow identifying wide and sometimes unexplained variations in the use of different procedures across countries, highlighting the possible overuse or underuse of certain interventions in each one of them.
They can stimulate further analysis within countries, especially when explanations about the variation in clinical practices and outcomes have to be found in regional and local situations.
Yet, these finding can highlight the areas deserving further comparisons, fostering knowledge exchange and mutual learning for all the States of the European Union.

INPATIENT SURGICAL PROCEDURES

Inpatient surgical procedures are defined as all invasive therapies performed as in-patient surgery, where in-patient surgery is a surgical operation or procedure that is performed with an overnight stay in an in-patient institution[2].

In 2008, at least 23% of population hospitalized was concerned by surgical procedures (*Chart 7*). Excluding the extreme values of Romania and Slovakia, the highest rates of inpatient surgical procedures to inpatient admissions were registered in Denmark (70% and 74% if considering only acute care admissions), Portugal (66% and 68% if considering only acute care admissions), the UK (63% and 67% if considering only acute care admissions) and Hungary (60% and 70% if considering only acute care admissions).

In particular, about 9.280 **inpatient surgical procedures per 100.000 inhabitants**, 6.631 in EU15 and 23.008 in EU12, were performed in 2008 in Europe.
Only 4 countries had more than 10.000 procedures per 100.000 inhabitants: Romania, with a particularly high value (53.785), Austria (13.956), Hungary (12.514) and Finland (10.366).
Adversely, less than 4.000 procedures per 100.000 inhabitants were performed only in Slovakia, with a particularly low value (493), Ireland (3.244), Cyprus (3.367) and the Netherlands (3.974).

Between 1998 and 2008 the registered number of inpatient surgical procedures per 100.000 inhabitants generally increased: +32,2% in EU, +2,1 in EU15, +141,7 in EU12.
The increase in EU12 was greatly affected by the data registered in Romania, where the number of surgical procedures was 14.307 in 1998 and 53.785 in 2008, rising by 276%. Apart from it, the major increases were registered in Bulgaria (+76,8%), Slovenia (+43,1%) and Portugal (+29,7%). The decreases were only significant in Slovakia (-28%), Italy (-11,6%), Germany (-8,2%) and Spain (-6,4%).

[2] WHO and OECD definitions.

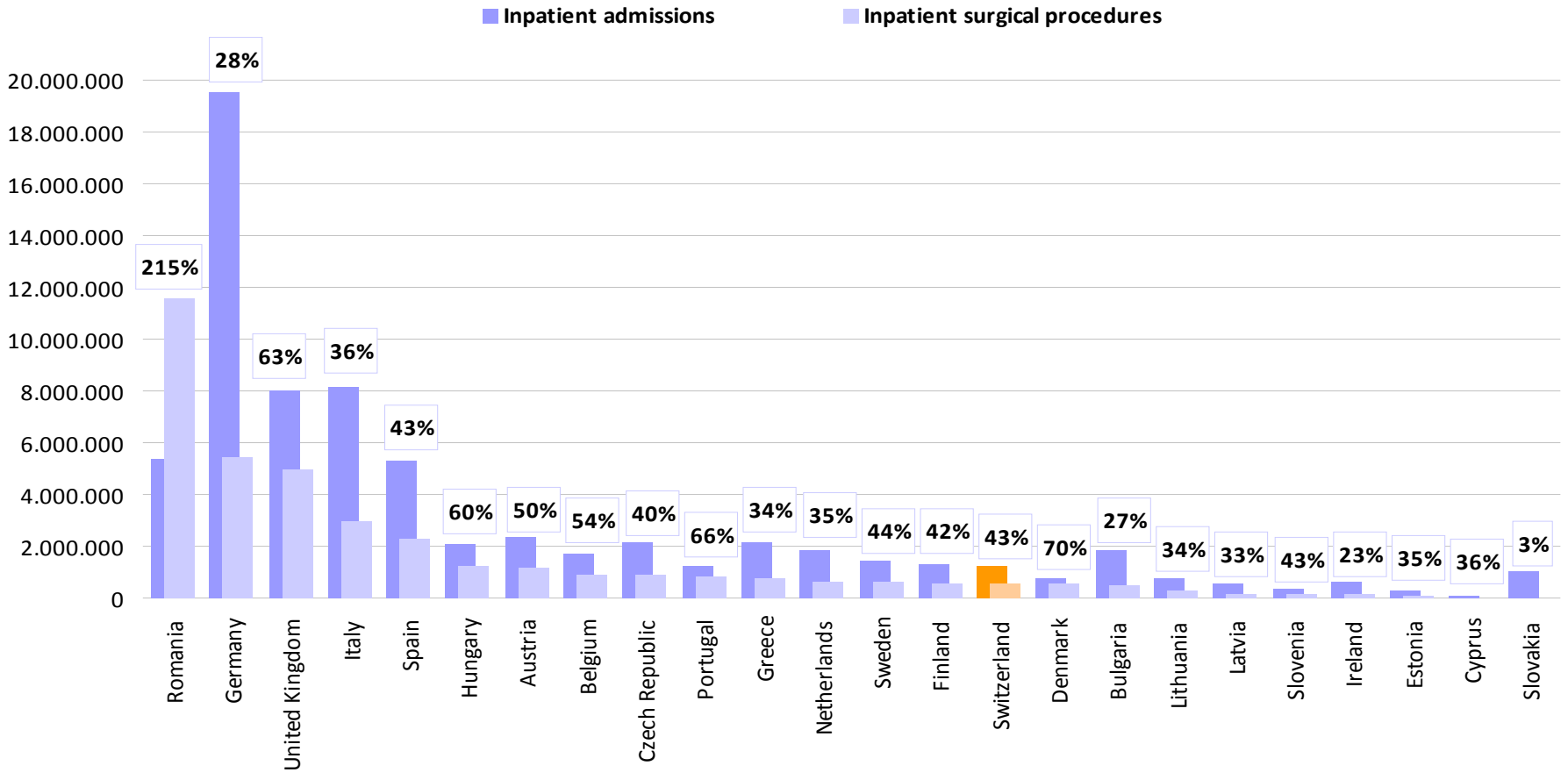

CHART 7. COMPARISON BETWEEN INPATIENT CARE SURGICAL PROCEDURES AND INPATIENT CARE ADMISSIONS WITH THE PERCENTAGE OF SURGICAL PROCEDURES ON TOTAL ADMISSIONS HIGHLIGHTED IN THE BOXES - YEAR 2008

All data refer to 2008 except Belgium and Sweden (year 2007) and Greece (year 2006); inpatient surgical procedures in the Netherlands and Portugal (year 2007).

Data for France, Luxembourg, Malta and Poland are not available.

CAESAREAN SECTIONS

In the last decade, the rate of caesarean deliveries in the European countries has significantly increased.

In 2008, about a quarter of children was delivered by means of **caesarean section**, and this value reached up to a third of total deliveries in Italy (38,1%) and Portugal (35,6%), while Switzerland, Luxembourg and Malta have around 31%.
The countries where the caesarean deliveries were less common, representing less than 20% of the total deliveries, were the Netherlands[3] (13,9%), Finland (16,5%) and Sweden (16,7%).

Between 1998 and 2008 the rate of caesarean sections (*Chart 8*) doubled or almost doubled in Bulgaria (+129%), Romania (+116%), Austria (+92%), Switzerland (+87%), Lithuania (+84%) and Slovenia (+81%).

Conversely, less relevant rates of increase happened in Finland (+8%), France and Spain (+20%) and the Netherlands (+26%). They grew instead by more than one third in all the others European Member States.

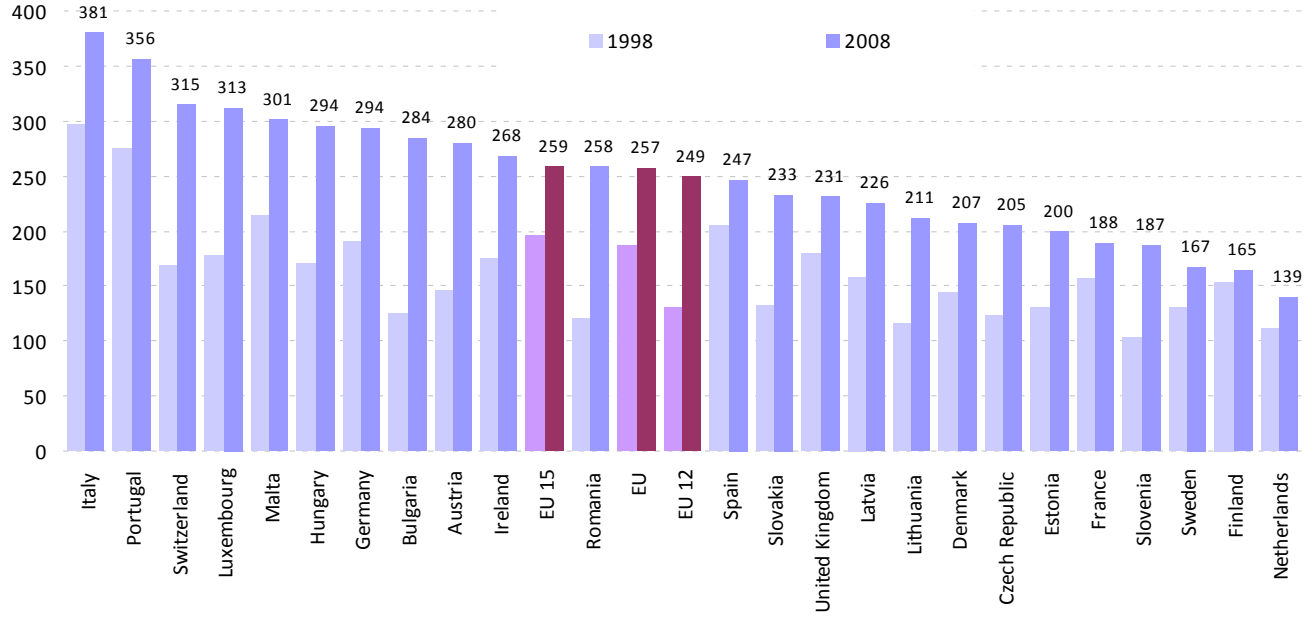

CHART 8. CAESAREAN SECTIONS PER 1000 LIVE BIRTHS - TREND 1998-2008

All data refer to 2007 except Italy, Portugal, Sweden and EU15 (2006); Spain (2005), Luxembourg (2004).
Data for Cyprus and Greece are not available.

[3] In the Netherlands home births are a usual option for women with low-risk pregnancies: in 2004 30% of all births occurred at home (Euro-Peristat, 2008).

In general terms, as highlighted in some OECD publications, reasons for the increase in the number of caesarean deliveries relate to scheduling convenience for physicians and patients, reductions in the risk compared to normal delivery, malpractice liability concerns, and some structural and social factors such as the rising number of childbirths among older women and the rise in multiple births resulting from assisted reproduction.
The implications of this kind of intervention are debated. Main concerns regard the increase in maternal mortality, maternal and infant morbidity, and complications for subsequent deliveries.

Nonetheless, it can be noticed that main indicators concerning health status of infants and mothers show a positive trend over the European countries in the last ten years.
In fact, between 1998 and 2008, the number of live births per 1000 inhabitants has been generally stable and the neonatal deaths have decreased especially in EU12.
In particular, the **early neonatal deaths**, which indicate the number of deaths in infants under 7 days of age in a year, decreased in the European Union by about one unit per 1000 live births (from 2,96 to 2,04). In EU12 they dropped off by more than 2 units (from 4,96 to 2,89) and the difference between EU12 and EU15 reduced significantly from 2,45 to 1,82 units (*Chart 9*).
These data depend from a wide range of clinical and social factors. They of course are not necessarily directly linked to modes of delivery and caesarean interventions, nonetheless they are a small element that helps to contextualize this situation analysing it from a broader perspective.

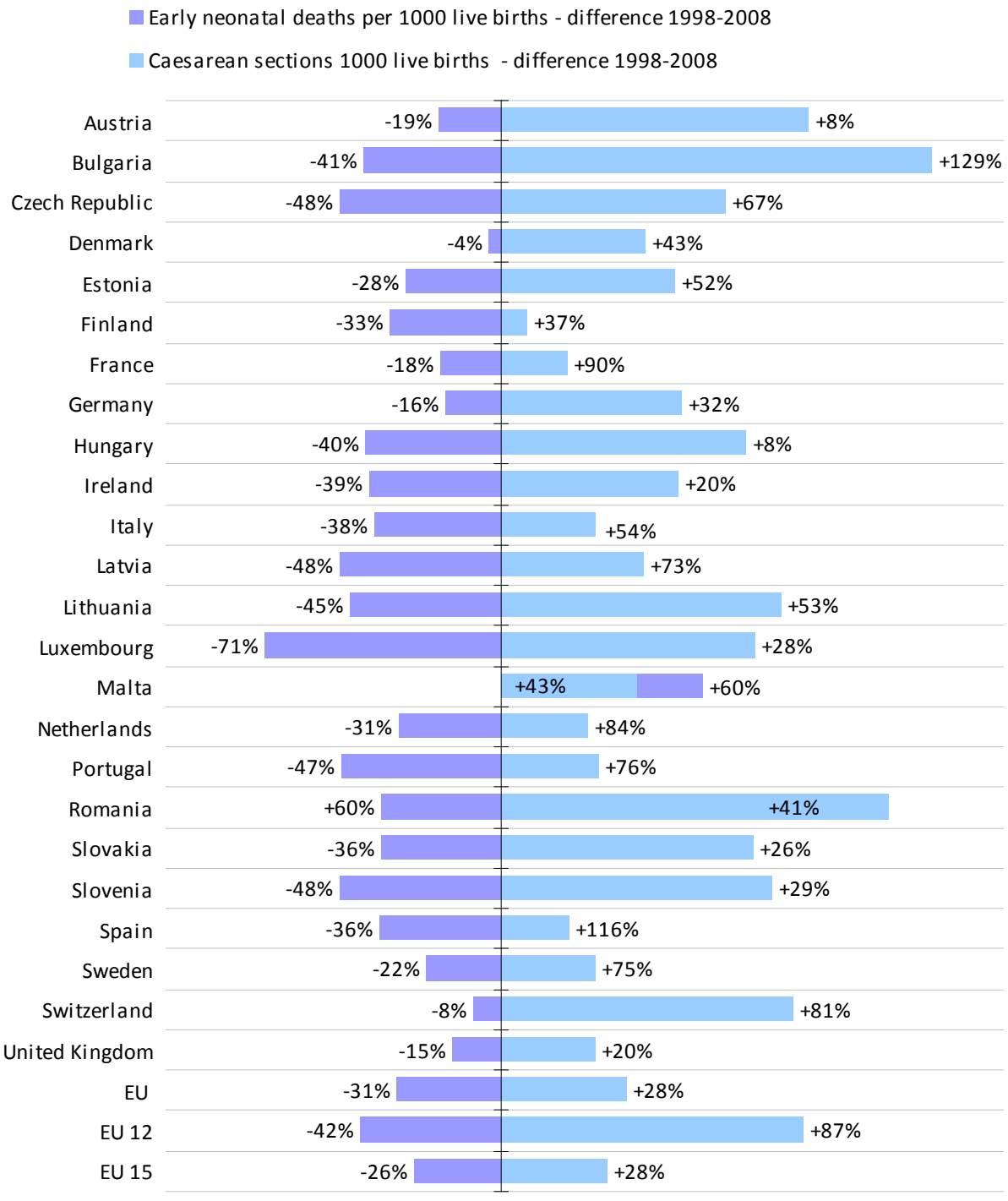

CHART 9. CAESAREAN SECTIONS AND EARLY DEATHS RATES PER 1000 LIVE BIRTHS - DIFFERENCE IN PERCENTAGE BETWEEN 1997 AND 2007

All variations refer to the period 1998-2008 except: caesarean sections in France (trend 1998-2003) and Switzerland (trend 1999-2007); early neonatal deaths rate in Belgium (trend 1998-2005).

Data for Belgium, Cyprus, Greece and Poland are not available.

MALIGNANT NEOPLASMS OF TRACHEA, BRONCHUS AND LUNG

Cancer is one of the leading causes of death and illness throughout Europe and it gathers great efforts from governments of Member States as well as from the European Union to tackle this big burden through interventions of prevention, case and operational management, effective use of resources and increased quality of care.

In Europe, about 65% of mortality of people aged between 35 and 65 is related to cancer. Malignant neoplasm of trachea, bronchus and lung are among the most diffuse kind of tumour. In particular, lung cancer is the leading cause of cancer mortality in the European population: it is responsible for 24,5% of cancer deaths for both sexes, increasing up to almost a third of cancer related deaths among male people[4].

In the following paragraphs some data concerning the hospital activity related to trachea, bronchus and lung are compared. Data are extracted from the Hospital Morbidity Database (HMDB) published by the WHO Regional Office for Europe. The main diagnosis or reason for the hospital admission is coded using the International Shortlist for Hospital Morbidity Tabulation (ISHMT) – a list of 149 categories where available data in ICD-9 and ICD-10 are aggregated[5].

The rate of incidence represents the number of new cases per a specific population number. It is the number of patients with newly diagnosed illness in a specified period of time.

In 2007, the **rate of incidence per 100.000 inhabitants** of malignant neoplasm of trachea bronchus and lung in EU was 54,8, it was 51,3 ten years before.
The highest rates were registered in Hungary (103,7 new cases per 100.000 inhabitants), Denmark (78,7 new cases per 100.000 inhabitants), Belgium (66,1 new cases per 100.000 inhabitants) and Netherlands and UK (65 new cases per 100.000 inhabitants).
The lowest rates happened in Cyprus (20,0 new cases per 100.000 inhabitants), Romania (34,6 new cases per 100.000 inhabitants), Luxembourg (35,6 new cases per 100.000 inhabitants) and Sweden (36,1 new cases per 100.000 inhabitants).

In 2008, the **age-standardized admission rate per 100.000 inhabitants** was below 50 and rather low in Luxembourg (0,15), Malta (31,7), Portugal (35,8), Cyprus (40,3), France (48,7) and Spain (50,1). Conversely, it was very high, being over 150 in Hungary (274,9), Austria (216,7) and Germany (173,3).

In the same year, the **average length of hospital stay** for the treatment of these kinds of cancer was 9,6 bed-days, whereas the **percentage of day-cases** was 14,2% (*Chart 10*).
The highest percentages of day-cases were registered in the UK (60,6%), Austria (39,9%) and the Netherlands (39,8%). These last two countries also had among the lower average inpatient length of stay: 7,0 bed-days in the Netherlands, 7,7 bed-days in Austria. Instead, notwithstanding the high same-day rate of hospitalization, the length of stay in the United Kingdom was 10,9 bed days, that is 1,3 bed days over the average.

[4] Source of data: ECO/OEC. European Cancer Observatory, Observatoire Européen du Cancer. International Agency for Research on Cancer, Lyon, 2009.

[5] The Hospital Morbidity Database (HMDB) contains hospital discharge data by detailed diagnosis, age and sex, which were submitted by European countries to the WHO Regional Office for Europe. Data presented are as provided by countries and may contain some coding errors or be effected by specific national practices of applying ICD codes for certain reasons of hospitalization.

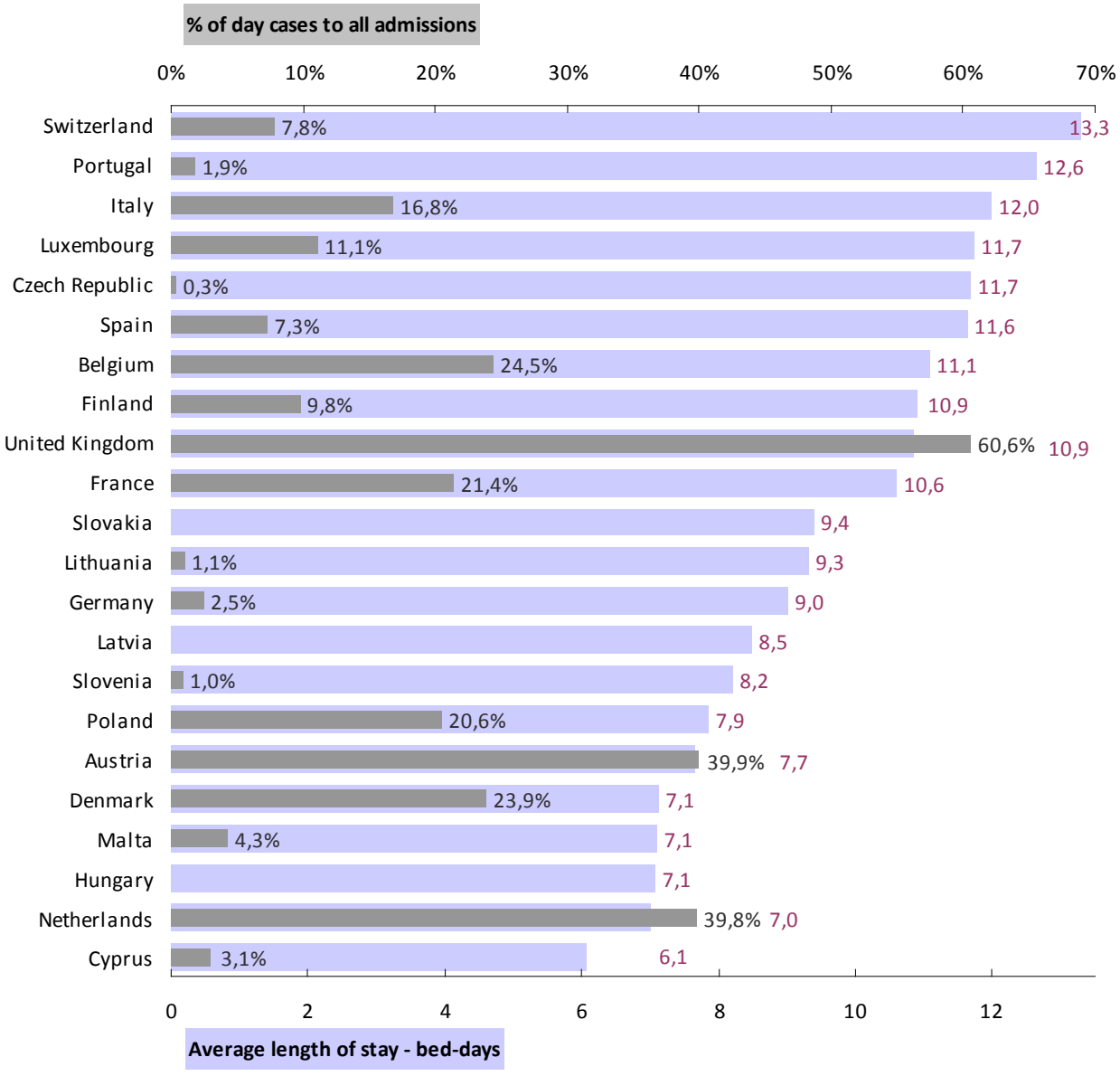

CHART 10. MALIGNANT NEOPLASMS OF TRACHEA, BRONCHUS AND LUNG – AVERAGE LENGTH OF STAY AND PERCENTAGE OF DAY CASES - YEAR 2008

Data refer to the last available year: 2008 or 2009, with the only exceptions of Luxembourg and Slovenia (2008) and Spain (2005). Data are not available for Bulgaria, Estonia, Greece, Malta, Romania and Sweden.

***Source**: European hospital morbidity database. Copenhagen, WHO Regional Office for Europe, [2009]*

3 HEALTHCARE AND HOSPITAL WORKFORCE

In the EU, it is estimated that almost 9% of the working population, including health professionals, administrative workers and labourers, work in the health and social sectors.

The financial constraints, also consequence of the economic crisis, are leading in most European countries to a reduction in the resources available for healthcare professionals, reducing the possibilities of hiring new staff. At the same time, the number of healthcare professionals is expected to dramatically drop off over the next decade due to ageing while several countries, especially in central and Eastern Europe are experiencing migrations of their healthcare workforce.
These trends are likely to have major impacts on the hospital sector, since inpatient care, alone, absorbs about a third of the healthcare resources and hospital sector gives work to half of active physicians.

The European countries, European Organizations and EU institutions are discussing the possible impacts and achievable solutions to these issues. Several countries are changing their patterns of care. For example they are shifting competencies from doctors to nurses, creating new educational pathways and bachelor degrees addressed to nurses. In many cases they are relieving the burden of hospital care by enforcing primary care institutions and community services.

3.1 HEALTH PROFESSIONALS' PROFILE

The profile of health professionals and the way they are managed differs a lot throughout Europe. The increasing diffusion of part-time working, the progressive ageing of hospital staff, high rates of early retirements and decrease in the total number of new medical professionals are common features and make comparison difficult. Moreover, the free movement of professional within the European internal market sometimes create distortions in the interpretation of actual workforce figures.
A solution would be the use of Full Time Equivalents (FTE), which measures the real amount of work absorbed by an activity. Unfortunately the FTE method is still applied differently. Figures, such as the number of working hours per week, may vary from country to country, data are often gathered and treated with different levels of accuracy and not always consistently available.
This section will then compare the figures about healthcare professionals considering the crude number of physicians and nurses physical persons, normally compared to the countries' population.

BOX 1. PHYSICIANS AND NURSES: DEFINITIONS

The **number of physicians** includes: all active physicians working in public or private health services, including health services under other ministries than the Ministry of Health; interns and residents (i.e. physicians in postgraduate training); stomatologists, who are physicians with the specialty of oral diseases/surgery (In some Eastern European stomatologists are dentists, practising dental care only, in this case they should be excluded from the total number of physicians).

The **number of nurses** includes: qualified nurses; first- and second-level nurses; feldschers (physician's assistants - a category of health personnel present in some Eastern European countries); midwives; and nurse specialists. It excludes: nursing auxiliaries and other personnel without formal education in nursing.

PHYSICIANS AND NURSES

An overview of the composition of the healthcare workforce (physicians and nurses) in the European Union over the last decade shows the presence of about 1.400.000 doctors and 2.600.000 nurses, with a more or less stable rate of 2 nurses per each doctor in average.

In 2008, in the European Union there were **about 3 physicians and almost 8 nurses every 1.000 inhabitants**. In the same year graduated **about 10 physicians and 30 nurses every 100.000 inhabitants** (*Charts 11 and 12*).
Unfortunately, these figures do not fairly mirror the situation across countries. Comparing the values in EU12 and EU15 a sharp difference in the total number of physicians and nurses can be observed.

Between 1998 and 2008 the number of physicians per 1000 inhabitants increased by 16,3% in EU15 and 1,3% in EU12.

The number of nurses per 1000 inhabitants increased by 42,5% in EU15 and by 17,0% in EU12.

Almost all EU12 Member States had in 2008 a number of physicians per thousand inhabitants lower than the EU average (3,2). The only exceptions were Lithuania, Bulgaria, Czech Republic and Estonia, though with less than 3,7 doctors per 1.000 inhabitants.
In the same year, all EU12 Member States had a number of nurses per thousand inhabitants of 1 to 3 points lower than the EU average (7,8), with the only exception of Czech Republic and Slovenia, which values equalled the average.

In EU15 figures seem to generally provide some evidence of the policies implemented for the management of healthcare professionals, especially concerning the allocation of resources and responsibilities between doctors and nurses.

Greece, Austria and Italy had in 2008 the highest rates of doctors per population and at the same time among the lower rates of nurses per populations. These data clearly represent the situation in countries having consolidated doctor-based systems. Conversely, countries where the shift of competencies from physicians to nurses is advanced, like Finland and Ireland (but also the UK should be mentioned here) registered in 2008 a rather low share of doctors per population, and the highest rates of nurses (15 nurses per 1.000 inhabitants).

Between 1998 and 2008 the number of physicians graduated per 100.000 inhabitants increased only by 6% in EU15, but dramatically decreased by 24% in EU12.

The number of nurses graduated per 100.000 inhabitants increased by 17% in EU15 and by 43% in EU12.

The situation concerning the number of nurses and doctors graduated is much more complex and fragmented.

In 2008, there were 10 doctors graduated per 100.000 inhabitants in Europe, encompassed between 7,2 in Poland and 15,2 in Ireland. The only exceptions were Latvia (4,5), where the number of physicians graduated had almost halved in ten years, and Austria (21,6), where this number had registered an increase since the beginning of 2000s.

The average number of nurses graduated per 100.000 inhabitants in Europe in 2008 reached 29. All countries' values (excluding Belgium and Cyprus, for which data are not available) were generally around the average, with some exceptions. In Bulgaria, a dramatic decrease lasted for ten years led to only 4,4 graduated nurses per 100.000 inhabitants in 2008. Instead, figures massively over the average characterized Slovakia (81,5), Denmark (78,6), Switzerland (81,5), Finland (56,1) and Sweden (49,9). In Slovakia, Switzerland and Sweden, this was the product of ten years steady increase. On the contrary, Finland registered a high value despite a continuous reduction between 1998 and 2008. Only in Denmark these figures have always been even up to 60 points over the EU average.

The major increases in the number of graduated nurses between 1998 and 2008 happened in Italy, Portugal and Poland. In some cases this was due to the introduction of bachelor degrees and, in general, new career opportunities for nurses. Nonetheless, in none of these countries, trends in the number of nurses graduated could equal trends in the number of graduated doctors. Once more it puts some evidence on countries' healthcare system organization, testifying how the healthcare systems in these countries continue to be doctors-lead and the central element of the system is likely to be represented by the hospital inpatient care.

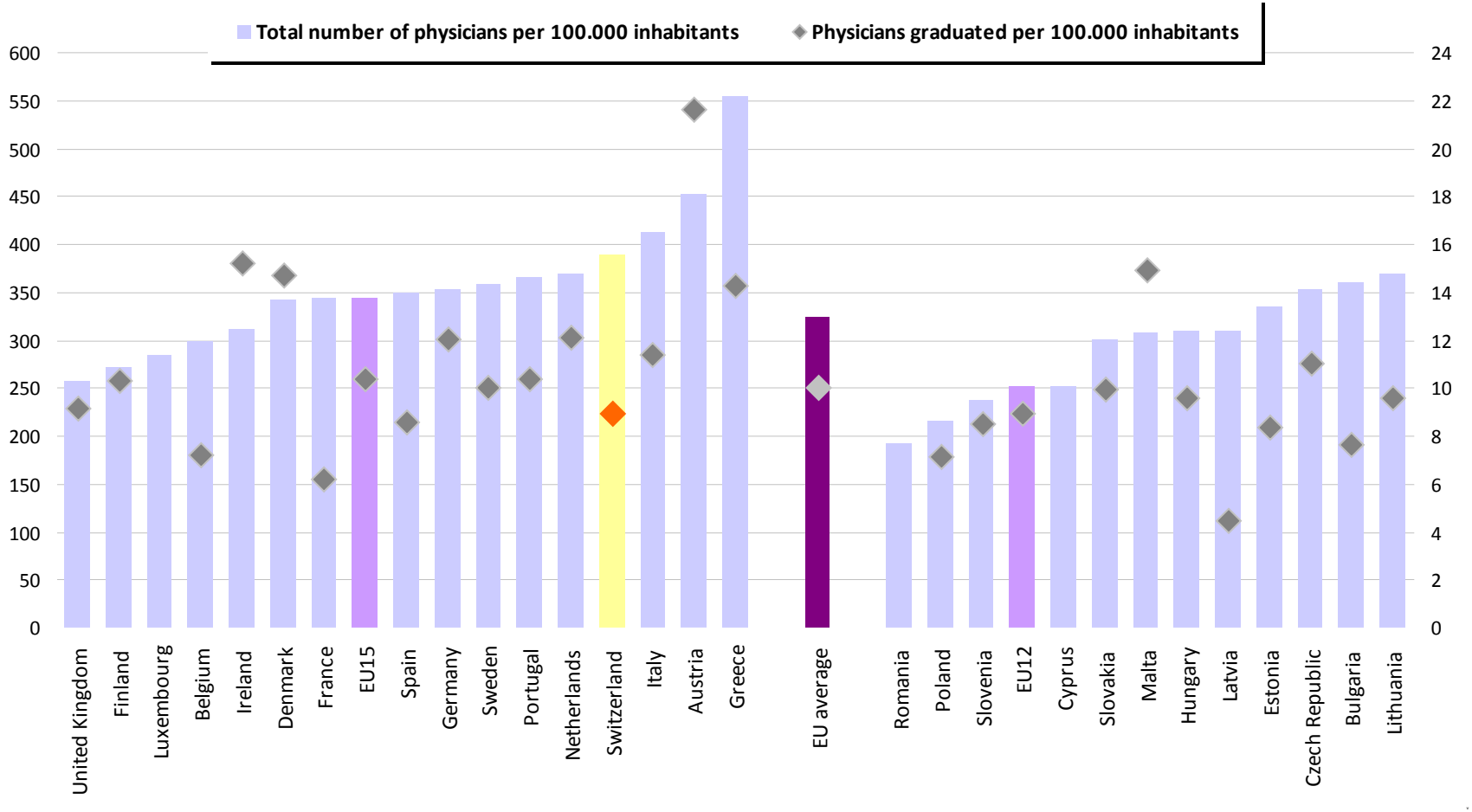

CHART 11. NUMBER OF PHYSICIANS PER 100.000 INHABITANTS AND PHYSICIANS GRADUATED PER 100.000 INHABITANTS - YEAR 2008

***Note**: data for Austria, France, Greece and Slovakia refer to 2007; data for Sweden refer to 2006; data for Malta refer to 2009.*

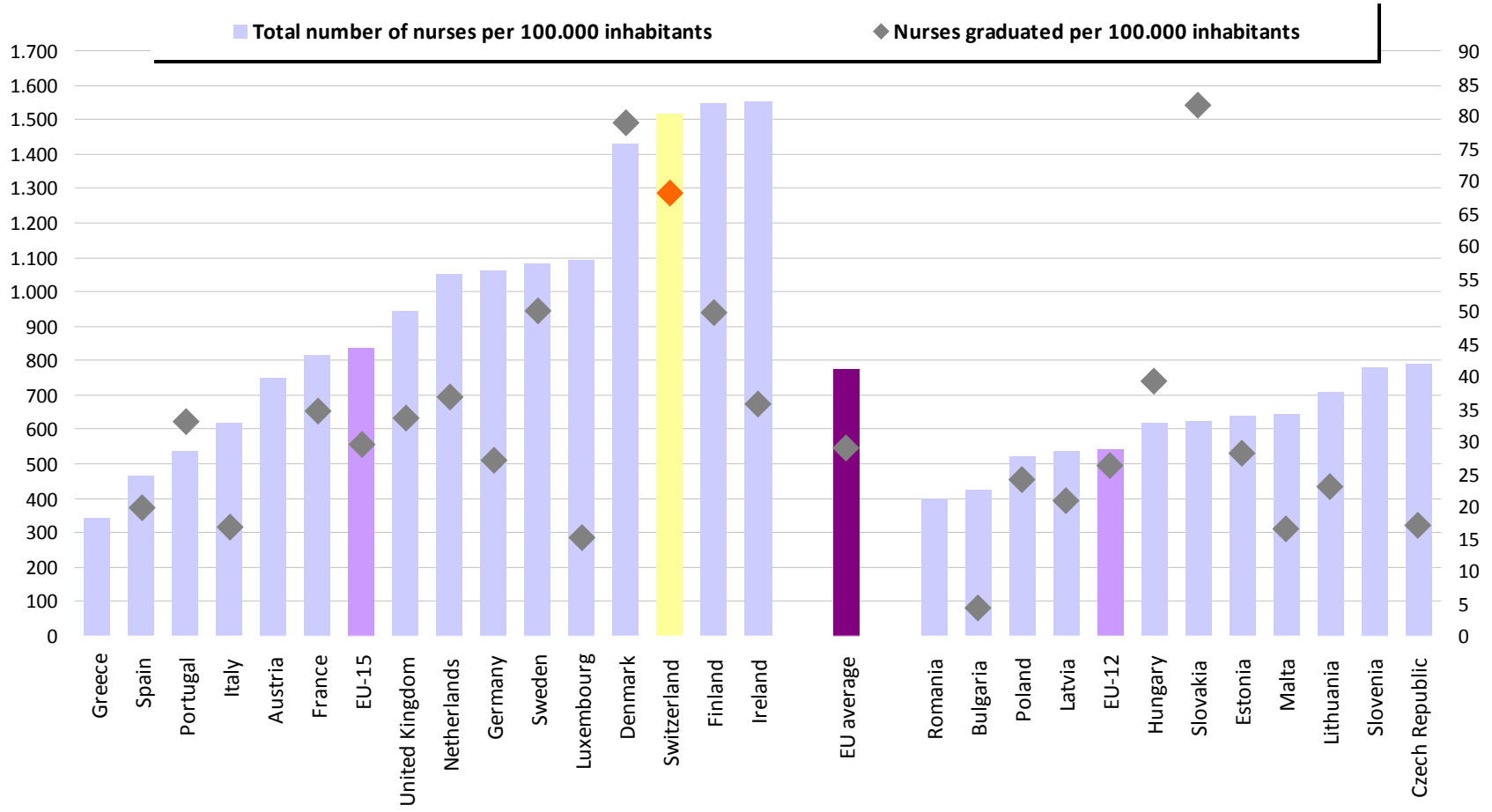

CHART 12. NUMBER OF NURSES PER 100.000 INHABITANTS AND NURSES GRADUATED PER 100.000 INHABITANTS - YEAR 2008

***Note**: data for Denmark, Finland and the Netherlands refer to 2007. Data for Luxembourg, Romania and Sweden refer to 2006.*

The following chart is meant to highlight the most important trends in the number of physicians and physicians graduated in the European countries. It compares the variation in the total number of physicians and the variation in the number of physician graduated per 100.000 inhabitants (*Chart 13*).
The time period considered is 2000-2008 for reason of simplicity and because data are more consistent. All countries are represented except Cyprus, Luxembourg, Malta, Romania and Switzerland, whose data are not available or incomplete.
Countries of EU15 are blue, countries of EU12 are purple.

- Most countries are situated in the quadrant right aloft – increase both in the total number of physicians and in the number of physicians graduated – with some notably differences:
  - in Germany, Ireland, Sweden, the Netherlands, the UK and Greece the increase in the total number of doctors was higher than the increase in the number of doctors graduated;
  - conversely, in Czech Republic, Slovenia, Austria, Denmark and Portugal, the increase in the number of doctors graduated was much higher than the increase in the total number of doctors; in particular in Denmark and Portugal the number of doctors increased by a little less than 20 percentage points, while the number of graduated more or less doubled;
  - In Italy, Lithuania and Hungary the variations in the total number of doctors were quite irrelevant, but the physicians graduated increased just by 3 percentage points in Italy, and by 17 and 24 points respectively in Lithuania and Hungary.
- Poland is the only country to be localised in the quadrant left aloft – decrease in the total number of physicians and increase in the number of physicians graduated – with the first value a little higher than the second one.
- Slovakia and Belgium are in the quadrant at the bottom left – decrease in both considered parameters – in both cases the decrease in the number of physicians graduated almost doubled the decrease in the total number of physicians.
- Many countries are also localised in the quadrant at the bottom right – increase in the total number of physicians and decrease in the number of physicians graduated – and also here there are some notably differences:
  - Finland is the only country where the increase in the number of doctors counterbalanced the quite small decrease in the number of doctors graduated;
  - In Estonia, Bulgaria and Latvia the increase in the total number of doctors was really small, but the decrease in the number of doctors graduated was striking;
  - France and Spain were almost on the average, with very smaller variations in France than in Spain.

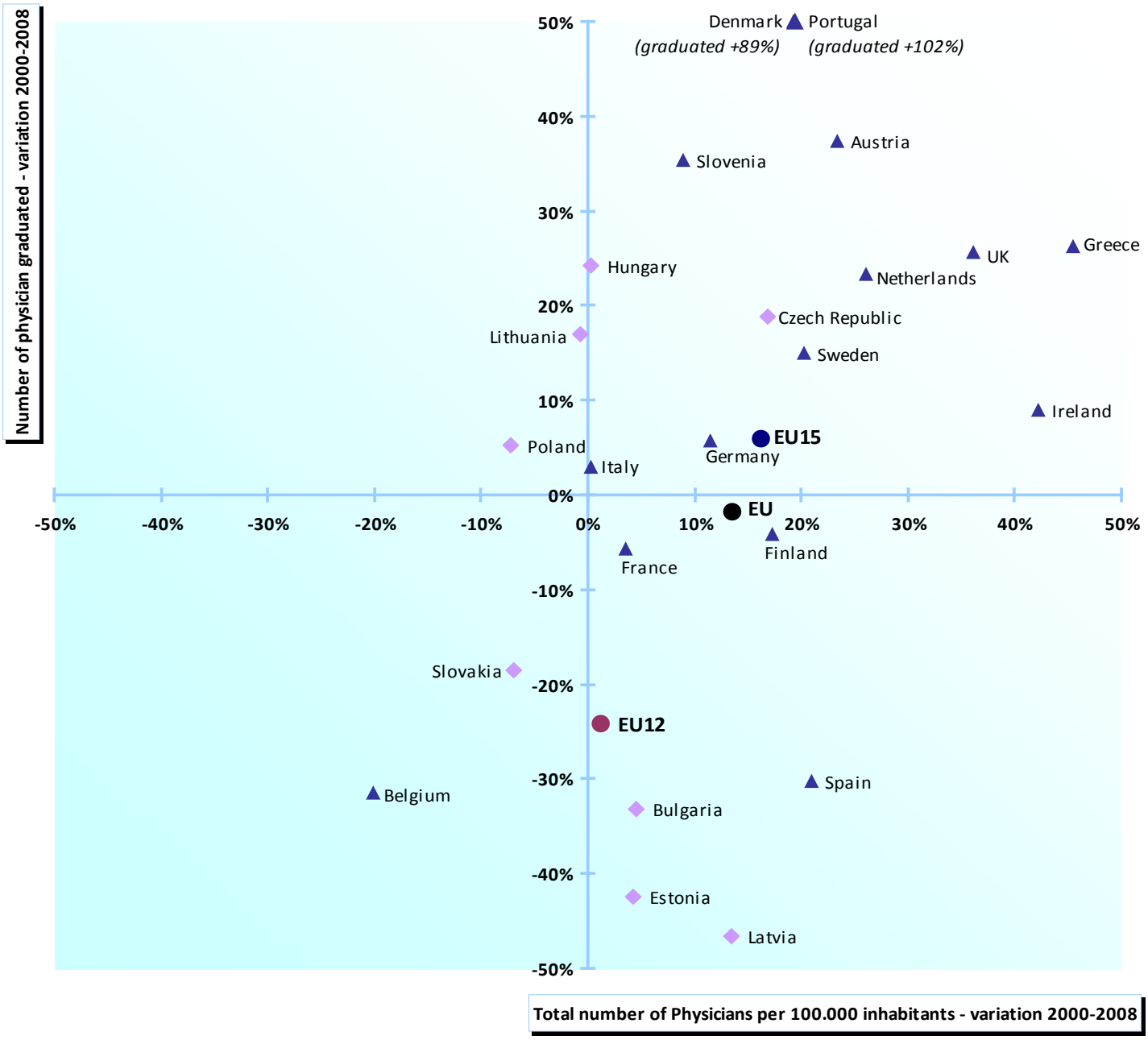

CHART 13. COMPARISON OF THE VARIATION IN THE TOTAL NUMBER OF PHYSICIANS AND THE VARIATION OF THE NUMBER OF PHYSICIANS GRADUATED IN EACH EU COUNTRY – DATA PER 100.000 INHABITANTS - Δ 2000-2008

***Note**: Where data referring to 2008 is not available the variation has been computed considering the closest year available.*

4.2 HEALTH PROFESSIONALS' WORKING IN HOSPITALS

Statistical comparison of hospital staff is often limited. On one hand, this is due to the frequent lack of consistently-used measurement tools; on the other, this is linked to the development of outsourcing of auxiliary services (maintenance, catering, etc.) whose staff is no longer directly employed by the hospital, and thus no longer counted as hospital staff.

In general, the most available and reliable data show that in the last decade the greatest part of nurses and physicians in the European countries has been working in hospitals.

Complete data for nurses are available only in a few countries, and show a percentage of nurses working in hospitals not lower than 50% (Switzerland) and up to 100% (Austria and Greece) between 2006 and 2008.

In 2008, **doctors working in hospitals** (*Chart 14*) were around 50 to 60% of the total number of physicians. Low rates were registered only in Belgium (15,6%), the Netherlands (38,6%) and Greece (38,6%). The highest rate was in Denmark (68,6%).
While relevant variation did not happen in any European country, between the late nineties and 2008 Greece registered a significant reduction of its physicians working in hospitals (-22,4 percentage points), while only Spain and Lithuania had a considerable increase (+15%).

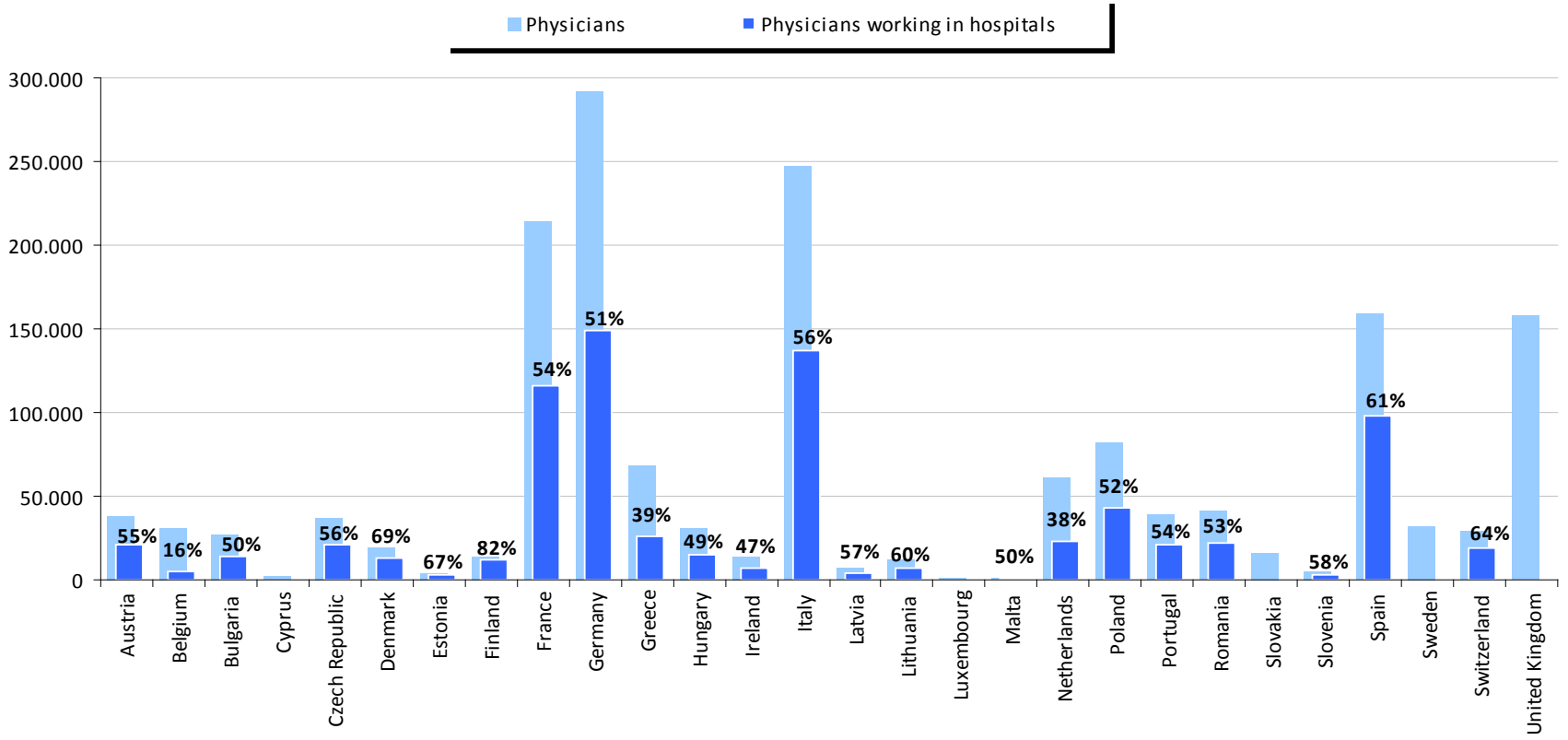

CHART 14. TOTAL NUMBER OF PHYSICIANS AND SHARE OF PHYSICIANS WORKING IN HOSPITALS - YEAR 2008

***Note**: data for Denmark, Luxembourg, the Netherlands and Slovakia refer 2007; data for Cyprus, Romania and Sweden refer to 2006; data for Malta refer to 2009.*

HOPE Publications, June 2011

Chief Executive: Pascal Garel

Avenue Marnix 30, 1000 Brussels
Belgium

Tel: +32 2 742 13 20

www.hope.be