

# HOSPITALS IN EUROPE HEALTHCARE DATA

2018

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## 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 that 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 workforce issues, such as the progressive ageing of healthcare professionals and increasing mobility of personnel.

All over Europe, many efforts are being made to deal with these challenges.

Looking to the past while keeping an eye on the future, the data and indicators featured here provide evidence of the efforts that have already been made to ensure high value and quality hospital care, to build more efficient and appropriate services, and to streamline and rationalise secondary care.

Trends in core hospital provision and in the workforce structure highlight how healthcare services, in particular hospitals, across Europe have been addressing these problems and meeting their objectives. They show how changes in the clinical and demographic characteristics of the population along with the financial sustainability of healthcare remain high on the agenda for national healthcare systems.

Some simple data on hospital activity also provides evidence about workloads in hospital and inpatient settings. This will, hopefully, take us towards a deeper analysis of the quality and appropriateness of hospital care and of the integration pathways between primary, secondary and community/social care.

The aim of this publication is to increase awareness, as much as possible, about hospital capacity and, more generally, secondary care provision within the European countries. However, it does not seek to provide answers but rather to look at some facts in order to raise questions, stimulate debate and thus share information and knowledge.

The report offers a picture of the hospital situation for which most recent data is available compared to the situation ten years before. The considered trend mostly covers the decade 2004-2014. When data concerning the reference years is unavailable, the closest year is considered.

The source of data and figures is the World Health Organisation's Health For All Database of the (last update: March 2018) and the EU Commission Eurostat Health Database (last update: May 2018). Information referring to the expected population trends in the upcoming decades have been taken from Eurostat – Statistics Explained (March 2018). Some figures are disputed for not being precise enough, but they at least give a good indication of the diversity.

All European Member States are considered plus Switzerland and Serbia. Whenever appropriate, two groups have been compared: EU-15, the countries that joined the EU before 2004 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom) and EU-13, the countries that joined the EU in 2004 and 2007 (Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia).

## 1. HEALTHCARE SYSTEM AND POPULATION HEALTH

### 1.1 DEMOGRAPHIC TRENDS

The EU-28 population grew by 105.1 million, from 406.7 to 511.8 million, between 1960 and 2017. During the 1960s, EU-28 population grew faster, on average by about 3.3 million people per year. This growth rate dropped to 1.5 million people per year during the period 2005-2017.

Population projections suggest there will be a fluctuating pattern of developments during the next six decades. Eurostat's projections indicate that the EU-28 population will grow overall by 1.7 % between 1 January 2016 and 1 January 2080, with the number of inhabitants increasing by 8.5 million. The EU-28 population is projected to peak around 2045, reaching 529 million people, an increase of 18.8 million (or 3.7 %) compared with the situation as of 1 January 2016. The size of the EU-28 population is then projected to progressively fall to 519 million by the start of 2080.

The most relevant aspect highlighted by the population projections for the next decades is the considerable shift in the age structure.

The proportion of **people aged 65 or over** in the total EU-28 population is projected to increase by about 29.1% (or 151 million people) by 2080. At the time of writing, the population structure counts on a relatively high number of people aged 45-55, a cohort who were born in the second half of the 1960s and early 1970s, and who will gradually move into retirement. Conversely, there are fewer people of working age in the generations that follow. This shift in age distribution provides further confirmation of the ongoing process of population ageing.

The proportion of **people aged 80 or over** is projected to increase by 12.7 % by 2080. In absolute figures, their number will more than double, reaching 66.1 million by 2080.

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** (WHO estimates) in 2014 was PPP\$ 3,509 in EU-28, with wide variations around this average value: PPP\$ 4,020 in EU-15 and PPP\$ 1,596 in EU-13.

According to “Health at a Glance 2017”, per capita spending on health across the OECD continued to grow in 2016 following the trend of recent years. This comes after the abrupt slowdown in health spending growth between 2009 and 2011 in the wake of the global financial and economic crisis. On average, annual health spending growth across the OECD since 2009 has been 1.4% compared with 3.6% in the six years up to 2009. In a number of countries there have been significant turnarounds in annual growth rates in health spending in the years before, compared with after the financial crisis<sup>1</sup>.

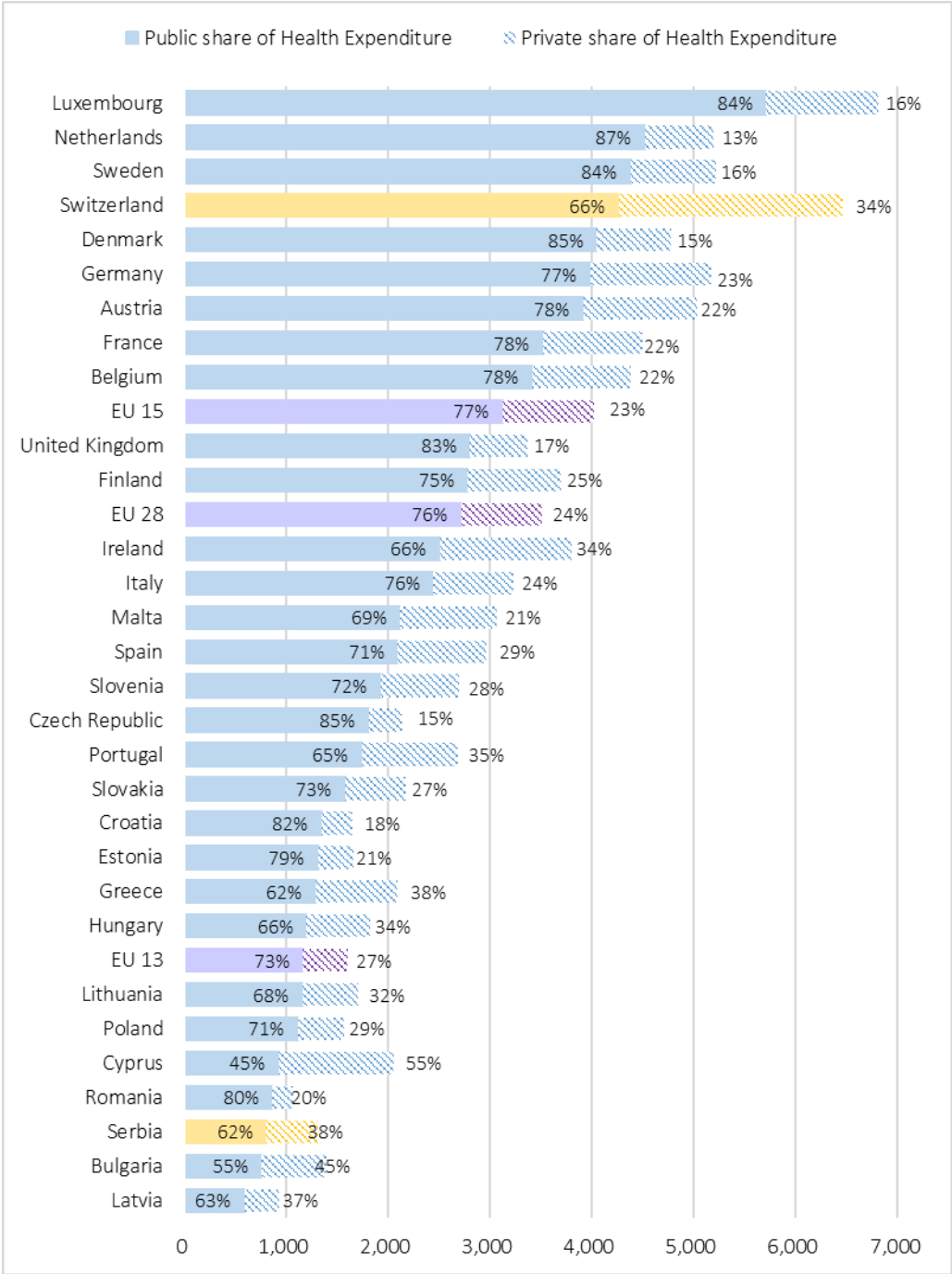
A major part of health expenditure is handed over to the public finance (*Chart 1*). It includes expenditure incurred by state, regional, local governments, health boards and social security schemes. In 2014, the share of **public sector health expenditure** (WHO estimates) was higher than 65% in all European countries, with some exceptions: Cyprus (45%), Bulgaria (55%), Greece (62%), Serbia (62%) and Latvia (63%).

Between 2004 and 2014 the **share of public spending on healthcare** markedly rose in the Netherlands (+21.4 p.p.), Switzerland (+7.6 p.p.), Latvia (+6.6 p.p.) and Romania (+5.8 p.p.) and whereas it sensibly declined in Ireland (-10.2 p.p.), Serbia (-7.0 p.p.), Bulgaria (-6.2 p.p.) and Portugal (-5.3 p.p.).

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<sup>1</sup> OECD (2017), “Health expenditure per capita”, in Health at a Glance 2017, OECD publishing.

**CHART 1: HEALTH EXPENDITURE, IN PPP\$ PER CAPITA. SHARE OF PUBLIC AND PRIVATE. YEAR 2014 (SOURCE WHO).**





About a third of total **current health expenditure** supports the delivery of **inpatient curative care**. This means that a third of health payments cover the running expenses, excluding investments and capital outlays, of inpatient institutions for curative 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 2014, expenditure on inpatient curative care represented on overall current health expenditure, ranging from 17 % and 18% in Portugal and in the Netherlands respectively, to 30% in Bulgaria and 32% in Poland. The highest available value was registered in Greece, where the share of inpatient curative care represents the 39% of total current expenditure (*Chart 2*). Here, only those countries for which complete data is available are considered, but the information provided is sufficient to remark the size of the inpatient sector in the health system.

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

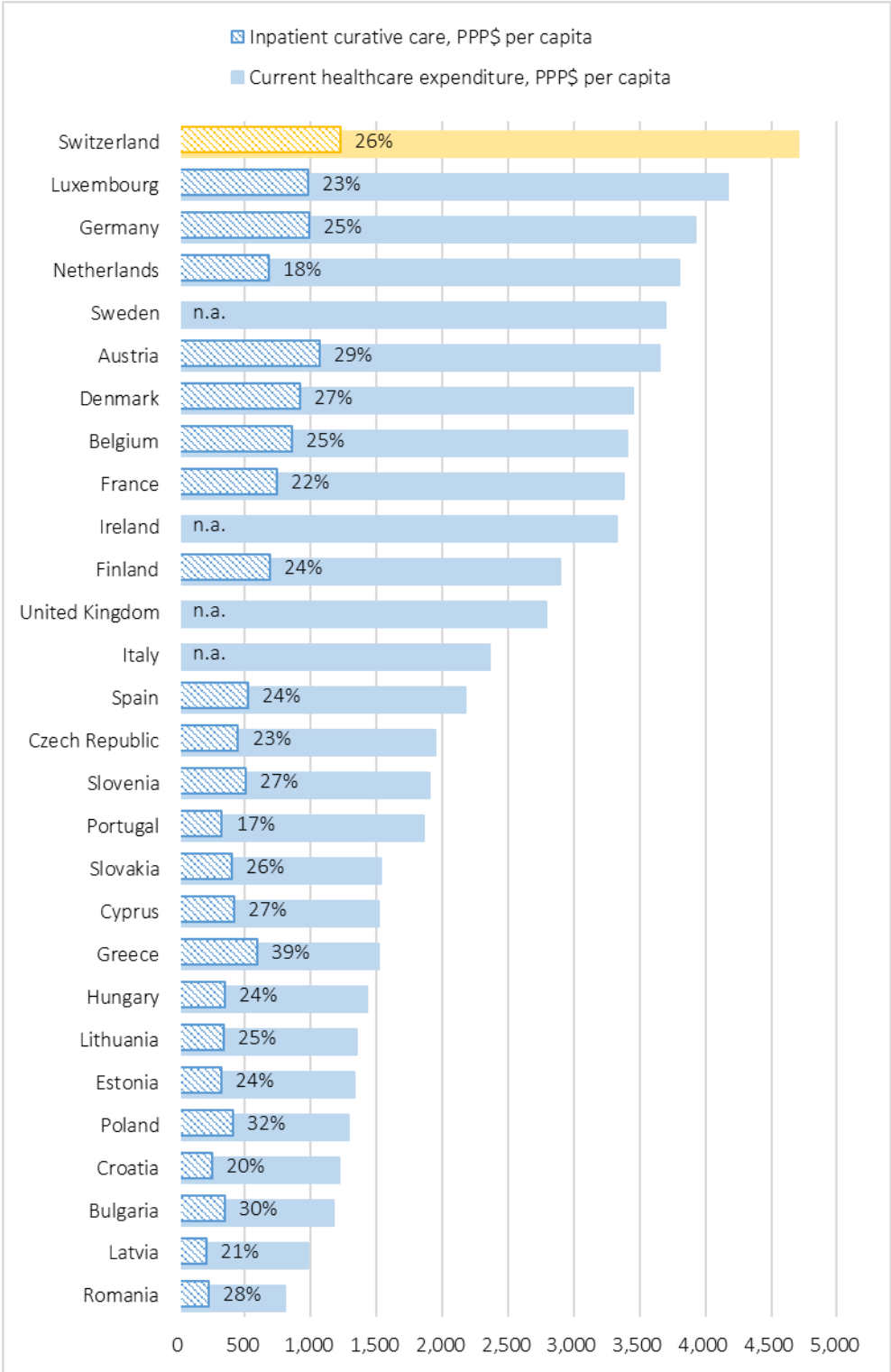
According to “Health at a Glance 2017”, many countries have seen a growing share of health spending going to hospitals in recent years while at the same time there has been a tendency to shift medical services from inpatient to day-care settings. This is mainly because greater efficiency is achieved and waiting times are reduced.

Moreover, for some interventions day care procedures are now the most appropriate method. Hence, in a number of OECD countries day care now accounts for more than 10% of all hospital expenditure<sup>2</sup>.

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<sup>2</sup> OECD (2017), “Health expenditure by provider”, in Health at a Glance 2017, OECD publishing.

**CHART 2: SHARE OF INPATIENT CURATIVE CARE ON CURRENT HEALTH EXPENDITURE, VALUES IN PPP\$ PER CAPITA. YEAR 2014 (SOURCE: EUROSTAT).**



## HOSPITAL CAPACITY AND DELIVERY OF CARE

The health sector in Europe has faced diverse challenges, which have led national authorities to implement reforms for rationalising the use and provision of hospital care, improving quality and appropriateness, and reducing costs. Over the years, there has been a drop in the number of hospital facilities and beds. These reforms have also resulted in fewer acute care beds and shorter stays, as well as an improved occupancy rate of acute care beds.

Almost all European countries have made changes in their hospital provision. Major efforts have been put into delivering better services, increasing quality, and improving efficiency and productivity. The streamlining of care delivery started by a sharp reduction in the size of secondary care institutions and then moved towards more integrated and efficient care pathways, which might in the future bring an end to the hospital-centric model of care.

These reforms have been possible through a package of financial and organisational measures. These are designed to do three things: improve coordination and integration between different levels of care, increase the use of day hospital and day surgery, and introduce new and more efficient methods of hospital financing (e.g. the replacement of daily payments - known to encourage longer hospitalisation - by prospective payment).

In most European countries these policies have led to changes in the management of patients within hospitals and offered a possibility for reducing the number of acute care hospital beds. Only the bed occupancy rates recorded more disparate trends across Europe. This is due to the demographic and epidemiological structure of the population and how local, social and healthcare systems are organised, i.e. the structure of primary care, the presence and the efficiency of a gate-keeping system, access to secondary care, availability of home care and development of community care.

### 2.1 GENERAL HOSPITAL PROVISION

In 2014, in Europe there were on average 2.9 hospitals for 100,000 inhabitants, ranging from 1.4 in Slovenia to 9.8 in Cyprus. There were on average 521 hospital beds for 100,000 inhabitants, ranging from about 254 in Sweden and 826 in Germany.

Between 2004 and 2014, the average **number of hospitals** decreased by about 7%, with values between -2% in Czech Republic (equal to -5 hospitals) and -47% in Ireland (equal to -84 hospitals). In the same period, the total number of hospital beds per 100,000 inhabitants decreased by about 12%. The countertrends were recorded in the Netherlands (+4%), Croatia (+6%) and Bulgaria (+17%).

In several countries the decrease in the total number of beds was accompanied by a slight increase in the number of private inpatient beds, which are inpatient beds owned by not-for-profit and for-profit private institutions. But the proportion of private hospital beds – where figures are available – was still quite low in most countries, with percentages above 30% in Spain (31%), Italy (32%), Greece (35%), France (38%), Cyprus (48%) and Germany (59%).

## 2.2 ACUTE CARE HOSPITAL PROVISION

In almost all European countries **acute care hospitals** represent more than half of the total number of hospitals (60% in average).

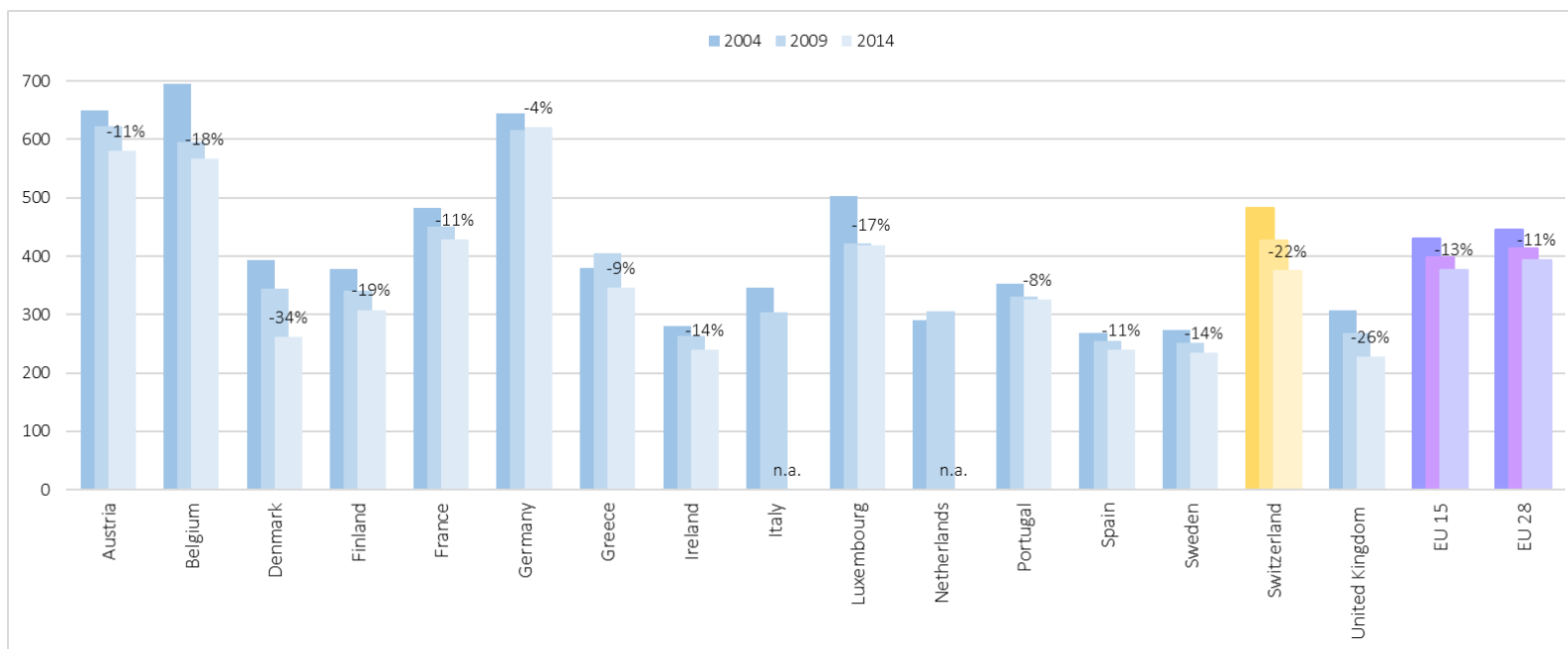
Between 2004 and 2014 the number of acute hospitals decreased significantly all over Europe. 181 acute care hospitals were closed in Germany, 126 in Italy, 96 in France and 92 in Switzerland. Their number decreased by 57% in Latvia, 46% in Switzerland, 45% in Croatia, 25% in Slovakia and 17% in Luxembourg and Malta. In Cyprus and Belgium, it decreased by 15%.

Between 2004 and 2014, the number of **acute care hospital beds per 100,000 inhabitants** in Europe recorded an average reduction of 11%, with a slightly faster decrease in the first five years: -7.2% between 2004 and 2009 and -4.6% between 2009 and 2014. The only exceptions were in EU-13 and more precisely in Poland (+2%) and Malta (+8%). Therefore, the highest positive variation was recorded in Cyprus where acute care hospital beds per 100,000 inhabitants increased from 195 to 341 (+75%). (*Charts 3 and 4*).

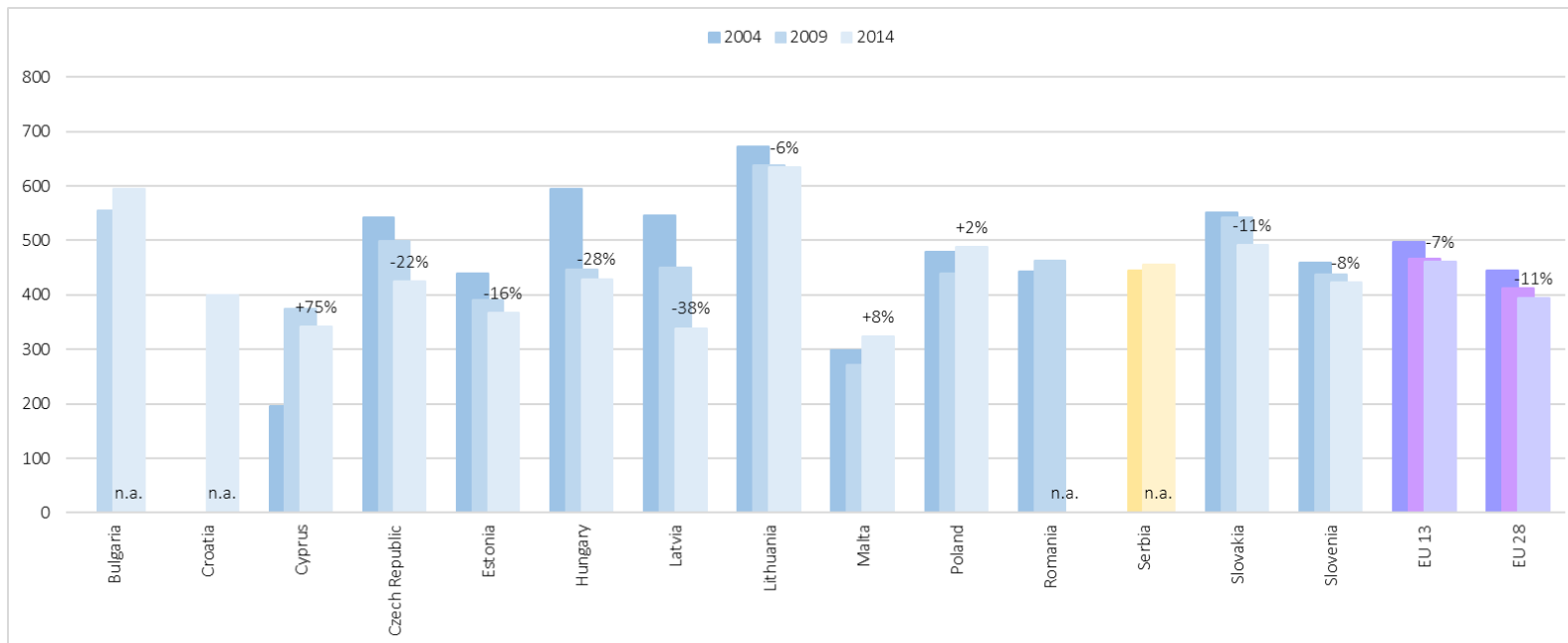
The decrease was remarkable in all European countries. In EU-15 it ranged from -4% in Germany and -34% in Denmark. In EU-13 it ranged from -6% in Lithuania and -38% in Latvia.

Still, in 2014 the difference in the total number of acute care beds per 100,000 inhabitants was just above 20% between EU-15 (on average 377 beds) and EU-13 (on average 461 beds).

**CHART 3: ACUTE CARE HOSPITAL BEDS PER 100,000 INHABITANTS IN EU-15 AND SWITZERLAND. YEARS: 2004, 2009, 2014 (SOURCE: WHO).**



**CHART 4: ACUTE CARE HOSPITAL BEDS PER 100,000 INHABITANTS IN EU-13 AND SERBIA. YEARS: 2004, 2009, 2014 (SOURCE: WHO).**



## 2.3 USE AND EFFICIENCY OF HOSPITAL CAPACITY

In recent years the healthcare reforms implemented all over Europe for rationalising the use and provision of hospital care, improving its quality and appropriateness, and reducing its costs.

These reforms have brought about a fall in the number of hospital beds, a broad reduction of acute care admissions and length of stay, and improved occupancy rates of acute care beds.

### HOSPITAL ADMISSIONS/DISCHARGES

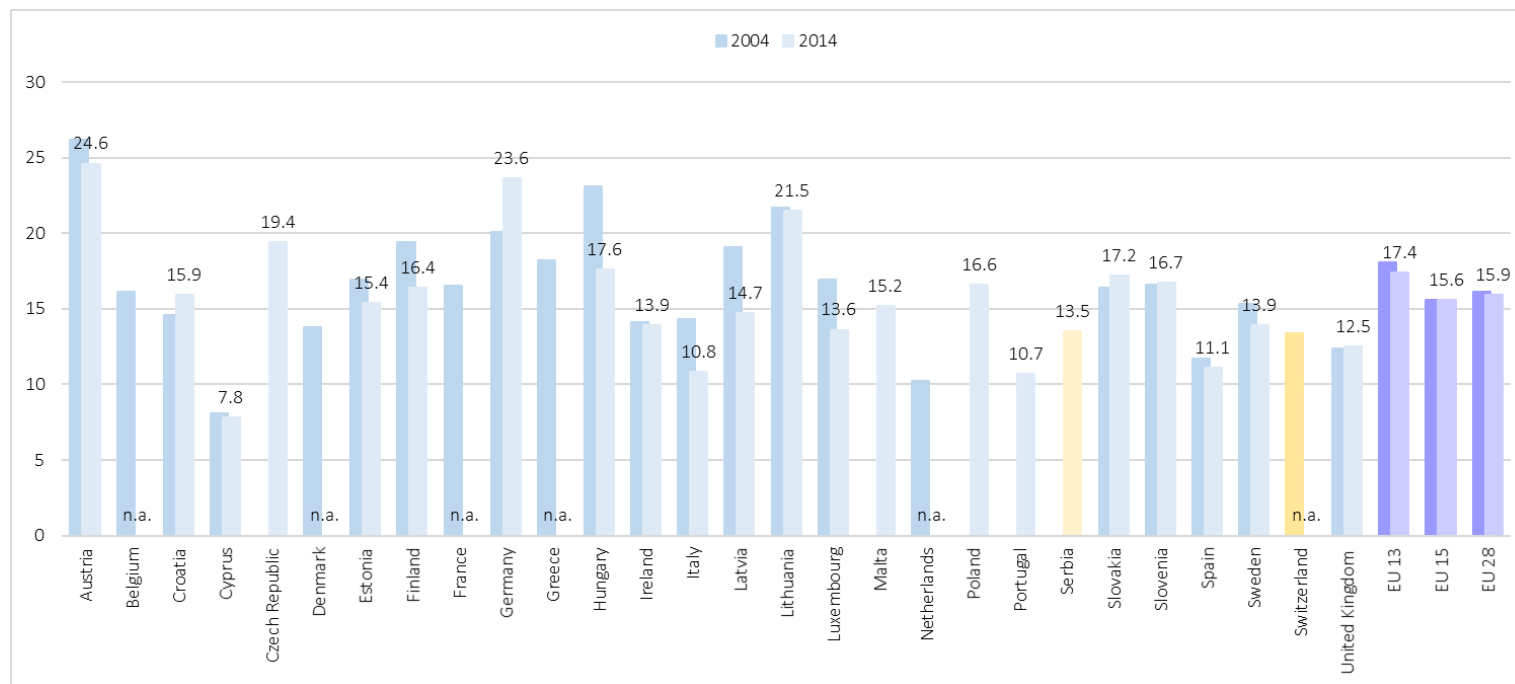
The number of **acute care admissions** involves the entire hospital care pathway of a patient, who would usually stay in hospital for at least 24 hours before being discharged to return home or to be transferred to another facility or the patients dies.

In 2014, the rates of acute care hospital admissions in the European countries were quite dissimilar, ranging from 8% in Cyprus to 25% in Austria ([Chart 5](#)).

Between 2004 and 2014 some countries reduced their rate of admissions or at least stabilised it. The European average decreased by almost 0.2 percentage point, from 16.2% to 15.9%. The most remarkable rates of reduction were recorded in Hungary, Latvia, Italy Luxembourg and Finland, respectively -5.5, -4.4, -3.5, -3.3 and -3.0 percentage points (p.p.).

In some countries, the rates increased between 0 and 1%: United Kingdom and Slovenia (+0,1p.p.) and Slovakia (+0.1 p.p.). An increase of more than 1% was recorded in the following countries: Croatia (+1.3 p.p.), Switzerland (+1.6 p.p.), and Germany (+3.5 p.p.).

**CHART 5: RATE OF ACUTE CARE HOSPITAL ADMISSIONS/DISCHARGES (PERCENTAGE). YEARS: 2000-2014 (SOURCE: WHO).**





## LENGTH OF STAY

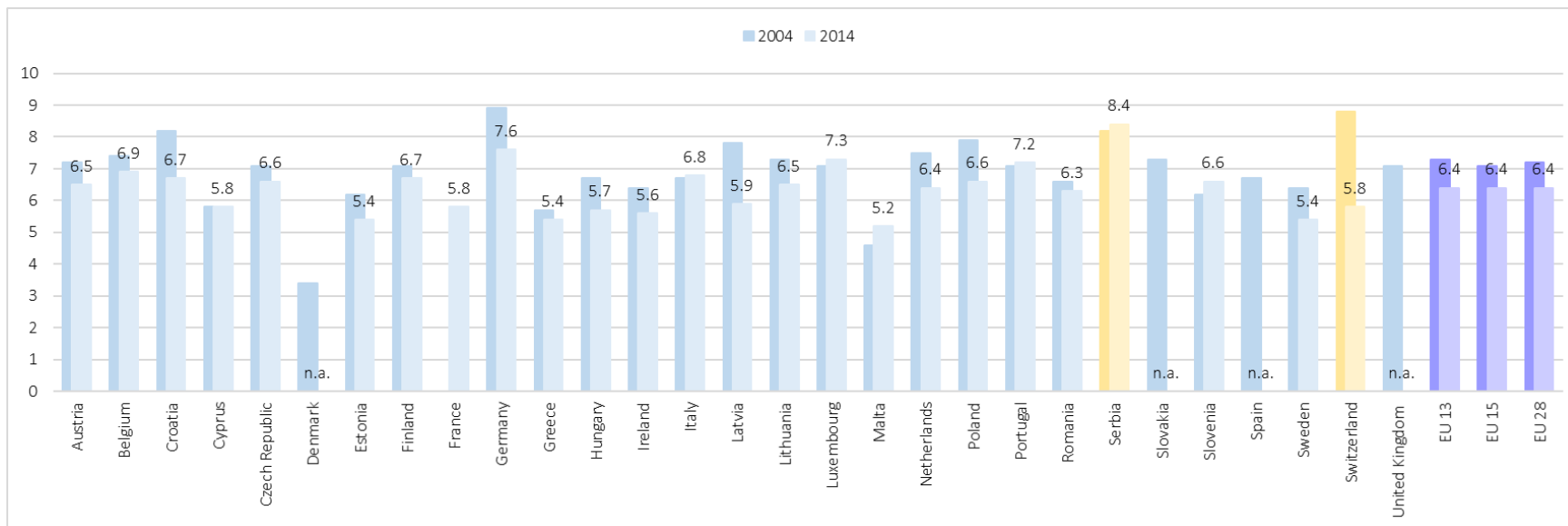
The **average length of stay** is defined as the total number of occupied hospital bed-days, divided by the total number of admissions or discharges.

In 2014, the average length of stay in acute care hospitals was 6.4 bed days in EU-28, roughly ranging from 5.2 bed days in Malta to 7.0 bed days in Slovakia.

Between 2004 and 2014, almost all European countries were able to reduce the length of stay by 1 bed day on average (*Chart 6*). The exceptions were Italy, Portugal, Luxembourg, Serbia, Slovenia and Malta where the indicator reduced on average by 0.3 bed days.

In EU-13 the average reduction was 0.9 bed-days. In fact, the most relevant improvements happened in Latvia, Croatia and Poland where the reduction was respectively of 1.9, 1.5 and 1.3 bed days. In EU-15, the reduction was on average -0.7 bed days. Germany recorded the most significant decrease (-1.3 bed days).

**CHART 6: AVERAGE LENGTH OF STAY IN ACUTE CARE HOSPITALS, YEARS: 2000-2014 (SOURCE: WHO).**



### BED OCCUPANCY RATE<sup>3</sup>

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

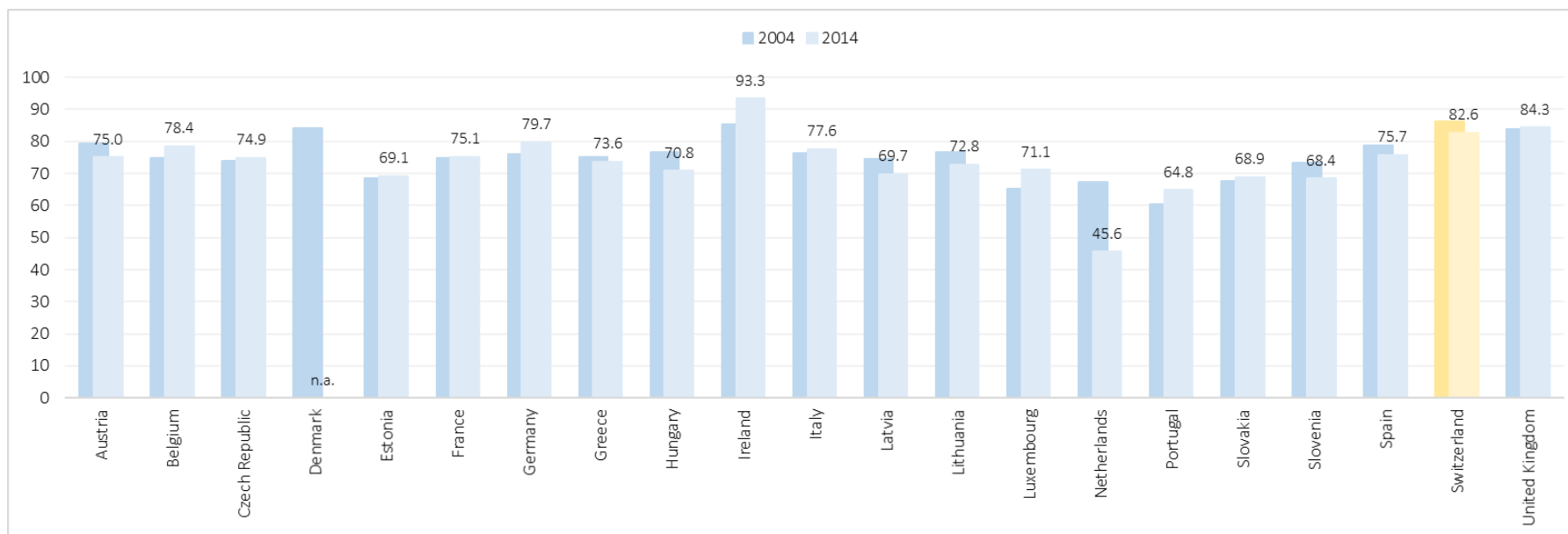
In 2014, the acute care occupancy rate in Europe ranged from 46% in the Netherlands to 93% in Ireland. The lowest values were recorded in Portugal (65%), Slovenia (68%) and Slovakia (69%). The highest values were found in Germany (80%), Switzerland (80%) and the United Kingdom (84%).

Between 2004 and 2014 there was no clear trend across Europe (*Chart 7*). In some countries the occupancy rate of acute care hospitals increased, like in many countries of EU-15, in other cases it dramatically decreased, like in the Netherlands (-22.0 p.p.). 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 hospitalisation have been developed in each country.

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<sup>3</sup> The source of data reported in this paragraph is OECD Health Statistics 2017.

**CHART 7: BED OCCUPANCY RATE FOR ACUTE CARE HOSPITALS (PERCENTAGE), YEARS: 2000-2014 (SOURCE OECD).**



## 2.4 HOSPITAL ACTIVITY

The number 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 show broad 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.

However, these findings can highlight areas deserving further comparisons, fostering knowledge exchange and mutual learning for all EU states.

### INPATIENT SURGICAL PROCEDURES

Inpatient surgery is invasive. It is defined as a surgical operation or procedure that is performed with an overnight stay in an inpatient institution<sup>4</sup>.

In 2014, the population that was hospitalised (on average 22%) underwent surgical procedures (*Chart 8*), excluding the lowest value of Slovakia, Switzerland and Latvia where this rate was 2%. The highest rates of inpatient surgical procedures to inpatient admissions were recorded in Denmark (44%), the United Kingdom (33%), Luxembourg (32%), Spain (30%) and Portugal (30%). Conversely, the lowest rates were recorded in Slovenia (18%), Poland (16%), Hungary (16%) and Czech Republic (10%).

Latest available data on total inpatient surgical procedures per 100,000 inhabitants per country has been provided by WHO Health For All database and refers to the year 2009<sup>5</sup>.

Only 4 countries had more than 10,000 procedures per 100,000 inhabitants: Hungary (14,475), Austria (14,370), Finland (10,840) and Denmark (10,058).

In contrast, fewer than 5,000 procedures per 100,000 inhabitants were performed only in Slovakia, with a particularly low value (458), Ireland (3,154), the Netherlands (4,065), Spain (4,865) and Italy (4,951).

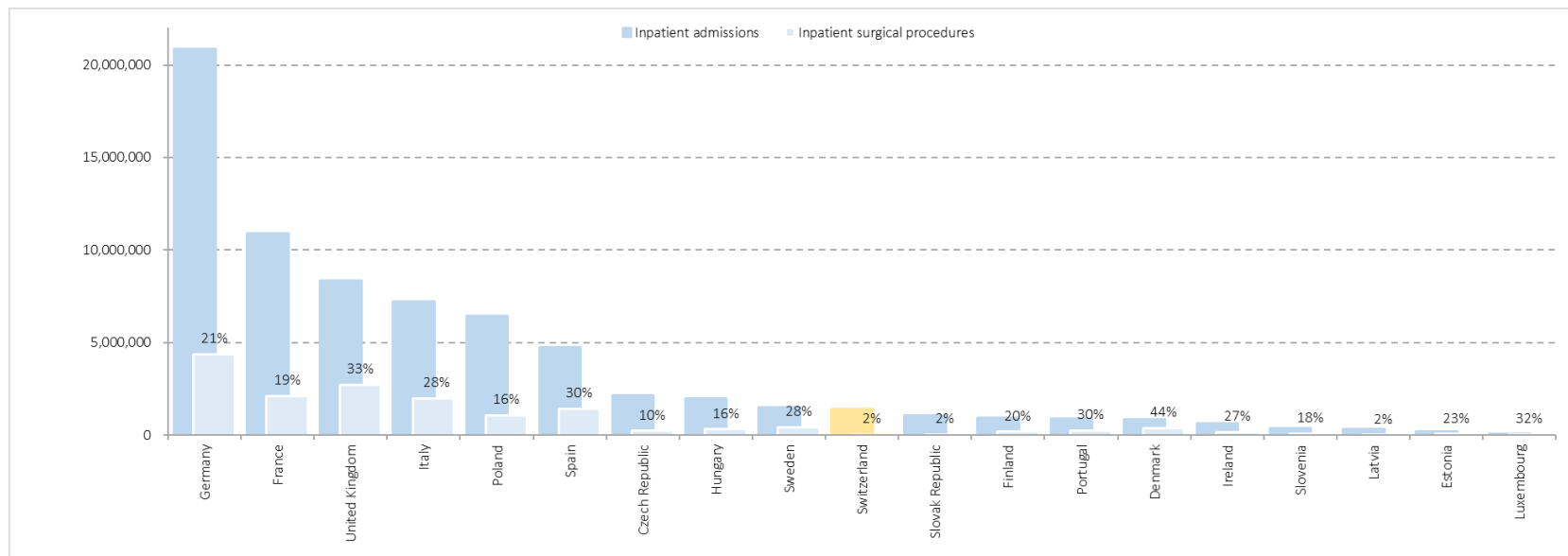
Between 2005 and 2009 the recorded number of inpatient surgical procedures per 100,000 inhabitants increased by 5% in the EU. In EU-15 and EU-13 this variation was equal to 5% and 4% respectively.

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<sup>4</sup> OECD definition.

<sup>5</sup> Eurostat and OECD provide data on inpatient surgical procedures per 100,000 inhabitants per diagnosis.

**CHART 8: COMPARISON BETWEEN INPATIENT CARE SURGICAL PROCEDURES AND INPATIENT CARE ADMISSIONS WITH THE PERCENTAGE OF SURGICAL PROCEDURES ON TOTAL ADMISSIONS HIGHLIGHTED IN THE BOXES. YEAR 2014 (SOURCE: EUROSTAT).**



## CAESAREAN SECTIONS

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

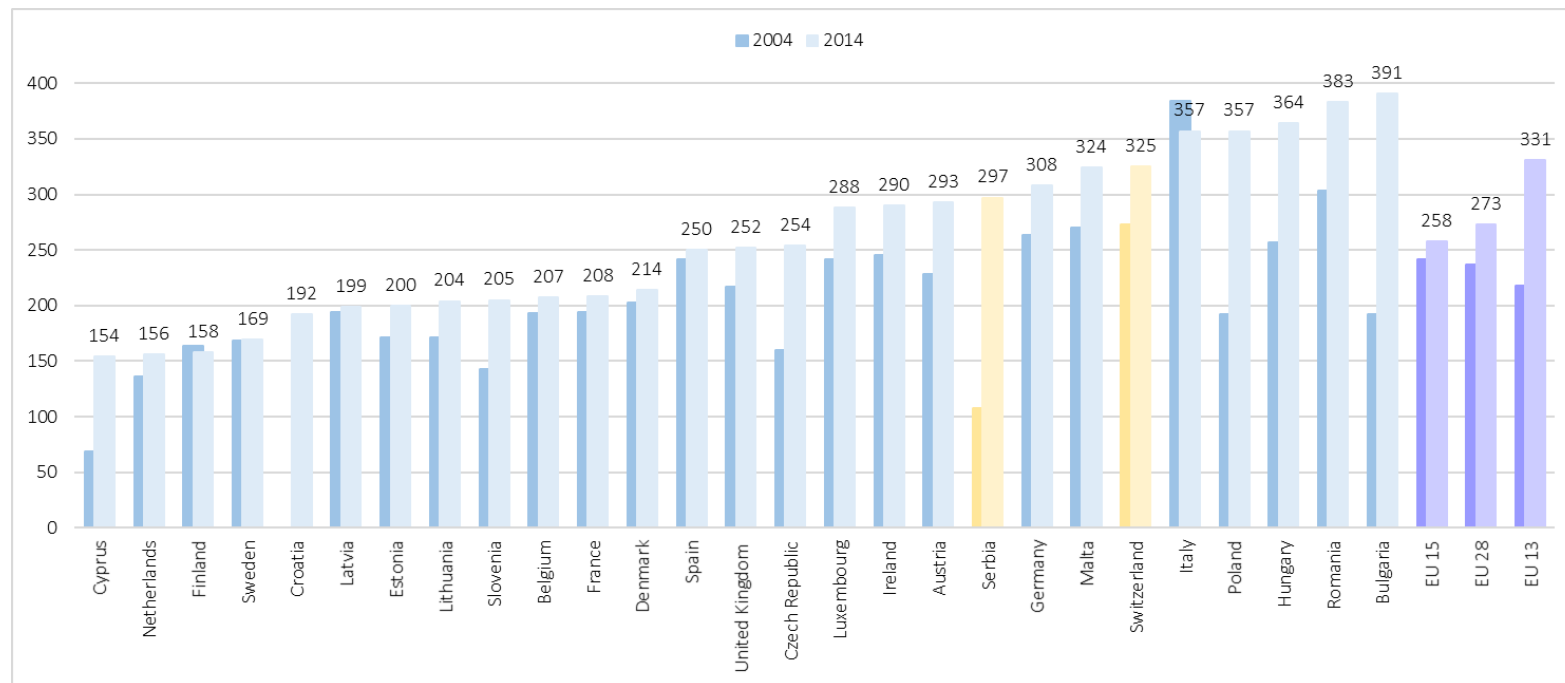
In 2014, about a quarter of children were delivered by means of **caesarean section**, but for some countries it was about a third of total deliveries: Bulgaria (39%), Romania (38%), Hungary (36%), Italy (36%), Poland (36%), Switzerland (33%), Malta (32%) and Germany (31%).

The countries where the caesarean deliveries were less common, representing less than 20% of the total deliveries, were Croatia (19%), Sweden (17%), Finland (16%), the Netherlands (16%) and Cyprus (15%).

Between 2004 and 2014 the rate of caesarean sections per 1,000 live births (*Chart 9*) strongly increased in Serbia (+175%), Cyprus (+123%), Bulgaria (+104%) and Poland (+86%).

Conversely, slower rates of increase happened in Sweden (+1%), Latvia (+3%), Spain (+3%), Denmark (+5%), France (+7%) and Belgium (+7%). The average increase in Europe was equal to 15%, ranging from 7% in EU-15 countries to 52% in EU-13 countries.

**CHART 9: CAESAREAN SECTIONS PER 1000 LIVE BIRTHS. YEARS: 2004-2014 (SOURCE: WHO).**





Rates of caesarean delivery have increased over time in nearly all OECD countries, although in a few countries this trend has reversed, at least slightly, in the past few years. Reasons for the increase include the rise in first births among older women and in multiple births resulting from assisted reproduction, malpractice liability concerns, scheduling convenience for both physicians and patients, and the increasing preference of some women to have a caesarean delivery. Nonetheless, caesarean delivery continues to result in increased maternal mortality, maternal and infant morbidity, and increased complications for subsequent deliveries, raising questions about the appropriateness of Caesarean deliveries that may not be medically required<sup>6</sup>.

Between 2004 and 2014, the number of live births per 1,000 inhabitants dropped slightly (-3%) in EU-28. The highest positive variations were recorded in Slovenia (+13%), Lithuania (+18%) and Latvia (+20%) while the highest negative variations were found in Portugal (-14%), Denmark (-16%) and Spain (-14%).

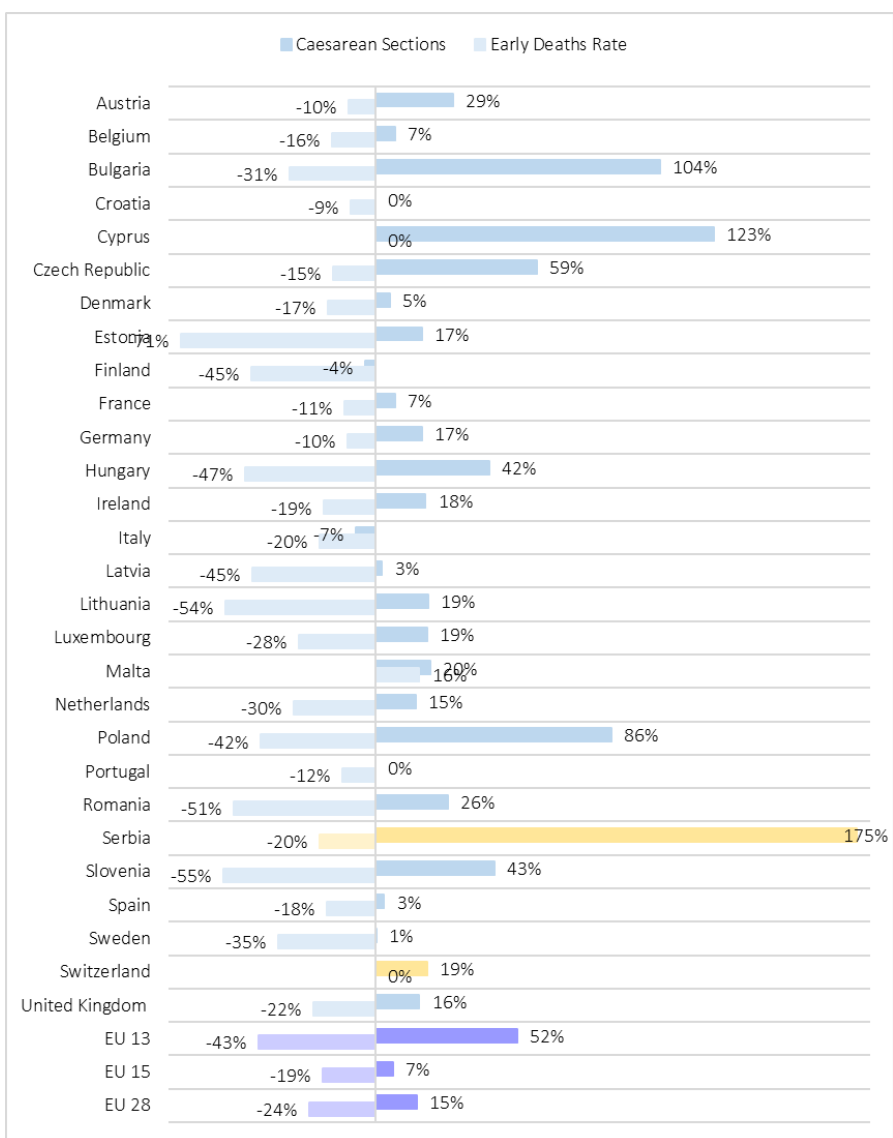
In particular, the **early neonatal deaths**, which indicate the number of deaths in infants under 7 days of age in a year, decreased in the European Union by about one unit per 1,000 live births (from 2.5 to 1.9). In EU-13 they dropped by about 2 units (from 4.0 to 2,3), whereas in EU-15 the indicator decreased from 2.1 to 1.7 units (*Chart 10*).

This data depends on a wide range of clinical and social factors. They are not of course necessarily directly linked to modes of delivery and caesarean interventions, nonetheless they are a small element that helps to contextualise this situation and analyse it from a broader perspective.

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<sup>6</sup> OECD (2017), "Health care activities", in Health at a Glance 2017, OECD publishing.

**CHART 10: CAESAREAN SECTIONS AND EARLY DEATHS RATES PER 1000 LIVE BIRTHS - DIFFERENCE IN PERCENTAGE BETWEEN 2004 AND 2014 (SOURCE: WHO).**



## MALIGNANT NEOPLASMS OF TRACHEA, BRONCHUS AND LUNG

Cancer is the second largest cause of death in Europe. The most common forms of cancer in Europe are breast, prostate, colorectal and lung cancers. Lung cancer and breast cancer are recognised as the leading causes of cancer mortality for men and women, respectively. There are consistent variations across Europe in this regard but in general, *the rising share of deaths due to cancer reflects the fact that mortality rates from other causes, particularly circulatory diseases, has been declining more rapidly than for cancer*<sup>7</sup>. The rate of cancer incidence is higher for men than for women in almost all the countries, but the increase in deaths due to lung cancer in women is reducing this gap.

According to Eurostat Cancer Statistics, in 2014 almost one and a third million people died from cancer in the EU-28, which equated to more than one quarter (26%) of the total number of deaths. Cancer accounted for a somewhat higher share (30 %) of deaths among men than among women (23%). Among the EU Member States, the proportion of deaths from cancer in the total number of deaths exceeded 30 % in Denmark, Ireland, the Netherlands and Slovenia: among men this peaked at 36 % in Slovenia, while among women at 30% in Ireland. By contrast, less than one fifth of all deaths in Bulgaria and Romania were caused by cancer.

For the EU-28, the standardised death rate (SDR)<sup>8</sup> for malignant neoplasms for all ages was 262 per 100,000 inhabitants, lower than the rate for circulatory diseases, but higher than the rate for most other causes of death.

In 2014, the standardised death rate for malignant neoplasms of trachea, bronchus and lung for all ages accounted for 54 per 100,000 inhabitants, with lowest values registered on average in EU-15 countries (36). In EU-13, this figure reached the value of 45 per 100,000 inhabitants.

In 2014, the **rate of incidence per 100.000 inhabitants** of malignant neoplasms of trachea bronchus and lung in the EU was 64, recording an increase of 7 points compared with ten years earlier.

The highest rates were recorded in Hungary (117 new cases per 100,000 inhabitants), Denmark (82 new cases per 100,000 inhabitants), the Netherlands (76 new cases per 100,000 inhabitants) and Belgium (75 new cases per 100,000 inhabitants). The lowest rates were found in Luxembourg (38), Sweden (42), Romania (44) and Bulgaria (45).

In 2014, the **hospital inpatient discharge for malignant neoplasms of trachea, bronchus, and lung per 100,000 inhabitants** recorded the lowest values in Portugal (49), Malta (50), Ireland (60) and United Kingdom (62). The highest values regarded Slovenia (124), Serbia (184), Germany (250), Austria (262) and Hungary (295).

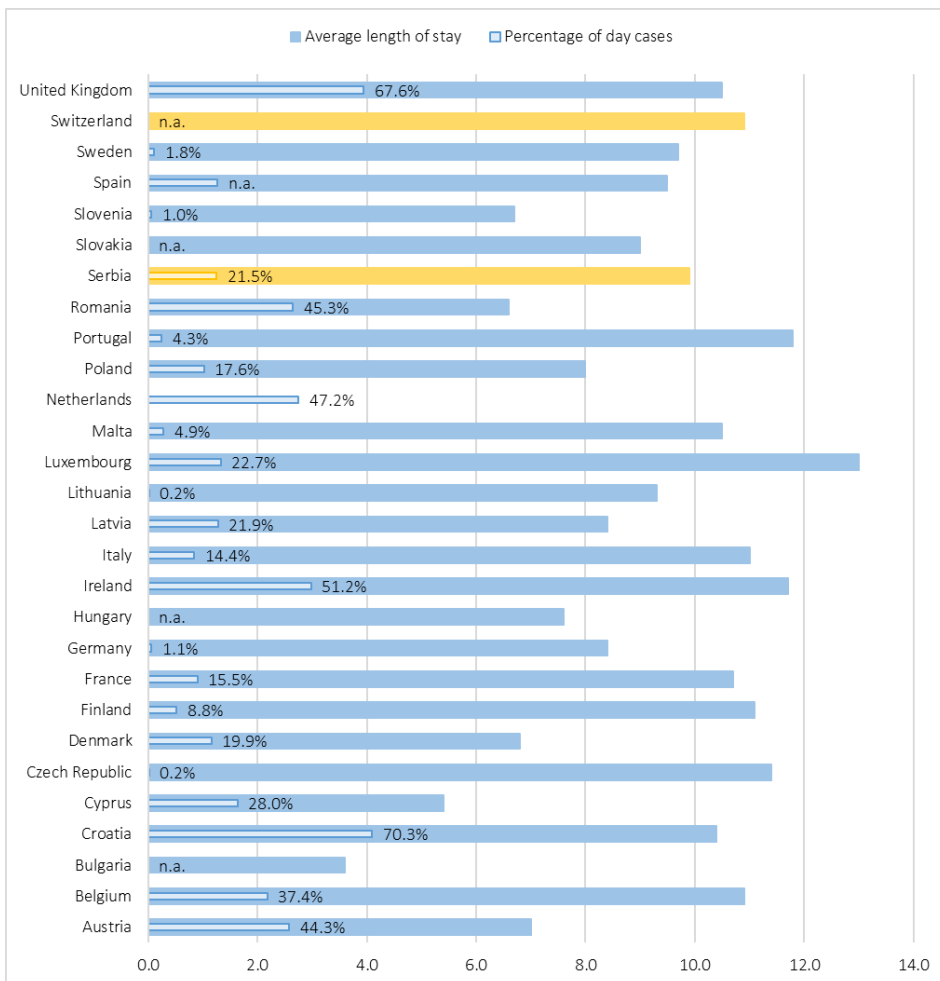
According to Eurostat Healthcare database, in 2014 the **average length of inpatient stay** for the treatment of these kinds of cancer ranged from 3.6 bed days in Bulgaria to 13.0 bed days in Luxembourg, whereas the **percentage of day-cases to all admissions** reached highest values in the United Kingdom (68%) and Croatia (70%). In Lithuania and the Czech Republic, the percentage of patients admitted to healthcare facilities and discharged on the same day was equal to 0%.

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<sup>7</sup> OECD (2017), "Mortality from cancer", in Health at a Glance 2017, OECD publishing.

<sup>8</sup> SDR is the age-standardised death rate calculated using the direct method, i.e. represents what the crude rate would have been if the population had the same age distribution as the standard European population.

**CHART 11: MALIGNANT NEOPLASMS OF TRACHEA, BRONCHUS AND LUNG: AVERAGE LENGTH OF STAY AND PERCENTAGE OF DAY CASES ON ALL ADMISSIONS. YEAR: 2014 (SOURCE: EUROSTAT).**



## HEALTHCARE AND HOSPITAL WORKFORCE

In 2015, an average 10% of the working population was employed in the human health and social work sector of the EU.

Unlike in the total economy, the number of workers in this sector had been steadily growing, even during the crisis years. Furthermore, the health and social services sector, composed of human health, residential care and social work, has an important economic weight as it generates around 7% of the total economic output in the EU-28 and appears to have suffered from the crisis according to the European Commission supplement to the quarterly review on “Health and social services from an employment and economic perspective” (December 2014).

The review also underlines that the health and social services sector is facing several challenges because the workforce is ageing faster than in other sectors. Indeed, the vast majority of the people working in human health and social sector belong to the 25–49 year age group, while the proportion of people above 50 years increased from approximately 27% to 32% between 2008 and 2013 in EU-28. Moreover, there are large imbalances in skills levels and working patterns, and recruitment and retention are affected by demanding working conditions.

The financial constraints in most European countries are leading to fewer available resources for healthcare professionals, reducing the possibilities of hiring new staff. Additionally, 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, because inpatient care alone absorbs about a third of the healthcare resources and because the hospital sector gives work to more than half of active physicians.

European countries and the EU institutions are discussing the possible impacts of and 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 degrees for 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 differ a lot throughout Europe. The spread of part-time working, the progressive ageing of hospital staff, high rates of early retirement and the drop in the total number of new medical professionals are common features and make comparison difficult. Moreover, the free movement of professionals within the European internal market sometimes distorts the interpretation of actual workforce figures.

A solution would be the use of Full Time Equivalent (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 is often gathered and processed with different levels of accuracy and is not always consistently available.

This section will therefore compare the figures about healthcare professionals considering the gross number of physicians and nurses physical persons, normally compared to the countries' populations.

**BOX 1. PHYSICIANS AND NURSES: DEFINITIONS**

**Practising physicians** provide services directly to patients. This includes: people who have completed studies in medicine at university level and who are licensed to practise; interns and resident physicians; salaried and self-employed physicians delivering services irrespectively of the place of service provision; foreign physicians licensed to practise and actively practising in the country.

**Practising nurses** are defined as nurses providing services directly to patients. They assume responsibility for the planning and management of the care of patients, including the supervision of other health care workers, working autonomously or in teams with medical doctors and others in the practical application of preventive and curative measures. This includes professional nurses, associate professional nurses and foreign nurses licensed to practise and actively practising in the country.

## PHYSICIANS AND NURSES

An overview of the healthcare workforce (practising physicians and nurses) in the European Union over the last decade shows the presence of about 1,600,000 physicians and 3,100,000 nurses, with a rather stable rate of 2 nurses per physician on average.

In 2014, in the European Union there were **351 physicians and almost 868 nurses for 100,000 inhabitants**. In the same year, **12 physicians and 39 nurses graduated for 100,000 inhabitants** (*Charts 12 and 13*). Unfortunately, these figures do not fairly mirror the situation across countries. Comparing the values in EU-13 and EU-15, a sharp difference in the total number of physicians and nurses can be observed.

Almost all EU-13 Member States had in 2014 a number of physicians per hundred thousand inhabitants lower than the EU average (351). The only exceptions were the Czech Republic (369), Malta (375), Bulgaria (400) and Lithuania (433). In the same year, all EU-13 Member States had a number of nurses per hundred thousand inhabitants lower than the EU average (868), with the only exception of the Czech Republic (833) and Slovenia (861), whose values equalled the average.

Between 2004 and 2014 the number of physicians per 100,000 inhabitants increased by 14% in EU-15 and 6% in EU-13.

The number of nurses per 100,000 inhabitants increased by 6% in EU-15 and by 4% in EU-13.

In EU-15 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 and Austria had in 2014 the highest rates of physicians per 100,000 inhabitants, respectively 625 and 506. At the same time, Greece also had the lower rates of nurses per population. This data clearly represents the situation in countries which have strong doctor-based systems. Conversely, countries where the shift of competencies from physicians to nurses is advanced, like Finland, Denmark, Ireland, Switzerland, Luxembourg and Belgium, recorded in 2014 the highest proportion of nurses per physician per 100,000 inhabitants, which is on average equal to 2.5 in EU-28.

Between 2004 and 2014 the number of physicians graduated per 100,000 inhabitants increased by 21% in EU-15 and by 23% in EU-13.

The number of nurses graduated per 100,000 inhabitants increased by 16% in EU-15 and by 30% in EU-13.

The situation concerning the number of nurses and physicians graduating is much more complex and fragmented.

In 2014, there were 12 doctors graduating per 100,000 inhabitants in Europe, from 9 in Greece to 15 in Portugal. The highest rates were recorded in Denmark (20), Ireland (22) and Malta (27).

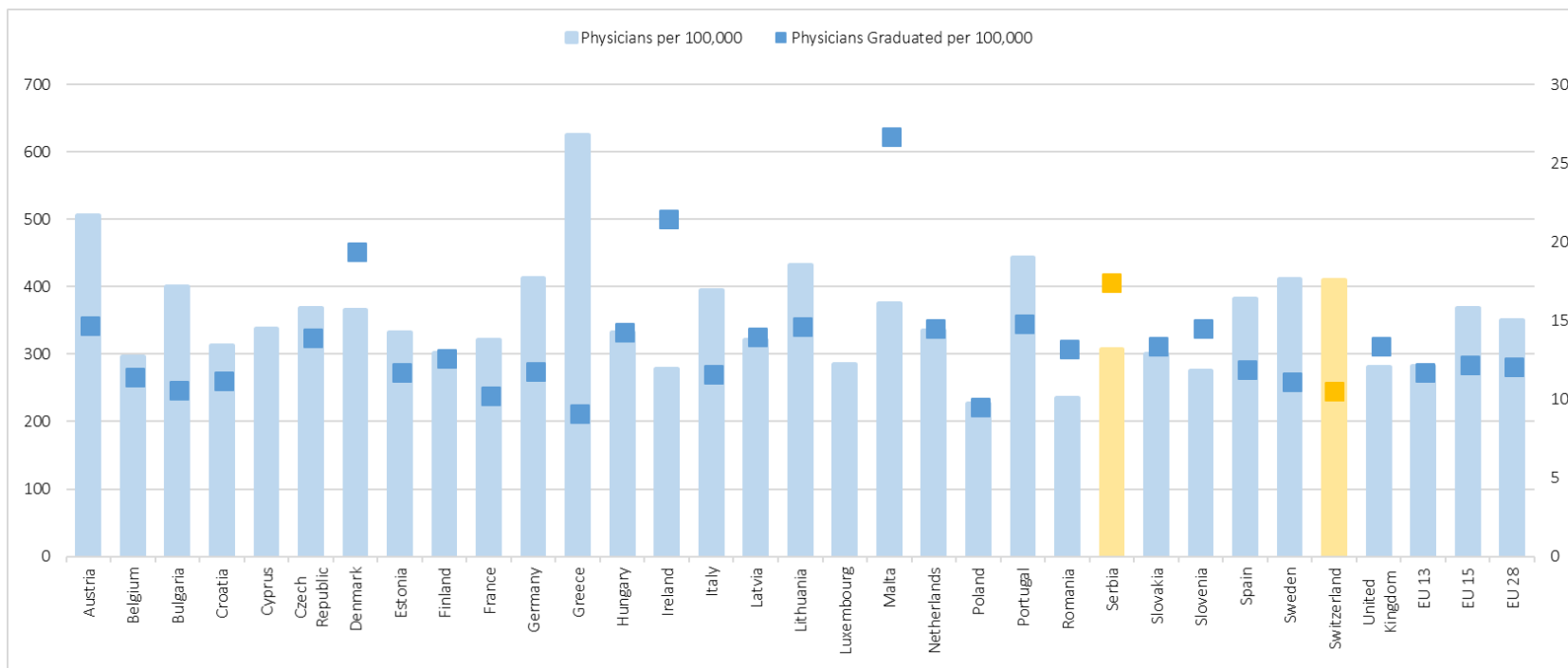
The average number of nurses graduating per 100,000 inhabitants in Europe in 2014 reached 39. In EU-13 this value is slightly higher than the EU average and equal to 43. Conversely, in EU-15, there were on average 37 nurses graduating per 100,000 inhabitants. The trend is variable in the all Europe. Lowest rates were recorded in Bulgaria (4), Luxembourg (13), the Czech Republic (15).

In contrast, figures massively over the average characterised Slovenia (78), Croatia (90), Romania (91), Denmark (92) and Switzerland (93). Croatia recorded a high value despite an overall reduction (-26%) between 2004 and 2014. In Romania, the value increased in the same years (+57%) but the trend was variable.

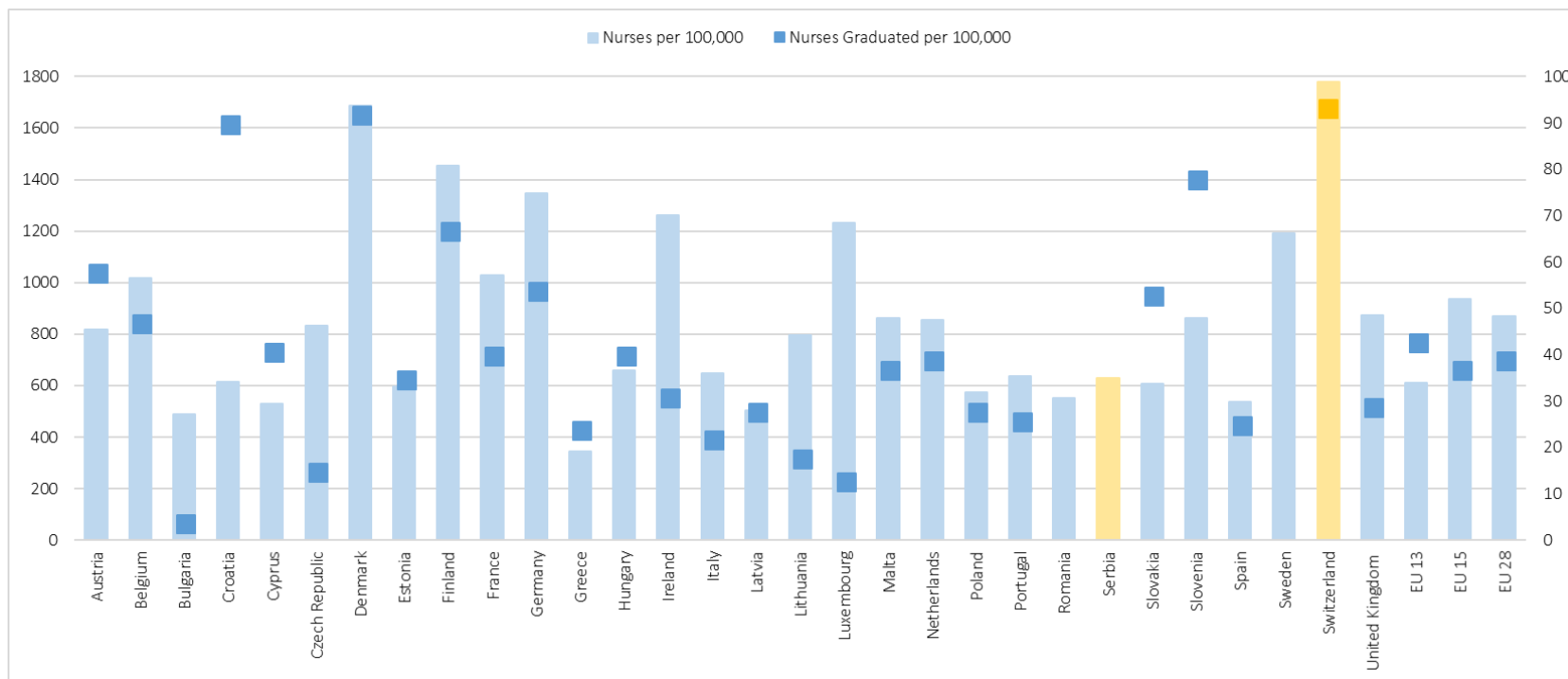
The major increases in the number of graduating nurses per 100,000 between 2004 and 2014 happened in Romania (+57%), Latvia (+65%), Cyprus (+78%) and Poland (+600%). In some cases, this was due to the introduction of bachelor's degrees and, in general, new career opportunities for nurses. The correlation between the number of graduated doctors and nurses indicates how these countries' healthcare systems are organised; they continue to be doctor-led and probably focused on hospital inpatient care.



**CHART 12: NUMBER OF PHYSICIANS PER 100,000 INHABITANTS AND PHYSICIANS GRADUATED PER 100,000 INHABITANTS. YEAR: 2014 (SOURCE: WHO).**



**CHART 13: NUMBER OF NURSES PER 100,000 INHABITANTS AND NURSES GRADUATED PER 100,000 INHABITANTS. YEAR: 2014 (SOURCE: WHO).**



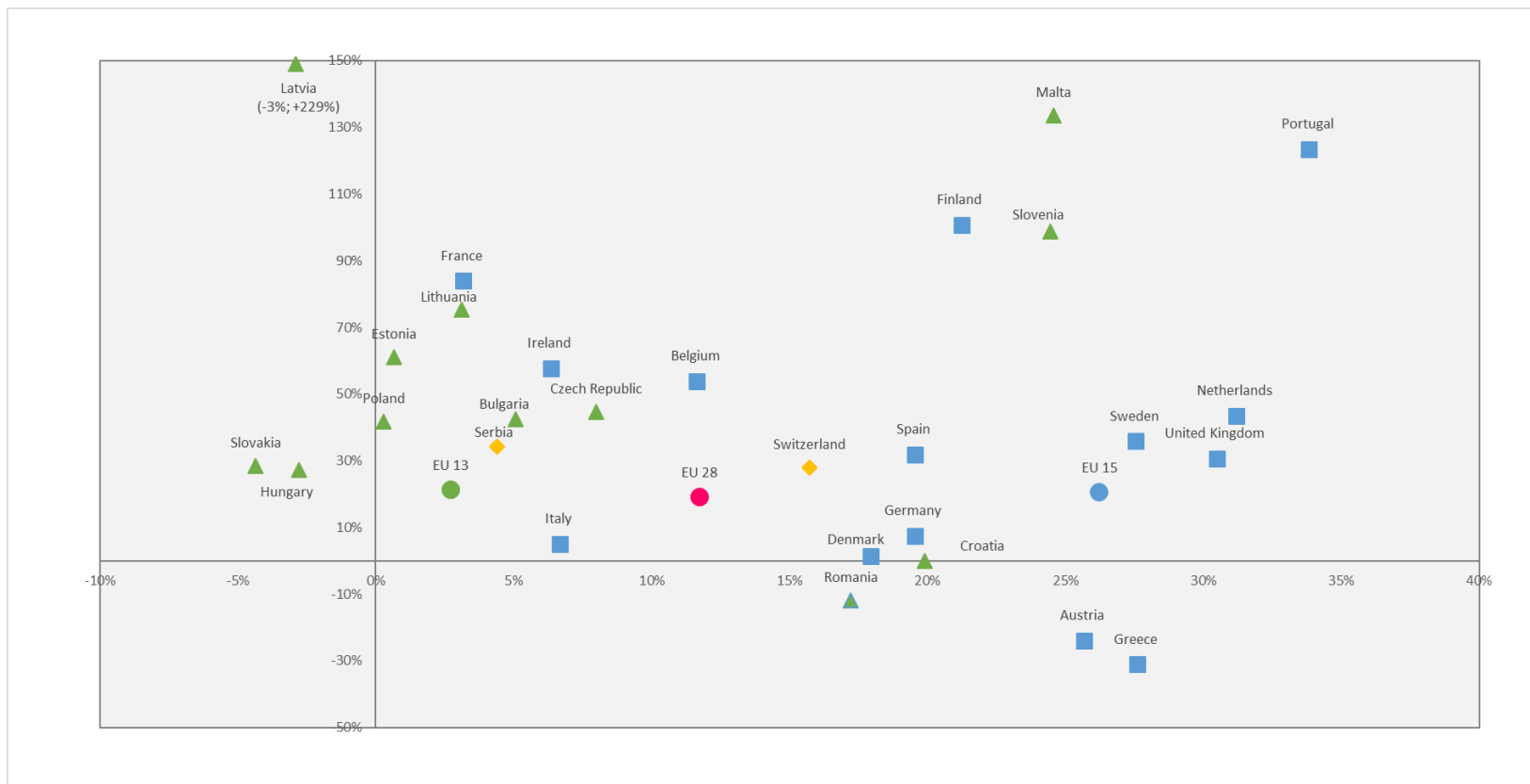
The following chart is designed to highlight the most important trends in the number of physicians and physicians graduating in the European countries. It compares the variation in the total number of physicians and the variation in the number of physicians graduated per 100,000 inhabitants (*Chart 14*).

The period considered is 2004-2014 for reasons of simplicity and because the data is more consistent. All countries are represented except Cyprus and Luxembourg whose data is unavailable or incomplete.

EU-15 countries are blue, EU-13 countries are green. Switzerland and Serbia are represented in yellow.

- ▶ Most countries are situated in the upper right quadrant – increase both in the total number of physicians and in the number of physicians graduated – with some notable differences:
  - The number of physicians graduating varied the most compared to the total number of physicians in all the countries, except for Croatia, Denmark, Germany and Italy;
  - In Malta, Portugal, Finland and Slovenia (graphically located in the upper part of the quadrant) the positive variation in the number of physicians graduated was much higher than the total number of physicians;
  - In Sweden, the United Kingdom and the Netherlands, the variations recorded in the two indicators are similar.
- ▶ In Romania, Austria and Greece the total number of physicians increased while the number of physicians graduating decreased (lower right quadrant);
- ▶ Conversely, in Latvia, Slovakia and Hungary the total number of physicians decreased while the number of physicians graduating increased (left upper quadrant);
- ▶ The highest variations in the number of physicians were recorded in Portugal, the Netherlands and the United Kingdom while highest variations in the number of physicians graduated were registered in Portugal, Latvia, Malta and Finland.

**CHART 14: COMPARISON OF THE VARIATION IN THE TOTAL NUMBER OF PHYSICIANS AND PHYSICIANS GRADUATED IN THE EU. DATA PER 100.000 INHABITANTS. Δ 2004-2014 (SOURCE: WHO).**



### 3.2 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 employed by the hospital, and thus no longer counted as hospital staff.

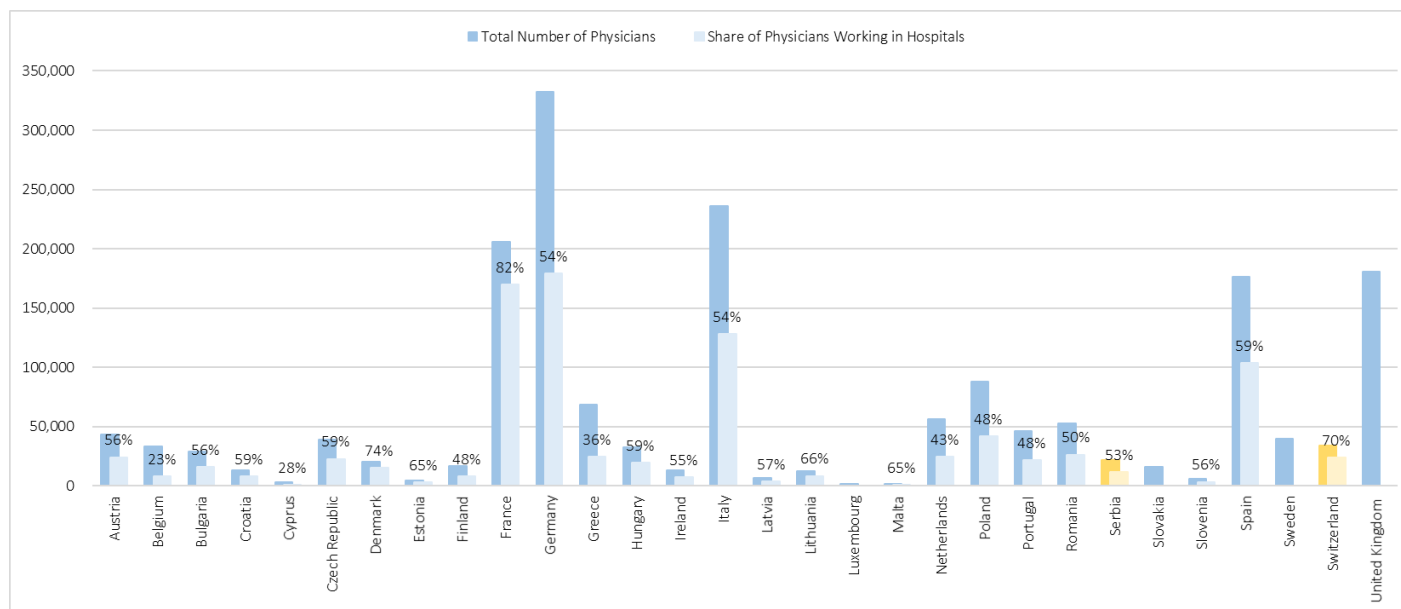
In general, the most available and reliable data shows that in the last decade the greatest proportion of nurses and physicians in the European countries has been working in hospitals.

Complete data for nurses is available only in a few countries and shows a percentage of nurses working in hospitals above 40% (Ireland) and up to 100% (Austria and Greece) between 2005 and 2010.

In 2014, **doctors working in hospitals** (*Chart 15*) ranged from 35% to 65% of the total number of physicians. Low rates were recorded only in Belgium (23%) and Cyprus (28%). The highest rates were in Switzerland (70%), Denmark (74%) and France (82%)

While relevant variations did not happen in any European country, between 2004 and 2014, Portugal and Greece recorded a significant reduction of their physicians working in hospitals (respectively -13 p.p. and -10 p.p.), while only Bulgaria and Lithuania experienced a substantial increase (respectively +11 and +14 percentage points).

**CHART 15: TOTAL NUMBER OF PHYSICIANS AND SHARE OF PHYSICIANS WORKING IN HOSPITALS. YEAR: 2014 (SOURCE: WHO).**





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