Effects of Demographic Changes on Hospital Workforce in European Countries

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ABSTRACT [2]

Demographic trends and ageing are one of the main factors influencing future trends in the socio-economic development of all European countries expressed in significant changes in labour market structure. This paper is devoted to analysis of future demand for hospital care in European countries between years 2010-2030 and its influence on expected workforce. There are two main drivers to future changes in demand, demographic change and utilization patterns. Due to structure of existing data, the estimation of future needs is based on the utilization method. Used methodology is based on previous published work (Schultz et al., 2013), (Schultz (a), 2013) and (Radvanský, Dováľová, 2013). To illustrate the estimation of future demand for hospital care, population forecast Europop 2013 has been used as well as trend analysis for utilization indicators by 5 year age groups. The target year for the foresight is 2030. Presented cross-country comparison shows, that despite the similar demographic trends in all European countries, the situation in health care demand, especially length of stay and number of discharges (incl. trends) is significantly different. Development of expected hospital utilization is based on rather simple time series analysis. On the other side, the main purpose of this paper is to present the broader overview of possible labour force shortages in specific sector of employment. We have been able to estimate future demand for employment for all EU countries.

Key words: Hospital workforce, ageing, hospital utilization

JEL Classification: I15, J23, C22

Introduction

During the last decade most of the EU countries made changes in provision of hospital services, they reduced the number of hospital facilities, as well as the number of hospital beds. In 2008 in Europe there were on average 2,6 hospitals and 530 hospital beds for 100 000 inhabitants but between 1998 and 2008 the average number of hospitals decreased by about 6 % and the total number of hospital beds per 100 000 inhabitants decreased by about 18 %. Hence in the last ten years in Europe we can observe falling numbers of hospital beds resulting 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. A shift from inpatient treatment to outpatient treatment noticed within the hospitals was caused by various factors as for example relative costs, consumer preferences, technological advances, increased usage of day-hospital and day surgery and more efficient methodologies of hospital financing in order to incentivise appropriateness (e.g. the replacement of daily payments - known to

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encourage longer hospitalization - by prospective payment). With regard to these patterns, the forces restraining the growth of hospital employment are clearly substantial, opposing the increasing number of older people (European Hospital and Health care Federation, 2011). On the other hand, this situation differs from country to country, even when optimization targets are not met.

In general, health care sector seems very promising in creating additional demand from labour force point of view, which is in the line with increasing labour force demand in the healthcare sector as was confirmed by the latest European Vacancy Monitor published by European Commission in September 2013. Between 2008 and 2012 employment in the EU health care sector was growing by almost 2 % annually mainly due to the ageing population, advances in technology and treatments, higher expectation of service quality and greater emphasis on preventative care (European Commission, 2013). More detailed analyses of employment in health care sector are provided in (Schultz, 2013(a)). Therefore, the question about further needs and adaptation mechanism are not so obvious. One of the most significant factors of increased demand for hospital care, ageing, is taken into consideration and we will try to estimate its possible effects on further employment in this sector across ale EU member states. Other factors, such as current unmet needs, change of health care system and approach are not covered in this paper.

This paper is providing an overview of the situation within the horizon of 2030, especially how ageing population and the trends in health care utilization can influence the demand for health care services and labour force focusing on hospital health care3??. The article is structured as follows: in section 1 we discuss methodological approach, in section 2 we discuss demographic trends in EU countries based on Europop demographic scenarios and in section 3 we deal with trends in hospital care utilization based on length of stay and ratio of discharges during period of 2002 to 2010. We summarise and discuss the results of effect on additional demand for hospital services in section 4.

1. Methodology

In this paper we assume a group of main drivers resulting in a change of demand for hospital workforce. An overview of methods for estimating demand and supply for health workforce can be found in (Schultz et al., 2013). As we focus only on demand side (we assume that current demand is met and any current shortages are not incorporated into the estimation), we can utilize one of four available methods of estimation[4]:

- need based approach – comprehensive method based on estimation of health status of all persons in the community and their prevalence to disability and diseases,
- utilization method – estimation based on current observed trends of service utilization,
- economic estimation method –method based on incorporating observed relation of demand for health services and any other indicator into the econom(etr)ic model,

[3] More details about the impact of ageing population on curative health care workforce for particular countries (e.g. Germany – Schultz, E., 2013a; Denmark - Schultz, E., 2013b; Poland – Golinowska, S., Kocot, E., Sowa, A., 2013, Slovakia – Radvansky, Dováľová 2013) could be found on NEUJOBS project webpage: http://www.neujobs.eu/publications.

[4] For estimation of supply there are in (Schultz et al., 2013) indicated three abailable methods – time series approach, stock and flow method and top down approach

- benchmarking method – method based on setting workforce-to-population ratio of best performing country as optimal (benchmark) ratio in relation to analysed country.

All approaches have several pros and cons. Preferred method in terms of data availability is an utilization method. For estimating the effect of ageing on demand for hospital health care we are using two crucial indicators – change of total treatment days and change of population. To indicate the changes we are using 5-year age groups. We will estimate the effect of population change in 2030 in respect to official Europop 2013 projection. Total estimation of number of treatment days will be differentiated by two approaches. Static scenario will consider actual utilization – both average length of stay and average number of discharges by 1000 people will remain stable over forecast period and change of demand will depend purely on structural and volume changes across 5-year age groups. Dynamic scenarios will consider the current trends in average number of discharges as well as in average length of stay, but reasonably restricted. As initial period to indicate trends we have selected period from 2000 to 2010, differs between countries by current availability[5]. This approach shows the need of constraint, where past trend is steep, simply because estimated value in 2030 will be too low, or too positive with comparison to other countries. Therefore, we have appended the constraint to average yearly relative change for utilization indicators (both positive and negative) to 1 % of actual value. Limits for total adjustment in utilization were set to 1/3 of current value except lower bound for average length of stay, which was set to 5. These restrains should keep information about system differences across countries. Indicative trend and threshold value for constraint are presented in Figure 1. As a result, we create four different scenarios of demand for hospital services. Main assumption of these estimation is that the demand relation between number of treatment days and needed employment will remain constant, in other words one nurse is able to cover similar number of treatment days over time. One can assume adjustment of published scenarios under increased/decreased ratio of treatment days to demand for nurses/doctors.

Figure 1 – Observed average growth of utilization indicators and threshold value for selected countries
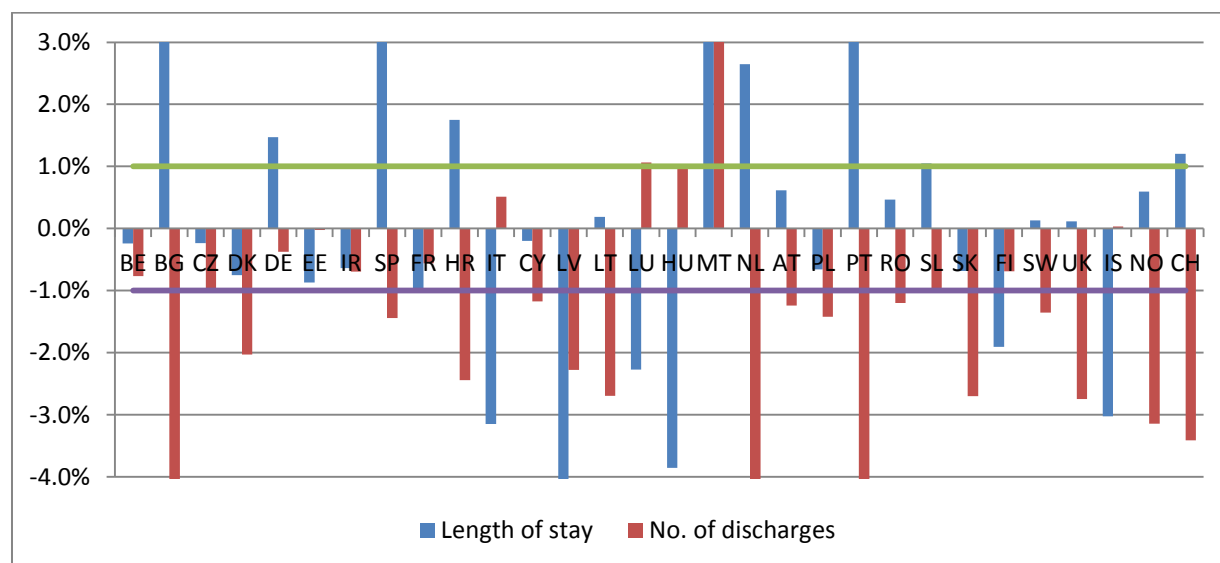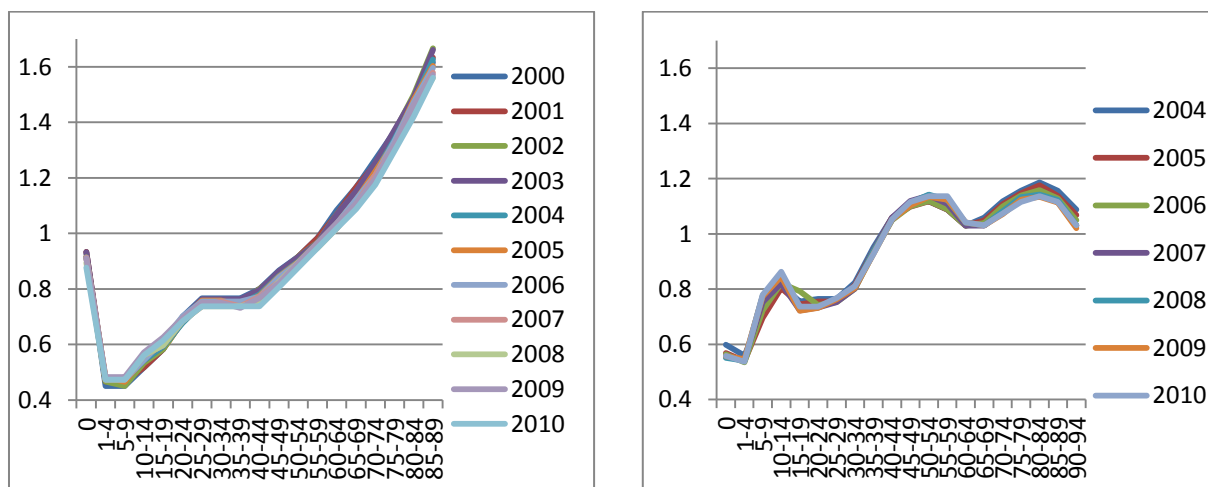

Source: Author

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[5] If shorter period was available but not more that three data was missing, we have used this shorter period.

We analyse all countries separately and then provide results for whole EU28 as sum of needs of all member states. Provided analysis should also take into account change of utilization not only for whole country as a trend, but also across age groups. When we compare these patterns within last decade, we can make one important conclusion. Relation of length of stay of particular age group to country average remains either pretty stable over time, or with minimal decrease in older age groups (see Figure 2), even when patterns between countries are different (Figure 5). Similar observation could be done in relation to number of discharges. In case of decreasing (increasing) average value of utilization indicator, the changes are almost proportional in relation to all age groups. Therefore, the trend analysis could be simplified to effect on country average in dynamic scenarios. Results for country average are later distributed between age groups on information about multiplicator for each age group. Obviously, the trend in healthy ageing could slightly overestimate provided results, but additional scenario was created to illustrate the size of this effect.

Generally we can say, that national patterns in health care utilization within age groups are strong and we could not observe cross country effect in initial period. The lack of spillover effects suggests, that the long term patterns under different health care systems, prevalence to diseases and attitude to treatment remain relatively stable. In any case, this assumption should be under surveillance.

Figure 2 – Ratio of length of stay within age group to country average over time (France - left) and (Germany- right)
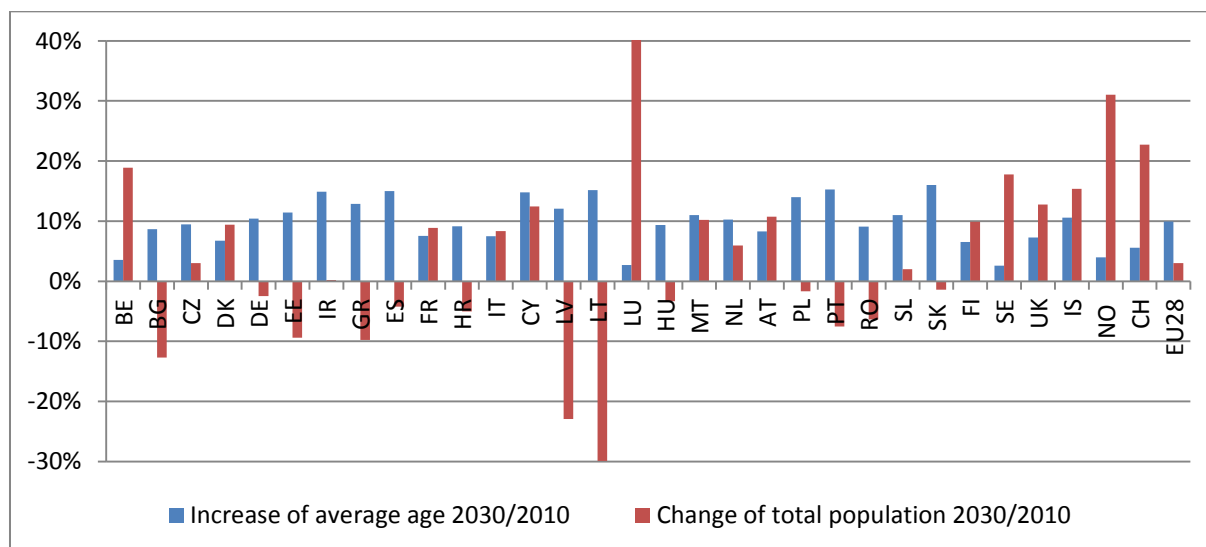

Source: Author

2. Ageing in EU countries

Past changes in dynamics processes that led to the current demographic profile of Europe as well as the contemporary and ongoing trends carry significant consequences in terms of European population demographic structure and in terms of the dynamics pertain to the total population change. In this paper we utilize Europop 2013 demographic forecast. Ageing of the population is currently observed in all member states, including surrounding regions, but this does not mean that total population will increase in all of them. During next two decades difference between population growth in member states is significantly different, from more than 50 % expected growth in

Luxembourg (mainly due to migration) to significant decrease of population in Latvia and Lithuania by more than 20 %. In level of the countries we can thus expected strongly different patterns (see Figure 3.)

Figure 3 – Comparison of increase of average age and change of total population in selected European countries between 2010 and 2030

Source: Author based on Europop 2013, Eurostat

Influence of ageing, thus movement of most significant cohorts to older ones is easily observable in Figure 4. On European level (EU28) are the individual country differences partially brushed, while until 2030 there is expected increase of total population by more than 3 % and increase of average age by more than 5 %. In this paper we are using 5 year age group up to 95+ with additional specific group of new-borns (0-1 year old). The increasing shares of older (65+) with higher demand for health services will cause expected increase of demand for hospital care services.

Figure 4 – Population forecast for population in European Union (EU28)
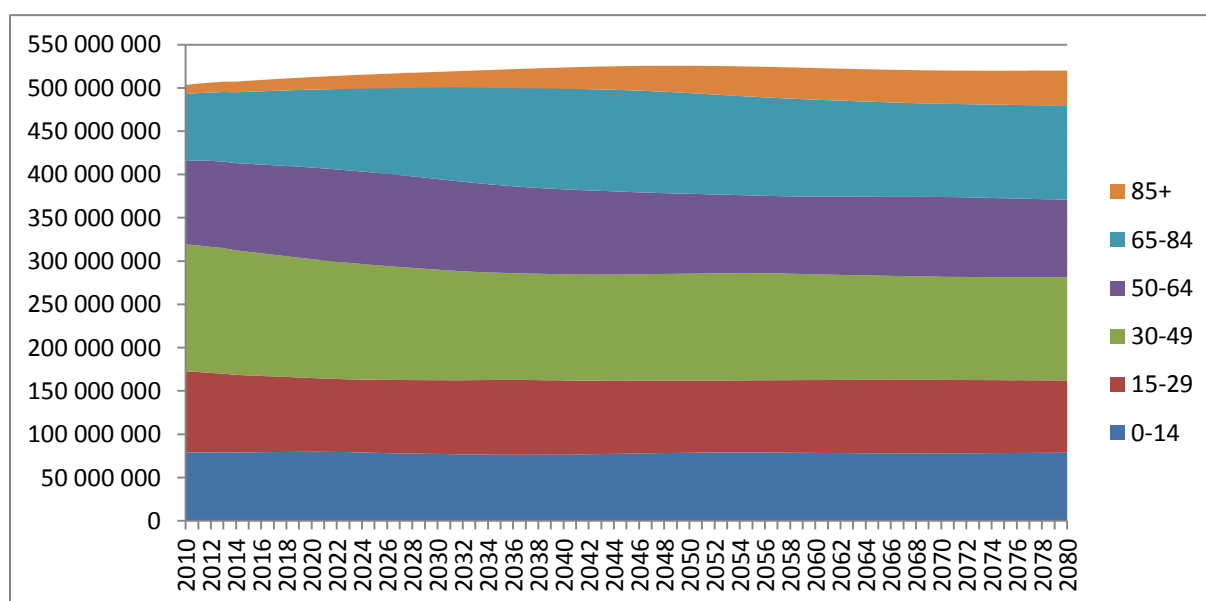
Source: Author based on Europop 2013, Eurostat

3. Estimating the demand for hospital care

Future demand for health care and hospital care can be affected by various factors, such as prevalence to diseases, age structure, climate conditions, etc. Hospital utilization can be illustrated appropriately by number of care days. Total care days consists of two components – average length of stay (can be divided by age group) and number of hospital discharges[6] (related to number of hospital cases). These indicators of hospital activities could be influenced by a number of factors such as increasing demand for hospital services caused by ageing population.

Average length of stay in hospitals[7] is very often used as an indicator of efficiency or indicator of technological development. A shorter stay in hospital can reduce the cost per discharge and it can shift health care from inpatient to less expensive post-acute settings, but on the other hand shorter stays tend to be more service intensive and more costly per day. In the cases when length of stay is too short, it could negatively affect health outcomes, comfort and recovery of patient. In general, the trend in OECD countries has decreasing tendency as the average length of stay in hospitals has fallen over the past decade in nearly all OECD countries – from 8.2 days in 2000 to 7.2 days in 2009 on average across OECD countries (OECD, 2011). Trends in discharges are not so obvious and clear, they vary across OECD countries.

3.1. Average length of stay

As can be seen in Figure 5, between the years 2002-2010 the decreasing trend of length of stay in hospitals was observed across the European countries.

Figure 5 Average length of stay (in days) vs. average past trend between 2002-2010
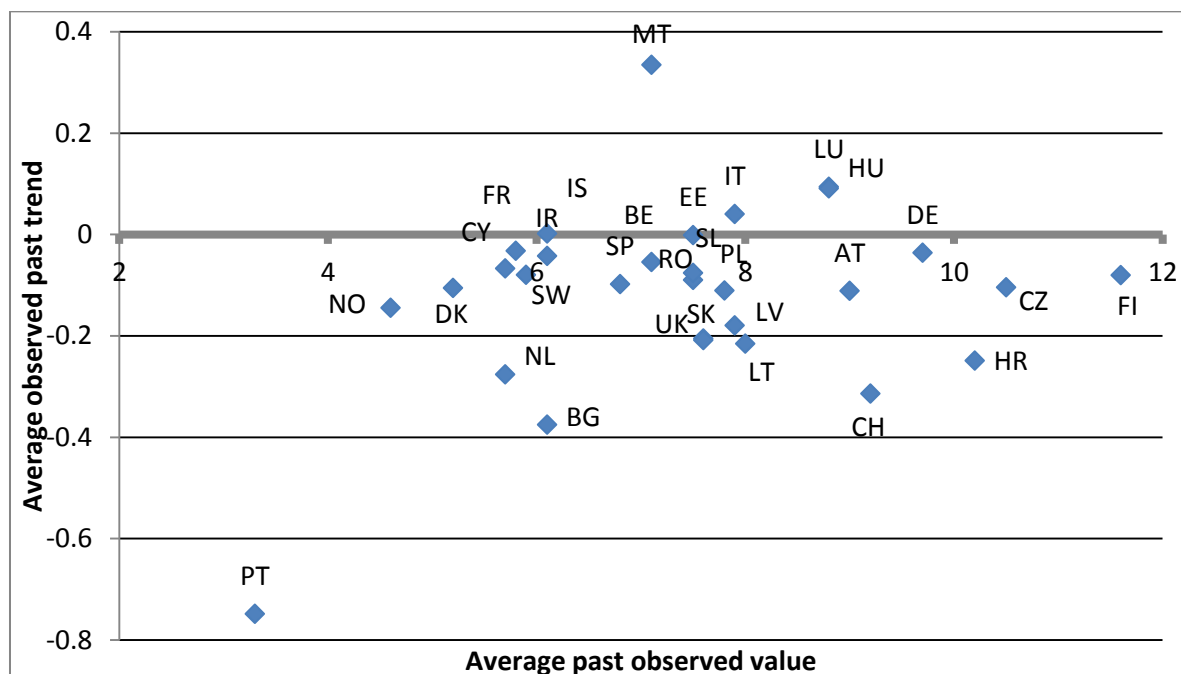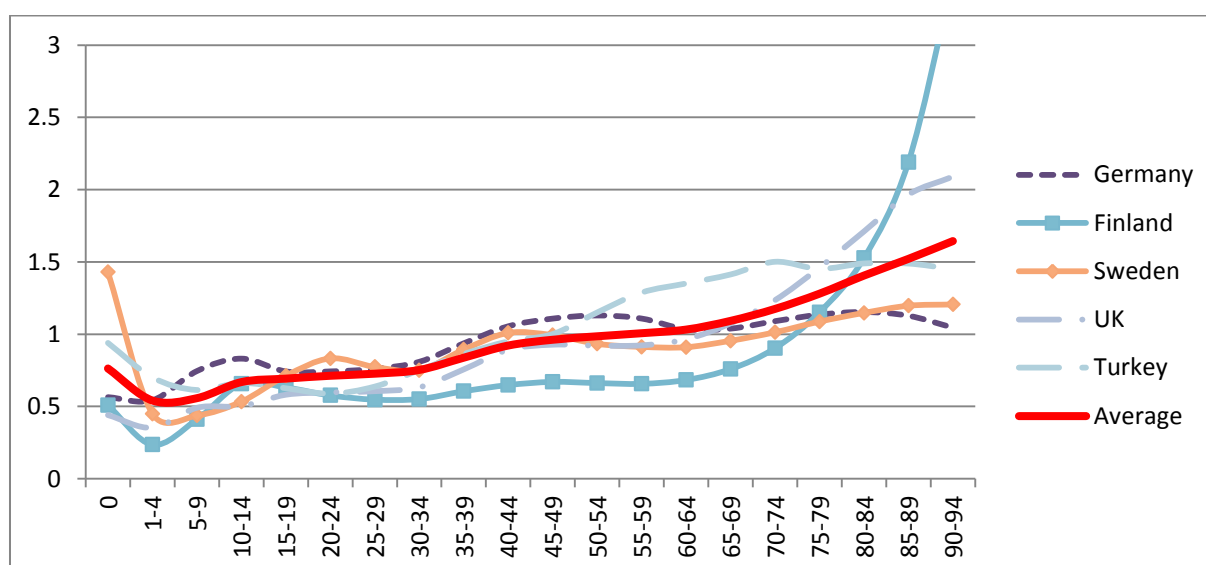

Source: Author

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[6] Number of people who need to stay overnight in hospital each year (OECD, 2010).
[7] Average length of stay refers to the average number of days that patients spend in hospital. It is generally measured by dividing the total number of days stayed by inpatients during a year by the number of admissions or discharges (OECD, 2011).

With exceptions being Lithuania, Malta and Hungary,most of the countries fit into the average length of stay interval of more than 4 and less than 10 days. Declining average length of stay is connected with the pressure to more efficient health care systems, technological change and reforms of existing social models. Development of this indicator among the selected countries shows different patterns when considering the age structure of the patients. Situation is unclear in Portugal, where average length of stay is significantly lower than in any other country.

The average length of stay was relatively high for the new-born patients, but then declined to lowest numbers for the category of 1-4 years old patients. Overall, the average trend during the years 2002-2010 was increasing length of stay corresponding with rising age of the patients. This trend was particularly strong for the patients 60 years and older, as was observed in Finland and United Kingdom, with moderate growth in Sweden and even decline in Germany. The different patterns of average length of stay between European countries are displayed in Figure 6. Most significant differences are in older age groups, which could significantly affect future needs for hospital care in particular countries.

Figure 6 Different patterns of average length of stay in selected countries by age groups, (2002-2010)
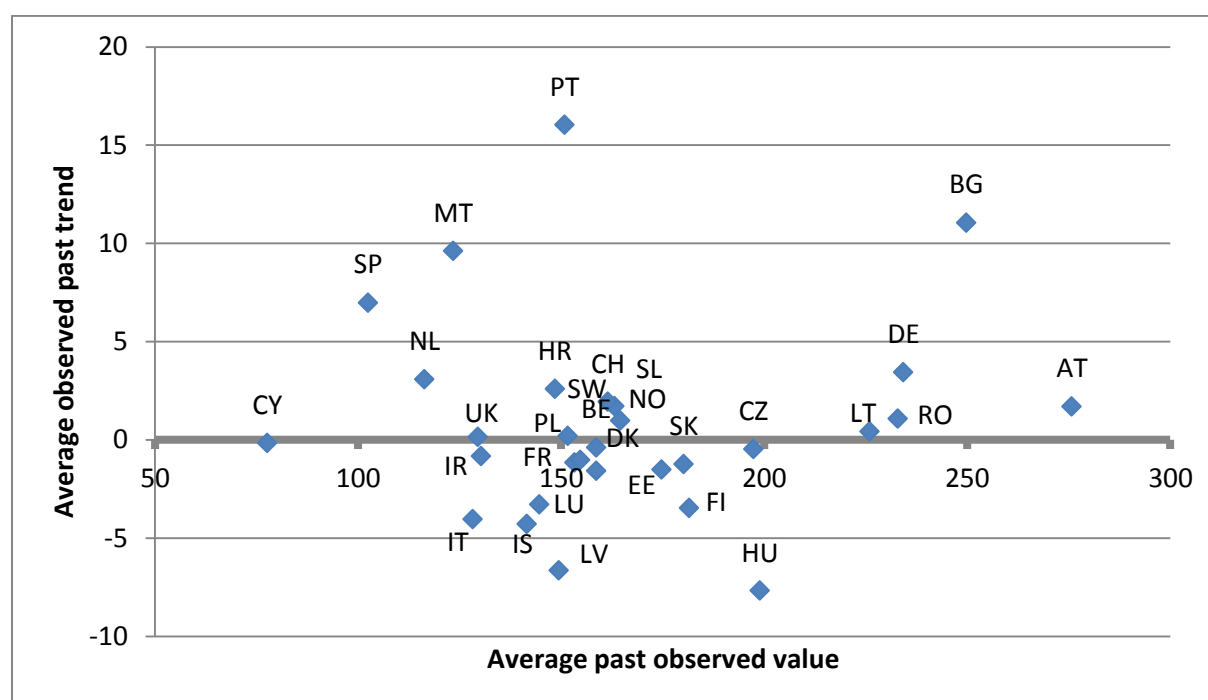

Source: Author

3.2. Hospital discharges

Trends in average discharges per 1 000 inhabitants are more heterogeneous in European countries (Figure 7) than in the category of length of stay mentioned above, when there are several countries which experienced increasing discharge rates (including e.g. Bulgaria, Portugal, Malta, Spain and also Germany), several countries with decreasing discharge rates (including e.g. Italy, Hungary, Finland) and on the other hand there is also group of countries with relatively stable rates in this indicator (including e.g. United Kingdom or Poland).

Very heterogeneous is also situation when comparing hospital discharges between countries. In country average this indicator varies between 75 in Cyprus to almost 300 in Austria – with growing trend. It is obvious, that these differences are systematic and couldn't be explained by age structure.

Figure 7 Average rate of discharges vs. average past trend between 2002-2010

Source: Author

When considering development of average discharges according to the age structure of patients, the trend was varying during the life time. On the average, discharges were staying relatively flat for patients between 5-60 years old and showing relatively high numbers for new-born or very young patients and also for the patients older than 60 years. These patterns are connected with demand for more health care within the categories of new born and older and are similar to the development of average length of stay indicators when considering the age structure of the patients. On the other hand, there are relatively more stable in age groups 15-64. In the future the demand for hospitalization can grow due to the ageing population, since older people account for disproportionately high percentage of hospital discharges in all countries (Figure 6).

Figure 8 Different patterns of rate of discharges in selected countries by age groups, (2010)
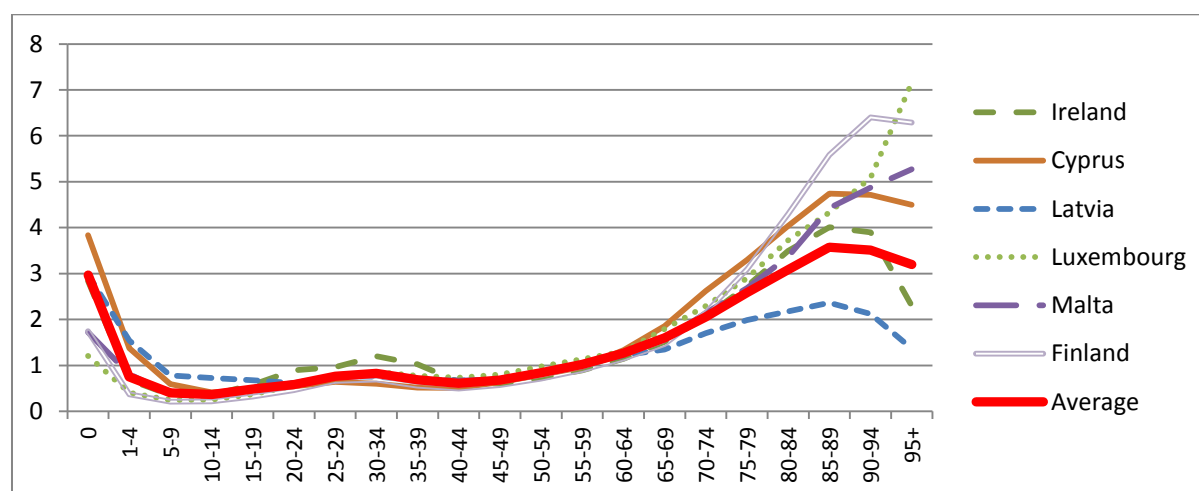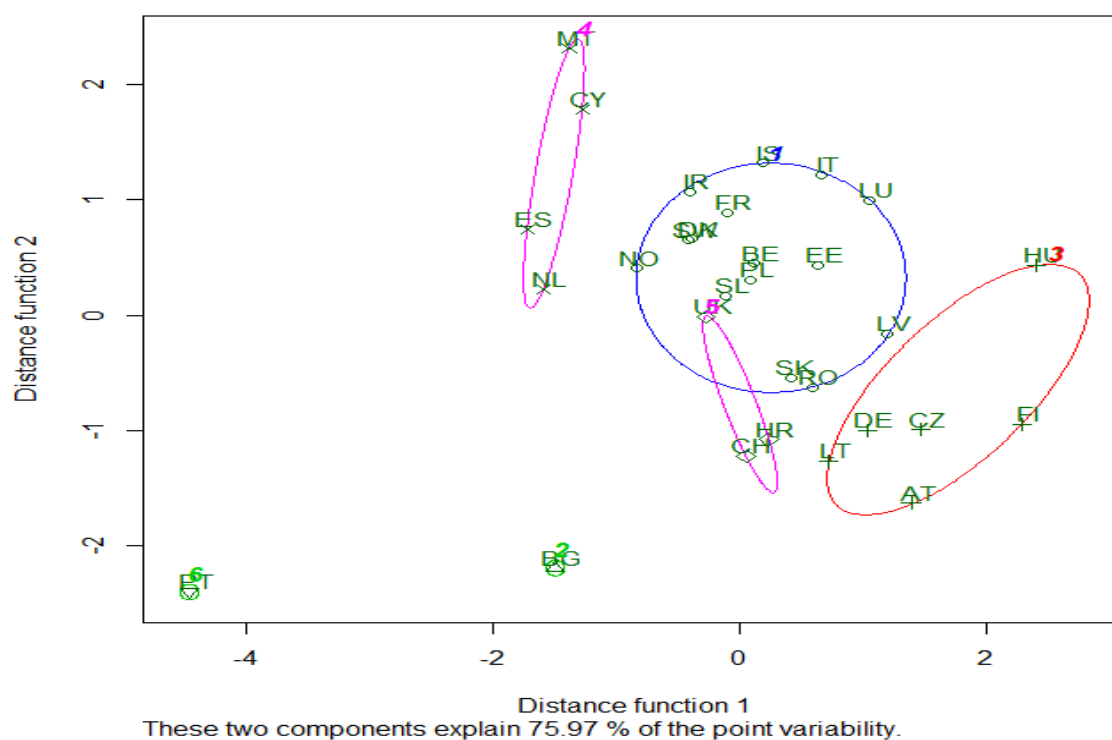

Source: Author

3.3. Similarities in hospital health care trends

A multidimensional clustering method is applied to divide selected countries into groups with similar hospital health care utilization profiles characterized by average number of discharges per 1 000, average length of stay in hospitals (days), and trends for both of these indicators during the period 2002-2010. This method provides more comprehensive understanding of the characteristics of different trends of hospital health care utilization. In Figure 9 we can see six clusters with different size and utilization patterns. From the data analysis it can be seen that cluster 1 covers relatively high number of countries with relative position close to EU average and not so significant trends. Custer 2 is similar, but with higher average length of stay. Cluster 3 has relatively high average number of discharges per 1 000 persons with positive trend and relatively high average length of stay in hospitals with negative trends. Cluster 4 has the both current utilization values slightly below average. There are also two outliers, Bulgaria and Portugal.

Figure 9 Clusters with similar hospital health care utilization profiles (2002-2010)

Source: Author

4. Estimating demand for hospital workforce

In following chapter we discuss estimations obtained by utilization method. Main goal is to estimate future demand for hospital workforce. To reach this goal, we have used Europop 2013 demographic forecast for European countries. We have covered all EU 28 countries in this study and several neighbouring countries. There were few countries, where the partial information on age group utilization or total utilization trend was missing. To fulfil missing indicators, we have used to estimate these data with regression to similar countries based on existing indictors of utilization

(based on correlation matrix). The countries with partially estimated data were Bulgaria, Estonia, Greece, Portugal, Romania, Sweden and Norway. Except Greece, for all countries was available at least value and trend of utilization indicator on national level, and utilization patterns for wider age groups that there was required. Therefore, the information was at least partial and bias of estimation was significantly lower than in Greece.

For more in-depth illustration of influence of ageing on demand for hospital workforce, several scenarios have been elaborated and are described within this chapter. At the end of the chapter can be find estimated demand for hospital workforce in EU28.

4.1. Estimation of demand for hospital care in 2030

The estimation of increased demand for hospital care (treatment days) under restrictions described in second chapter and illustrated in Figure 2 are presented in Figure 10. Static scenario without changes in utilization reveals future increase of demand caused by demographic changes in all covered states except Latvia and Lithuania, where significant decrease of total population is expected. The dynamic scenario where at least one decreasing trend of utilization is usually expected shows expected lower dynamics despite the ageing process. Only in Malta we can observe both utilization indicators rising in past years, the expected demand in dynamic scenario is high (double to current values). Significant increase is also observable at Norway (not affecting results for EU 28) and Luxembourg. These countries do not have significant share of workers in European level, so their influence on additional demand is rather scarce.

Figure 10 Estimated change of demand for hospital care in period 2010 – 2030
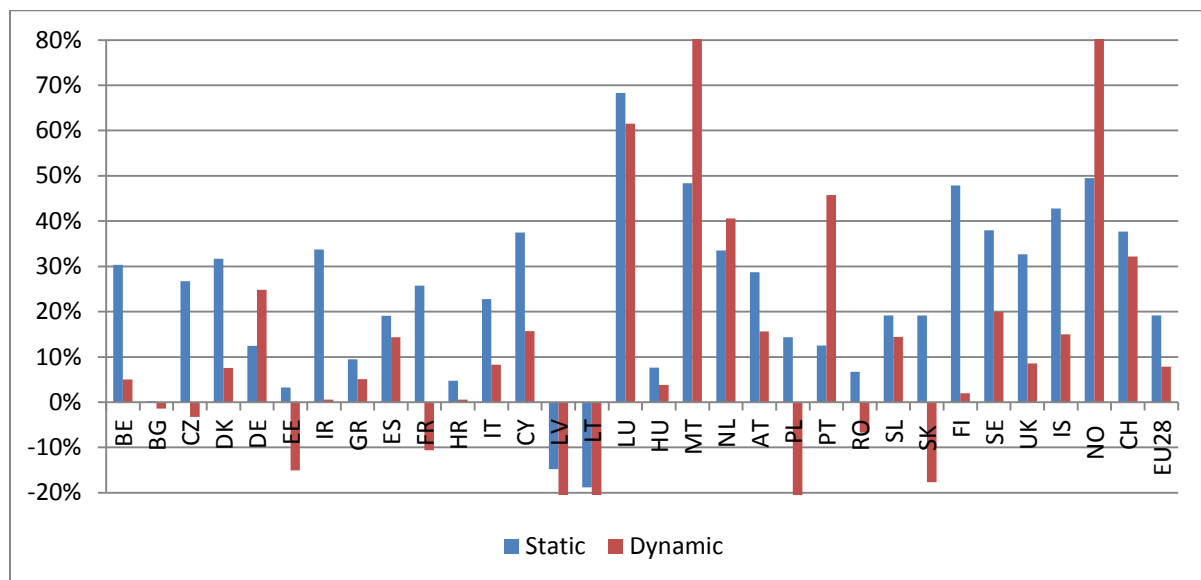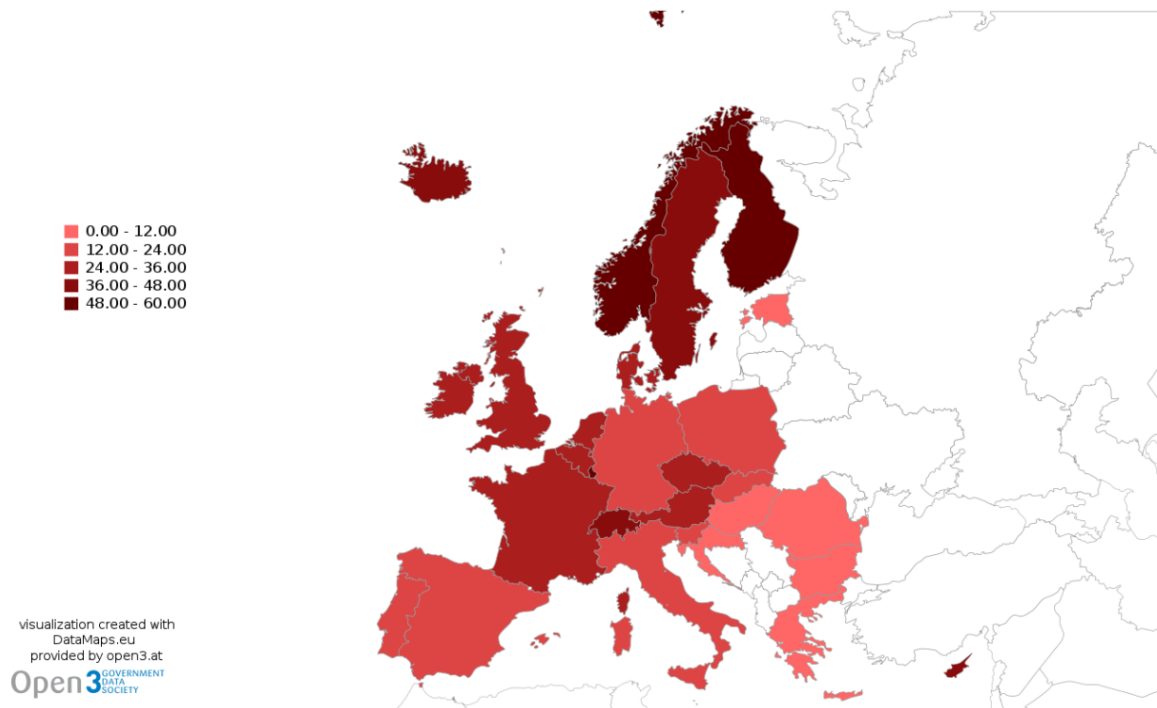

Source: Author

Except for Latvia and Lithuania there are five countries where one can expect decrease of demand for hospital workforce under dynamic scenario. Observed decreasing trends in utilization indicators could cause decrease of demand for additional employment in Estonia, France, Poland, Slovakia and Romania. In EU 28 as a total, we can expect increase of demand for hospital care up to 19 % in static scenario and 8 % in dynamic scenario. Under expectations about keeping

doctor/patient ratio, the same dynamic could be applied to expectations about growth of employment in 2030.

Figure 11 Estimated change of demand for hospital care in period 2010 – 2030 – static scenario
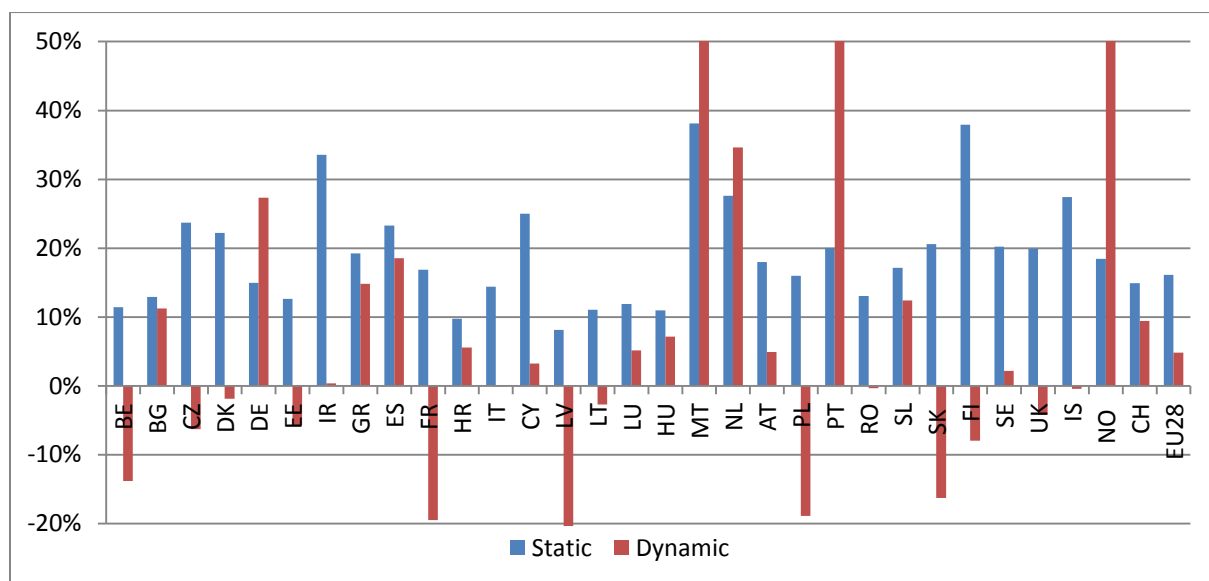

Source: Author

4.2. Net aging effect on demand for hospital care in 2030

To illustrate pure ageing effect, we have estimated similar scenario for all countries, but without absolute change of population in 2030. Therefore, the structure of population by 5 year age groups from 2030 was applied to number of inhabitants in 2010. This is purely artificial scenario and the results can be perceived as a net effect of ageing on demand for healthcare. Results are presented in Figure 12. This helps to compare effects of ageing and utilization differences between countries, but expected changes to demand in 2030 will be closer to ones presented in previous chapter, which incorporate also population factor.

As it can be observed in Figure 12, total variability between countries in this scenario has slightly decreased. Countries with expected population decrease will be affected positively (higher demand is expected) while countries with increasing population will achieve lower net demand in 2030. Therefore we can say that most significant positive net effect on demand for hospital care during next two decades will be most probably observed in Ireland, Malta, Finland, Nederland and Iceland in static scenario, and Malta, Nederland, Portugal and Norway in dynamic scenario. In average, net effect of ageing on demand for hospital care in EU28 will be most probably between 16 % (static scenario) and 5 % (dynamic scenario). Population growth will therefore cause increase of demand for care by around 3 percentage points.

Figure 12 Estimated change of net demand for hospital care in period 2010 − 2030 − fixed total population

Source: Author

Figure 12 Estimated change of net demand for hospital care in period 2010 − 2030 − fixed total population
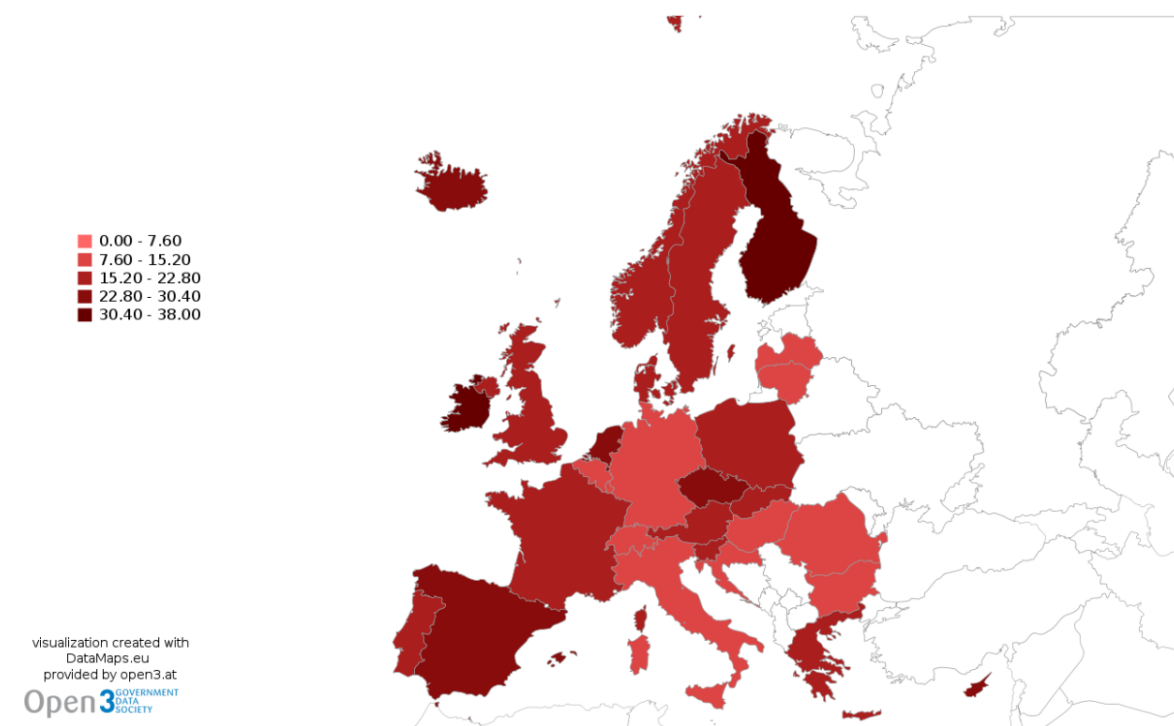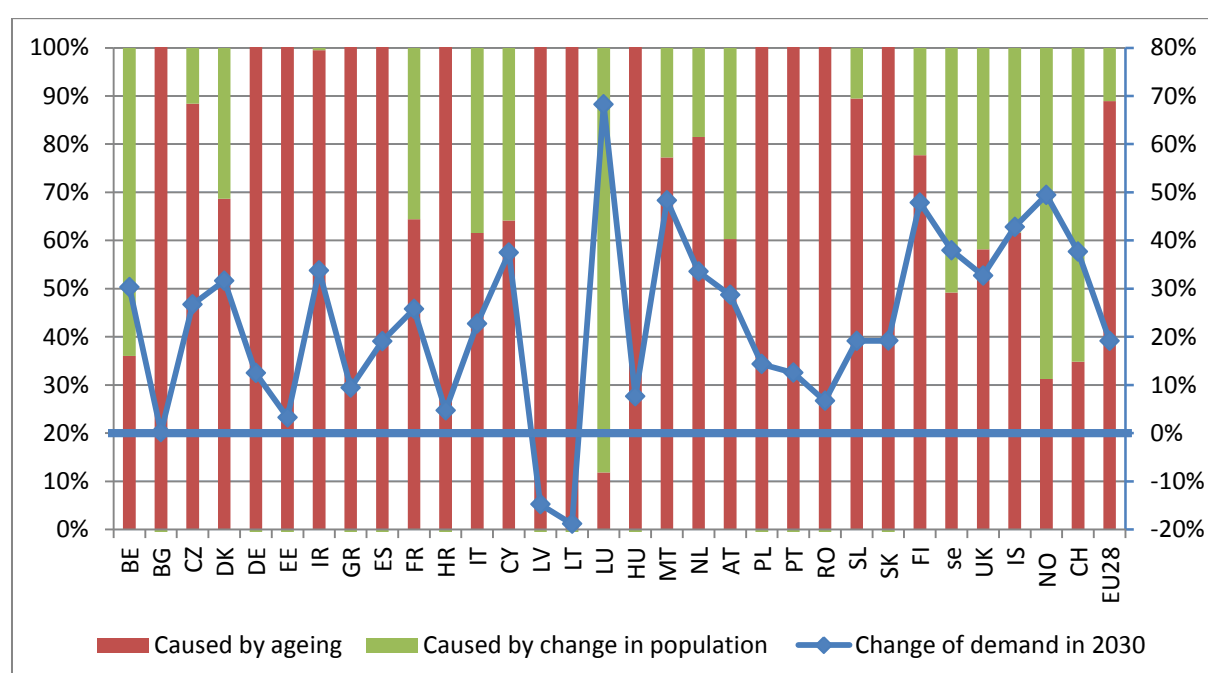

Source: Author

4.3. Demographic source of additional demand for hospital care in 2030

In previous chapter we have tried to estimate pure effect of ageing without population change on demand for hospital care. In this chapter we will estimate the share of both effects (ageing and population) on additional demand for health care. To estimate source of additional demand, we have taken fixed utilization indicators for all countries (similar to static scenario). We have estimated number of treatment days for both demographic aspects separately, one without population change and one without ageing process (age structure 2010 applied on population 2030). From comparison of relative effects of these two scenarios, we have been able identify the demographic source of additional demand for hospital care (see Figure 13).

Figure 13 – Estimation of the demographic source of additional demand for hospital care (left axis) and relative change of demand for hospital care in 2030 – static scenario (right axis)
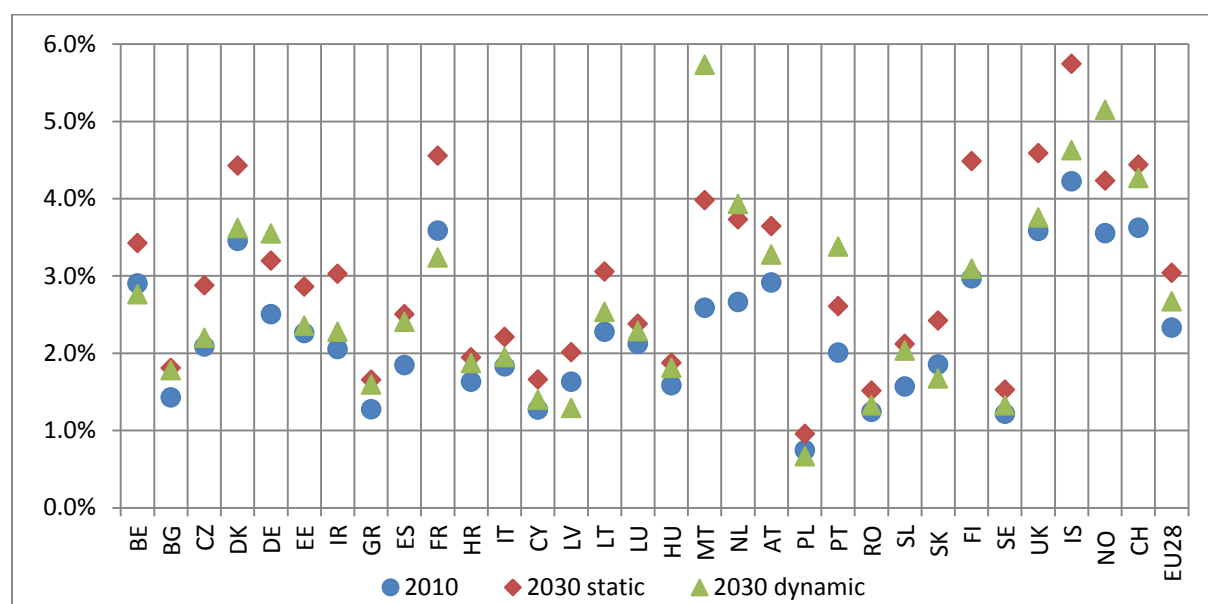

Source: Author

From the results we can observe that most significant share of additional demand for hospital care is caused by ageing except five countries, where population effect prevails (Belgium, Lithuania, Norway and Switzerland). In EU 28, 89 % of additional demand is related to age shift, whilst effect of population change is rather scarce.

4.4. Effects on total employment

In final part of this chapter we will provide information about estimated effect of ageing presented in chapter 4.1 on employment in sector of hospital care. We have already provided information about structure, trends and values of most important hospital utilization indicators – length of stay and hospital discharges. Uneven healthcare systems and prevalence to diseases results in differences in all aspects of hospital care. Similar heterogeneous situation can be observed in labour structure and labour intensity in hospital sector. We have already partially covered this topic in previous work (Radvanský and Dováľová, 2013). Therefore we have focused only on four major

groups of employees in hospital sectors (doctors, nurses, associate professional nurses and other staff). In cross country comparison there are also differences in perception of two groups related to nursing personnel. In Figure 14 we can observe estimated change of total workers on population in economically active age. Initial share significantly varies between countries from 0,7 % of economically active population in Poland up to 4,2 % in Iceland. Generally, we can expect increase of share of hospital workers in all countries within basic scenarios. The most significant increase of workers can be expected in Malta and Iceland and increase of demand will reach up to 6 %. In almost all countries we can expect share of hospital workers under 4,5 %. In EU 28, we can expect slight increase of this share from 2,33 % in 2010 to 2,67 % in dynamic scenario up to 3,04 % in static scenario.

Figure 14 – Estimation of the share of total workers in hospital care on population 15-65 at 2030

Source: Author

More detailed foresight for estimated number of workers in EU 28 in hospital sector in 2030 is presented in Table 1. There are four scenarios for target year 2030, ***static scenario*** - without changes in utilization patterns, ***2030 10% inc.*** - which assume 10 % decrease in utilization rates across all age groups (length of stay or number of hospitalizations), ***2030 Old 10 %*** - which assume 10 % of decrease in utilization rates just in older age groups (65+) and ***dynamic*** scenario with demand based on current observed trends.

Table 1 - Total demand for hospital workforce in EU 28 in four major groups of workers in 2030

	2010	2030 Static	2030 10% dec.	2030 Old 10%	2030 Dynamic
Total hospital employment	7 167 428	8 802 170	7 921 953	8 675 643	7 735 550
Physicians or doctors	958 958	1 158 361	1 042 525	1 141 602	1 027 972
Professional nurses and midwives (total)	2 448 222	2 996 230	2 696 607	2 952 943	2 644 830
Associate professional nurses	755 843	974 990	877 491	961 759	822 554
Other	3 004 406	3 579 528	3 221 576	3 528 049	3 239 626

Source: Author

The expansion demand related to four scenarios is presented in Table 2. In EU28 there can be expected increase od demand for total labour in 2030 between 570 – 1 643 thousand workers, out of 70 – 200 thousand are doctors, 200 – 550 thousand nurses and 66 – 220 thousand associate professional nurses. These shortages should be covered by education system during next decade to fulfil requirements in 2030.

Table 2 - Expansion demand for hospital workforce in EU 28 in four major groups of workers in 2030

	2030 Static	2030 10% dec	2030 Old 10%	2030 dynamic
Total hospital employment	1 634 742	754 525	1 508 214	568 122
Physicians or doctors	199 403	83 567	182 644	69 014
Professional nurses and midwives (total)	548 009	248 386	504 722	196 608
Associate professional nurses	219 147	121 648	205 916	66 711
Other	678 663	303 040	624 337	220 752

Source: Author

The source of demand for additional employees is unevenly distributed by the countries (Figure 15), In static scenario 19 % of new working places will be created in France, 18 % in United Kingdom, 14 % in Italy and 9 % in Spain and Denmark. In dynamic scenario, almost one third of expansion demand is created at Germany, 12 % in Spain, and 7 to 9 % in Italy, United Kingdom, Portugal and Nederland.

Figure 15 – Source of demand for hospital personnel in EU28 by country. Static scenario – left and dynamic scenario - right.
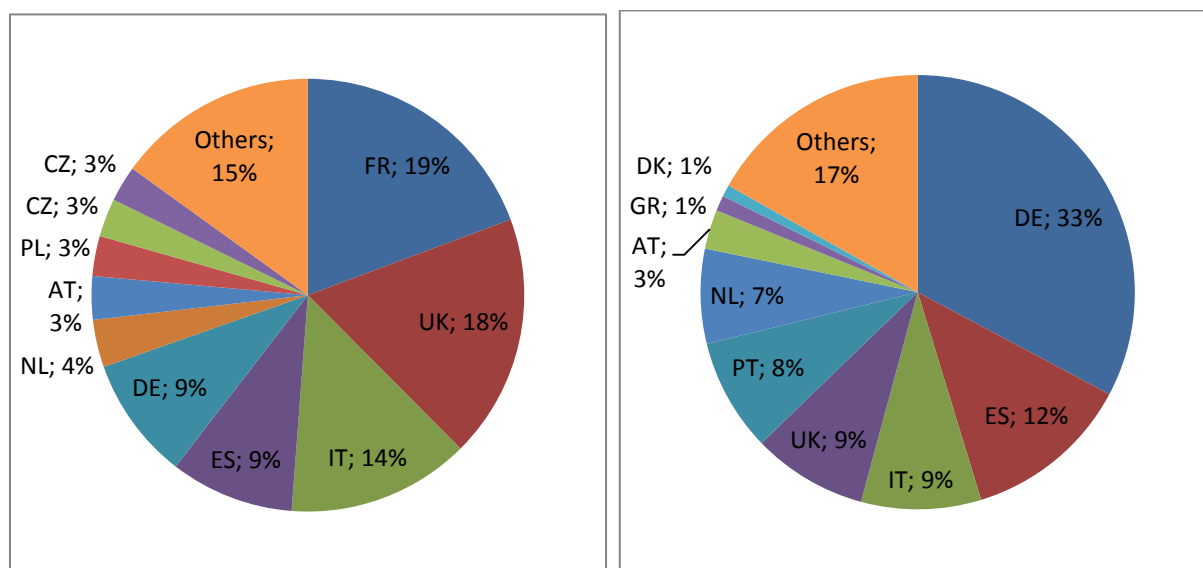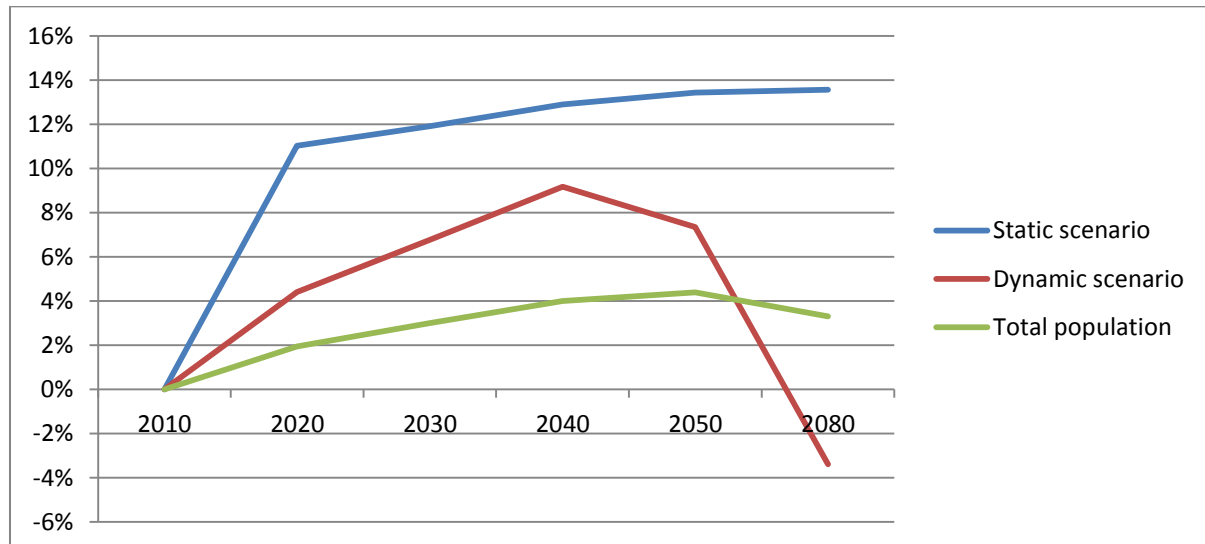

Source: Author

European projection Europop 2013 provides forecast up to 2080, which can be utilized for long term foresight of future needs in hospital care. The differences in utilization changes and changes in total population are illustrated in Figure 16. The restriction in utilization trends is more visible after 2040. Demand for workers in dynamic scenario in 2080 will be lower (-4%) than population change (3%) compared to 2010. In static scenario, most significant increase can be observed in initial period from 2010 up to 2030. Despite estimated decrease of total population in EU28 after 2080, demand for

hospital workforce will not decrease due to significant ageing. The share of total population in total workforce will also significantly increase during this period, certainly caused by decrease of population in working age.

Figure 16 – Comparison of long term foresight for demand for hospital care under static and dynamic scenarios with comparison to change of total population

Source: Author

5. CONCLUSIONS

This paper presents foresight of expected development of change of demand for hospital workforce in several scenarios up 2030 and long term foresight up to 2080. We have provided estimation of two main scenarios related to change of utilization patterns in hospital care services. In all scenarios, European population forecast Europop 2013 has been utilized. Initial analysis shows, that uncertainty about future demand for health care is pretty high and can be affected by many different factors. Current mostly decreasing trends in average length of stay couldn't be kept in long term, thus some constraints have been adopted. Countries overview has two main conclusions. Firstly, the utilization trends across countries are different and cluster analysis provide information, that we can find 6 groups, which best fit similar trends. Secondly, the age distribution of hospital care remains more stable over time and we couldn't find significant cross border influence. Therefore, the trends are distributed rather proportionally. In average in most of the countries we can expect a moderate growth in demand for hospital workforce. Additionally, we have been able to provide information about pure influence of ageing on labour demand. In that case, the differences in demographic development (mostly ageing) play still significantly lower role than change of utilization patterns.

Generally we can say that in relation to static scenario (without significant changes in utilization) substantial growth of labour demand can be expected almost in all countries. In dynamic scenario with typically decreasing trend in needs for hospital care only one third of observed countries shows expected increase of demand for hospital care (incl. Germany). We should keep in mind, that only additional demand is analysed. (Schultz, 2013(a)) shows, that average age of medical and nursing personnel is in average over 50, and we can expect also significant role (in some

countries even the most significant) of replacement demand in total demand for health care workforce.

In EU28, there can be expected increase demand for hospital workforce in all scenarios and varies between 0,57 up to 1,68 million jobs in 2030, from which 70 – 200 thousand will be doctors and almost triple of that number in case of hospital nurses. That means that in addition to replacement demand we need additionally train around 5 thousand doctors per year and 15 thousand skilled nurses in EU. Crucial role will play countries with significant ageing process and large hospital markets, such us Germany, Italy and UK. Significant source of this demand is in France, but increase of additional demand caused by ageing is not so clear in case of dynamic scenario and is caused mainly by high ratio of healthcare personnel per hospital day.

Initial assumptions play a strong role in the presented analysis. During the following years some of them should be carefully observed. Healthy ageing preventive care, increasing retirement age etc. should play significant role in changing utilization patterns between age groups, even when these are not yet observable in significant way. Implementation of relative new approach to healh care such as one day surgeries will also strongly affects needs for care in positive way.

Provided paper does not take into consideration other trends in healthcare labour force. Initially, we have assumed that there are *not any current shortages in labour force*. This is strong assumption, which can oppose the positive trends in utilization trends in some countries. Moreover, most significant role within European countries will play cross-country migration. We can expect more significant movement of medical and care personnel in the future between countries. Therefore the minimal qualification needs have to be carefully watched and unified. In any case, language issues in LLL can play the crucial role. Currently, we can observe high flow of medical workers in relation to low wage competitiveness of new member states and respected expectation about more significant shortages in new member states.

LITERATURE

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