

# Demographic trends and public health in Europe

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Demographic trends in Europe are currently being shaped by an ageing population, falling fertility rates and diverse migration flows. Fertility rates are lowest in Eastern and Southern Europe with Eastern Europe also experiencing the lowest net migration and an exodus of its working population. All regions in Europe are experiencing aging of their population with some countries having the added burden of high rates of unemployment among the working age population. The impact of these demographic changes on the current and future public health of the country depends on how countries have been preparing and adapting to demographic changes over the past years. Changes in age structure and ethnic composition will put further strain on health care and welfare systems and requires careful planning. A multi-faceted approach which goes beyond the health care system is required and countries need to look beyond their borders in search as to how countries are tackling these important issues. As Europe ages the concept of healthy aging should become an increasing priority focus for European Public Health.

## Introduction

Europe's tradition to lead the way in demographic change still holds today as it did around 200 years ago, at the beginning of the demographic transition. While the current world population has surpassed 7 billion and is expected to continue to increase and reach around 10 billion by 2050, Europe is the only world region expected to experience a population decline by 2050.<sup>1,2</sup> This decline in population growth is attributed to the low and very low fertility rates being experienced in most European countries. Decline in population growth may not necessarily be regarded as a negative phenomenon in itself since economic prosperity is often associated with a fall in birth rate as well as decreasing strain on the earth's ecosystem<sup>3</sup> however concomitantly Europe is also aging rapidly with the median age currently at 41.9 years compared to the median age in the world at 29.2 years.<sup>4</sup>

The shrinking and ageing of the European population may be partially offset if current migration trends persist into the future. However, migration varies between European countries and several countries are experiencing increasing hostility to further immigration.<sup>5</sup> Furthermore whilst migration may slow down population decline, it is not actually expected to reverse it.<sup>4</sup>

Whilst this is the overall picture of the current demographic state in Europe, demographic variations between European countries do exist.

This paper aims to describe these regional differences, explore the potential for cross-country learning and outline how current and future demographic trends need to be taken into account in public health practice.

## Data sources

The current analysis was based on data obtained from the United Nations Population Division database.<sup>2</sup> The various indicators were analysed by region: namely Northern, Southern, Eastern and Western Europe (annex 1). Other indicators were obtained from the Eurostat database.<sup>6</sup>

## Fertility trends in Europe

In 1990, all regions in Europe had total fertility rates which were below replacement level and the northern and western parts of

Europe had experienced lowering of total fertility since the 1970s (figure 1). However, while both Southern and Eastern Europe continued to experience a fall in fertility until very recently and have very low fertility levels, Western Europe and Northern Europe in particular, seem to have experienced less sharp fertility declines and have higher total fertility rates.

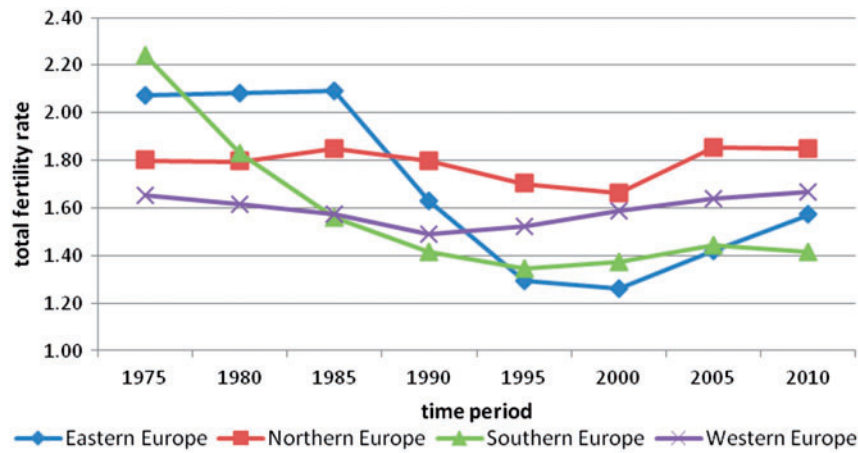
## Migration trends in Europe

Whilst great variation in net migration rates exists at individual country level and also by time period, broadly, net migration has been very low in Eastern Europe while there has been a steady increase in net migration in Western and Northern Europe (figure 2). Southern Europe has seen an overall rising trend in net migration since the late 1990s until recently, however there is much inter-country variation.

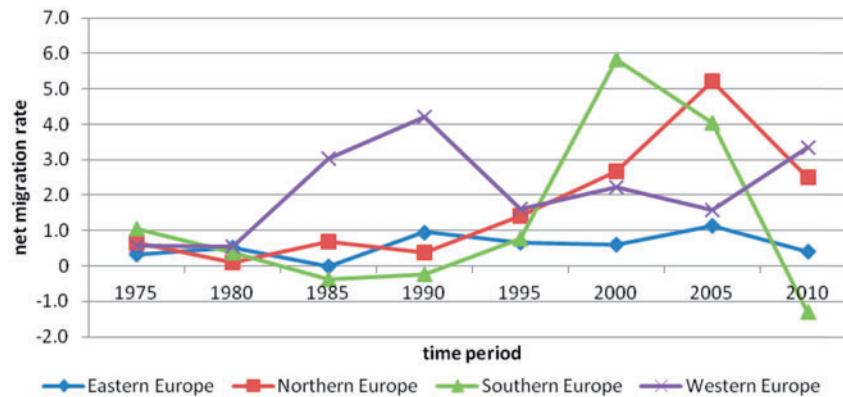
Countries like Bulgaria, Poland, Romania and Albania have experienced negative net migration for many years (figure 3). Emigration from these countries is mainly of the working age population and impacts both the size and the age structure of these populations. The sharp decline in the net migration rate witnessed in Southern Europe reflects the economic crisis which affected this region particularly negatively. It is interesting to note that this net migration decline is in spite of the fact that Southern European countries such as Italy and Greece bore the brunt of immigration from Africa and from Syria. This is explained by the outflow of working age nationals seeking employment in other parts of Europe. Figure 3 below shows a clear link between economic growth/stability and net migration with countries having experienced the worst effects during the economic crisis generally also experiencing the largest negative net migration.

## Old age dependency ratio

All regions of Europe are showing an increasing old age dependency ratio with a sharp rise observed particularly in Southern Europe (annex 2). The old age dependency ratio is the share of the population 65 years and over to the working age population aged 15–64 and reflects the burden of the older population on the working population. Old age dependency ratio was compared to older worker employment, for those countries for which this data was available (figure 4). Older worker employment is defined as



**Figure 1** Trends in total fertility rate by European Region<sup>2</sup>



**Figure 2** Trends in net migration rate per 1000 population by European Region<sup>2</sup>

those persons 55–64 years who are still in employment. It is observed that while the variation in old age dependency ratio between countries is quite small, there is a large difference in older worker employment rates, with highest rates being observed in Northern Europe. Whilst the old age dependency ratio is a useful demographic construct, it does not present the complete picture in terms of economic dependency since it does not take into account the unemployment being experienced by a substantial proportion of the denominator population (particularly youth unemployment) in certain European countries. Unemployment rates in 2016 as presented in figure 4 below were particularly high in Greece, Spain, Croatia and Cyprus. Indeed, there is increasing evidence that in parts of Southern Europe which were severely affected by the economic crisis, the elderly persons in receipt of a retirement pension are now supporting younger relatives who are unemployed or in precarious employment. Innovative indices that capture both old age dependency and dependency due to lack of employment could be helpful to devise.

## Total population projections

The average annual rate of population change which is the average exponential rate of growth of a population over a given period of time [calculated as  $\ln(P_t/P_0)/t$  where  $t$  is the length of the period, expressed as a percentage]<sup>2</sup> varies by region in Europe and by the time period under study (figure 5). Eastern Europe has seen a sharp drop in its average annual population growth over some time with a

shrinking of its population since the 1990s. In contrast Northern and to a lesser extent Western Europe have until now (period 2010–15) seen overall population growth over the past 30 years. Though exhibiting population growth, Southern Europe until the late 1990s experienced a continual decline in the average annual growth rate, until a sudden surge in population growth, probably attributed to a large influx of migrants followed by a precipitate fall coinciding with the economic recession. Projecting these trends forward (using the medium variant) shows a decline in the annual rate of population change in all regions in Europe, with all regions except the Northern region experiencing population decline.

## The public health impact of changing demography in Europe

The modelling available that was used indicates that the future population of Europe is likely to shrink and this will impact European countries to different extents. The impact of fertility decline, increase in life expectancy and migration varies between countries and this affects both the population structure as well as population growth or decline to different degrees in the various European countries. The changes in the age structure and ethnic composition of Europe will have an impact on public health and health systems. This raises questions regarding sustainability and whether countries are preparing sufficiently for the demographic and ethnic changes developing.

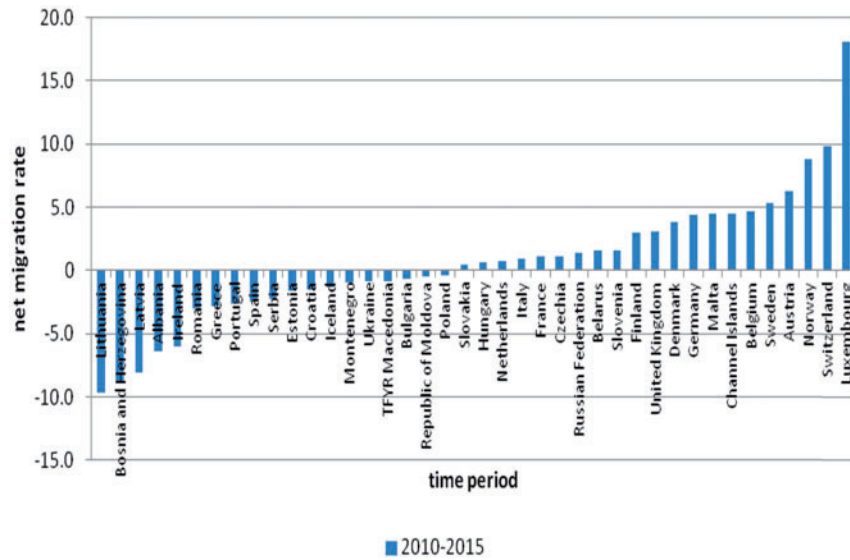


Figure 3 Net migration rate per 1000 population by European Country for the period 2010–15<sup>2</sup>

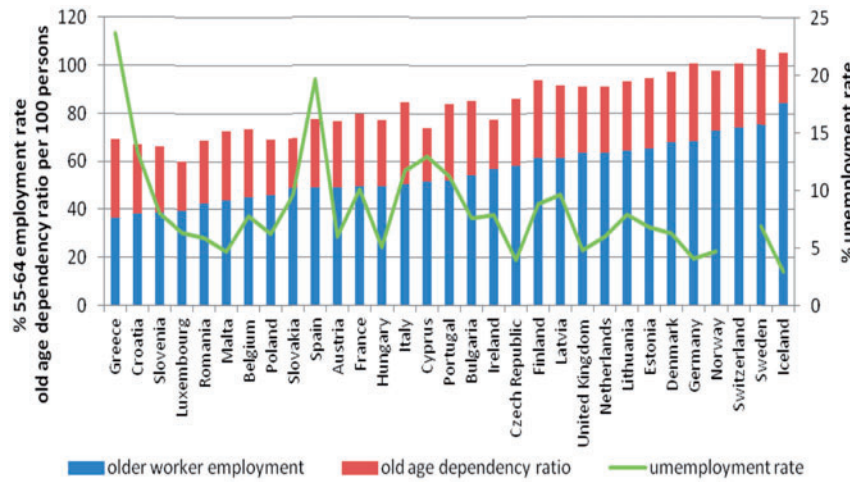


Figure 4 older worker employment, old age dependency ratio and % unemployment rate in 2016 by country<sup>6</sup>

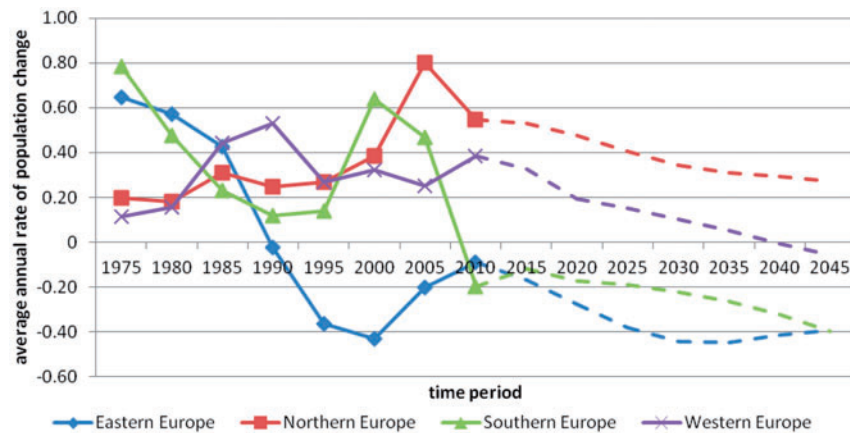


Figure 5 Trends and projected trends (medium variant) in average annual rate of population change by European Region<sup>2</sup>

To date most of the focus with respect to the greying of Europe from a public health and health systems perspective has been on the health care needs of the elderly population and the challenges that this will pose in terms of financing and provision of health services,<sup>7</sup>

particularly with a focus on long-term care.<sup>8</sup> Changing demographics may well pose a strain on the welfare system. This needs to be targeted through multiple approaches, such as family related benefits which support couples wishing to have children as well as facilitating

increase female employment and the Nordic countries are a good example of this.<sup>9</sup> It has been also shown that fertility levels are higher with increasing gender equity levels in the developed world.<sup>10</sup> However, the fertility rate which can be observed to have increased in many parts of Europe since around the year 2000 can be partly explained by the postponement of women in having children to older ages reaching a threshold, with little further increase in the mean age of women having children in recent years.<sup>11</sup>

The effects of demographic aging on health care expenditure have often been overestimated as for example in the area of pharmaceutical expenditure where innovation seems to be a more important driver.<sup>12</sup>

Furthermore, ageing per se is not sufficient to determine health needs. The concept of healthy ageing and the evolution of frailty are important aspects to take into account.<sup>13</sup> It remains indisputable that the promotion of healthy ageing should be a specific objective across all public health programmes. Preventive actions that seek to improve the health of the working age population can have a significant effect on the health profile of the new elderly population in Europe in the coming years. Whilst most countries in Europe have experienced improvements in longevity and healthy life expectancy over the past decades, increasing health inequalities and data on stagnation as well as mild reversal of life expectancy are beginning to emerge.<sup>14</sup> There is therefore no room for complacency from a public health perspective if healthy ageing is to remain a priority for European public health in the years to come.

The above arguments are only a very limited perspective and the public health impacts of demographic change will be far wider. For example, in planning for strategies such as sexual health, the need to move away from focussing only on young people and addressing the unmet needs among older people has been highlighted.<sup>15</sup> The impact of ageing on public mental health is another obvious area that requires closer attention in the coming years. However, demography will also affect areas of public health planning and practice such as communicable disease. It has been shown that there are clear, but diverging effects of an ageing population on the estimated disease burden of influenza and HBV in the Netherlands. Factoring in a dynamic demographic approach is important for planning communicable disease control strategies in the future.<sup>16</sup>

Migration and changing ethnic composition is also a very important factor which may have an impact on population growth and structure in Europe. While the European population is shrinking, that in Africa is increasing rapidly<sup>1</sup> and poor and unstable political conditions in these countries results in an emigration flux which is being disproportionately distributed in Europe. Some European countries, mainly in Eastern and Southern Europe are experiencing outbound migration often of their working young population with little or no influx of migrants from other countries. Migrant health has become a priority discussion topic. However public health practice goes

beyond addressing the health of migrants to including the need for specific attention to changing ethnic composition when planning health strategies and health services. Indeed, increasing attention to racial and ethnic composition and how this affects health and well being is likely to be one of the key challenges facing public health leaders in the next decades in Europe.<sup>17</sup>

*Conflicts of interest:* None declared.

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## Annex 1

Countries listed in the different European Regions in the United Nations Population Division database<sup>2</sup>

Eastern Europe	Northern Europe
Belarus	Channel Islands
Bulgaria	Denmark
Czechia	Estonia
Hungary	Finland
Poland	Iceland
Republic of Moldova	Ireland
Romania	Latvia
Russian Federation	Lithuania
Slovakia	Norway
Ukraine	Sweden
	United Kingdom
Southern Europe	Western Europe
Albania	Austria
Bosnia and Herzegovina	Belgium
Croatia	France
Greece	Germany
Italy	Luxembourg
Malta	Netherlands
Montenegro	Switzerland
Portugal	
Serbia	
Slovenia	
Spain	
TFYR Macedonia	

## Annex 2

Trends in old age dependency ratio by European Region<sup>2</sup>

