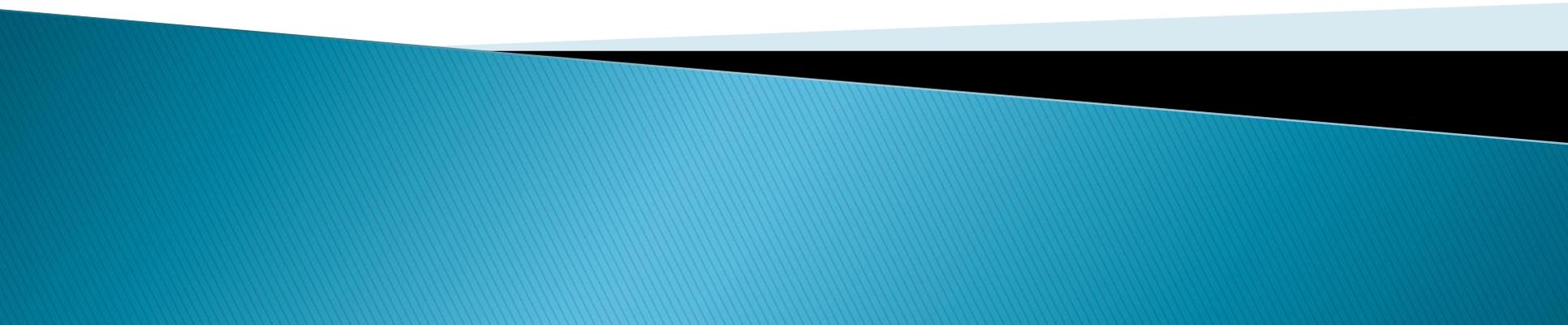


Epidemiology of chronic noninfectious diseases in the EU

Prof. Dr. Gabor Ternak



What is a noninfectious disease?

- ▶ Noninfectious diseases can't be passed from one person to another. Instead, these types of diseases are caused by factors such as the environment, genetics and lifestyle.
- ▶ The term comes from a distinction health experts like to make between infectious diseases -- which are caused by organisms and can be passed from one person to another (also known as contagious) -- and those that can't.
- ▶ Examples of these infectious diseases are colds, flu, herpes, measles and even AIDS, which is caused by infection with HIV.

What is a noninfectious disease?

- ▶ Noninfectious diseases are not caused by specific organisms and are studied and cared for more in developed countries, where many infectious diseases are under control.
 - ▶ Examples of inherited noninfectious conditions include cystic fibrosis and Down syndrome, and examples of conditions caused by environmental or lifestyle factors include heart disease and skin cancer.
 - ▶ We can't change our genetic codes, but there are plenty of ways to prevent other noninfectious diseases.
 - ▶ For example, cutting down on exposure to cigarette smoke and the sun's rays will prevent certain types of cancer.
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Examples

- ▶ Malignancies
- ▶ Atherosclerosis
- ▶ Diabetes
- ▶ Obesity
- ▶ Myocardial infarction
- ▶ Psoriasis
- ▶ COPD
- ▶ Autoimmun disorders
- ▶ Mental disorders
- ▶ Chronic kidney disorders
- ▶ Inherited haemoglobinopathies
- ▶ Rheumatoid arthritis
- ▶ Muscle and Joint Disease
- ▶ Bone Disease

Chronic Illness

- ▶ The data available here reflect the incidence of chronic illness of Europeans.
- ▶ The incidence of rheumatism/arthritis, allergies, high blood pressure (hypertension), asthma, diabetes and cancer is, overall in Europe, 22.1 per cent, 18.3 per cent, 16.5 per cent, 7.2 per cent, 6.0 per cent and 2.6 per cent, respectively .
- ▶ The incidence of these chronic illnesses varies strongly from one country to another, with, for instance, 38.2% of Portuguese having rheumatism or arthritis, but just 14.7% of Greeks having the same, illustrating that regional trends are not always present.
- ▶ Some previous reports have suggested that cardiovascular disease may strike Southern Europeans less, but a similar trend is not discernible with respect to the illnesses discussed here.

Chronic Illness

| | Rheumatism, arthritis | Allergies | Hyper- tension | Asthma | Diabetes | Cancer |
|---------|--------------------------|-----------|-------------------|--------|----------|--------|
| P | 38.2 | 18.1 | 22.4 | 8.3 | 10.0 | 2.4 |
| FIN | 24.1 | 26.3 | 20.7 | 11.0 | 7.4 | 4.1 |
| DK | 21.8 | 26.9 | 15.5 | 9.8 | 3.7 | 4.2 |
| I | 27.9 | 22.6 | 16.7 | 6.7 | 5.4 | 1.9 |
| UK | 24.8 | 19.1 | 15.7 | 13.8 | 4.0 | 3.6 |
| L | 24.0 | 22.7 | 13.0 | 7.6 | 4.3 | 3.5 |
| NL | 19.9 | 21.7 | 15.9 | 8.7 | 4.6 | 3.4 |
| B | 20.9 | 19.1 | 18.3 | 6.1 | 5.1 | 3.6 |
| S | 16.6 | 26.9 | 12.1 | 9.6 | 4.1 | 3.4 |
| EU 15 | 22.1 | 18.3 | 16.5 | 7.2 | 6.0 | 2.6 |
| F | 20.3 | 20.1 | 16.7 | 6.9 | 5.6 | 2.4 |
| IRL | 17.1 | 9.5 | 17.3 | 10.5 | 6.5 | 5.5 |
| D West | 18.3 | 16.1 | 16.2 | 4.0 | 7.7 | 2.3 |
| D Total | 18.1 | 15.4 | 16.9 | 3.7 | 7.8 | 2.5 |
| D Ost | 17.5 | 12.7 | 19.3 | 2.7 | 8.2 | 3.2 |
| E | 22.1 | 11.8 | 15.9 | 4.4 | 7.2 | 1.7 |
| A | 15.1 | 16.7 | 16.4 | 4.6 | 6.7 | 1.6 |
| GR | 14.7 | 11.7 | 14.6 | 4.7 | 4.9 | 1.4 |

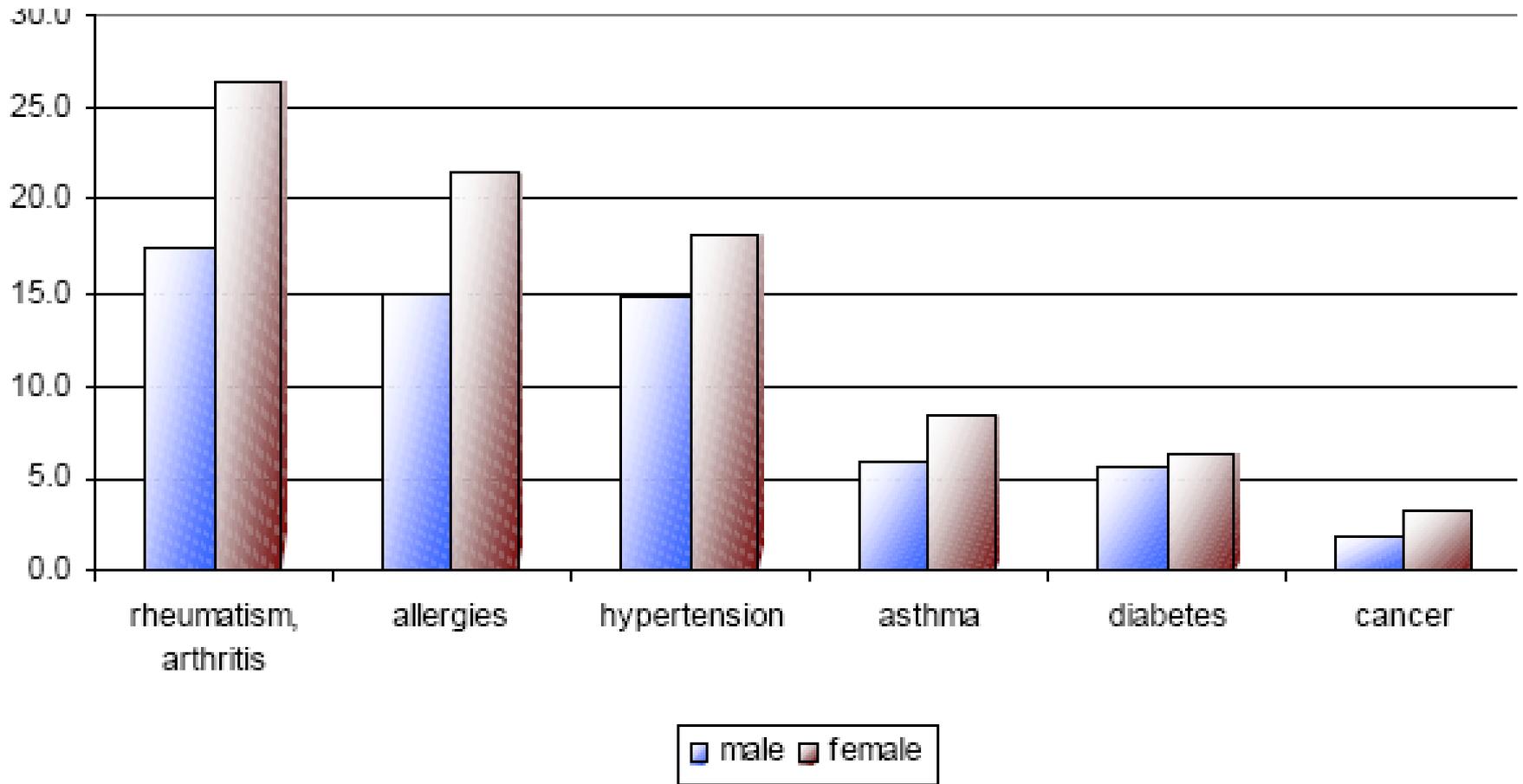
Chronic illnesses

- ▶ The Portuguese, Finns and Danes have the highest incidence of chronic illness overall in Europe.
- ▶ In terms of individual illnesses, the Portuguese have the highest incidence of rheumatism and arthritis (38.2%), diabetes (10.0%) and hypertension (22.4%) in Europe, but are below the EU average for incidence of cancer and allergies.
- ▶ Finland is the only EU state which has a higher incidence of chronic illness than the EU average for all illnesses.
- ▶ Sweden has the highest incidence of allergies, with 26.9 per cent, while Ireland, with 5.5 per cent, has the highest incidence of cancer and the UK, at 13.8 per cent, the highest rate for asthma.

Chronic illnesses

- ▶ The incidence of cancer (2.6 per cent overall, with a range from 1.4 per cent to 5.5 per cent) seems surprisingly low, although it must be noted that, in contrast to the other illnesses discussed here, cancer has the highest mortality rate, resulting in fewer survivors able to report that they have had cancer.
- ▶ Greece has the lowest incidence of cancer and rheumatism, while Germany has the lowest rate of asthma (there is quite a difference between the former East and the former West Germany, with East Germany having a 2.7 per cent incidence and West Germany a 4.0 per cent incidence).
- ▶ Denmark has the lowest rate of diabetes with 3.7 per cent.

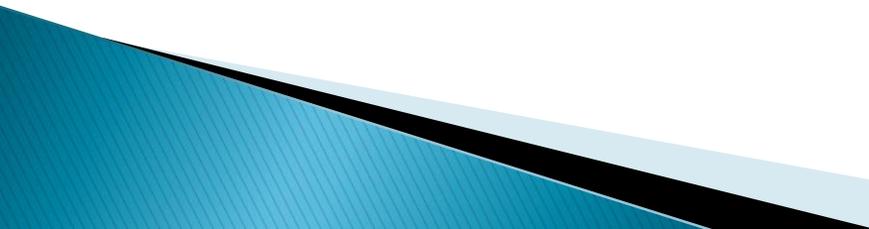
Gender-related incidence of chronic diseases



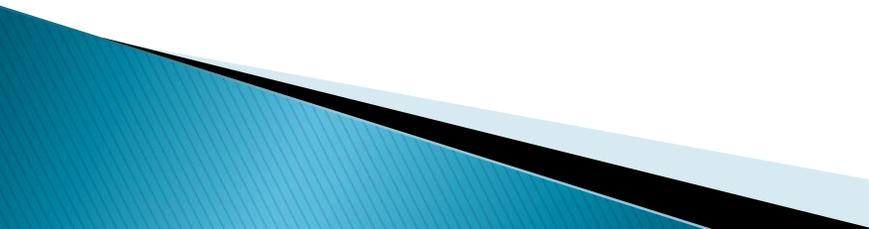
Long-Term Treatment

- ▶ Denmark, Portugal and the United Kingdom have the highest percentage of people undergoing long-term treatment, with 31.5%, 31.3% and 31.0%, respectively, in comparison to the EU average of 25.8 per cent.
- ▶ Sweden (21.9%), Ireland (19.9%) and Austria (14.5%) have the lowest incidence of long-term treatment among Europeans
- ▶ Rheumatism, hypertension and cardiovascular disease are the top three causes for longterm treatment in the European Union (although, strictly speaking, 'Other reason' is the second-most common reason for long-term treatment).

Long-Term Treatment

- ▶ There is some variation, however, with other illnesses being the top three for various countries.
 - ▶ Leaving 'other' aside, the top three causes of long-term treatment are rheumatism/arthritis (except in Finland), hypertension (except the Netherlands, Germany and Austria) and either cardio-vascular disease (in 8 cases) or diabetes (in 8 cases).
 - ▶ In Finland and Ireland, asthma is the third cause of long-term treatment, while in Denmark, depression and allergies are the second and third causes.
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General situation

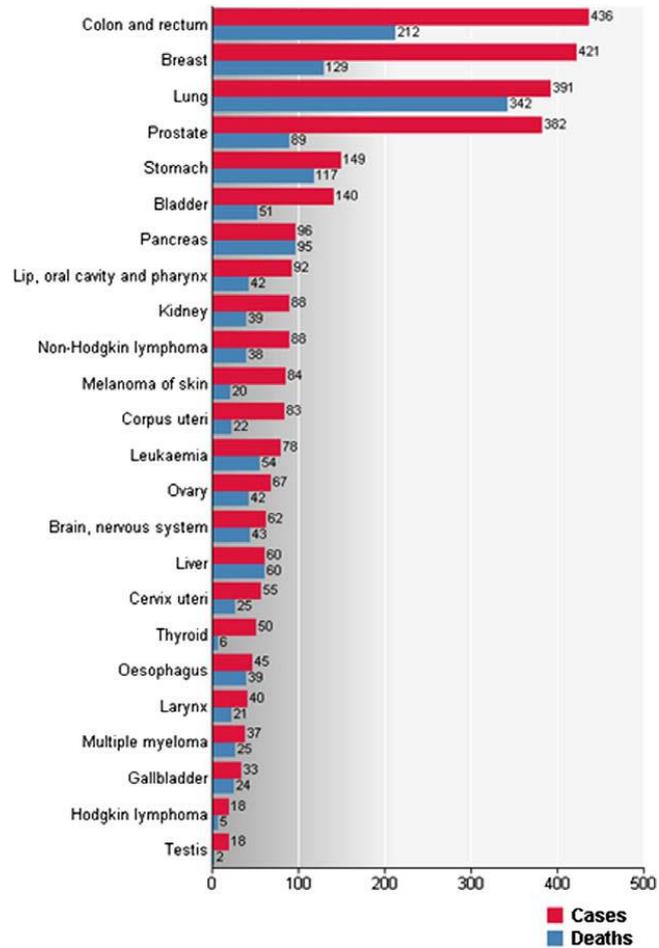
- ▶ Nearly one-quarter of Europeans suffer some form of rheumatism or arthritis, while nearly one-fifth suffer from allergies, and just about 16% suffer from hypertension.
 - ▶ Decreasing income is related to increasing incidence of rheumatism/arthritis, hypertension and diabetes.
 - ▶ More women than men suffer chronic illness.
 - ▶ Inhabitants of Luxembourg, former East Germans and Austrians have seen doctors the most in the previous year, and Portuguese, Greeks and Irish the least.
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General situation

- ▶ About one-quarter of all Europeans are under long-term treatment; the major causes of treatment are rheumatism/arthritis (20.4%), hypertension (15.5%) or diabetes (13.1%).
- ▶ Diabetes is more common among those with less education, while depression most affects those with more education.
- ▶ Nearly one-third of Europeans are not missing any teeth, while just seven per cent are missing all of their teeth.
- ▶ The plurality of Europeans, 39 per cent, are missing 1 to 5 teeth, while just about ten per cent each are missing 6 to 10, more than 10 (but not all) and all.

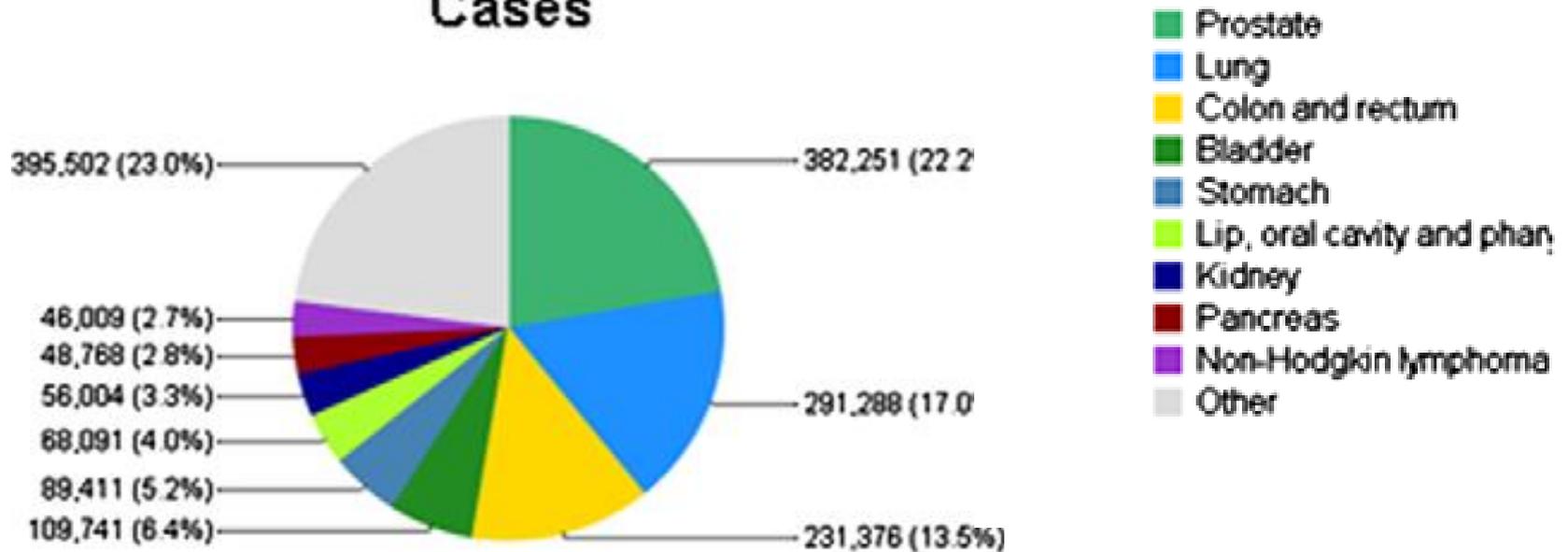
The Nordic countries have the best dental health

Malignancies



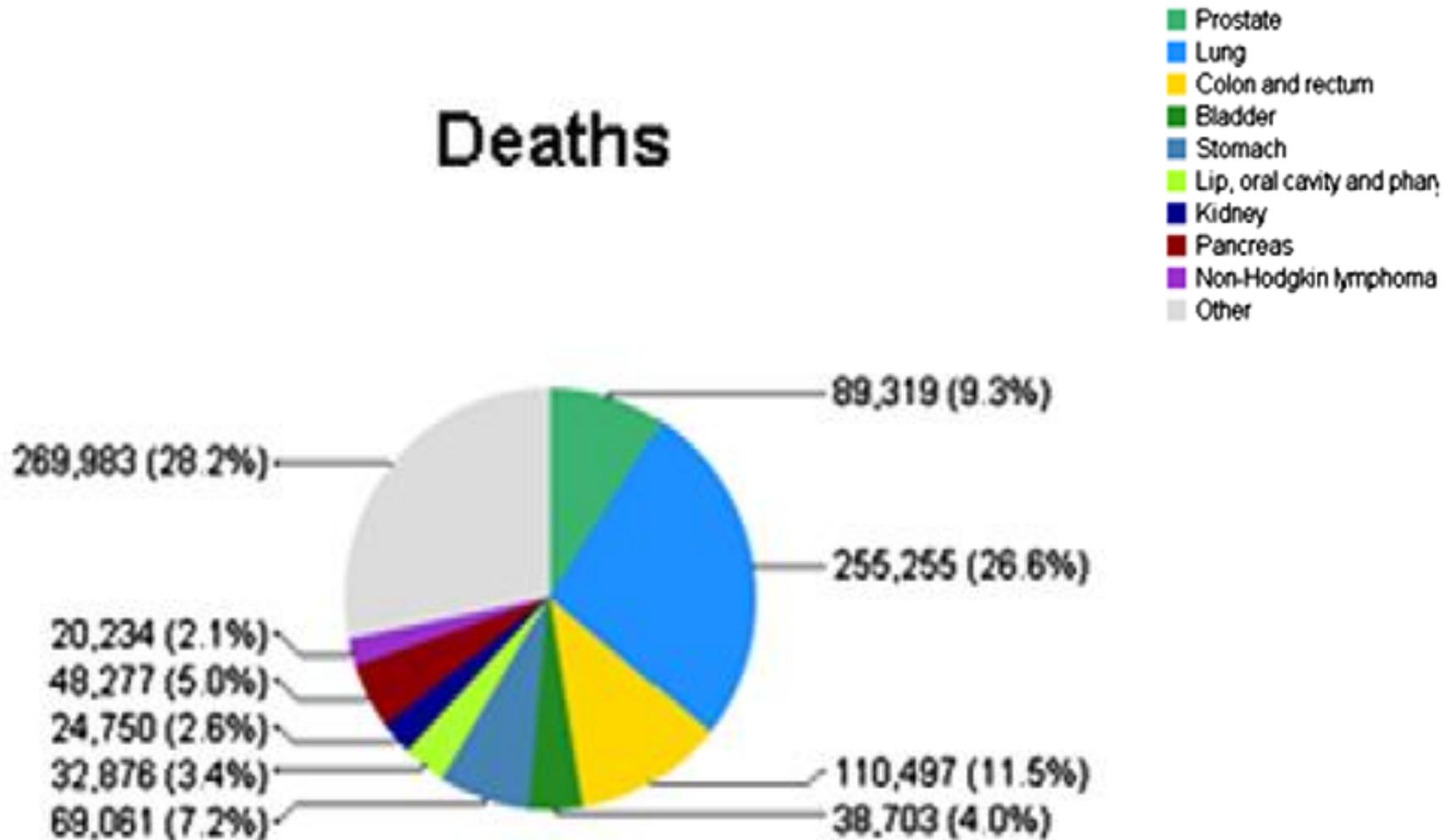
Prevalence of cancer in male

Male Cases



Mortality among males

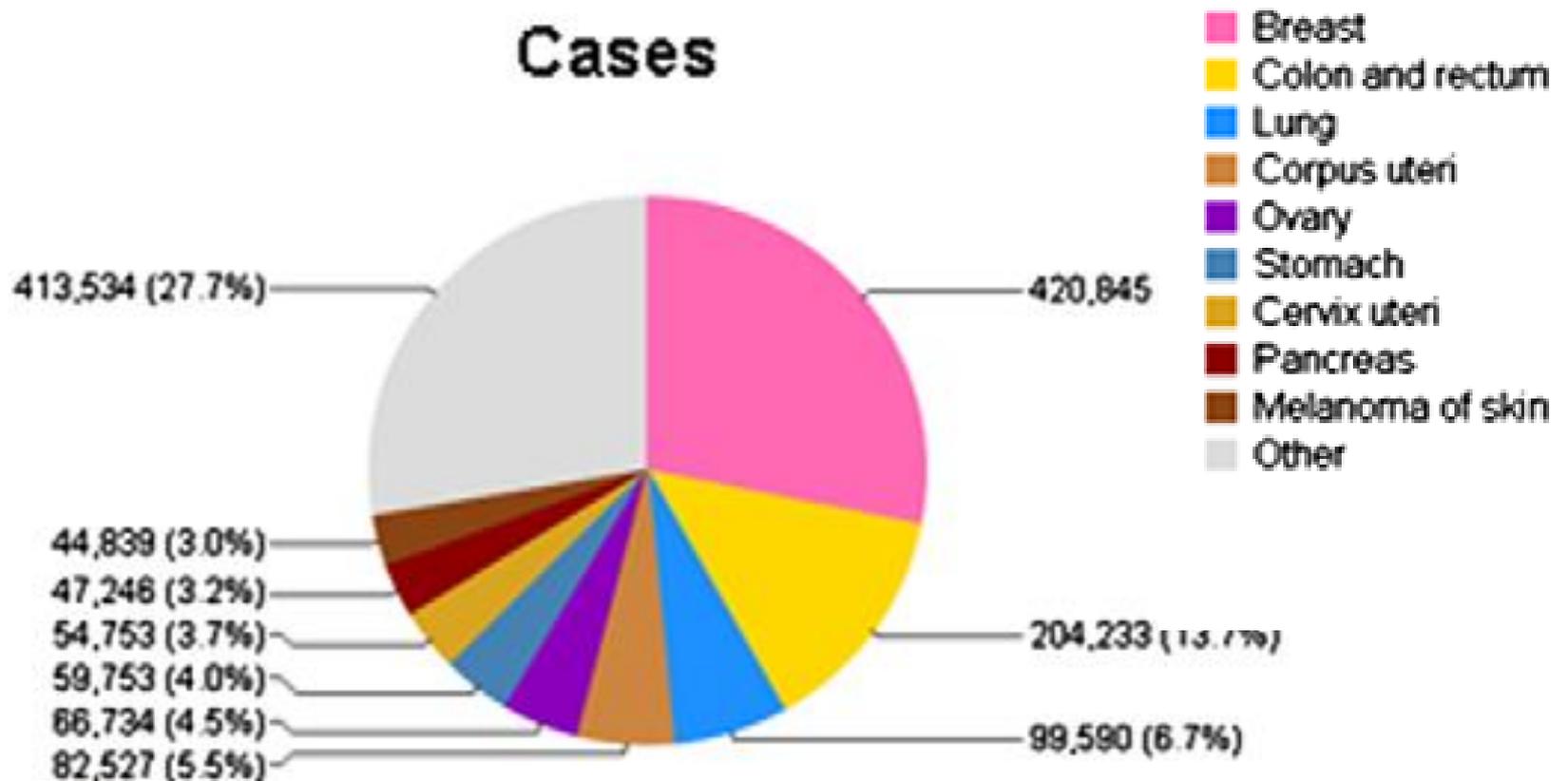
Deaths



Prevalence of cancer in female

Female

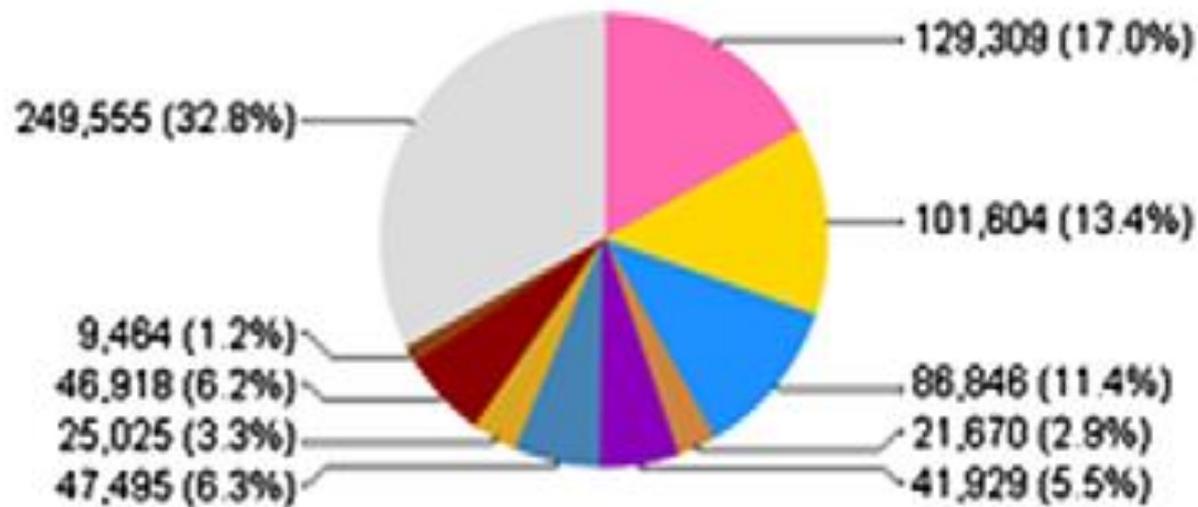
Cases



Mortality among females

Deaths

- Breast
- Colon and rectum
- Lung
- Corpus uteri
- Ovary
- Stomach
- Cervix uteri
- Pancreas
- Melanoma of skin
- Other



| | Incidence | | | Mortality | | |
|----------------------------|------------|--------|--------|------------|-------|--------|
| | Both sexes | Male | Female | Both sexes | Male | Female |
| Oral cavity and pharynx | 66.6 | 48.9 | 17.7 | 27.1 | 20.8 | 6.3 |
| Oesophagus | 33.3 | 25.0 | 8.3 | 28.8 | 21.6 | 7.2 |
| Stomach | 82.7 | 50.4 | 32.3 | 61.5 | 36.9 | 24.6 |
| Colon and rectum | 333.4 | 183.0 | 150.4 | 148.8 | 80.0 | 68.8 |
| Liver | 46.6 | 31.7 | 14.9 | 46.5 | 30.5 | 16.0 |
| Gallbladder | 23.5 | 9.3 | 14.2 | 17.2 | 6.4 | 10.8 |
| Pancreas | 68.5 | 34.6 | 33.9 | 70.2 | 35.2 | 35.0 |
| Larynx | 28.9 | 25.8 | 3.1 | 12.9 | 11.6 | 1.3 |
| Lung | 288.1 | 208.2 | 79.9 | 252.5 | 181.9 | 70.6 |
| Melanoma of skin | 67.4 | 32.1 | 35.3 | 14.1 | 7.8 | 6.3 |
| Breast | | | 332.8 | | | 89.8 |
| Cervix uteri | | | 31.4 | | | 13.6 |
| Corpus uteri | | | 55.9 | | | 12.9 |
| Ovary | | | 45.3 | | | 28.8 |
| Prostate | | 338.7 | | | 70.8 | |
| Testis | | 15.3 | | | 1.0 | |
| Kidney | 71.6 | 45.7 | 25.9 | 31.5 | 19.7 | 11.8 |
| Bladder | 110.5 | 86.3 | 24.2 | 38.2 | 28.3 | 9.9 |
| Brain, nervous system | 40.2 | 22.0 | 18.2 | 31.4 | 17.0 | 14.4 |
| Thyroid | 33.0 | 8.3 | 24.7 | 3.6 | 1.3 | 2.3 |
| Hodgkin disease | 11.6 | 6.3 | 5.3 | 2.6 | 1.4 | 1.2 |
| Non-Hodgkin lymphoma | 73.7 | 38.6 | 35.1 | 31.1 | 16.4 | 14.7 |
| Multiple myeloma | 32.0 | 16.4 | 15.6 | 20.9 | 10.4 | 10.5 |
| Leukaemia | 59.7 | 33.2 | 26.5 | 40.4 | 22.2 | 18.2 |
| All sites (excluding skin) | 2457.6 | 1344.4 | 1113.4 | 1231.2 | 691.2 | 540.0 |

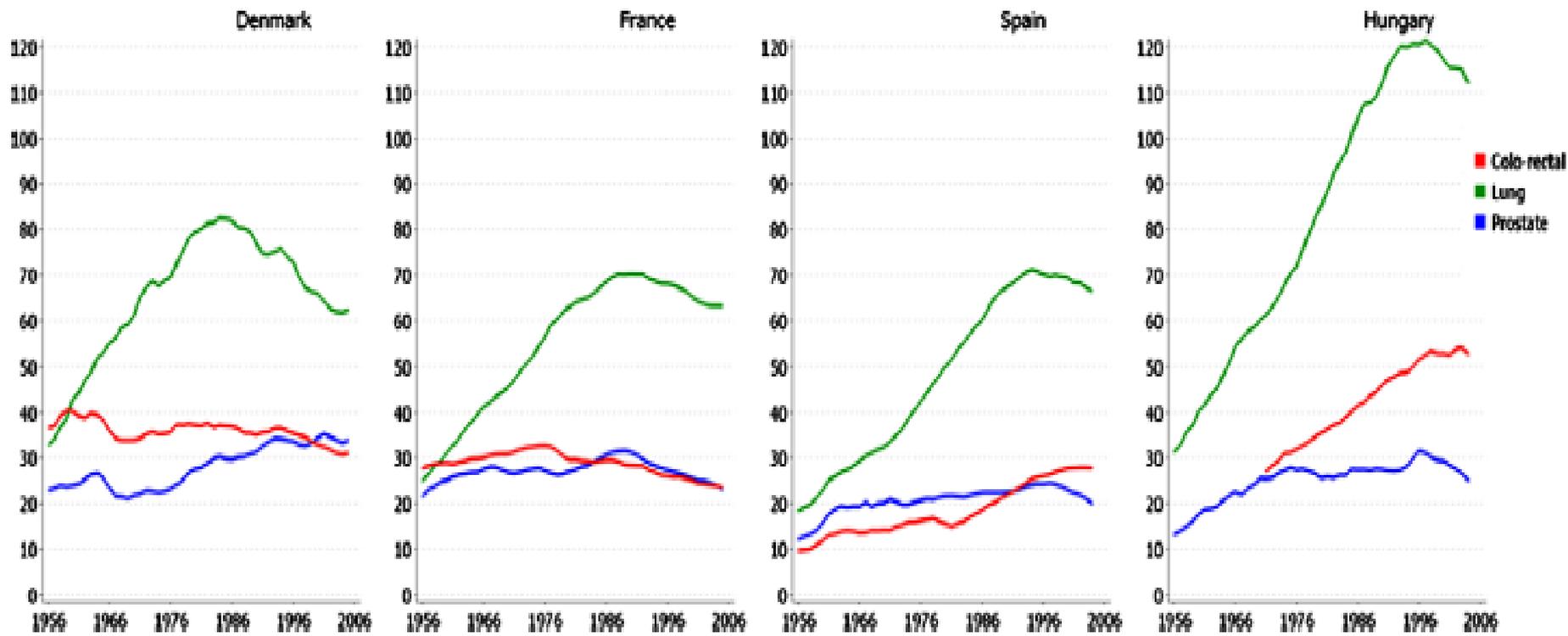


Fig. 4a - Trends in age-standardised (European standard) mortality rates from colorectal, lung and prostate cancers in males

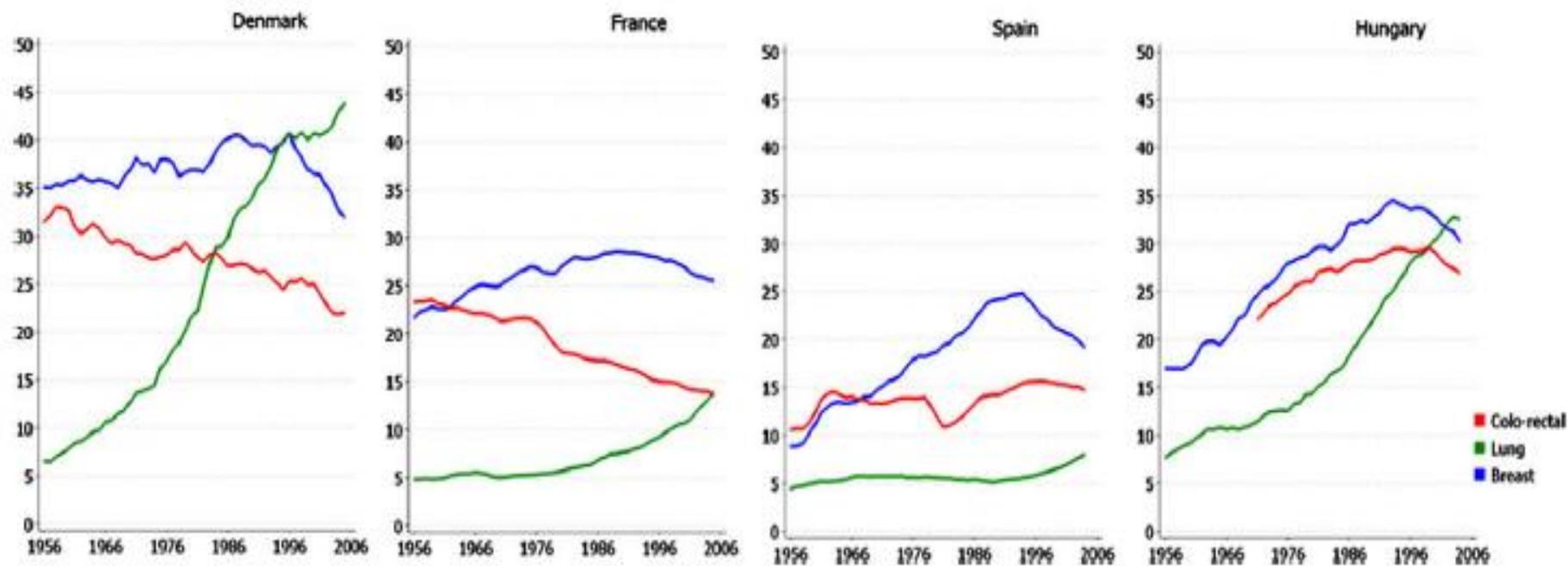
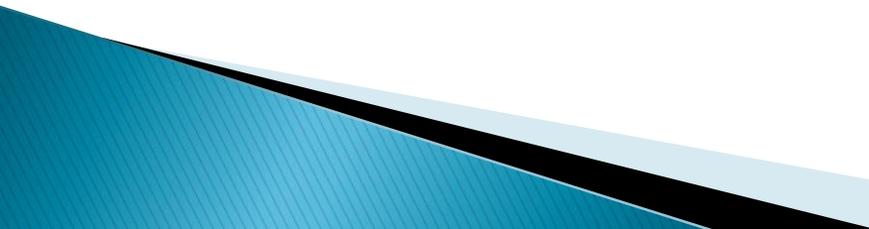


Fig. 4b – Trends in age-standardised (European standard) mortality rates from colorectal, lung and breast cancers in females in Denmark, France, Spain and Hungary (Source: WHO mortality database⁹).

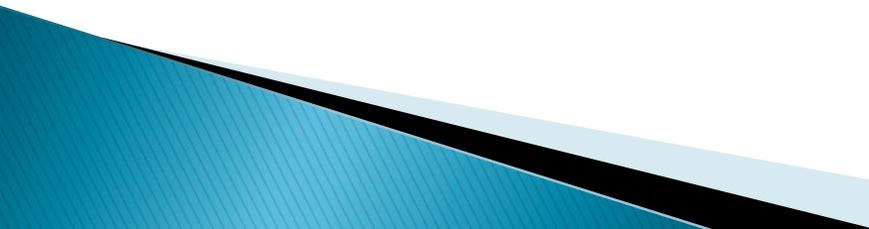
Trends in age-specific coronary heart disease mortality in the European Union over three decades: 1980–2009

- ▶ Recent decades have seen very large declines in cardiovascular disease (CVD), and coronary heart disease (CHD) mortality specifically, across the European Union (EU), with rates of CVD mortality falling by 30% in both sexes and CHD mortality falling by a third in men and over a quarter in women between 1985–89 and 2000–04.
 - ▶ These trends have been attributed to improved treatment and care, which has helped to reduce case-fatality ratios, as well as improved primary prevention and risk factor management which has reduced incidence rates of disease.
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Trends in age-specific coronary heart disease mortality in the European Union over three decades: 1980–2009

- ▶ Cardiovascular disease remains, however, the main cause of death in most European countries, with CHD and stroke accounting for the majority of these deaths.
 - ▶ Furthermore, many risk factors for CHD, particularly obesity and diabetes, have been increasing substantially over the same period, while rates of hypertension have plateaued after substantial declines.
 - ▶ Trends in the prevalence of these risk factors vary widely between countries and age groups, and it is not yet clear what impact these changes will have on mortality rates in the context of improved treatment and care for CHD.
 - ▶ Smoking rates are still quite high on a world scale in some EU countries, despite a general trend to reductions in smoking prevalence, and it is probable that this contributes to inequalities in the regio
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Trends in age-specific coronary heart disease mortality in the European Union over three decades: 1980–2009

- ▶ It is hypothesized that recent upwards trends in obesity and diabetes
 - ▶ may be beginning to cancel out the beneficial effect of reduced smoking rates and improved care and treatment on CHD mortality, and that this effect may be demonstrated by examining CHD mortality trends in younger age groups.
 - ▶ Although mortality rates in younger age groups make a relatively small contribution to total CHD mortality, developments in younger age groups are important indicators for public health, which may represent a cohort effect that—if maintained—would result in significant future impacts on the burden of CHD.
 - ▶ Evidence of CHD mortality rates beginning to plateau in younger age groups has been demonstrated to varying extents and at differing time points in England and Wales, Scotland, USA, and Australia.
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Diabetes

- ▶ Diabetes is a chronic metabolic disease, characterised by high levels of glucose in the blood.
 - ▶ It occurs either because the pancreas stops producing the hormone insulin (Type 1 diabetes), or through a combination of the pancreas having reduced ability to produce insulin alongside the body being resistant to its action (Type 2 diabetes).
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Diabetes

- ▶ People with diabetes are at a greater risk of developing cardiovascular diseases such as heart attack and stroke if the disease is left undiagnosed or poorly controlled.
 - ▶ They also have elevated risks for sight loss, foot and leg amputation due to damage to the nerves and blood vessels, and renal failure requiring dialysis or transplantation.
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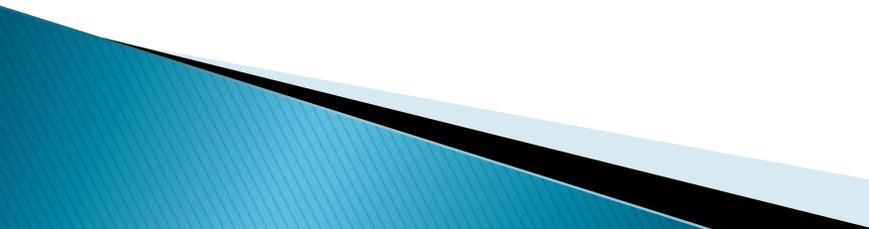
Diabetes

- ▶ Diabetes was the principal cause of death of more than 100 000 persons in EU member states in 2011, and is a leading cause of death in most developed countries.
- ▶ However, only a minority of persons with diabetes die from diseases uniquely related to the condition – in addition, about 50% of persons with diabetes die of cardiovascular disease, and 10–20% of renal failure (IDF, 2011).

Diabetes

- ▶ Diabetes is increasing rapidly in every part of the world, to the extent that it has now assumed epidemic proportions.
- ▶ Estimates suggest that more than 6% of the population aged 20–79 years in EU member states, or 30 million people, had diabetes in 2011, with 42% of diabetic adults aged less than 60 years (IDF, 2011; Whiting *et al.*, 2011).
- ▶ *If left unchecked, the* number of people with diabetes in EU member states will reach more than 35 million in less than 20 years.

Diabetes

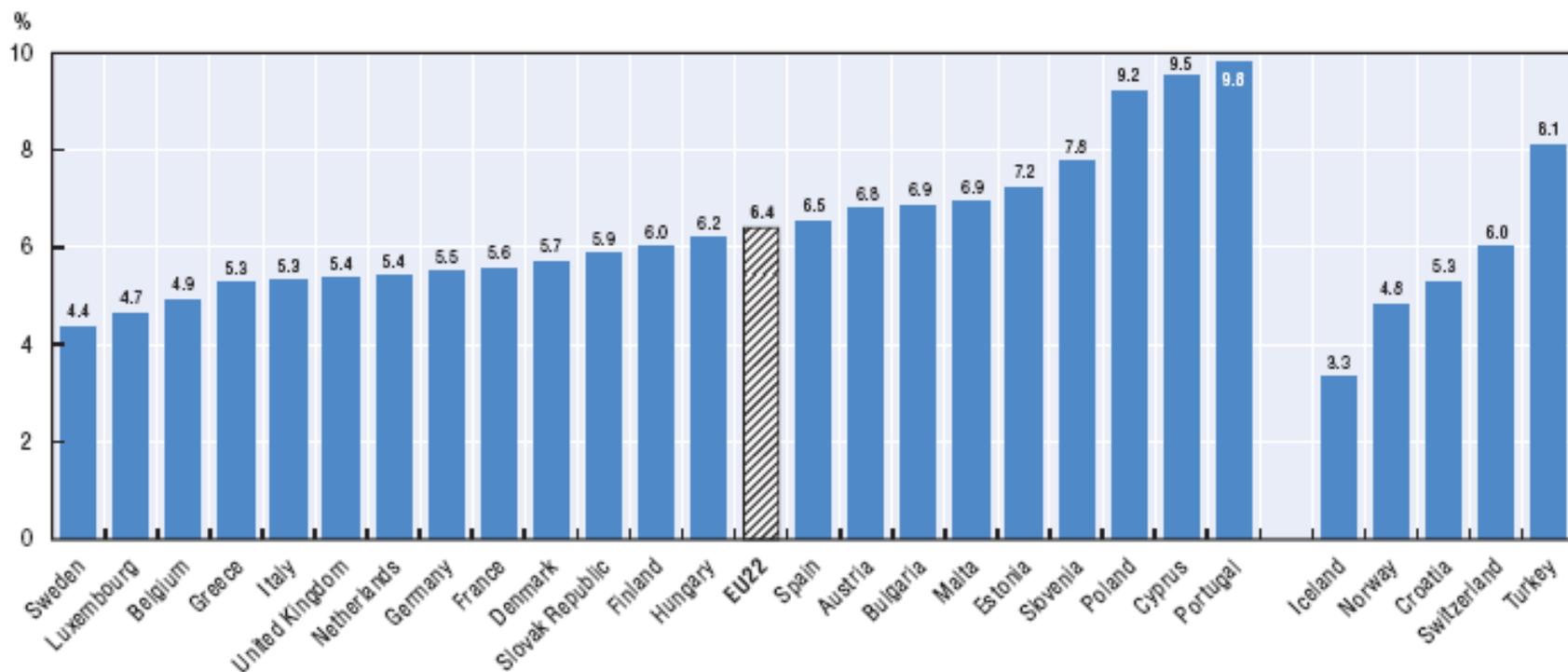
- ▶ Less than 5% of adults aged 20–79 years in Belgium, Iceland, Luxembourg, Norway and Sweden have diabetes, according to the International Diabetes Federation.
 - ▶ This contrasts with Portugal, Cyprus and Poland, where 9% or more of the population of the same age have the disease.
 - ▶ In Europe, abnormal glucose tolerance shows little association with affluence, except in a few countries.
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Diabetes

- ▶ Type 1 diabetes accounts for only 10–15% of all diabetes cases.
- ▶ It is the predominant form of the disease in younger age groups in most developed countries.
- ▶ Based on disease registers and recent studies, the annual number of new cases of Type 1 diabetes in children aged under 15 years is high at 25 or more per 100 000 population in Nordic countries (Finland, Norway and Sweden).
- ▶ Bulgaria, Croatia and Switzerland have less than ten new cases per 100 000 population.
- ▶ Alarmingly, there is evidence that Type 1 diabetes is developing at an earlier age among children.

Diabetes

1.14.1. Prevalence estimates of diabetes, adults aged 20-79 years, 2011



Obesity in adults

