



pwc

Healthcare outcomes and expenditure in Central and Eastern Europe – a review

June 2021

strategy&

Part of the PwC network



Introduction

Assessing public healthcare spending in Central and Eastern Europe and its implications

- PricewaterhouseCoopers UK (PwC) was engaged by the European Federation of Pharmaceutical Industry Associations (EFPIA) to examine the case for increasing healthcare spending in Central and Eastern Europe (CEE).
- Health outcomes play an important role in driving economic growth whilst the level of healthcare spending shapes countries' health outcomes. Historically, the countries of CEE have spent less on public healthcare than other parts of the European Union (EU).
- This report examines the pattern of public spending on healthcare in the CEE countries and its consequences for health outcomes, as well as fiscal sustainability and economic prosperity.
- The focus is on nine CEE countries: Bulgaria, Croatia, Czech Republic, Hungary, Lithuania, Poland, Romania, Slovakia and Slovenia. These are compared to France, Germany, Italy, Spain and the UK, the largest five EU countries in 2019. These countries have some of the most developed healthcare systems in Europe.
- This document is structured in four further sections each of which deals with one issue:
 - Why CEE governments' lower spending on healthcare than the EU5 is linked to their poorer health outcomes, when compared to the EU5.
 - How increased healthcare spending will improve health outcomes, boost economic performance and improve fiscal sustainability.
 - Why CEE health systems require further investment to meet future challenges and be financially sustainable over the longer term.
 - Why the efficiency and effectiveness of spending is as crucial to improving health as the level of spending.
- The analysis in this report is based on data published before the COVID-19 pandemic, and therefore doesn't consider the short-term impacts of COVID-19 on health outcomes and healthcare spending. This was due to a lack of accurate and comparable data for all countries in scope of our analysis at the point of evidence gathering.
- The pandemic has further demonstrated the crucial link between health outcomes and economic performance. The impact of COVID-19 on global health and healthcare investment has been profound and will shape healthcare policy for decades to come, as discussed on the following slide.



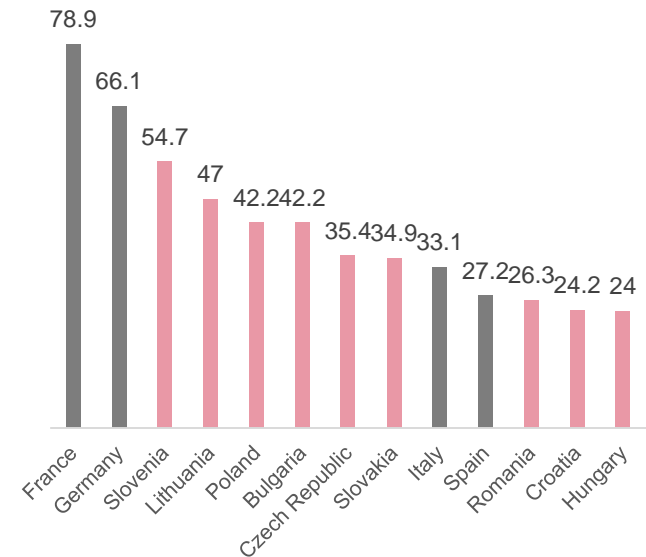
The COVID-19 pandemic has highlighted the need for a resilient healthcare system to cope with unexpected surges of demand

European countries varied dramatically in their preparedness for the pandemic

- The COVID-19 pandemic has had a profound impact on the health of the global population and healthcare systems across the world. From March to December 2020, 580,000 excess deaths were recorded across the European Union compared with the average period 2016-2019¹, both from the virus itself and from the pandemic overwhelming national healthcare systems.
- The economic impacts have also been severe, with the World Bank reporting that the COVID-19 recession has seen the fastest and steepest downgrade in global growth projections since 1990.²
- The pandemic has led to a short-term increase in healthcare spending to deal with treatment and containment of the virus (although this was partially offset by foregone care during lockdowns and the postponement of other healthcare treatments such as elective surgeries). However it has also highlighted the importance of stable and resilient healthcare systems to manage future, unexpected surges of demand.
- Health outcomes after the pandemic are also likely to worsen in the longer term due to the disruption to screening programmes and delays to treatment. Healthcare systems will need to be appropriately resourced to face this ongoing challenge.
- Historic spending on healthcare was a key determinant of countries' preparedness to deal with the impacts of the pandemic, with countries varying greatly across Europe (see chart).
- During the post-COVID recovery, policymakers must prioritise long-term investment in healthcare and recognise the clear link between health and the economy. Upcoming analysis from PwC and EFPIA³ recommends:
 - An increased focus on prevention and early care.
 - A move from short-term approaches to longer-term planning around health outcomes and addressing patient needs.
 - Investing in digital infrastructure and data governance.
 - Focusing on people and outcomes, equipping healthcare professionals with new skills to best respond to patients needs and empowering patients to understand their own health status better.

Healthcare preparedness index

Dimensions: COVID-19 testing capacity, Population structure, Healthcare resources & Historic healthcare expenditure (most recent data)



Further resources:

OECD, 'Beyond Containment: Health systems responses to COVID-19 in the OECD' (2020)

OECD, 'Strengthening the frontline: How primary health care helps health systems adapt during the COVID-19 pandemic' (2021)

Graph source & index methodology: Aristodemou, Buchhas & Claringbould, 'The COVID-19 crisis in the EU: the resilience of healthcare systems, government responses and their socio-economic effects' (2020)

1. Eurostat data

2. Consensus Economics, World Bank data (2020)

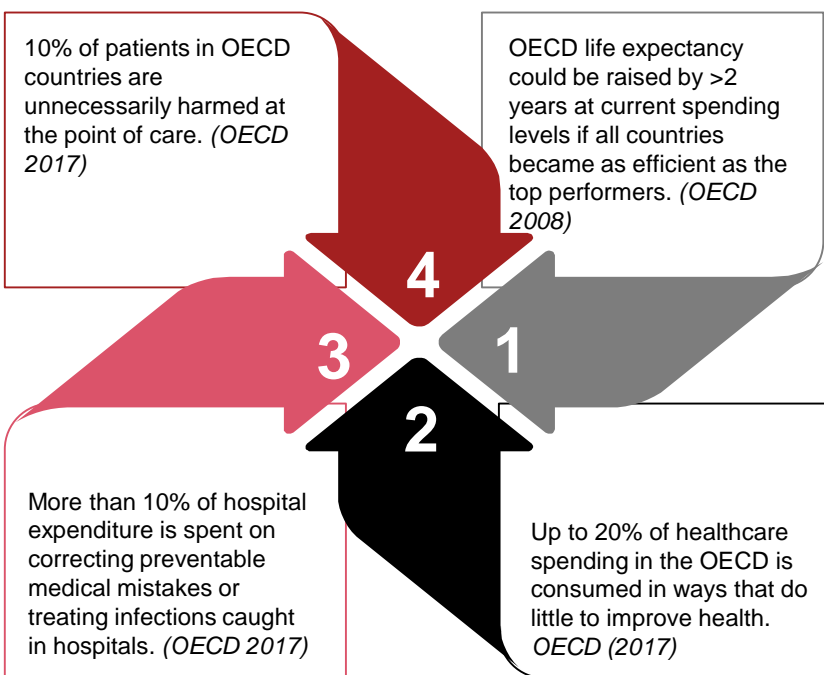
3. PwC draft report, Evidence-based narrative on future health systems following COVID-19 (to be published June 2021)

Better transparency over health spending and outcomes is essential for improving efficiency and making fair comparisons

However, increasing the overall level of healthcare spending is still vital for improving outcomes

- **Increasing spending does not always improve health outcomes - what also matters is how this money is spent and the efficiency of spending.**
 - Improving efficiency is not the same as cutting costs – its about freeing up additional resources to be used in higher value areas.
 - This will require health stakeholders from across the industry to work together to share best practices, improve patient outcomes and increase quality of care.
 - The Covid-19 pandemic has provided some opportunities to increase efficiency across the healthcare system and has accelerating trends such as digitalisation and e-health.
- **However there currently lacks enough robust data over how healthcare budgets are invested and the resulting health outcomes:**
 - Much of the current variation in health outcomes between countries is due to differences in the definition and measurement of data, making it very difficult to compare healthcare systems internationally.
 - Standardising health spending and health outcomes data across the EU would allow policymakers to better understand and compare the efficiency of current spending.
 - Publishing this data more transparently would also give patients more confidence in their healthcare system and empower them to make better decisions for themselves, as well as allowing service providers to shape future service provision more effectively.
- This report focuses on understanding the need for increased healthcare spending in CEE countries and exploring ways to increase efficiency as a potential source to cover existing financing gaps. However, we recognise that the level of spending and the efficiency of spending should be explored in parallel as the current gaps in healthcare financing cannot be covered by increasing efficiency alone.

Key statistics on healthcare inefficiency:



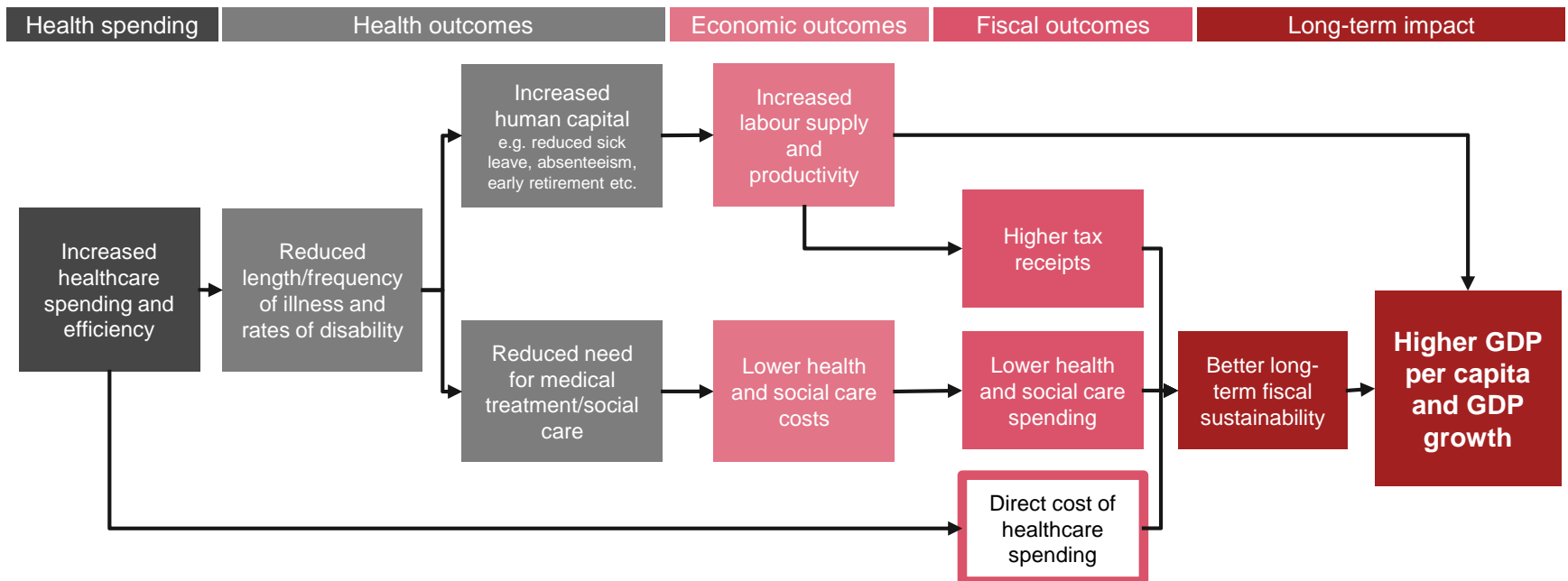
Further resources:

EFPIA (2020) – ‘Strengthening health systems through smart spending’
The Value of Health, Improving Outcomes (2018) – Final report

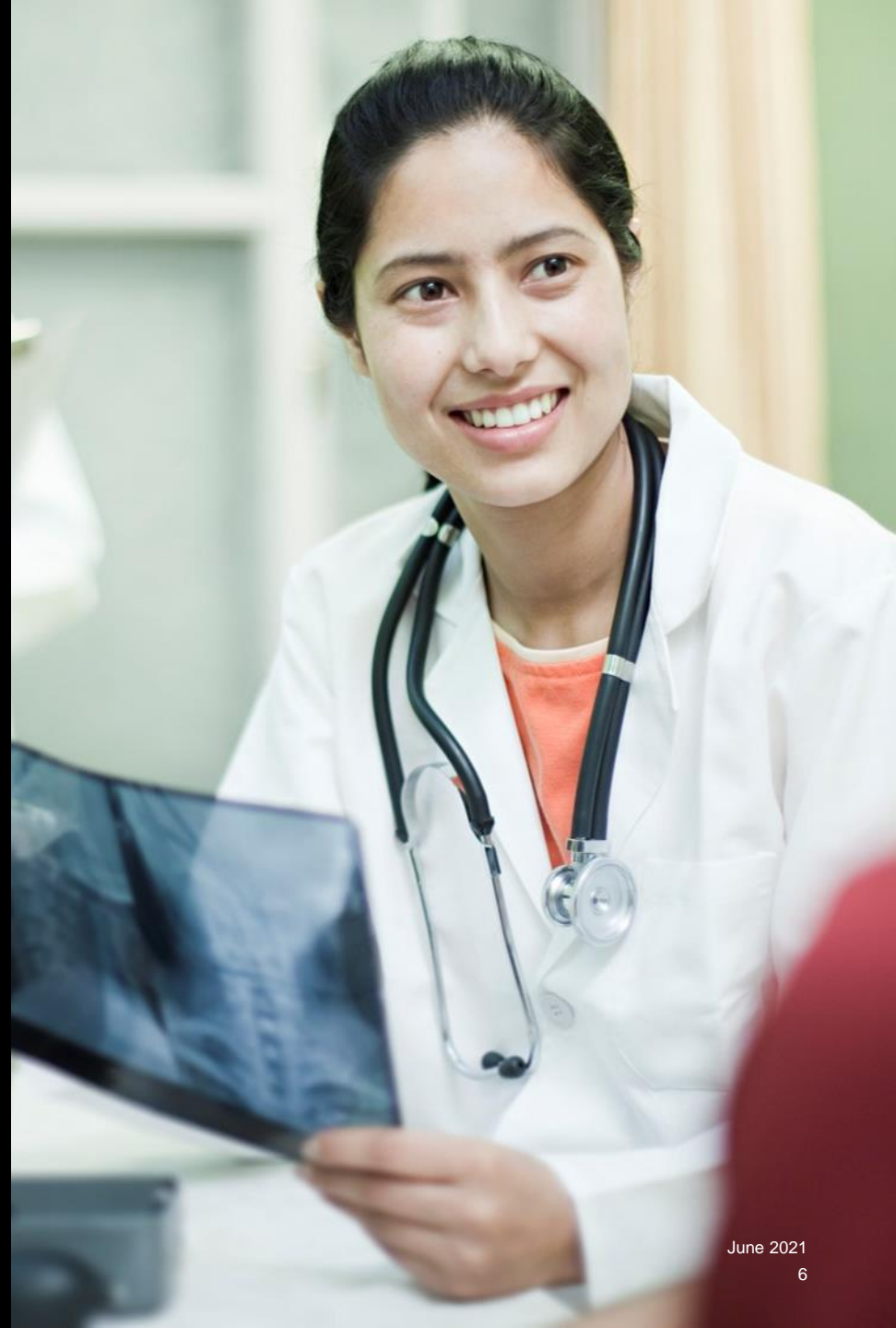
Summary of the case for change: More spending on healthcare and better healthcare policies lead to superior health, economic, and fiscal outcomes

A healthier population is more productive and has fewer social and healthcare costs

- Healthcare policies and spending affect health outcomes within a country, **whether positively or negatively**. The health of the population in turn affects future economic and fiscal outcomes, through the channels shown below.
- When assessing the **economic and fiscal impacts** of healthcare spending or policy changes, the effects through all of these channels should be taken into account; not only the direct cost of the new policy or additional spend.
- However, the **full economic and fiscal impact is often underestimated**, but when the potential impact is observed across all channels it is clear there is significant opportunity.



CEE governments spend less on their healthcare than the EU5 and have poorer health outcomes



Message 1 overview:

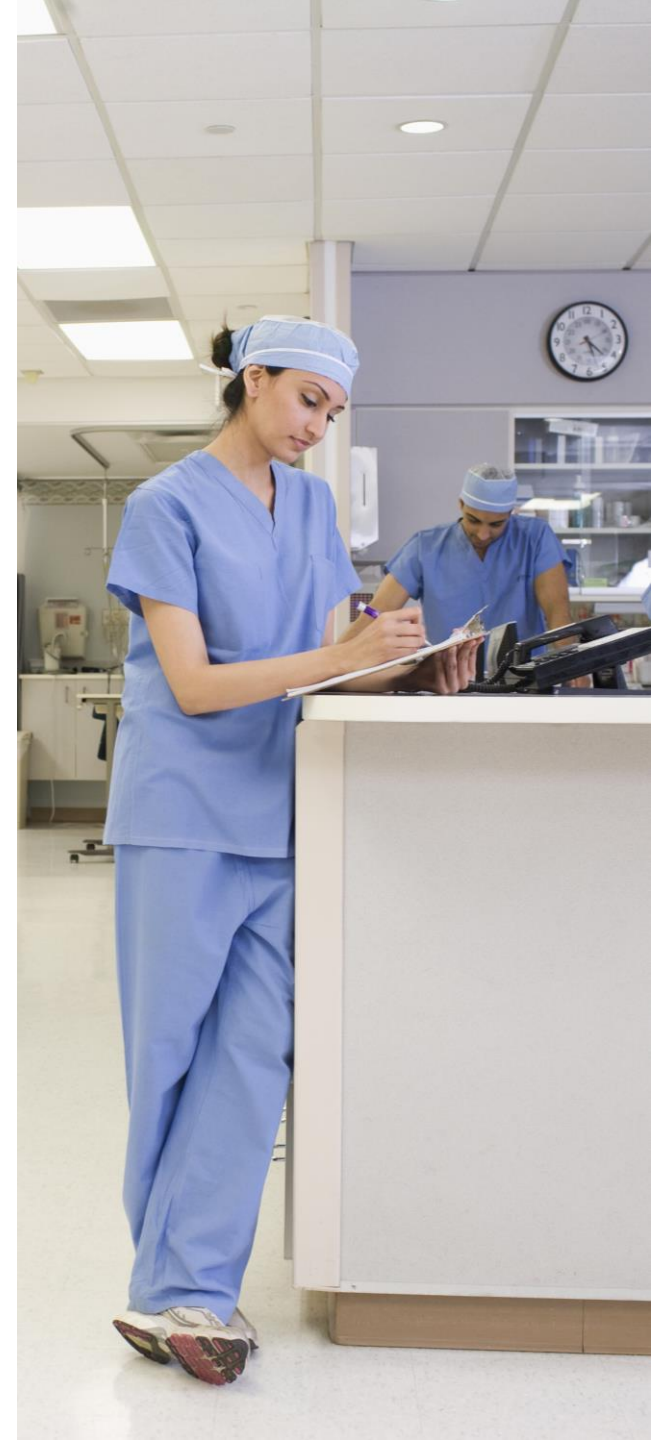
CEE governments spend less on their healthcare systems than the EU5 and have poorer health outcomes

1a) Historical public health spending in CEE countries

- Public healthcare spending in CEE countries has grown over time, but current spending as a proportion of GDP is still less than in the EU5 by around 3 percentage points
- The gap in public healthcare spending accumulates over time creating an ever-growing wedge
- If CEE countries spent the same proportion of GDP as the EU5, per capita public healthcare spend could increase by 65%
- Health spending allocation between human resources and infrastructure varies across the region

1b) Current health outcomes in CEE countries

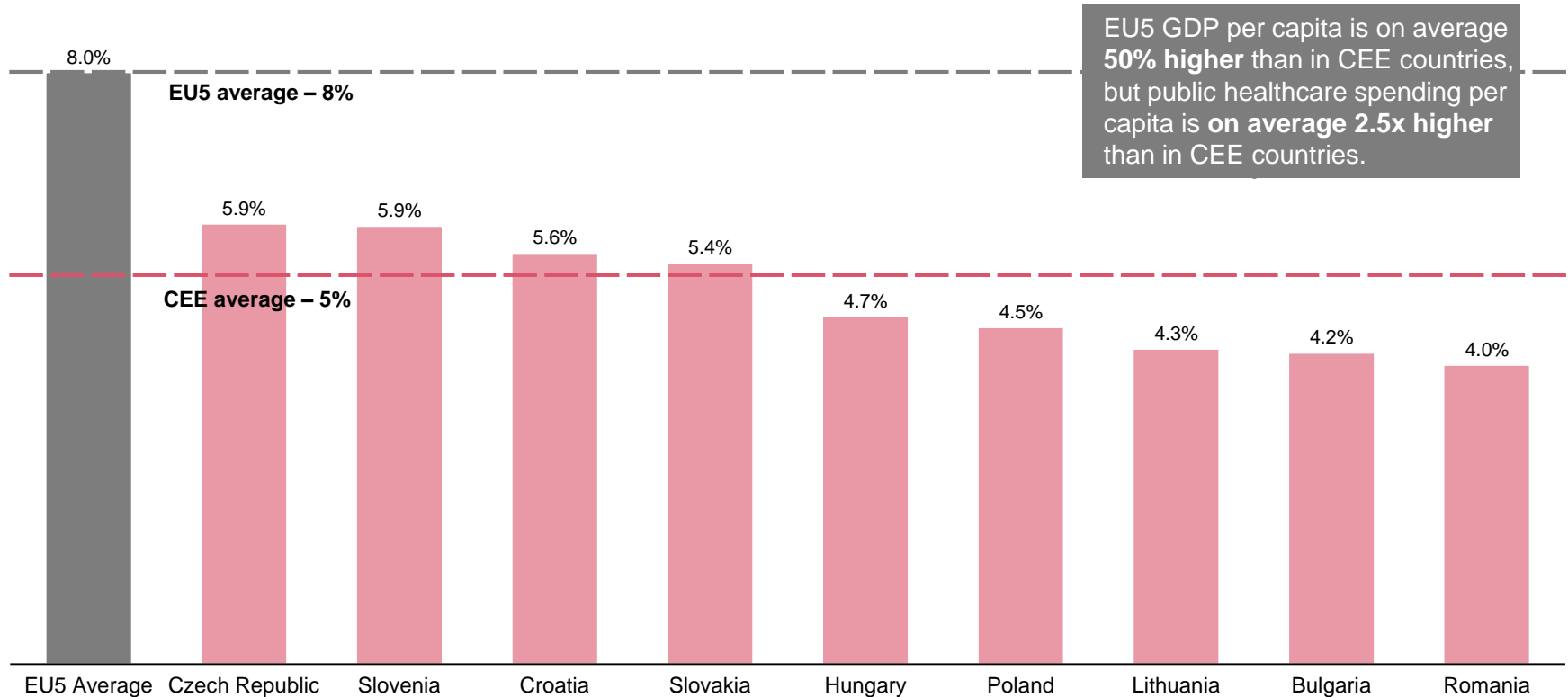
1c) Access to innovative therapies



In CEE countries, public spending on healthcare as a % of GDP is around 3 percentage points lower than the EU5 average

Income differences are not enough to explain the total gap in public healthcare spending

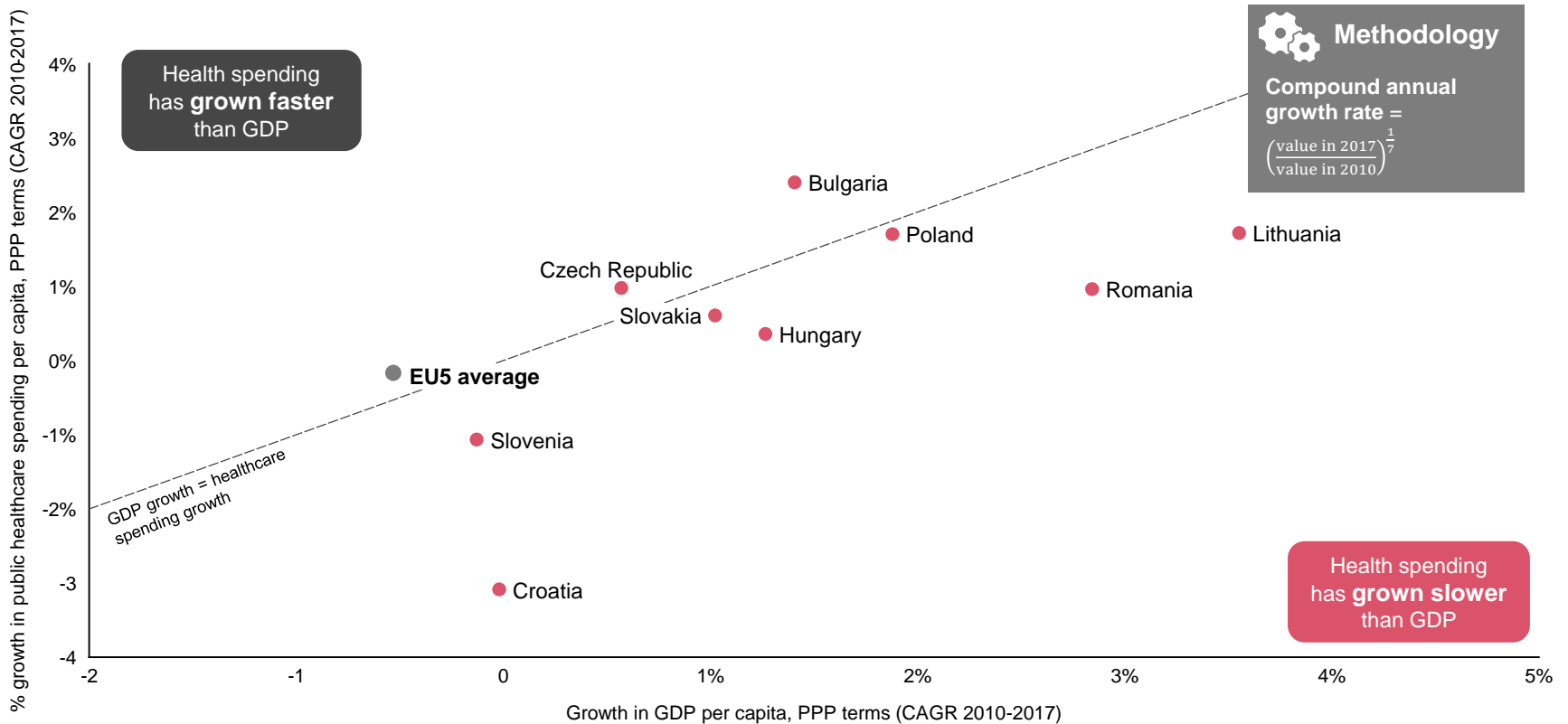
Public healthcare spending as a % of GDP
%, PPP adjusted, 2017



Since 2010, GDP in CEE countries has grown faster than in the EU5 but growth in public healthcare spending has not kept pace

On average CEE GDP per capita has grown by 1.4% p.a. compared to just 0.5% for per capita healthcare spending

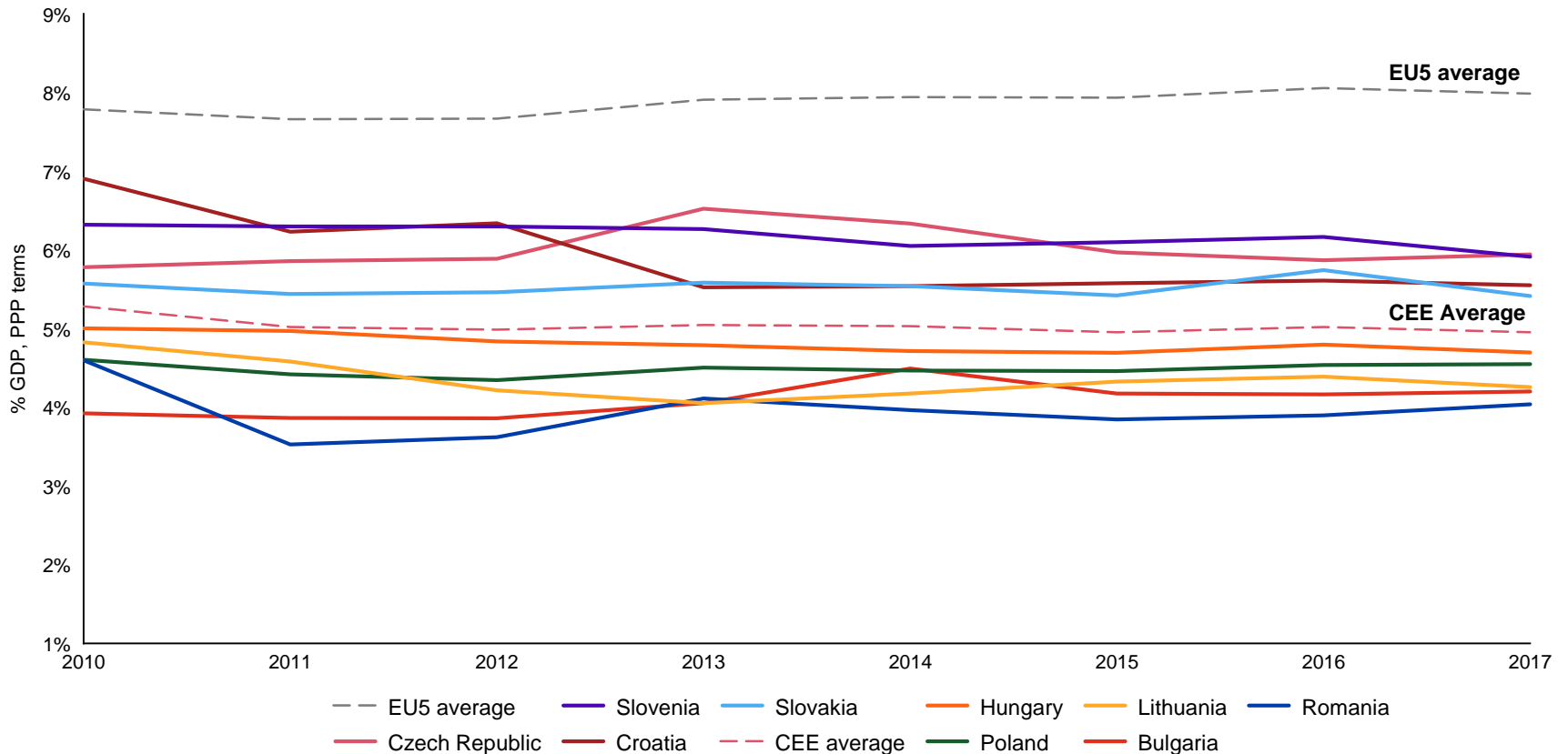
Annual GDP per capita growth and annual public healthcare per capita spending growth
Compound annual growth rate, %, PPP-adjusted 2010-2017



Source: PwC analysis of WHO data "Health expenditure financed by government schemes & compulsory contributory health insurance schemes" for public spend per capita (PPP, constant 2017 prices) and World Bank Data for GDP per capita (PPP, constant 2017 prices).
Note: Converted to from US\$ to €EUR using PPP conversion rates (EA19/USD) before taking CAGR.

This has caused the gap in healthcare spending between CEE and the EU5 to widen by 0.5% of GDP between 2010 and 2017

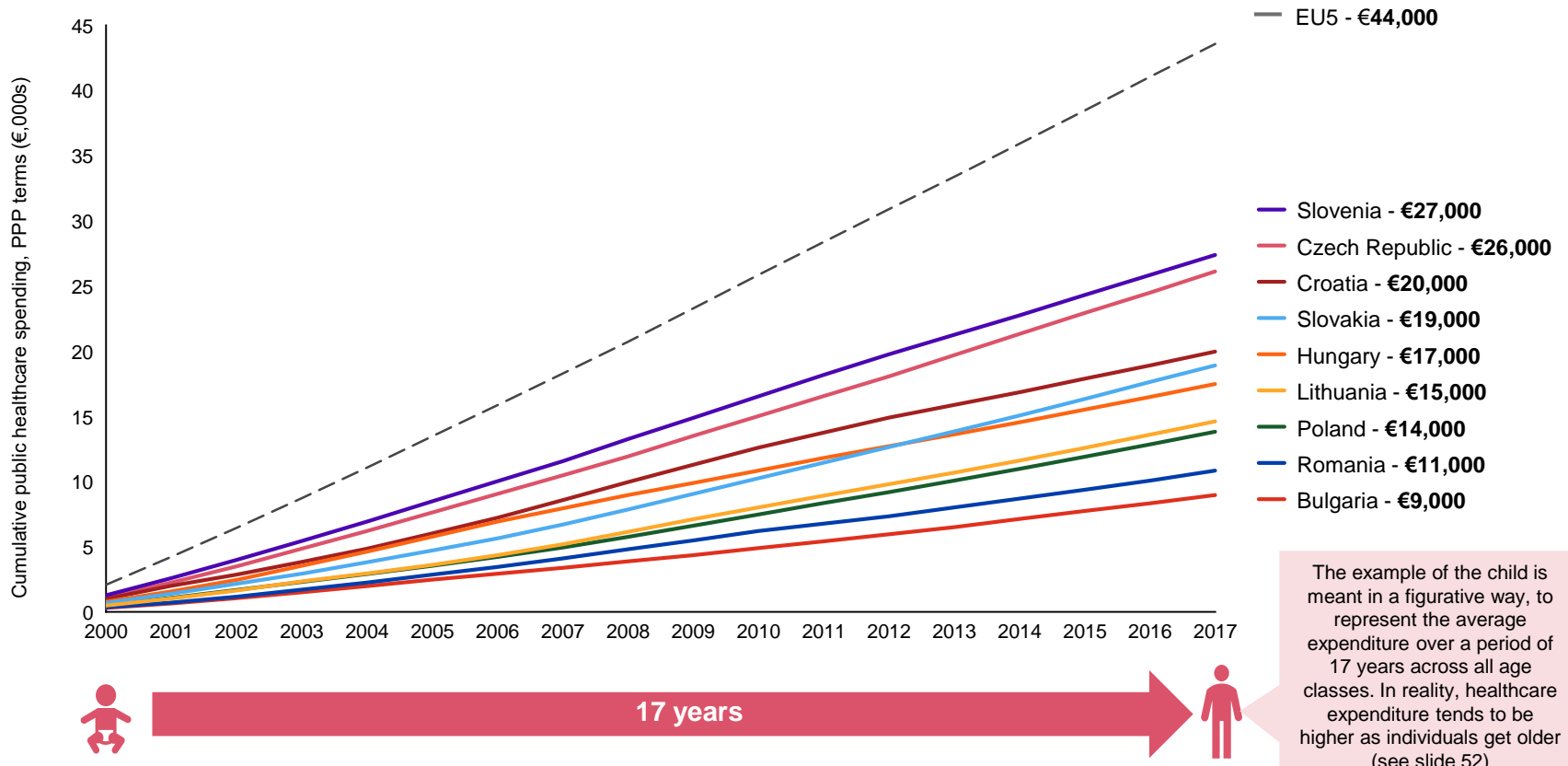
Public healthcare spending as a % GDP
%, PPP-adjusted 2010-2017



The effect of the gap in public healthcare spending accumulates over time creating an ever-growing wedge

On average, people in CEE countries will have benefitted from €26,000 less in public healthcare spending between 2000 - 2017 compared to someone in the EU5

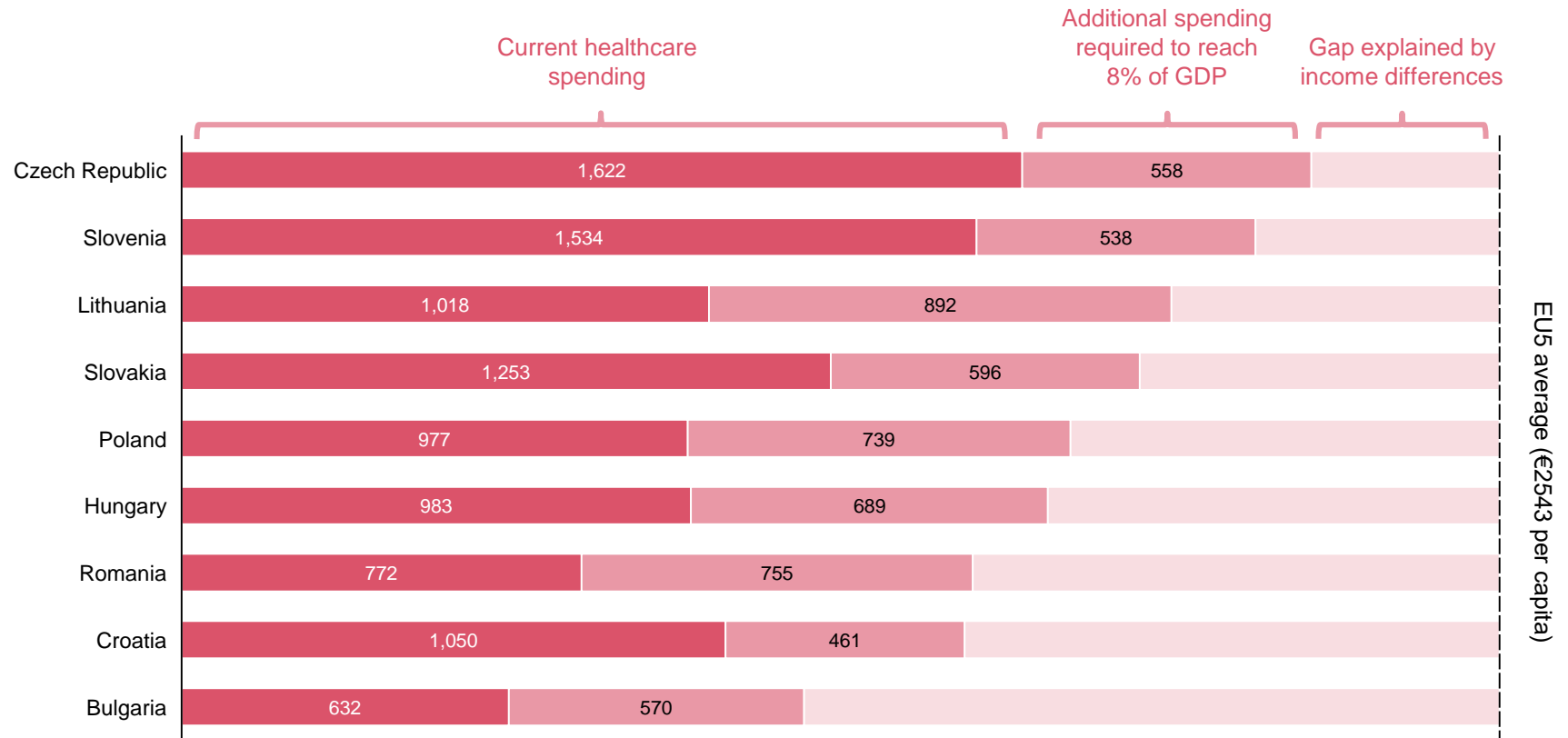
Cumulative per capita public healthcare expenditure
€000s, PPP-adjusted, 2000-2017



If CEE countries spent the same proportion of GDP on healthcare as the EU5, average per capita public spending would rise by 65%

This amounts to an extra €644 per person in 2017 across CEE countries on average

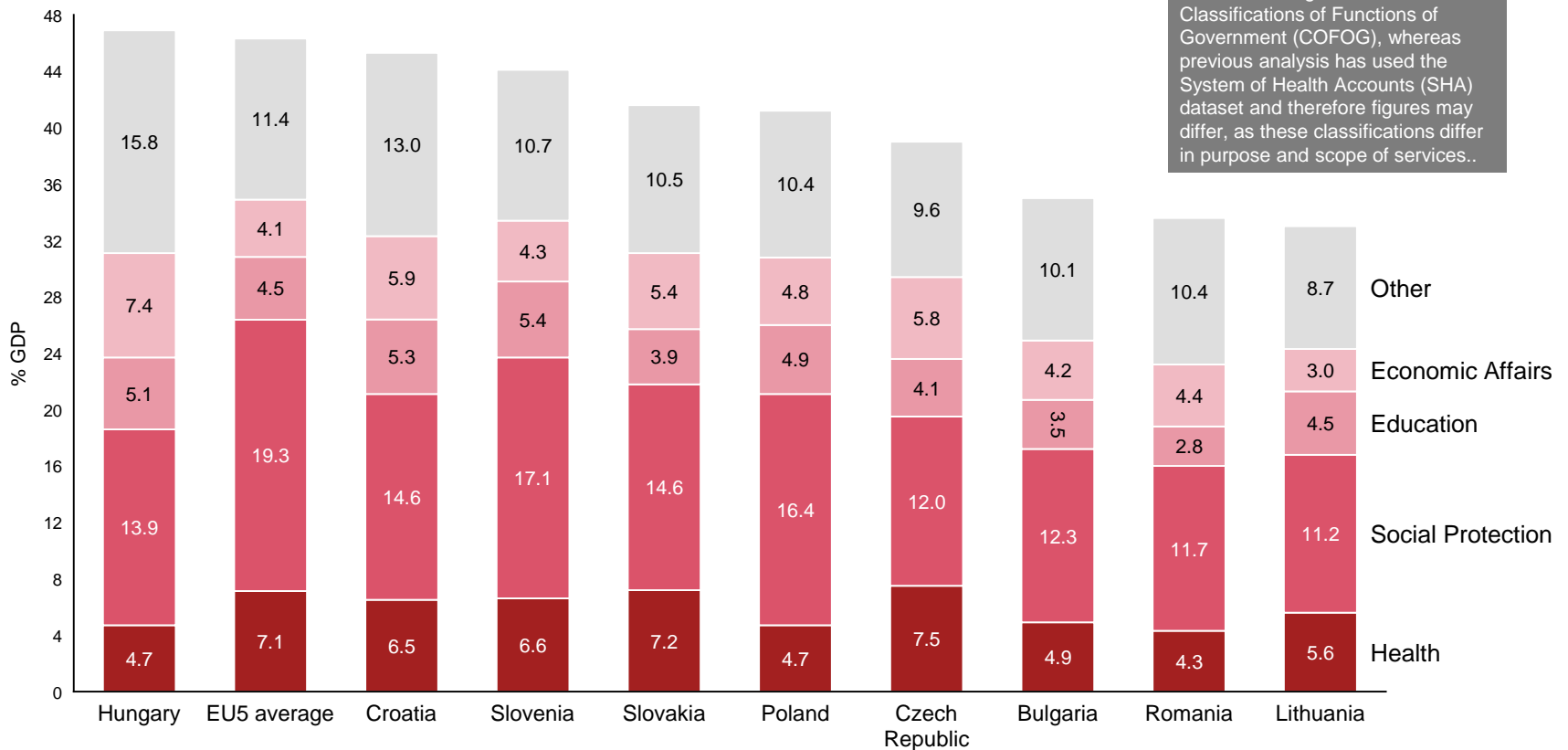
Additional spending required to increase public healthcare spending to 8% of GDP
 €, PPP adjusted, 2017



In most CEE countries, general government expenditure on health is less than 7% of GDP

Health spending currently represents less than 15% of total general government expenditure and there is potential for it to grow

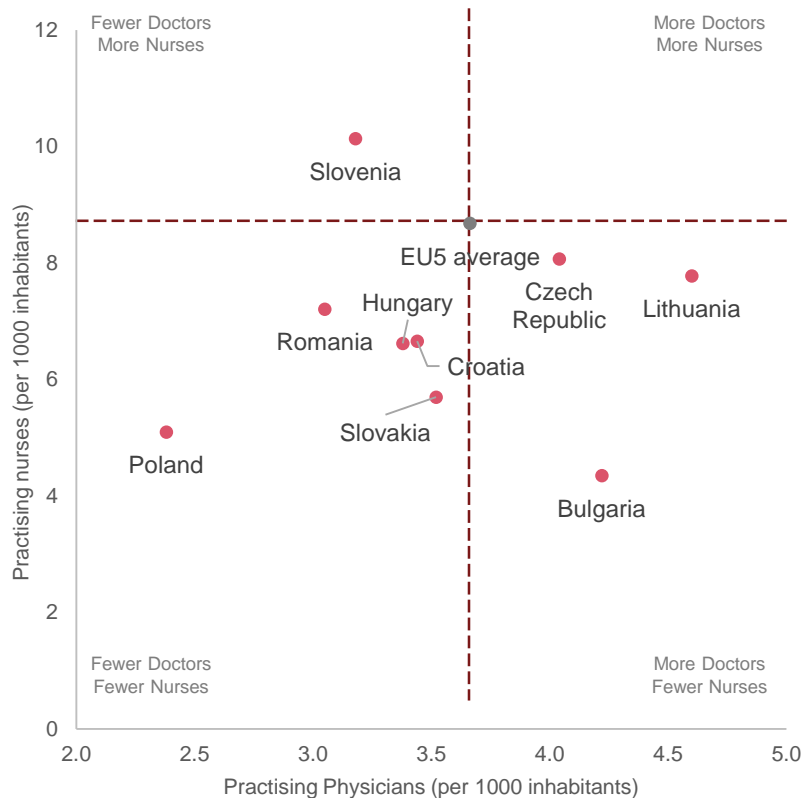
General government expenditure by function
% of GDP, 2017



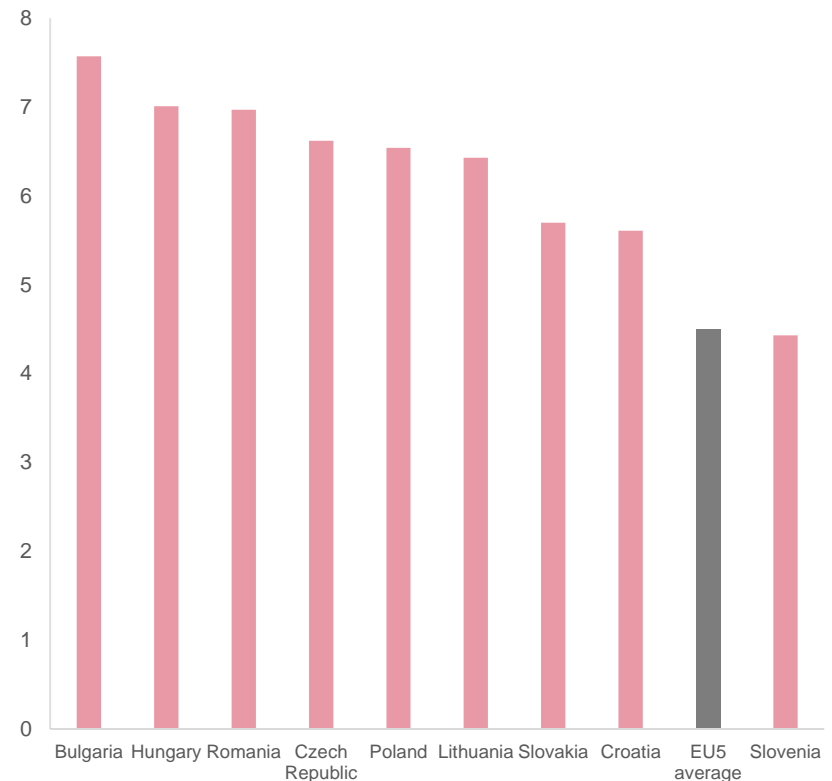
Health spending allocation between human resources and infrastructure varies across the region

CEE countries have invested in more hospital beds but fewer healthcare professionals which may lead to inefficiency due to a mismatch of resources

Number of practising nurses and physicians per 1000 inhabitants 2018 (or latest year)



Hospital beds per 1000 inhabitants 2018



Message 1 overview:

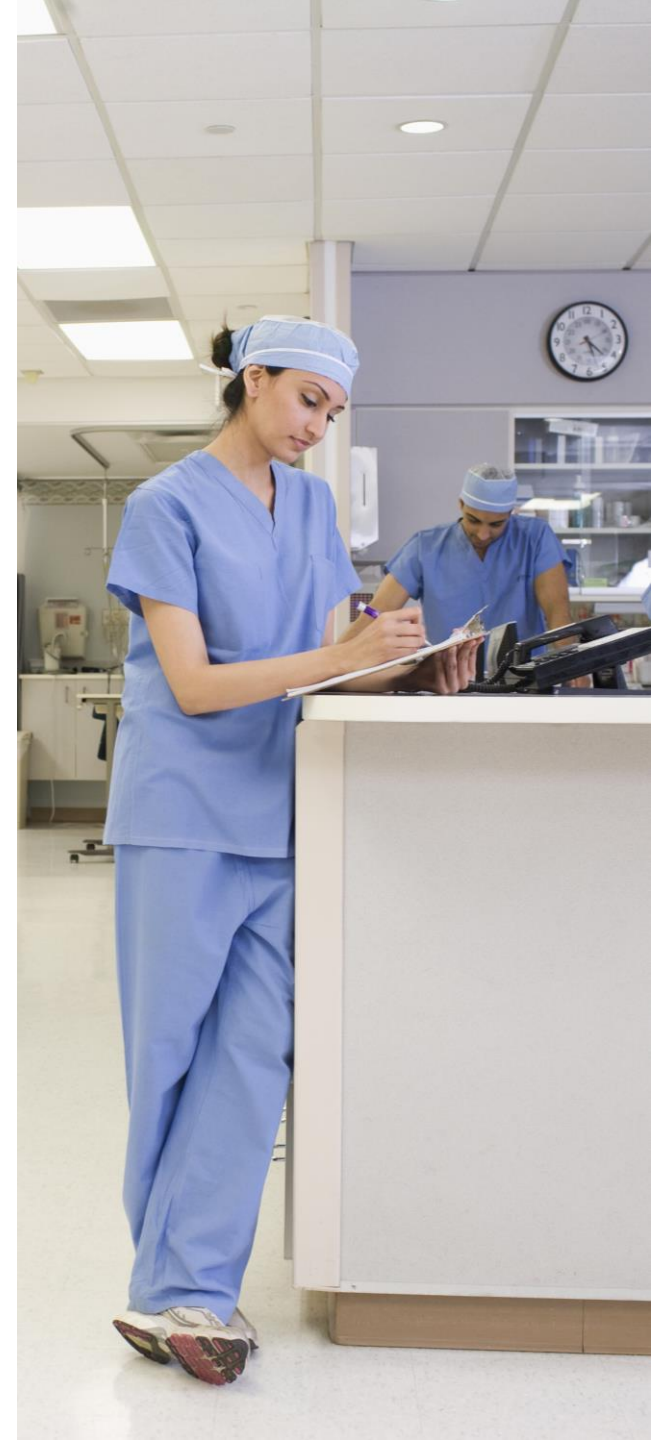
CEE governments spend less on their healthcare systems than the EU5 and have poorer health outcomes

1a) Historical public health spending in CEE countries

1b) Current health outcomes in CEE countries

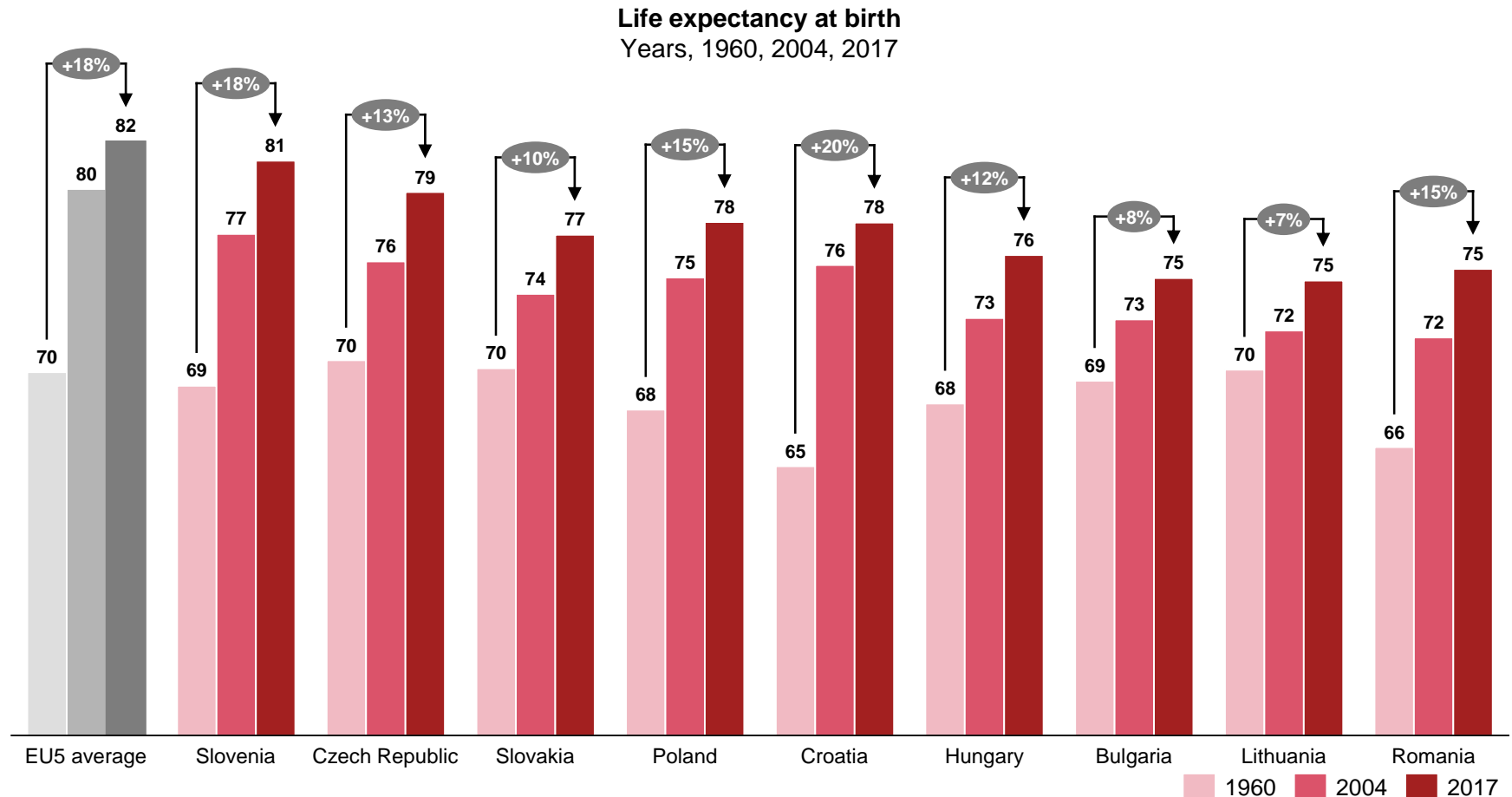
- Health outcomes in CEE countries have improved significantly over time, but still lag behind the EU5
- This includes life expectancy, amenable mortality rates, mortality from cardiovascular disease and cancer survival rates
- At current rates of improvement in these health outcome indicators, it would still take many years for CEE countries to catch up to current EU5 averages

1c) Access to innovative therapies



Although life expectancy in CEE has improved greatly over the past 60 years, it is still 5 years less than in the EU5

EU5 life expectancy has increased by 12 years since 1960, compared to 9 years in CEE countries

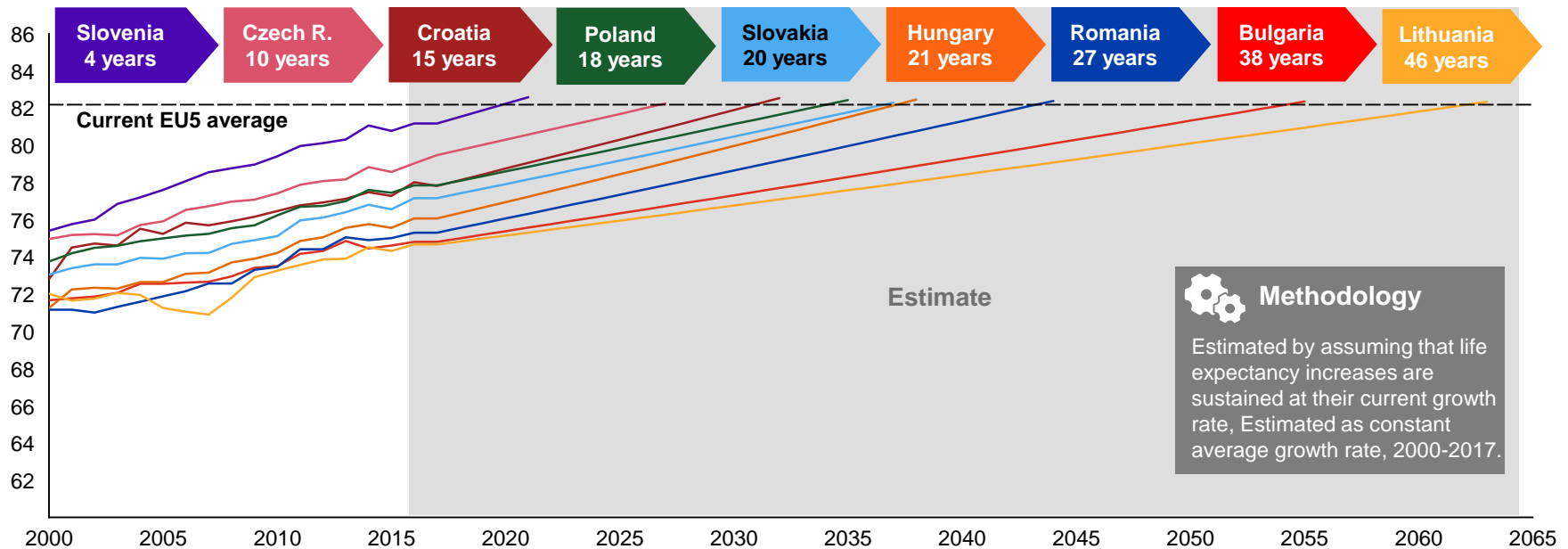


At historic growth rates, it will take an average of 22 years for life expectancy to catch up to the current EU5 average (82 years)

Some countries would bridge the gap more quickly (e.g. 4 years in Slovenia) but others will take longer (e.g. 46 years in Lithuania)

Life expectancy

Actual (2000-2017) and projected (2017-2055)*



- If EU5 life expectancy **continues to grow at its current rate**, the **catchup period will be even longer**, with the Czech Republic, for example, taking 22 years to catch up, instead of 10.

Amenable mortality rates across CEE are twice those of the EU5 despite having fallen since 2011

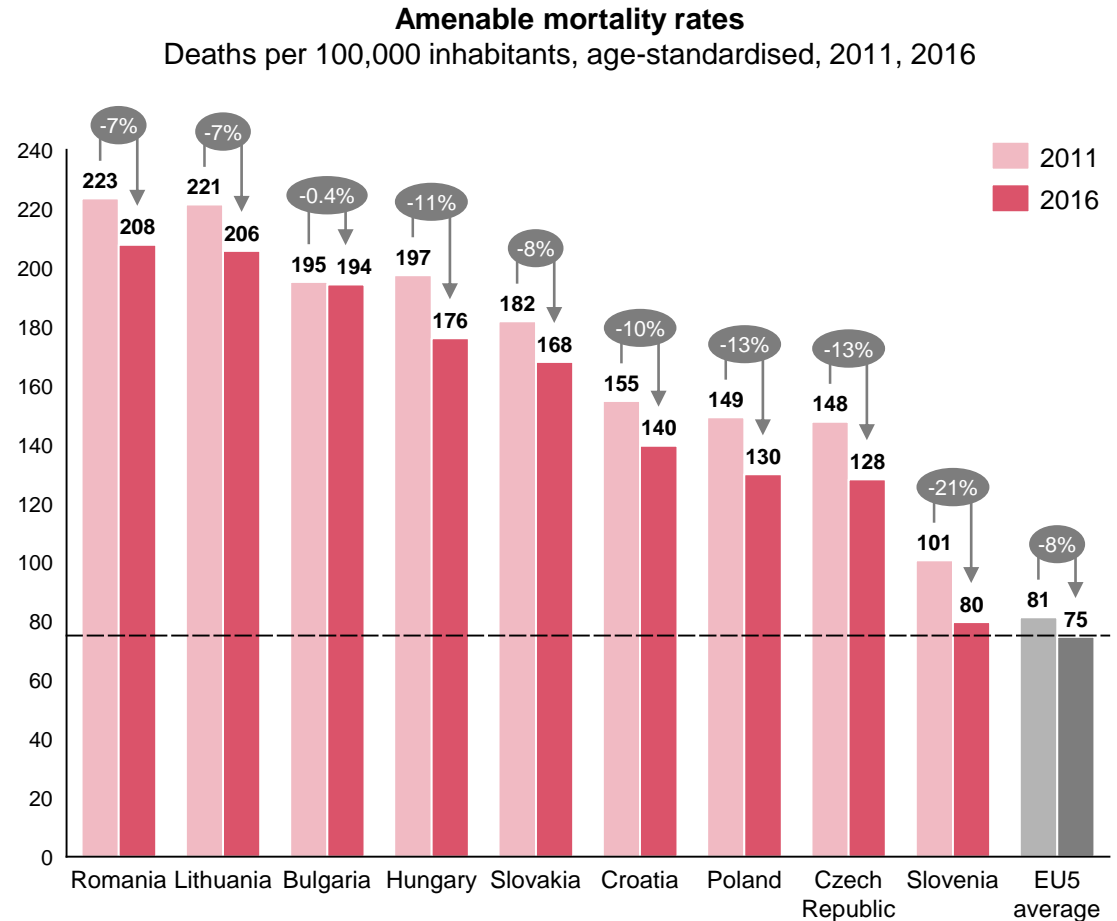
Amenable mortality has fallen 10% since 2011 across CEE countries

The amenable mortality rate measures the percentage of deaths from a collection of diseases such as diabetes and appendicitis that **could be avoided** with optimal quality healthcare.



Methodology

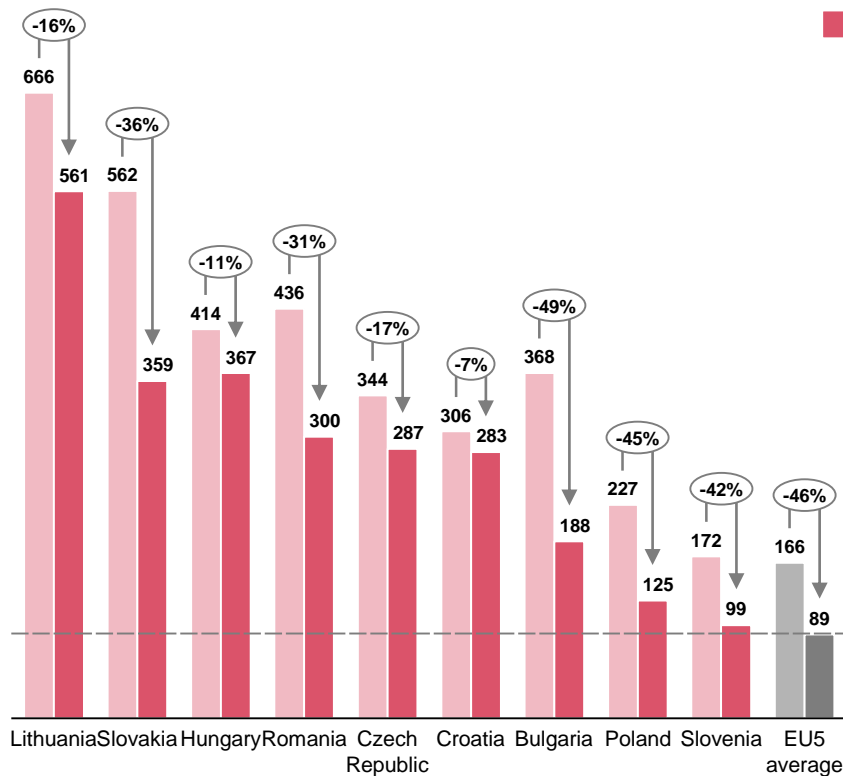
Age standardisation: Deaths are age-standardised to account for differing population structures between countries. The rate is Estimated as a weighted average of age-specific mortality rates per 100,000 persons.



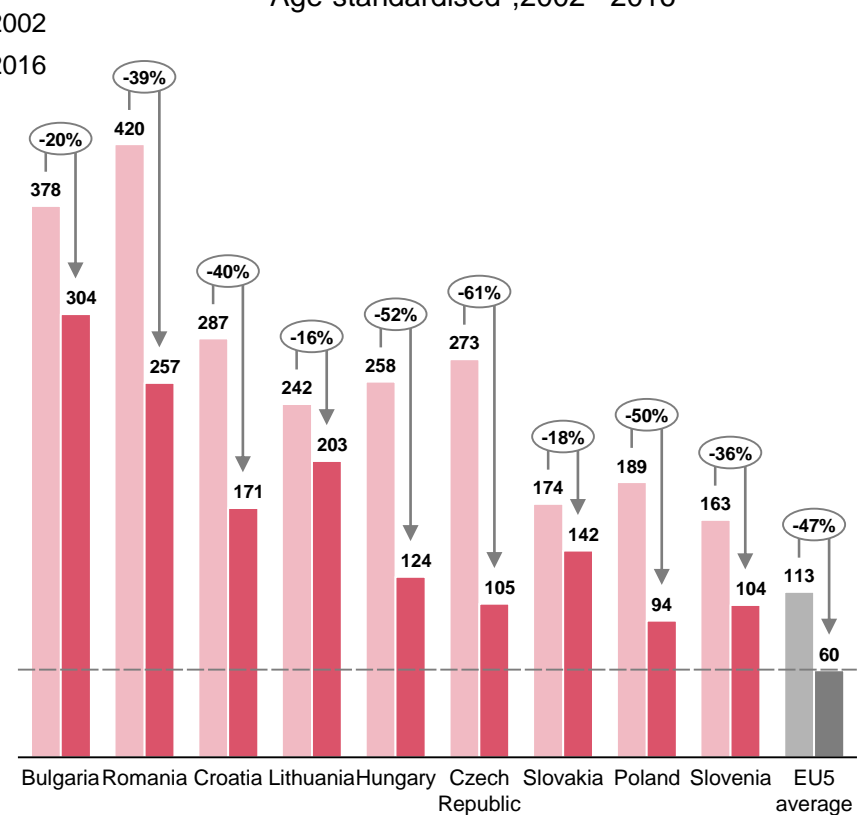
Mortality rates for cardiovascular diseases across CEE have declined but are still about three times that of the EU5

Cardiovascular diseases are responsible for nearly one third of all deaths across CEE¹

Coronary heart disease mortality rate
Age-standardised², 2002 - 2016



Cerebrovascular disease mortality rate
Age-standardised², 2002 - 2016



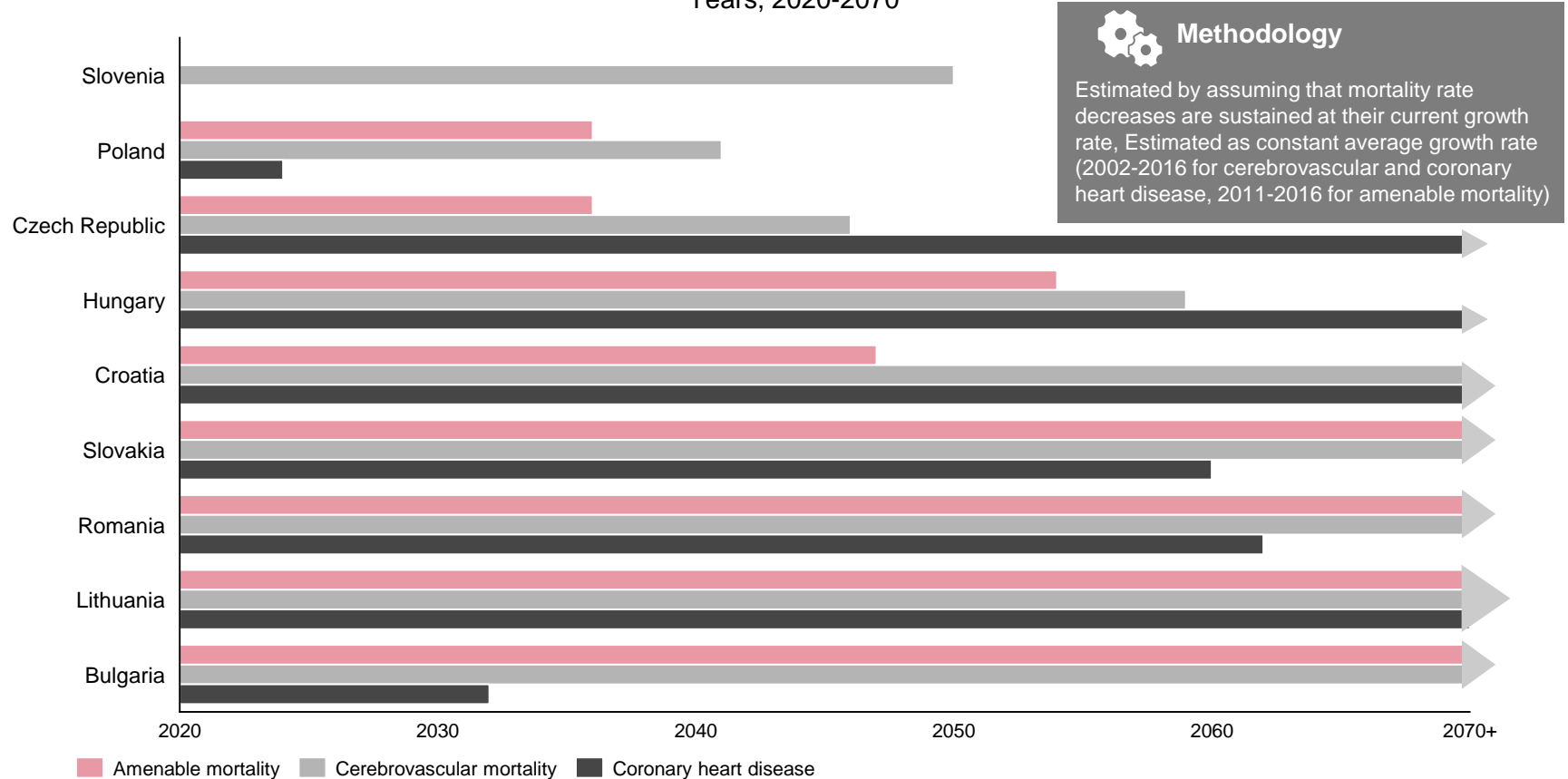
Source: PwC analysis of Eurostat data

1. Cardiovascular diseases are a group of disorders of the heart and blood vessels. Two major diseases within this group are coronary heart disease (ischaemic) and cerebrovascular disease
2. For definition of age-standardised mortality rates, see slide 18.

At the current rate of improvement it would take some CEE countries >50 years to reach EU5 levels on these health outcomes

There is, however, significant variation between countries, for example Slovenia has already caught-up on some indicators

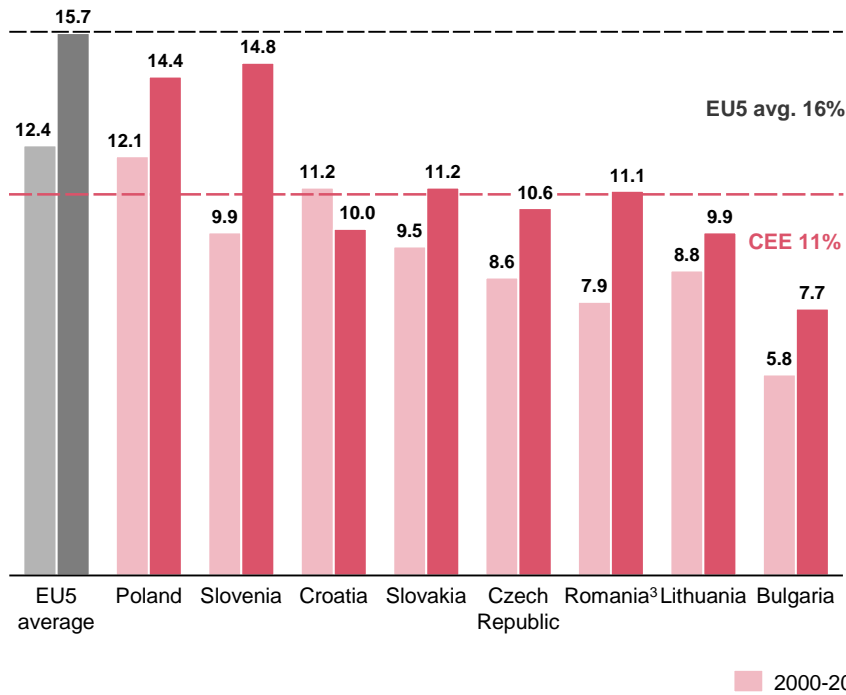
Estimated time to reach current EU5 rates of amenable, cerebrovascular and coronary heart disease mortality
Years, 2020-2070



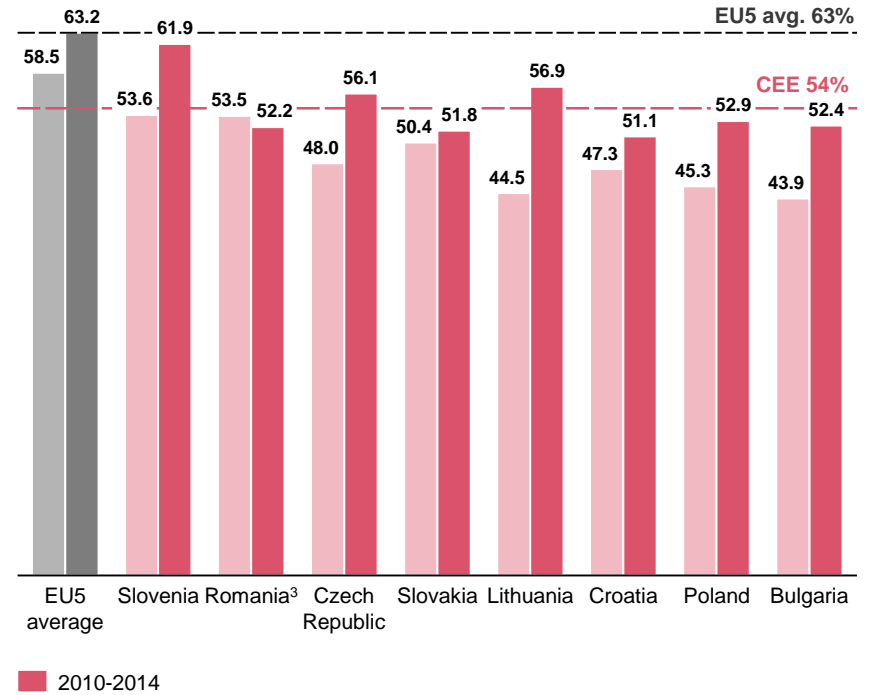
Lung and colon cancer survival rates have improved by 22% and 13% respectively in CEE but still lag behind those in the EU5

A patient diagnosed in CEE between 2010-2014 was almost one third less likely to survive lung cancer than a patient in the EU5

Five year net survival rates¹ for lung cancer patients
 %, age-standardised², patients diagnosed during 2000-2004 and during 2010-2014



Five year net survival rates¹ for colon cancer patients
 %, age-standardised², patients diagnosed during 2000-2004 and during 2010-2014



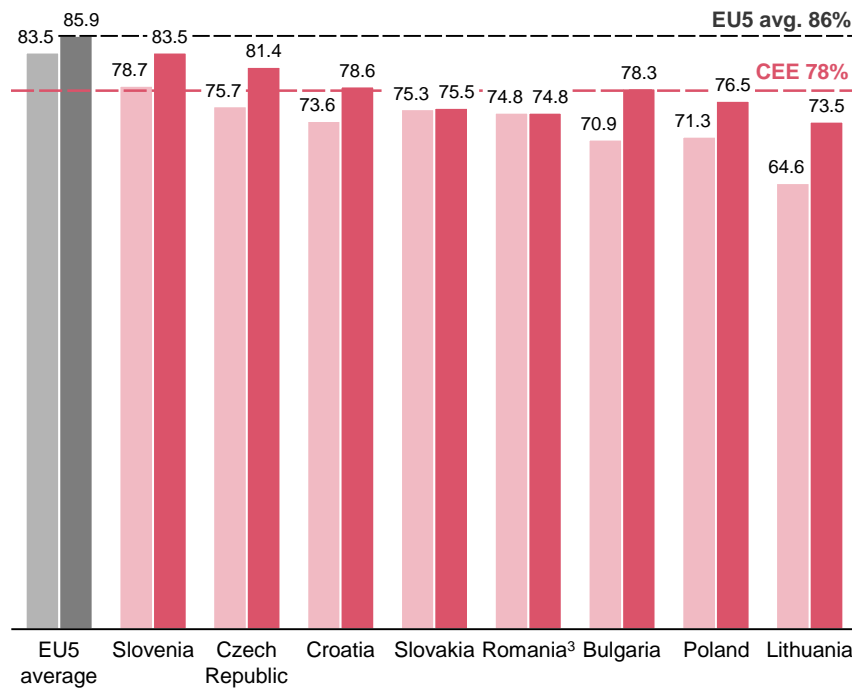
Source: PwC analysis of CONCORD London School of Hygiene and Tropical Medicine data
 1. Five survival rates use short-term predictions of 5-year survival for patients who were diagnosed with cancer during 2000-2004 (and 2010-2014). Survival rates are expressed in net terms (to account for international differences in background risk of death)
 2. For definition of age-standardised mortality rates, see slide 18.
 3. Romania data is for 2005-2009 as data for 2000-2004 missing. Hungary missing data.

Prostate and breast cancer survival rates in CEE have also improved but still lag behind the EU5

CEE countries lag behind considerably, with Lithuania a notable exception for prostate cancer

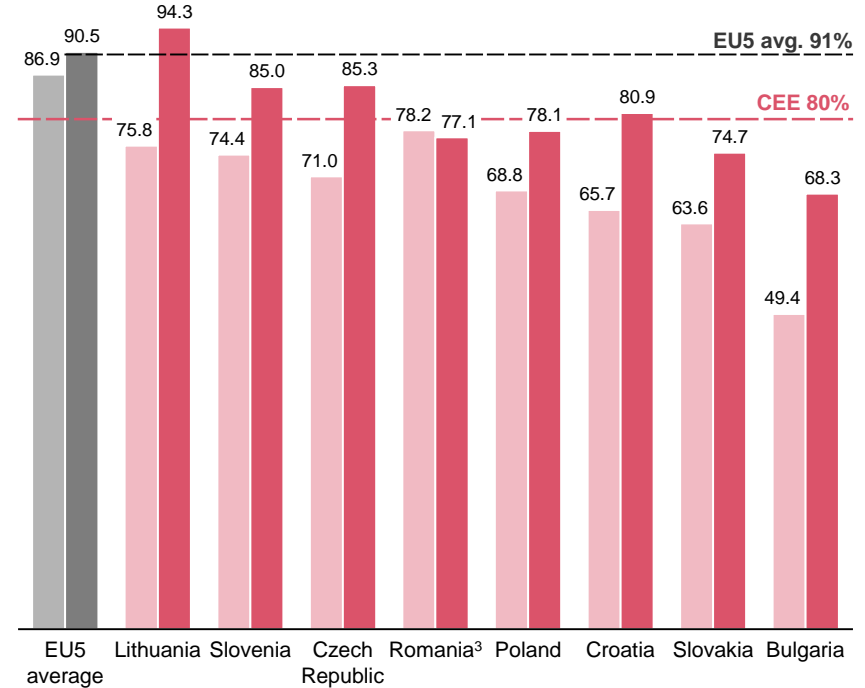
Five year net survival rates¹ for breast cancer

%, age-standardised², patients diagnosed during 2000-2004 and during 2010-2014



Five year net survival rates¹ for prostate cancer

%, age-standardised², patients diagnosed during 2000-2004 and during 2010-2014



2000-2004 2010-2014

Source: PwC analysis of CONCORD London School of Hygiene and Tropical Medicine data

1. Five survival rates use short-term predictions of 5-year survival for patients who were diagnosed with cancer during 2000-2004 (and 2010-2014).

Survival rates are expressed in net terms (to account for international differences in background risk of death)

2. For definition of age-standardised mortality rates, see slide 18.

3. Romania data is for 2005-2009 as data for 2000-2004 missing. Hungary missing data.

Message 1 overview:

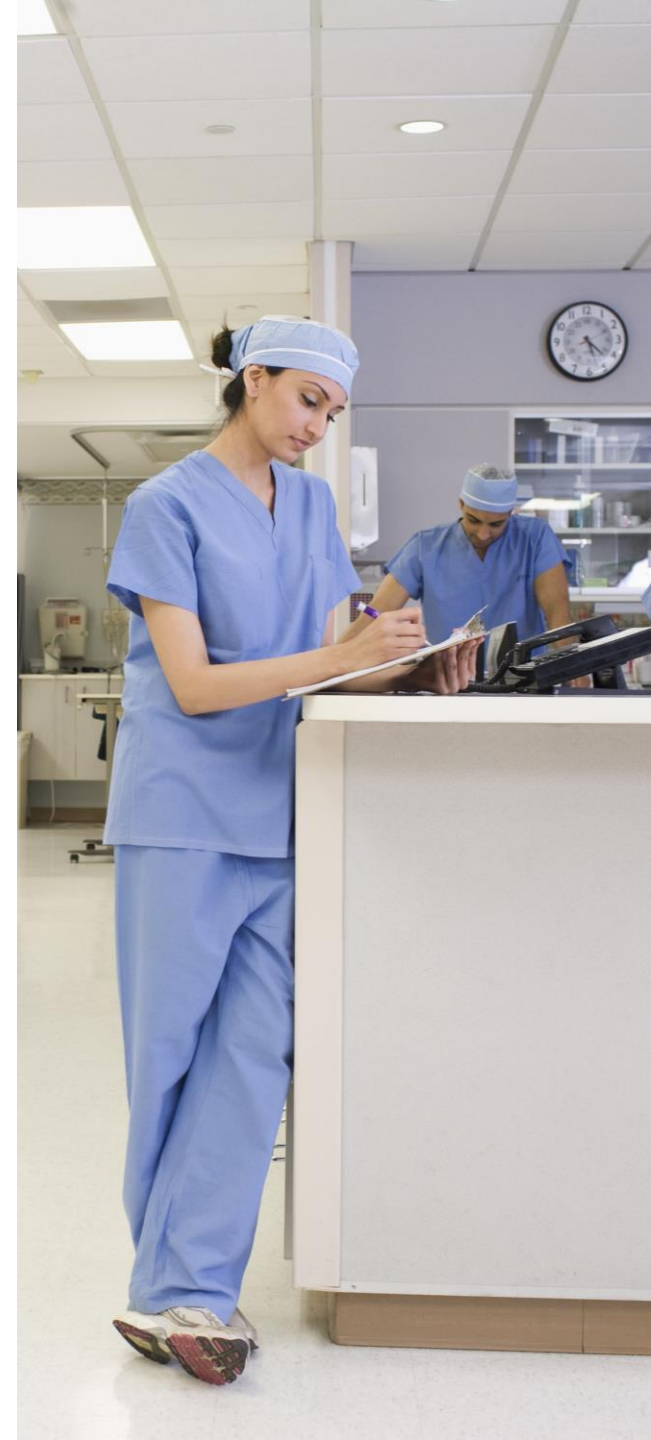
CEE governments spend less on their healthcare systems than the EU5 and have poorer health outcomes

1a) Historical public health spending in CEE countries

1b) Current health outcomes in CEE countries

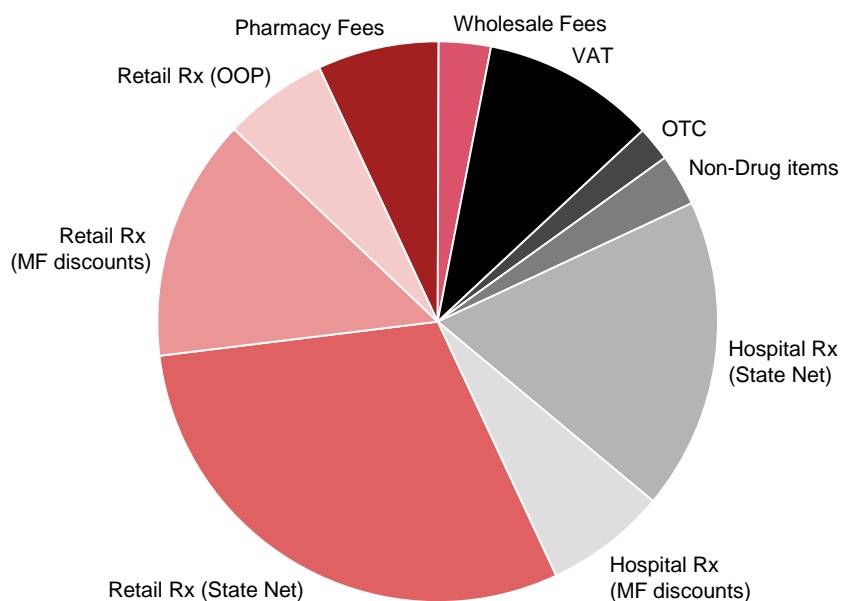
1c) Access to innovative therapies

- CEE governments spend less on pharmaceuticals per capita than the EU5
- Across several CEE countries, out-of-pocket expenditure makes up a significant proportion of pharmaceutical expenditure
- Patient access to innovative medicines in CEE countries, both in terms of the availability of new drugs and the time taken for these drugs to become available, is significantly lower than in the EU5



Official data do not provide an accurate picture of pharmaceutical spending largely due to the exclusion of hospital spend

Components of a hypothetical gross pharmaceutical market



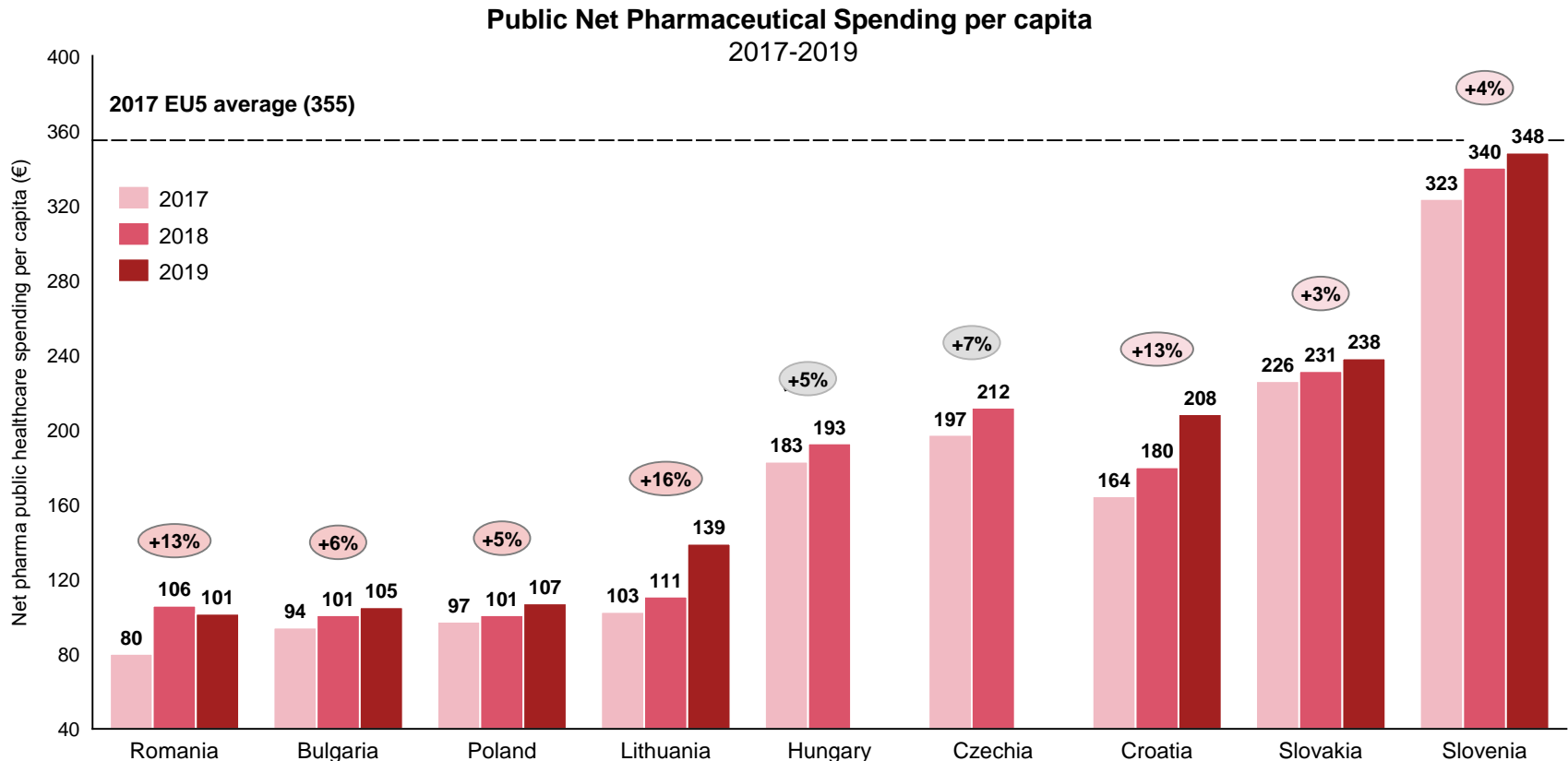
Note: Illustrative pie-chart to show general components in pharmaceutical spending – **does not represent real data** from CEE countries

- EFPIA has commissioned estimates of net pharmaceutical expenditure as no official statistics exist which provide consistent, reliable estimates across the EU.
- OECD statistics include spending on medical non-durables such as syringes but exclude spending within hospitals. OECD statistics are also reported on a gross basis including VAT, where applicable, and distribution costs but before rebated/discounts provided by manufacturers.
- The chart illustrates the complexity of the composition of pharmaceutical expenditure, which contains over ten elements, and demonstrates the need to obtain a net figure for comparison purposes.

Methodology

- Working with national associations, EFPIA used a standard template to collect data on each component of spend for each country from official and other sources. Where gaps existed, the missing data were estimated.
- The **Public Net Pharmaceutical Expenditure** reported in the following slides is the publicly quoted number (provided by National Associations) minus any discounts or rebates. There is some variability in the inclusion/exclusion of pharmacy fees, wholesale fees and VAT between the countries as it depends on how their Sick Fund or National Statistics Organisation report the data.

Although CEE countries have lower levels of income than the EU5, pharmaceutical spending is still significantly lower...

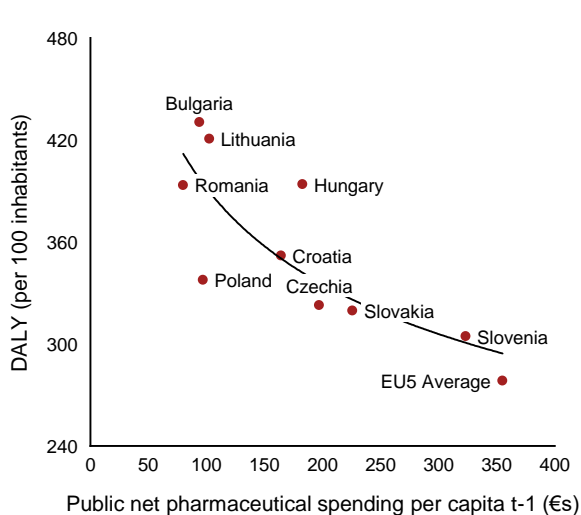


...and lower levels of government spending on pharmaceuticals is associated with worse health outcomes

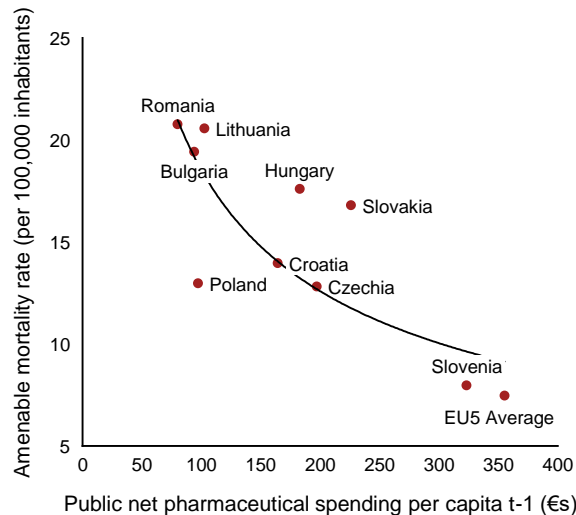
This relationship holds for DALYs, amenable mortality and mortality rates from circulatory diseases

Public Net Pharmaceutical spending per capita (2017) and key health indicators (2016) across the EU

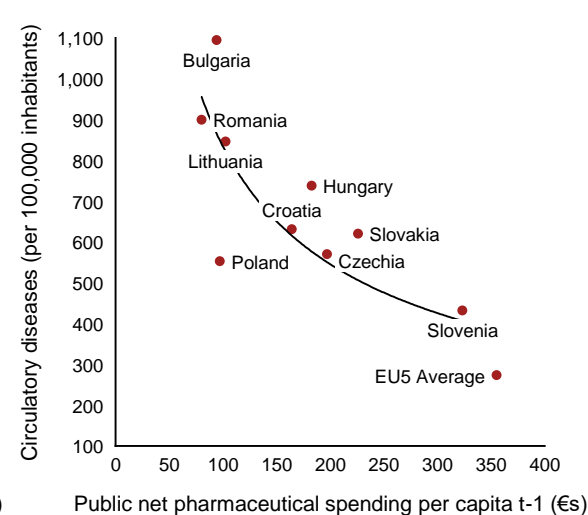
Disability-adjusted life years



Amenable mortality¹



Circulatory disease mortality



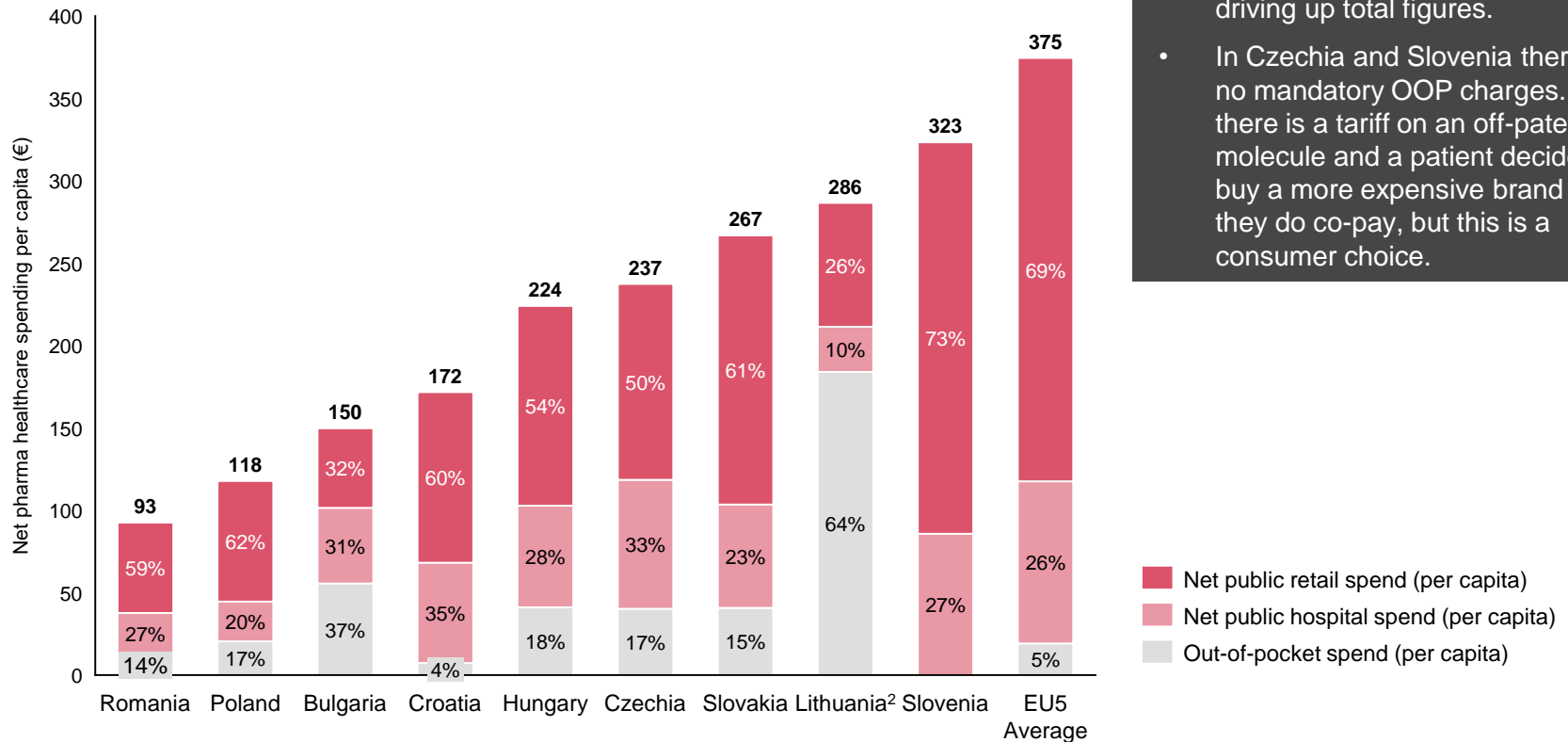
Methodology

Disability-adjusted life years - The sum of DALYs across the population measures the gap between current health status and an ideal health situation. It is the sum of Years of Life Lost (YLL) due to premature mortality and Years Lost due to Disability (YLD) for people living with the health condition or its consequence.

Across several CEE countries, out-of-pocket expenditure makes up a significant proportion of pharmaceutical expenditure

High co-payments worsen health outcomes by incentivising underconsumption of medicines¹

Breakdown of Total Net Pharmaceutical Expenditure per capita
2017



- Out-of-pocket (OOP) pharmaceutical expenditure is high in many CEE countries, driving up total figures.
- In Czechia and Slovenia there are no mandatory OOP charges. If there is a tariff on an off-patent molecule and a patient decides to buy a more expensive brand then they do co-pay, but this is a consumer choice.

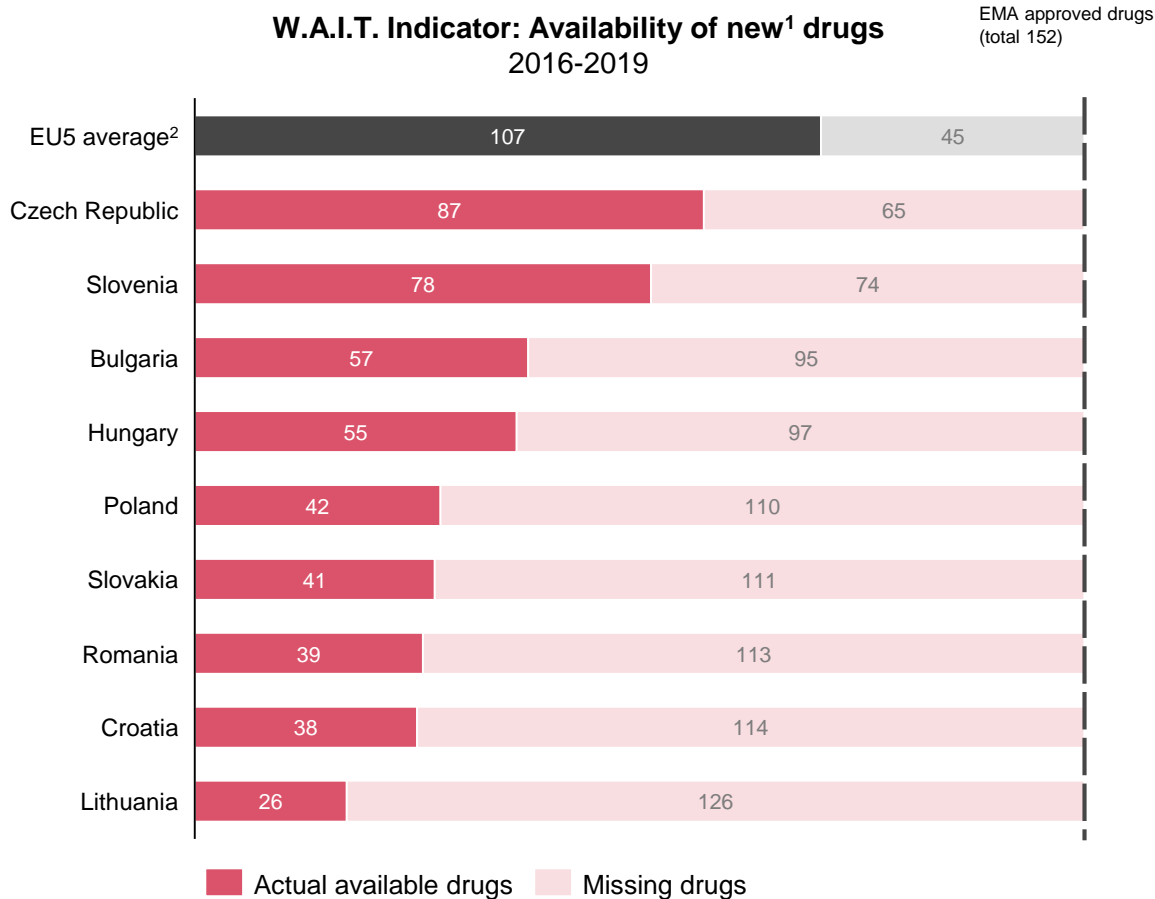
Source: PwC analysis of EFPIA estimates of net pharmaceutical expenditure

1. Gemmill 2008

2. Additional measures have been implemented in Lithuania since 2017 that have sought to reduce levels of Out-of-pocket spending within the country

Patients in the EU5 had access to over twice as many innovative therapies as those in CEE between 2016 and 2019

On average, only 34% of new drugs authorised by the European Medicines Agency (EMA) were available in CEE countries



- The W.A.I.T. Indicator measures differences in time to reimbursement across Europe. A medicine is available on the market if patients can receive the medicine under a reimbursement scheme. The chart shows number of new EMA-authorized medicines available to patients across Europe
- Some available medicines are only for a limited sub-population, rather than all patients.³ For instance, 22% of available medicines in Slovakia and in Poland had limited availability

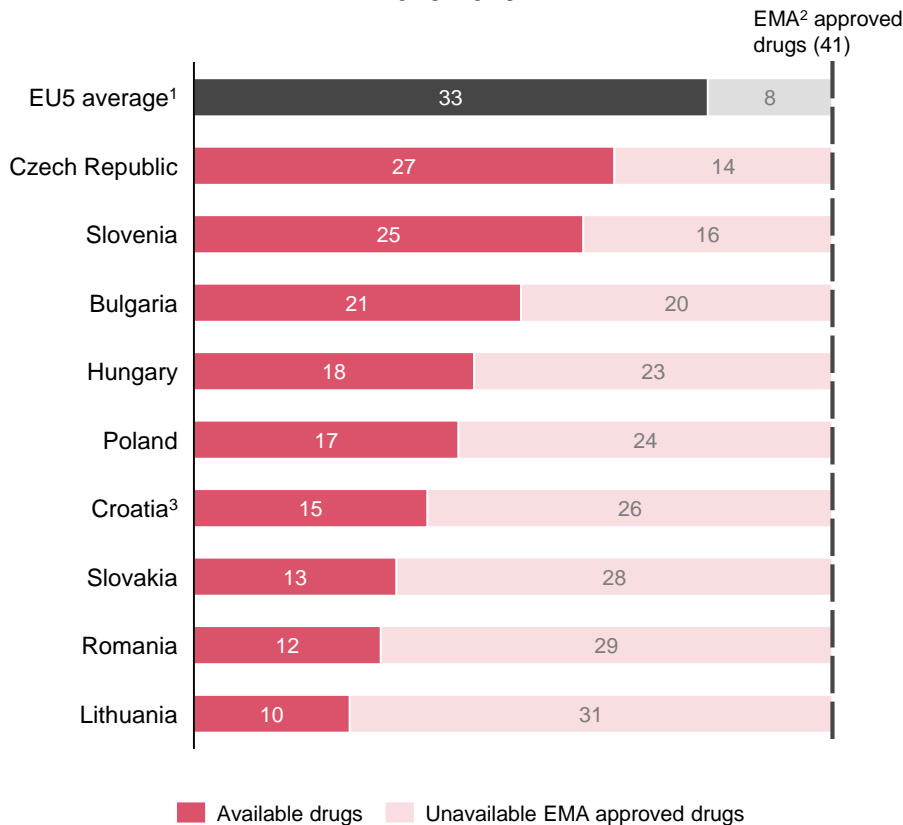
Methodology

Availability date – The first date when doctors can prescribe/hospitals can administer the medicine to patients in the country, who will be able to benefit from reimbursement conditions applicable in the country

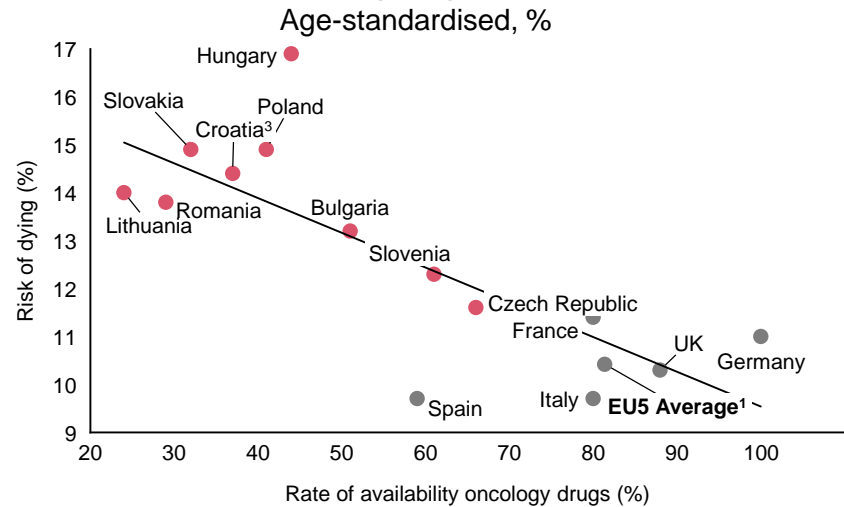
Poorer access to innovative therapies is often linked to poorer health outcomes, for example in oncology

Patients in the EU5 had access to almost twice as many new oncology drugs as those in CEE and had a much lower risk of dying from cancer

W.A.I.T Indicator: Availability of new oncology drugs 2016-2019



W.A.I.T Indicator: Rate of availability of new oncology drugs (2016-19) compared to risk of dying from cancer (2018)



Methodology

Risk of dying from cancer – The cumulative probability of dying from cancer, expressed as the % of newborn children who would be expected to die from cancer before the age of 75, assuming a constant rate of cancer incidence as observed in the period of observation and in absence of competing causes of death. It is estimated using age-specific rates and therefore not influenced by differences in age structures.

Patients in CEE countries also waited longer to get access to new drugs that were available between 2016 and 2019

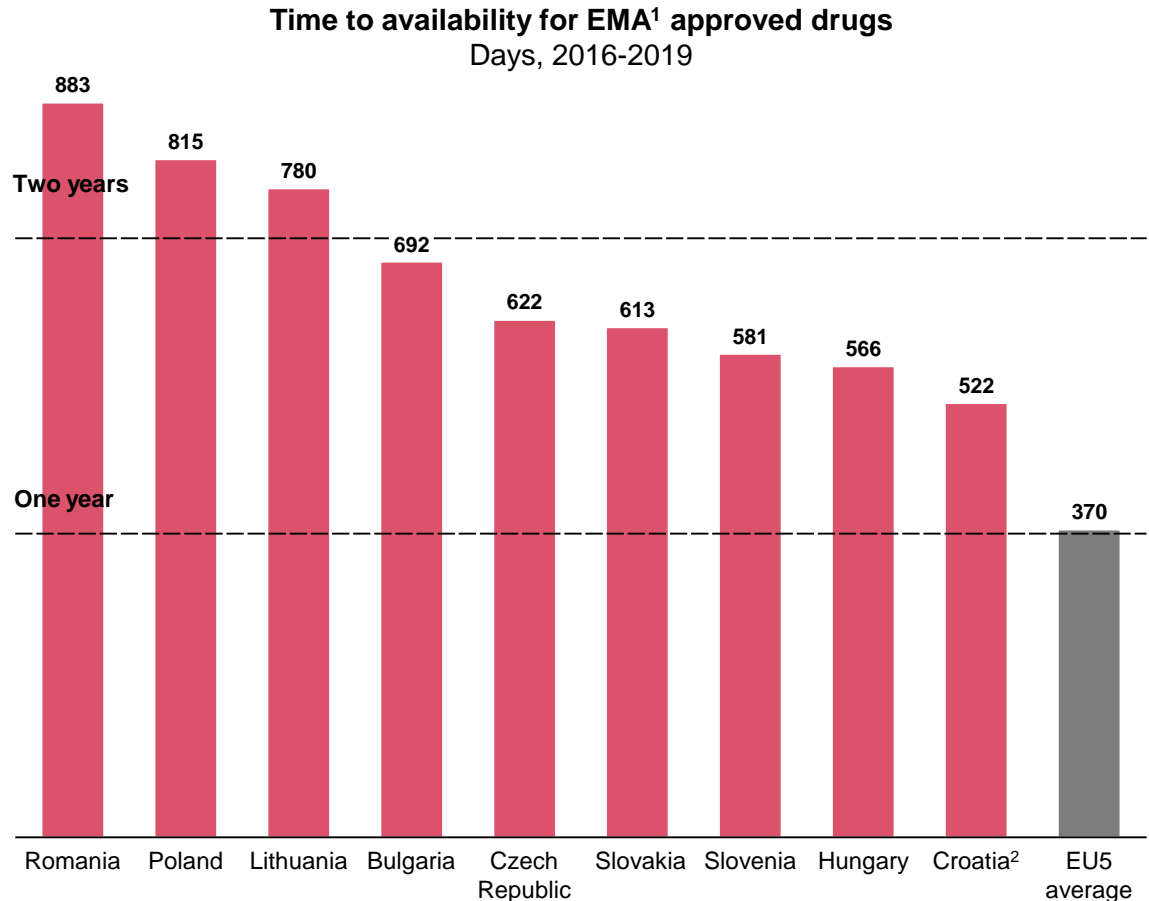
It took an extra 304 days on average for a drug to be made available in CEE than in the EU5

There is a large variation in the speed of access to different products **within a country**. For example, in Poland some drugs become available after 170 days, whereas for other drugs this can take **almost five years**.



Methodology

Time to availability (previously known as length of delay) - The number of days between EMA market authorisation of a medicine and the date it becomes available to patients which, for most countries, is the point at which it gains access to the reimbursement list.



Increased healthcare spending will improve health outcomes, boost economic performance and improve fiscal sustainability



Message 2 overview:

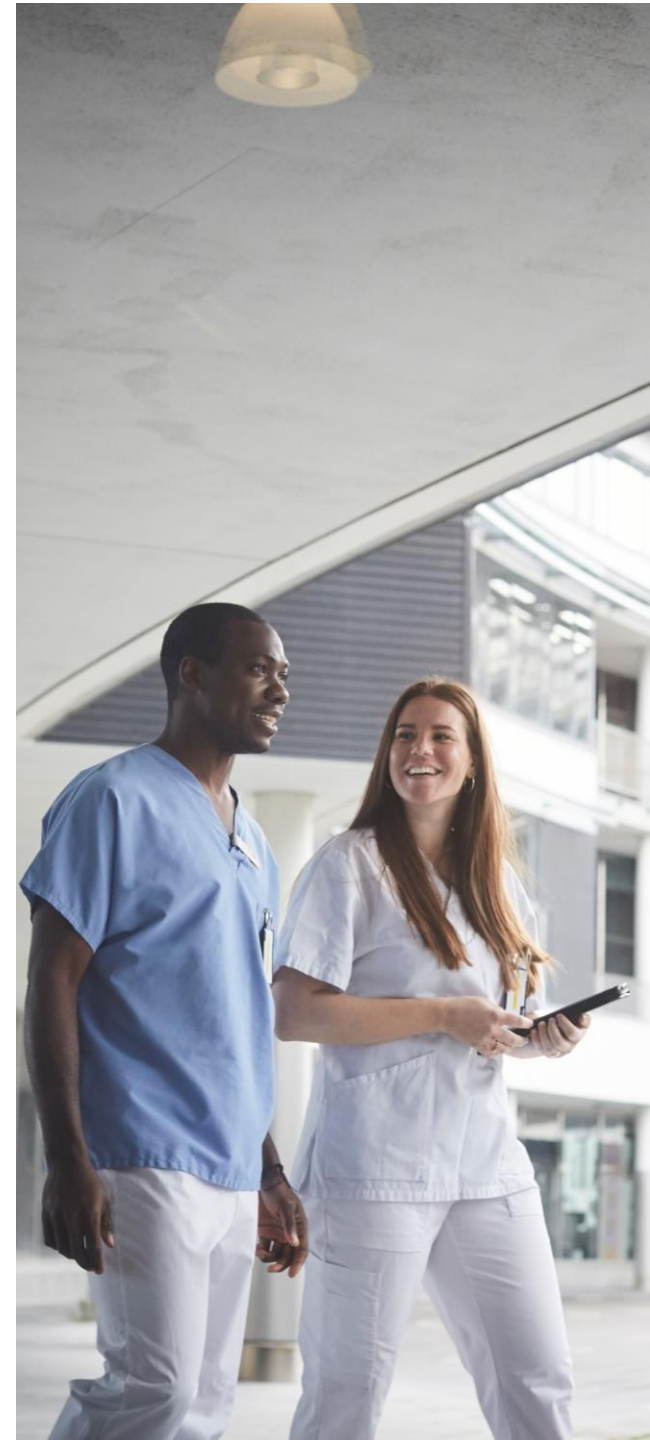
Increased healthcare spending will improve health outcomes, boost economic performance and improve fiscal sustainability

2a) The economic benefits of better health outcomes

- Healthcare spending is associated with better health outcomes, including lower disability adjusted life years, amenable mortality and mortality from circulatory diseases
- Improved health outcomes enhance the economic performance of a country, measured through GDP and productivity

2b) The potential impact of improving health outcomes in CEE countries

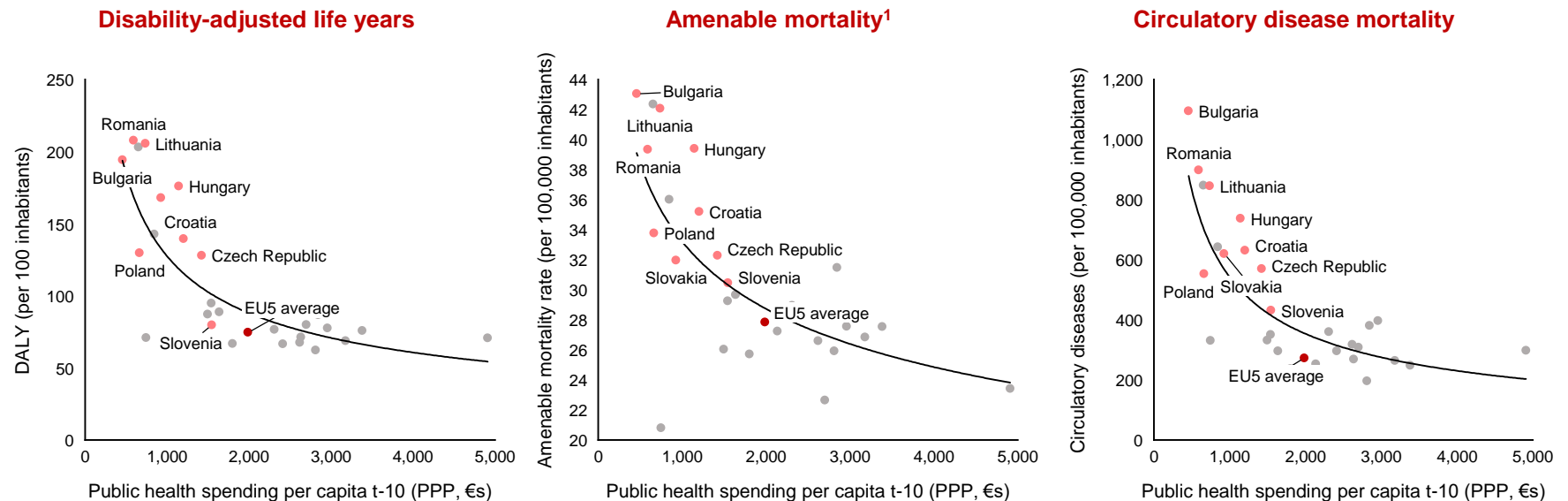
2c) The positive impact of innovative therapies for CEE countries



Higher levels of healthcare spending are associated with better health outcomes

This relationship holds across the EU for health outcomes such as DALYs, amenable mortality and mortality rates from circulatory diseases

Public health spending per capita (2006) and key health indicators (2016) across the EU



Methodology

Disability-adjusted life years - The sum of DALYs across the population measures the gap between current health status and an ideal health situation. It is the sum of Years of Life Lost (YLL) due to premature mortality and Years Lost due to Disability (YLD) for people living with the health condition or its consequence.

Note: We have analysed a 10 year lag between health spending and outcomes, to allow for impacts of spending changes to fully materialise

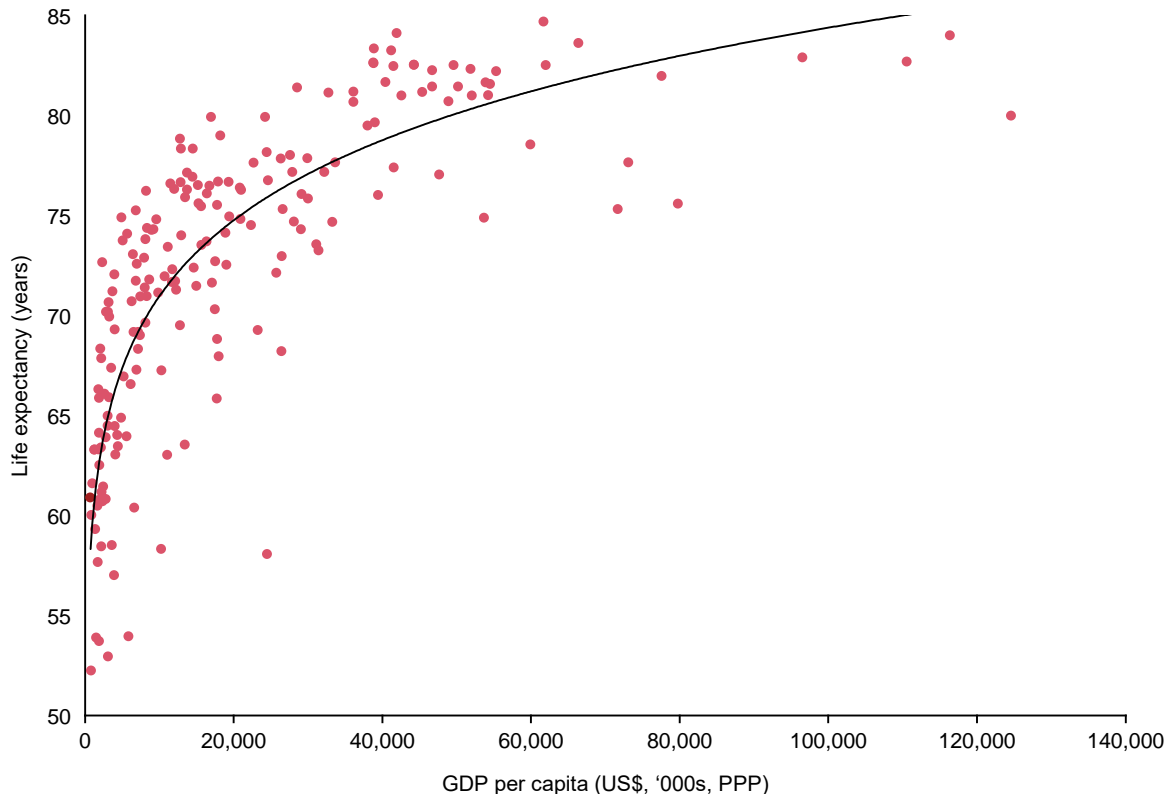
Source: PwC analysis of WHO data 'Health expenditure financed by government schemes & compulsory contributory health insurance schemes' (PPP) data, WHO data for DALY and Eurostat data for Amenable mortality and Circulatory disease

1. For definition of amenable mortality see slide 18.

Better health outcomes are associated with higher per capita incomes across the world and over time

This positive relationship was identified in 1970 by Preston

The Preston Curve: Life expectancy and GDP per capita across 194 countries
\$,000s, PPP-adjusted, 2017



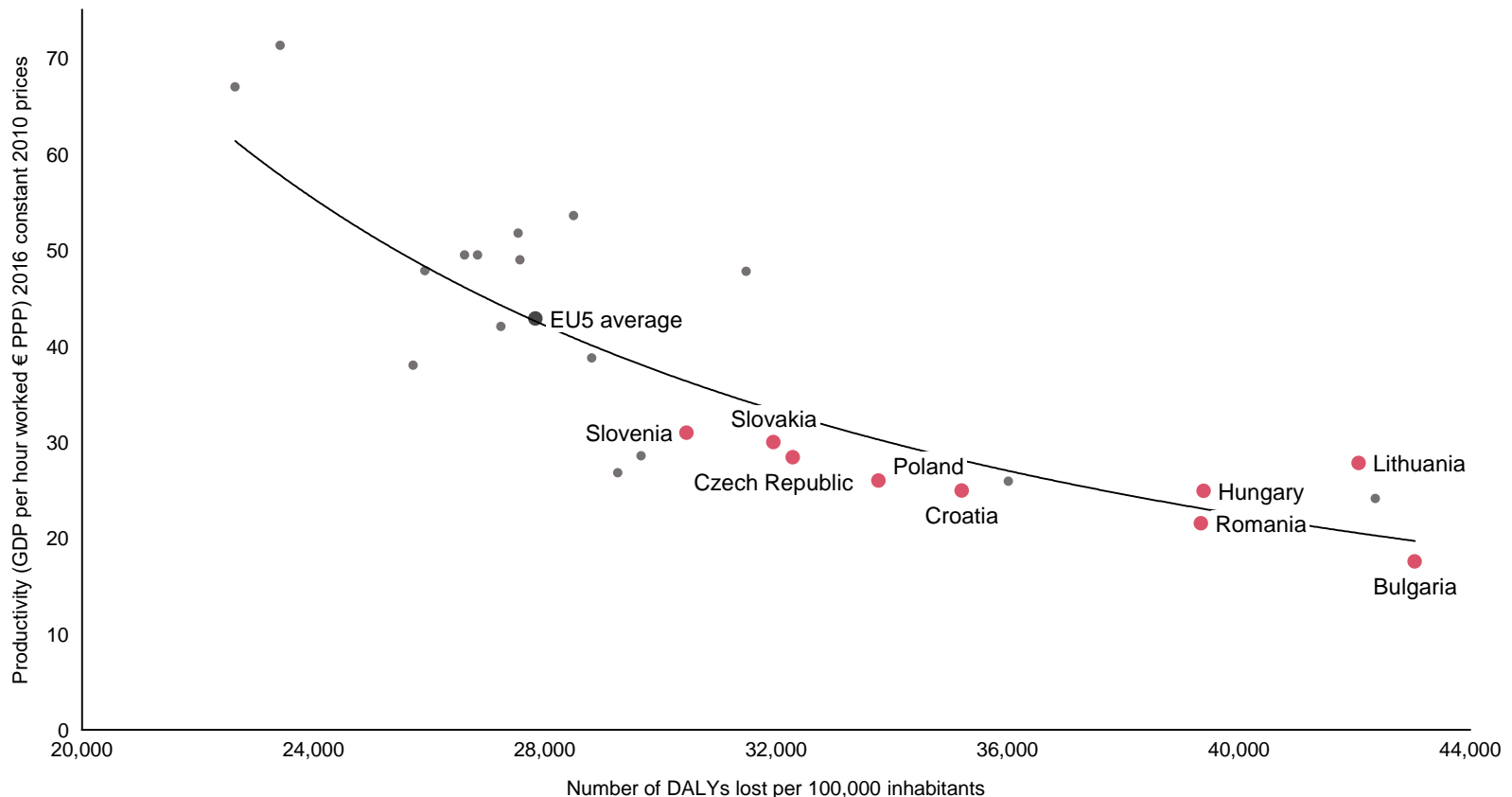
Better health outcomes drive higher per capita incomes and higher incomes drive better health outcomes (e.g. by allowing more investment in healthcare).

Evidence on this relationship is extensive and includes key studies by the **World Health Organisation** (2001), **World Bank** (2008) and **European Commission** (2013).

The countries in the EU with the most lost years of 'healthy life' are also the least productive

CEE countries have higher rates of disability and lower productivity than the EU5 average

Disability adjusted life years (DALYs)¹ lost compared to GDP per hour worked
€, PPP-adjusted, EU countries, 2016



Message 2 overview:

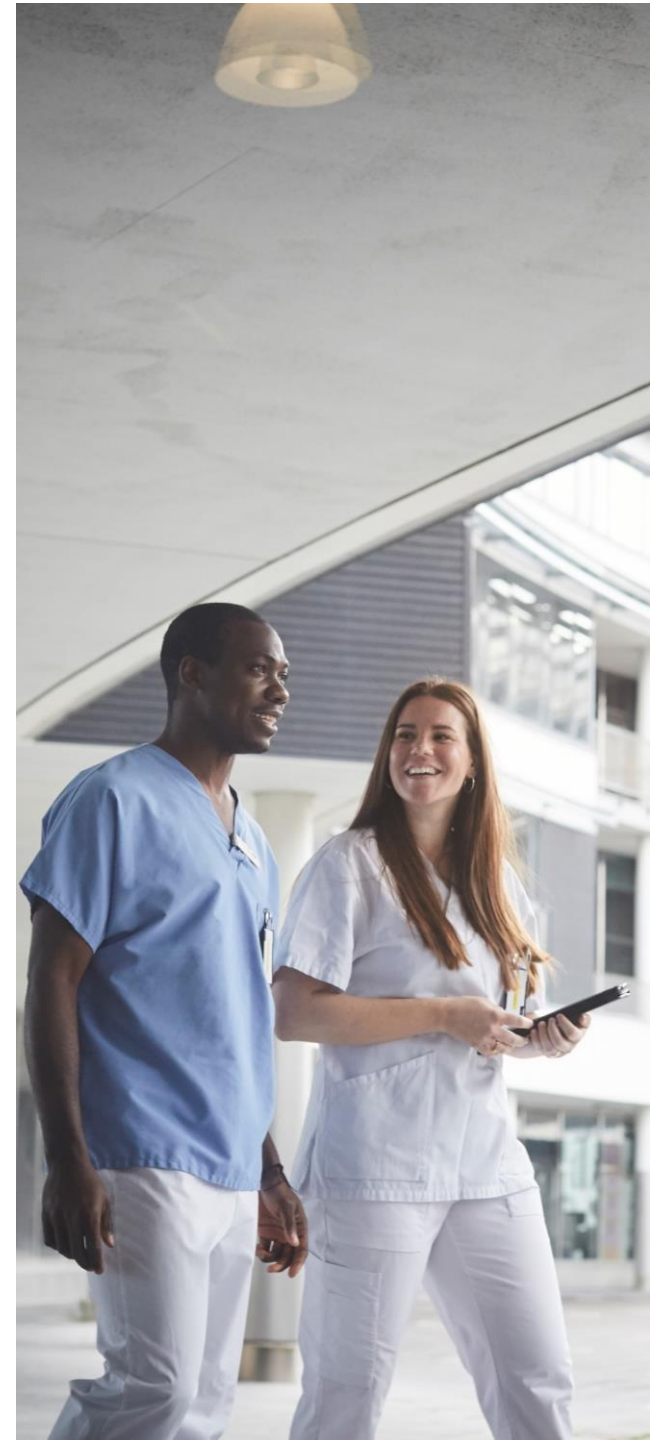
Increased healthcare spending will improve health outcomes, boost economic performance and improve fiscal sustainability

2a) The economic benefits of better health outcomes

2b) The potential impact of improving health outcomes in CEE countries

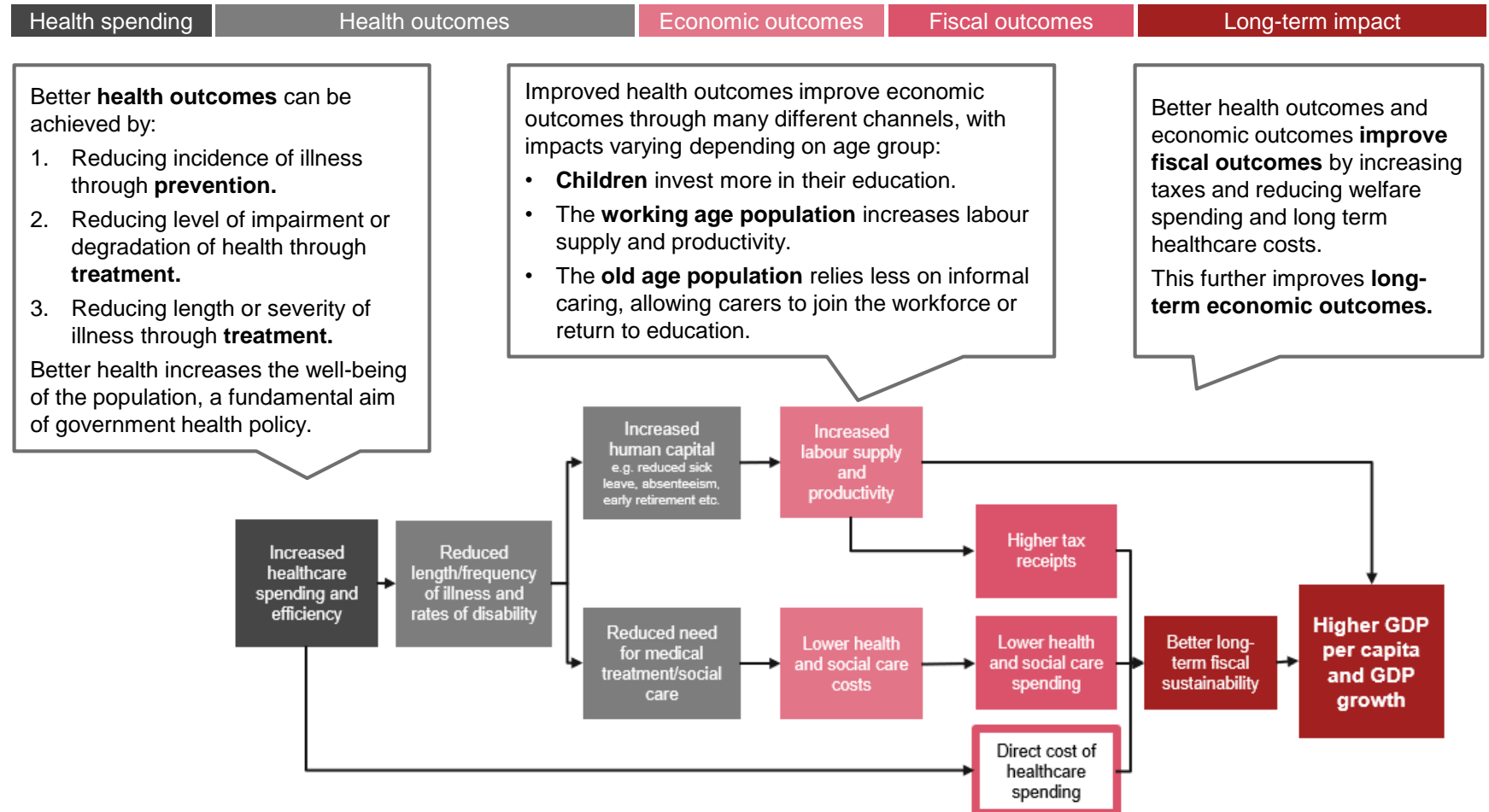
- Improved health outcomes have the potential to boost economic and fiscal performance of CEE countries
- This can occur through a number of channels, including reductions in time taken away from work (absenteeism), or reducing inactivity in the labour force due to ill health and informal caring responsibilities

2c) The positive impact of innovative therapies for CEE countries



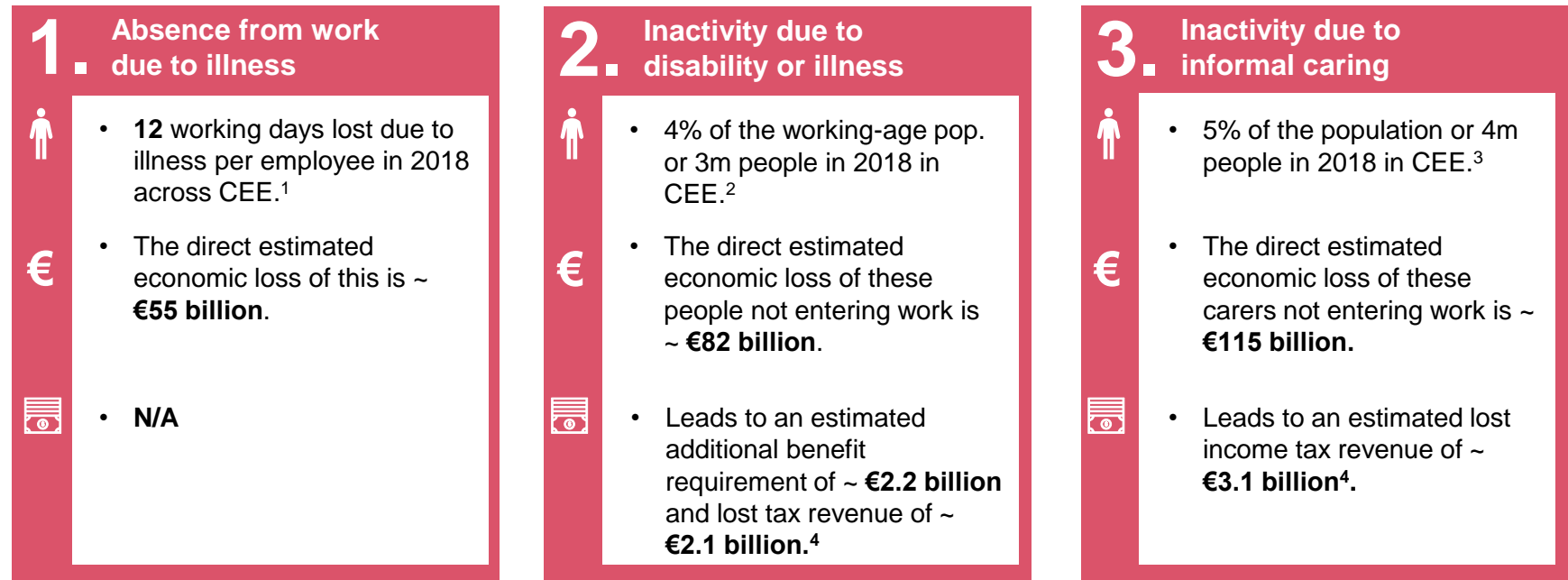
Improved health outcomes boost economic and fiscal performance in several ways

Including through increased labour supply, tax contributions and enhanced productivity



CEE countries experience significant economic and fiscal losses due to the impact of illness and disability on the workforce

Lost working days gave rise to an estimated economic loss of €264bn across CEE in 2018

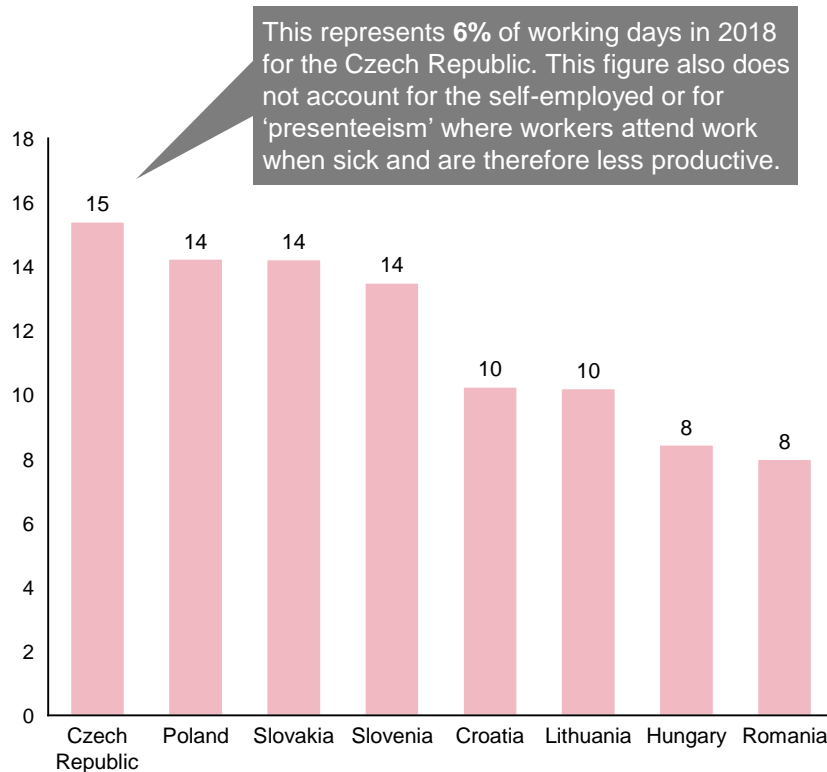


National breakdowns of all figures and detailed methodologies are available on slides 39 - 42

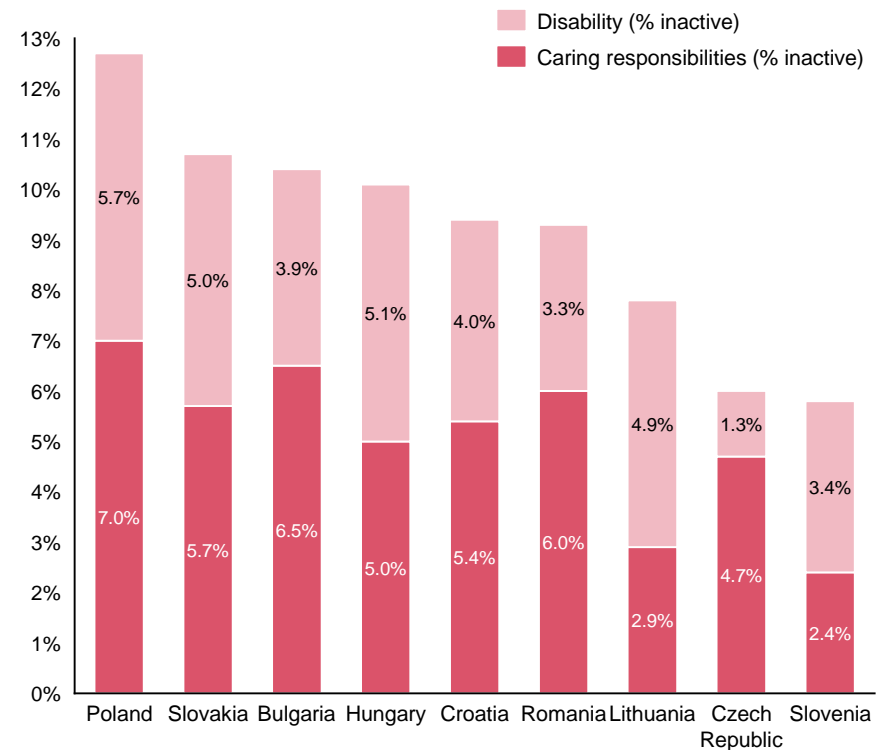
Poorer health outcomes in CEE have led to more of the working age population being inactive or absent from work

With 9% of the working age population inactive in CEE and 5% of working days lost for workers

Average number of working days lost per employee per year due to sickness or injury
2018 or most recent available year



Inactivity due to illness or disability and due to informal caring responsibilities
% of the working age population 2017/2018 (current prices)



Even modest reductions in time away from work due to ill health would have large potential benefits

In 2013 the cost of paid sick leave constituted 0.8% of GDP across the EU¹

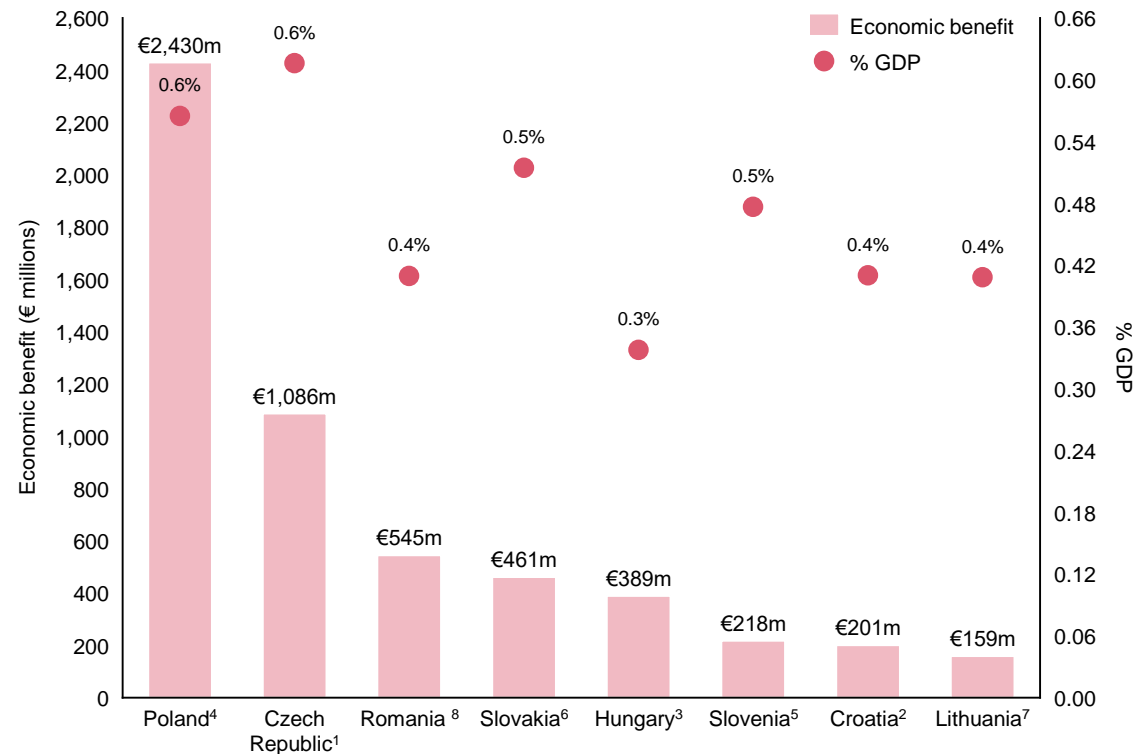
Reducing absenteeism by 10% by improving health outcomes represents an average fall from **12.6 to 11.8 days** per employee per year.

Methodology:

Estimated by multiplying working days lost per employee, the total no. of employees and GDP per worker per working day, assuming 250 working days p.a.. Assumed GDP per worker remains constant, i.e. increases in the labour supply do not decrease wages. This figure was then multiplied by 0.1 (additional working days gained) to find 10% improvement

Estimated annual increase in GDP from reducing absence² from work due to illness by 10%

€ million, 2018 or most recent available year (current prices)



Source: PwC analysis of WHO data for absenteeism. Eurostat data for employment statistics and €GDP. Most recent years for absenteeism data 2012(8), 2015(4), 2016(1,3,7), 2017(2), 2018(5,6).

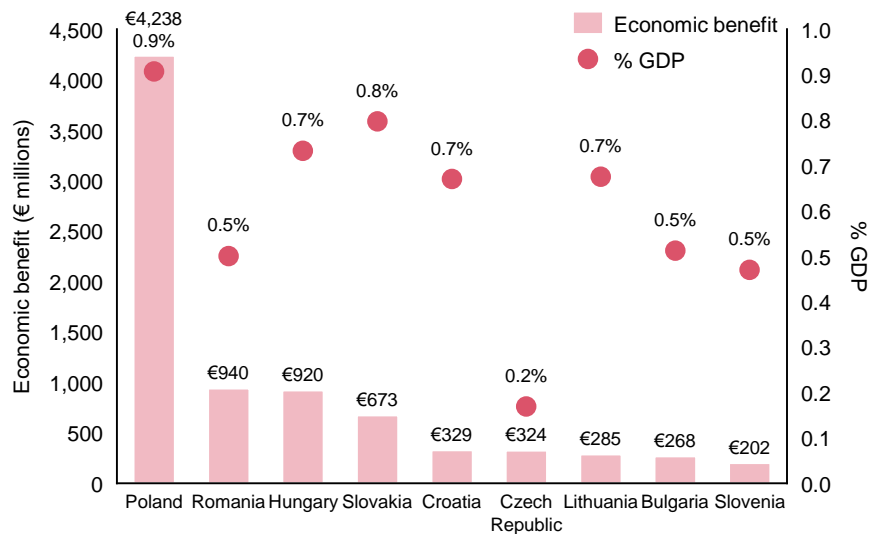
1. Eurostat data (Labour Force Survey) – includes 24 European countries.

2. WHO definition of absenteeism: Average number of working days lost per employee per year due to sickness or injury (excluding maternity leave).

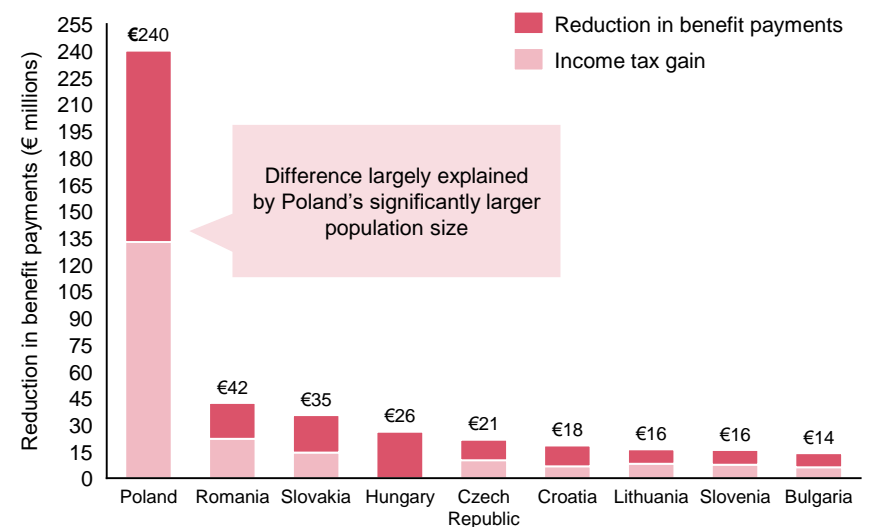
Improved health outcomes for the long-term sick and disabled would offer even larger economic and fiscal benefits

Reducing inactivity due to disability/illness by 10% has a potential economic and fiscal gain of €8.6bn across CEE countries

Estimated annual increase in GDP if inactivity¹ due to illness or disability fell 10%
€ million, 2017 (current prices)



Estimated decrease in benefit payments and increase in income tax revenue if inactivity due to illness/disability fell 10%
€ million, 2017 (current prices)



Methodology:

Estimated by multiplying 10% of no. of working age people made inactive due to a) disability and illness and b) caring responsibilities by annual GDP per worker. Assumed GDP per worker remains constant, i.e. increases in the labour supply do not decrease wages.

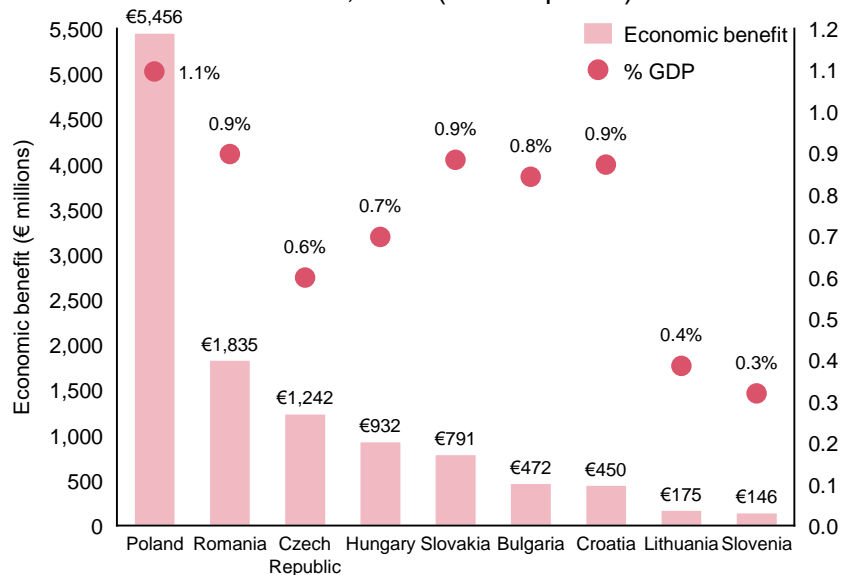
Methodology:

Average annual income tax payments per working age person Estimated (using income tax data and population data) then multiplied by 10% of the no. of working age people made inactive due to disability and illness. Assumed tax revenue remains constant for each additional worker.

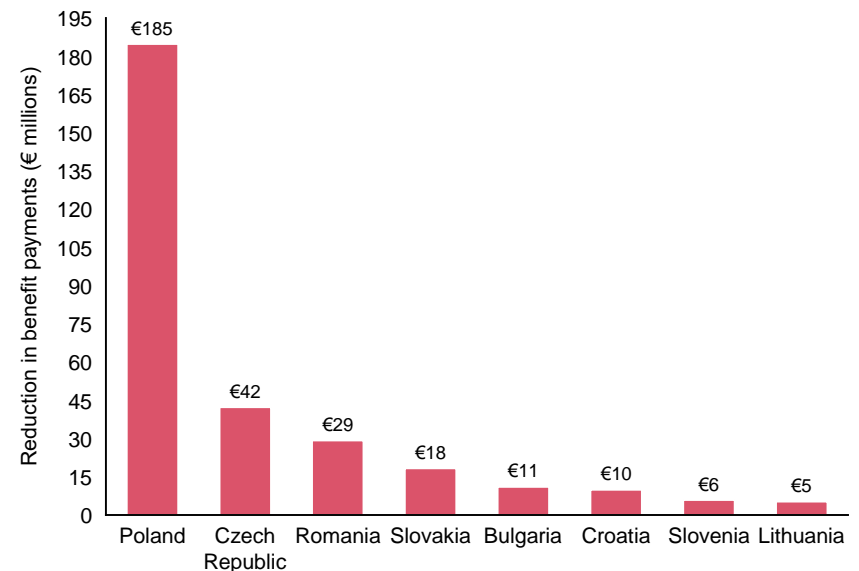
Improved health outcomes can also boost labour supply by reducing the need for informal care

With a total estimated increase in GDP of €11.5bn across CEE countries

Estimated increase in GDP from getting 10% of currently inactive¹ informal carers into work
€ millions, 2018 (current prices)



Estimated increase in income tax revenue if inactivity due to caring reduced by 10%
€ millions, 2017 (current prices)



Methodology:

Estimated by multiplying 10% of the inactive population by annual GDP per worker. Assumed GDP per worker remains constant, i.e. increases in the labour supply do not decrease wages.

Methodology:

Average annual income tax payments per working age person Estimated (using income tax data and population data) then multiplied by 10% of the population inactive due to informal caring responsibilities. Assumed tax revenue remains constant for each additional worker.

Message 2 overview:

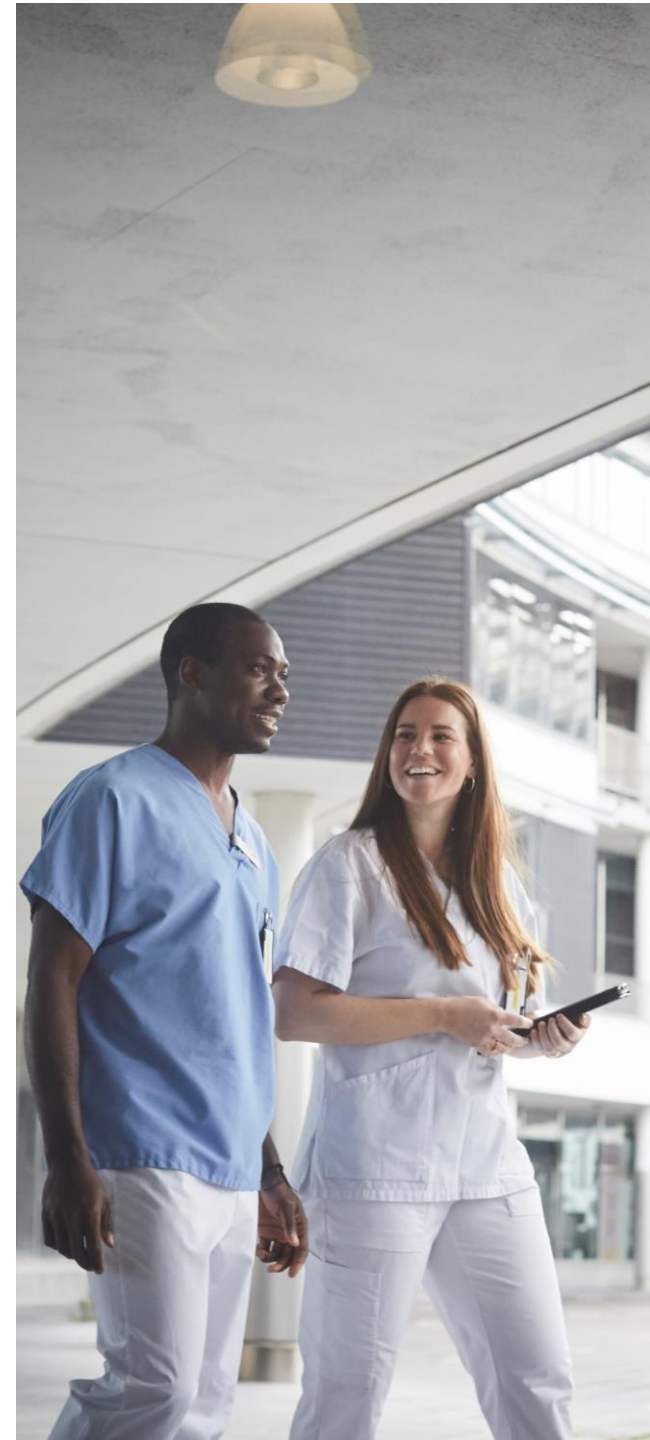
Increased healthcare spending will improve health outcomes, boost economic performance and improve fiscal sustainability

2a) The economic benefits of better health outcomes

2b) The potential impact of improving health outcomes in CEE countries

2c) The positive impact of innovative therapies for CEE countries

- Innovative therapies have improved health outcomes, reduced costs to the healthcare system and delivered economic benefits
- Therapies currently being developed have the potential to deliver even further benefits in the future



Innovative therapies have created direct savings by lowering healthcare costs, for example in oncology

Innovative cancer therapies have fewer side effects and are more effective than previous options

Pharmaceutical innovation in Slovenia 2003 – 2009:

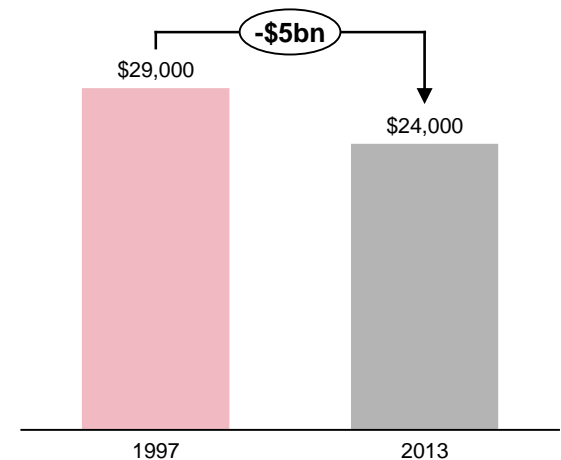
7% fall in hospital discharges in 2010

85% of the increase in drug expenditure has been offset by reduction in hospital expenditure

12% more cancer deaths (age-standardised) could have occurred if innovation had not taken place

Lichtenberg (2015) - Pharmaceutical innovation in **Slovenia** between 2003-2009 is estimated to have contributed to two-thirds of the decline in premature mortality. It has resulted in a cost-per-life year saved of **€3 953**. This is considered significantly cost effective, when comparing to the country's GDP per capita¹

Cost of cancer treatment per patient United States, \$, 1997-2013



Lichtenberg (2018) - New cancer drugs in the US between 1993-2014 reduced the amount of days spent in hospital and thus the cost of treatment by **\$5bn**

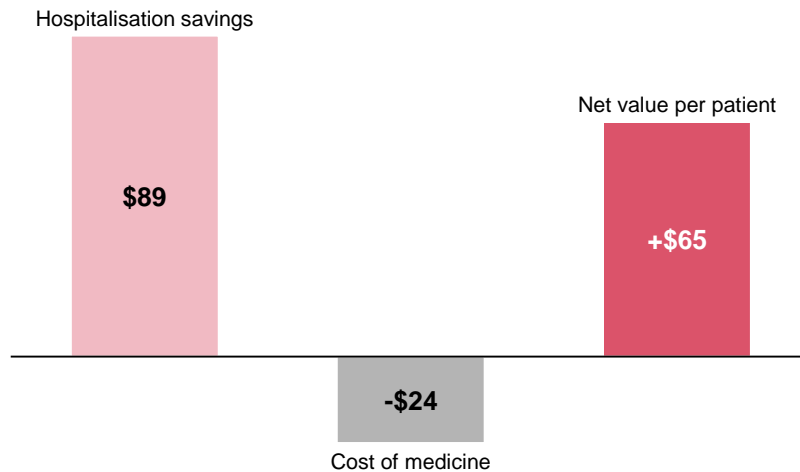
The number of life years lost from cancer also fell, by an average rate of **0.93% per year**

Sources: Lichtenberg (2015) – 'The impact of pharmaceutical innovation on premature mortality, cancer mortality and hospitalisation in Slovenia 1997-2010' and Lichtenberg (2018) – 'How cost effective are new cancer drugs in the U.S.'
1. The most common cost-effectiveness threshold is that interventions costing less than 3x GDP per capita for each DALY averted should be supported (WHO <https://www.who.int/heli/economics/costeffanalysis/en/>)

Innovative therapies for cardiovascular diseases have delivered significant benefits by reducing patient adverse events¹

This reduces the cost of treatment and increases patient well-being

Net value per patient of innovative cardiovascular medicines 20 OECD countries, \$, 1995-2003



Lichtenberg (2009) – Study of innovative cardiovascular medicines across 20 OECD countries (1995-2003) found that:

- Usage of innovative medicines led to a reduction of hospitalisation costs that was 4x greater than an increase in the direct cost of medicines
- Reduced the age-adjusted cardiovascular disease mortality rate

Grabwoski (2012) - The development of statins between 1987-2008 to treat high cholesterol was estimated to reduce **28,000 deaths, 41,000 heart attacks, 15,000 strokes** in 2008 across Europe

+\$433bn

net gain (overall social value from extra years of life minus the cost of treatment)

Sources: Lichtenberg (2009) – 'Have newer cardiovascular drugs reduced hospitalisation, 1995-2003' and Grabwoski et al. (2012) – 'The large social value resulting from use of statins warrants steps to improve adherence and broaden treatment'

1. Adverse event = injury resulting in prolonged hospitalisation, disability or death, caused by healthcare management

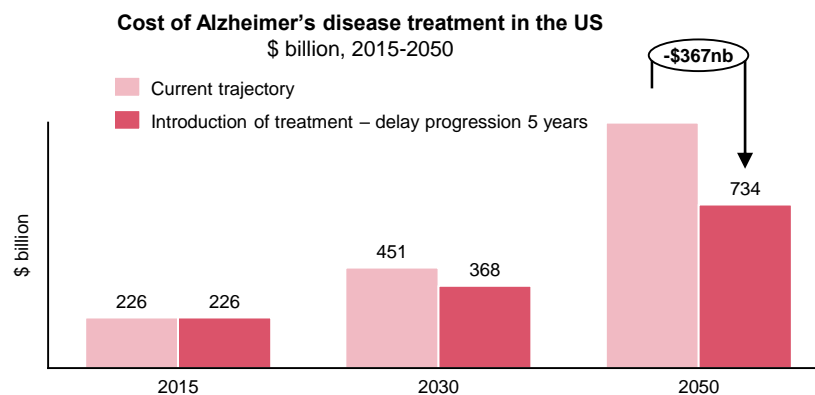
Innovative therapies currently being developed have the potential to create further benefits in the future (1/3)

A recent pipeline review identified a number of key disease areas where new innovations are likely to address significant unmet need

Disease modifying therapy for Alzheimer's disease

Around 1.4m patients¹ in CEE countries suffered from dementia in 2018, with an average cost of €13,000 per person¹ or €19bn p/year across all CEE countries (€2bn p/year in the average CEE country).

- Current treatments of Alzheimer's disease only treat worsening symptoms of the disease. However, a **disease modifying therapy** (β-Amyloid Pathway), that can be administered at early stages of the disease, could offer the potential to delay disease progression.
- It is estimated that the development of innovative therapies to delay the onset of dementia by 5 years, **could lower hospitalisation costs in US by 40% by 2050**



CGRP inhibitors for Migraines

Migraines contribute to ~14 lost work days per patient each year, equivalent to ~530m days lost in the EU and €45bn lost in GDP³

- **CGRP inhibitors** are currently in development, with three drugs approved between 2018/19, and three expected to launch by 2020/21.
- Phase 3 trial evidence indicates that patients could achieve >50% reduction in headache days, translating to ~155m fewer work days lost and **GDP gains of €13bn p/year** across the EU³.
- CGRP inhibitors could also prevent hospitalisation due to medicine overuse and, as a result, **decrease total healthcare spend across the EU by 15.3% (~€1bn per year)**.

Sources: PwC analysis of data from Alzheimer's Association 'Changing trajectory of Alzheimer's disease (2015) and EFPIA pipeline review full evidence deck (2019). See for <https://www.efpia.eu/we-wont-rest/innovation-1-0ld/> more detail on the various therapy areas

1. The number of patients with Dementia obtained from ('Dementia in Europe Yearbook 2019').

2. Cost is obtained from World Alzheimer Report by taking average cost per person in Central and Eastern Europe – assume that it stays constant (2015)

3. GDP and healthcare impacts based on EFPIA/IQVIA impact analysis, summarised in the EFPIA pipeline review full evidence deck

Innovative therapies currently being developed have the potential to create further benefits in the future (2/3)

A recent pipeline review identified a number of key disease areas where new innovations are likely to address significant unmet need

CAR-T therapies for Blood Cancer

Haematological cancers resulted in 600,000 global deaths in 2013, up 37% from 1990, and cause 3.6m DALYs in Europe each year

- CAR-T therapies have the potential to reduce blood cancer mortality and improve quality of life compared to the current standard of care, which have high relapse rates.
- They could **reduce current healthcare expenditure on targeted therapy by ~55-100%** and the associated side effects. The curative potential could allow patients to contribute to the economy, resulting in an additional **~€5.1bn to nominal GDP¹ p/year** across the EU for patients diagnosed in 2020

Combination therapies for Lung Cancer (NSCLC)

Lung cancer is the 3rd most common cancer in Europe. Non-small-cell lung cancer (NSCLC) represent 85-90% of all lung cancers²

- **Combination therapies** use multiple drugs to boost the chance of **patient survival** and improve patient quality of life vs chemotherapy alone. Between 2018-19, three product combinations received market authorisation and four more combinations are to launch by 2023.
- Increasing long-term survival rates could mean fewer patients requiring palliative care/overnight stays; reducing the pressure on healthcare utilisation. It could also increase patient contribution to the economy. For NSCLC patients diagnosed in 2020, **an estimated €662m could be generated in GDP each year¹**.

Sources: EFPIA pipeline review full evidence deck (2019). See for <https://www.efpia.eu/we-wont-rest/innovation-1-old/> more detail on the various therapy areas

1. GDP and healthcare impacts based on EFPIA/IQVIA impact analysis, summarised in the EFPIA pipeline review full evidence deck

2. European Society for Medical Oncology (2018)

Innovative therapies currently being developed have the potential to create further benefits in the future (3/3)

A recent pipeline review identified a number of key disease areas where new innovations are likely to address significant unmet need

Cell Therapies for Type 1 Diabetes

In the EU, approximately 5 million people suffer from Type 1 diabetes (T1D), with incidence growing at 3-5% p/year. The cost of managing T1D and associated co-morbidities is estimated to cost EU healthcare systems a total of €12bn p/year¹.

Cell therapies involve injecting living cells into a patient to treat the T1D, without the need for daily injections and without relying on patient adherence to therapy. Five cell therapies are anticipated to receive marketing authorisation by 2021.

Cell therapies offer significant clinical and quality of life benefits for T1D patients. They reduce the incidence of life-threatening co-morbidities due to long-term control of blood-glucose levels and have the potential to **reduce the risk of cardiovascular disease by ~30%** in patients that do not receive intensive treatment.

Current therapy is unable to fully control blood-glucose levels and results in many days taken off work as a result. The reduction in co-morbidities could **reduce sick days due to hospitalisation by ~650,000 per year**, which could lead to an **increase in nominal GDP of ~€16bn¹**.

mAb's for Bacterial infections

Bacterial, lower respiratory infections are the 4th leading cause of death in the world².

Innovation in antibacterials has falling since the 1980s, despite a growing problem of multiple drug resistant bacteria. **Antibacterial monoclonal antibodies (mAbs)** offer more targeted treatment to slow the development of antibiotic resistance - saving lives of patients that would otherwise not respond to treatment and improving quality of life by reducing side effects of high antibiotic doses.

mAbs could reduce infections due to these selected MDR bacteria, reducing healthcare costs and productivity losses, which **currently cost the EU economy at least €1.5 billion each year³**

CEE health systems
require further
investment to meet
future healthcare
challenges and be
financially sustainable
over the longer term



Message 3 overview:

CEE health systems require further investment to meet future healthcare challenges, and be financially sustainable in over the longer term

3a) Future healthcare challenges for CEE

- An ageing population in CEE countries will put pressure on healthcare spending in the future, as elderly people require more costly care
- Increasing dependency rates associated with an ageing population will also increase demand for social care services in CEE, requiring increases in long-term care spending
- Ensuring that health outcomes improve as the population ages can significantly reduce future spending pressures

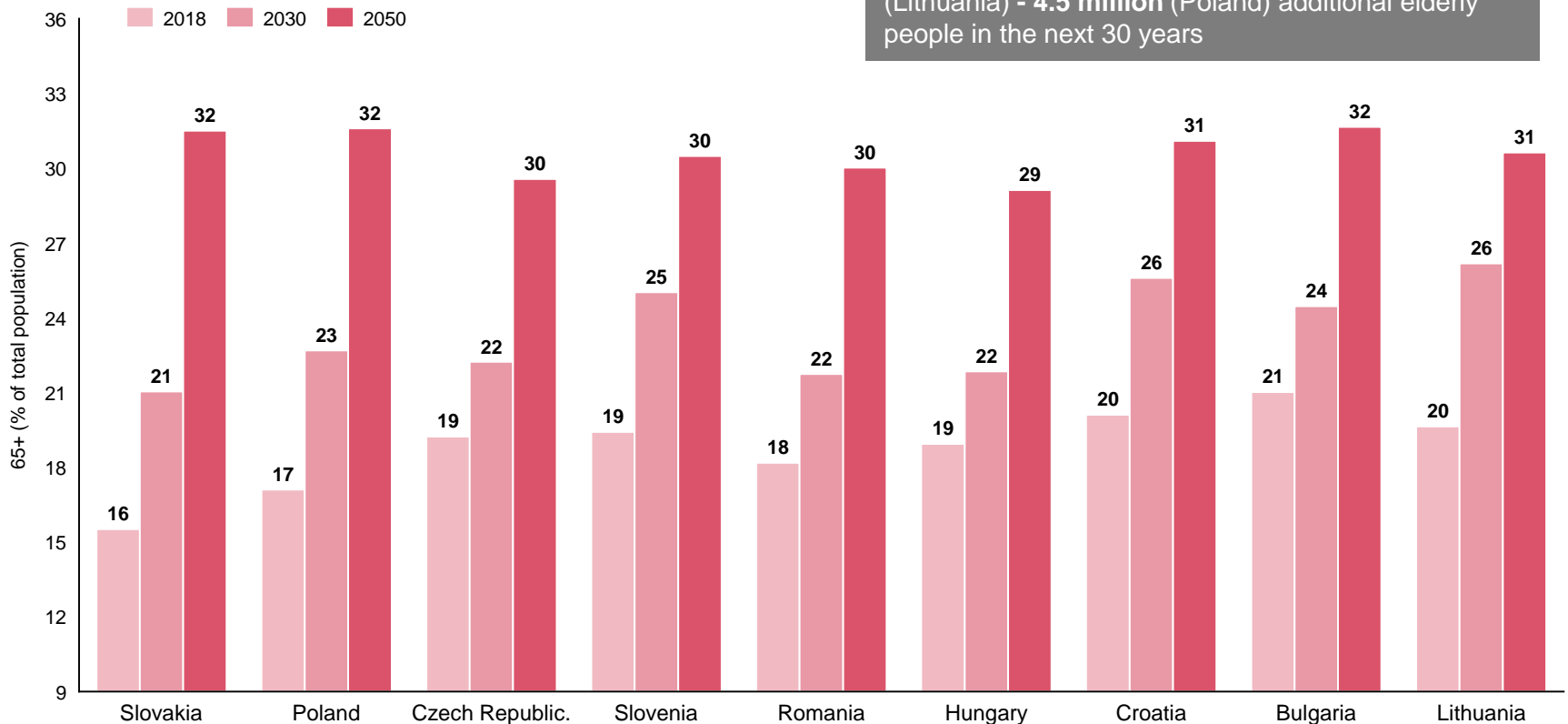
3b) Ensuring long-term fiscal sustainability in CEE



Populations in CEE countries are ageing

The share of the population aged over 65 in CEE is expected to increase from 19% in 2018 to 31% in 2050

Proportion (%) of the population aged 65+ in 2018, 2030 and 2050 (projections)



CEE countries are expected to see between 110,000 (Lithuania) - 4.5 million (Poland) additional elderly people in the next 30 years

Per capita healthcare spending increases with age, largely driven by higher rates of disease as people get older

Elderly people require more costly care so an ageing population will tend to put pressure on the cost of future healthcare systems

Age-related healthcare spending per capita as proportion of GDP per capita
%, 2016

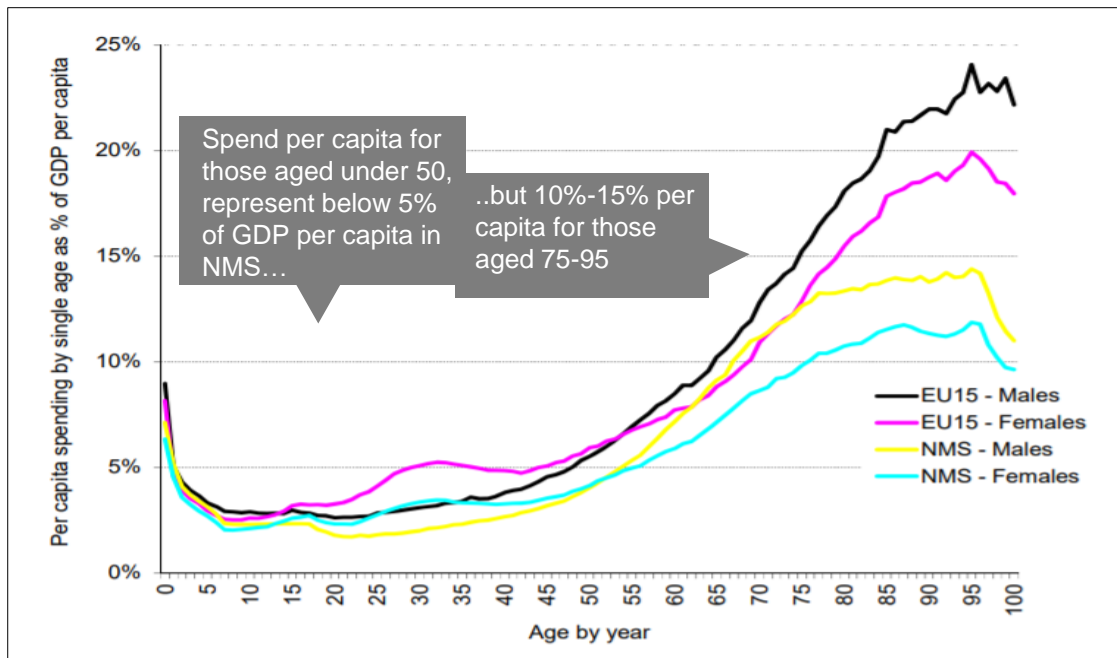


Image: European Commission – The 2018 Ageing Report

Analysis by the European Commission shows that, in CEE countries public spending per capita increases with age, notably 55+.

This is largely because older people often develop multiple diseases, which require costly medical care.

For instance, the prevalence of multimorbidity increased from 23% for those aged 55-59 to 53% for those aged 70 and over across 16 EU countries.¹

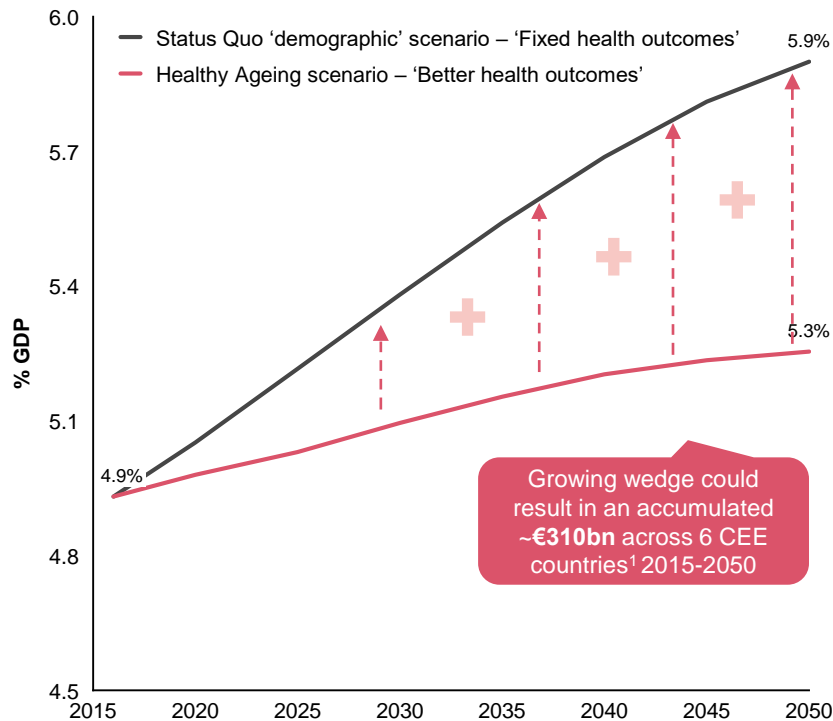
Source: European Commission (2018), The 2018 Ageing Report. Economic & Budgetary Projections for the 28 EU Member States (2016-2070).

1. Palladino (2016) based on 2011-12 Survey of Health, Ageing and Retirement in Europe (SHARE) across 16 EU countries

Improving health outcomes in CEE countries will reduce future spending pressures linked to ageing.

This could reduce public healthcare spending by an estimated €310bn across CEE by 2050¹

Projected increase in public health expenditure due to ageing across CEE countries
% of GDP, 2016-2050



Growing wedge could result in an accumulated ~€310bn across 6 CEE countries¹ 2015-2050

The European Commission projects future healthcare spending based on two scenarios which assume different levels of **per capita spending according to age**:

1. The **'Status quo/Fixed health outcomes'** scenario² assumes no change in current rates of disease and morbidity. Every additional year of life is spent 'bad health'. The age-expenditure profiles remain constant and a greater number of older people results in increasing healthcare costs.
2. The **'Healthy-Ageing/Better health outcomes'** scenario² assumes longevity increases in line with an increasing number of healthy life years. Age-expenditure profiles are shifted outwards from the base year, in proportion to life expectancy increases.



Methodology:

Total estimated savings calculated by combining public healthcare spending projections as % of GDP³ (in 5 year intervals) with projected GDP (PPP terms) to calculate **cumulative** spending under both scenarios and then finding the difference. For missing data in the intervals, we assume the compound annual growth rate.

Source: PwC analysis of data provided by European Commission 2018 Ageing report

1. Croatia, Bulgaria and Romania are excluded from this figure as there were no GDP projections (OECD data). Figures have been converted from USD to EUR using 2018 exchange rate.

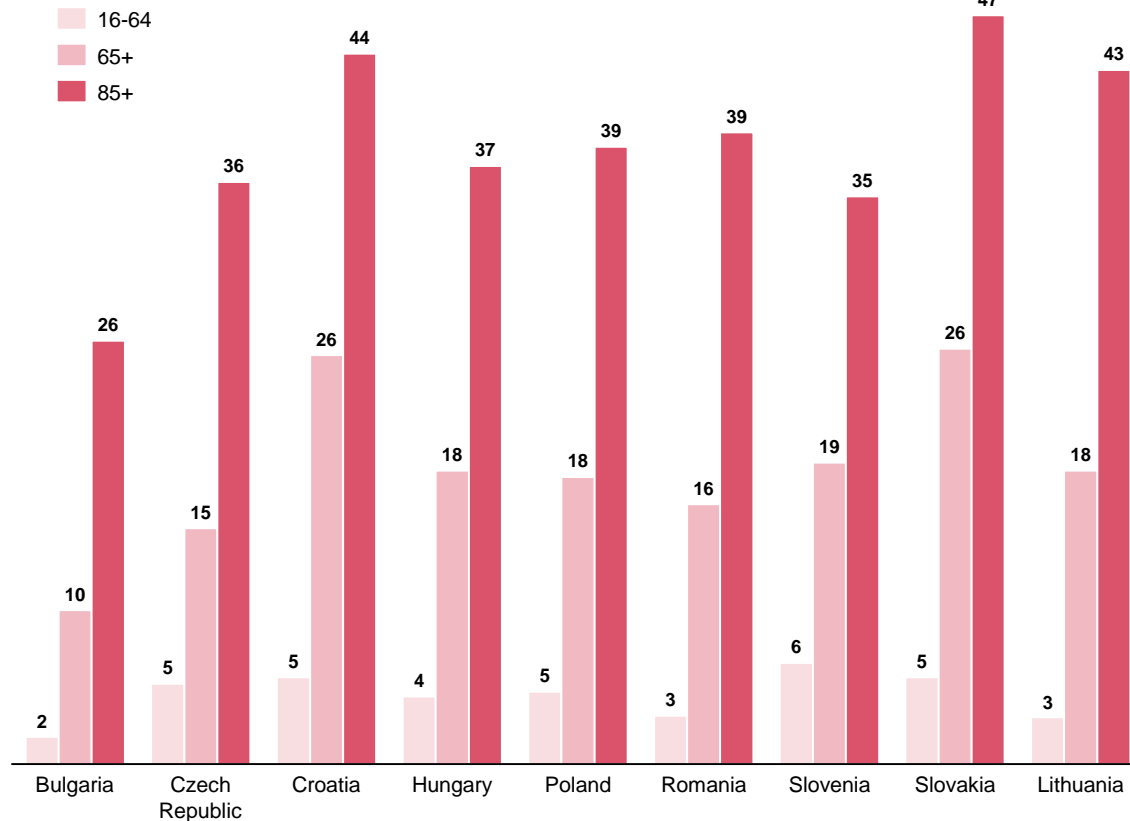
2. This is considered the 'demographic scenario' in the report. For example, the life expectancy of a 50 year old man is expected to increase from 30 years in year t to 34 years in t+20 (by 4 years). This scenario assumes that this old man will have per capita public expenditure profile of a (50-4) = 46 year old man in year 5

3. Public healthcare spending as % of GDP is not directly comparable to earlier analysis, as these projections combine SHA and COFOG datasets and exclude long-term care spending

Ageing populations will also mean growing demand for social care services

4% of 16-64s had severe health problems limiting their ability to perform daily activities compared to 40% of those over 85

Dependency rates per age group
%, 2018



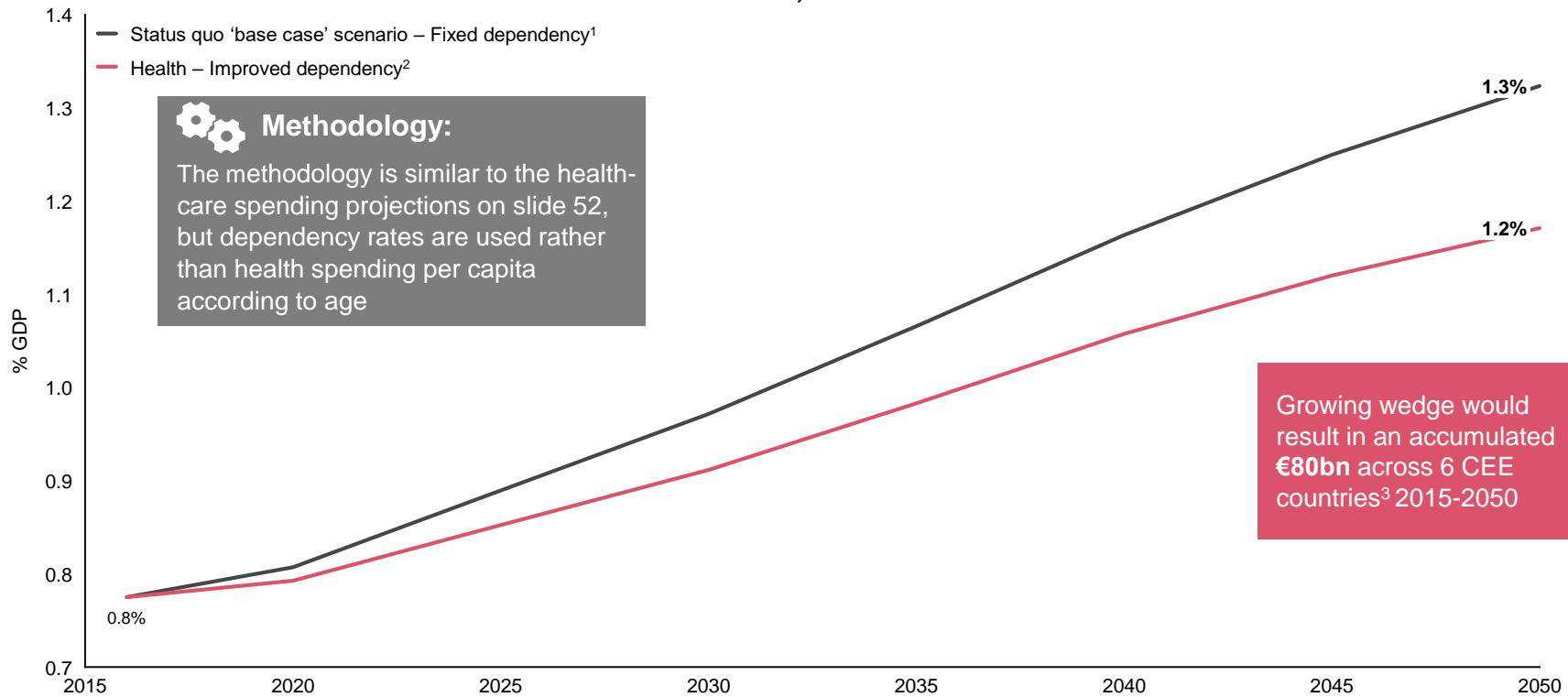
Methodology:

Dependency relates to the **severe** inability to perform activities of daily living and instrumental activities of daily living. People with dependency issues therefore require some degree of external assistance. Dependency rates are higher in older age groups, and directly drive long term care expenditure.

An ageing population is projected to increase public spending on long-term care from 0.8% of GDP to 1.3% by 2050 in CEE.

If populations age healthily, this could save a total of €80bn across CEE countries

Projected increase in public spending on long-term care due to ageing across CEE countries
% of GDP, 2016-2050



Source: PwC analysis of data provided by European Commission 2018 Ageing report

1. Defined as the 'base case' scenario in the report 2. Defined as 'constant disability scenario' and/or 'healthy ageing scenario in the report.

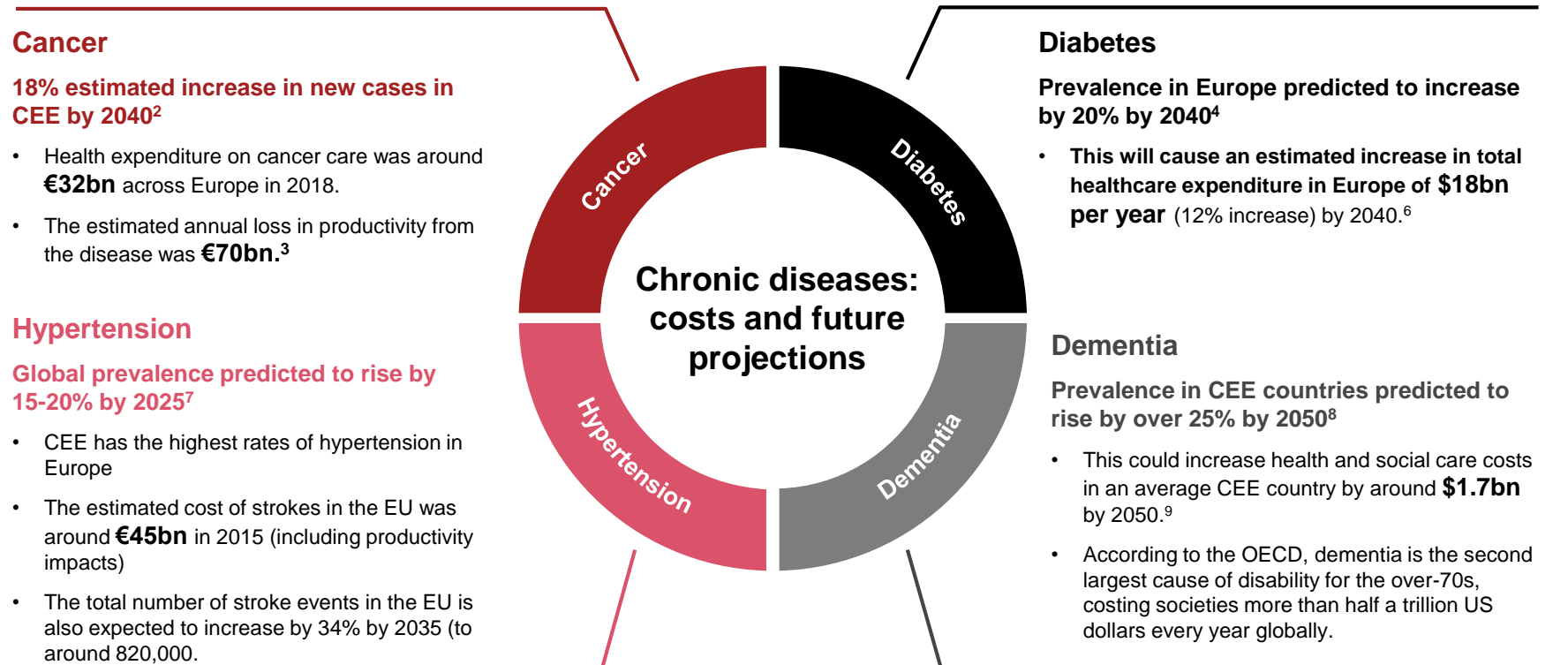
For example, if the life expectancy of a 50 year old increases by 2 years in 2030, the dependency rate is that of a 48 year old man today

3. Croatia, Bulgaria and Romania are excluded from this figure as there were no GDP projections (OECD data). Figures have been converted from USD to EUR using 2018 exchange rate.

Chronic diseases are becoming more prevalent which increases demand for healthcare services and the need for spending

Patients with chronic diseases use health services more frequently and are most costly to treat

Across 16 EU countries, the presence of multiple diseases or conditions (multimorbidity) was found to **double the number of annual doctor visits** compared to those with no chronic disease and **increase annual hospitalisations by over one third**.¹



Message 3 overview:

CEE health systems require further investment to meet future healthcare challenges, and be financially sustainable in over the longer term

3a) Future healthcare challenges for CEE

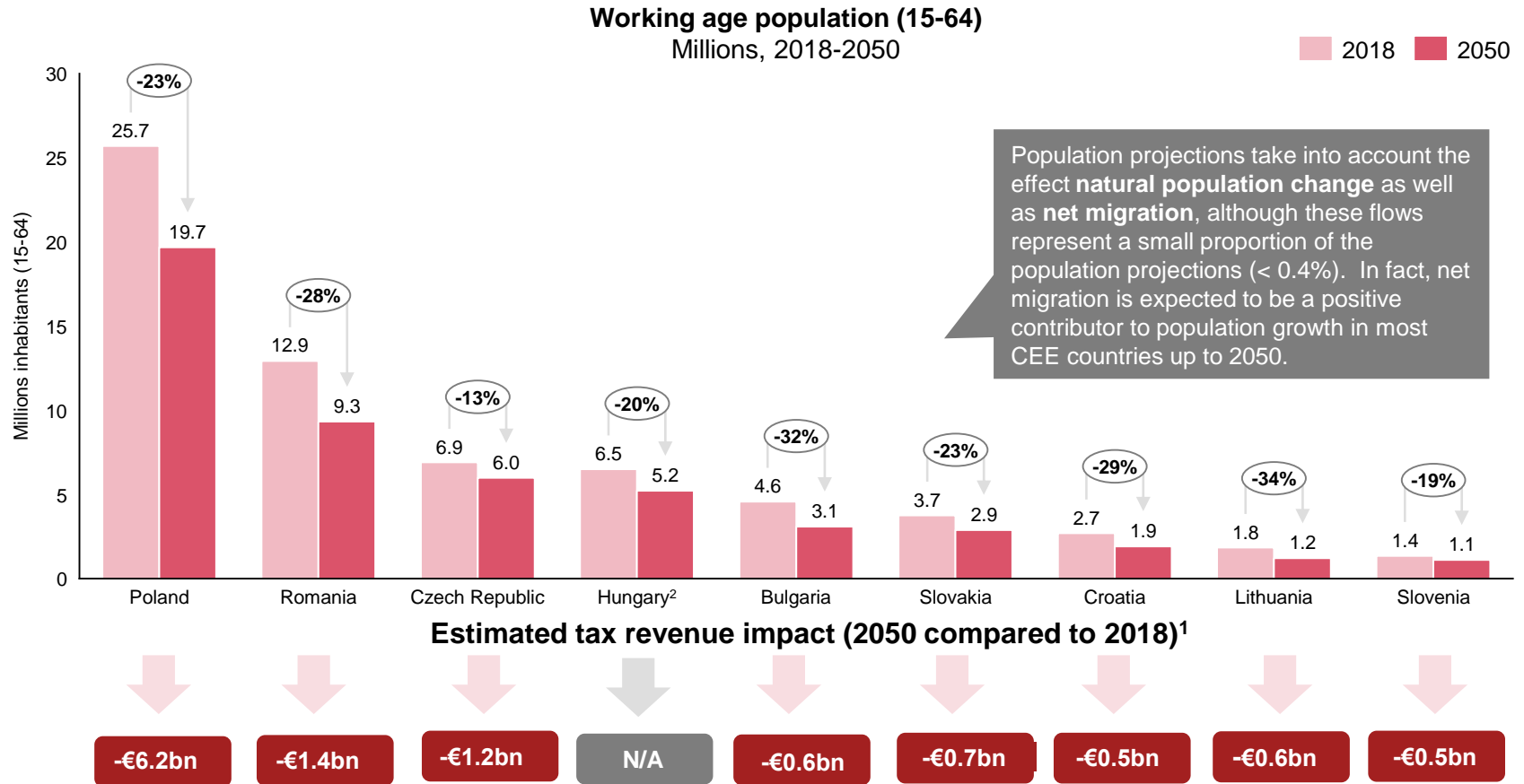
3b) Ensuring long-term fiscal sustainability in CEE

- Relieving future pressure on the health system is particularly necessary in CEE countries as the working age population decreases and income tax receipts decline



The working age population is projected to fall by 16m in CEE so reducing labour supply and tax revenue

This would reduce annual income tax revenue by an estimated €11bn by 2050 across CEE



Source: PwC analysis of Eurostat data for income tax and population projections

1. This is the difference between annual tax revenue in 2018 and annual tax revenue in 2050. We assume tax paid per working age person remains constant between 2018 and 2050. Income tax is from salaries/wages individual or household income.

2. Hungary has missing tax revenue data

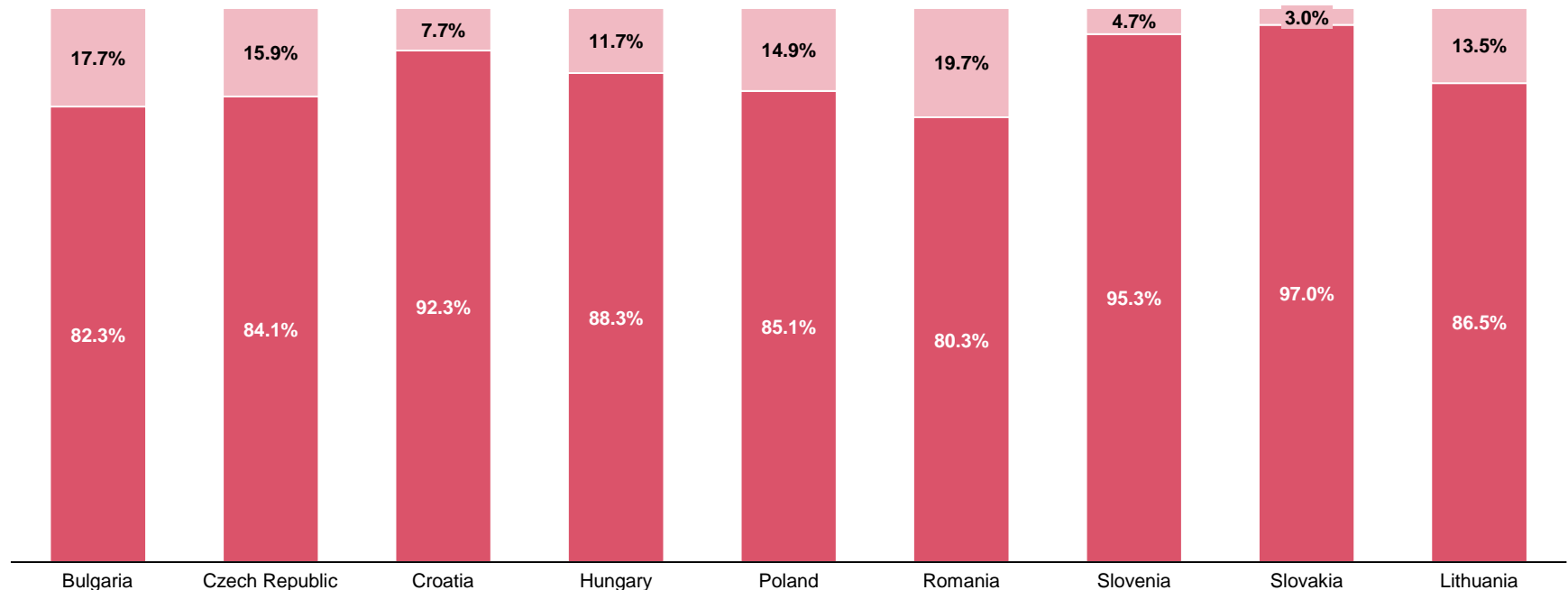
This also means that fewer workers will pay into compulsory health insurance schemes reducing funding for public healthcare

These schemes make up 88% of public healthcare financing in CEE countries

% of total public healthcare spending by financing scheme
2017

Salary contributions (from employer and employee) range from 8% of income in Bulgaria to 14% in Slovakia and 16.5% in Croatia

■ Compulsory contributory health insurance schemes
■ Government schemes

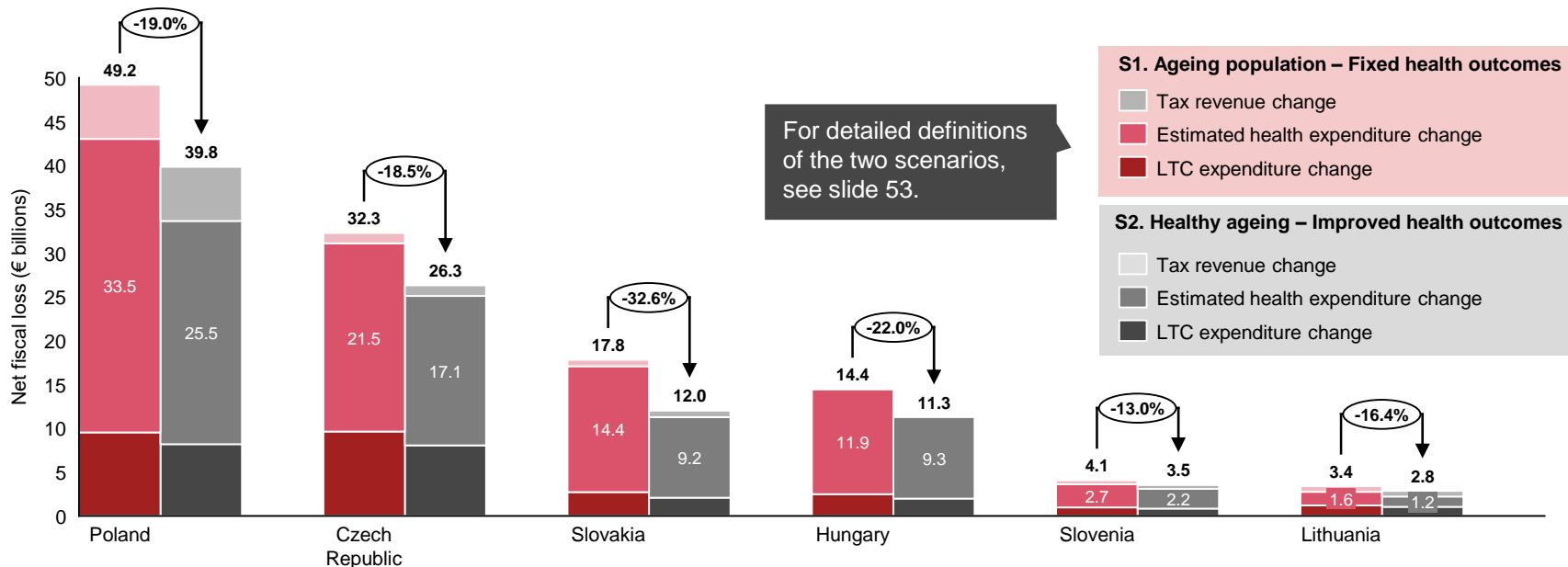


Increasing demand for healthcare coupled with a shrinking workforce pose a threat to future fiscal sustainability

Investing in healthcare will reduce future cost pressures as well as create economic benefit

Estimated change in health, long-term care spending and annual tax revenue across all CEE countries

Based on scenarios developed by the European Commission, 2018-2050



Methodology:

The net fiscal loss is an estimate of increases in absolute health spending under both scenarios (higher under S1), combined with estimated reductions in tax revenues (equivalent under both scenarios) between 2018 and 2050. To calculate the absolute spending difference, we have combined two data sources – European Commission projections for healthcare spend as % GDP for each country and OECD projections for GDP in PPP terms (with missing data for non-OECD countries Romania, Bulgaria and Croatia).

Policy reform can improve health outcomes by increasing the efficiency and effectiveness of healthcare spending



Message 4 overview:

Policy reform can also improve health outcomes by increasing the efficiency and effectiveness of healthcare spending

- Moving toward a digitised healthcare system, with strong community based care can improve efficiency i.e. reducing costs without compromising care quality.
- Policies which promote appropriate competition from biosimilars and generics can create headroom in budgets for new and more effective medicines
- Improving adherence to medication, through initiatives such as medicine reviews and patient support, has the potential to reduce resource waste and improve treatment effectiveness.
- Reforming the way healthcare systems are financed, through the introduction of integrated budgets and novel payment schemes, can improve resource allocation and support the sustainability of funding for new medicines.
- Ensuring the flow of better information across the healthcare system, through outcome measurement and horizon scanning, can help to identify effective treatments and support sustainable budget planning.

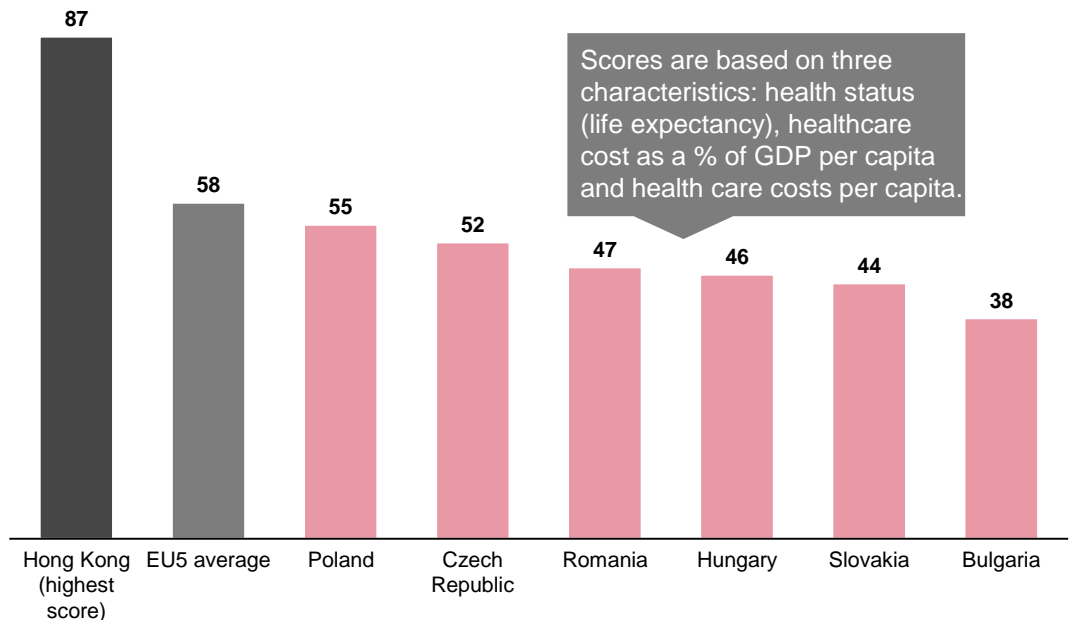


There is considerable scope to improve efficiency across healthcare systems in CEE

CEE countries currently sit below the EU5 average when it comes to healthcare efficiency scores

- Key sources of inefficiencies¹:
 - **Wasteful clinical care** - patients receive ineffective / inappropriate care (e.g. medical errors, provision of 'low-value' care).
 - **Operational waste** – poor management of resources and spending on medicines.
 - **Governance-related waste** – use of resources that do not directly contribute to patient care (e.g. administrative burden, fraud).

Bloomberg healthcare efficiency index²
(based on 2016 data)



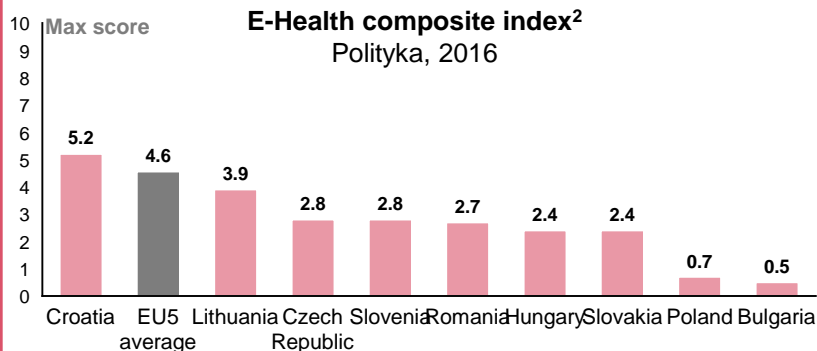
The following slides outline a number of **policy reforms to increase efficiency** across entire the healthcare sector

Healthcare systems can improve efficiency and increase patient access by investing in digitisation

The COVID-19 pandemic has demonstrated the need for rapid digitisation across the sector

Challenge:

- **Limited adoption of e-Health** (e.g. inability to book doctors appointments online or limited patient data analytics) presents a challenge for managing rising healthcare costs and changing patient preferences.
- There is currently uneven development of digitisation and eHealth solutions across the EU and CEE countries.



Further resources:

OECD (2019) - Health in the 21st Century *Putting Data to Work for Stronger Health Systems*

Opportunity:

Digitisation can generate substantial cost-savings by reducing the cost of services - Polityka estimates that eHealth solutions could decrease health expenditure in most European countries by ~5%.

Examples of digitisation:

- **Telemedicine** (remote medical consultations) which reduces the need for travel and the likelihood of missed appointments, saving doctor and patient time.
- **Electronic health systems & records** which improves accuracy and availability of medical records, enabling better and more efficient patient management.
- **Remote monitoring devices + biosensors** to improve disease surveillance and, consequently, health outcomes.
- **Data analytics + artificial intelligence** to identify high-risk patients and provide targeted treatments.

The impact of COVID-19 has heightened awareness of the limitations of healthcare systems and the need for new digital approaches to healthcare delivery.

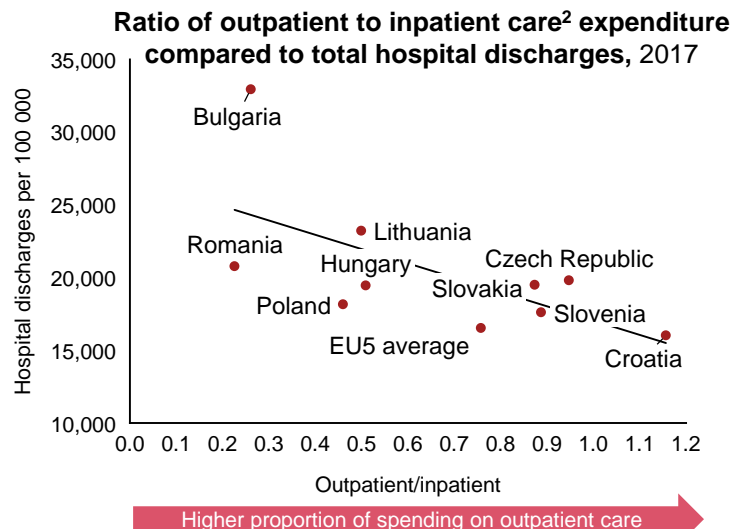
Stronger community-based care can reduce the burden on hospitals and generate cost savings for the healthcare system

This requires moving care into community-based settings and investing in primary care

Challenge:

Lack of investment in primary care systems (including availability of community based physicians) and **reliance on secondary care** results in unnecessary admissions (as shown in the chart below, with hospital discharges used as a proxy for admissions).

- Over a quarter of patients in the EU visit emergency departments due to inadequate primary care; this is a particular issue in rural areas¹.



Opportunity:

The development of high quality, accessible community based care can strengthen the overall health system by:

- Reducing avoidable hospital admissions**, which can reduce overall costs for the healthcare system and improve resource utilisation.
- Improving patient health outcomes**. Primary care is proven to be an effective and efficient way to address causes of poor health and the associated risks.
- Meeting the increasingly complex healthcare needs of the future**, which will require people-centered, community based care.
- Improved patient experience**, through better coordination of care and patients receiving the most appropriate services in the right settings.

Further resources:

OECD (2019) - Realising the full potential of primary healthcare

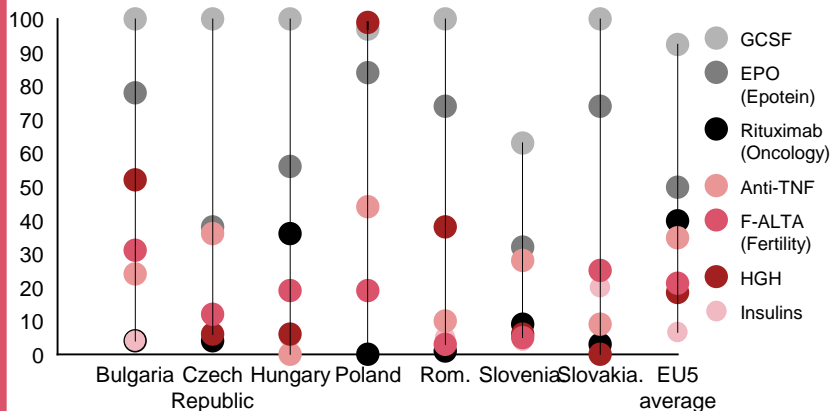
Biosimilar and generic competition can create headroom in budgets for new and more effective medicines

Adoption of generics and biosimilars is inconsistent across CEE countries

Challenge:

- Generics and biosimilars are usually cheaper than branded products and low uptake represents a **lost opportunity to reduce costs** e.g. the adoption of biosimilars reduced average prices across CEE by 15-25%.¹

Share of biosimilars² in the accessible market³ %, 2018



Opportunity:

- Competition in off-patent pharmaceutical/biologics markets is **key to generate savings, contribute to the sustainability of health systems** and foster innovation
- Effective mechanisms should ensure that potential **cost savings from increased competition are not retained in the distribution channel** but are passed on to payers and patients.
- Incentives need to guarantee **security of supply and continuation of treatment** by providing a sufficiently broad choice of products and avoiding a “winner takes all” scenario.

Further resources:

EFPIA (2015) - Policy principles for off-patent biologic markets in Europe

Graph source: PwC analysis of IQVIA (2019) data from 'The Impact of Biosimilar competition in Europe' 1. PwC analysis of IQVIA data (2019).

2. A biosimilar product contains a version of the active substance of an already authorized original biological medicinal product 3. The accessible market includes the original referenced and original non-referenced products as well as the biosimilar product. The biosimilar market share is measured as the number of biosimilar treatment days as a share of accessible market volume. 4. GCSF (Granulocyte-colony stimulating factor) is used with cancer patients to accelerate recovery from neutropenia after chemotherapy. EPO initiates production of hemoglobin to treat patients with anemia after chemotherapy. Rituximab = blood cancer and inflammatory conditions drug, Anti-TNF = inflammatory condition treatment e.g. arthritis/Chron's disease, F-AltA = fertility medication, HGH = treats growth disorders in children and hormone deficiency in adults, Insulins = treatment of diabetics allergic to beef/pork insulin.

The effectiveness of treatment can be improved through increasing adherence to medication

Poor adherence is estimated to contribute to 200,000 deaths in Europe per year, costing €125b¹

Challenge:

Poor adherence to treatment leads to **poorer health and economic outcomes** in several ways:

- It **wastes medication** and increases the cost of treatment.
- It reduces the effectiveness of treatment and **increases the risk of further adverse events** (e.g. stroke, heart attack) which result in additional costs.

Poor adherence is caused by a number of factors such as a lack of information for patients, side effects from treatment or polypharmacy (where a patient is taking 5+ medications):

- Inappropriate polypharmacy (e.g. drug-drug interaction) contributes to 45% of the avoidable costs due to suboptimal medicine use - a total of **0.3% of global total health expenditure** (\$18 bn worldwide).²

Opportunity:

Increasing adherence to medication can be achieved through:

- Introduce **guidelines which encourage more frequent medicine reviews** to identify opportunities for reducing polypharmacy and ensuring medicines are working optimally in combination.
- **Support for patients** by providing self-management education by nurses to adopt sustainable self-management skills and behaviour.
- **Investment in medical technologies** that have fewer side effects and reduce the need for polypharmacy e.g. through the combination of active ingredients into one treatment.

Further resources:

Pfizer (2018) *The value of drug adherence*

PwC (2019) *Touching lives, improving health*

Integrated budgeting across primary, secondary and social care can incentivise collaboration and the provision of continuous care

Siloed budgeting can disincentivise funding treatments with wider social or longer-term benefits

Challenge:

Budgets across CEE countries are siloed - they are rigidly assigned to specific healthcare settings (e.g. primary, secondary, social care), cost categories or disease areas. This **results in silo ways of working** and, as a result:

- **Disincentives exist to fund treatments that could create system-wide benefits:** When investing in treatments, only the value to a specific setting is taken into account, even though wider benefits exist.¹
- **Disincentives to provide coordinated care:** ~5.6% of EU hospital admissions could have been avoided, had there been better care coordination and management³. The need for care continuity to alleviate pressure on healthcare systems is growing, with increasingly 'complex' patients facing multiple chronic conditions.^{4,5}
- The business **case for preventative primary care measures is weakened** without considering downstream impacts on reduced hospitalisation and secondary care spending.

Further resources: see references in footnote

Opportunity:

Integrated budgeting is considered a pre-requisite to successful delivery of integrated care.⁴ It can **align incentives across the healthcare system**, improving resource allocation and efficiency.^{6,7} Benefits include:

- **Accountability & flexibility:** A fixed bundled payment to cover multiple settings **incentivises collaboration and coordination of care**⁸ to achieve system-wide, rather than individual, cost savings. Without the constraints of siloed budgeting, there is flexibility to deliver the most effective service mix. For instance, investing in treatments that bring the best long-term value for the healthcare system and provision of preventative care, community-based care.⁹
- **New treatments:** Breaking away from siloed funding can incentivise development of innovative treatments for multiple indications and with wide-ranging benefits.¹⁰
- **Predictability:** Identification of the value of the budget upfront increases the stability of the healthcare system to plan and implement changes.⁸

Novel payment models can support sustainability of funding for innovative medicines

By allowing for uncertainty over benefits and spreading out costs over longer periods

Challenge:

Scientific advances and novel treatments offer significant benefits to patients but pose new challenges to current payment models, which may restrict affordability:

- **High one-off cost** of curative treatments. Payers face affordability constraints as single upfront payment is required, while benefits to patients and the healthcare system occur over many years.
- **Uncertainty regarding the extent of the benefits** of treatments and their real-world value at the time of assessment.
- **Medicines may deliver significantly different value** across a range of contexts and indications/sub-populations, whereas current pricing and reimbursement processes are often rigid in assigning a single composite price.

Further resources:

EFPIA (2019) – Addressing Healthcare Challenges *Novel Pricing and Payment Methods*

Opportunity:

Given these challenges, traditional pricing and reimbursement models can become a barrier to patient access. Novel pricing and payment models may be required:

- **Outcomes-based payments (OBPM)** are conditioned on real world performance and are related to observable outcomes, providing incentives to deliver the most effective treatments.
- **Over-time payments** mean that manufacturers are paid over fixed periods for each patient receiving a therapy to mitigate up-front costs.
- **Subscription payments** involve decoupling payments for a treatment from the number of patients that receive the medicine. This can help payers anticipate the budget impact of treating patients in a given disease area, as payment is not linked to the number of patients treated.
- **Indication & combination based pricing** allows the price of a medicine to differ to reflect its observed value across indications.

Information sharing and healthcare analytics can improve resource allocation and allow for effective budget planning

This includes the use of performance indicators for healthcare delivery and horizon scanning

Challenge:

A lack of appropriate information or data can limit the effectiveness of the healthcare system and allocation of resources, for example:

- Practitioners in healthcare systems may have limited information on their **performance across different disease areas** or the most appropriate treatment. This can result in **wasteful clinical care**, driven by inaccurate beliefs about treatment effectiveness and the inability to identify which interventions deliver better patient outcomes.
- Governments that have **limited insight on the pipeline of innovation** are not able to effectively plan budgets to fund these innovations when they come to market.

Further resources:

NHS (2018) - *Report of the Review of the QoF in England*
 OECD (2019) - *Improving Forecasting of Pharmaceutical Spending p17-20*

Opportunity:

Information sharing and health analytics (e.g. through a quality and outcomes framework) has the potential to:

- **Improve effectiveness of patient care** by assessing performance and receiving continuous feedback.
- **Reduce unnecessary care and costs** by having a greater understanding what matters to patients in terms of health and prioritising interventions that deliver better outcomes.
- **Reduce waste through prescriptive analytics** - estimating patient costs allows for appropriate allocation of personnel and resources.
- **Reducing costs of treating chronic diseases through predictive analytics** - identifying high-risk patients, making early intervention possible.

Governments can prepare for the future of innovative medicines through effective '**Horizon Scanning**' and identification of off-patent medicines. **Collaboration with pharmaceutical firms** enables governments to identify, assess and prioritise innovations early and plan their budgets better.

Thank you

strategyand.pwc.com

© 2021 PwC. All rights reserved

PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see pwc.com/structure for further details.

Disclaimer: This document has been prepared only for EFPIA and solely for the purpose and on the terms agreed with EFPIA in our agreement dated 29/01/2020. We accept no liability (including for negligence) to anyone else in connection with this document.

Disclaimer: This content is general information purposes only, and should not be used as a substitute for consultation with professional advisors.