

The “Unknown-Unknown” Conundrum

Policy Challenges - 30 Years after Ottawa

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Ottawa Charter - More Than Just “UN Speak”?

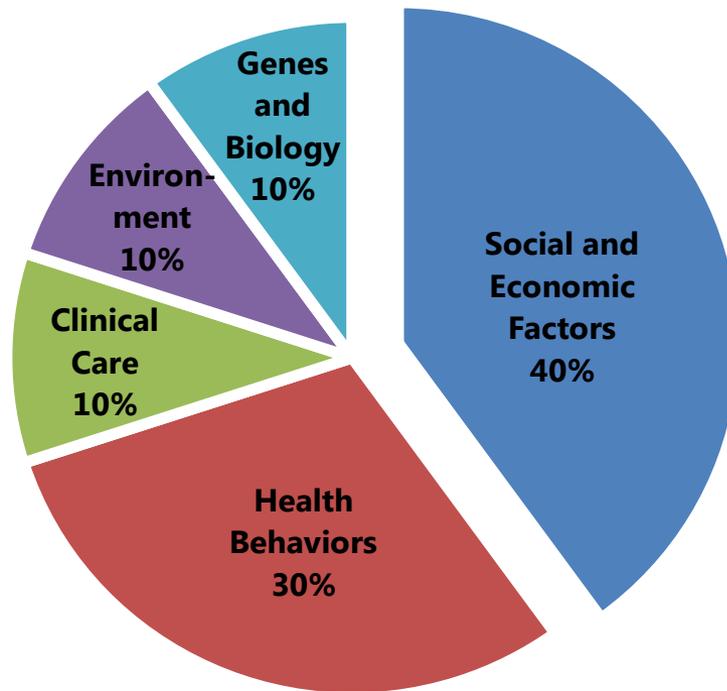


- Build healthy public policy
- Create supportive environments
- Strengthen community action
- Develop personal skills
- Re-orient services towards prevention

Advocate health impact - **Enable** control of determinants –
Mediate collaboration of sectors

How could anyone reasonably disagree with the above?

Health Outcomes – Not Function of Inputs...



Peace
Shelter
Education
Food
Income
Stable eco-system
Sustainable
resources
Mobility
Social justice and
equity

Determinants of Health Model based on frameworks developed by: Tarlov AR. *Ann N Y Acad Sci* 1999; 896: 281-93; and Kindig D, Asada Y, Booske B. *JAMA* 2008; 299(17): 2081-2083.

World Health Organization. Ottawa charter for health promotion. International Conference on Health Promotion: The Move Towards a New Public Health, November 17-21, 1986 Ottawa, Ontario, Canada, 1986. Accessed July 12, 2002 at <<http://www.who.int/hpr/archive/docs/ottawa.html>>.

Unfair and Avoidable Differences...

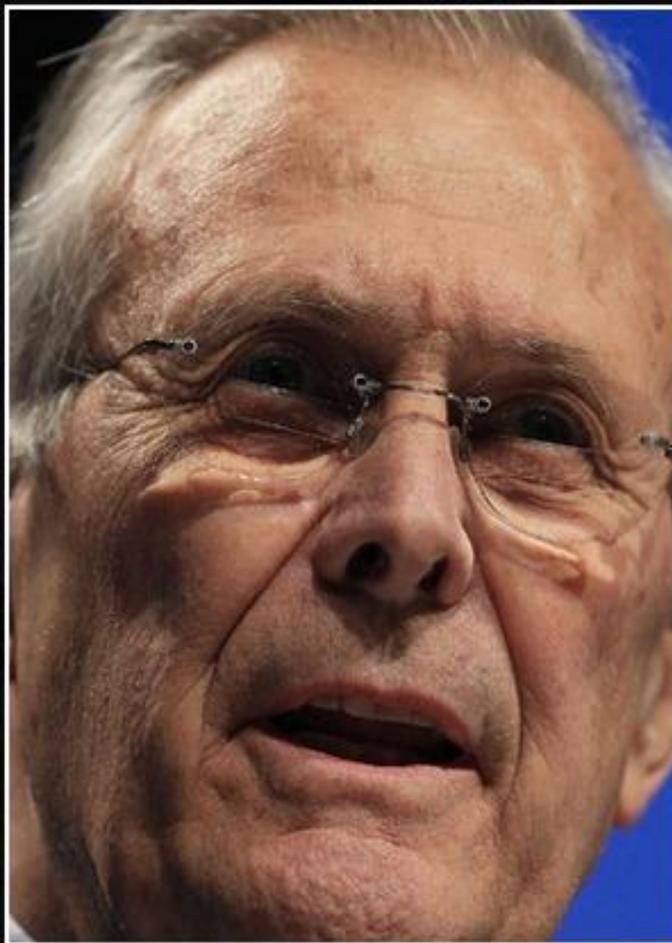


Commission on social
determinants of health

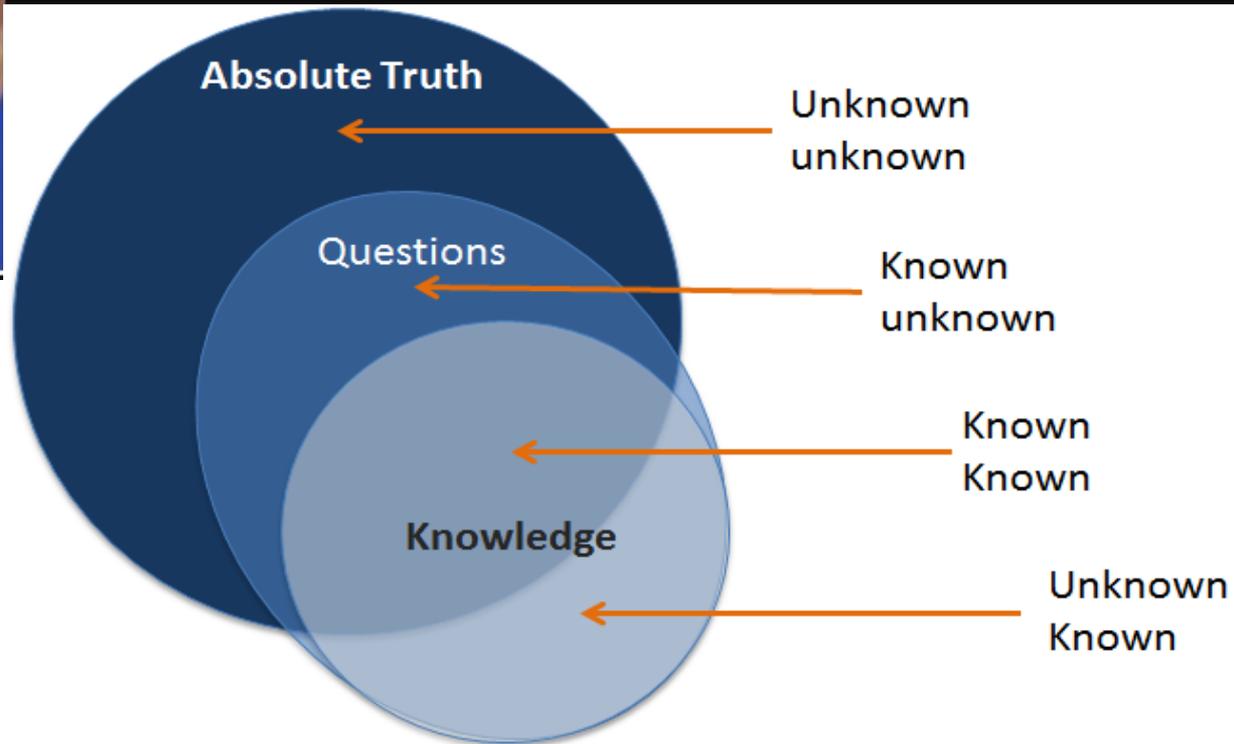
Social determinants:

- Structural roots within education, taxation, labor and housing markets, urban planning, government regulation, health systems
- Individuals have little or no direct personal control - can only be altered through social and economic policies and political processes.

Sir Michael Marmot: WHO Commission on Social Determinants of Health



There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know.



Who Remembers?

Black Swan Events in Public Health?

Nassim Nicholas Taleb:

Disproportionate role of high-impact, hard-to-predict, rare events beyond the realm of normal expectations...



- Non-computability of the probability of rare events by scientific methods
- Bias makes people individually and collectively blind to uncertainty and unaware of massive impact of rare events.

Unexpected?

“Temperatures Rise and We’re Cooked”.

“Humans don’t function nearly as well when the weather is hotter”

The New York Times

vertical, starting with
ation,” he said.
would be more credible
yearheaded an effort to
people from using law-
the press.

ember on board. The
publicans mayor of
chart, is demanding
ocialist government
ontrol the migrants.
Nicolas Sarkozy of
ing for president
a detention center
h soil, an idea the
ed. With presiden-
for spring, Calais
migrant rallying
and the far-right

nard Cazeneuve
ed that the camp
of this year, with
to other parts of
is remain vague,
mediate action.
nti-immigrant fe-
tly, a refugee cen-
ber outside Paris

Mr. Tusk said the
step up and do its
efugee crisis. No
l effort is needed
that Britain and
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NICHOLAS KRISTOF

Temperatures Rise, and We’re Cooked

One of Donald Trump’s 100 wackiest ideas is that climate change is a hoax fabricated by China to harm America.

“The concept of global warming was created by and for the Chinese in order to make U.S. manufacturing uncompetitive,” Trump once tweeted.

He later said, unconvincingly, that he had been kidding about China, but he has emphasized that he does not believe in climate change and would end serious efforts to prevent it.

That obstinacy confronts a new wave of research showing that climate change is much more harmful than we had imagined.

Until now, the focus has been on rising seas, more intense hurricanes, acidification of oceans, drought and crop failures. But new studies are finding that some of the most important effects will be directly on our bodies and minds.

A clever new working paper by Jisung Park, a Ph.D. student in economics at Harvard University, compared the performances of New York City students on 4.6 million exams with the day’s temperature.

He found that students taking a New York State Regents exam on a 32-degree day have a 12 percent greater chance of failing than when the temperature is 22 degrees.

The Regents exams help determine whether a student graduates and goes to college, and Park finds that when a student has the bad luck to have Regents exams fall on very hot days, he or she is slightly less likely to graduate on time.

Likewise, Park finds that when a school year has an unusual number of hot days, students do worse at the end of the year on their Regents exams, presumably because they’ve learned less.

A school year with five extra days above 27 degrees leads students to perform sig-

nificantly worse on Regents exams.

The New York City students in Park’s study do poorly on hot days even though the majority of city schools are air-conditioned (perhaps in part because the air-conditioning often barely works).

Imagine the consequences in hotter climates with less air-conditioning: The average Indian now endures about 33 days a year above 32 degrees, and that is forecast to increase by as many as 100 days by 2100.

“If students in New York public schools are being affected by heat stress, one can only imagine what it’s like for a student in Delhi,” Park notes.

Heat affects our bodies as well as our minds: As temperatures rise, people die.

Humans don’t function nearly as well when the weather is hotter.

In India, a rise of one degree in average daily temperatures leads to a 10 percent increase in the annual mortality rate. Even a single extra hot day leads to a noticeable jump in mortality.

Even in the United States, heat kills. A single day above 32 degrees increases the monthly mortality rate by more than 1 percent, according to research by Olivier Deschenes and other economists.

We just don’t function as well when the mercury goes up. When the temperature rises above 29 degrees, Americans who work outside cut their time in the heat by about an hour. Even in auto factories, most presumably air-conditioned, a week of six

days above 32 degrees reduces production by 8 percent.

Perhaps more startling, rising temperatures seem to cause more violence. “The relationship is really clear,” said Edward Miguel, an economist at the University of California, Berkeley, who has studied the issue. “Extremes in climate lead to more violence, more killing, more war, more land riots in Brazil, more sectarian violence in India. It’s pretty stunning how the relationship between climate and violence holds across the globe.”

The starting point is that heat makes people irritable. Researchers have found hot days linked to more angry honking in Arizona, and more road rage and car accidents in Spain.

On hot days, property crimes aren’t more common, but murders go up with the temperature. Likewise, researchers find that police officers are more likely to draw and fire their weapons during a training session conducted on a hot day.

In Tanzania in any season, elderly women are sometimes accused of witchcraft and hacked or beaten to death. Professor Miguel has found that unusual weather linked to climate change — either drought or heavy rainfall — is associated with a doubling in the number of these “witch” killings.

It appears that 2016 will be the hottest year in recorded history, and each of the first six months of this year set a record as the hottest ever — the hottest January, the hottest February, and so on. But it’s not just that the mercury is going up; fundamentally, we are creating a hotter world for which we humans are poorly adapted.

So it’s time for Trump — and all Americans — to re-evaluate. Climate change isn’t a hoax, and it certainly isn’t a Chinese conspiracy. Unless we act, we’re cooked!

confrontation, and Nicolas
key may well have misjudged it.

protected at realpolitik, seeking to
the same time Putin has become oppor-
tunistically revisionist in his own right,
sensing American weakness and look-
ing for ways to destabilize the Western
order — including through tacit support
for Trump.

Unless you’re Trump himself, Putin’s
destabilizing moves — the Crimean
annexation, the Ukraine invasion, the
shadow war against his neighbors and
Western governments writ large
have made it much harder to imagine
Moscow as anything but an adversary
to be checked, contained, opposed.

But the trajectory of events in
Middle East, where American geo-
strategy has mostly come to grief,
gests the limits of a “new Cold
elsewhere is not containing Rus-
sian expansion. It’s containing jihadi
terrorism, ending the refugee crisis
storing basic order — and in the
we need a way to work with them
we hope to see any success.

Which gets at the underlying
tension here: Just how tight was
Russia certainly looks more
gerous geopolitical rival
it did four years ago. But it
game and its revanchist at-
titude are its biggest potential danger

Bigger than Al Qaeda and
than the far-stronger at-
horitarian People’s Repub-

It is not enough to say
are dangers, statesmen
tize, and our priorities
open-ended and unde-

If the last four years
War 2.0 overture, the
the Middle East and
fashioned with an
new twilight war

But if Beijing
rival than Moscow
tions are more
hold play of a
need a path to
cooperation

Donald Tr
embrace of
the man for
as has ofte
in the mid
question
leaders

Indirect Health Impact?

Donald Trump: “The concept of global warming was created by and for the Chinese in order to make US manufacturing uncompetitive.”



Jisung Park (cand. PhD, Harvard):

- NY College admission tests: $\geq 32^{\circ}\text{C}$ results in 12 % higher chance of failing exam.
- School year with 5 extra days above 27°C results in worse performance on exam.
- India: 33 days above 32°C and a forecast of 100 days over next 80 years.

Heat Kills Without Adaptation

Olivier Deschenes (UCal Sta. Barbara): 1 day over 32°C increases monthly mortality by more than 1%



Contents lists available at [ScienceDirect](#)

Energy Economics

journal homepage: www.elsevier.com/locate/eneco



Temperature, human health, and adaptation: A review of the empirical literature[☆]



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ABSTRACT

This paper presents a survey of the empirical literature studying the relationship between health outcomes, temperature, and adaptation to temperature extremes. The objectives of the paper are to highlight the many remaining gaps in the empirical literature and to provide guidelines for improving the current Integrated Assessment Model (IAM) literature that seeks to incorporate human health and adaptation in its framework. I begin by presenting the conceptual and methodological issues associated with the measurement of the effect of temperature extremes on health, and the role of adaptation in possibly muting these effects. The main conclusion that emerges from the literature is that despite the wide variety of data sets and settings most studies find that temperature extremes lead to significant reductions in health, especially measured with excess mortality. Regarding the role

Heat and Violence – Evidence from Brazil, Tanzania, Arizona, India, Spain



Marshall Burke, Solomon M. Hsiang, Edward Miguel

Annual Review of Economics Vol. 7: 577-617 DOI: 10.1146/080614-115430

Meta Analysis of 55 studies:

- Deviations from moderate temperatures and precipitation patterns systematically increase conflict risk.
- Each 1 sd increase in temperature increases interpersonal conflict by 2.4% and intergroup conflict by 11.3%.
- Intentional injuries: BOD - #16 by 2030

SYRIAN REFUGEE CRISIS

Families Fleeing Violence

There are more than 4.7 million Syrian refugees in neighboring countries. Nearly one million have applied for asylum in the safety of Europe. More than **13.5 million people are still in need** of assistance inside Syria.



1 in 5 people is a Syrian refugee

LEBANON

1,069,111



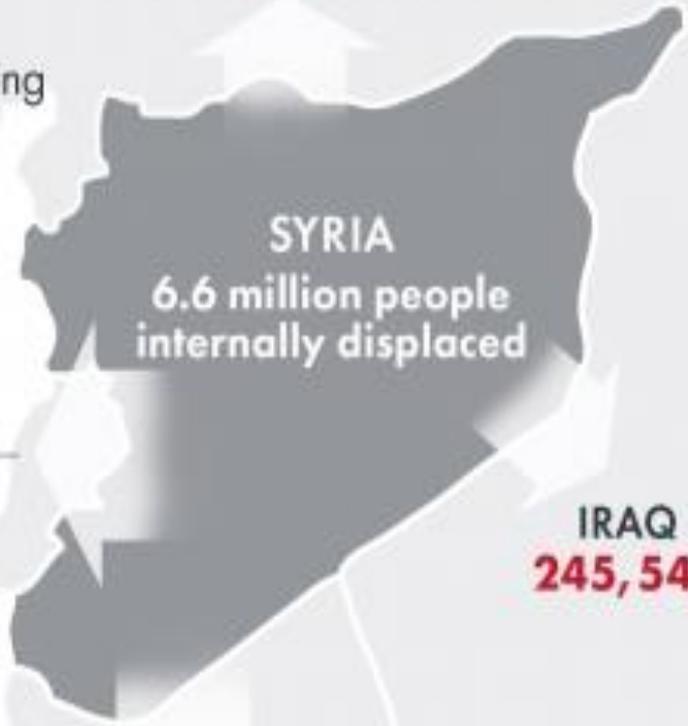
1 in 13 people is a Syrian refugee

JORDAN

637,859

EGYPT
118,512

TURKEY **2,620,553**



As of February 24, 2016

Sources: <http://data.unhcr.org/syrianrefugees/regional.php>
UNOCHA.org/syria

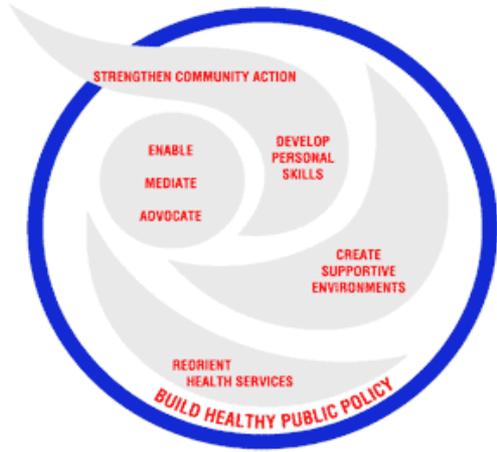
Environmental Causes of Syria's Civil War

- **2010: Water-intensive agriculture and wells doubled >213,000**
- **400% more sheep: 12,000,000**
- **Population growth (2.45%/yr.)**

- **2006 – 2011 worst drought in centuries. Rainfall <20cm/yr.**
- **Crop failure rate =75%, 85% of livestock died**
- **1/3 of Syria's 10 million farmers slide into extreme poverty.**

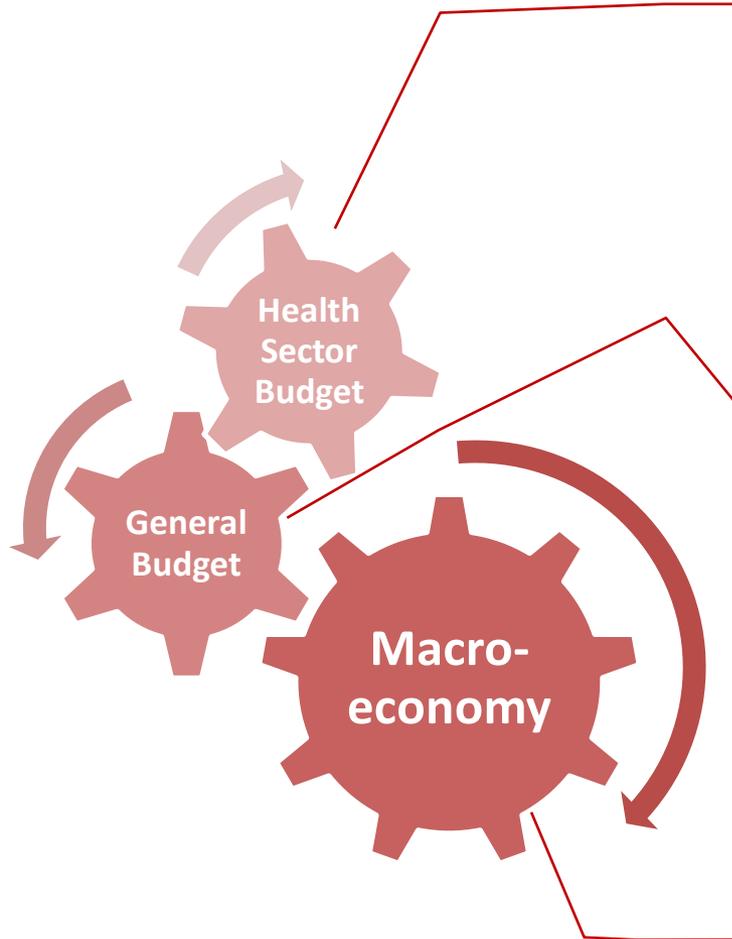
- **Farmers move to cities lacking employment and infrastructure.**
- **Assad regime violently suppresses farmer's protests in Daraa.**
- **Escalation results in civil war**

Ottawa and Beyond – Health and Wealth



- 1977: 14th WHA – Health promotion to achieve "economically productive" level of health
- 1986: Ottawa Charter
- 1993: World Bank WDR - Health and economic performance.
- 2008: Tallinn Ministerial Conference: “Health and Wealth” – Tallinn Charter
- 2008-13: EU Health Strategy, Economic strategy

Wheels of Fortune? Macro-economy and Fiscal Space



INTRA-SECTORAL ALLOCATION

- EQUITY vs. EFFICIENCY

- Public Health Budget to GDP Ratio
- Public Health Budget to GGB Ratio

Transmission:

GGB grows - public health budget could increase.

INTER-SECTORAL ALLOCATION

- POLITICAL ECONOMY

- General Government Budget (GGB) to GDP Ratio
- Growth in GGB/GDP Ratio

Transmission:

GDP grows - general government budget increase.

MACRO EFFECT (EXOGENOUS)

- GDP per capita
- Real GDP Growth Rate
- Fiscal Capacity Growth

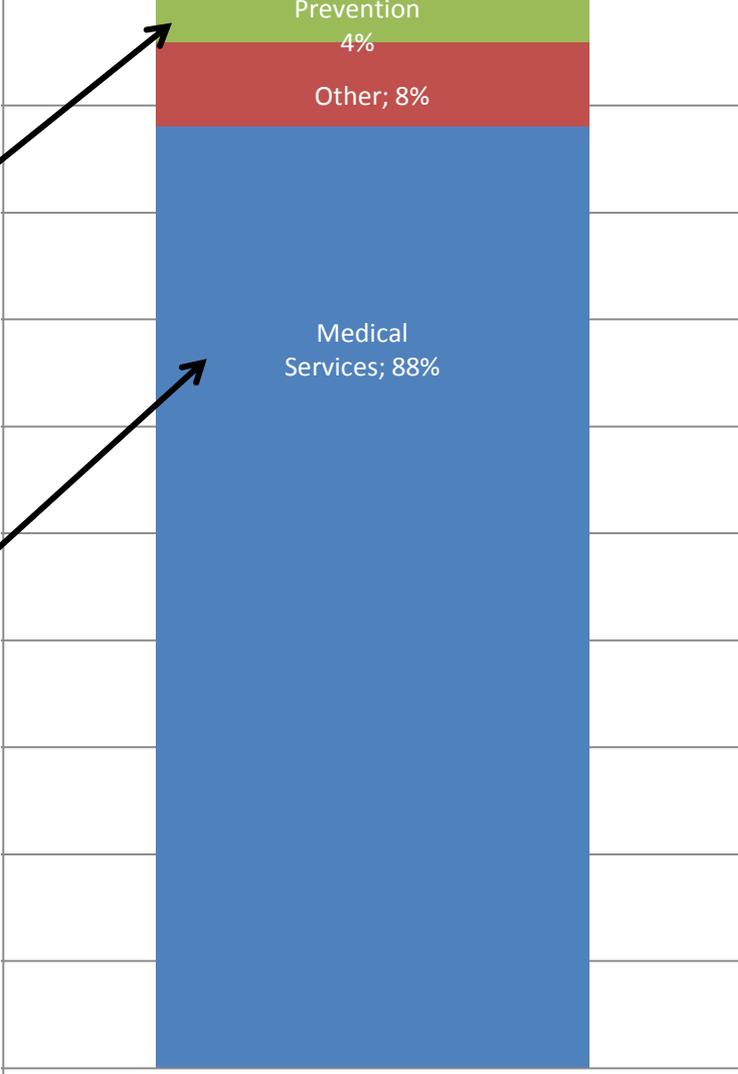
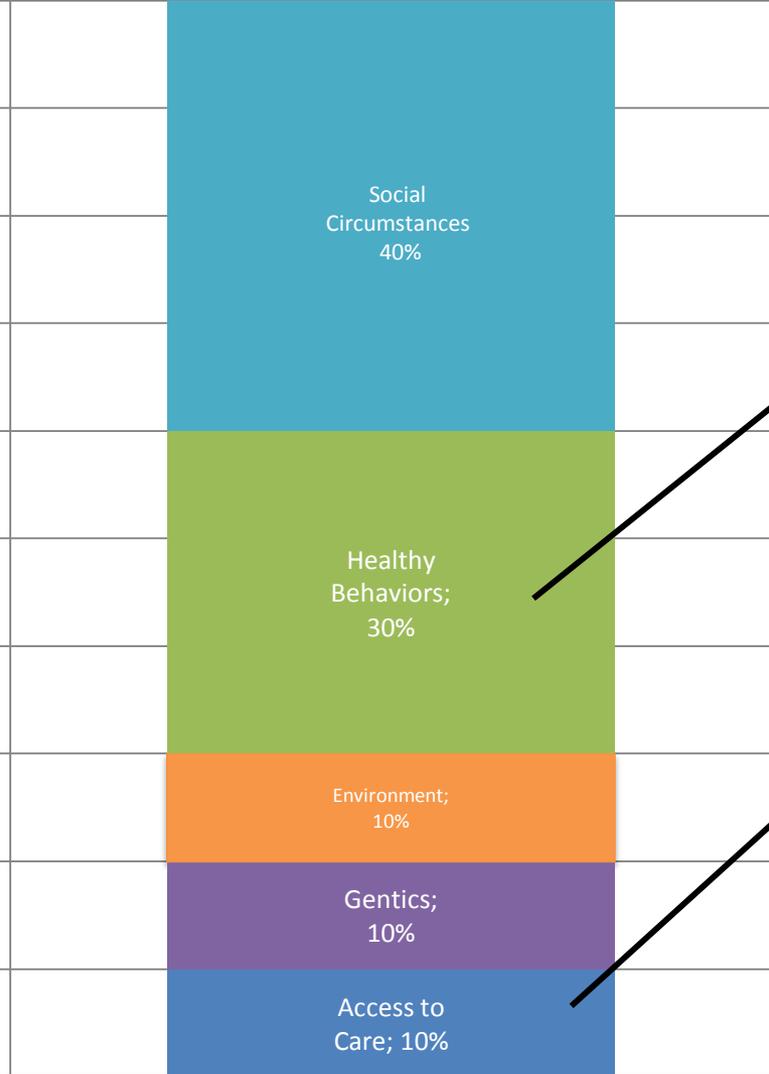
Transmission:

Increase in per-capita GDP – revenues increase

Spending Mismatch

Determinants

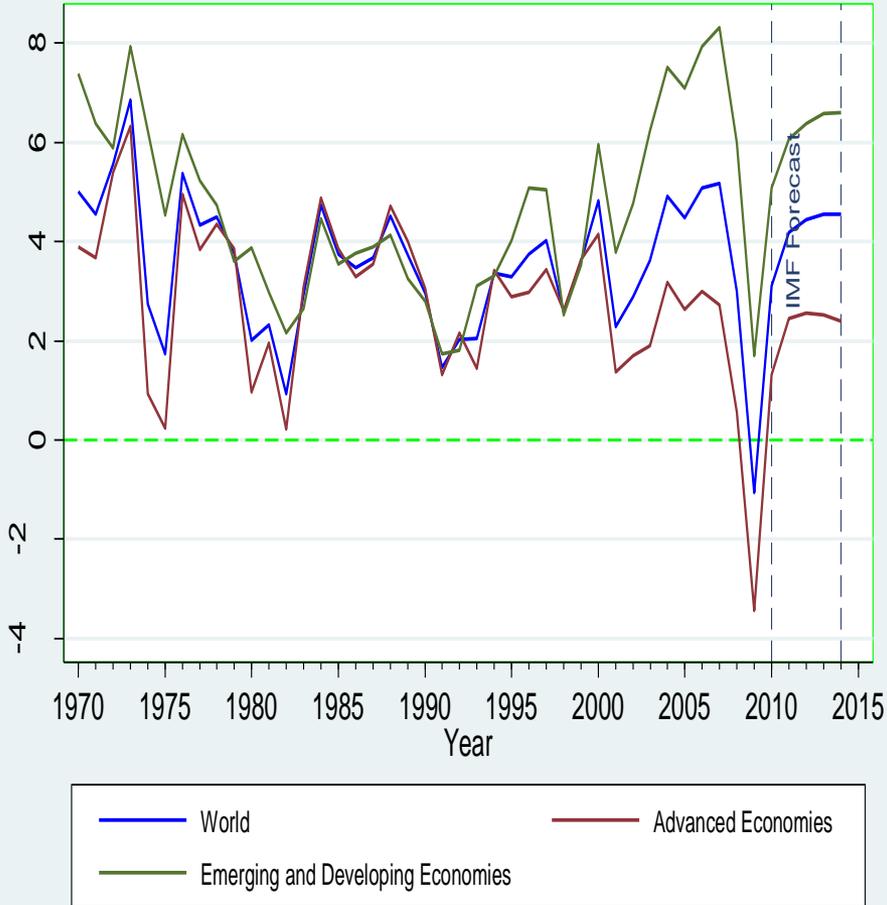
National Health Expenditures



Source: OECD, EU, 2014

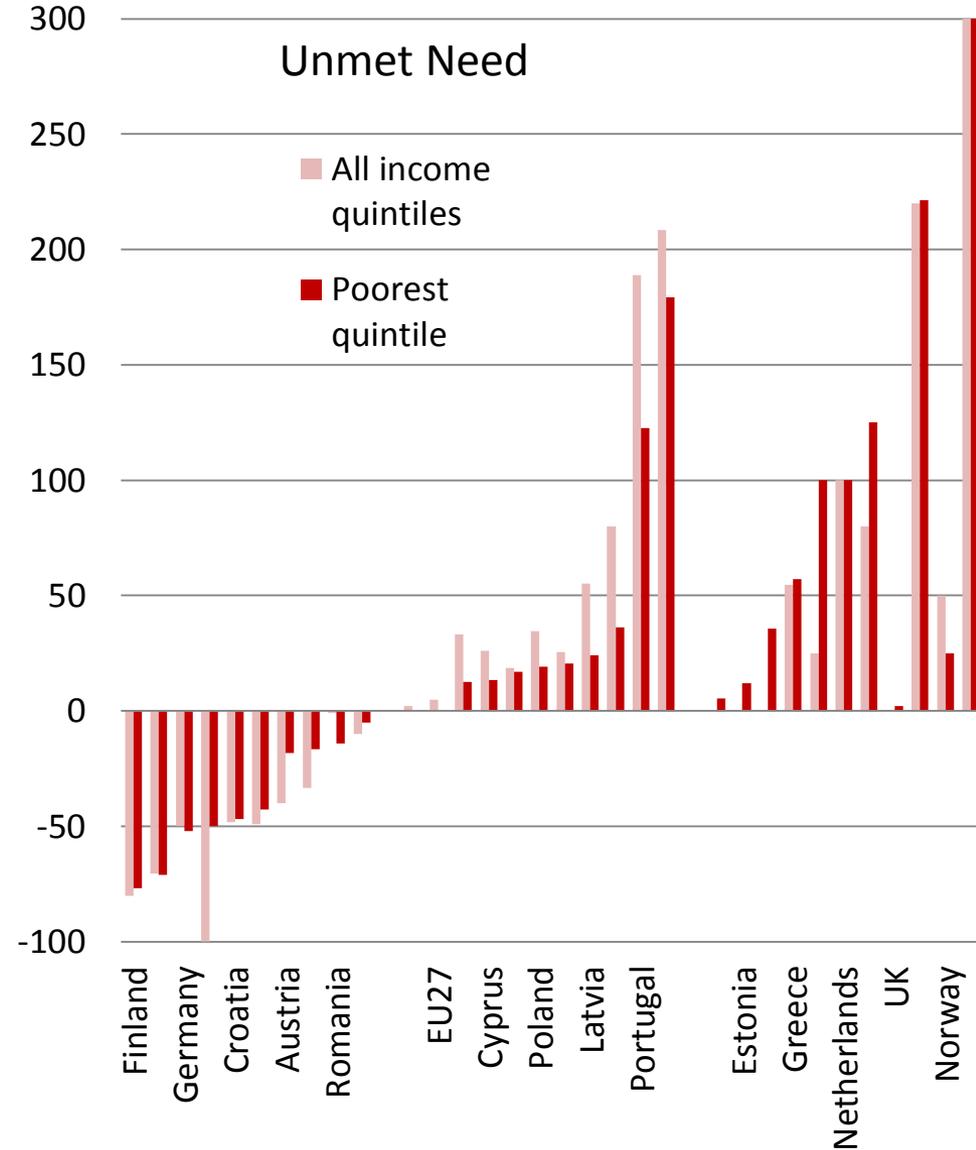
Crisis Management ?

Real GDP Growth in World and Major Economic Groupings (1970-2014)



Source: IMF World Economic Outlook Database October (2009)

Unmet Need

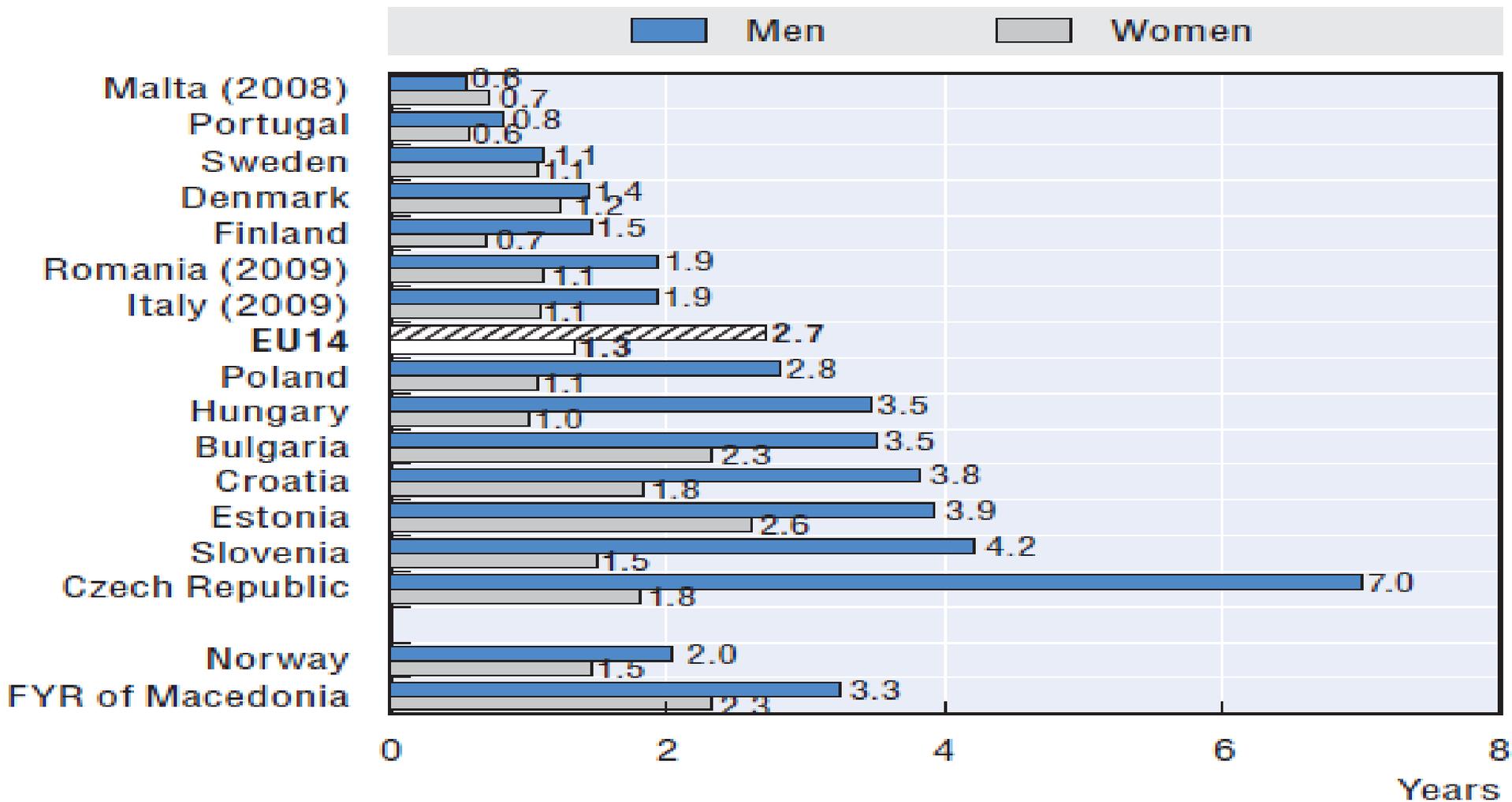


Source: IMF and Thomson et al 2014; WHO-EURO

Seven Cross-Sectoral Challenges

- Education
- Transport
- Nutrition/Obesity
- Tobacco and Alcohol
- Health Literacy
- Poverty/Destitution
- Use and abuse of “Big Data”

Life Expectancy and Education Level:



Gaps between people with high and low level of education at 65, 2010 (or nearest year). Source: OECD/EU

Killing Fields...

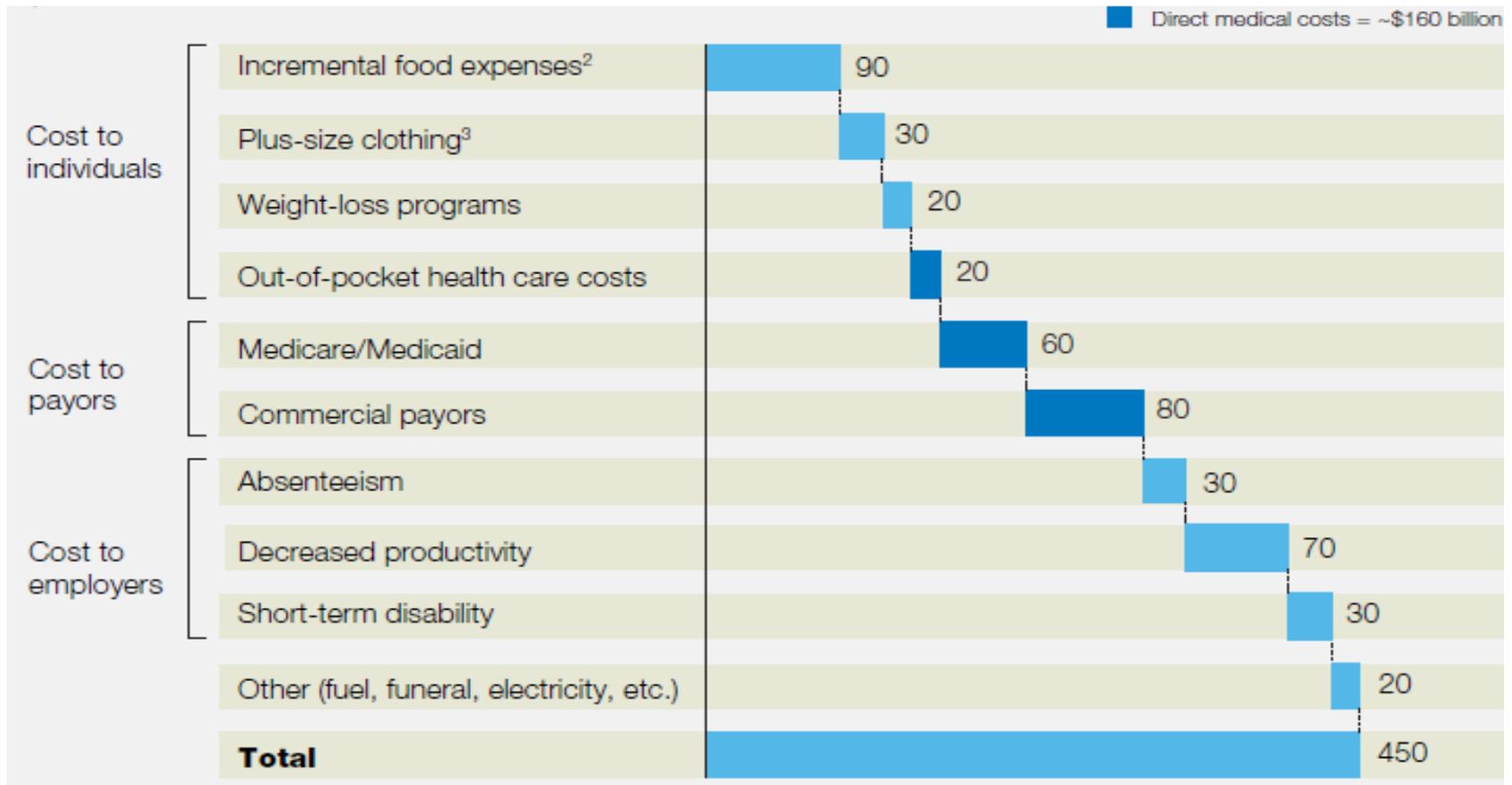


- Road traffic accidents in the EU:
 - 35,000 premature deaths and 250,000 injuries p.a
 - Risk of dying peaks at ages 15-24.
 - Fatalities: highest in RO, PL, LT, HR
lowest in UK, S, IRL.
- Direct and indirect financial costs:
 - 1 to 3% of GDP annually (OECD/ITF, 2014).

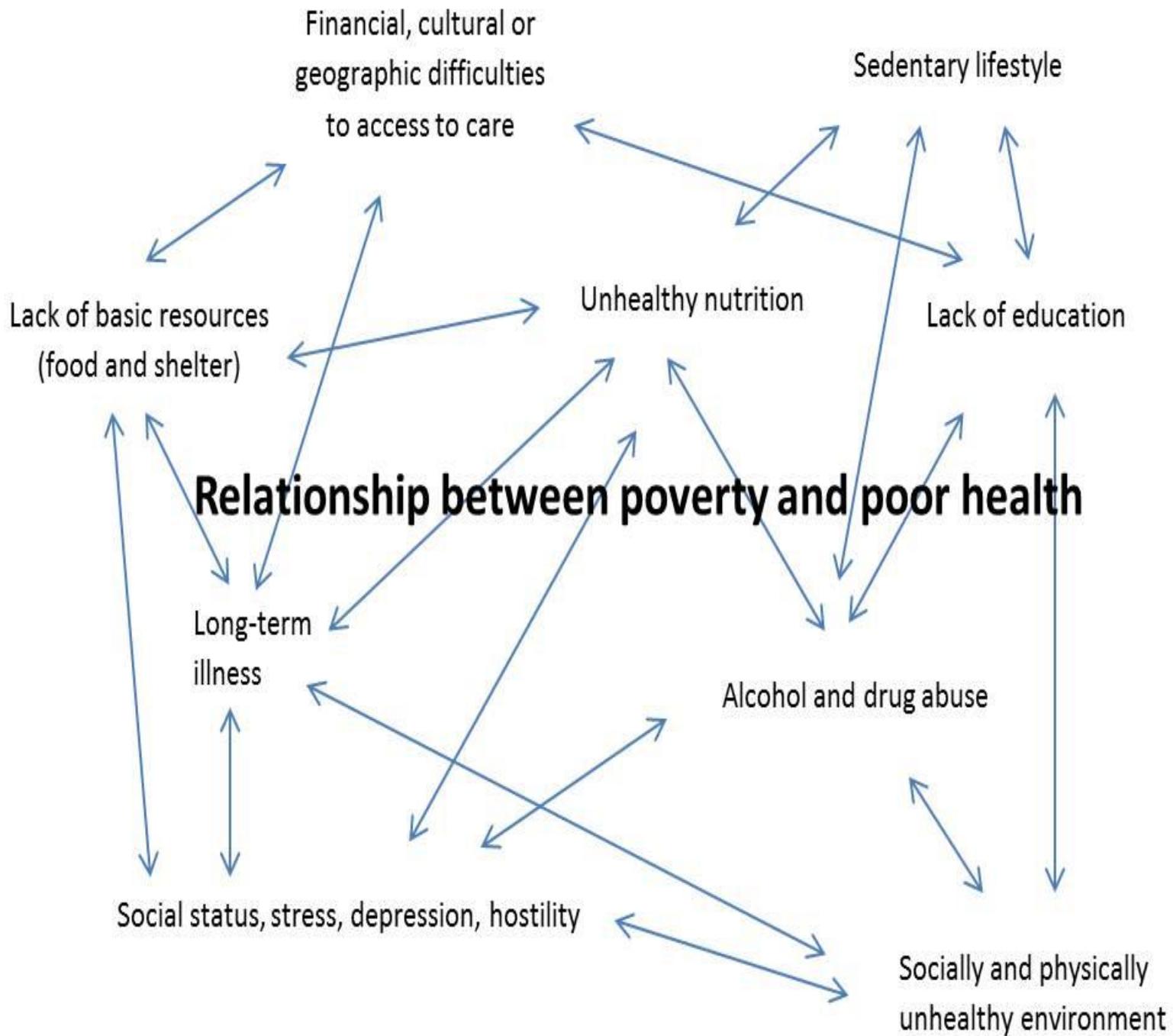
Obesity: A Costly Trajectory

US: Obesity can triple health costs, impacting many sectors and the economy as a whole

Estimated increased spending associated with the obesity in the United States (US\$, billion)*



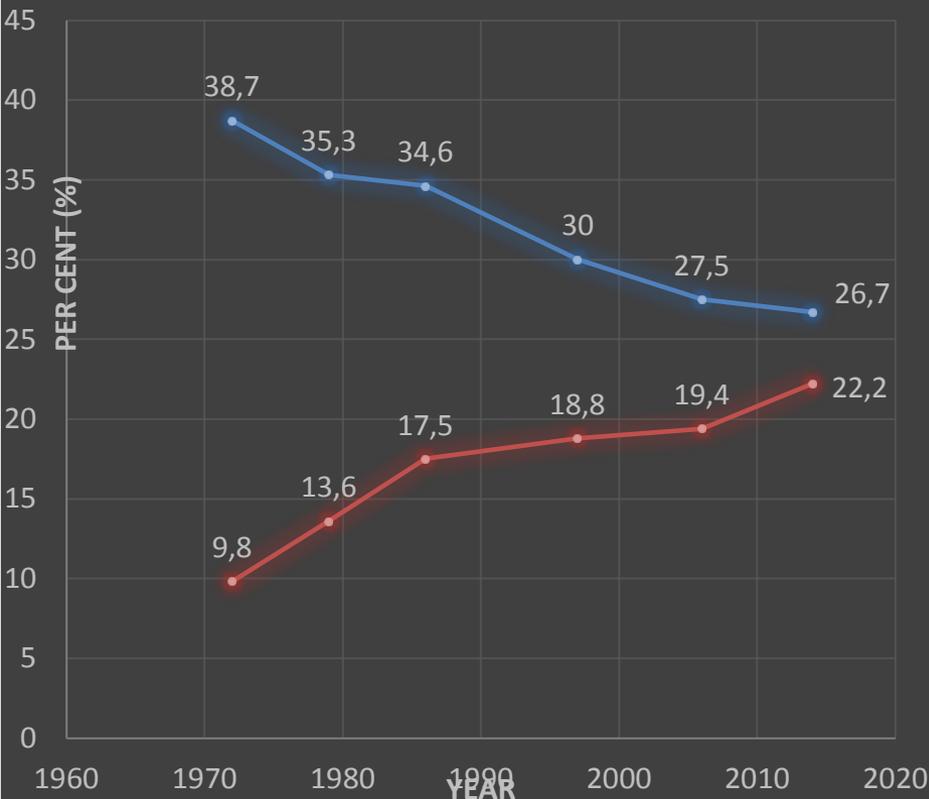
Rounded estimates Source: McKinsey Quarterly



Alcohol and Smoking (in Austria)

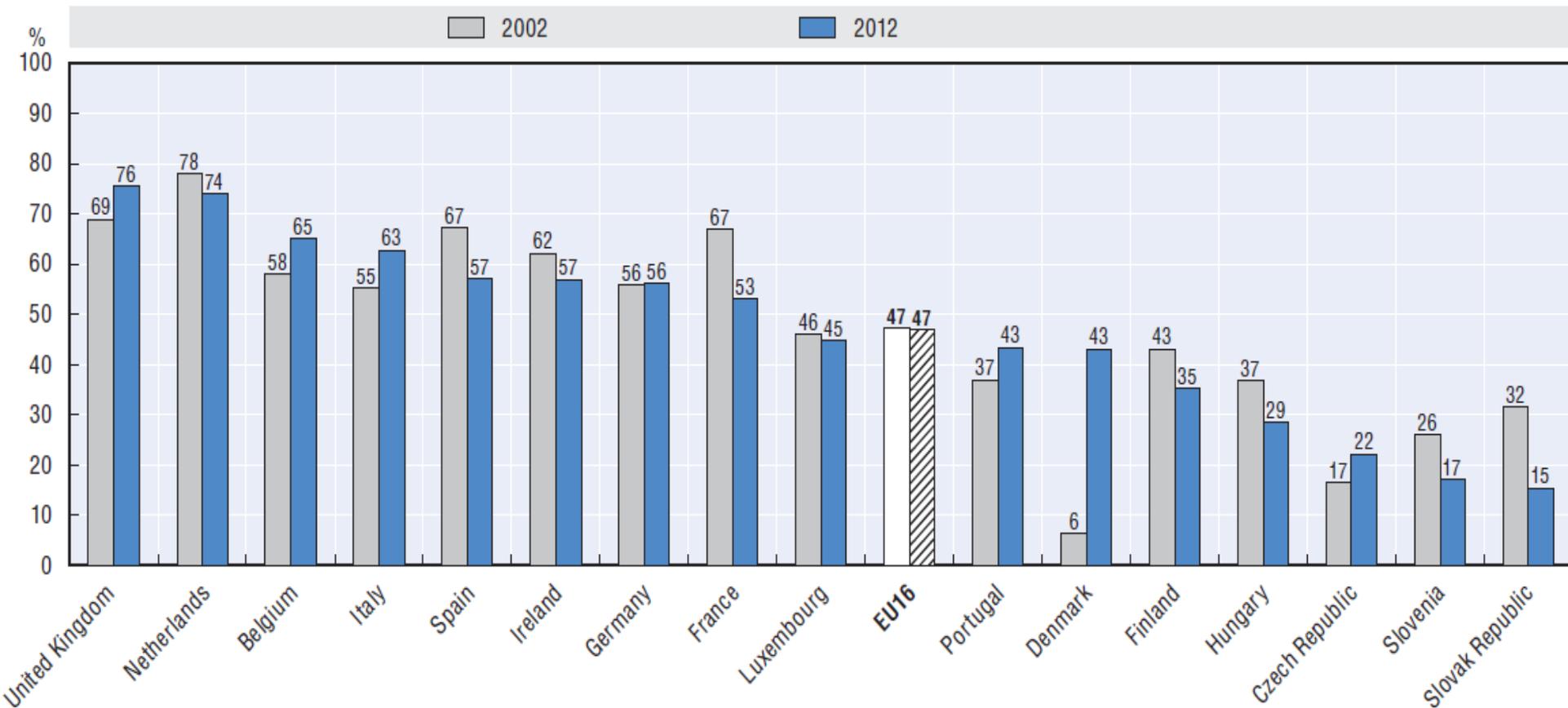
Daily smoking in Austria

Male Smoking (%) Female Smoking (%)



Sources: OECD/EU: Alcohol consumption among population aged 15 years and over, 2012 (or nearest year)
Alexander Lackner (MCI Master Thesis) PERI Graphics.

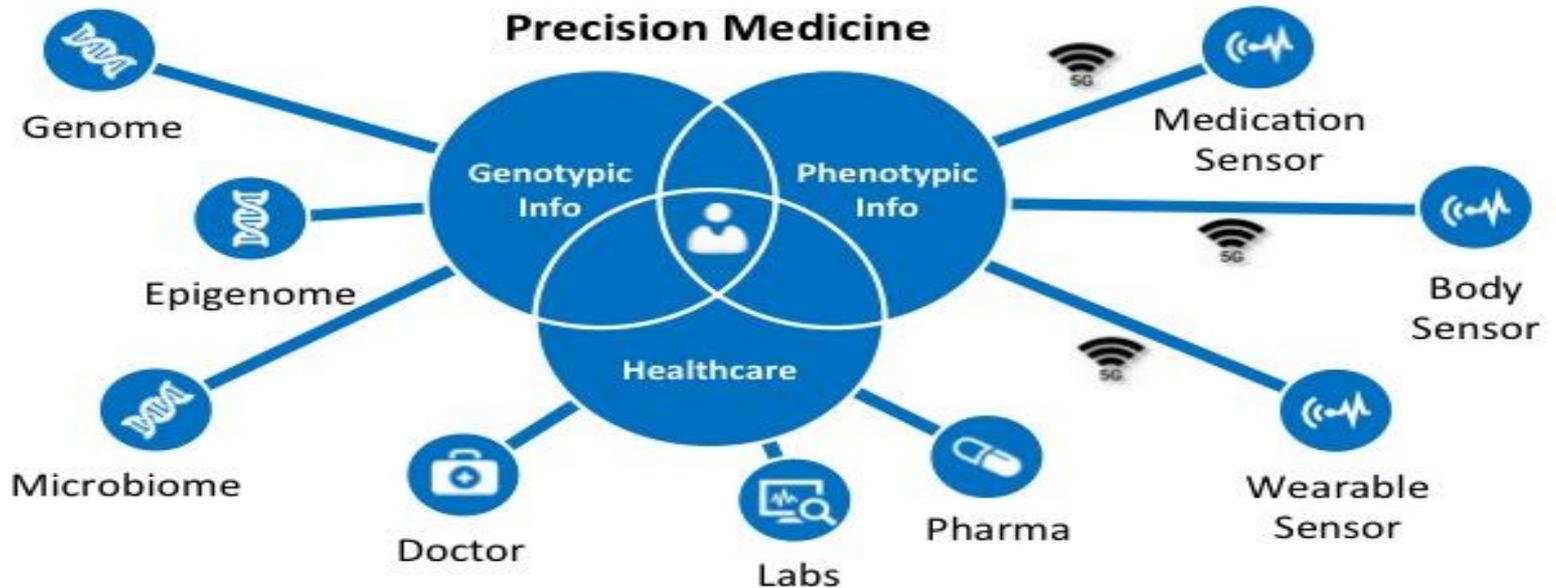
Vaccination and Health Literacy: A Link?



Source: OECD/EU: Influenza vaccination coverage, population aged 65 and over, 2002-12 (or nearest year)

“Big Data”: Opportunities and Risks

The Future of Genomic Medicine



Data cloud to generate evidence for early public health intervention?

Need for new regulations and close supervision.

Budget Reform in Austria

Steps taken after Constitutional Amendment 2009

Traditional System	New System
<ul style="list-style-type: none">• Accounting and budgeting: cash – based• Budget structure: Detailed legally binding appropriations (> 1000)• Input-orientation• Budget discipline: weak incentives and sanctions• No long term fiscal projection	<ul style="list-style-type: none">• Two binding perspectives: cash + accrual• Legally binding global budgets (< 70)• Performance: Output/outcome orientation• Incentives and sanctions considerably strengthened• Long term fiscal projection (> 30 years)

(Source and modified after: Gerhard Steger, former DG MOF Austria):

Annual Budget Statements

Outcome objective 1:

Why this objective:

What is done to achieve this objective:

What would success look like:

- **Max. 5 outcome objectives per budget chapter**
- At least 1 outcome objective directly addressing **cross sectoral dimensions**
- Overall objective: **Integrated view** on budget and performance information

Breaking Down the Silos

	<i>Tobacco</i>	<i>Poor Diet & Nutrition</i>	<i>Physical inactivity</i>	<i>Alcohol</i>	<i>Unhealthy environment</i>	<i>Pathogens</i>	<i>Injuries & violence</i>
<i>Health</i>	✓			✓		✓	
<i>Education</i>	✓	✓	✓	✓			✓
<i>Finance</i>	✓	✓		✓	✓		
<i>Urban Planning</i>			✓		✓		✓
<i>Agriculture</i>	✓	✓			✓		
<i>Industry</i>	✓	✓		✓	✓		
<i>Transport</i>			✓		✓		✓

Virchow: Relevance After a Century

Medicine: Social science – Obligation to point out problems, attempt theoretical solution.

Politics: Medicine on a large scale, must find means for actual solution.

Physicians: Natural attorneys of the poor - Social problems within their jurisdiction.

