

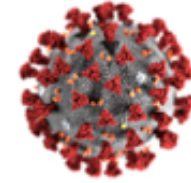
Does it work?
Is it worth it?
Evaluating the costs and benefits of
public health interventions.

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Health and the Economy in the COVID-Pandemic



- No vaccine and only few drugs available.
- We mainly fight the pandemic with **public health measures** such as forced social distancing and quarantine.
- These **measures work** but have **large economic costs** (people lose their jobs and income) and **health losses** (loss of mental and physical wellbeing).
- Health economic questions:
 - Are these costs **worth** the lives we save?
 - Can we design **more cost-effective** ways to save lives?

Objective: Understand the principles of health economic evaluations of public health interventions.

1. The dimensions considered
 - Health gains
 - Economic costs
2. Does it work?
Challenges in assessing the effectiveness of interventions
3. Is it worth it?
How to compare the costs and benefits of an intervention

Life years lost attributable to behavioral risk factors in total life-years due to non-communicable diseases

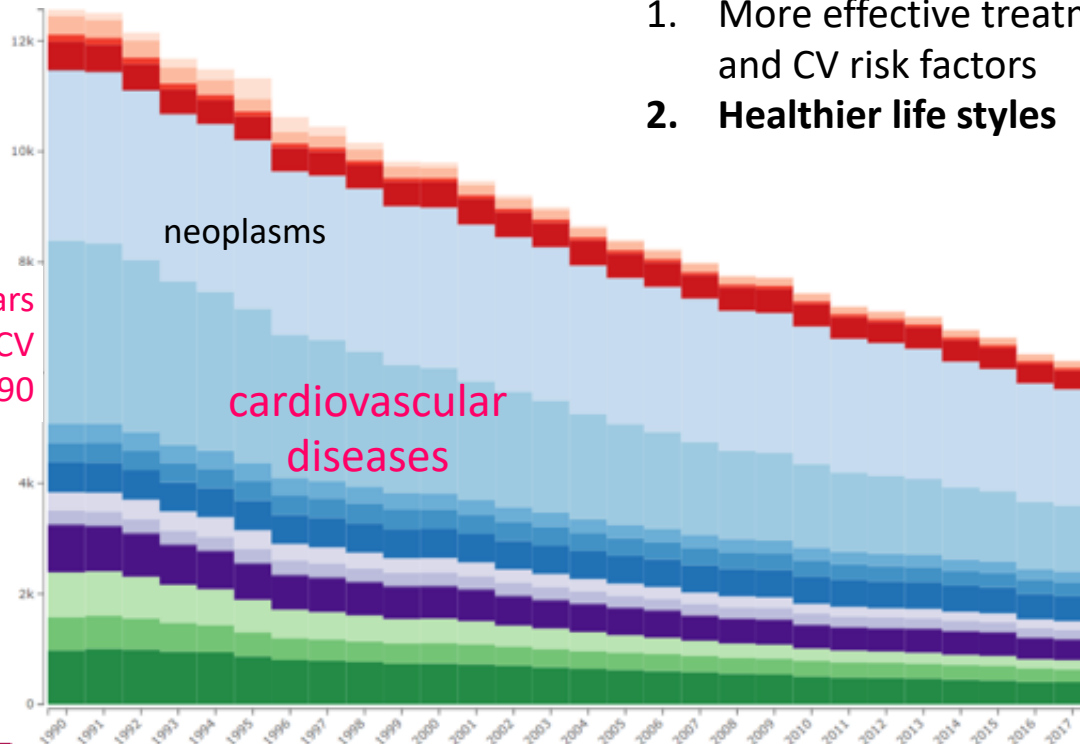
life years lost (YLL)
per 100'000
age-standardized population

We see a **large reduction in life year lost** due to cardiovascular diseases (CV) since 1990.

This is mainly due to:

1. More effective treatments of CV diseases and CV risk factors
2. **Healthier life styles**

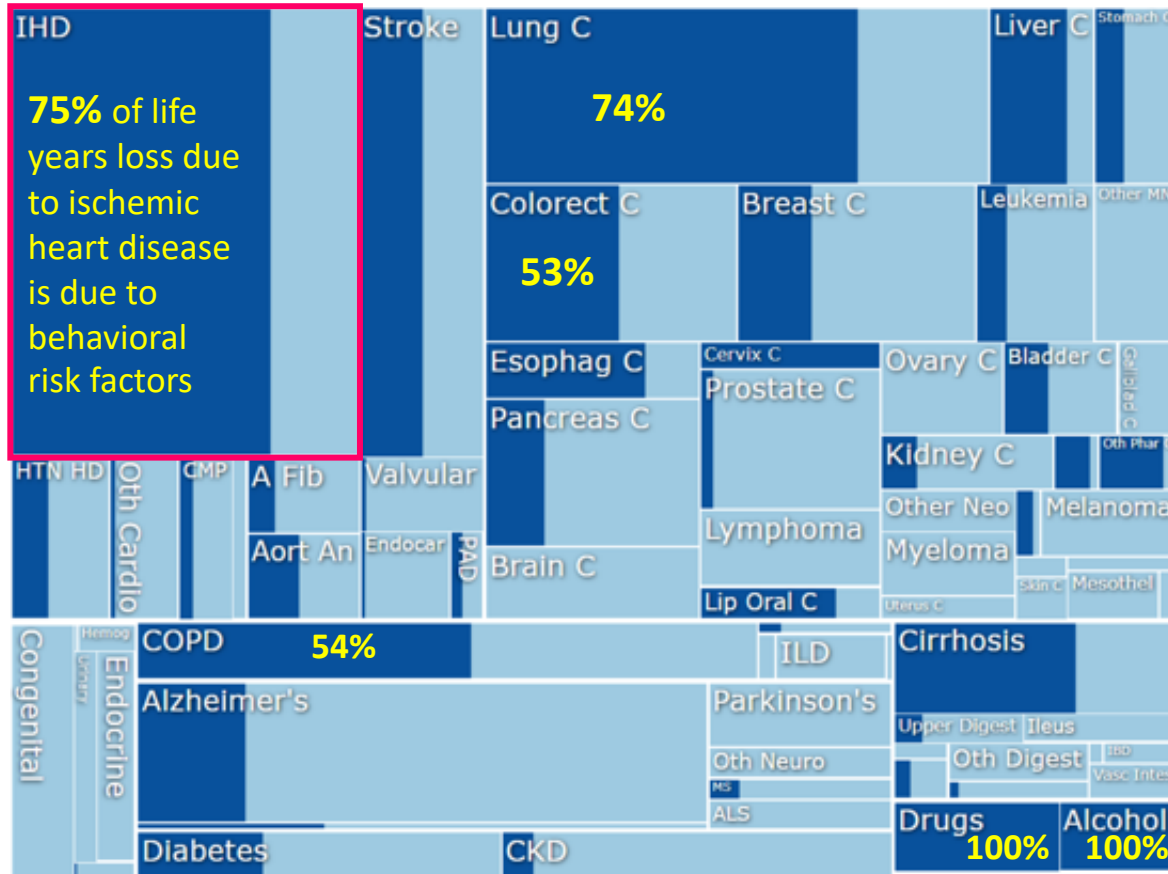
3'300 life years lost due to CV diseases in 1990



1'200 life years lost due to CV diseases in 2017

Switzerland, age-standardized estimation by Global Burden of Disease Project

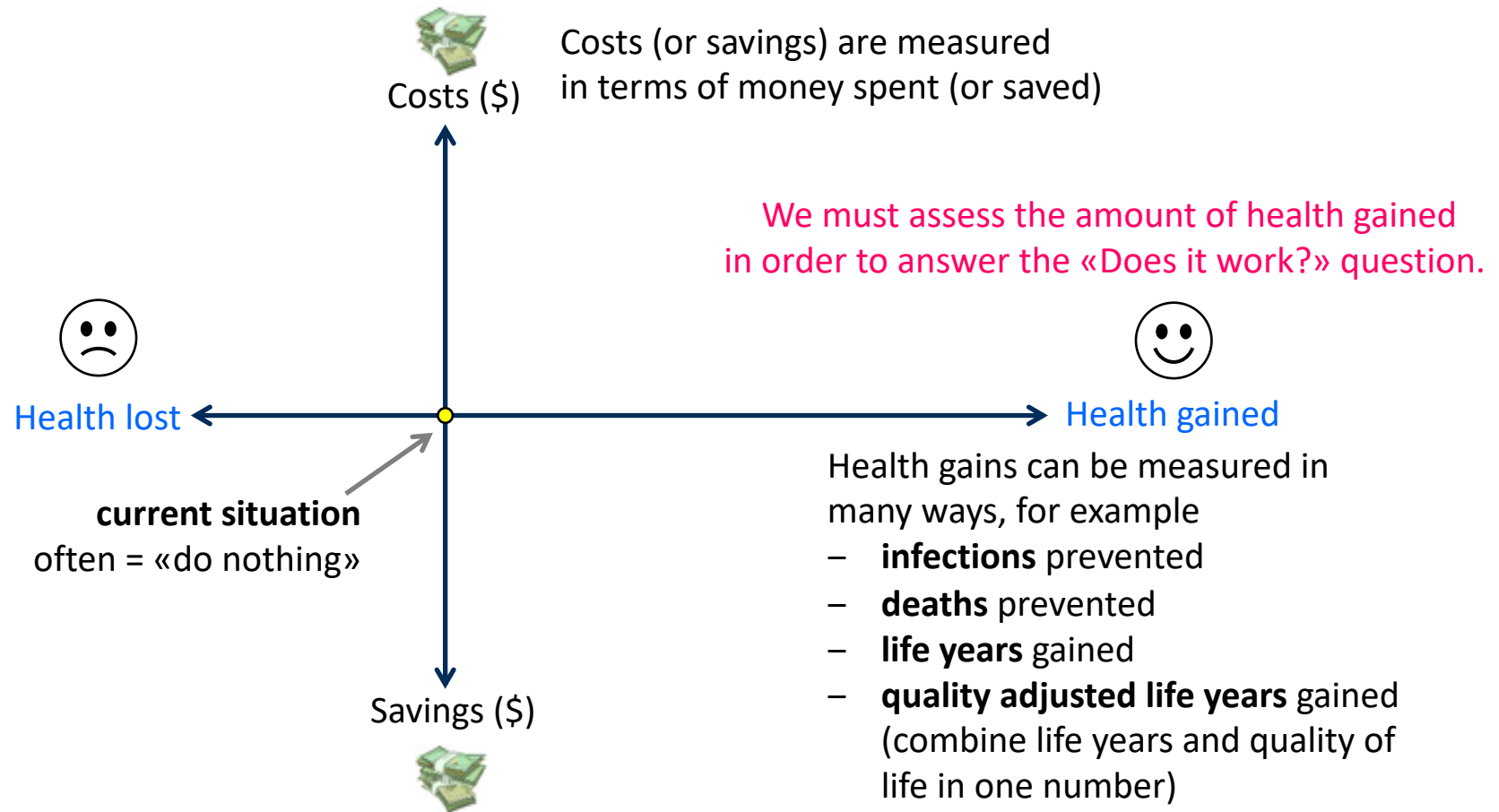
Life years lost attributable to behavioral risk factors in total life years due to non-communicable diseases



There is still a huge **harm reduction potential** for public health interventions!

Switzerland 2017
 estimation by
 Global Burden of Disease Project

The 2 dimensions of health economic evaluations



Does it work?

Typical interventions aiming at improving health behaviors

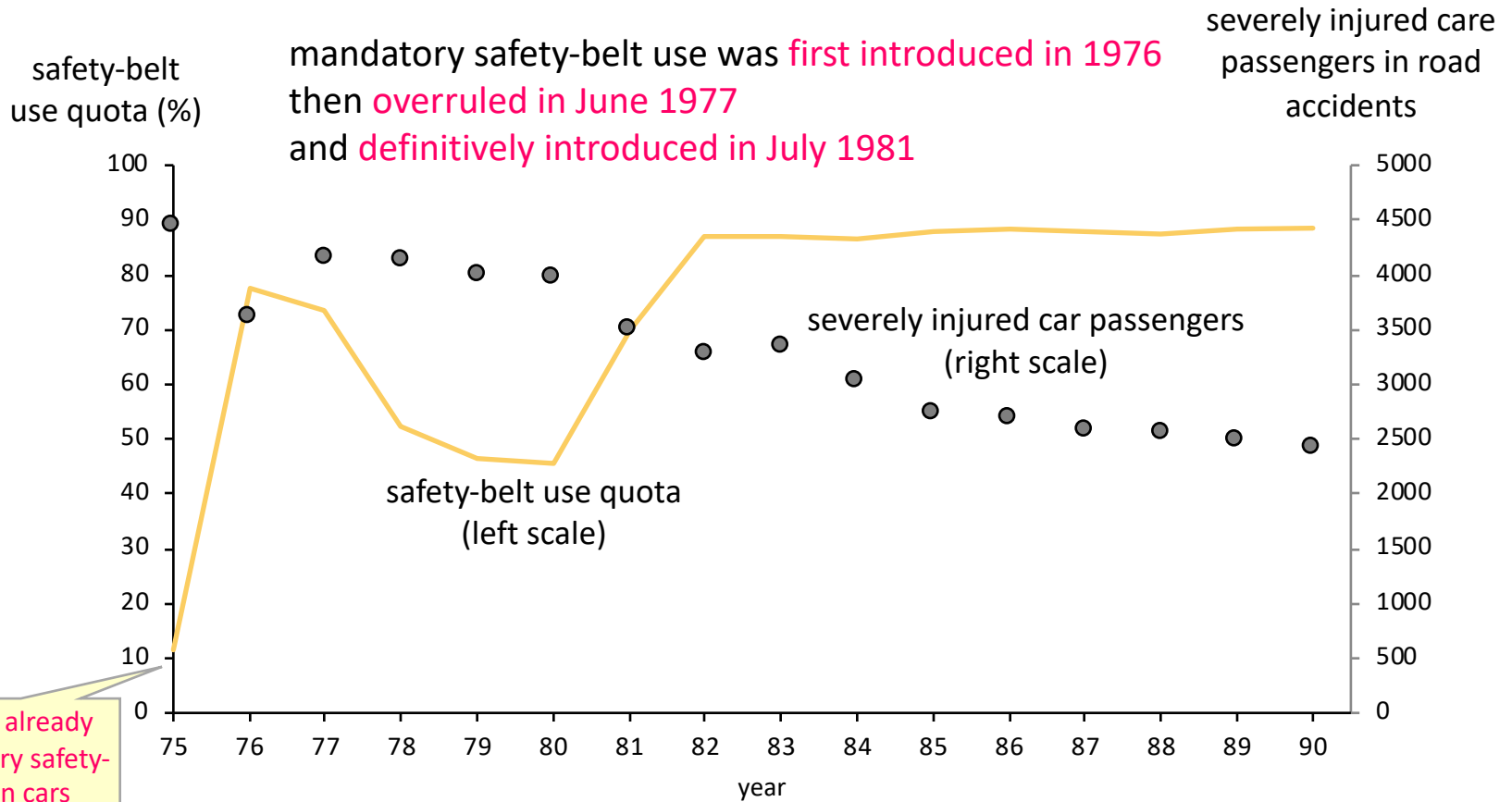
- Taxes on unhealthy products (cigarettes, sugar, ...)
- Subsidies on healthy products (bicycle helmets, fortified food ...)
- Impose healthy behaviors by law (use safety belt, stay at home during pandemic, ...)
- Public information campaign («drive carefully», «wash your hands», ...)

Does it work?

Challenges in assessing effectiveness of interventions

1. It's often difficult or even impossible to **observe behavior**.
2. It's often impossible or too expensive to carry out **randomized trials** (gold standard in clinical research).
3. Sometimes we have long **time lags** between behavior change and health effects (increased physical activity → less depression).
4. Many **confounding factors** make it hard to isolate the effect (other policy measures, overall societal trends).
5. Public health interventions often **have much broader effects on society** than clinical interventions (on economic activity, on non-problematic alcohol consumption)

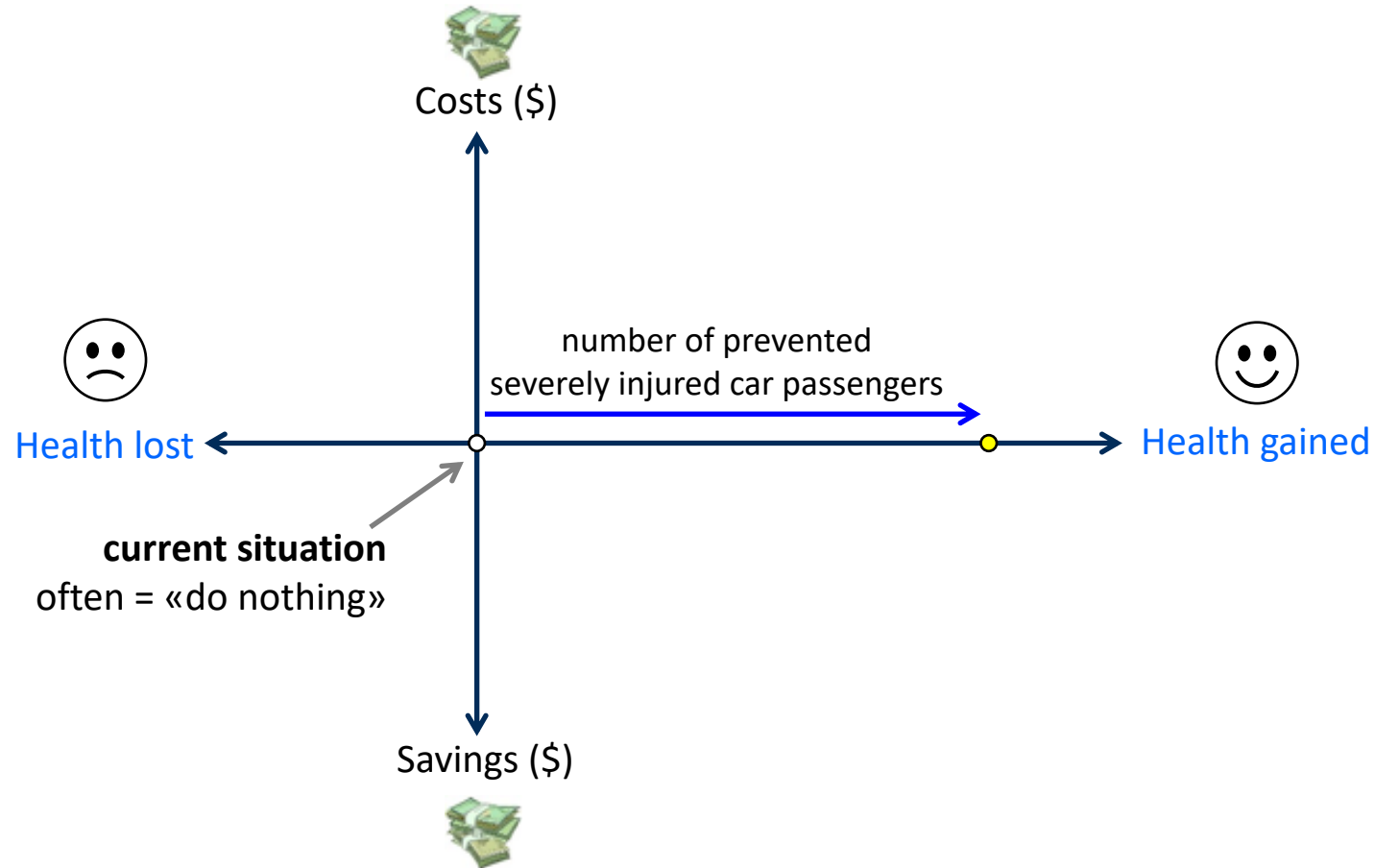
Does it work? Mandatory safety-belt use does



based on Federal Statistical Office data

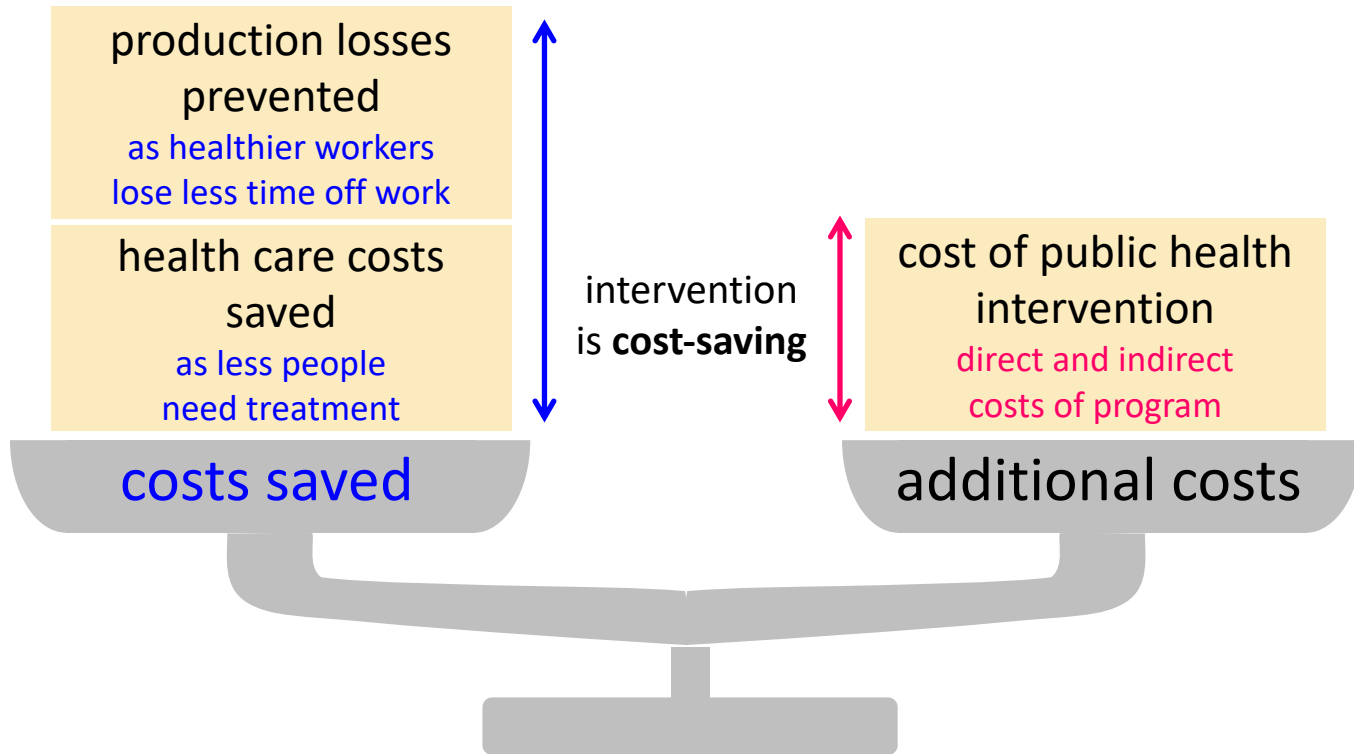
Does it work?

Mandatory safety-belt use does



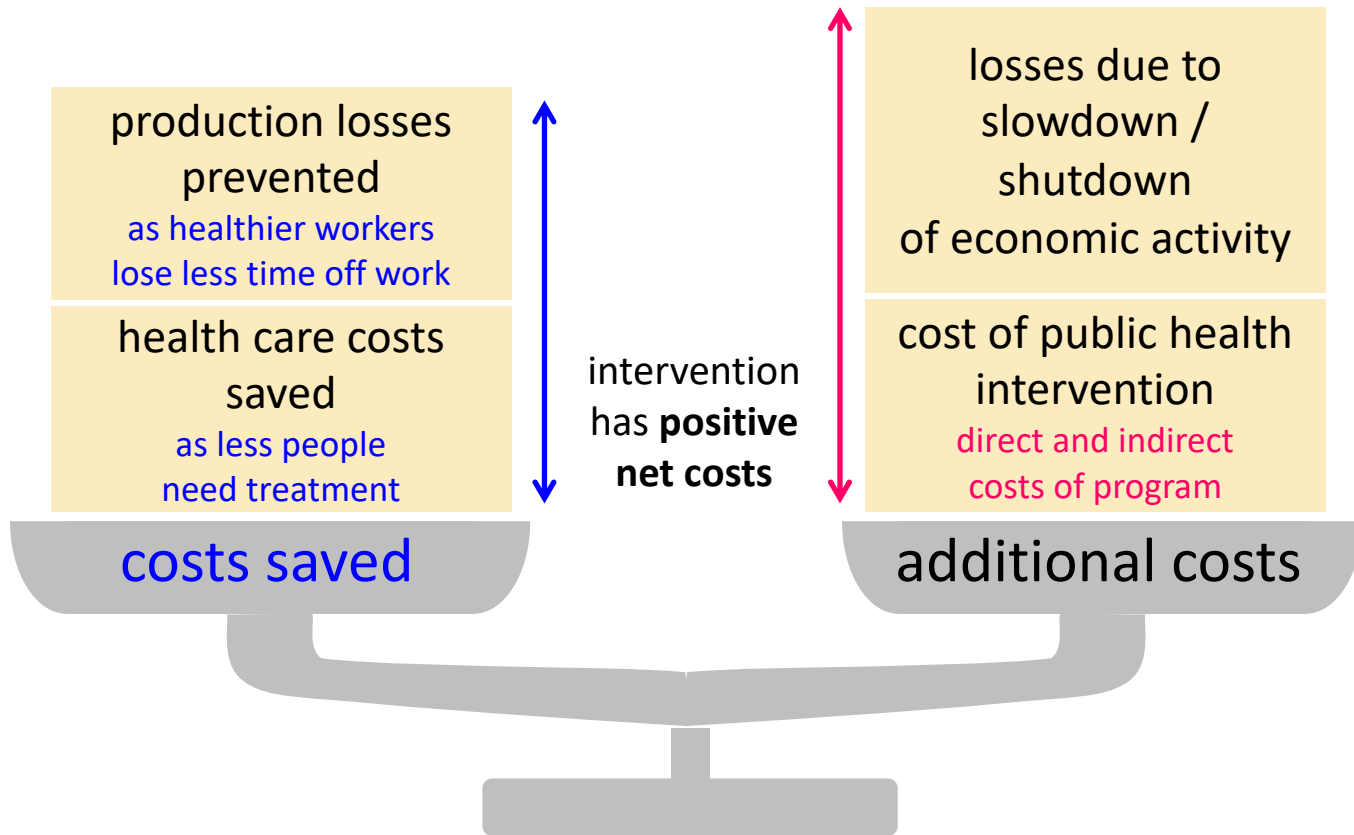
Is it worth it?

Types of cost categories considered

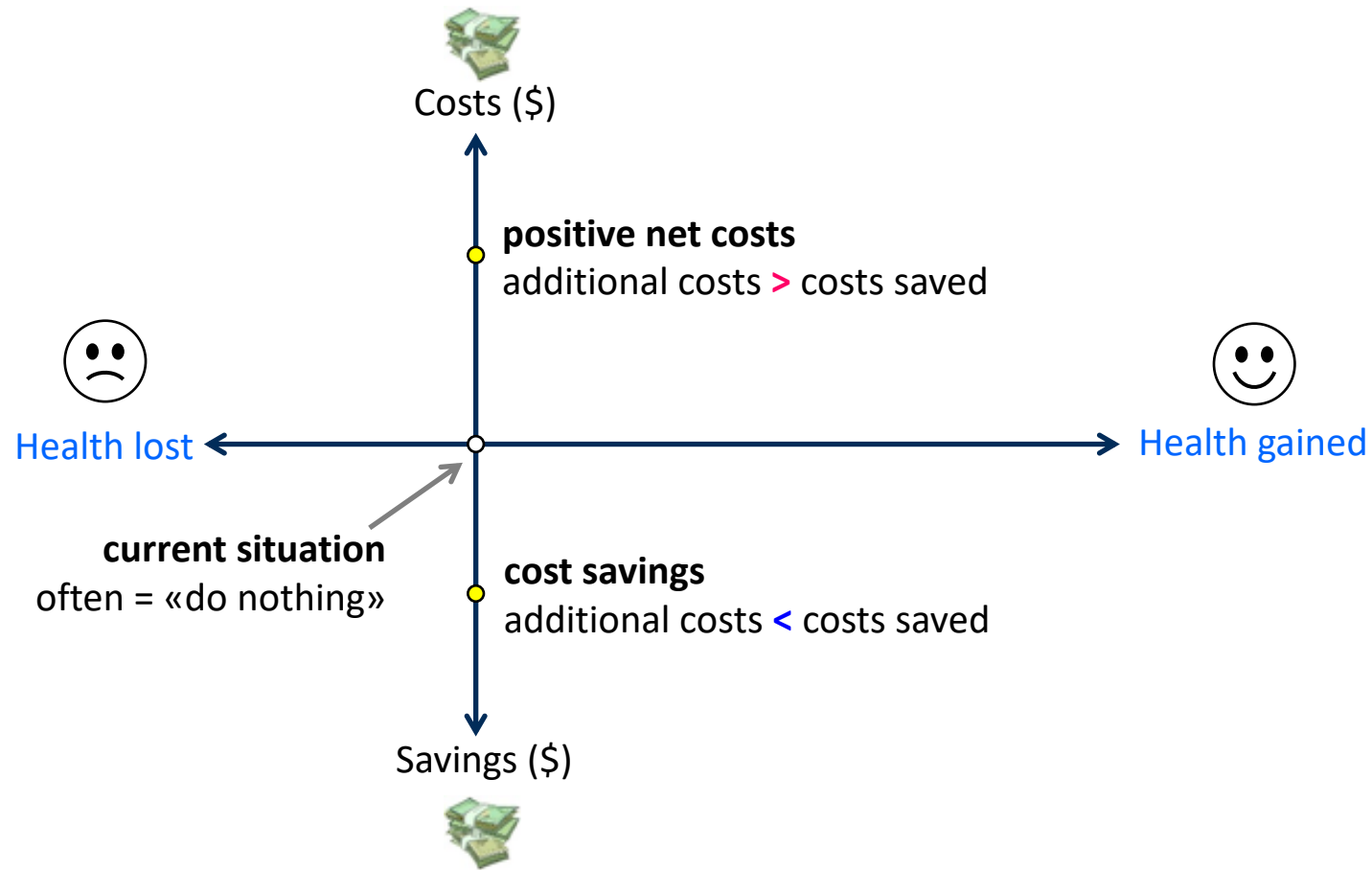


Is it worth it?

Types of cost categories considered

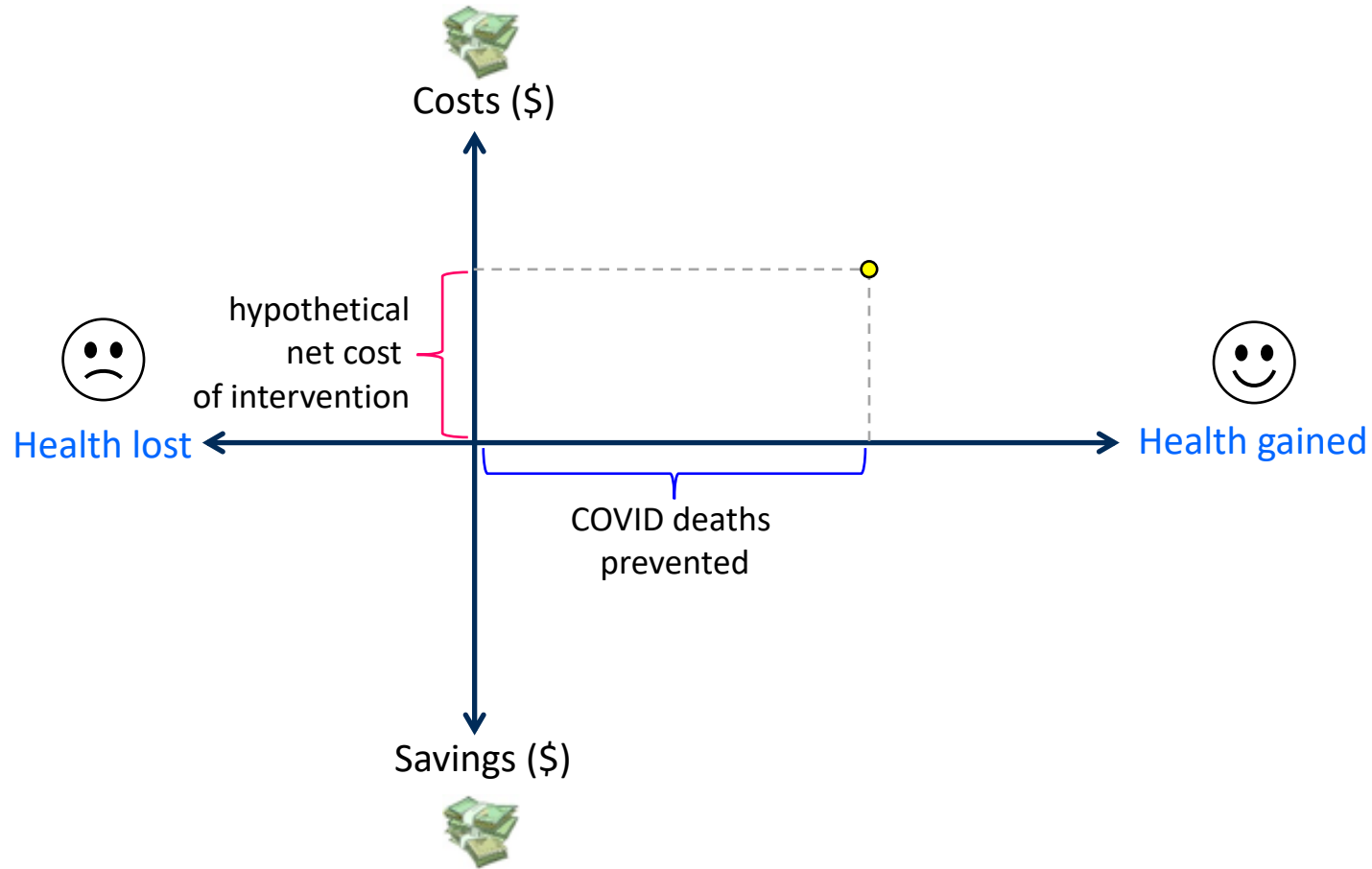


Net costs of public health intervention

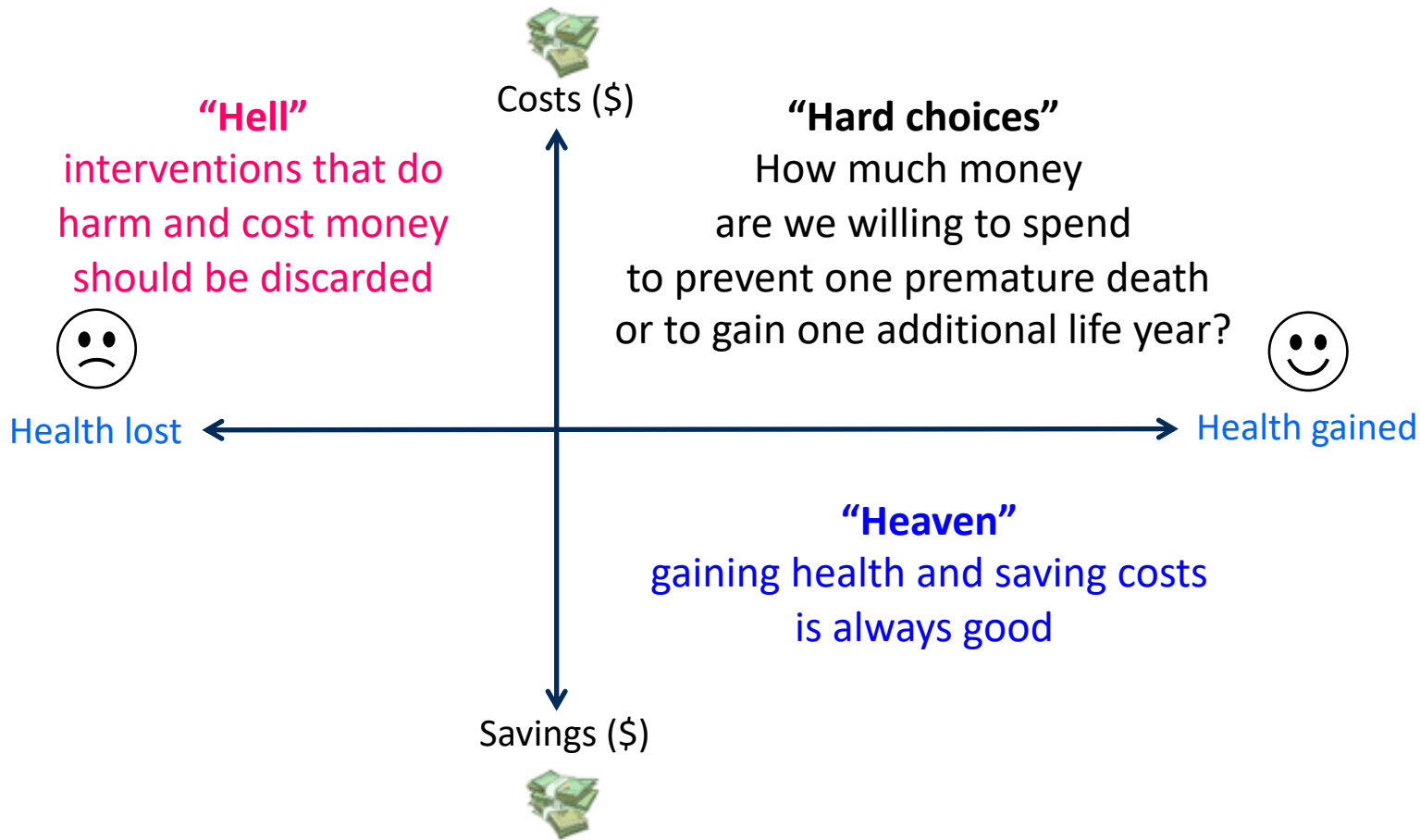


Is it worth it?

Combining health gains with net intervention costs

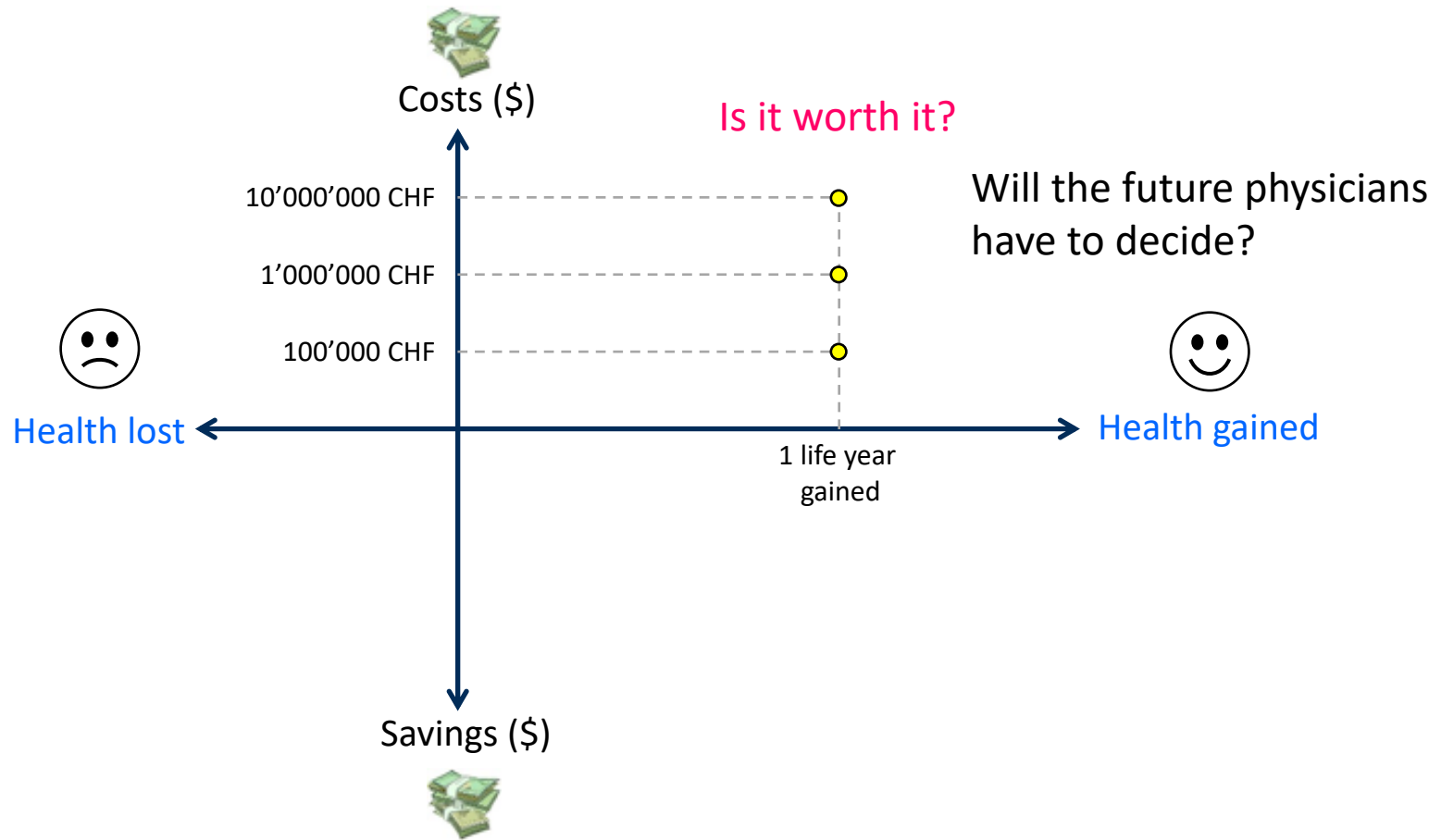


Is it worth it? Between **heaven, hell** and **hard choices**



Is it worth it?

How much are we willing to spend for one life year?



Conclusions

- Public health interventions **can be highly effective** in «producing» health.
- Evaluating the effectiveness of public health interventions can be challenging – in case of the current COVID interventions in particular because of their **broader effects on society**.
- The answer cost-effectiveness question is often difficult because we do not know **how much the society is willing to pay** for life year gained.
- Thinking thoroughly about the challenges to the **effectiveness** and **cost-effectiveness** of new interventions can help us design better interventions.