

# De kosten en baten van een gezonde leefstijl

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Advisory

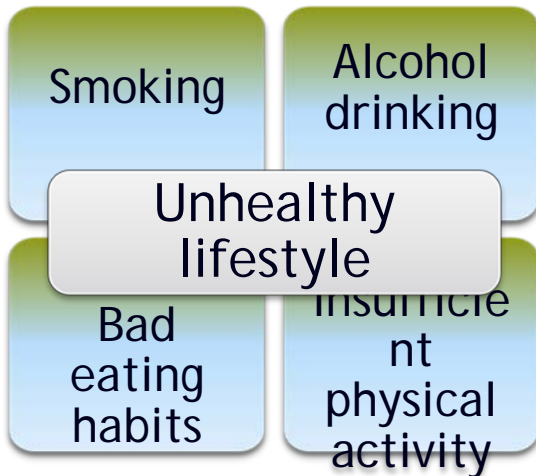
# Project “Prevention Pays for Everyone”

## Return on investment in a healthier lifestyle

Prevent Conference, Oegstgeest  
September 21<sup>st</sup>, 2010



# PREVENTION PAYS



Unhealthy behaviour contributes to higher prevalence of **chronic heart diseases and strokes, cancers, diabetes, respiratory diseases.**

Unhealthy lifestyle accounts for **10.2%** of the Netherlands' health care costs.

In some countries (e.g. Germany) it raises individual health insurance premiums.

 Whereas, if we decide to reverse the trends and invest in healthy lifestyle promotion:

- **€1** spent on stopping **SMOKING** translates into **€0.70 – €2.80\*** net benefits.
- **€1** spent on reducing **HEAVY DRINKING** leads to **€0.60 – €2.80\*** net benefits.
- **€1** spent on reducing **PHYSICAL INACTIVITY** and **OBESITY** results into **€0.30 – €1.30\*** net benefits.

\* Lower boundary is a pessimistic scenario, upper boundary – an optimistic one.

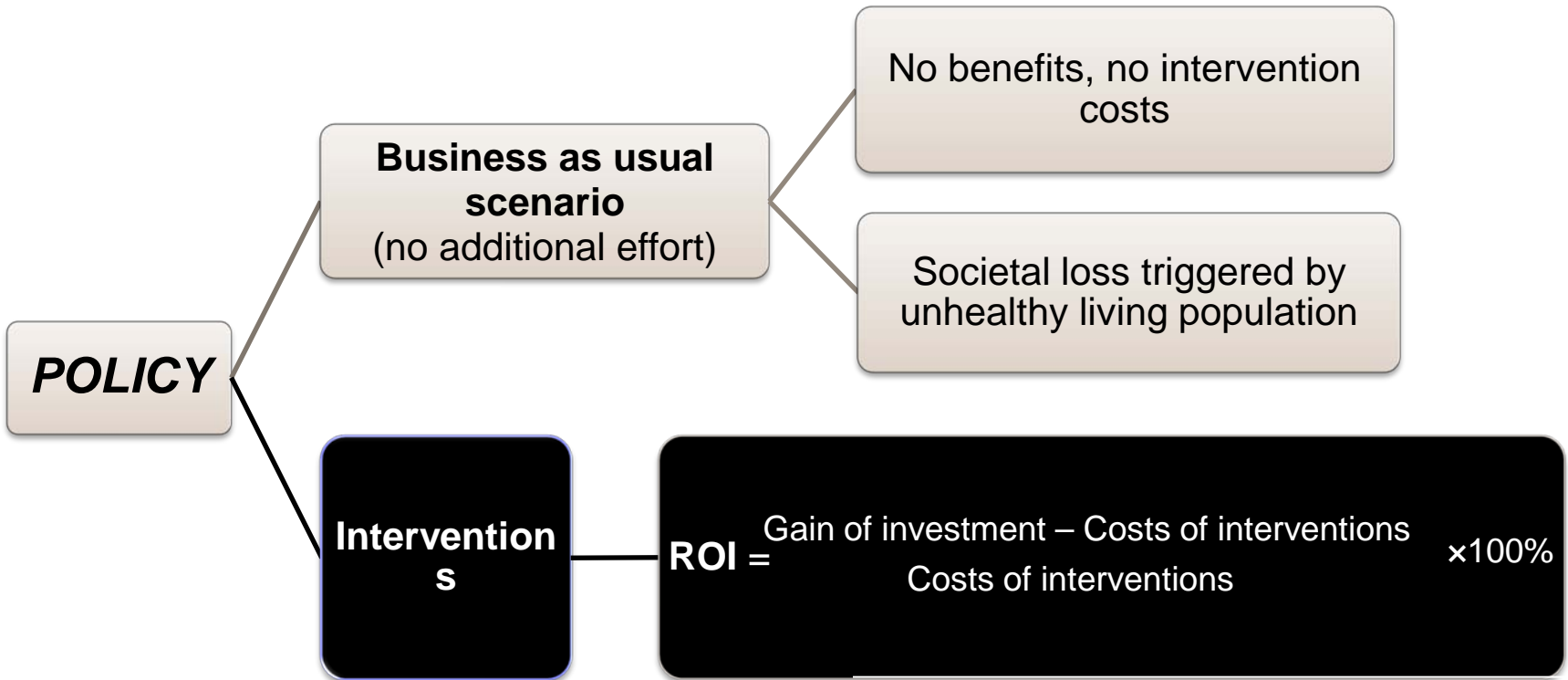
# SET UP OF THE PROJECT

**A societal macro approach** has been taken towards the whole array of lifestyle. A set of interventions into the lifestyle have an effect on different parameters. All effects have been discounted and all the numbers express **present value**.

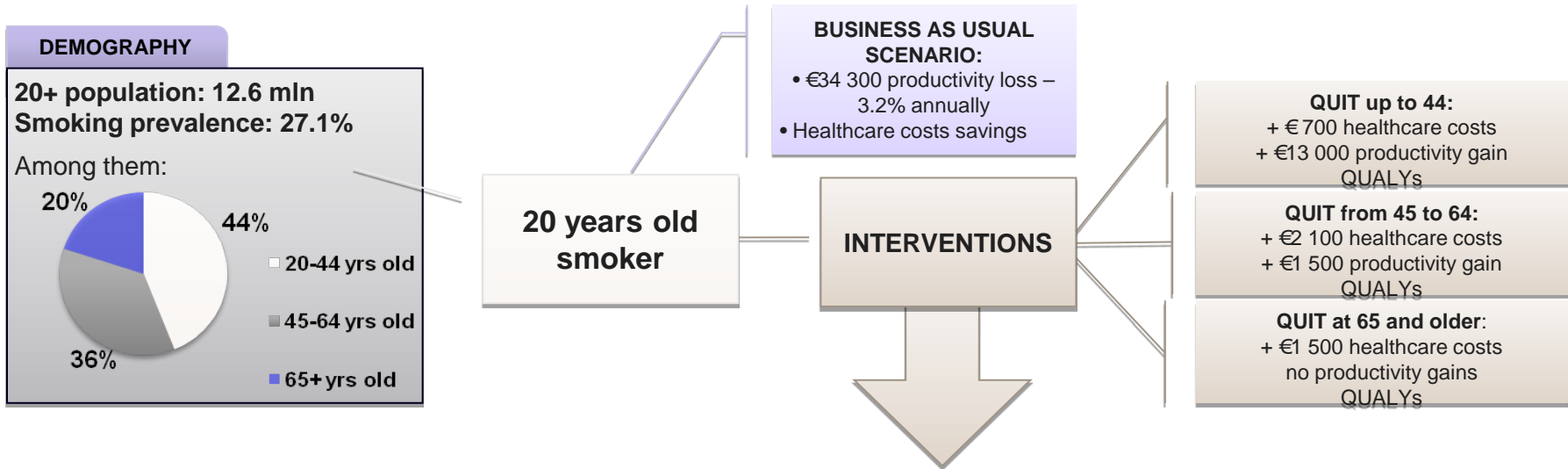
## Parameters included:

Prevention costs for welfare		Prevention benefits for welfare	
<b>Financial</b>			
1	Intervention costs	1	Higher productivity of the workforce
2	Healthcare costs due to longer life and unrelated disease	1.1	<i>Less sick leave</i>
		1.2	<i>Higher efficiency (only for quitters of smoking)</i>
		2	Reduction of healthcare costs for related disease
		3	Reduction of law enforcement costs <i>(for alcohol-related crime and accidents)</i>
<b>Non-financial</b>			
		1	Better quality of life (QALYs gained)
		2	Longer life expectancy (LYs gained)

## Two policy options. Calculation of return on investment (ROI)



# How does it work? – The LOGIC



	Interventions	Reach (20+ population)	Total costs	Effectiveness	Benefits	Return on investment
<b>Moderate reach scenario</b>	<ul style="list-style-type: none"> <li>• €0.25 increase in cigarette price</li> <li>• Minimal counselling</li> <li>• GP counselling</li> <li>• Intensive counselling + nicotine replacement therapy</li> </ul>	<ul style="list-style-type: none"> <li>• 100%</li> <li>• 25%</li> <li>• 5%</li> <li>• 7%</li> </ul>	435 mln EUR	1.2 p.p. reduction of smoking prevalence 150 000 quitters	740 mln EUR	<b>71%</b>
$150\,000 \times 44\% \times \text{€} 300 + 150\,000 \times 36\% \times (-\text{€}600) + 150\,000 \times 20\% \times (-\text{€}1\,500)$						

## MAIN ASSUMPTIONS

Discount rate of costs – 4.0%.  
Discount rate of effects – 1.5%.

Costs and benefits remain fixed over time.

Productivity – average annual labour costs in the Netherlands.

Productivity loss – sick leave days due to a certain behavioural risk.

Effectiveness ratios of interventions are kept constant throughout different reach scenarios.

Taxes is a costless intervention, since we get revenues to cover administration and other costs.



# SOURCES

## Articles in scientific journals:

- Health Affairs
- Preventive Medicine
- Journal of Occupational and Preventive Medicine
- Internal Medicine
- Journal of Physical Activity and Health
- International Journal of Public Health, etc.

## Reports by:

- *RIVM* – National Institute for Public Health and the Environment in the Netherlands
- *TNO* – independent research organization
- *WHO* – World Health Organization





## Section 4 – SOURCES

The model of preventive interventions evaluation we have built relies on international scientific publications, research institute reports, consultations with specialists. Thus, the evidence and data collected have been considered reliable and has not been validated independently by PwC.



## Section 5

# SMOKING

### Facts

Smoking is a leading risk factor, causing **17.9%** of **deaths** in high-income countries.

**71%** of **lung cancer** is attributable to tobacco smoking.

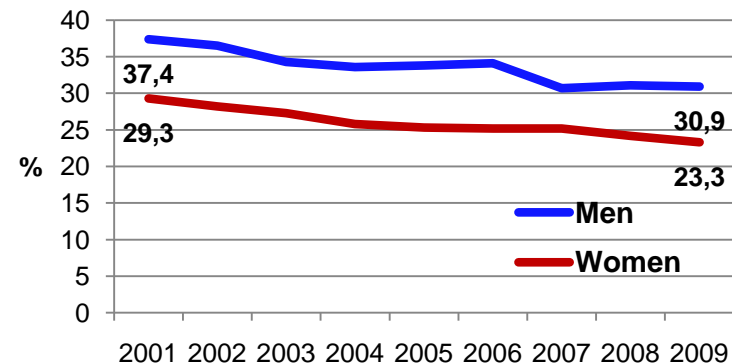
**The prevalence of smoking** in the Netherlands has been decreasing over the last decade and is not **27.1%**. However, it still remains one of the highest in Europe.

### Smoking policies in the Netherlands:

- The first European country to introduce warning labels on cigarette packages in 2003.
- Partial ban on advertising and promotion.
- Since 2008 smoking is banned in hospitality places.
- Beginning with 01/01/2011 smoking cessation aids will be covered by national health insurance.



**Figure 1. Smoking prevalence among men and women in the Netherlands.**



Source: WHO report Global Health Risks, ITC policy evaluation project, CBS Netherlands

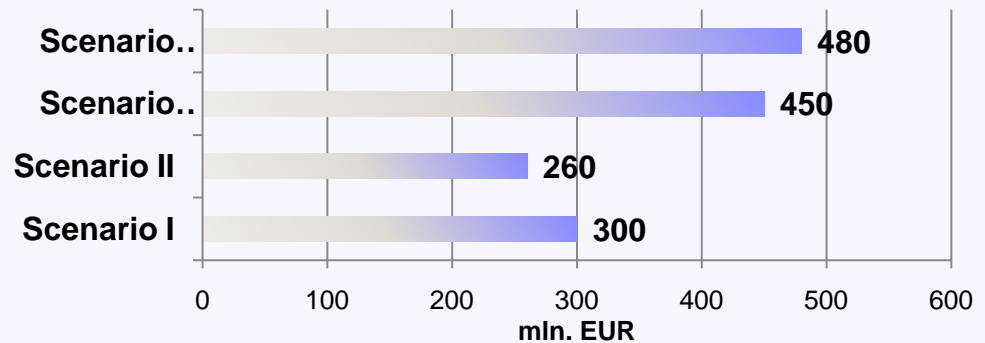
# Interventions

## Interventions to support smoking cessation PAY OFF:

	Package of interventions	Reach	ROI
Scenario I	1. Price increase (+ €0.25) 2. Counselling 3. Nicotine replacement therapy 4. Mass media campaign (MMC)	Low	90%
Scenario II		Basic+low MMC	70%
Scenario III		Basic+high MMC	220%
Scenario IV		High	280%

The most cost-effective single intervention appears to be **general practitioner counselling - 130 EUR/quitter** (moderate reach scenario). However, it is a limited resource. Besides, cessation rates can vary widely, affecting cost-effectiveness figures.

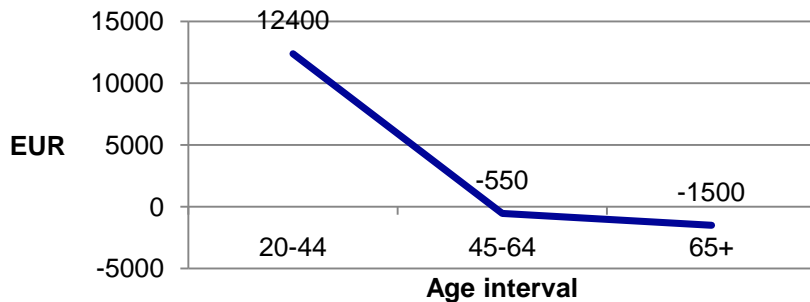
**Figure 2. Social net benefits of reducing smoking prevalence by 1 percentage point.**



Source: RIVM report, PwC Analysis

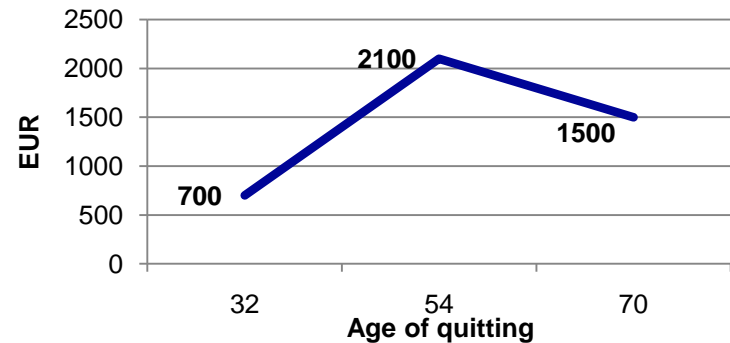
# Our findings

**Figure 3. Gross social benefits of quitting at different age per additional quitter.**



**2.4 billion EUR**  
Total productivity loss if current 15-20 yrs old smoking workers keep smoking

**Figure 4. Net healthcare costs per quitter after stopping smoking at different age.**



Productivity loss due to smoking-related sick leave and reduced efficiency at work – **3.2%**.



Over a working lifetime of a person who started smoking at 20 years old – it is a social loss of approximately **€34 300**.

Source: PwC Analysis, RIVM report

## Section 6

# HEAVY DRINKING

### Facts

Alcohol contributes to more than **60 types of disease and injury**, although it can also decrease the risk of cardiovascular disease and diabetes if consumed lightly to moderately.

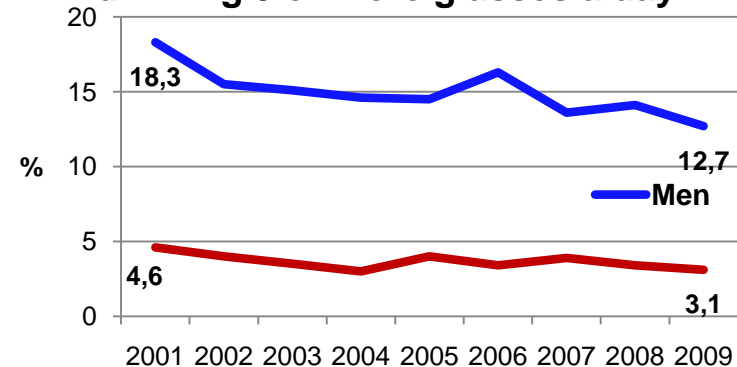
Alcohol is also responsible for approximately **20% of deaths** due to motor vehicle accidents.

**7.7%** of population in the Netherlands drink 3 or more glasses a day.

**0.03% of GDP (€144 mln)** is spent on tackling alcohol-related crime and accidents every year.



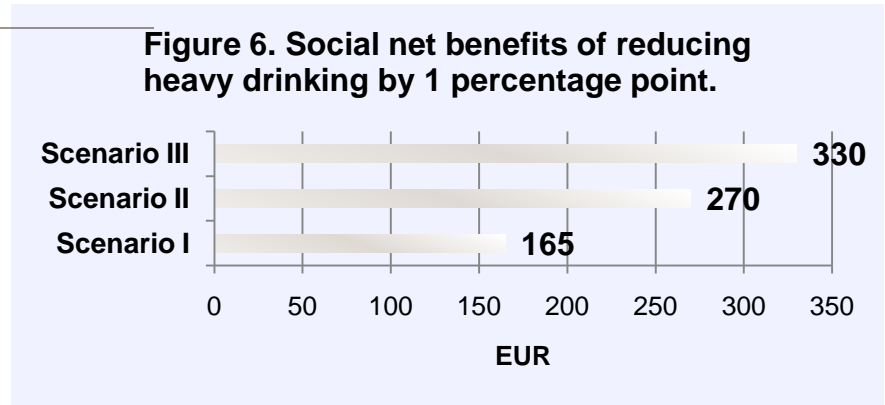
**Figure 5. Dutch population drinking 3 or more glasses a day.**



Source: WHO report Global Health Risks, CBS Netherlands

# Interventions

Interventions aiming to reduce the prevalence of alcohol abuse PAY OFF:



Source: PwC Analysis

# Our findings

Productivity loss due to alcohol-related sick leave – **1.11%**.



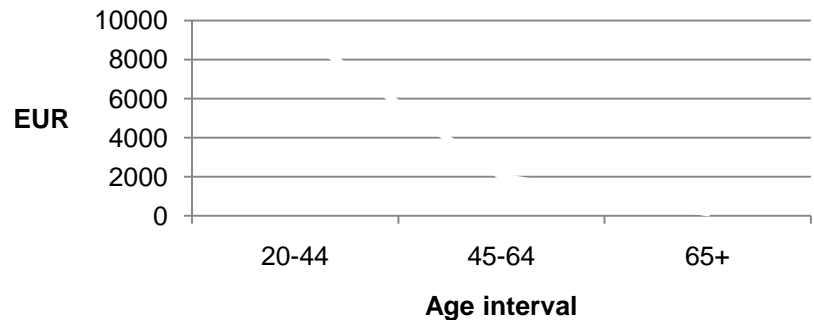
Over a working lifetime of a person who started drinking heavily at the age of 20-44 – it is a loss of approximately **€12 000**.

Over a working lifetime of a person who started drinking heavily at the age of 45-64 – it is a loss of about **€3 000**.

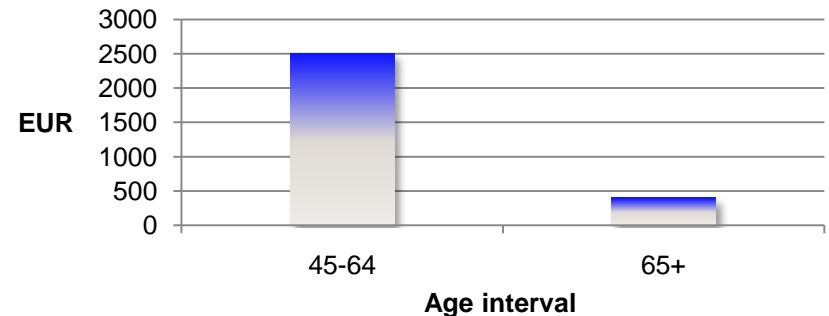
**2.6 billion EUR**

Total productivity loss if current 20-44 years old working heavy drinkers keep drinking

**Figure 7. Gross social benefits of stopping heavy drinking after having started at 20-44 years per additional stopper.**



**Figure 8. Gross social benefits of stopping heavy drinking after having started at 45-64 years per additional stopper.**



## Section 7

# BAD EATING HABITS AND PHYSICAL INACTIVITY

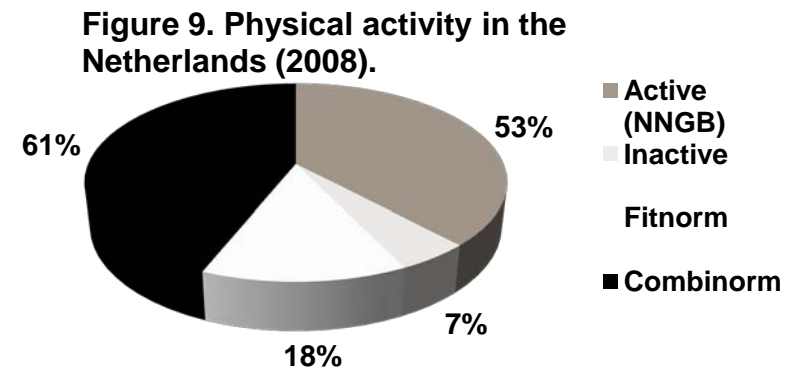
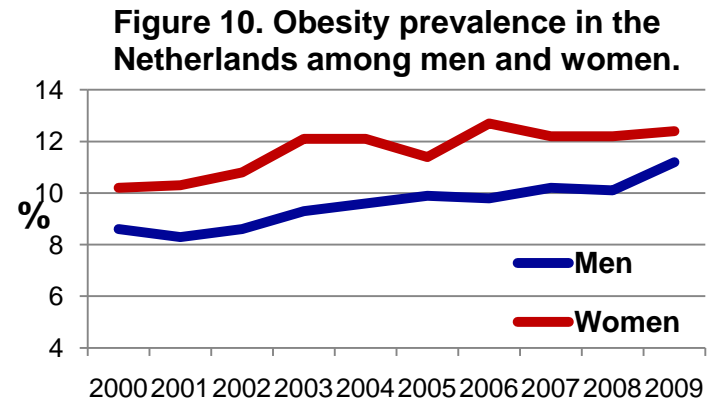
### Facts

Obesity and overweight have become a new challenge for Western health care systems. The main determinants are **eating habits** and **physical activity**.

Physical inactivity, overweight, obesity, and low fruit and vegetable intake together cause **18.6%** of **deaths** in high-income countries. Physical inactivity may also provoke the symptoms of depression.

**Physical inactivity** of adults has been slightly **decreasing** over the last decade in the Netherlands.

**A worrying fact** is an increasing prevalence of physical inactivity among 4-17 year olds.



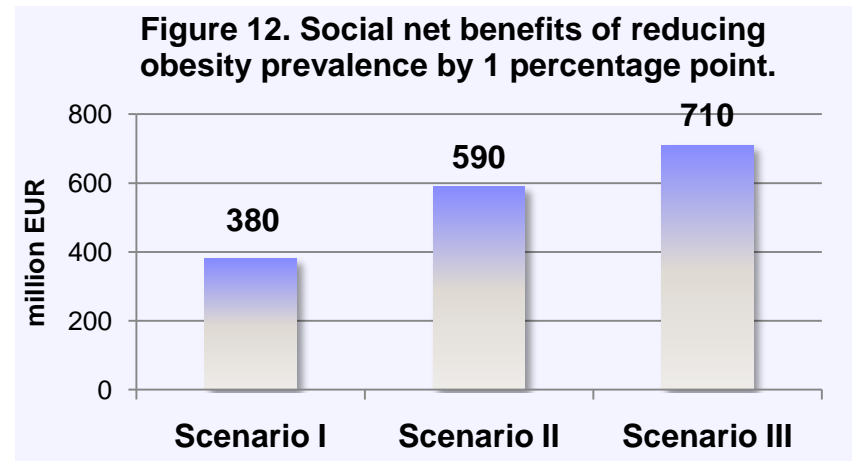
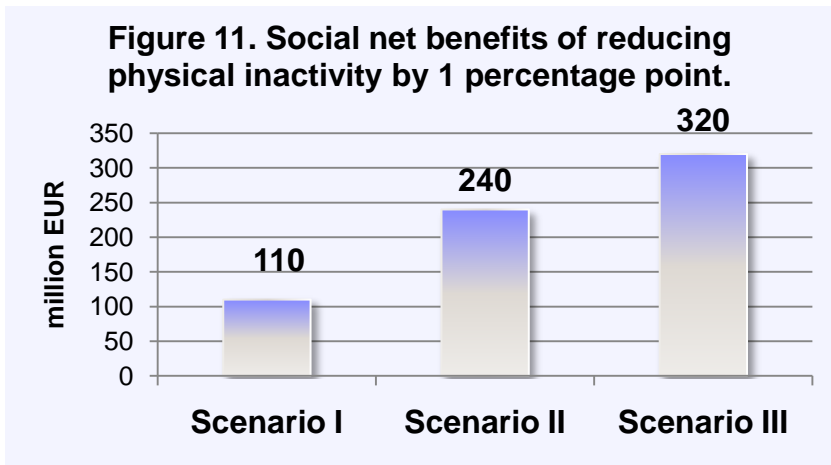
Source: TNO report, WHO report Global Health Risks, CBS Netherlands





# Interventions

Interventions to reduce the prevalence of physical inactivity and obesity (food and physical activity advice) also PAY OFF:



Source: PwC Analysis

PricewaterhouseCoopers

# Our findings

Productivity loss due to physical inactivity-related sick leave (6.25 days/ year) – **2.6%**.

Productivity loss due to overweight-related sick leave (1.5 days/ year) – **0.63%**.

Productivity loss due to obese-related sick leave (11.7 days/ year) – **4.88%**.

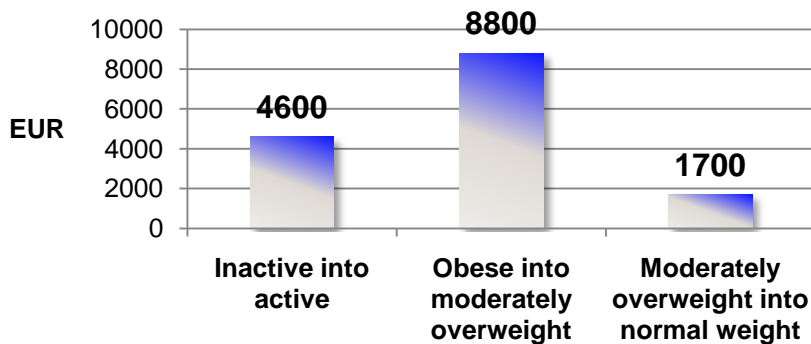
Over a working lifetime of a person who is physically inactive – it is a loss of approximately **€9 700.\***

Over a lifetime it creates a loss of about **€2 300.\***

Over a lifetime this is equal to the amount of approximately **€18 200.\***

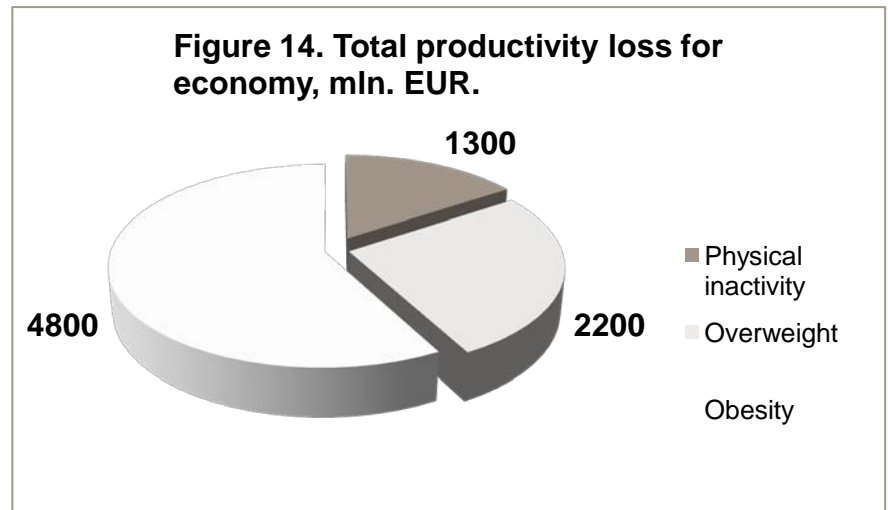
\* Assuming that a loss starts accumulating after a person becomes 40 years old on average.

**Figure 13. Gross social benefits of switching to a healthier lifestyle per additional active/ healthier weight person.**



Source: PwC Analysis

**Figure 14. Total productivity loss for economy, mln. EUR.**



## SUMMARY & RECOMMENDATIONS

### Prevention

### Main Findings

Cornerstone of future health care systems

- Prevention targeting young is **THE MOST BENEFICIAL**.
- **MOST COST-EFFECTIVE** interventions are the ones applied individually.
- **RATES OF RETURN** in smoking and heavy drinking prevention are significantly positive and comparable in size
- **THE JOINT EFFECT** of interventions, targeting different risk factors, is unknown
- **EFFECTIVE MASS MEDIA CAMPAIGN** is an efficient accelerator of individual interventions.

! Stimulate higher age classes to healthy lifestyle is still important as it **IMPROVES QUALITY OF THEIR LIFE & CAN LONGER BE VALUABLE FOR SOCIETY** (e.g. through active participation in community life, volunteering, educating younger generation, etc.). This effect can not be easily monetised

## SUMMARY & RECOMMENDATIONS

### **Prevention – pays for everyone:**

**Individual** - increases welfare and wellbeing

**Employers** - impacts labour force productivity.

**Providers** - frees up valuable capacity

**Payers** - reduces aggregate costs

**Governments** - reduces public health care spend and increases productivity



We'd like to thank you for your attention.