

Advisory

Project “Prevention Pays for Everyone”

Return on investment in a healthier lifestyle

Prevent Conference, Oegstgeest
September 21st, 2010



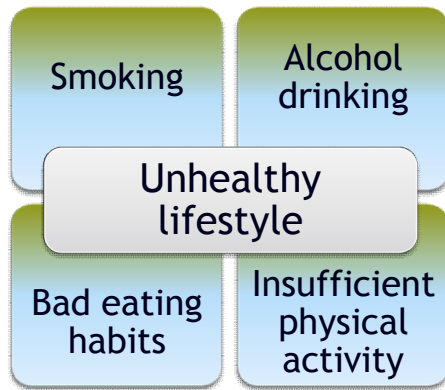
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PREVENTION PAYS



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.

Source: RIVM report, PwC Analysis

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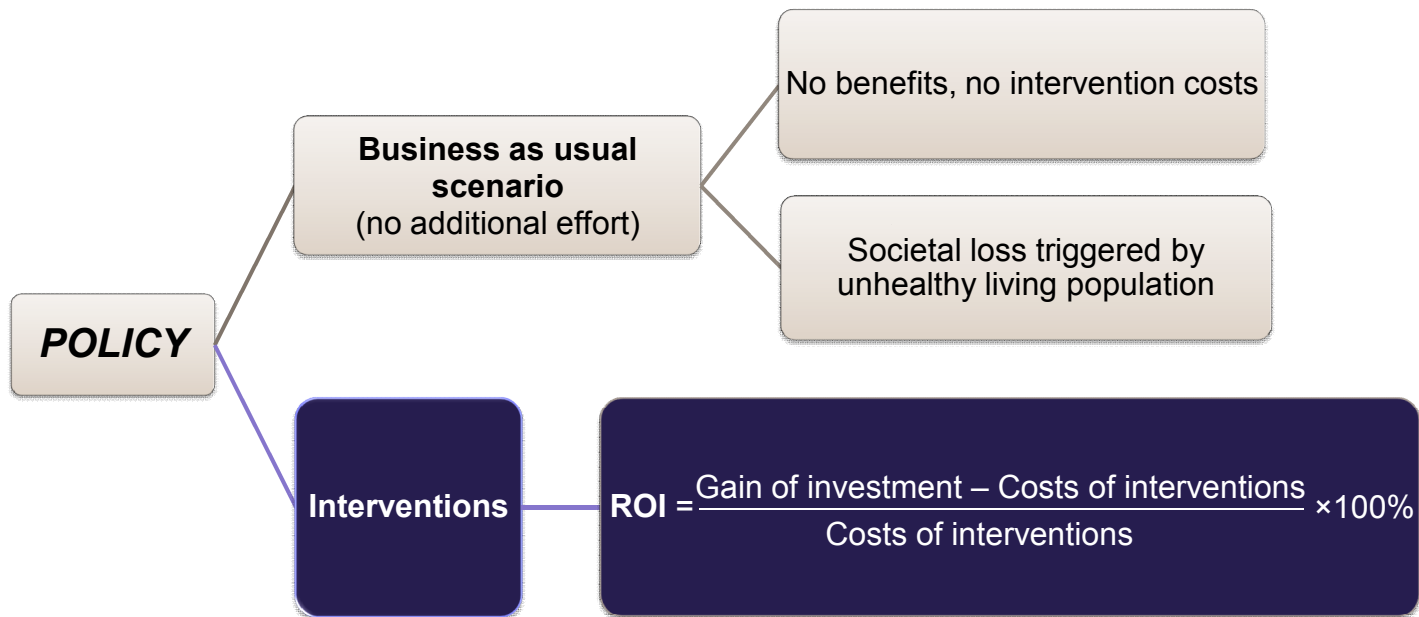
SET UP OF THE PROJECT

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:

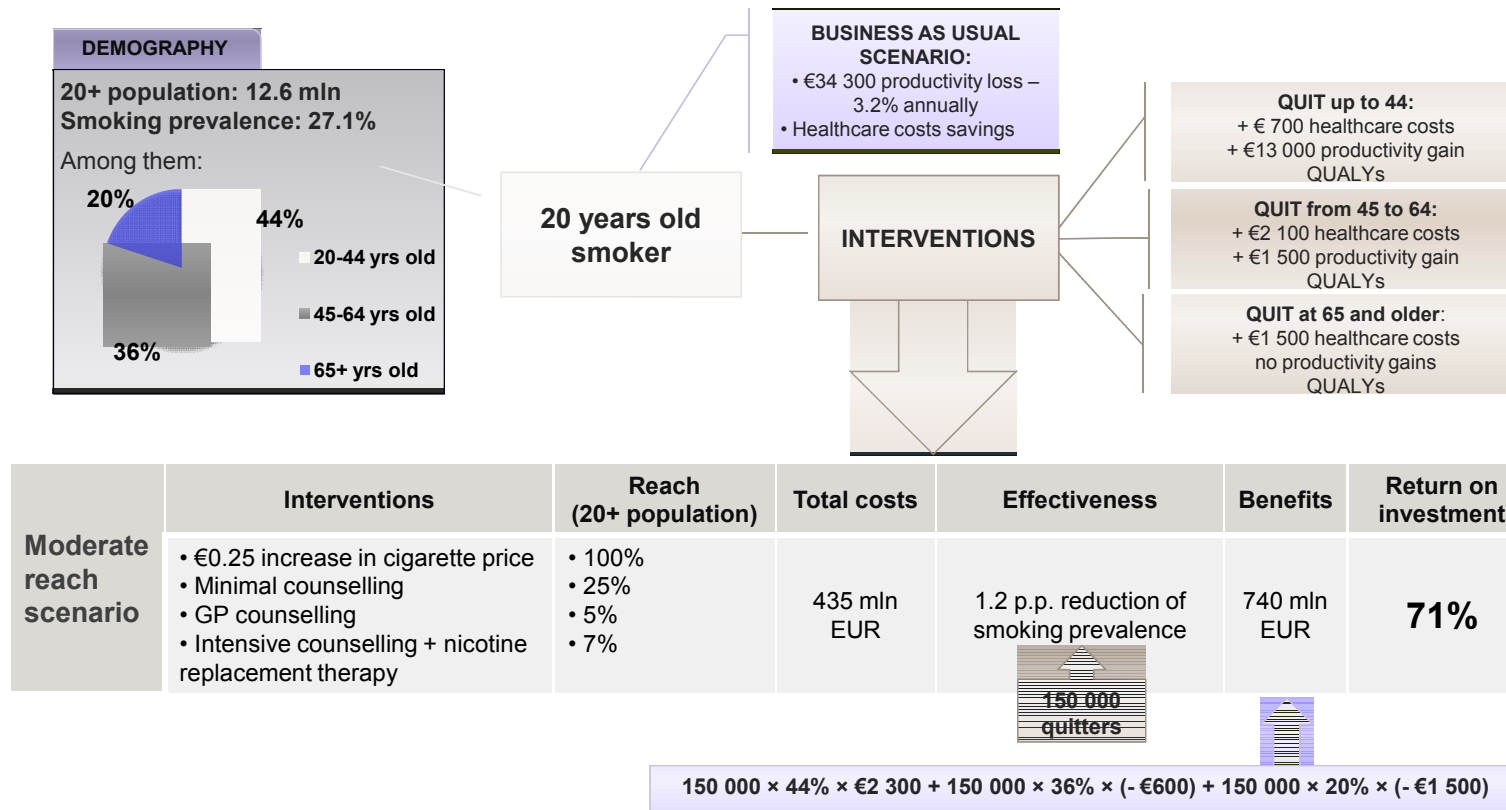
Prevention costs for welfare			Prevention benefits for welfare	
Financial				
1	Intervention costs	1	Higher productivity of the workforce	
2	Healthcare costs due to longer life and unrelated disease	1.1	Less sick leave	
		1.2	Higher efficiency <i>(only for quitters of smoking)</i>	
		2	Reduction of healthcare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

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



Section 2 – SET UP OF THE PROJECT

How does it work? – The LOGIC



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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.

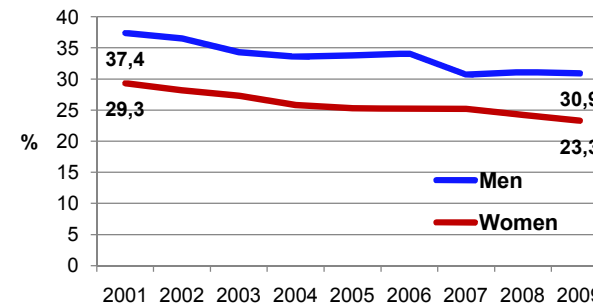
The prevalence of smoking in the Netherlands has been decreasing over the last decade and is not **27.1%**. However, it still remains one of the highest in Europe.

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

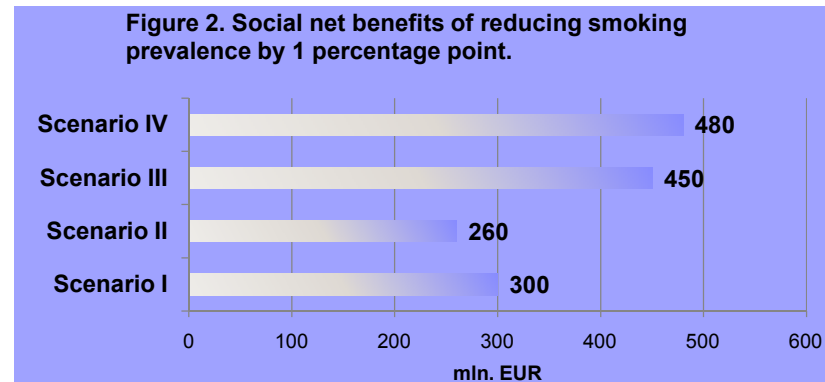
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Interventions

Interventions to support smoking cessation PAY OFF:

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

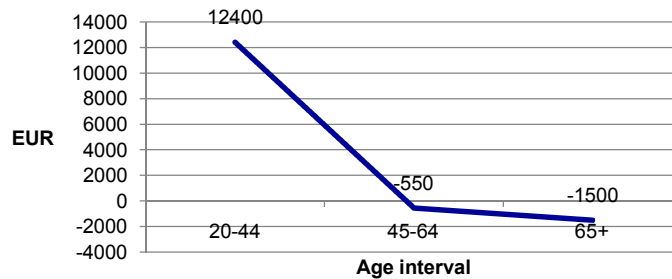


Source: RIVM report, PwC Analysis

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Our findings

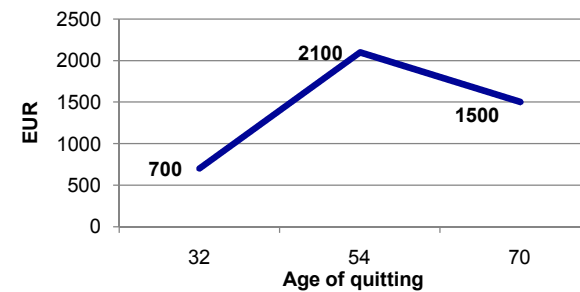
Figure 3. Gross social benefits of quitting at different age per additional quitter.



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**

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.

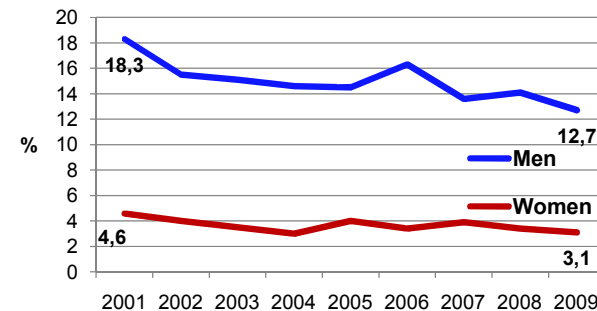
Alcohol is also responsible for approximately **20% of deaths** due to motor vehicle accidents.

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.



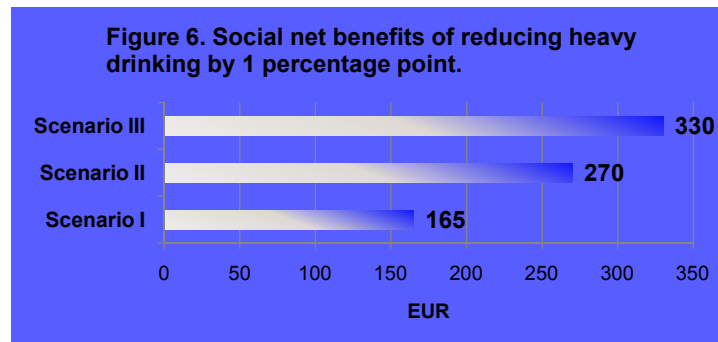
Source: WHO report Global Health Risks, CBS Netherlands

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Interventions

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

	Package of interventions	Reach		
Scenario I	<ol style="list-style-type: none"> 1. 25% increase in taxation 2. Screening programme and brief intervention 3. Restricted access 4. Advertising ban 	Low	ROI	60%
Scenario II		Moderate		150%
Scenario III		High		280%



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

Source: PwC Analysis

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

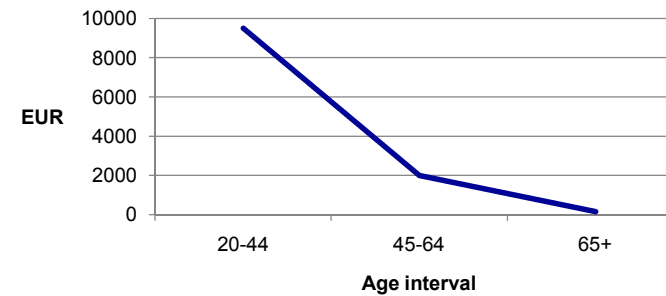
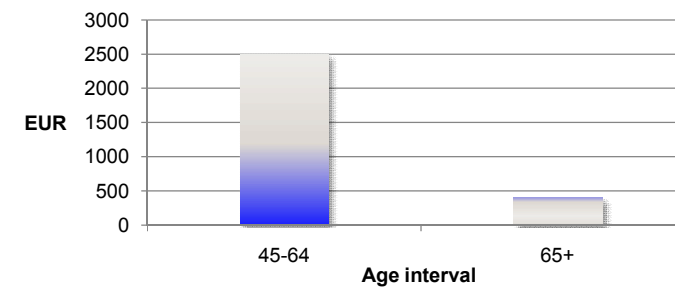


Figure 8. Gross social benefits of stopping heavy drinking after having started at 45-64 years per additional stopper.



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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

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Figure 10. Obesity prevalence in the Netherlands among men and women.

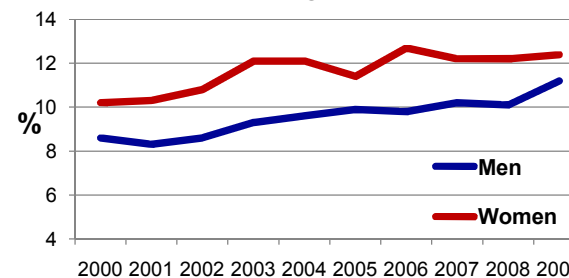
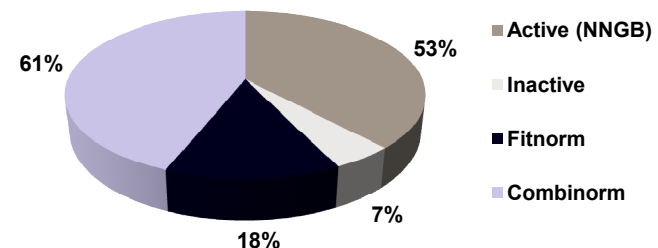


Figure 9. Physical activity in the Netherlands (2008).

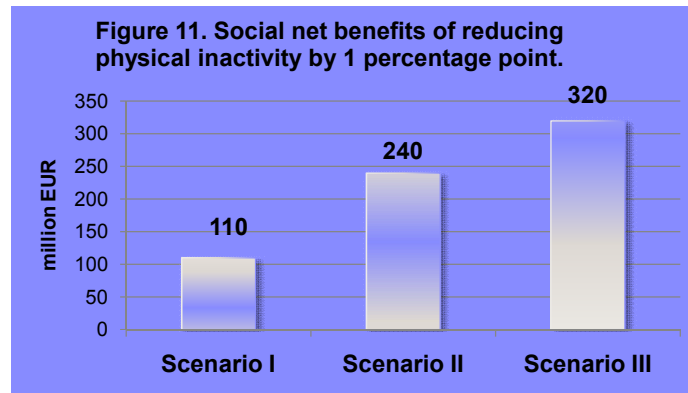


Interventions

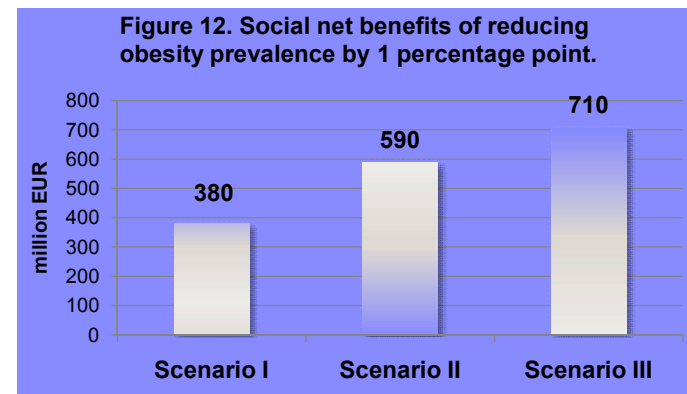


Interventions to reduce the prevalence of physical inactivity and obesity (food and physical activity advice) also PAY OFF:

	Package of interventions	Reach		
Scenario I		Low	ROI	30%
Scenario II		Moderate		80%
Scenario III		High		130%



Source: PwC Analysis



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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%**

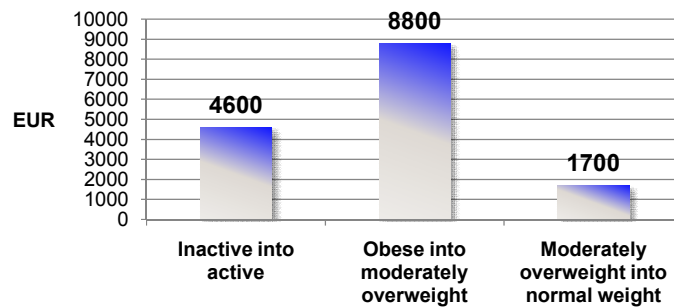
Over a working lifetime of a person who is physically inactive – it is a loss of approximately **€9 700** *

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

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

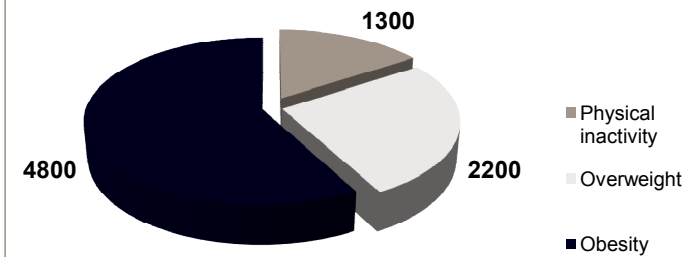
* Assuming that a loss starts accumulating after a person becomes 40 years old on average.

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.



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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.

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