Press Conference
3 June 2008

London

Münchener Rück
Munich Re Group

Agenda

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1.	Introduction: Global Leader in Health Insurance Solutions	- Peter Choueiri

2.	Obesity: Epidemic trends and its impacts on health	- Achim Regenauer

3.	Solutions and selected projects	- Franz Benstetter

4.	Conclusion	- Peter Choueiri

Today's News ... are Tomorrow's Risks

Current worldwide count of overweight adults stands at 1.6 billion and is projected to grow by 40% over the next 10 years.

(WHO, 2007)

A 60% increase in prevalence of hypertension is predicted by 2025.

(Kearney et al, Lancet, 2005)

Elevated BMI is a major risk factor for heart disease, stroke, type 2 diabetes and other chronic disease.
(Grundy, Medscape CME, 2008)

Direct health care costs of diabetes range from 2.5% to 15% of annual health care budgets.
(WHO, 2007)

About 2% of capital in the workforce is lost to disability, absenteeism and presenteeism related to chronic diseases.
(PricewaterhouseCoopers and National Business Coalition of Washington DC)

Obesity: One of the growth drivers in the global health market

Global health market – Market volume

in €bn

CAGR: ~6.0%

5,400

4,150

3,150

2,300

2000   2005   2010   2015
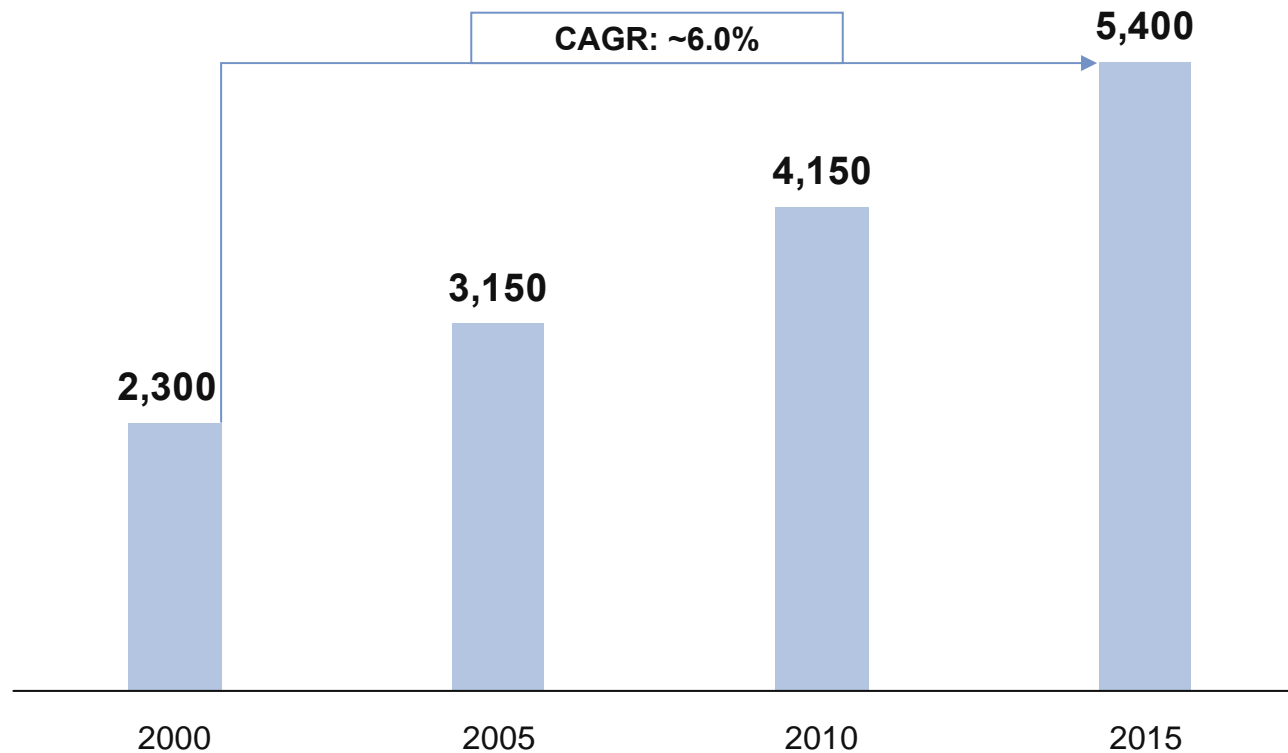
Quelle: OECD Health Statistics, Compustat, Bloomberg

Main growth drivers

Demographic development

Medical improvements

Lifestyle changes

Economic situation

Global activities build strong position in health insurance
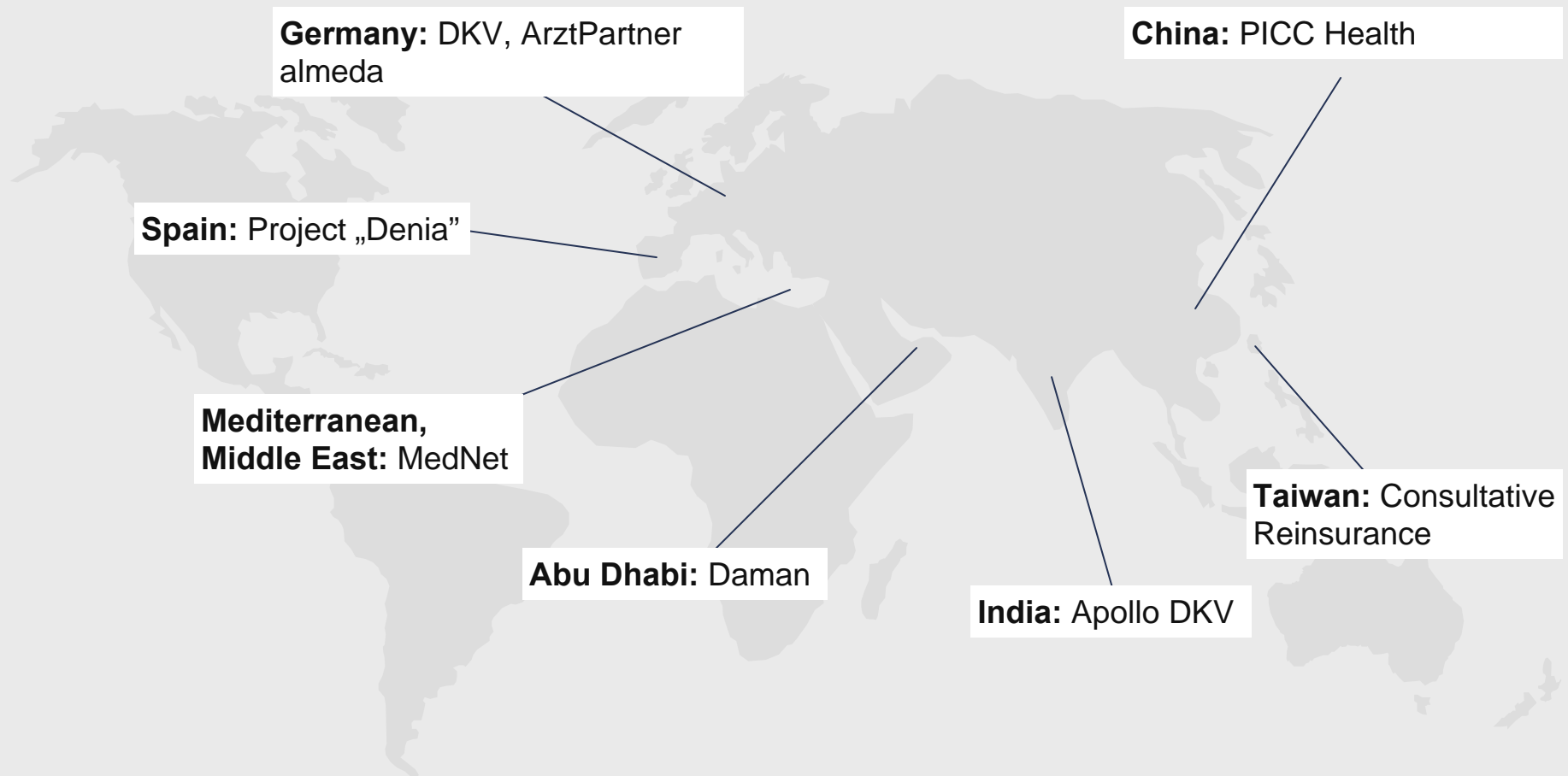
Our setup	Our strengths
■ Combining the world's No 1 health reinsurer and Europe's No 1 health insurer (DKV)	■ Flexible combination of business models and products as unique selling proposition
■ Health as core business segment within Munich Re Group	■ Outstanding knowledge and experience in health insurance and reinsurance gained in two decades of global presence
■ Health risk expertise in over 40 countries	■ Strong market presence in insurance and/ or reinsurance as solid platform for further growth
■ More than 3.500 healthcare professionals in 25 locations around the globe	

Our Ambition: "Global leader in health insurance solutions"

International Health
Selected Projects

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Germany: DKV, ArztPartner almeda

China: PICC Health

Spain: Project „Denia"

Mediterranean, Middle East: MedNet

Taiwan: Consultative Reinsurance

Abu Dhabi: Daman

India: Apollo DKV

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2. Obesity: Epidemic trends and its impacts on health   - Achim Regenauer

3. Solutions and selected projects   - Franz Benstetter

4. Conclusion   - Peter Choueiri

1. How is overweight and obesity defined ?

Obesity – the medical view

BMI $\dfrac{\text{Weight (kg)}}{\text{Height (m)2}}$	Classification	Degree of obesity	Example 174 cm
18.5 or less	Underweight		56 kg
18.5 – 24.9	Normal weight		77 kg
25.0 – 29.9	Overweight	0	92 kg
30.0 – 34.9	Obesity	I	107 kg
35.0 – 39.9	Obesity	II	120 kg
40 or greater	Extremely obese	III	

Obesity – the **cosmetic** view
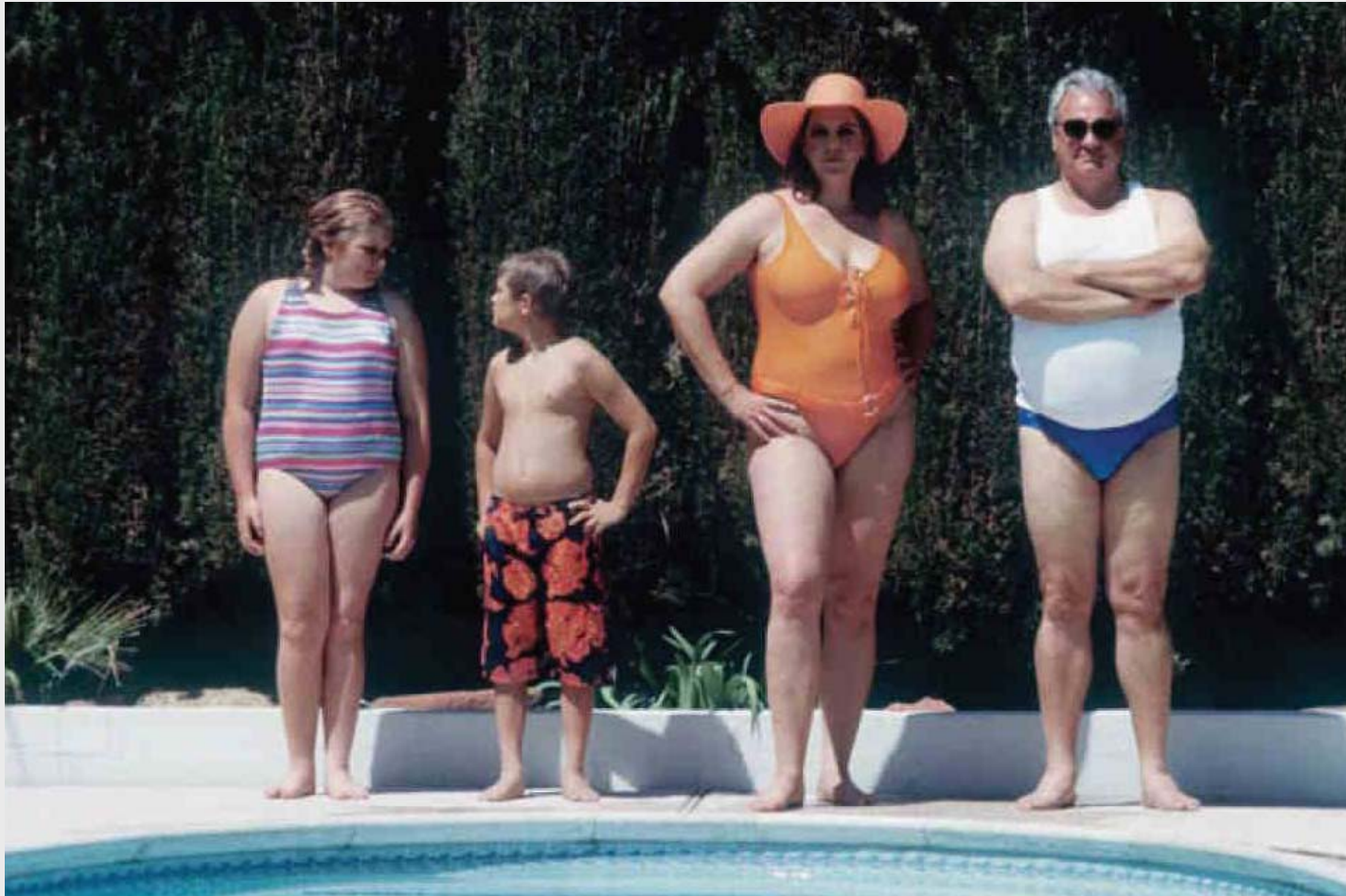
Estimated BMI for both adults on the slide: BMI $\approx$ 30
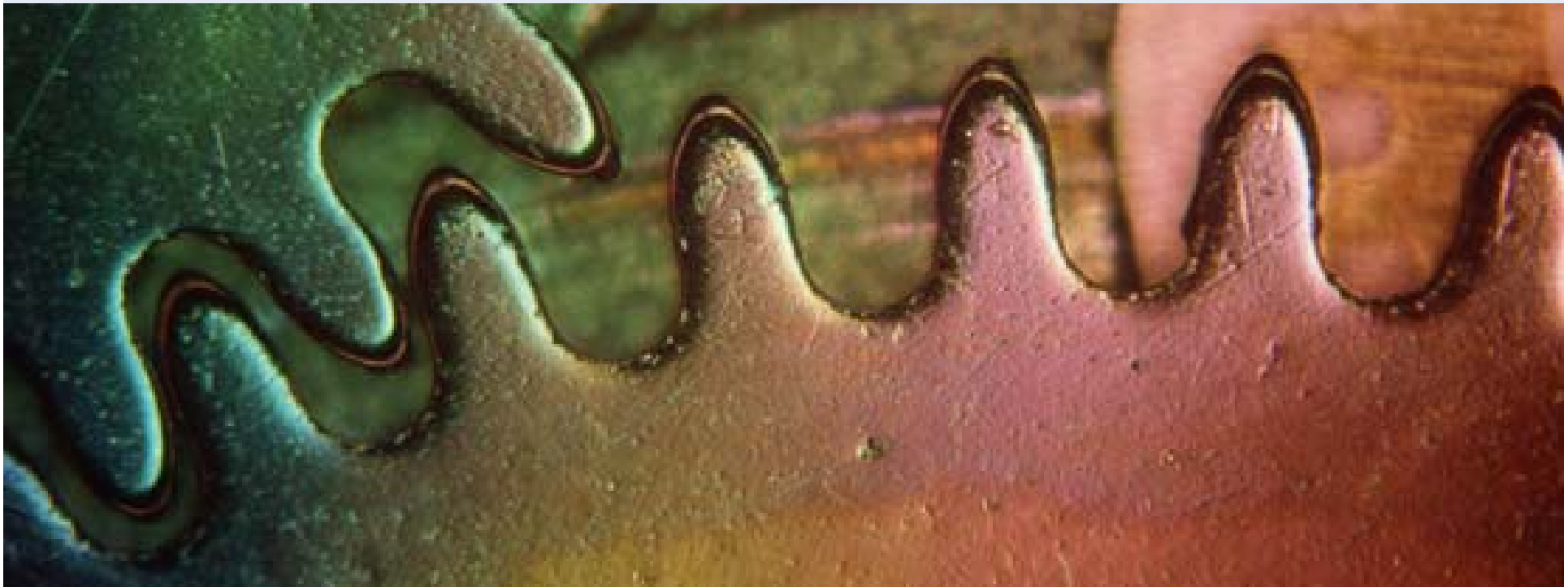
Trends in mean BMI in USA

- Self reported versus examined NHANES

(Nat. Health & Nutrition Examination Survey) n > 25,000 -

BMI trends, male

BMI trends, female

BMI, corrected
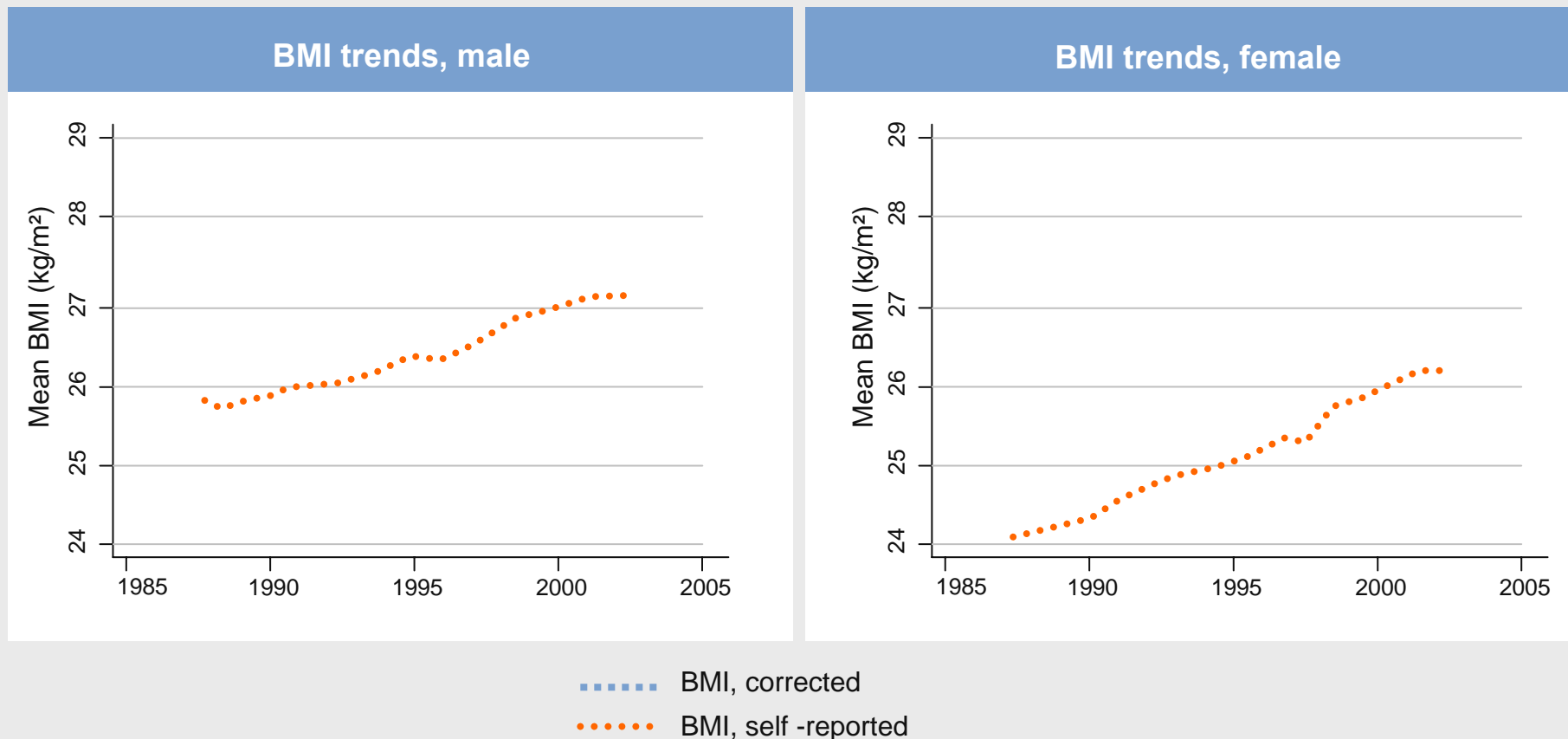
BMI, self -reported
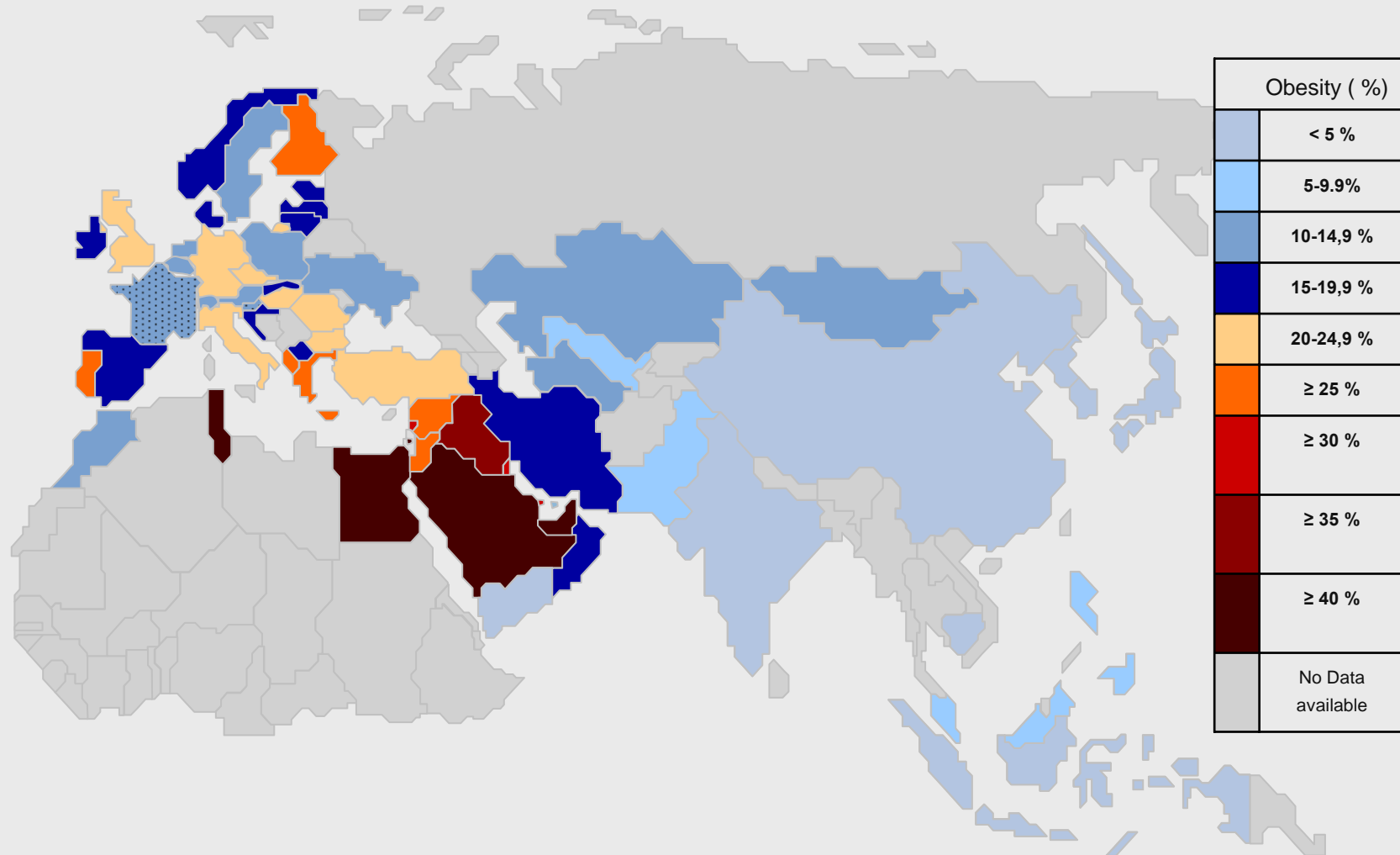
Obesity Trends* Among U.S. Adults
1985

*BMI ≥30
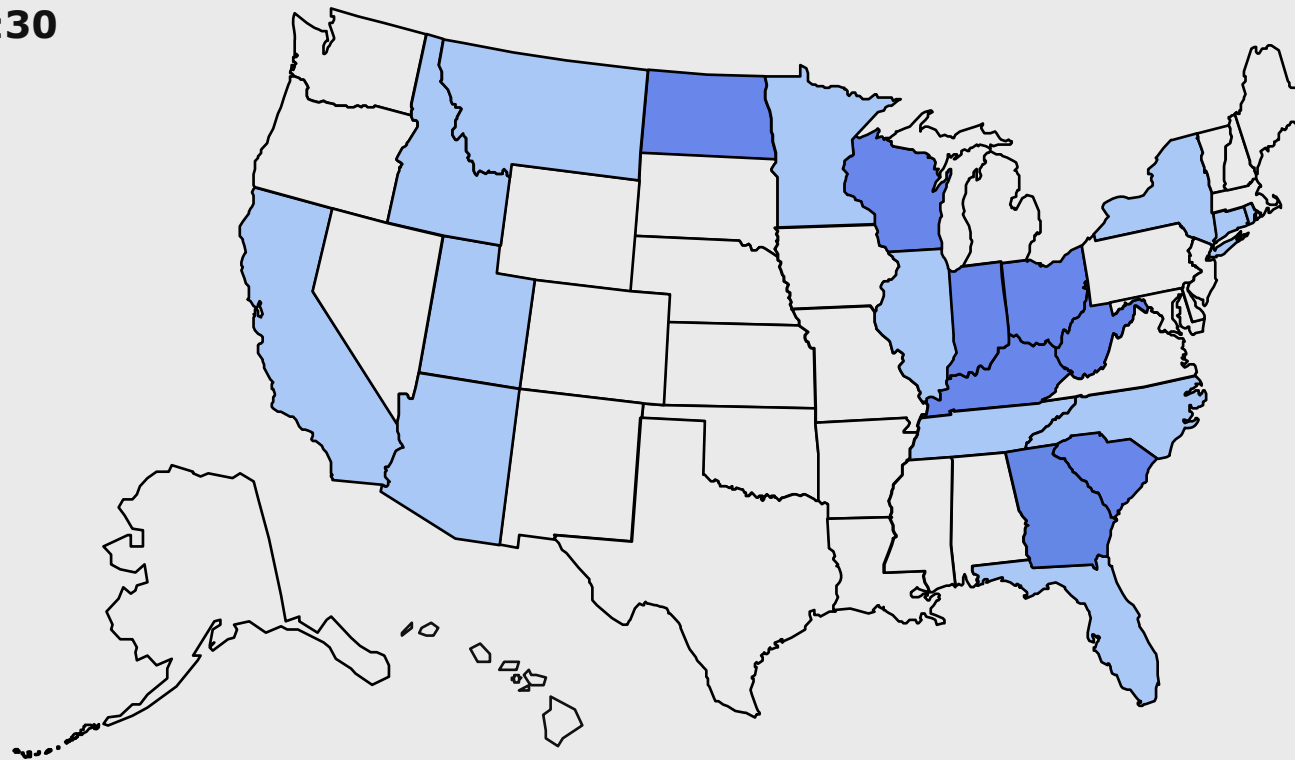
No Data   <10%   10%–14%

>>

Source: CDC Behavioral Risk Factor Surveillance System (BRFSS).

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Trends in mean BMI in USA

- Self reported versus examined NHANES

(Nat. Health & Nutrition Examination Survey) n > 25,000 -

BMI trends, male

BMI trends, female

BMI, corrected
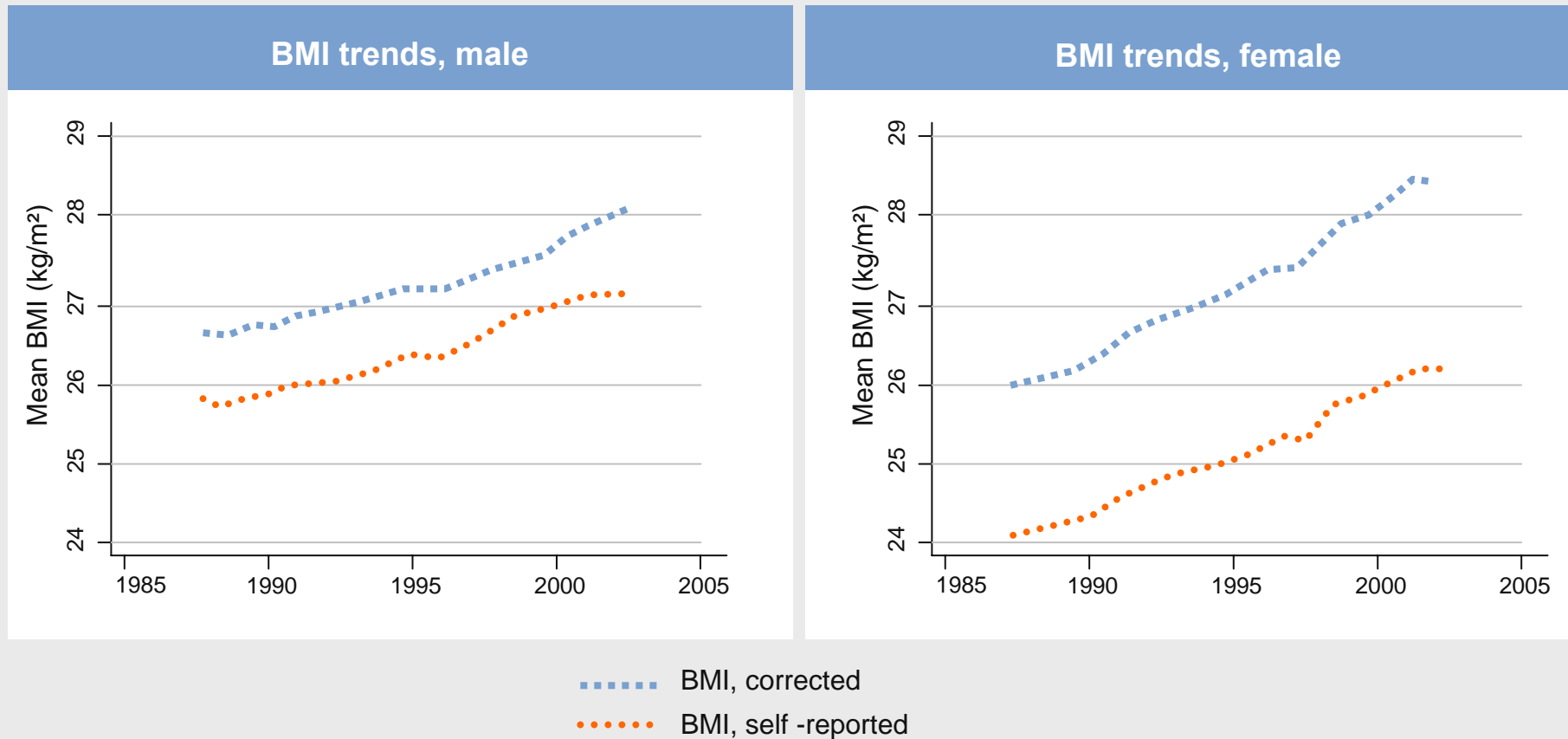
BMI, self -reported

Trends in mean BMI in USA and UK

- Self reported versus examined NHANES

(Nat. Health & Nutrition Examination Survey) n > 25,000 -

BMI trends, male

BMI trends, female
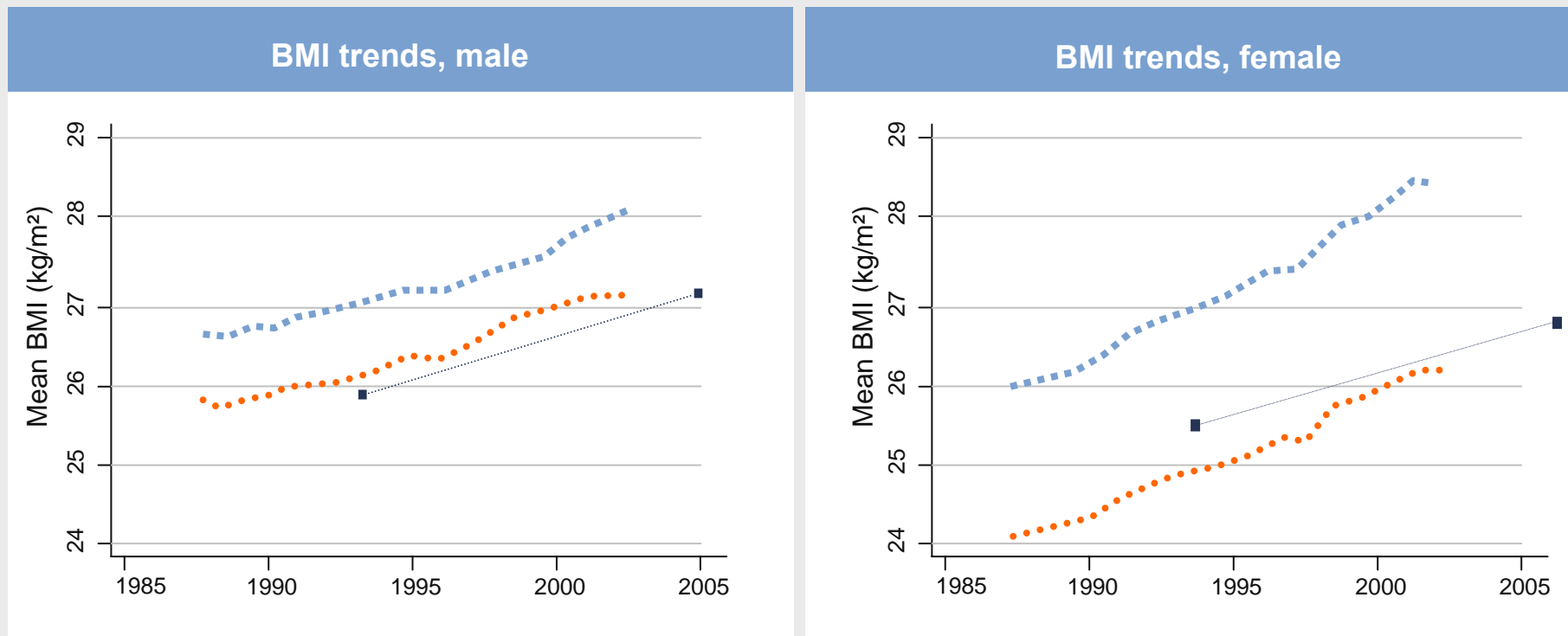
BMI, corrected

BMI, self -reported

BMI, UK „measured"

Source: Journal of the Royal Society of Medicine, Vol. 99, May 2006/
        Health Survey for England, NHS 2006
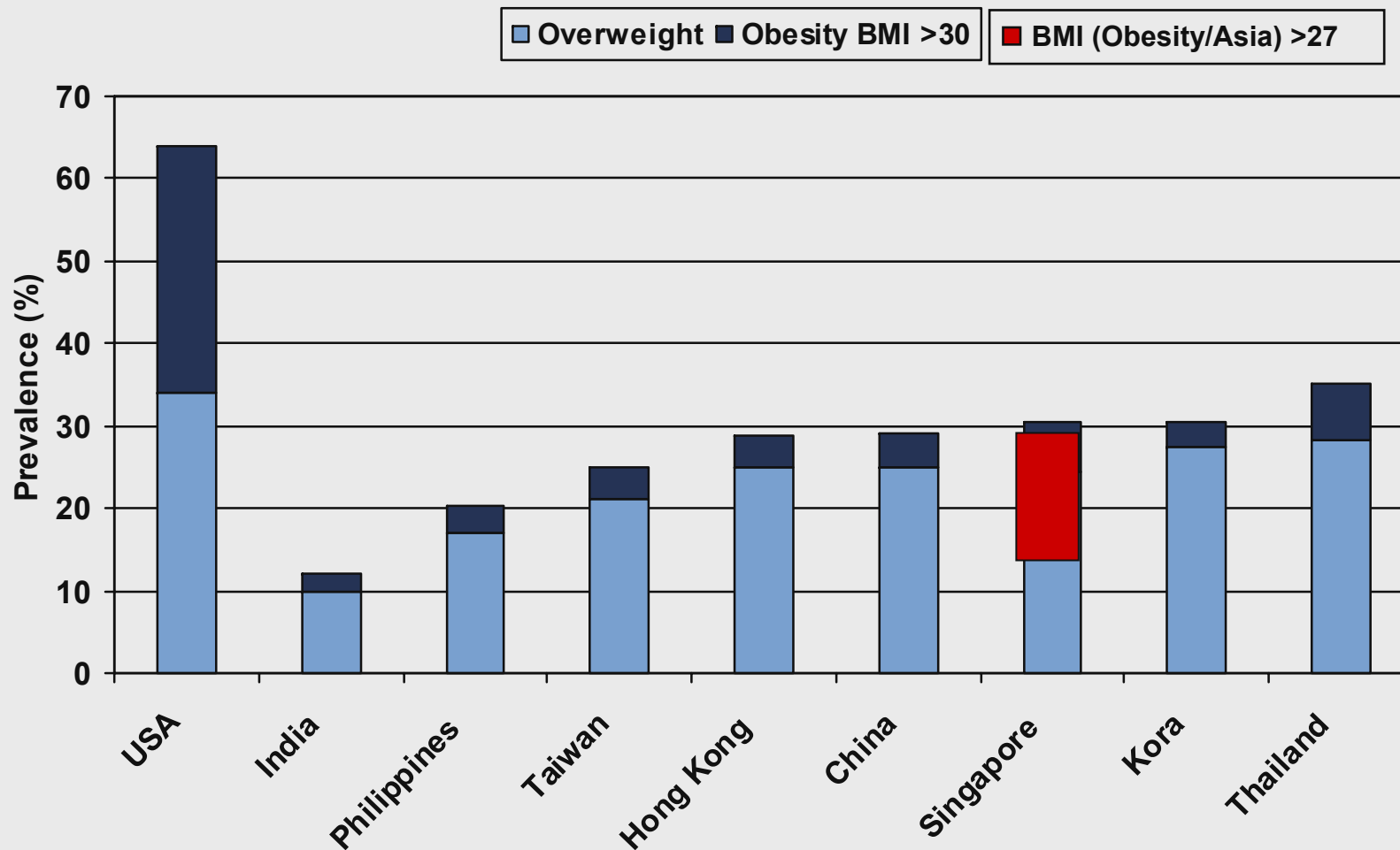
Obesity in Europe and Asia* - Women

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* BMI ≥30

Obesity (%)

	< 5 %
	5-9.9%
	10-14,9 %
	15-19,9 %
	20-24,9 %
	≥ 25 %
	≥ 30 %
	≥ 35 %
	≥ 40 %
	No Data available

15

WHO: much higher prevalence of obesity in Asia !
- representative study in Singapore -

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Proportion of overweight and obese adults

Legend: ☐ Overweight ■ Obesity BMI >30 ■ BMI (Obesity/Asia) >27

Chart — Prevalence (%) by country:

Country	Overweight	Obesity
USA	~34	~64 (total)
India	~10	~12 (total)
Philippines	~17	~20 (total)
Taiwan	~21	~25 (total)
Hong Kong	~25	~29 (total)
China	~25	~29 (total)
Singapore	~14	~30 (total); BMI >27 ~29
Kora	~27	~30 (total)
Thailand	~28	~35 (total)

Y-axis: Prevalence (%), 0 to 70

Future trends in obesity in the UK

Percentage of age-specific population obese

Males
Females
(Age 41-50)

year
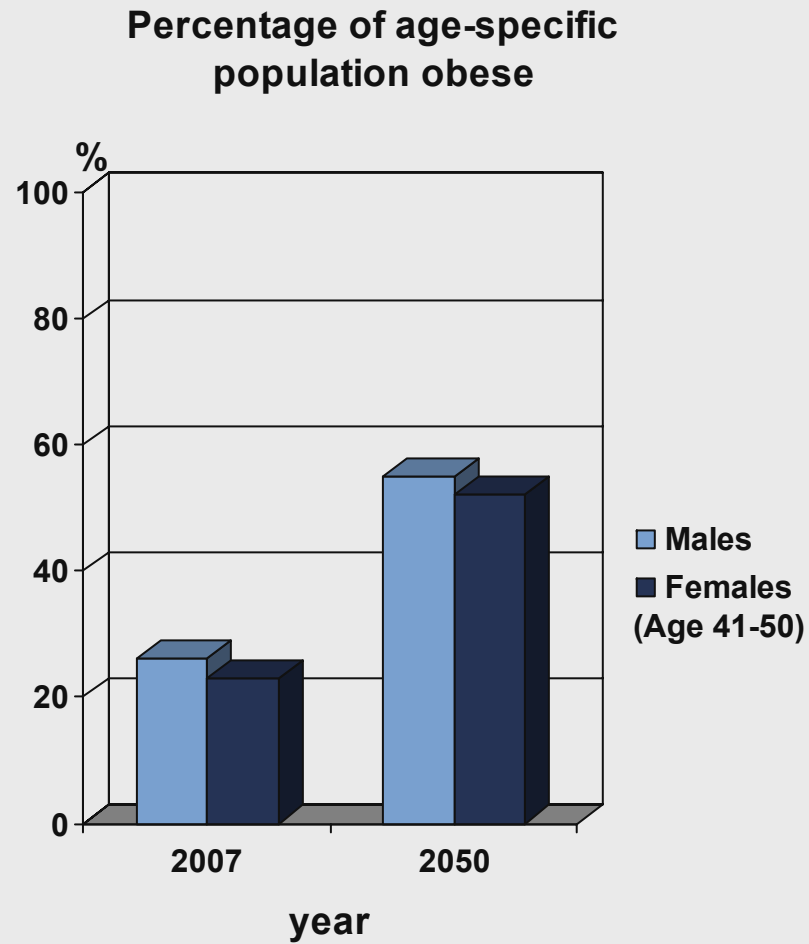
3. Epidemiologic trends among children

Prevalence (%) of overweight in children aged 5 – 11
- ITOF: Federal body of research associations in 50 countries -

Healthy Lifestyle in Europe by   Nutrition in Adolescence (HELENA):

3,000 adolescents in 10 europ. cities; age 13-16 .
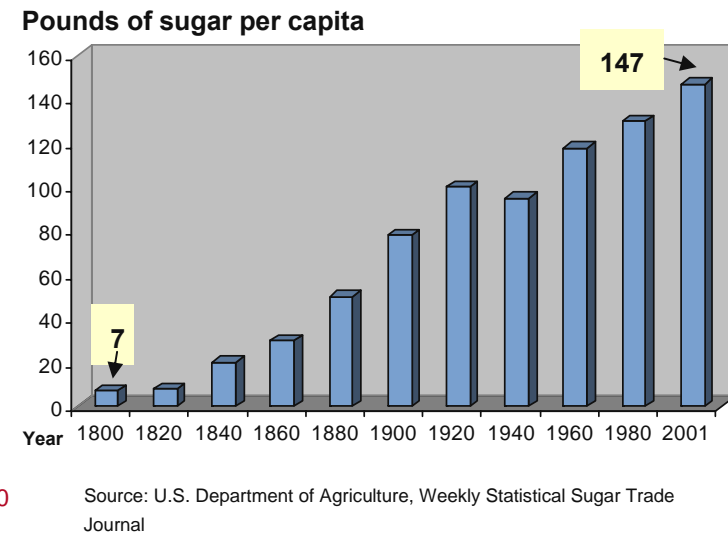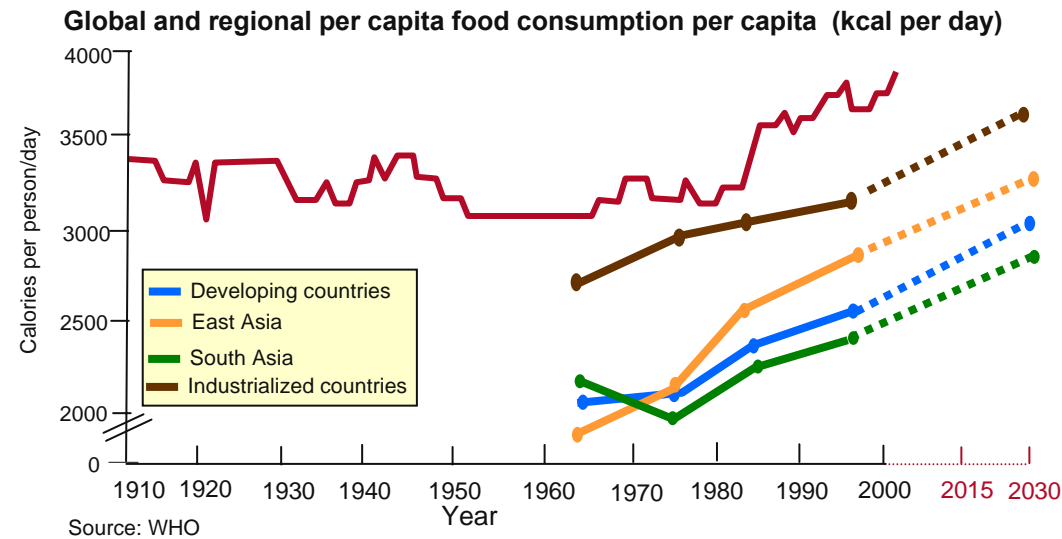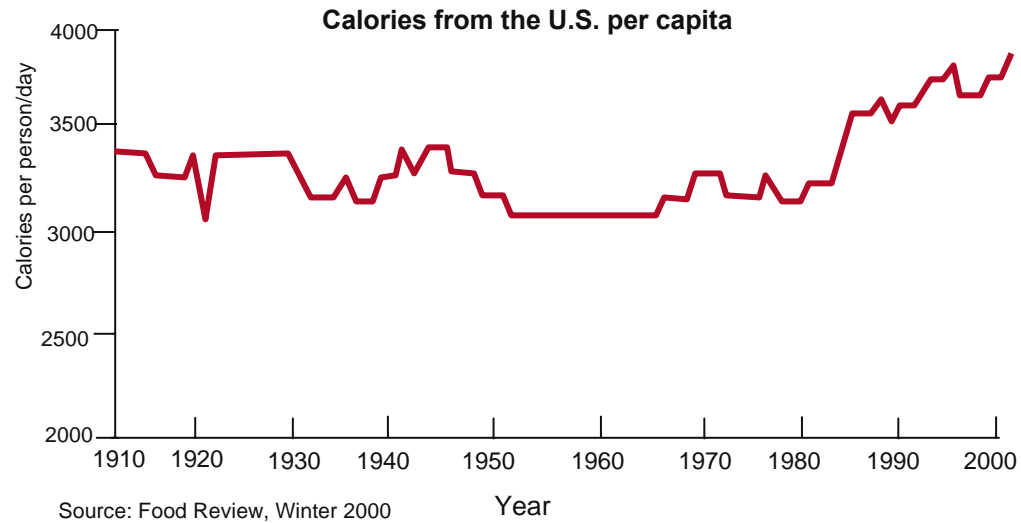
42% of the boys less than 1hr. physical exercise/day

69% of the girls less than 1hr. physical exercise/day

Legend: Netherlands, Germany, USA, UK, Poland, France
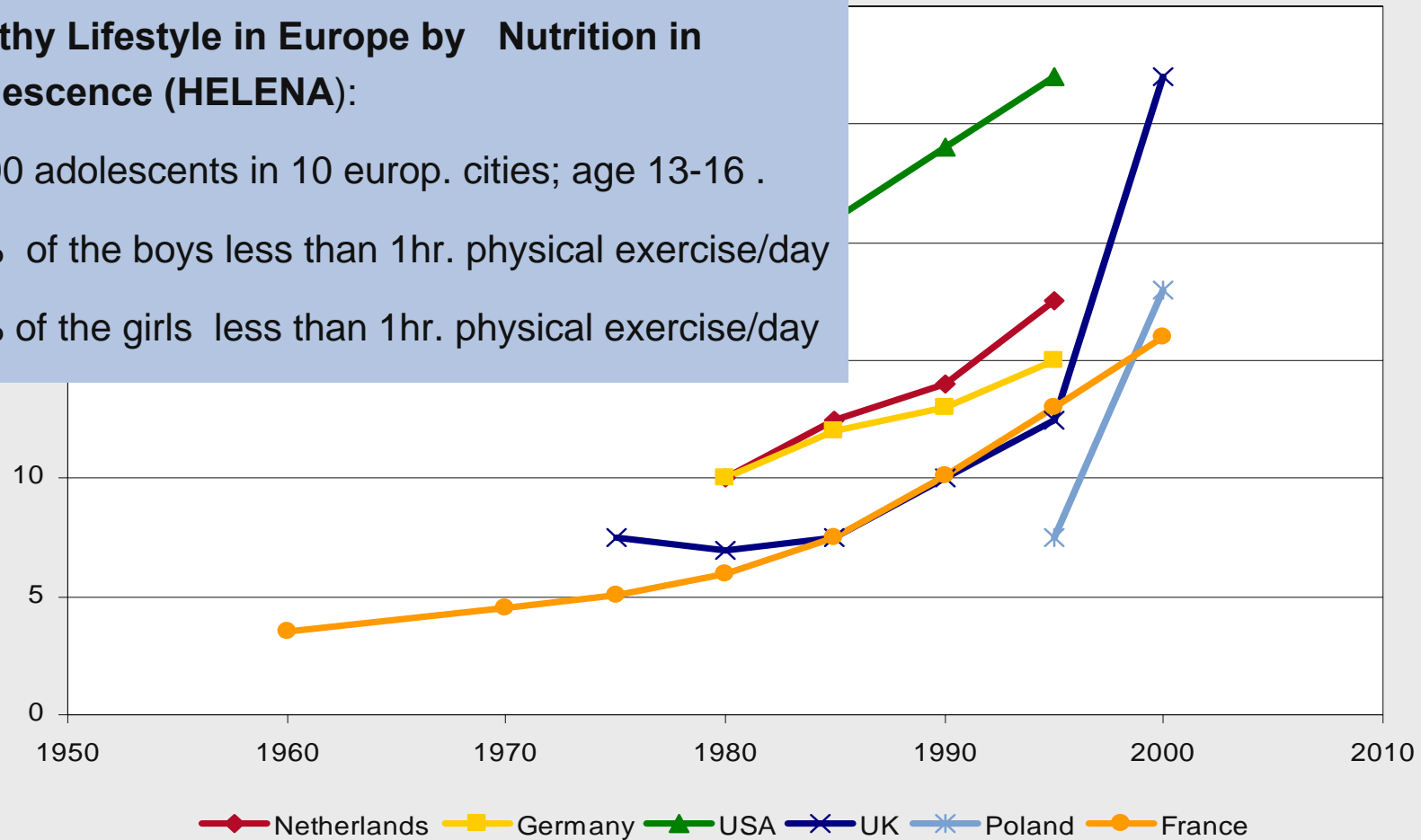
4. What are the reasons for this pandemic ?

Consumption of calories and sugar per capita in the US

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Calories from the U.S. per capita

Source: Food Review, Winter 2000

Global and regional per capita food consumption per capita (kcal per day)

- Developing countries
- East Asia
- South Asia
- Industrialized countries

Source: WHO

Pounds of sugar per capita

147

7

Source: U.S. Department of Agriculture, Weekly Statistical Sugar Trade Journal

Prevalence of Cardiovascular Disease Risk Factors* in Adults, USA 1961 – 2000
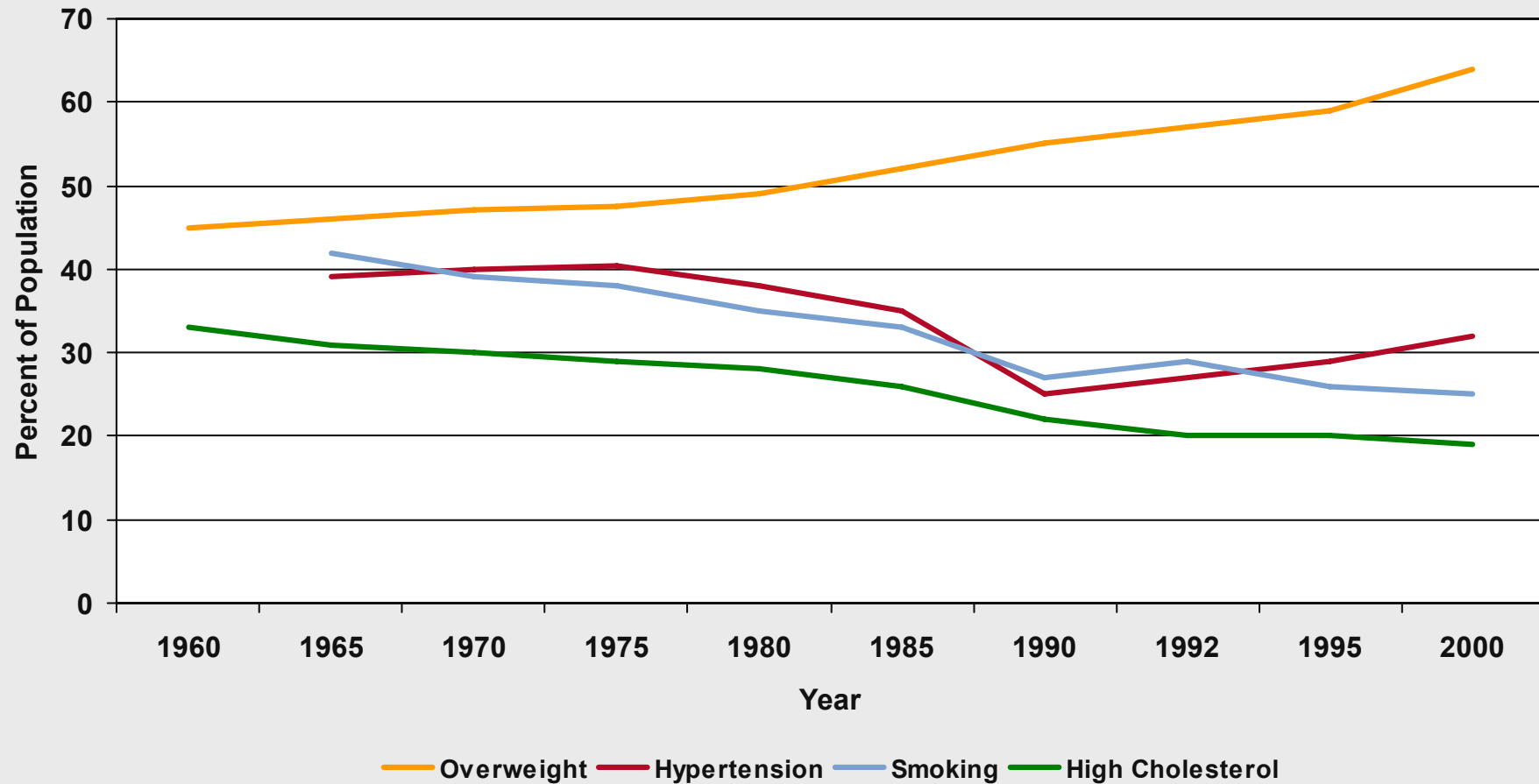
(*age adjusted)

Trend of „Fast food" and cigarettes prices (Germany)

Price trends

	"Cigarettes"	"French fries"	"Soft drinks "	CPI Germany total
1999	100%	100,0%	100%	100,0%
2000	103%	97,8%	100%	101,9%
2001	106%	95,5%	101%	104,4%
2002	112%	97,9%	101%	105,9%
2003	122%	95,0%	100%	107,1%
2004	136%	97,9%	101%	108,9%
2005	155%	94,2%	101%	111,1%

Source: Economist, Statistisches Bundesamt
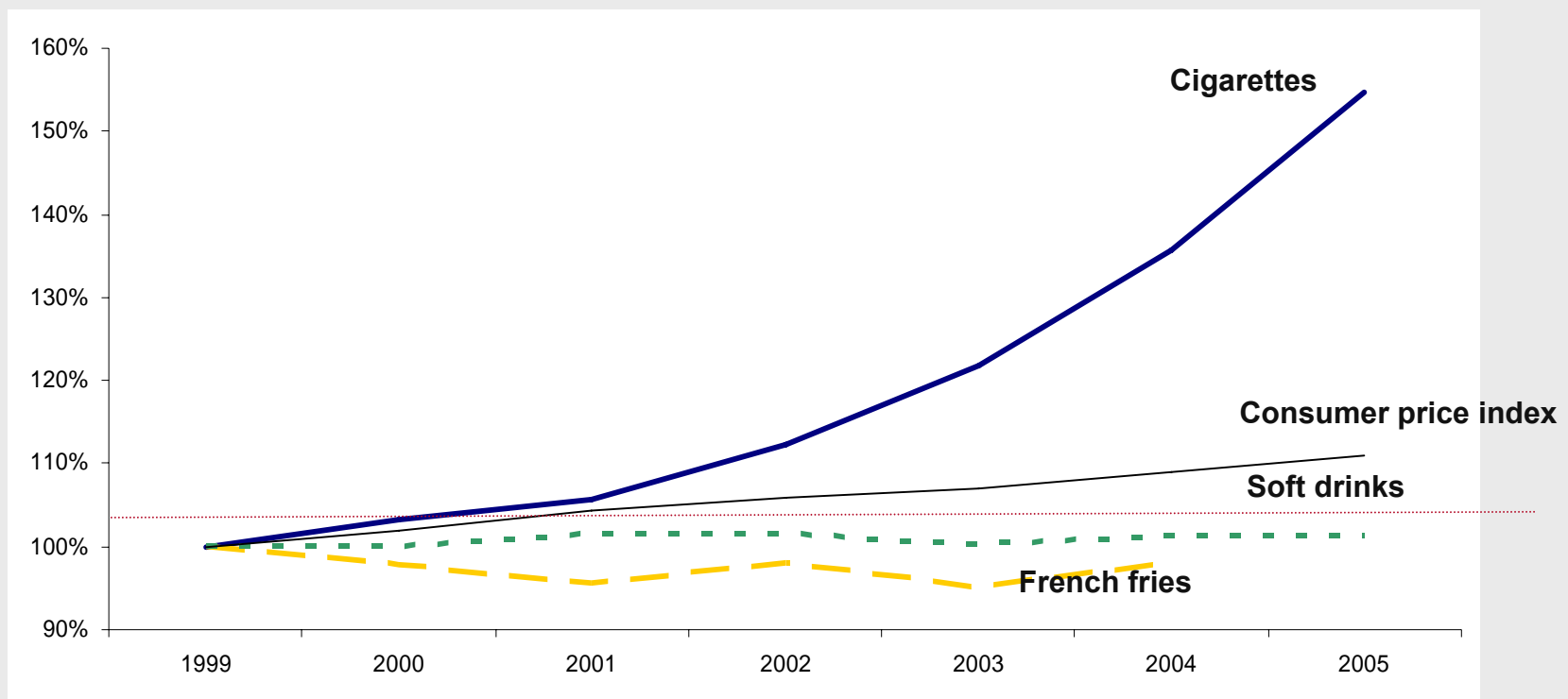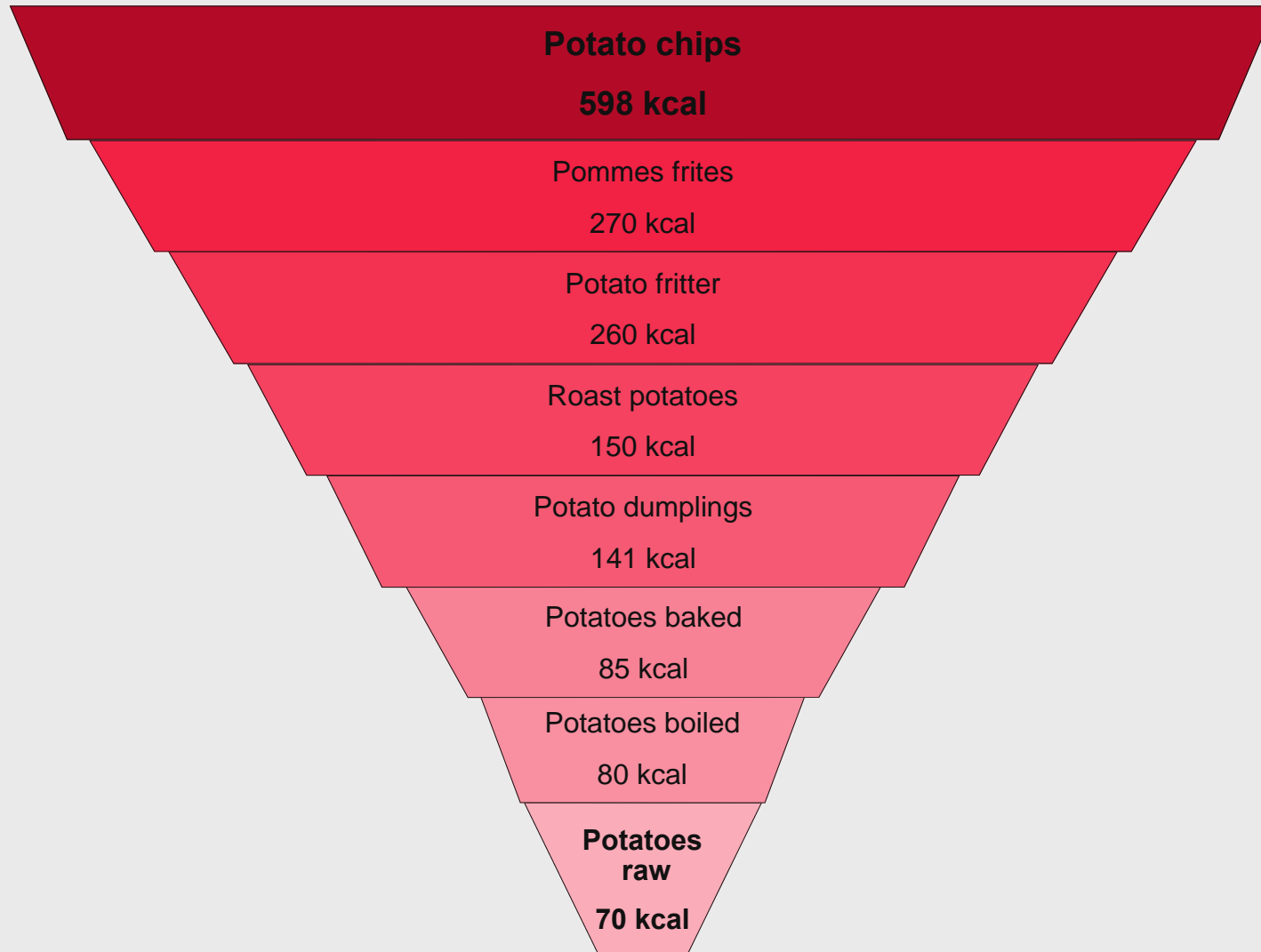
Diet or/and physical activity ?

	Maintenance resp. prevention of weight gain (50-100 kcal/day)	Weight loss (≥500 kcal/day)
Diet alone	Modest	Substantial
Physical activity alone	Modest	Absent or minor
Diet and physical activity combined	Substantial	Substantial

Source: BMJ, Vol 333, p. 1261 – 1264, 2006

5. Impact on health ?

Relationship between BMI and Risk of Type 2 Diabetes
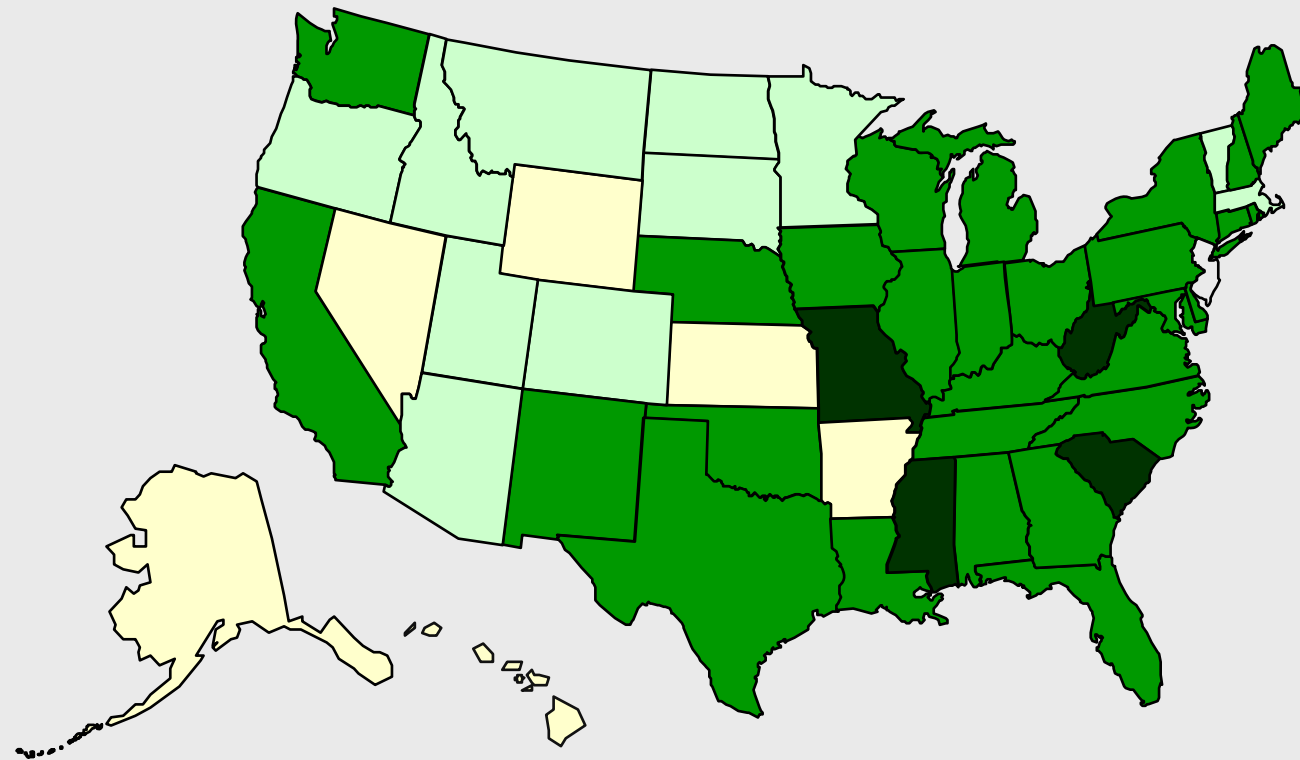- NHS n = 100,000 women f-up 16 yrs -

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Relative risk

Chart data (Relative risk by BMI):

BMI	Relative risk
<22	~1
22-22,9	~2
23-23,9	~2,5
24-24,9	~2
25-26,9	~5
27-28,9	~10,5
29-30,9	~21
31-32,9	~28
33-34,9	~42
>=35	~60

BMI
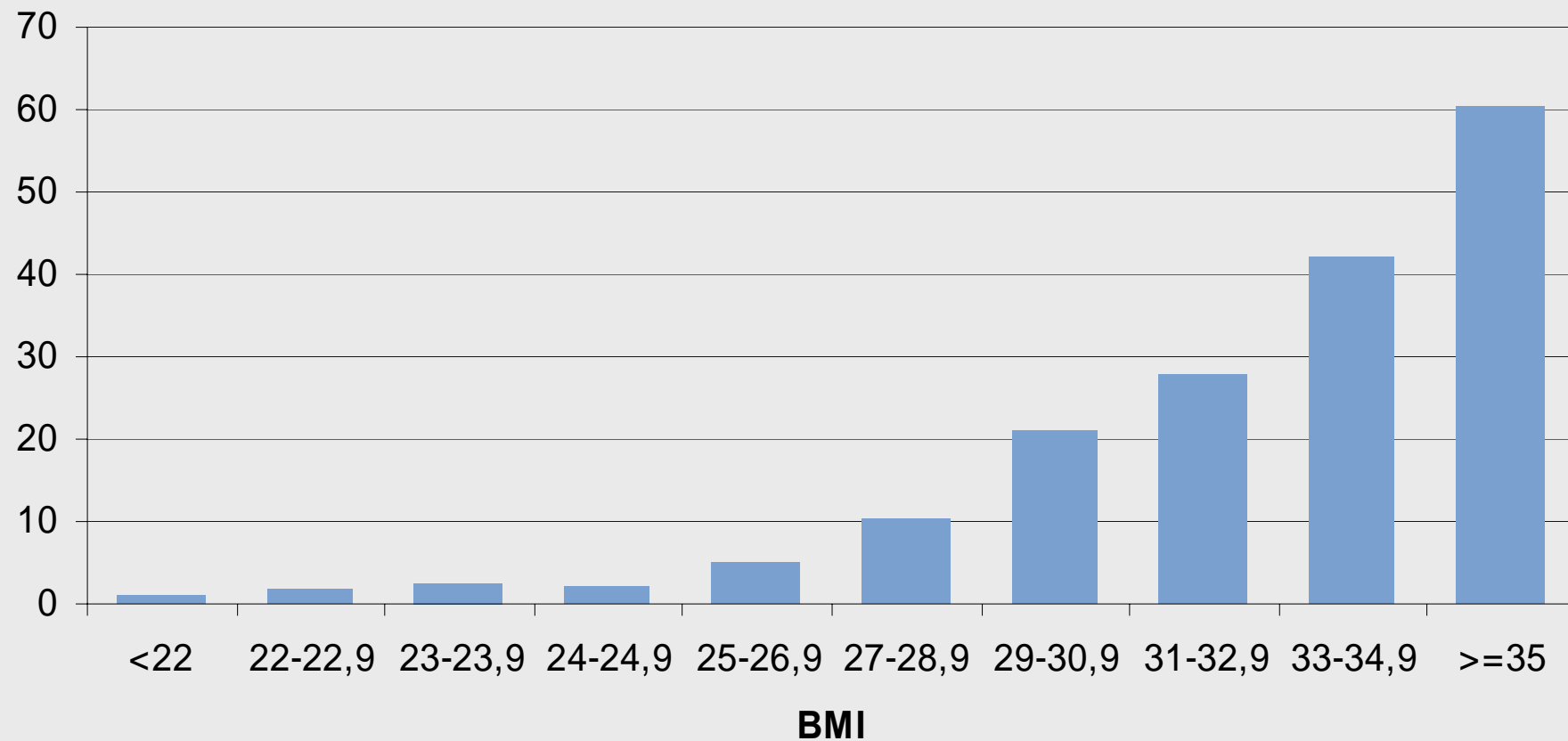
Nurses Health Study

Diabetes Trends among U.S. Adults
1990

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No data   < 4%   4–6%   6-8%   8-10%   >10%

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Increase in diseases attributable to rising obesity levels - age- and gender-standardised -

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Source: Foresight 2007, K. McPherson, University of Oxford
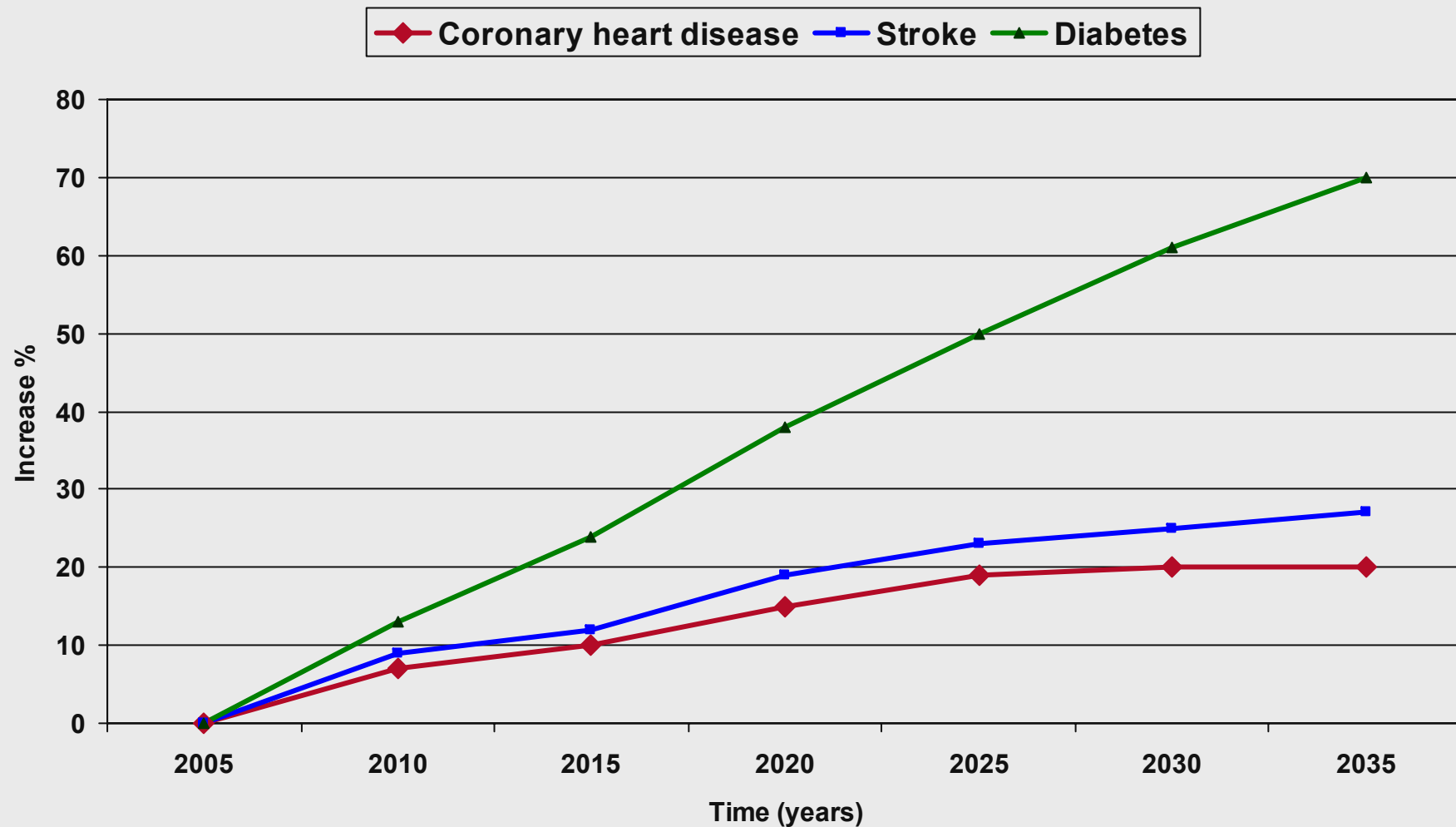
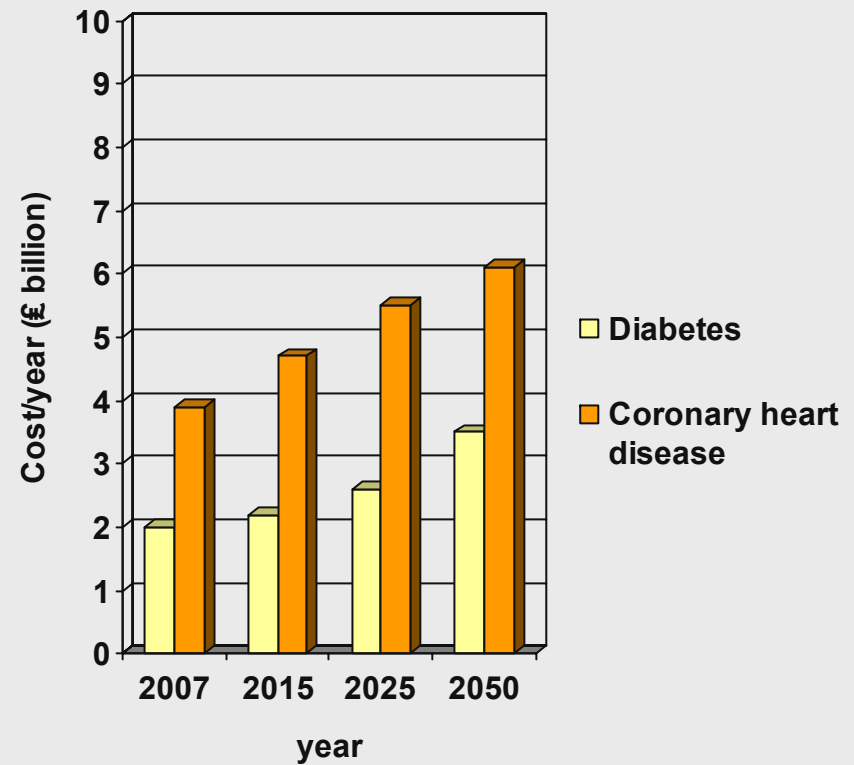# Mortality trends in US counties

Female 1961 - 1983
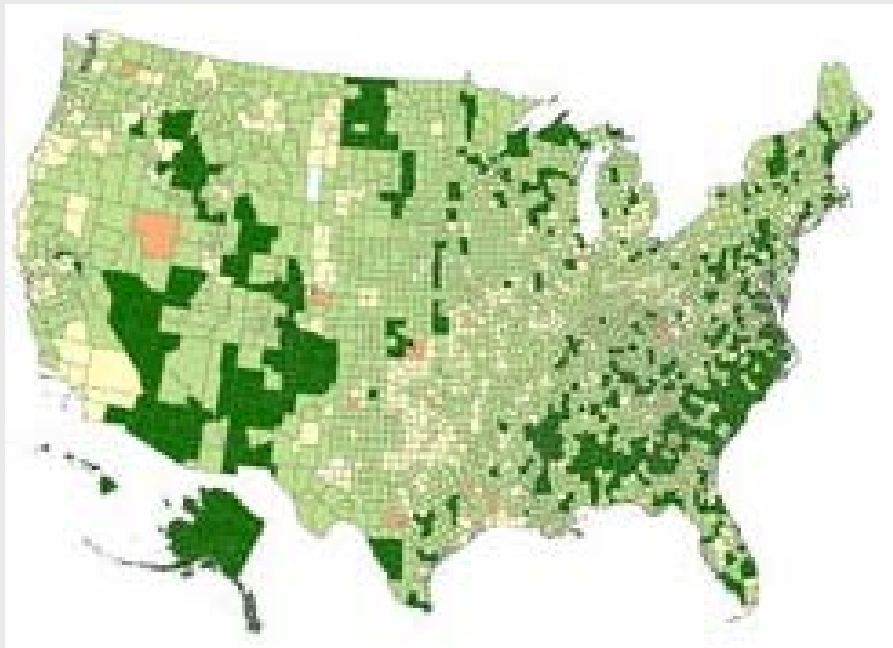
Female 1983 - 1999
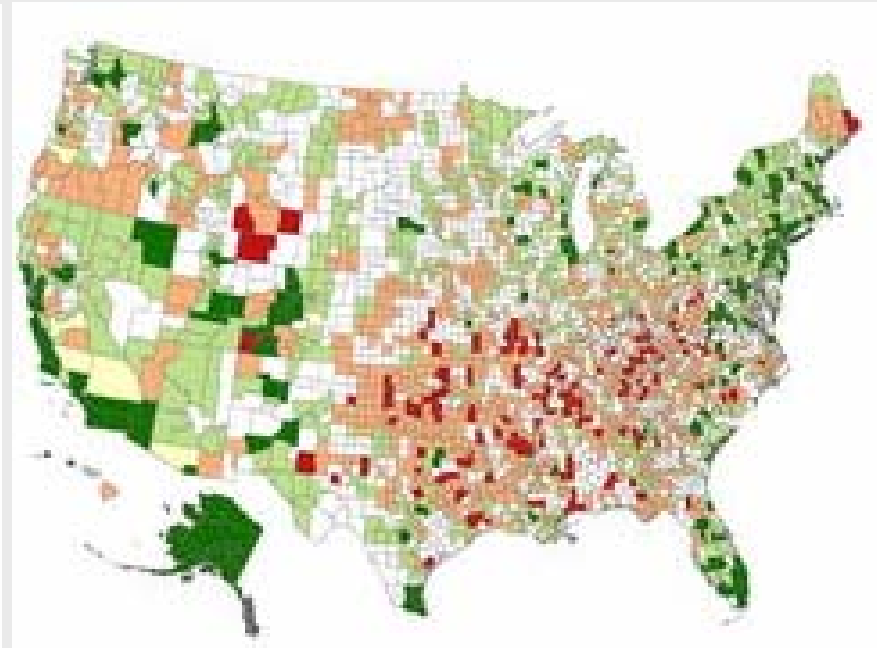
■ Life expectancy increased at a level significantly higher than national mean

■ Life expectancy increased at a level higher but not significantly distinguishable from mean

□ Life expectancy increased at a level higher but less than mean

□ Life expectancy change was statistically indistinguishable from national mean

■ Life expectancy change was less than the national mean

■ Life expectancy had a statistically significant decline.

Future trends in obesity in the UK

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**Percentage of age-specific
population obese**

Legend: ■ Males ■ Females (Age 41-50)
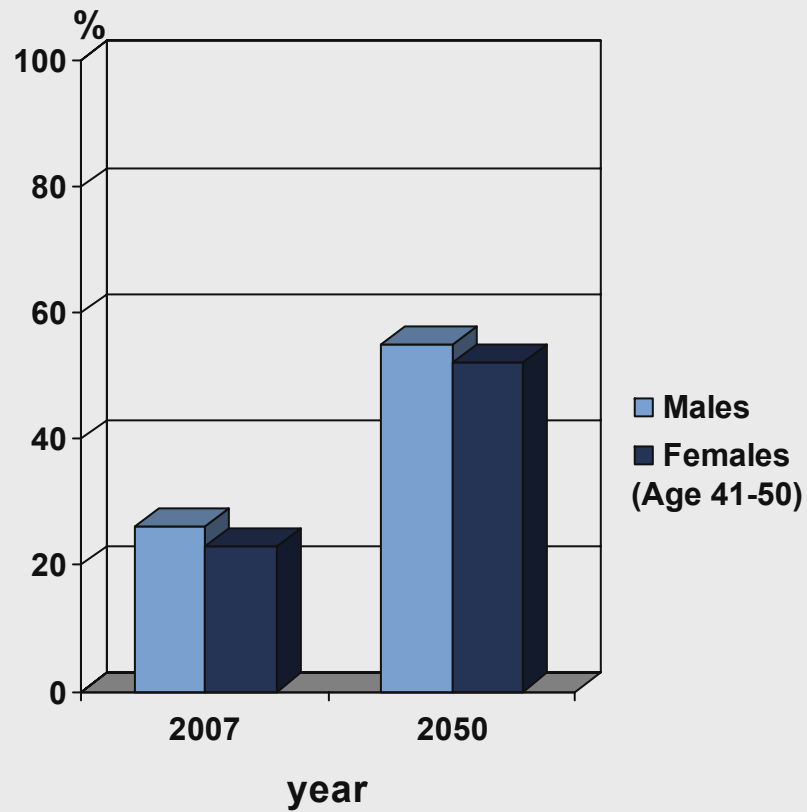
**Estimated future NHS disease costs
attributable to obesity**

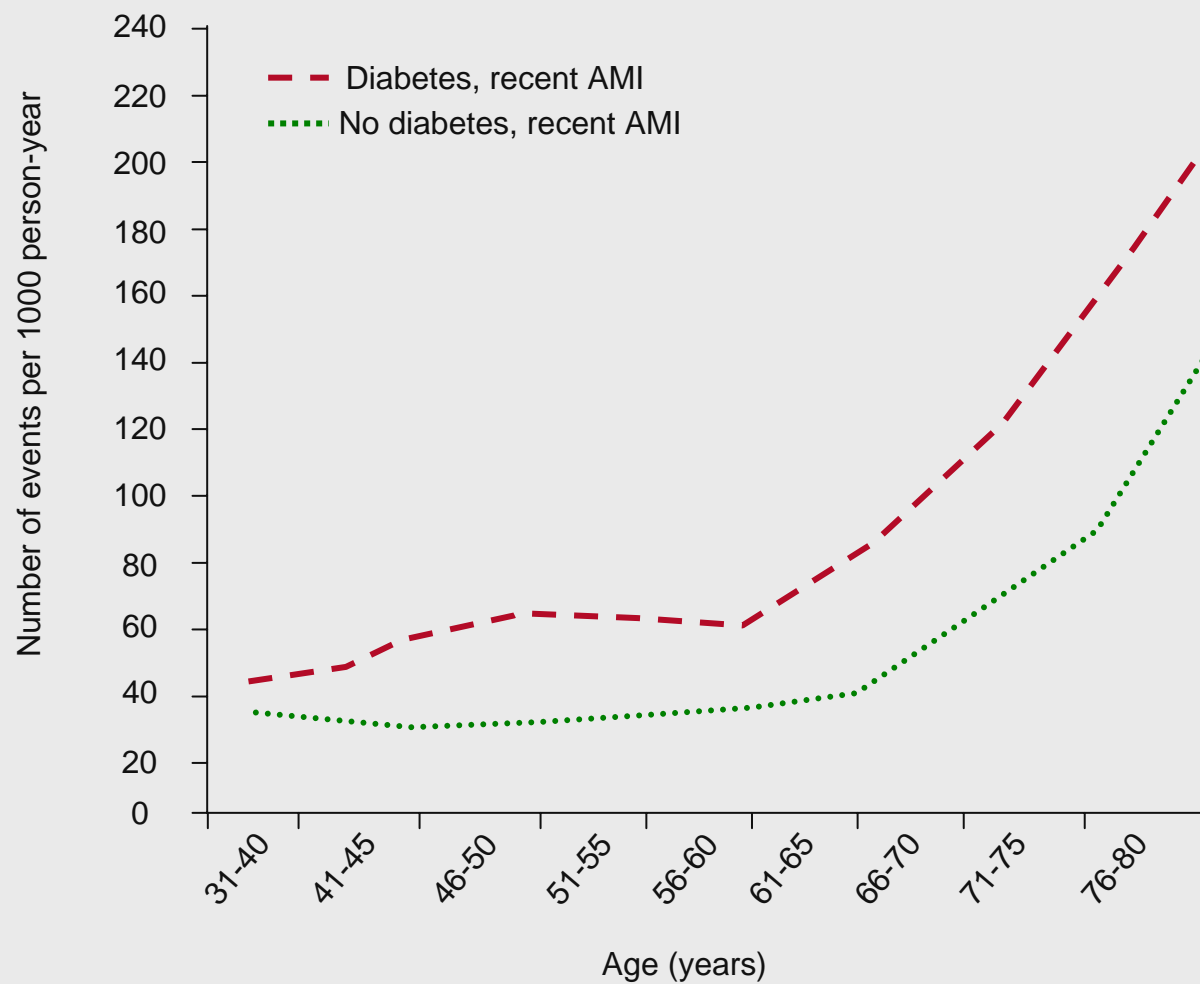Legend: ■ Diabetes ■ Coronary heart disease

Conclusions

- Obesity is rising to epidemic proportions around the world at an alarming rate

- followed by a Diabetes Type 2 epidemic worldwide ("Twin epidemic")

- ..and atherosclerotic complications (Heart attack)?

- Young generation will be exposed two decades longer

- Change of eating habits and increase of physical activity promising, if rewarded
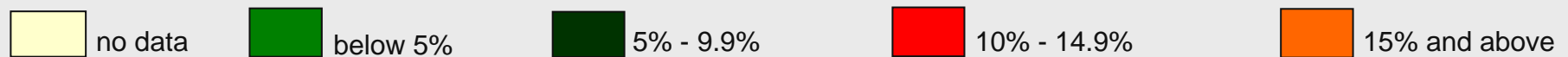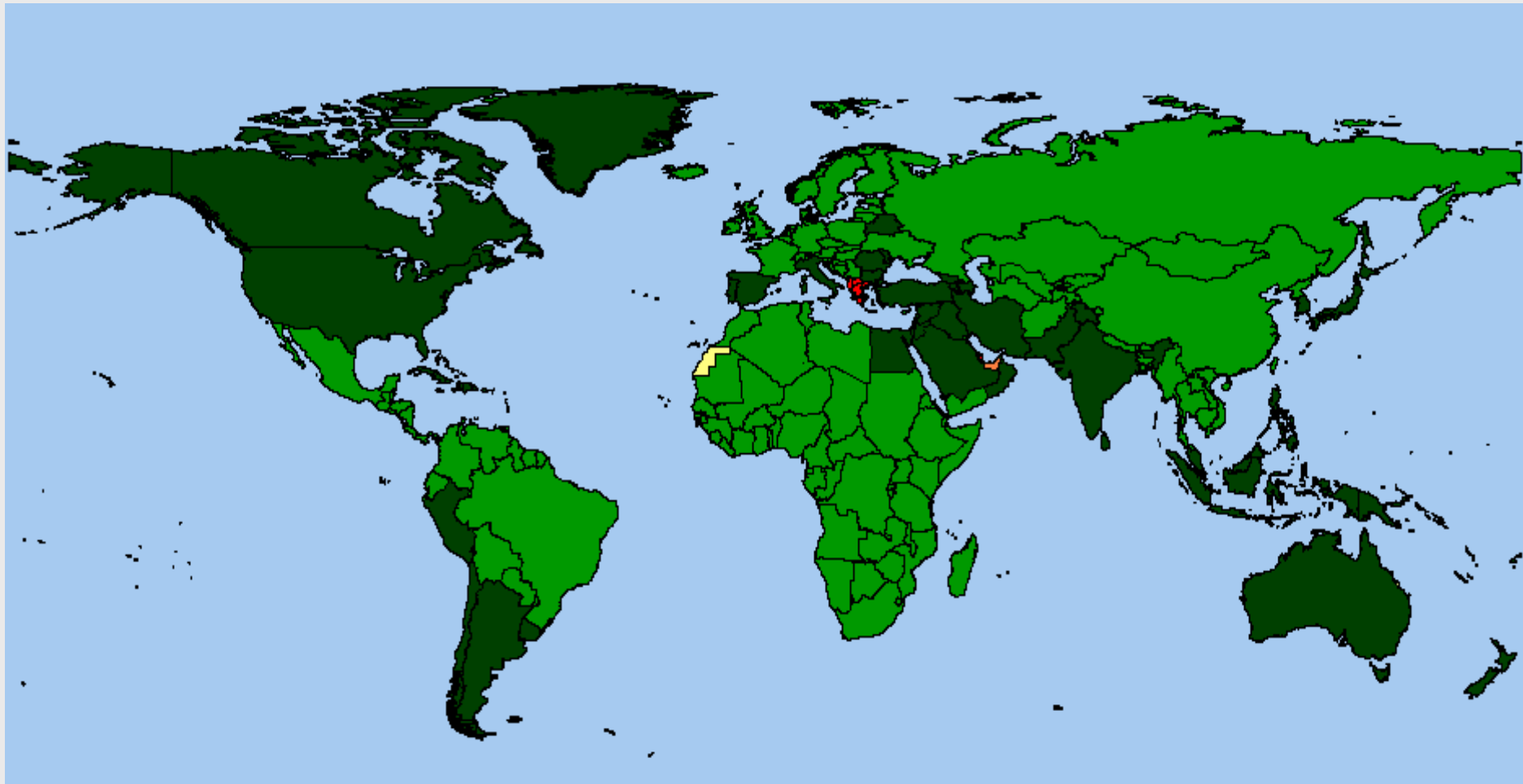
Relation between age and rates of CHD with and without diabetes
- population based retrospective cohort study n > 9 million -

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Number of events per 1000 person-year

- - Diabetes, recent AMI
······ No diabetes, recent AMI

Age (years)

Prevalence of diabetes worldwide
- Percentage of people aged ≥ 20 with diabetes in 2000

	no data		below 5%		5% - 9.9%		10% - 14.9%		15% and above

Source: WHO, 2007

Obesity* in Europe - Females
1980-1984

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* BMI ≥30
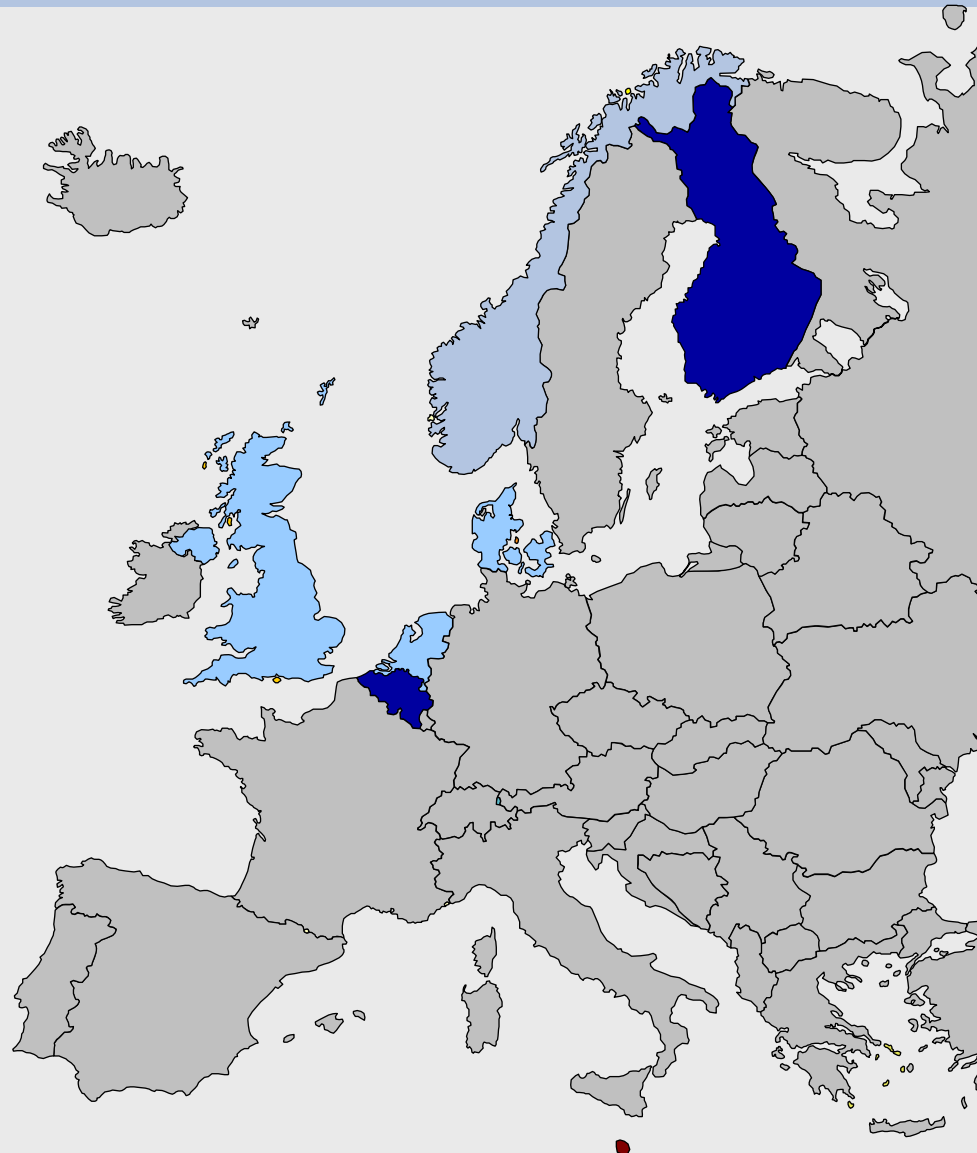
Obesity (%)

	< 5 %
	5-9.9%
	10-14,9 %
	15-19,9 %
	20-24,9 %
	≥ 25 %
	Self Reported data

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Agenda

- Introduction

- Ways out

  - Case Management

  - Disease management programs

  - Prevention programs

- Conclusion

Alarming cost driver: Diabetes

- 1 in every 10 health care dollars is spent on diabetes and its complications

- Medical cost of diabetes in 2007 (USA) is $116 billion

  - $27 billion for treatment of diabetes

  - $58 billion for treatment of diabetes-related chronic complications

  - $31 billion for excess general medical costs.

- Medical expenditures of people with diagnosed diabetes is 2.3 times higher than those without diabetes.

- It is projected that the annual costs of diabetes (in 2002 dollars) could rise to $156 billion by 2010 and to $192 billion in 2020.

Source: American Diabetes Association

What are the causes of this alarming rise of diabetes?

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- Population aging

- **Unhealthy diet**

- **Overweight and obesity**

- Sedentary lifestyle

⚠ The majority of type 2 diabetes is preventable by a healthy diet, increasing physical activity and promoting a healthy lifestyle.
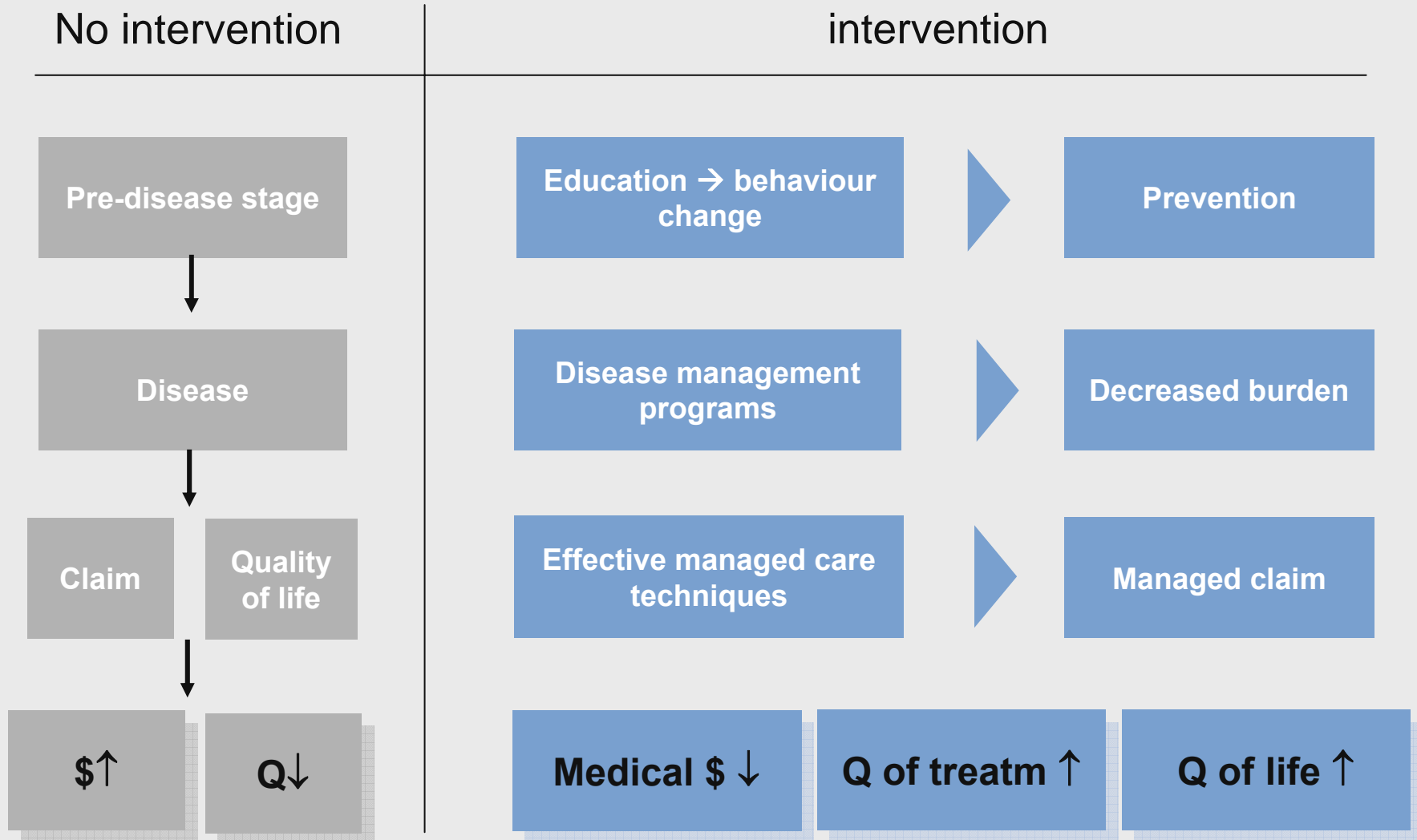
Risk Awareness

Analyse the cause and trends internationally
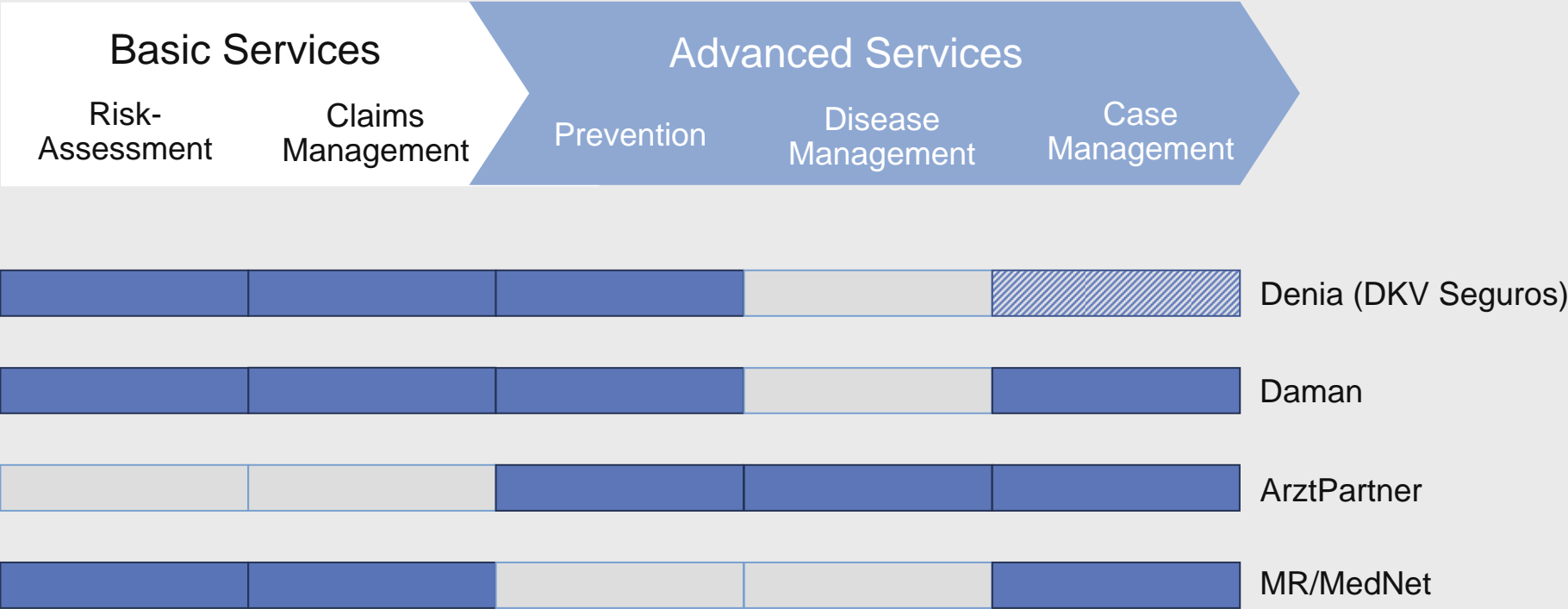
Obesity identified as a risk in the Health Sector

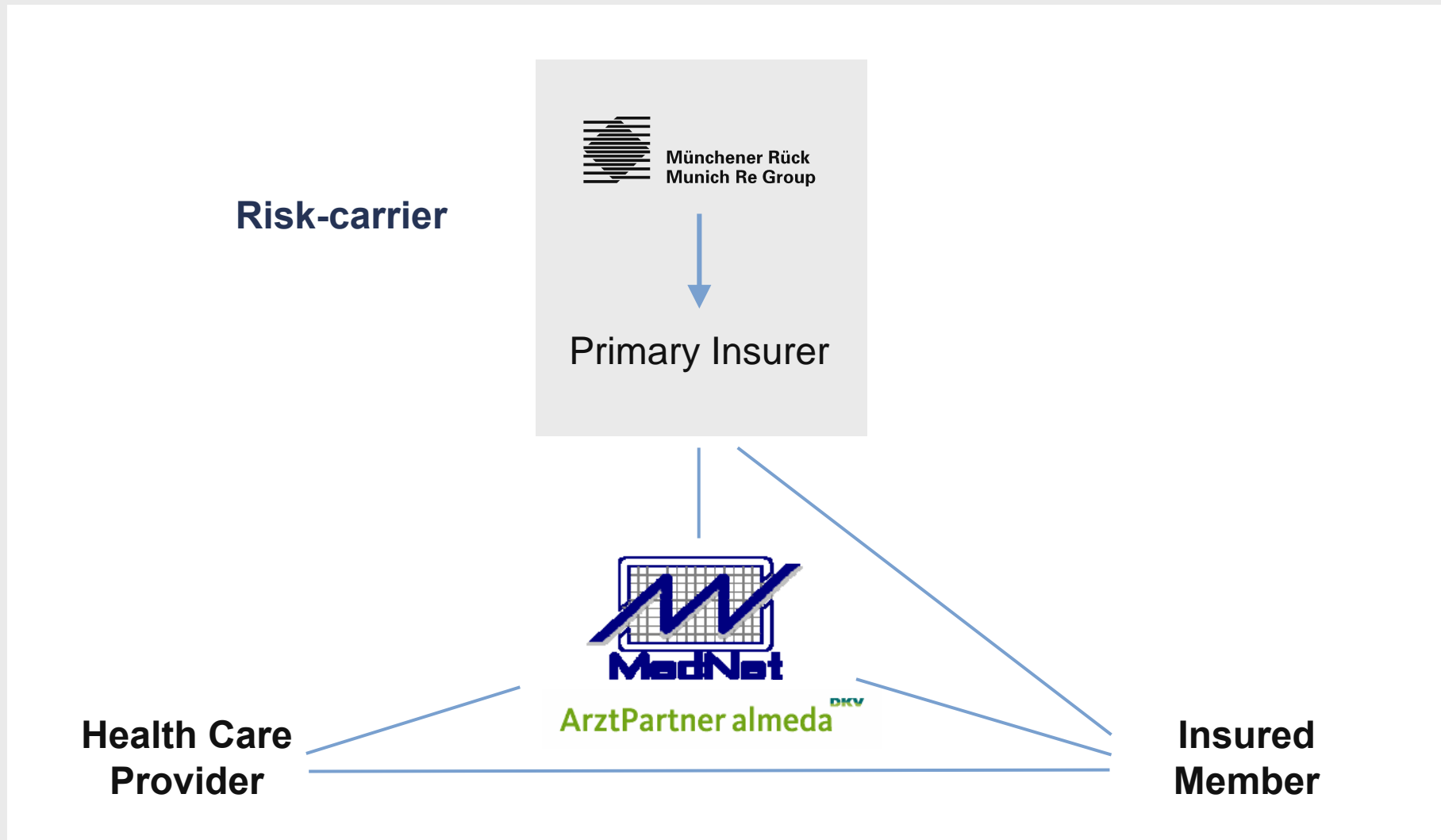**Combination of the Know-How within the MR Group**

Development of Solutions

Ways out

No intervention	intervention

No intervention:
- Pre-disease stage → Disease → Claim / Quality of life → $↑ / Q↓

Intervention:
- Education → behaviour change ▶ Prevention
- Disease management programs ▶ Decreased burden
- Effective managed care techniques ▶ Managed claim
- Medical $ ↓ | Q of treatm ↑ | Q of life ↑

Risk Management

Munich Re approach to risk management

Case Management

MedNet: Case Management example for a typical late complication of obesity related diabetes mellitus

Identification → Steering to appr. surgeon → Coordination → Q assurance
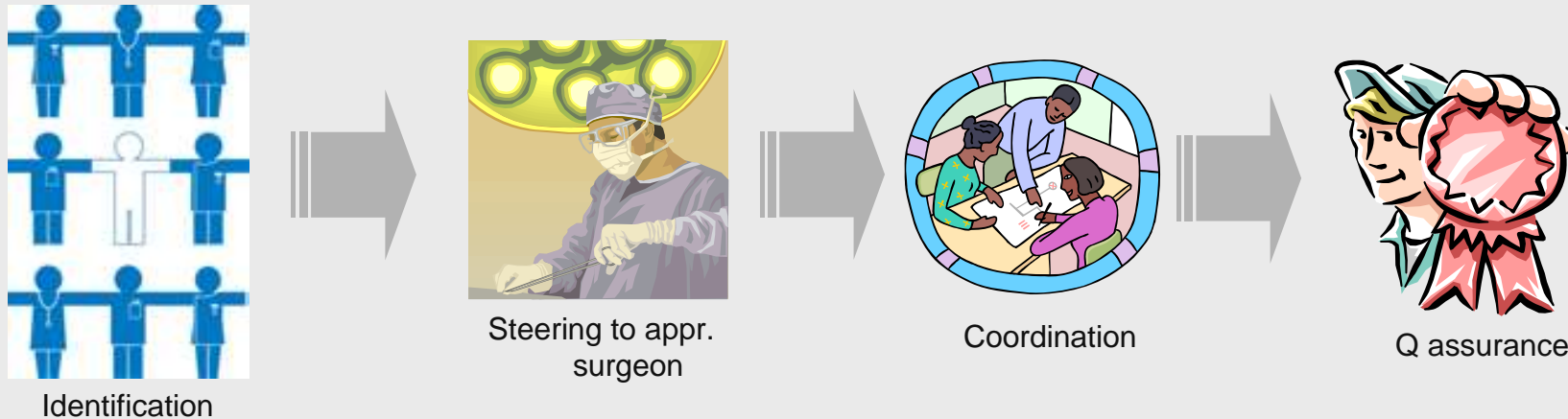
Example: Case Management Process for a Kidney transplant

- Transplant candidate selected

- Patient needs – resources – provider capabilities evaluated and patient steered to the most appropriate transplant surgeon

- Care plan designed in cooperation with treating physician and patient

- Care monitored along the treatment (e.g. immunosuppressive treatment and patient compliance) and quality assured
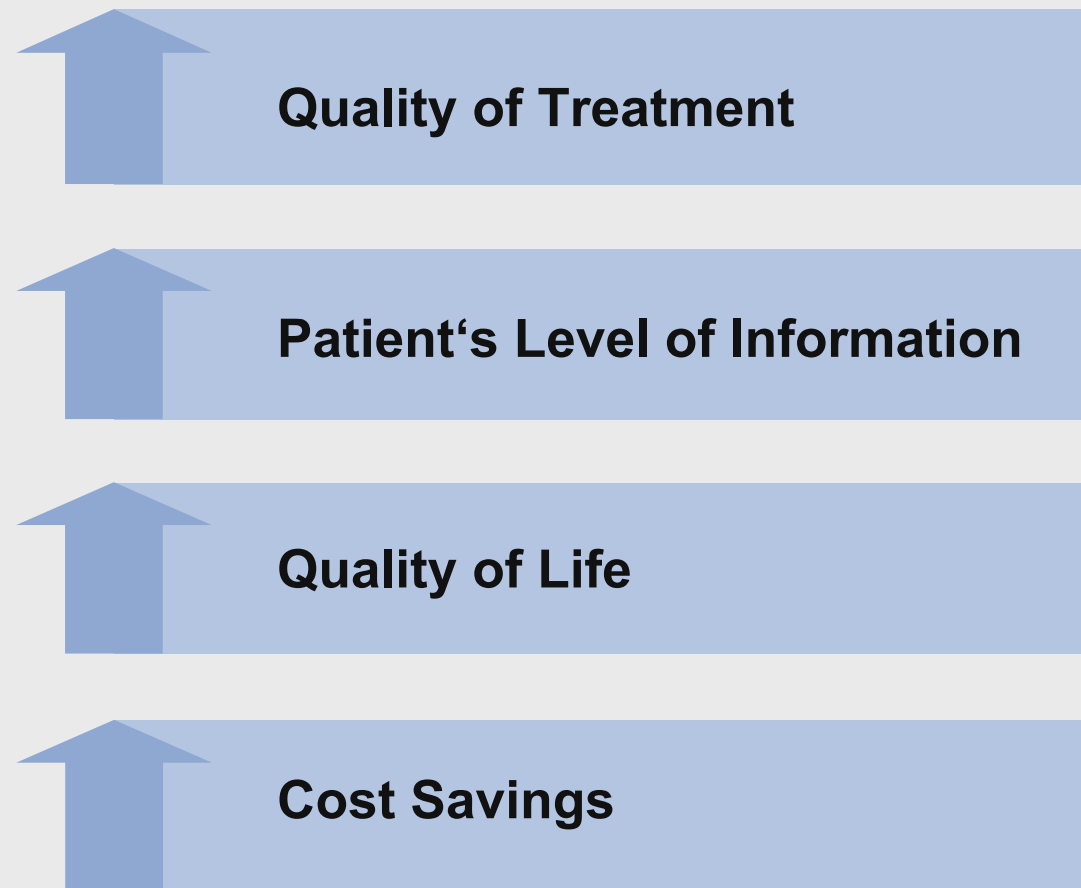
Disease Management

DMP Example Chronic Heart Failure – Workflow
(Munich Re Group Service Company – ArztPartner almeda – Germany)

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Identification	Recruiting	Orientation	Care

Identification
- **Data base query on claims data**
  - ICD Codes
  - CHF specific medication

Recruiting
- **Insurance company invites identified persons**
  - Initial mailing kit
- **Reminding after three weeks**
  - Call or letter

Orientation
- **Welcome call**
  - Qualification of diagnosis and severity (NYHA I-IV)
- **Welcome kit**
  - Program folder
  - Telemetric weight scale and blood pressure meter (optional)
  - Education material

Care
- **Outbound Care Calls**
- **Health Reports**
- **Education Material**

Economic evaluation DMP Chronic Heart Failure
(controlled, randomized, prospective study design)

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Tab. 1 Patientencharakteristika, Anzahl Rezepte, Krankenhausaufenthalte, Kosten und Mortalität. Angegeben sind Anzahl mit Prozentwerten in Klammern, Mittelwerte, Mediane und Standardabweichungen (SD).

Variable	Interventions-gruppe	Kontrollgruppe	p
Anzahl	251	251	
Frauen	106 (42,6%)	138 (55,3%)	
Alter (Jahre)	71,7	76,5	<0,001[2]
Median	73	78	
SD	10,2	11,3	
NYHA I und II	18 (7,2%)	19 (7,6%)	
NYHA III	51 (20,3%)	32 (12,7%)	
NYHA IV	81 (32,3%)	60 (23,9%)	
nicht näher bezeichnet [1]	101 (40,2%)	140 (55,8%)	
Anzahl Rezepte*	23,8	27,1	0,05[3]
Median	20,2	22,8	
SD	15,2	17,9	
Krankenhaus-Fälle*	2	3,4	0,04[3]
– Median	1	1,5	
– SD	2,9	8,8	
Krankenhaus-Tage*	25,3	49,1	0,01[3]
– Median	8,2	14,5	
– SD	45,3	151,1	
Leistungsausgaben			
Krankenhaus* (EUR)	8682	15810	0,01[3]
– Median	2249	3948	
– SD	26816	53155	
Arzneimittel* (EUR)	1881	1636	0,53[3]
– Median	1078	1024	
– SD	3807	2282	
Gesamt* (EUR)	10563	17446	0,05[3]
– Median	3799	5303	
– SD	27230	53322	
Todesfälle[5] (%)	**37 (14,7%)**	**69 (27,1%)**	<0,001[4]

*Durchschnitt je Teilnehmer bezogen auf ein Jahr; [1]ICD-Nummern 50.1, 50.19 und 50.9; [2]t-Test; [3]Mann-Whitney-U-Test; [4]Chi-Quadrat-Test
[5]Risk-Ratio für Ereignis Tod = 0,62, p-Wert (Mantel-Haenszel estimator) = 0,017

Ø Observation period 12 months
(min. 6 months and max. 18 months)

- Expenditures for hospital care within the treatment group were 45% lower than within the control group

- Expenditures for drugs were 15% higher within the treatment group

- **After 12 months the health care costs were 39,5% lower (up to 6.800 € per patient per year, p=0,05) within the treatment group compared to the control group**

- The all cause mortality was reduced by 46% (p<0,001)

Significant all cause mortality and health care expenditure reduction through Telemedical Chronic Heart Failure DMP

Dtsch Med Wochenschr 2007; 132: 417–422 · B. Kielblock et al., Einfluss einer telemedizinisch ...

Sufficient behavior modification is fundamental to Disease Management

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DMP manages treatment quality and costs of chronic diseases

Behavior Modification and increase in Q of life

Education

Professional Process- and Data- Management

Coaching

Telemedicine

Training

Training

Program results show that behavior modification (nutrition, exercise and smoking) plays a significant role, contributing more than 50% to the success of DMPs!

Competence in behavior modification is vital to manage disease.

Engage @risk persons in behavior modification to reduce chronic disease risks = prevention

Prevention

Prevention increases quality of life and even helps to reduce costs

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- **Approximately 50% of all diabetes type II cases can be prevented through regular physical activity.** *(Tuomilehto, J. et al 2001)*

- The risk of developing hypertension, can be reduced approximately 23% through weight loss. *(Stevens, Ann Intern Med 2001)*

- Control of hypertension can reduce cardiovascular disease by 33-50%. *(National Diabetes Statistics, NIDDK, 2003)*

- Smoking cessation is the single most effective - and cost effective - intervention to reduce the risk of developing COPD and stop its progression. *(Gold Report 2007)*

Increasing evidence shows that lifestyle changes are effective in preventing and reducing disease

Health Program Prevention - a systematic approach to induce, support, and maintain a balanced lifestyle

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Risk → Awareness → Preparation → Action → Maintenance

Screening-Questionnaire	Individual health profile	Tele-Coaching with personal coach
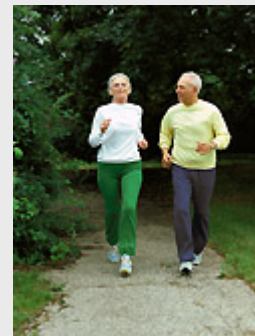
Health Program Prevention – Successful behavior modification after 1 year of participation

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- 51 %* changed their diets
- 28 %* left critical obesity range
  (lowered weight from BMI>30 to BMI<30)
- 53 %* increased their physical activity
- 13 %* stopped smoking

Successfully reduced Cardiovascular and diabetes risks

Positive outcome: steady decline in health expenses
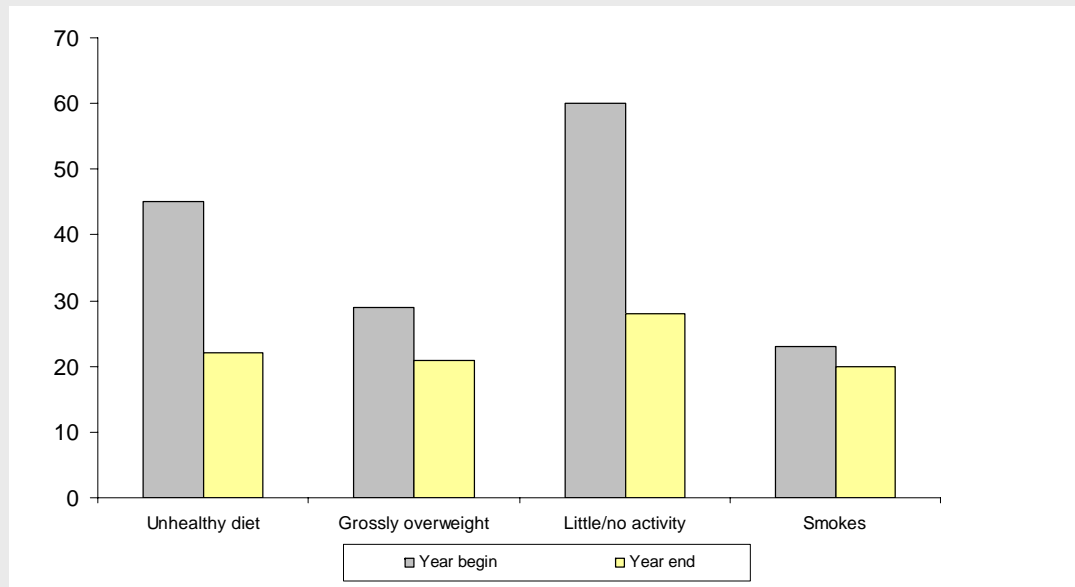
* % of target population, i.e. of those who showed adverse behavior or values initially

Project Denia – an integrated Health Care System

- The DKV subsidiary "Marina Salud" has a limited term concession contract for the management of public health facilities and public health insurance in the Denia region

- Remuneration: Capitation fee covers the complete outpatient and inpatient service range

- 15 year term

Comprehensive approach including:

- population-based prevention programmes
- participation in *THAO (Think Action Obesity)*

Programa Thao

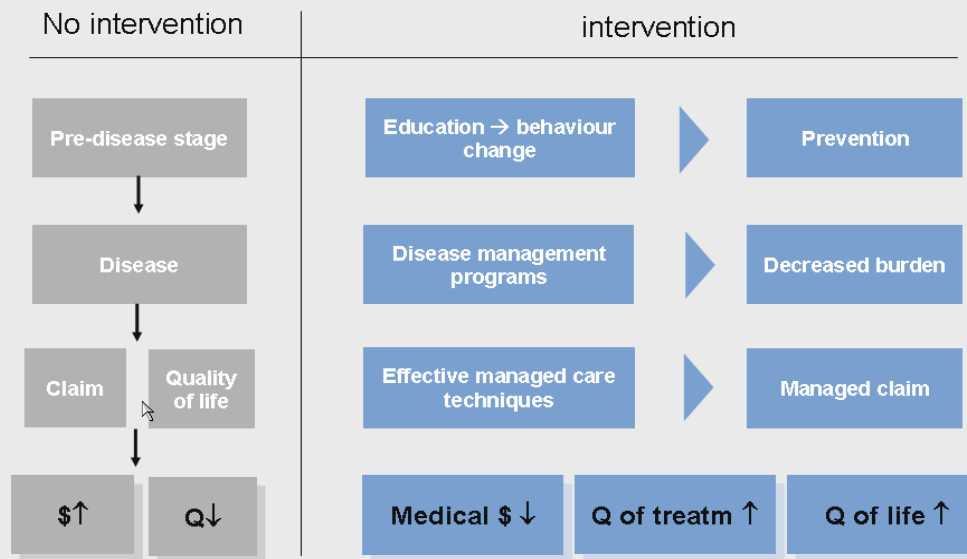- Four year old prevention programme

- Programme focuses on primary and secondary prevention for the community, parents and children from 3-12 years of age

- Based on a successful project in France (EPODE - Ensemble Prévenons l'Obésité Des Enfants, 2002-2007)

- Implemented in 5 cities of Spain (Villanueva de la Cañada, San Juan de Aznalfarache, Castelldefels, Sant Carles de la Ràpita, Aranjuez)
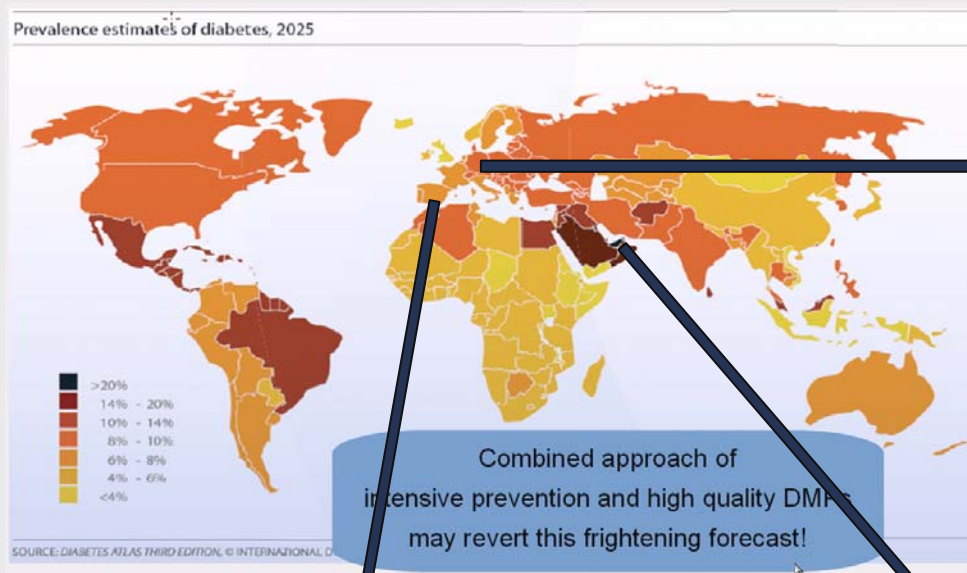
Conclusions

Combination of methods support the solution of the problem

No intervention | intervention

No intervention		intervention	
Pre-disease stage		**Education → behaviour change** →	**Prevention**
Disease		**Disease management programs** →	**Decreased burden**
Claim	**Quality of life**	**Effective managed care techniques** →	**Managed claim**
$↑	**Q↓**	**Medical $↓**	**Q of treatm ↑**	**Q of life ↑**

Success Factors:

- Transparency

- High Quality Data

- Professional Data Analysis

- Collaboration with Health Authorities and Providers

What Munich Re Group is doing about that!

Münchener Rück
Munich Re Group

Prevalence estimates of diabetes, 2025

>20%
14% - 20%
10% - 14%
8% - 10%
6% - 8%
4% - 6%
<4%

SOURCE: DIABETES ATLAS THIRD EDITION, © INTERNATIONAL D

Combined approach of
intensive prevention and high quality DMPs
may revert this frightening forecast!

German HealthCare Market:
- Prevention-programs
- Disease-Management
- Reinsurance for DMPs

Spain – Denia:
Pilot for prevention service via
education of children

UAE – Daman:
Pilot for Life style changing
prevention-Services in the hotspot of
the bad development

Agenda