Epidemiologie der Herz-Kreislauferkrankungen

Anita Rieder

Medizinische Universität Wien
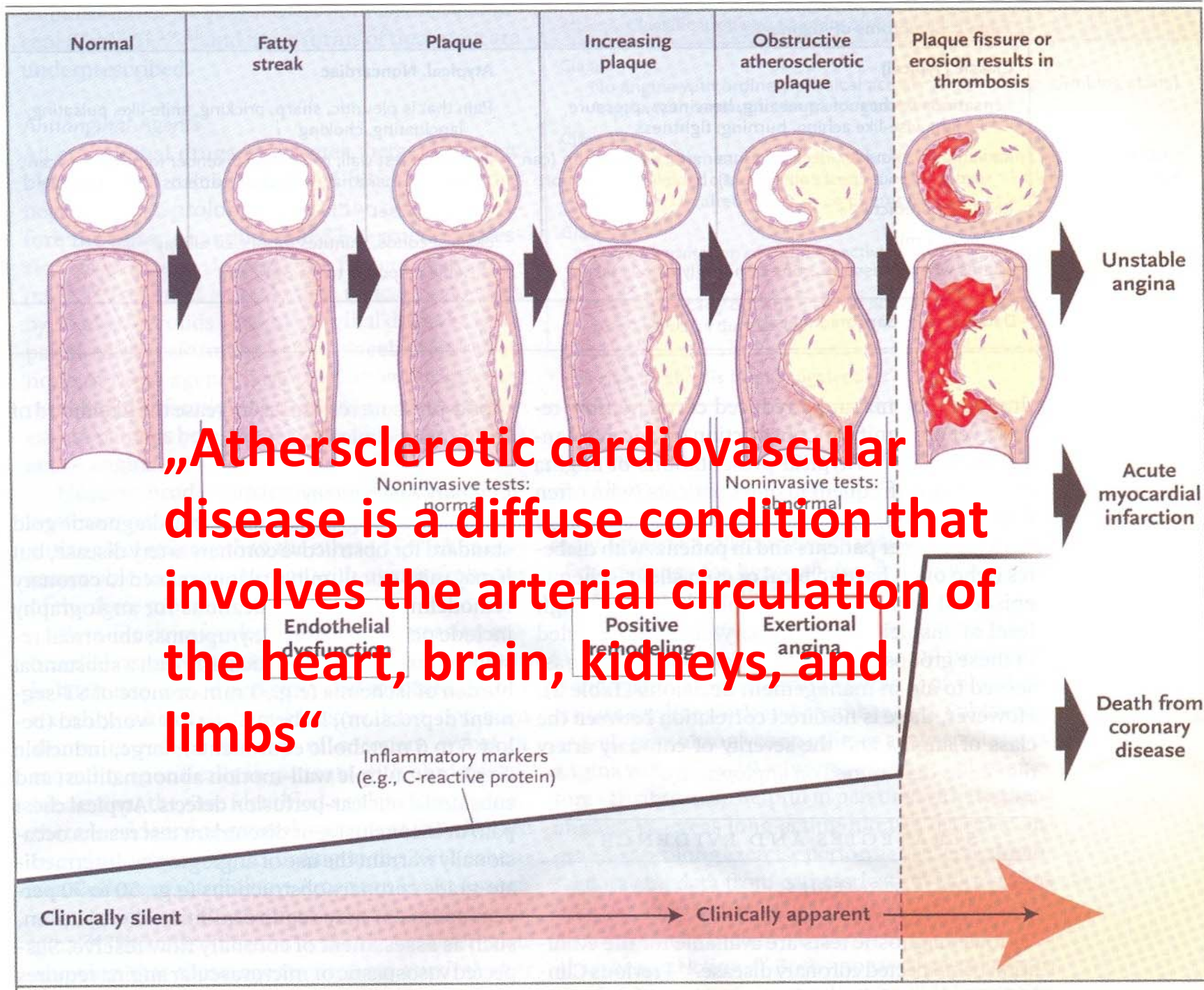
Institut für Sozialmedizin

Zentrum für Public Health

Die Ausschaltung der Herz-
Kreislauferkrankungen würde –
verglichen mit anderen
Todesursachen – die höchsten
Zugewinne in
der Lebenserwartung bringen
in Österreich

6,4 Jahre für Frauen
9,6 Jahre für Männer

Leitner B, Stat.Nachrichten 10/2007

Was zählt zu den Herzkreislauf-Erkrankungen?

Für statistische Zwecke werden Krankheiten des Herz-Kreislaufsystems mittels der „International Statistical Classification of Diseases and Related Health Problems (ICD)" der Weltgesundheitsorganisation kodiert.

- Akutes rheumatisches Fieber I00-I02
- Chronische rheumatische Herzkrankheiten (z.B. rheumatische Mitralklappenstenose) I05-I09
- Bluthochdruck (Hypertonie) I10-I15
- Ischämische Herzkrankheiten (z.B. koronare Herzkrankheit, Herzinfarkt) I20-I25
- Cor pulmonale und Krankheiten des Lungenkreislaufs (z.B. pulmonale Hypertonie) I26-I28
- Sonstige Herzkrankheiten (z.B. Perikarditis, Endokarditis, nichtrheumatische Herzklappenfehler) I30-I52
- Hirngefäßkrankheiten (z.B. Hirnblutung, Hirninfarkt) I60-I69
- Krankheiten der Arterien, Arteriolen und Kapillaren (z.B. arterielle Verschlusskrankheit) I70-I79
- Anderenorts nicht klassifizierte Krankheiten der Venen (z.B. Thrombose, Krampfadern), der Lymphgefäße und der Lymphknoten I80-I89
- Sonstige Krankheiten des Kreislaufsystems (z.B. Hypotonie, Ösophagusvarizen) I95-I99

Statistik Austria 2007

„Athersclerotic cardiovascular disease is a diffuse condition that involves the arterial circulation of the heart, brain, kidneys, and limbs"

Epidemiological Transition

► 5 Stadien

► 1. CVD durch rheumat.Fieber, etc..Sub-Sahara, Asien

► 2.Hypertonie, Herzkrankheiten, Schlaganfall,..China, Asien

► 3.fettreiche Ernährung, Rauchen, ...athersklerotische Veränderungen No 1, unter 50 jährige, „double burden"; Russland, Städte Indien, Lateinamerika,

► 4.Prävention, Diagnostik, Treatment,..CVd im höheren Alter, W-europa, N-Amerika, NZ, Australien

► 5.Rückfall in 1.und 2. Stadium und 3.und 4.bleiben bestehen, CVD und non CVD Mortalität

► Verschiedene Stadien in einer Population möglich – Prävention auf verschiedenen Levels

Yusuf S, et al 2001; Circulation

· ·

► Mehr Überlebende – größere Zahl von Betroffenen

► Demographische Entwicklung – Zunahme der Sterbefälle, Rehabedarf,..

► Entwicklung der Risikofaktoren – Diabetes, Adipositas

► Verschiedene Stadien der Transition, geografisch, sozioökonomisch, ..

► Frühzeitige CVD gilt grundsätzlich vermeidbar

► 2/3 des Rückganges der CHD-Events durch Rückgang der CHD-Inzidenz – Risikofaktoren Chol, RR, Rauchen (Tunstall-Pedoe H, et al, Lancet 1999)

► Primärprävention wirkt

- ▪ Gewonnene Lebensjahre 21 Jahre, Vergleich mit Sekundärprävention 7,5 Jahre (Unal, 2005)

► Bevölkerungsstrategie hat Evidenz

„Challenge of preventing CV disease lies in identifying and adressing the components most relevant to each community at their present and projected levels of transition"

Salim Yusuf, 2001

Österreich-Herz-Kreislauferkrankungen

Gestorbene 2005 nach Todesursachen und Geschlecht — Tabelle 1

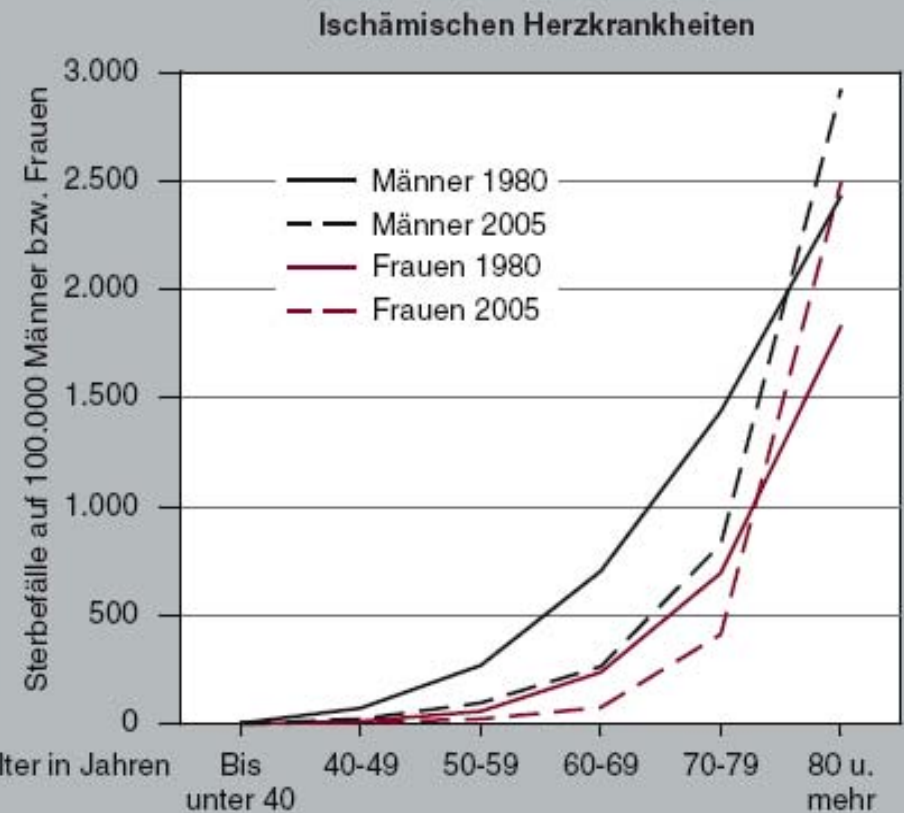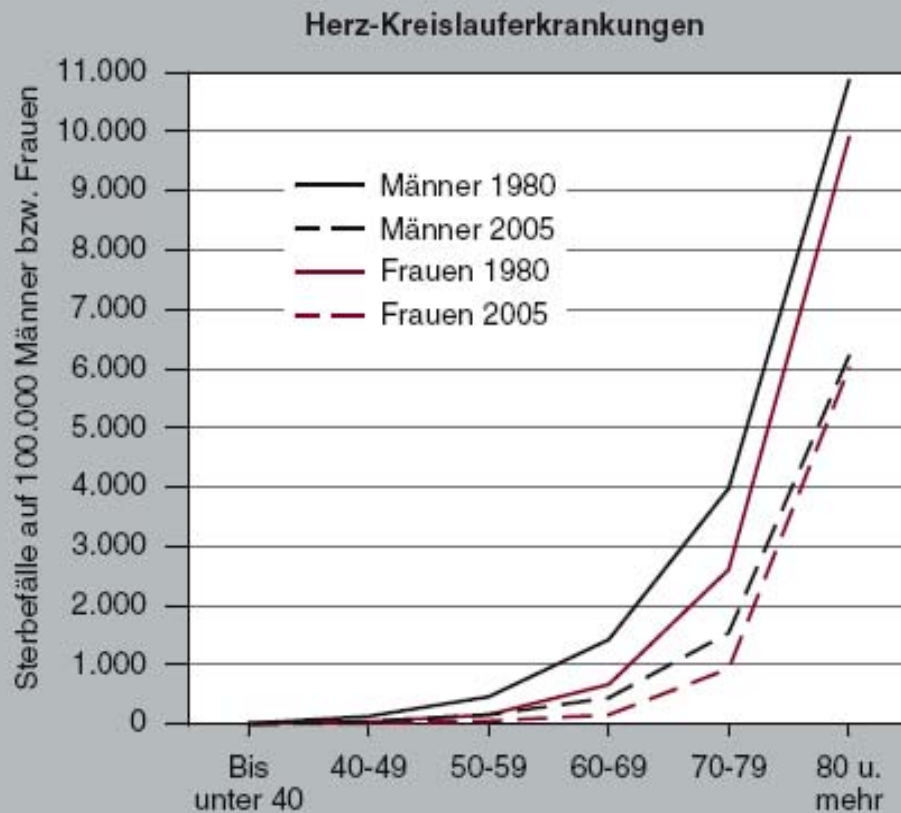| Todesursachen (ICD-10-Codes)	Insgesamt		Männer		Frauen	
	absolut	in %	absolut	in %	absolut	in %
Todesursachen insgesamt (A00-Y89)	75.189	100,0	34.986	100,0	40.203	100,0
Krankheiten des Herz-Kreislaufsystems (I00-I99)	32.636	43,4	13.048	37,3	19.588	48,7
Ischämische Herzkrankheiten (I20-I25)	14.944	19,9	6.723	19,2	8.221	20,4
Akuter Myokardinfarkt (I21-I22)	5.822	7,7	3.188	9,1	2.634	6,6
Hirngefäßkrankheiten (I60-I69)	5.564	7,4	2.108	6,0	3.456	8,6
Bösartige Neubildungen (C00-C97)	19.124	25,4	9.991	28,6	9.133	22,7
Sonstige Krankheiten (A00-B99, D01-H95, L00-R99)	10.966	14,6	4.831	13,8	6.135	15,3
Krankheiten der Atmungsorgane (J00-J99)	4.670	6,2	2.371	6,8	2.299	5,7
Verletzungen und Vergiftungen (V01-Y89)	4.439	5,9	2.890	8,3	1.549	3,9
Krankheiten der Verdauungsorgane (K00-K93)	3.354	4,5	1.855	5,3	1.499	3,7

Q: Todesursachenstatistik 2005
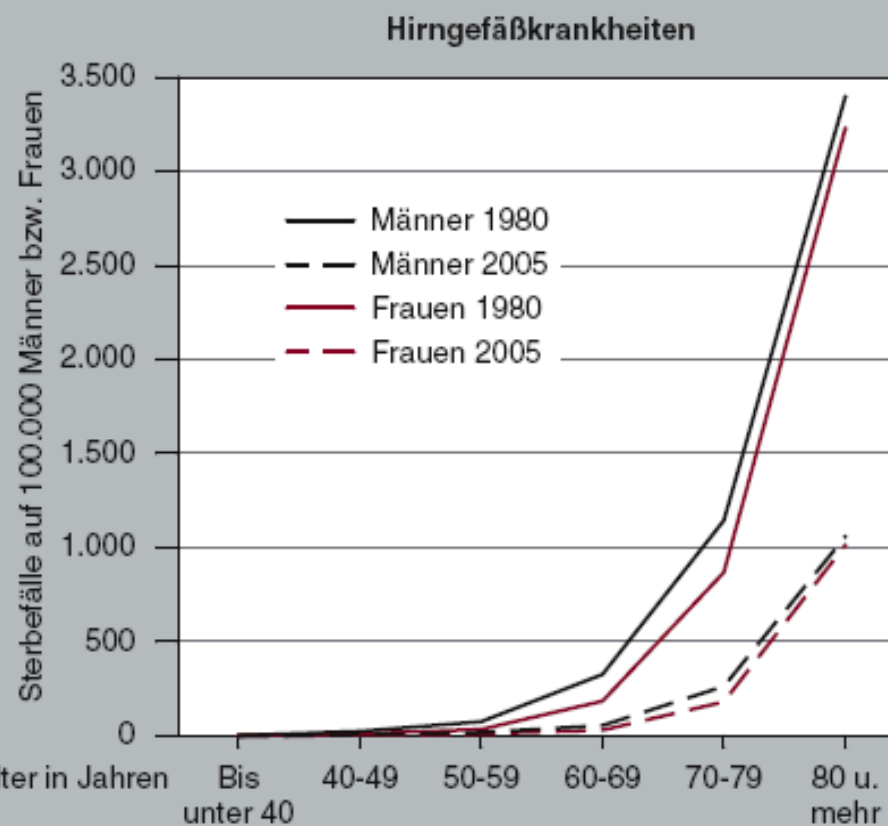
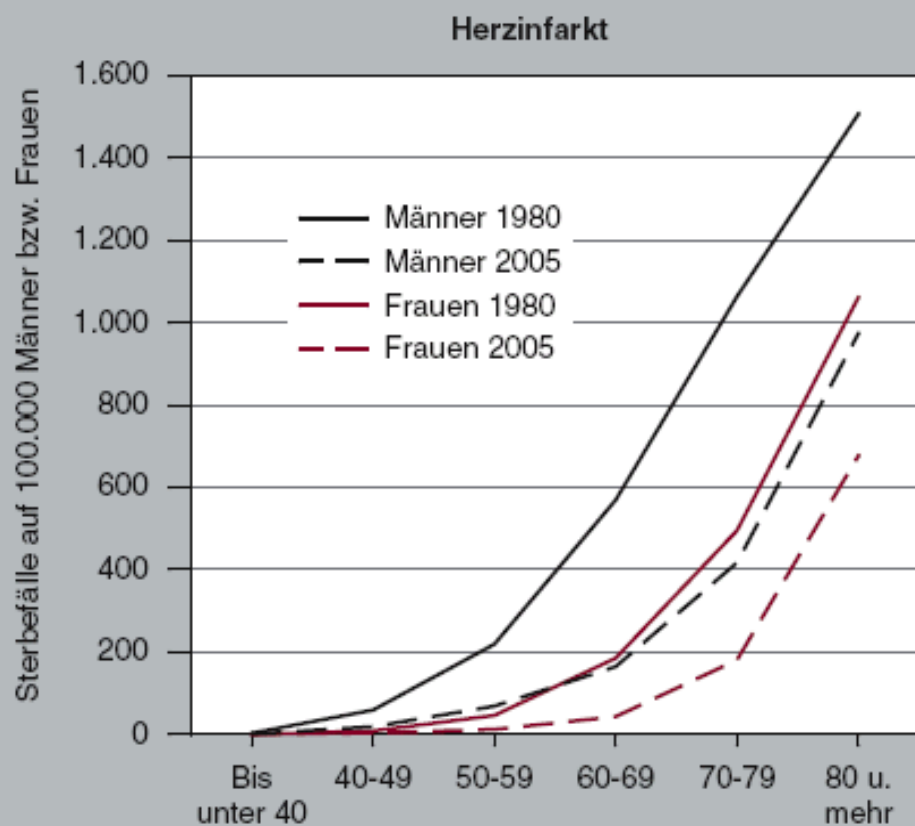# Österreich-Herz-Kreislauferkrankungen

Sterblichkeit auf 100.000 Einwohner 1980 und 2005 nach Alter und Geschlecht — Grafik 2

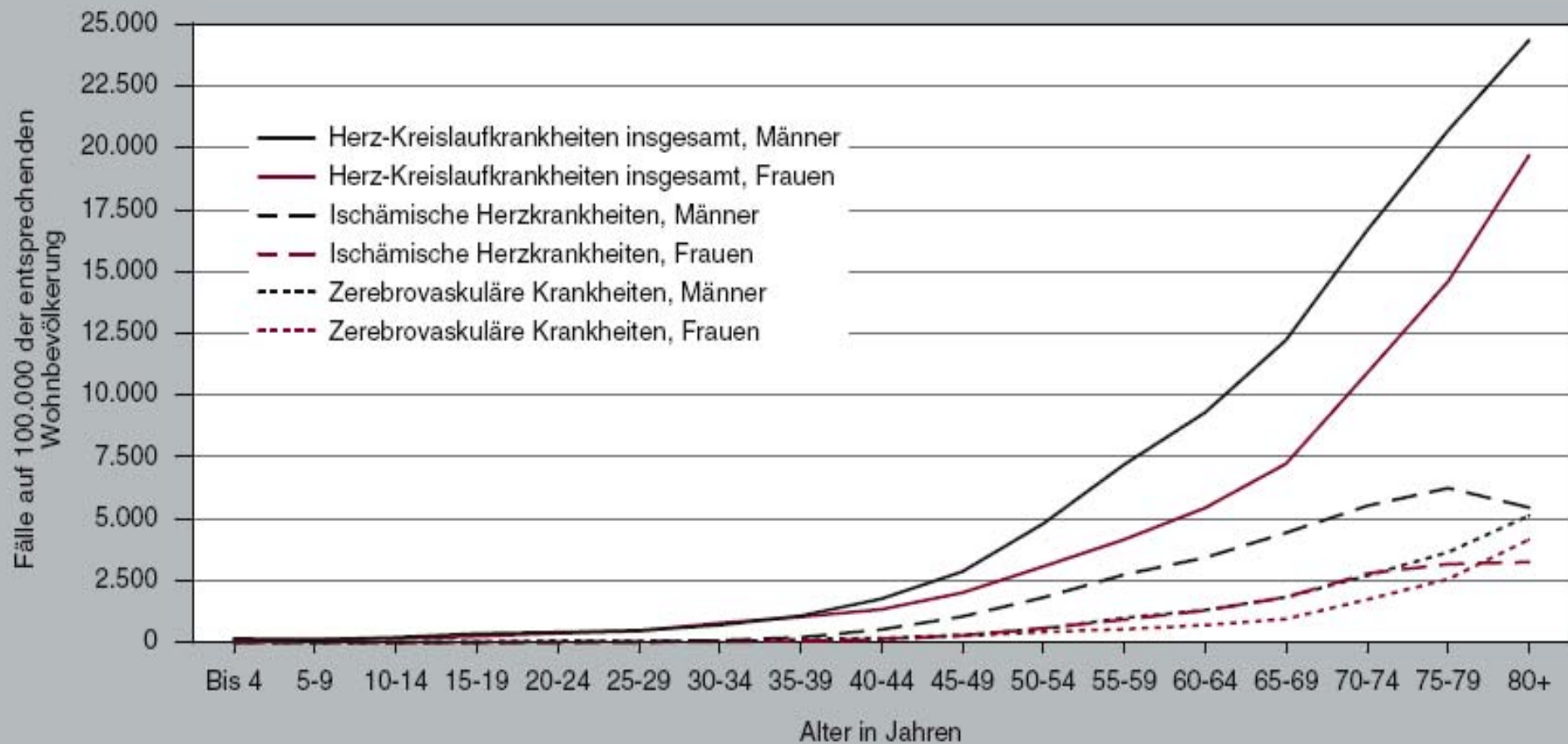# Österreich-Herz-Kreislauferkrankungen
Gestorbene/100.000

Q: Todesursachenstatistik

Österreich-Herz-Kreislauferkrankungen

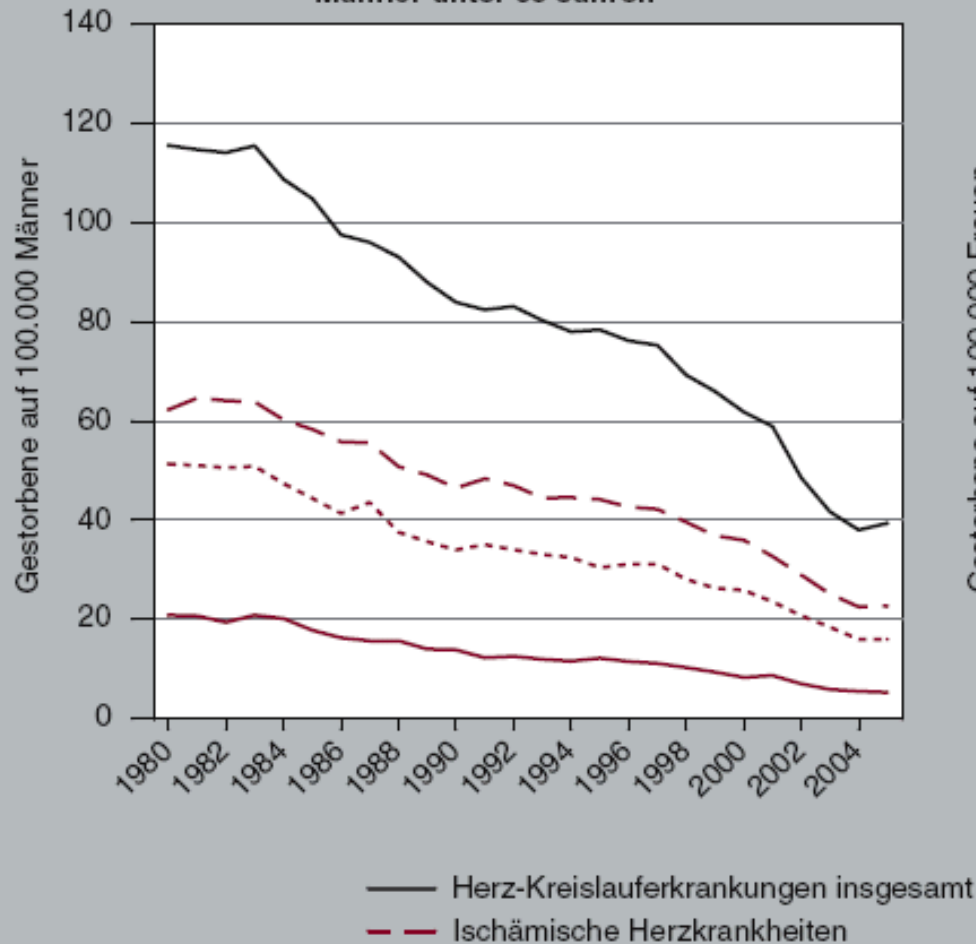Spitalsentlassungsfälle aufgrund von Herz-Kreislauferkrankungen 2005 nach Alter — Grafik 3

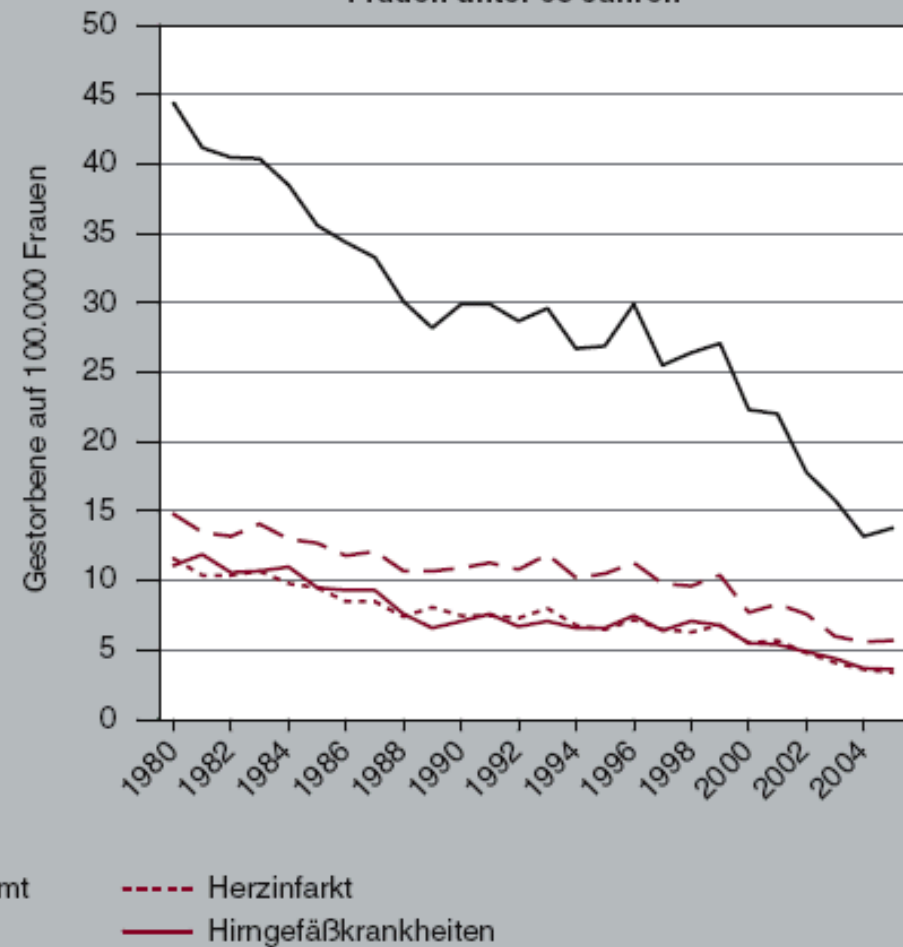Q: Spitalsentlassungsstatistik 2005.

Österreich-Herz-Kreislauferkrankungen
Gestorbene/100.000

Incidence of Atherosclerotic Cardiovascular Events in the Framingham Study[†]

Age	Cardiovascular disease, all types		Coronary disease		Stroke and TIA		Heart failure		Peripheral artery disease	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
35-64	17	9	12	5	2	2	2	1	3	2
65-94	44	50	27	16	13	11	12	9	8	5

[†]Age-adjusted average annual incidence per 1000 persons free of the specified disease.

Lerner DJ; Kannel WB; Am Heart J 1986 Feb;111(2):383-90.

► **Life-time risk koronare Herzkrankheit**

- 40jährige: 32% bei Frauen; 49% bei Männer
- 70jährige: 24% bei Frauen; 35% bei Männer

► **Inzidenzanstieg bei Frauen 10 Jahre später**

► **Inzidenzanstieg plötzlicher Herztod und Herzinfarkt**

20 Jahre später

► **Inzidenzanstieg postmenopausal**

- Vergleich Frauen gleichen Alters post/prämenopausal

- - 3fach höhere Morbiditätsrate

► **Mortalitätsrate Männer:Frauen**

- 25-34 3fach höher; 75-84: 1,6fach höher

International Death Rates (Revised 2007): Death Rates (Per 100 000 Population) in Selected Countries (most recent year available)

Men, Ages 35–74 y	CVD Deaths	CHD Deaths	Stroke Deaths
Russian Federation (2002)	1555	835	453
Hungary (2003)	714	358	181
Finland (2004)	334	211	54
Greece (2003)*	311	166	68
United States (2004)	289	174	35
Germany (2004)	271	142	39
Sweden (2002)	247	151	44
Austria (2004)	226	131	34
Spain (2003)	205	101	43
Japan (2003)	170	53	66

AHA, 2008

Heart Disease and Stroke Statistics—2008 Update: Chapter 2

International Death Rates (Revised 2007): Death Rates (Per 100 000 Population) for Total Cardiovascular Disease, Coronary Heart Disease, Stroke, and Total Deaths in Selected Countries (most recent year available)

Women Ages 35–74 y	CVD Deaths	CHD Deaths	Stroke Deaths
Russian Federation (2002)	659	288	257
Hungary (2003)	303	133	91
Finland (2004)	104	48	32
Greece (2003)*	134	46	44
United States (2004)	150	73	27
Germany (2004)	111	45	23
Sweden (2002)	107	51	30
Austria (2004)	90	42	19
Spain (2003)	79	26	23
Japan (2003)	69	16	31

Heart Disease and Stroke Statistics—2008 Update: Chapter 2

Sources: The World Health Organization Web page,64 NCHS, and NHLBI.

AHA, 2008

Age-standardized death rates from CHD, men aged 0 to 64, latest available year

Deaths per 100,000
- <30
- >=30, <45
- >=45, <80
- >=80, <130
- >=130

Allender S, et al and Leal J et al, European Cardiovascular Disease Statistics 2008

University of Oxford

Age-standardized death rates from CHD, women aged 0 to 64, latest available year

Deaths per 100,000

<7
>=7, <10
>=10, <20
>=20, <50
>=50

Allender S, et al and Leal J et al, European Cardiovascular Disease Statistics 2008

University of Oxford

Death rates from CHD, *men aged under 65, 1972 to 2005, selected countries*

Allender S, et al and Leal J et al, European Cardiovascular Disease Statistics 2008

University of Oxford
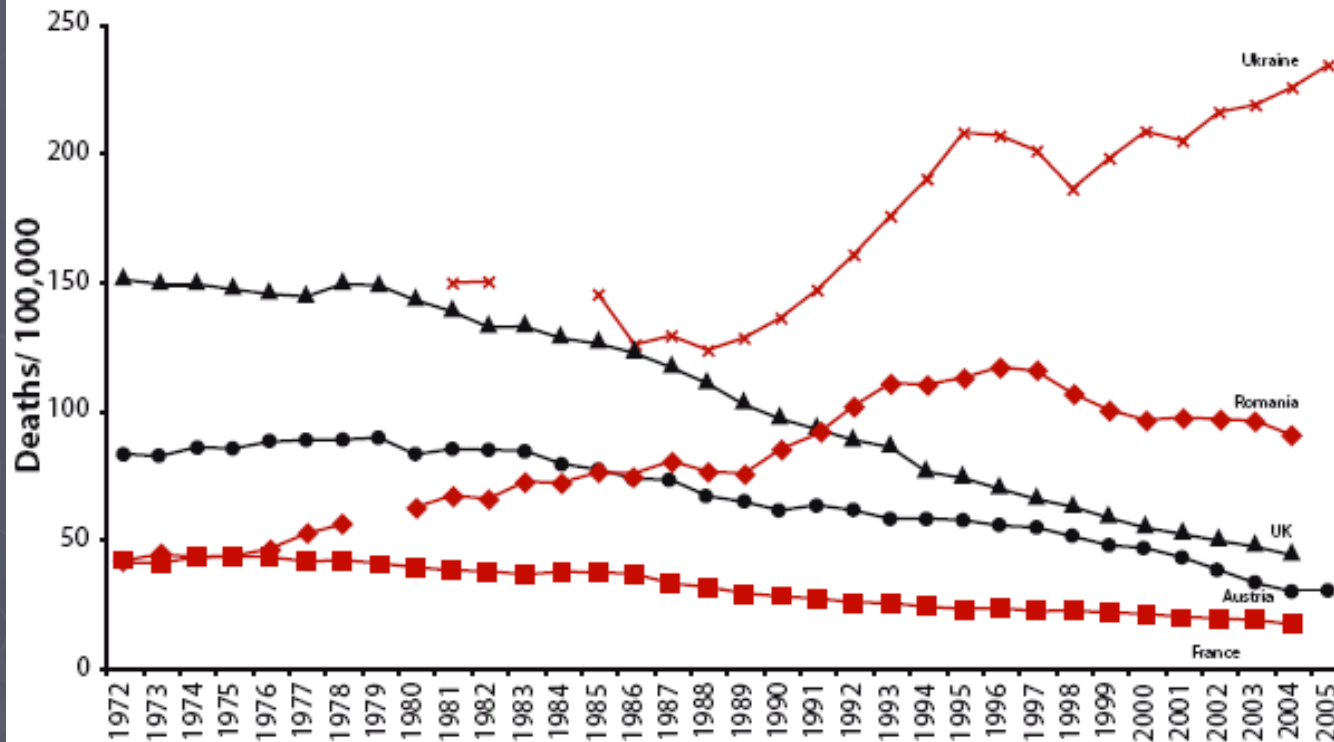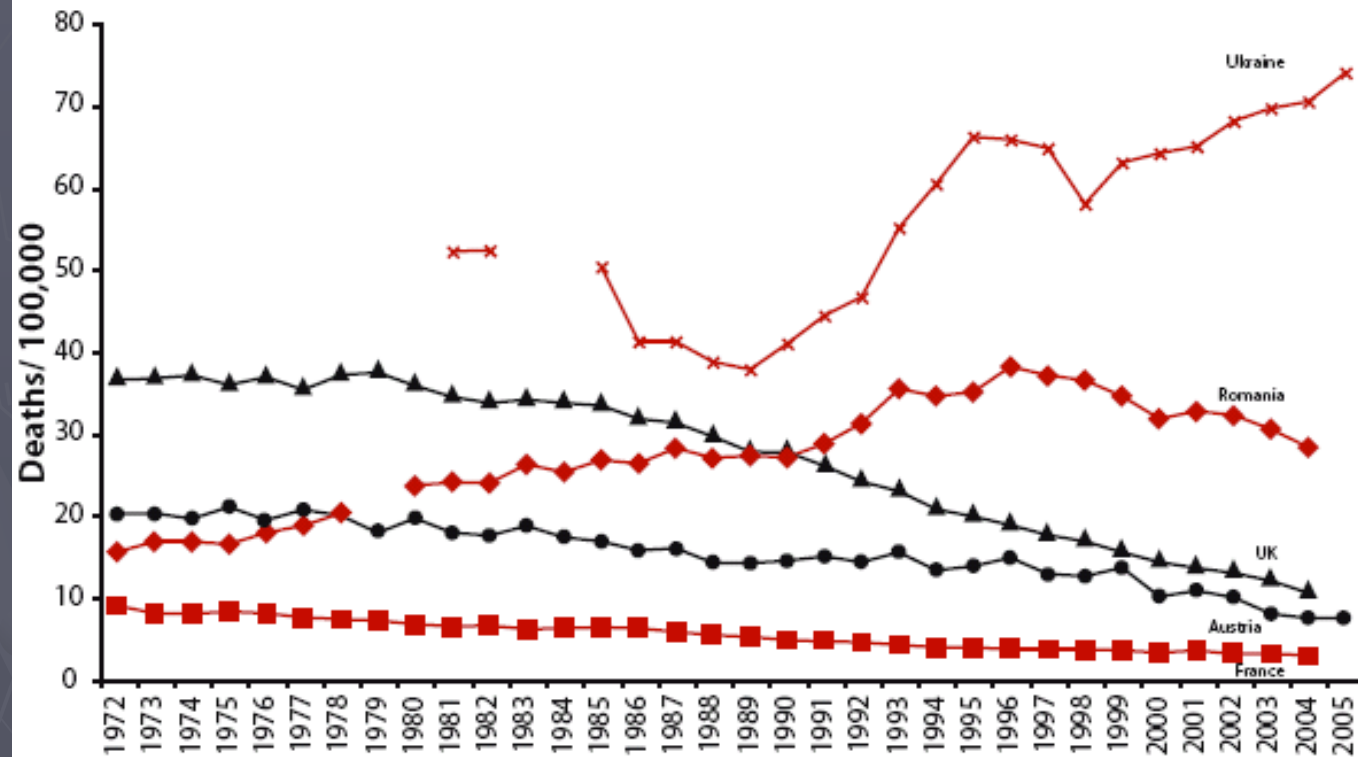
Death rates from CHD, women aged under 65, 1972 to 2005, selected countries

Allender S, et al and Leal J et al, European Cardiovascular Disease Statistics 2008
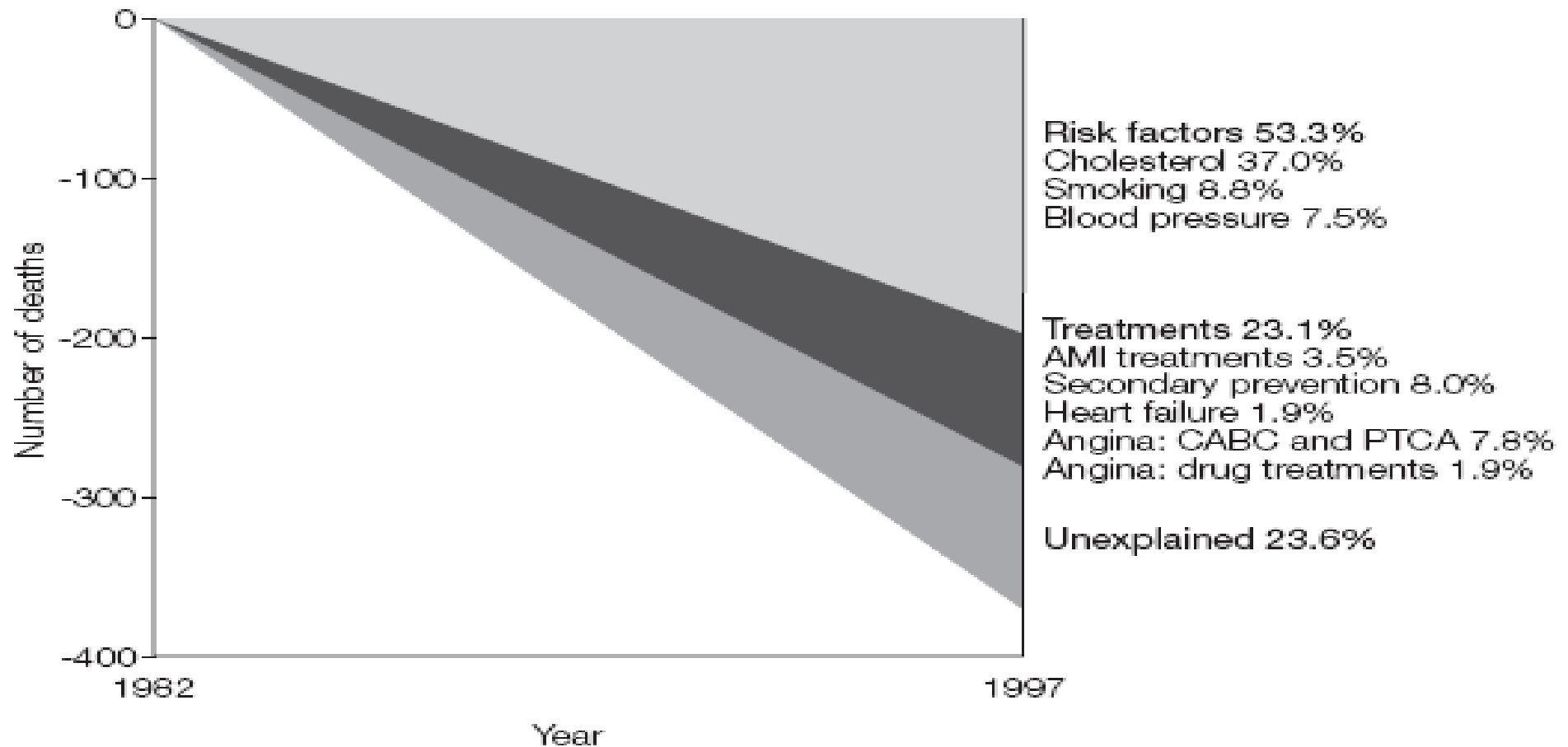
University of Oxford

IMPACT model showing the decline in coronary heart disease mortality in Finland between 1982 and 1997.

Lebenszeitrisiko

Remaining Risks for CVD and Other Diseases Among Men and Women Free of Disease at 40 and 70 Years of Age

Diseases	Remaining Lifetime Risk at Age 40		Remaining Lifetime Risk at Age 70	
	Men	Women	Men	Women
Any CVD*	2 in 3	>1 in 2	>1 in 2	1 in 2
CHD[37]	1 in 2	1 in 3	1 in 3	1 in 4
AF[38]	1 in 4	1 in 4	1 in 4	1 in 4
CHF[39]	1 in 5	1 in 5	1 in 5	1 in 5
Stroke[40]	1 in 6†	1 in 5†	1 in 6	1 in 5
Dementia[40]	. . .	. . .	1 in 7	1 in 5
Hip fracture[41]	1 in 20	1 in 6	. . .	. . .
Breast cancer[42,43]	1 in 1000	1 in 8	. . .	1 in 14
Prostate cancer[42]	1 in 6	. . .	. . .	. . .
Lung cancer[42]	1 in 12	1 in 17	. . .	. . .
Colon cancer[42]	1 in 16	1 in 17	. . .	. . .
Diabetes[44]	1 in 3	1 in 3	1 in 9	1 in 7
Hypertension[45]	9 in 10†	9 in 10†	9 in 10†	9 in 10†
Obesity[46]	1 in 3	1 in 3	. . .	. . .

Ellipses (. . .) indicate not estimated; AF, atrial fibrillation.
*Personal communication from Donald Lloyd-Jones, based on FHS data.
†Age 55.
‡Age 65.

AHA, 2008

Lifetime Risk for CVD and Median Survival for Men and Women in Selected Risk Factor Strata at 50 Years of Age

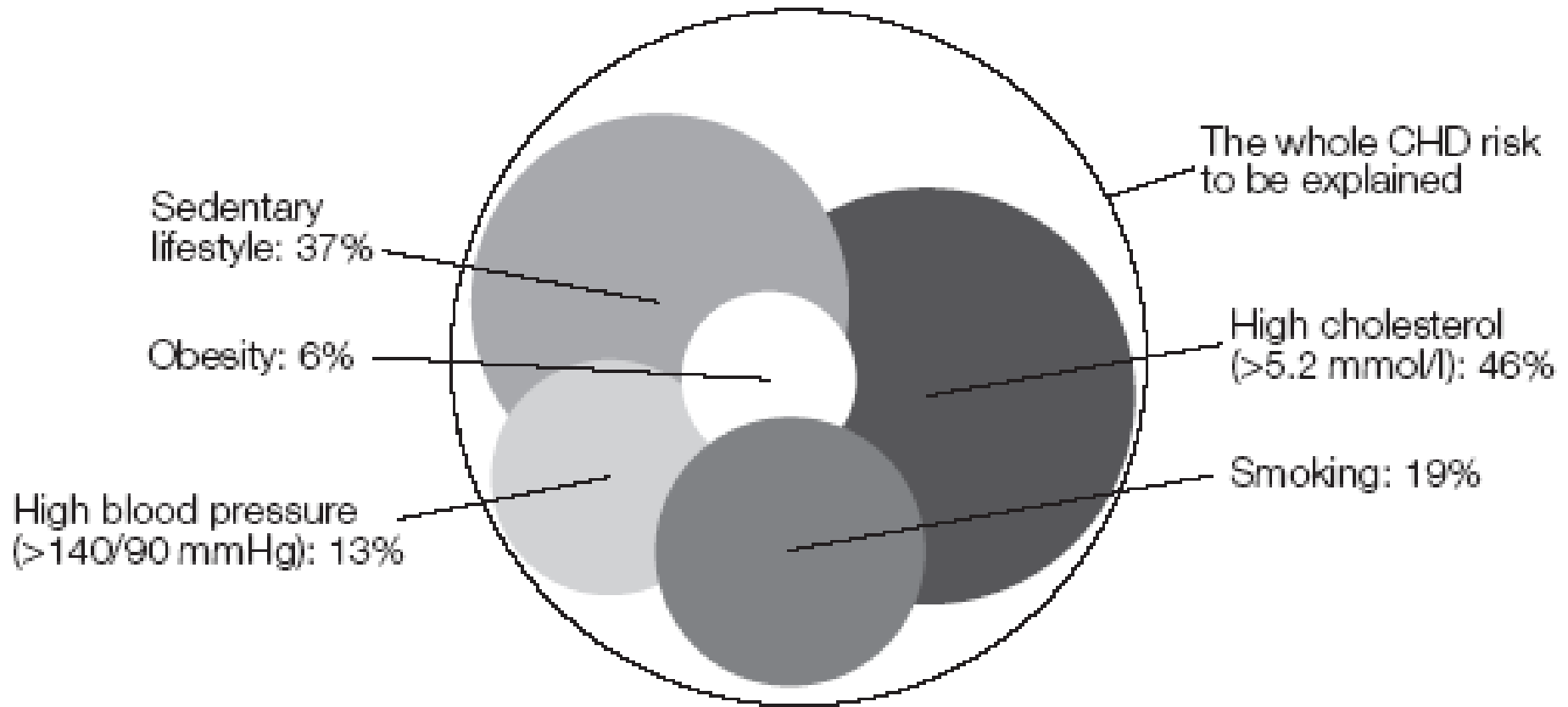|	Men		
	Lifetime Risk for CVD (95% CI), %		
	To 75 y	To 95 y	Median Survival (IQR), y
Overall	35.0 (32.9–37.2)	51.7 (49.3–54.2)	30 (22–37)
Total cholesterol, mmol/L (mg/dL)			
<4.65 (<180)	26.2	38.7	31
4.65–5.15 (180–199)	29.2	46.9	32
5.16–6.19 (200–239)	34.5	49.2	30
≥6.20 (≥240)	45.3	64.6	30
HDL cholesterol, mmol/L (mg/dL)			
Not low: ≥1.03 (≥40) men/≥1.29 (≥50) women	23.6	. . .	>33
Low: <1.03 (<40) men/<1.29 (<50) women	34.0	. . .	29
Systolic or diastolic blood pressure, mm Hg			
<120 or <80	26.6	47.3	33
120–139 or 80–89	31.8	47.9	32
140–159 or 90–99	46.4	61.6	29
≥160 or ≥100 or treated	51.3	65.1	28
Nondiabetic	30.2	. . .	32
Diabetic	67.1	. . .	23
Nonsmoker	27.8	47.8	34
Smoker	34.0	51.5	29
BMI, kg/m^2			
<25	27.5	47.8	32
25–25.9	30.4	49.3	29
≥30	41.8	58.0	29

IQR indicates interquartile range.

Lifetime Risk for CVD and Median Survival for Men and Women in Selected Risk Factor Strata at 50 Years of Age

	Women		
	Lifetime Risk for CVD (95% CI), %		Median Survival (IQR), y
	To 75 y	To 95 y	
Overall	19.2 (17.5—20.8)	39.2 (37.0—41.4)	36 (28—42)
Total cholesterol, mmol/L (mg/dL)			
<4.65 (<180)	9.1	19.4	37
4.65—5.15 (180—199)	11.3	31.1	37
5.16—6.19 (200—239)	16.7	37.6	36
≥6.20 (≥240)	30.0	48.3	34
HDL cholesterol, mmol/L (mg/dL)			
Not low: ≥1.03 (≥40) men/≥1.29 (≥50) women	11.0	. . .	>33
Low: <1.03 (<40) men/<1.29 (<50) women	15.9	. . .	>33
Systolic or diastolic blood pressure, mm Hg			
<120 or <80	10.5	29.3	37
120—139 or 80—89	17.9	37.0	36
140—159 or 90—99	28.8	52.3	35
≥160 or ≥100 or treated	35.0	50.6	31
Nondiabetic	16.3	. . .	36
Diabetic	57.3	. . .	34
Nonsmoker	14.2	39.0	38
Smoker	20.6	36.8	33
BMI, kg/m^2			
<25	14.7	35.3	37
25—25.9	18.1	42.5	36
≥30	21.9	43.0	33

IQR indicates interquartile range.

Lloyd-Jones et al Lifetime Risk for CVD, Circulation 2006

"Koronare Herzkrankheit"

The role of smoking, high-serum total cholesterol, high blood pressure, obesity and physical inactivity on the development of coronary heart disease

Sedentary lifestyle: 37%

Obesity: 6%

High blood pressure (>140/90 mmHg): 13%

The whole CHD risk to be explained

High cholesterol (>5.2 mmol/l): 46%

Smoking: 19%

Ståhl T, Wismar M, et al. Health in all Policies: Prospects and Potentials. Finnish Ministry of Social Affaisr and Health. 2006

Risk factor	Sex	Control (%)	Case (%)	Odds ratio (99% CI)	PAR (99% CI)
Current smoking	F	9.3	20.1	2.86 (2.36–3.48)	15.8% (12.9–19.3)
	M	33.0	53.1	3.05 (2.78–3.33)	44.0% (40.9–47.2)
Diabetes	F	7.9	25.5	4.26 (3.51–5.18)	19.1% (16.8–21.7)
	M	7.4	16.2	2.67 (2.36–3.02)	10.1% (8.9–11.4)
Hypertension	F	28.3	53.0	2.95 (2.57–3.39)	35.8% (32.1–39.6)
	M	19.7	34.6	2.32 (2.12–2.53)	19.5% (17.7–21.5)
Abdominal obesity	F	33.3	45.6	2.26 (1.90–2.68)	35.9% (28.9–43.6)
	M	33.3	46.5	2.24 (2.03–2.47)	32.1% (28.0–36.5)
Psychosocial index	F	–	–	3.49 (2.41–5.04)	40.0% (28.6–52.6)
	M	–	–	2.58 (2.11–3.14)	25.3% (18.2–34.0)
Fruits/veg	F	50.3	39.4	0.58 (0.48–0.71)	17.8% (12.9–24.1)
	M	39.6	34.7	0.74 (0.66–0.83)	10.3% (6.9–15.2)
Exercise	F	16.5	9.3	0.48 (0.39–0.59)	37.3% (26.1–50.0)
	M	20.3	15.8	0.77 (0.69–0.85)	22.9% (16.9–30.2)
Alcohol	F	11.2	6.3	0.41 (0.32–0.53)	46.9% (34.3–60.0)
	M	29.1	29.6	0.88 (0.81–0.96)	10.5% (6.1–17.5)
ApoB/ApoA1 ratio	F	14.1	27.0	4.42 (3.43–5.70)	52.1% (44.0–60.2)
	M	21.9	35.5	3.76 (3.23–4.38)	53.8% (48.3–59.2)

Odds ratio (99% CI)

Yusuf S, et al. Lancet 2004;364:937-52

WHO "European Health Report 2005"

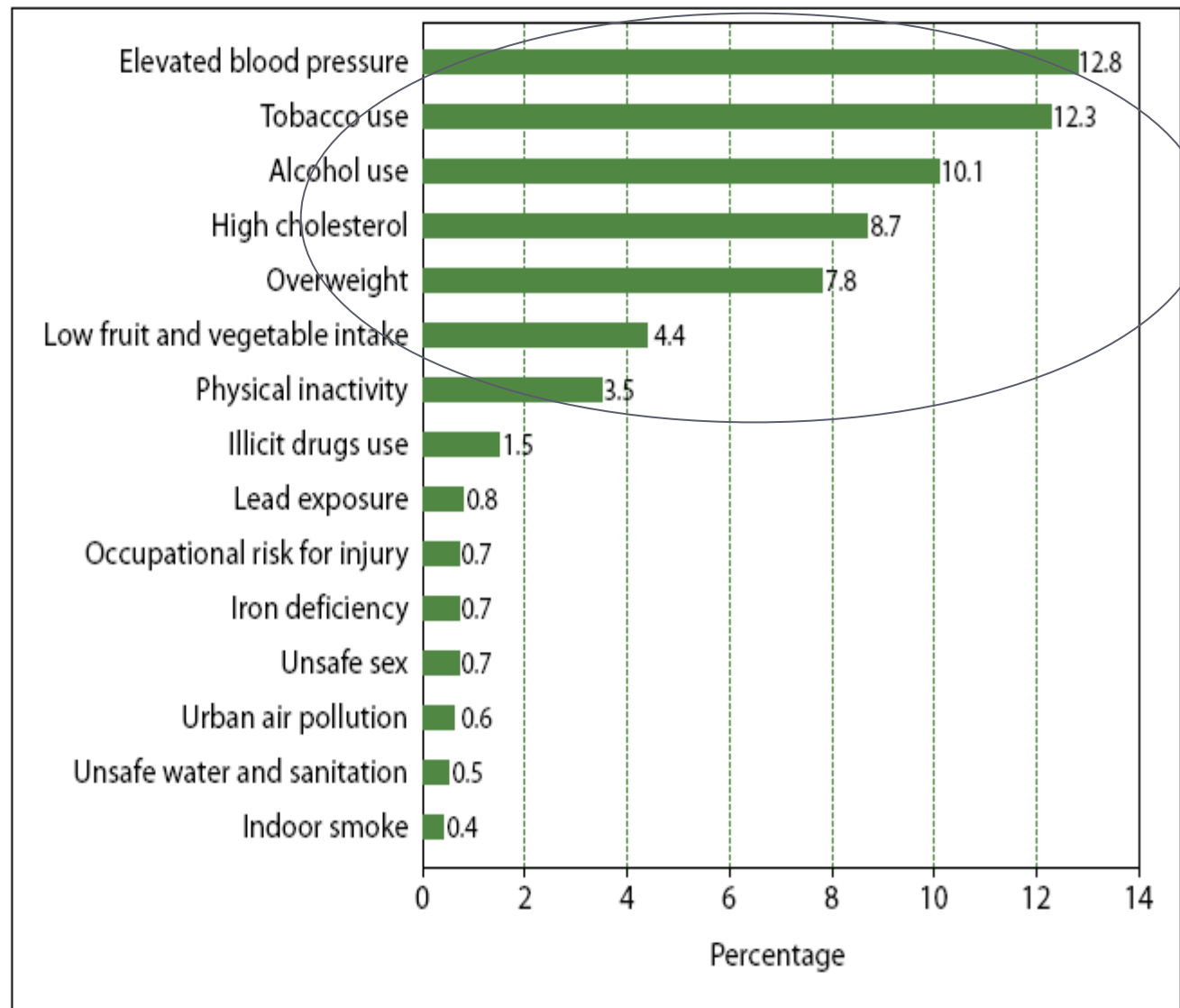Sieben Risikofaktoren verursachen den Großteil der Nicht-übertragbaren Erkrankungen (NCDs) :

Bluthochdruck, Rauchen, Alkohol, hohes Cholesterin, Übergewicht, zu wenig Obst und Gemüse, und zu wenig Bewegung.

WHO "European Health Report 2005"

. Proportions of total DALYs that can be attributed to the leading 15 known risk factors in the WHO European Region, 2000

DALY = Disability Adjusted Life Years

The sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability

Risk factor	Percentage
Elevated blood pressure	12.8
Tobacco use	12.3
Alcohol use	10.1
High cholesterol	8.7
Overweight	7.8
Low fruit and vegetable intake	4.4
Physical inactivity	3.5
Illicit drugs use	1.5
Lead exposure	0.8
Occupational risk for injury	0.7
Iron deficiency	0.7
Unsafe sex	0.7
Urban air pollution	0.6
Unsafe water and sanitation	0.5
Indoor smoke	0.4

Deaths and DALYs attributable to the 10 leading causes in the WHO European Region, 2002

DEATHS	total deaths	% of total	DALYs	Total DALYs	% of total
All causes	70 450	100.0	All causes	969 681	100.0
1. Ischaemic heart disease	15 418	21.9	1. Unipolar depressive disorders	95 118	9.8
2. Cerebrovascular disease	7 559	10.7	2. Ischaemic heart disease	79 989	8.2
3. Trachea, bronchus and lung cancer	3 170	4.5	3. Cerebrovascular disease	49 230	5.1
4. Colon and rectum cancer	2 531	3.6	4. Alcohol-use disorders	48 850	5.0
5. Chronic obstructive pulmonary disease	2 122	3.0	5. Hearing loss, adult onset	36 543	3.8
6. Cirrhosis of the liver	1 758	2.5	6. Alzheimer's and other dementias	34 102	3.5
7. Breast cancer	1 633	2.3	7. Chronic obstructive pulmonary disease	30 652	3.2
8. Self-inflicted injuries	1 476	2.1	8. Trachea, bronchus and lung cancer	26 882	2.8
9. Diabetes mellitus	1 428	2.0	9. Self-inflicted injuries	26 204	2.7
10. Hypertensive heart disease	1 247	1.8	10. Cirrhosis of the liver	95 118	9.8

AUSTRIA

WHO European Health Report 2005

WHO "European Health Report 2005"

Condition	Total DALYs (%)
1. Ischaemic heart disease	10.5
2. Unipolar depressive disorders	6.2
3. Cerebrovascular disease	7.2
4. Alcohol-use disorders	3.1
5. Chronic pulmonary disease	2.3
6. Road traffic injury	2.4
7. Lung cancer	2.2
Total	33.8

Shares of seven leading conditions in the DALY burden in the WHO European Region, 2002

Source: The world health report 2004 – Changing history (19).

Risk factor	A	Total DALYs (%)
A. High blood pressure	8.9	12.8
B. Tobacco	11.0	12.3
C. Alcohol	9.2	10.1
D. High blood cholesterol	6.6	8.7
E. Overweight	6.7	7.8
F. Low fruit and vegetable intake	2.2	4.4
G. Physical inactivity	3.0	3.5
Total		59.6

Shares of seven leading risk factors in the DALY burden in the WHO European Region, 2000

Source: The world health report 2002 – Reducing risks, promoting healthy life (20).
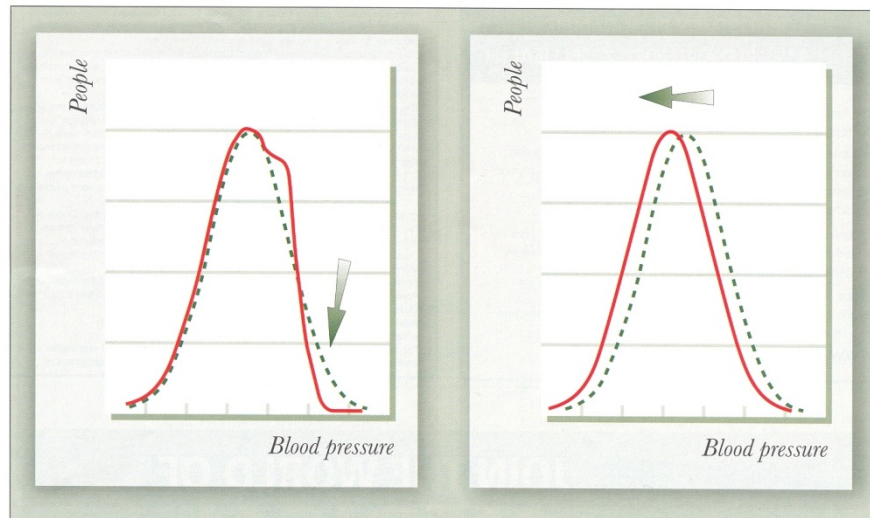
CHINA

Weißer Riese

Qingdao, eine Provinzhauptstadt im Osten Chinas, ist die Heimat dieser erstaunlichen Katze: 15 Kilo bringt das Tier auf die Waage, sein Bauchumfang beträgt 77 Zentimeter. Das Band zeigt ein altes chinesisches Längenmaß, das Cun, es entspricht 3,3 Zentimetern. Auf dem Speisezettel des neunjährigen Schwergewichts steht vor allem Fleisch, das es Fisch deutlich vorzieht. Favorit: rohes Schwein. Die Wertschätzung seines Besitzers erwarb sich der Koloss durch seine Qualitäten als Hauswächter. Während der vergangenen Jahre hat die Katze im Reich der Mitte als Haustier an Beliebtheit gewonnen. Insbesondere weiße Exemplare, die im Gegensatz zu ihren schwarzen Artgenossen als **Glücksbringer** gelten, werden gern gekauft.

Ein eindeutiger Fall für die Prävention….

People

Blood pressure

People

Blood pressure

Preventing coronary heart disease

Which risk reduction strategy is right for the 21st century? p617, p629, p659

bmj.com

„Modelling the decline in CHD deaths in England and Wales, 1981-2000: comparing contributions from *primary and secondary prevention*"
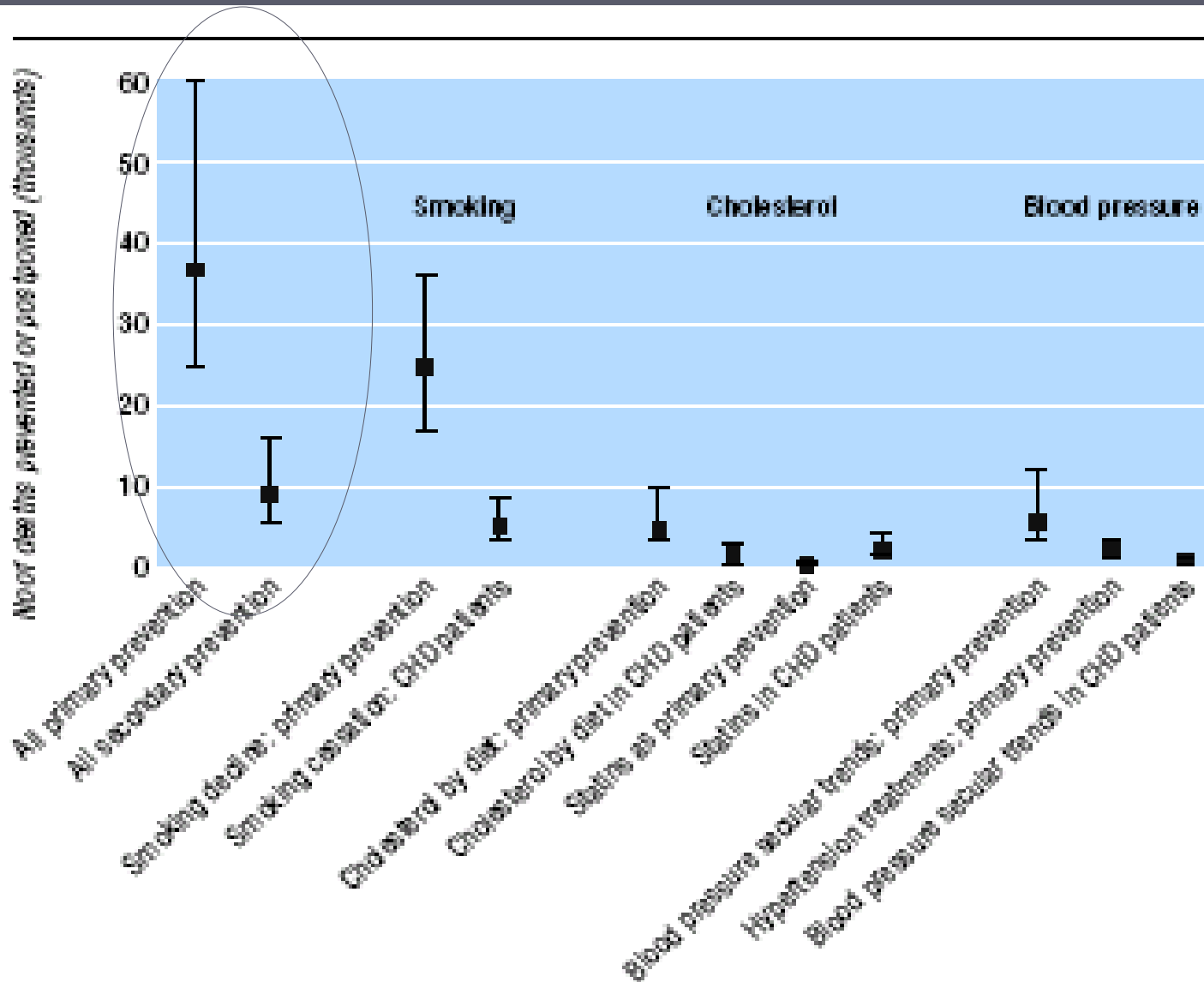
Unal et al, BMJ, 2005; 331:614

Numbers of deaths prevented or postponed* by reductions in risk factors: relative contributions from primary prevention and secondary prevention, by age and sex.
Values are numbers (percentages)

	25-34	35-44	45-54	55-64	65-74	75-84
Men						
Overall	85	815	3 635	7 750	10 835	10 320
Secondary prevention	10 (11.8)	115 (14.1)	545 (15.0)	1 460 (18.9)	1 875 (17.3)	1 485 (14.4)
Primary prevention	75 (88.2)	705 (86.5)	3 090 (85.0)	6 285 (81.1)	8 960 (82.7)	8 835 (85.6)
Women						
Overall	10	95	510	2 400	5 085	3 835
Secondary prevention	5 (50.0)	35 (36.8)	175 (34.3)	560 (23.3)	1 120 (22.0)	1 365 (35.6)
Primary prevention	5 (50.0)	60 (63.2)	335 (65.7)	1 840 (76.7)	3 970 (78.0)	2 470 (64.4)

Falls in coronary heart disease mortality attributable to changes in risk factors in people with and without recognised coronary heart disease in England and Wales, 1981-2000 (best estimate, with minimum and maximum estimates). CHD=coronary heart disease
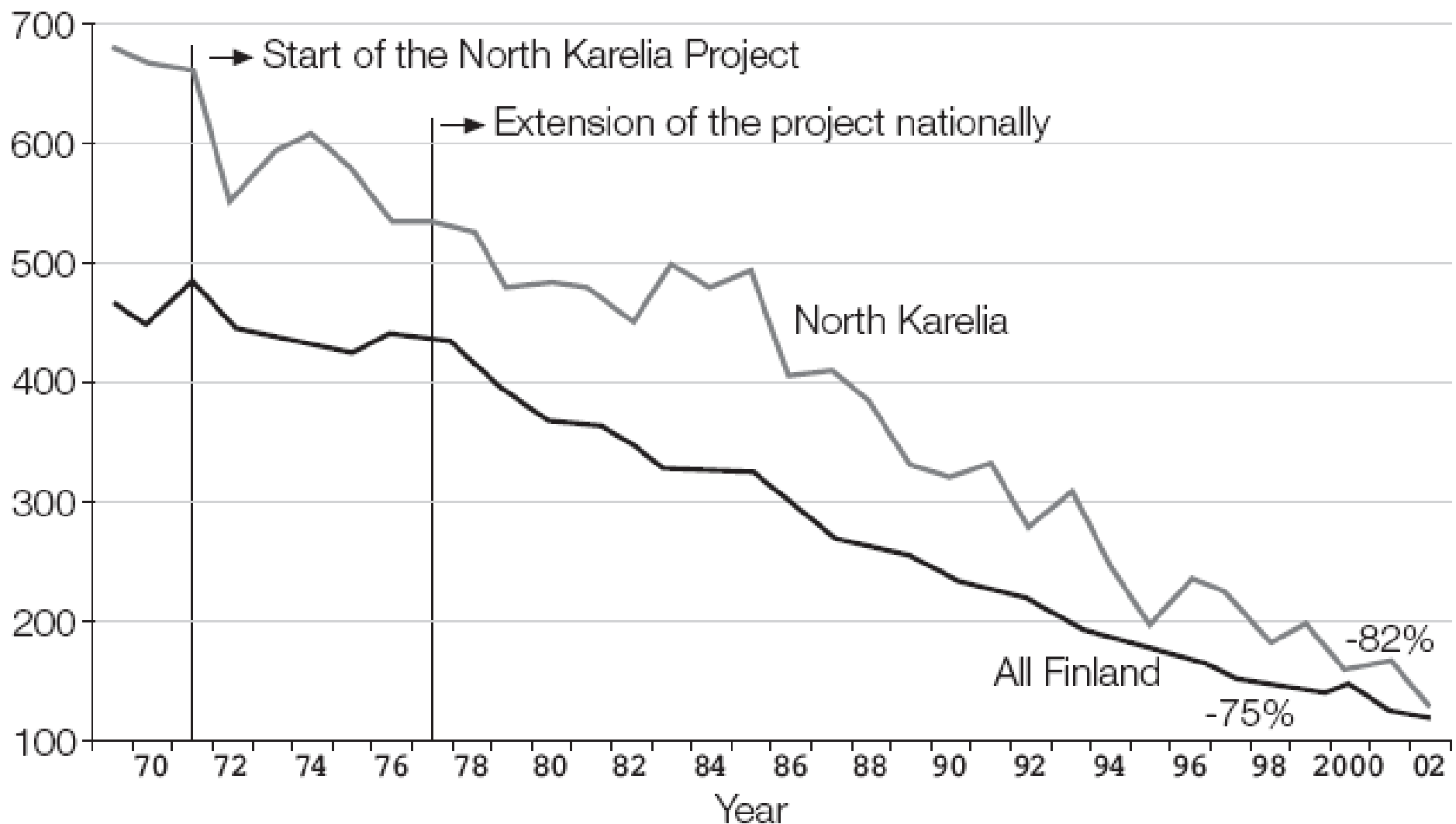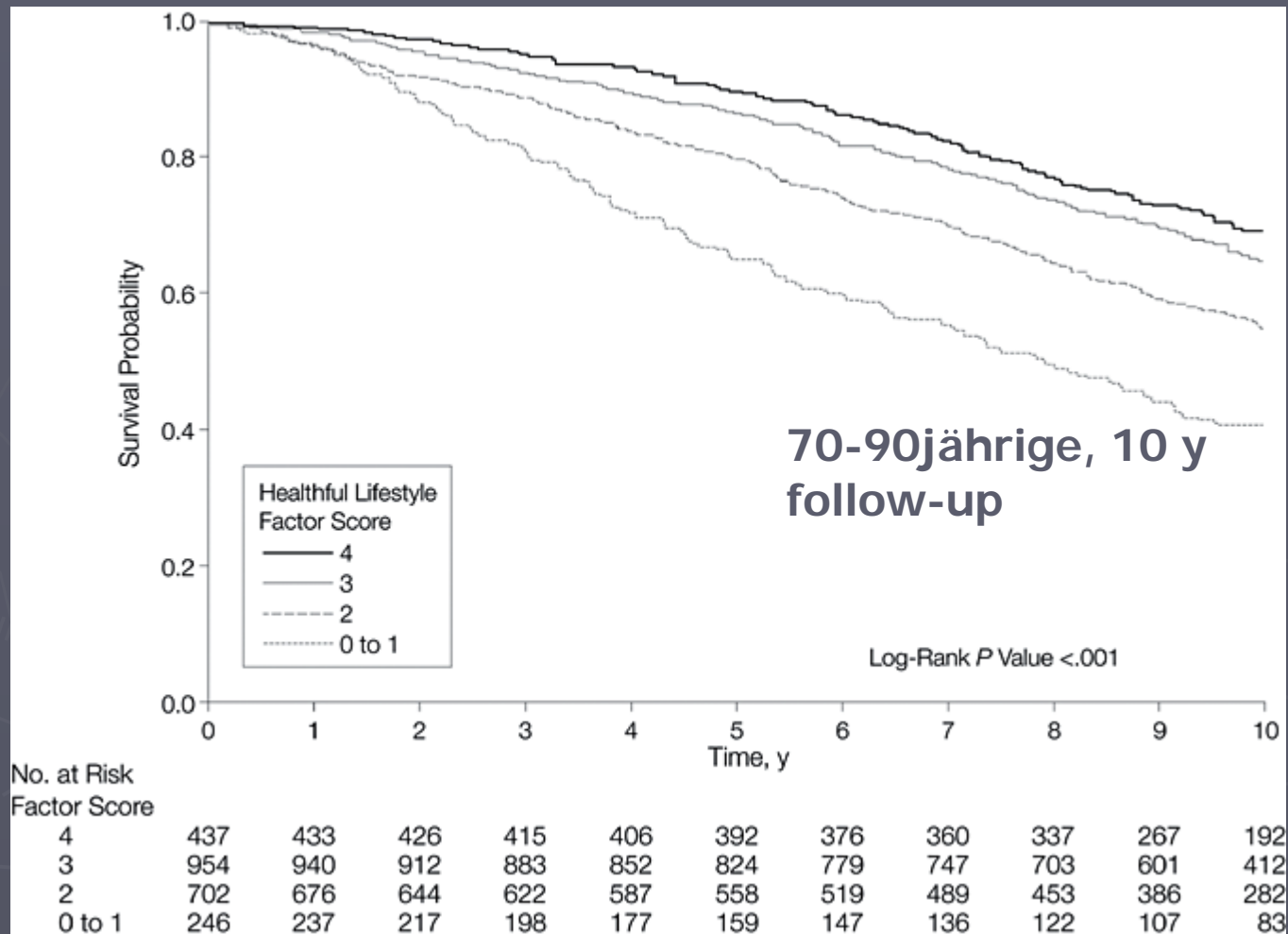
► Primary Prevention had an almost fourfold bigger impact on mortality (CHD) than did secondary prevention for dietary based cholesterol reduction

► Primary prevention had a 10-fold bigger impact through blood pressure reduction

► Approximately half the recent large falls in CHD deaths in England and Wales can be attributed to primary prevention:

  ▪ *reductions in the three major risk factors (smoking, cholesterol, blood pressure) in people without recognised CHD*

Unal B, et al BMJ, 2005; 331:614

Coronary heart disease mortality changes in the North Karelia province and the whole of Finland from 1970 to 2002 in men aged 35–64 years

Start of the North Karelia Project

Extension of the project nationally

North Karelia

All Finland

-82%

-75%

Ståhl T, Wismar M, et al. Health in all Policies: Prospects and Potentials. Finnish Ministry of Social Affaisr and Health. 2006

Mediterranean Diet, lifestyle factors, 10-y mortality in elderly european men and women

70-90jährige, 10 y follow-up

Log-Rank P Value <.001

Healthful Lifestyle Factor Score
— 4
— 3
-- 2
···· 0 to 1

No. at Risk Factor Score											
4	437	433	426	415	406	392	376	360	337	267	192
3	954	940	912	883	852	824	779	747	703	601	412
2	702	676	644	622	587	558	519	489	453	386	282
0 to 1	246	237	217	198	177	159	147	136	122	107	83

Knoops, et al JAMA 2004; 292:1433-1439

Figure. Kaplan-Meier Curves for Number of Healthful Lifestyle Factors
The lifestyle score was calculated by adding the individual scores for diet, physical activity level, smoking status, and alcohol intake. Individuals scored 1 point if they belonged to the low-risk group for diet or a particular lifestyle factor and 0 if they belonged to the high-risk group. In total, an individual could obtain 4 points: 1 point for a Mediterranean diet and 3 points for the healthful lifestyle factors.

Einfluss soziodemographischer Merkmale auf das Gesundheitsverhalten: Männer OR

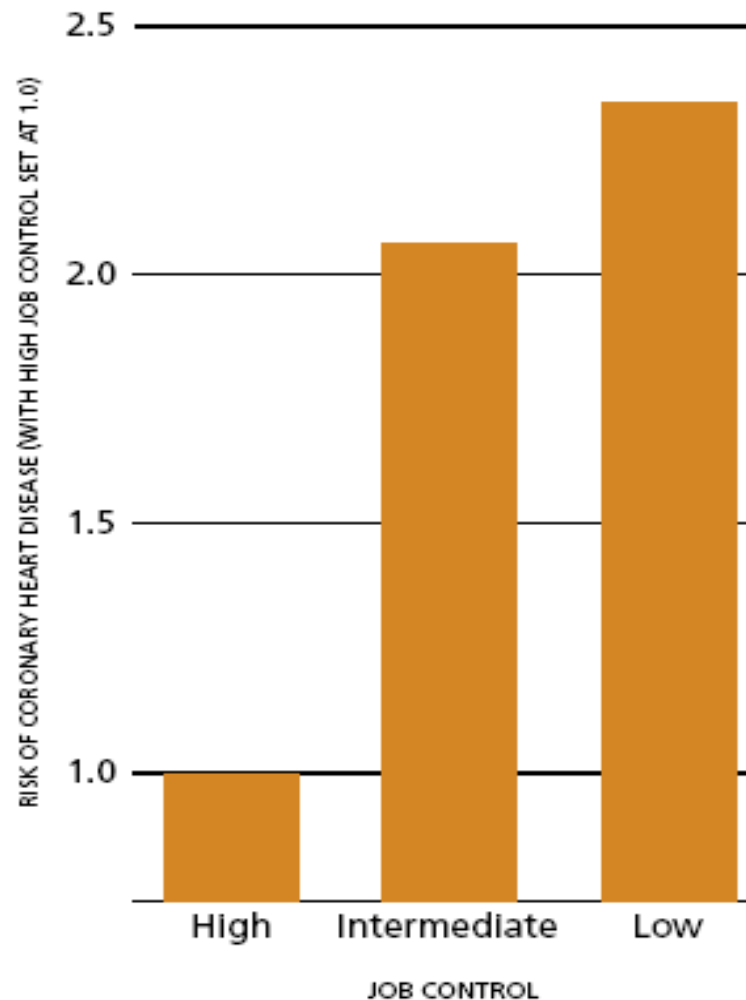|	Fleischreiche Ernährung	zuckerreiche Getränke	Bewegungsarmer Lebensstil	Rauchen
Bildung				
Pflichtschule	1	1	1	1
Lehre	1.02	0.77***	0,7***	0.91
BMS	0.91	0.88	0,7***	0.76**
AHS/BHS	0.78**	0.52***	0,73***	0.47***
Uni	0.67***	0.44***	0,71***	0.45***
Berufsklasse				
Angestellter	1	1	1	1
Arbeiter	1.26***	1.53***	1.38***	1.32***
Selbständig	0.9	1.05	1.21**	1.02
Landwirt	1.7***	2.48***	1.37**	0.53***
Andere	0.69**	1.15	1	0.66**

Einfluss soziodemographischer Merkmale auf das Gesundheitsverhalten: Frauen OR

	Fleischreiche Ernährung	zuckerreiche Getränke	Bewegungsarmer Lebensstil	Rauchen
Bildung				
Pflichtschule	1	1	1	1
Lehre	0.84*	0.68***	0.77***	0.92
BMS	0.62***	0.52***	0.78***	0.68***
AHS/BHS	0.52***	0.41***	0.58***	0.55***
Uni	0.38***	0.38***	0.63***	0.51***
Berufsklasse				
Angestellter	1	1	1	1
Arbeiter	1.09	1.41***	1.15**	1.07
Selbständig	1.13	0.84	1.08	1.25*
Landwirt	1.97***	2.28 ***	0.89	0.24***
Andere	0.7**	1.23	1.53***	0.45***

Social Determinants of Health

Self-reported level of job control and incidence of coronary heart disease in men and women

Adjusted for age, sex, length of follow-up, effort/reward imbalance, employment grade, coronary risk factors and negative psychological disposition

WilkinsonR & Marmot M. The Solid Facts. Second edition. WHO 2003

60 Jahre Framingham Study..

► In October 2007 data from approximately 9000 Framingham participants, not only extensive phenotype data but also 500.000 single nucleotide polymorphisms from a whole-genom scan on each individual, became accessible to the scientific community..........

► ...the long-term contribution to science and public health will be seen......

...A New Era of Cardovascular Disease Epidemiology
  Psaty, B et al JAMA 2007;

Observational epidemiology—confusing the public?