



Sociální determinanty zdraví u sociálně a zdravotně
znevýhodněných a jiných skupin populace - SODEZZ
(CZ.1.07/2.3.00/20.0063)



Prof. Thomas Kohlmann

**“Subjective Health in Population Studies:
Concepts, Measurement and Social
Determinants”**



evropský
sociální
fond v ČR



EVROPSKÁ UNIE



MINISTERSTVO ŠKOLSTVÍ,
MLÁDEŽE A TĚLOVÝCHOVY



OP Vzdělávání
pro konkurenceschopnost

INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

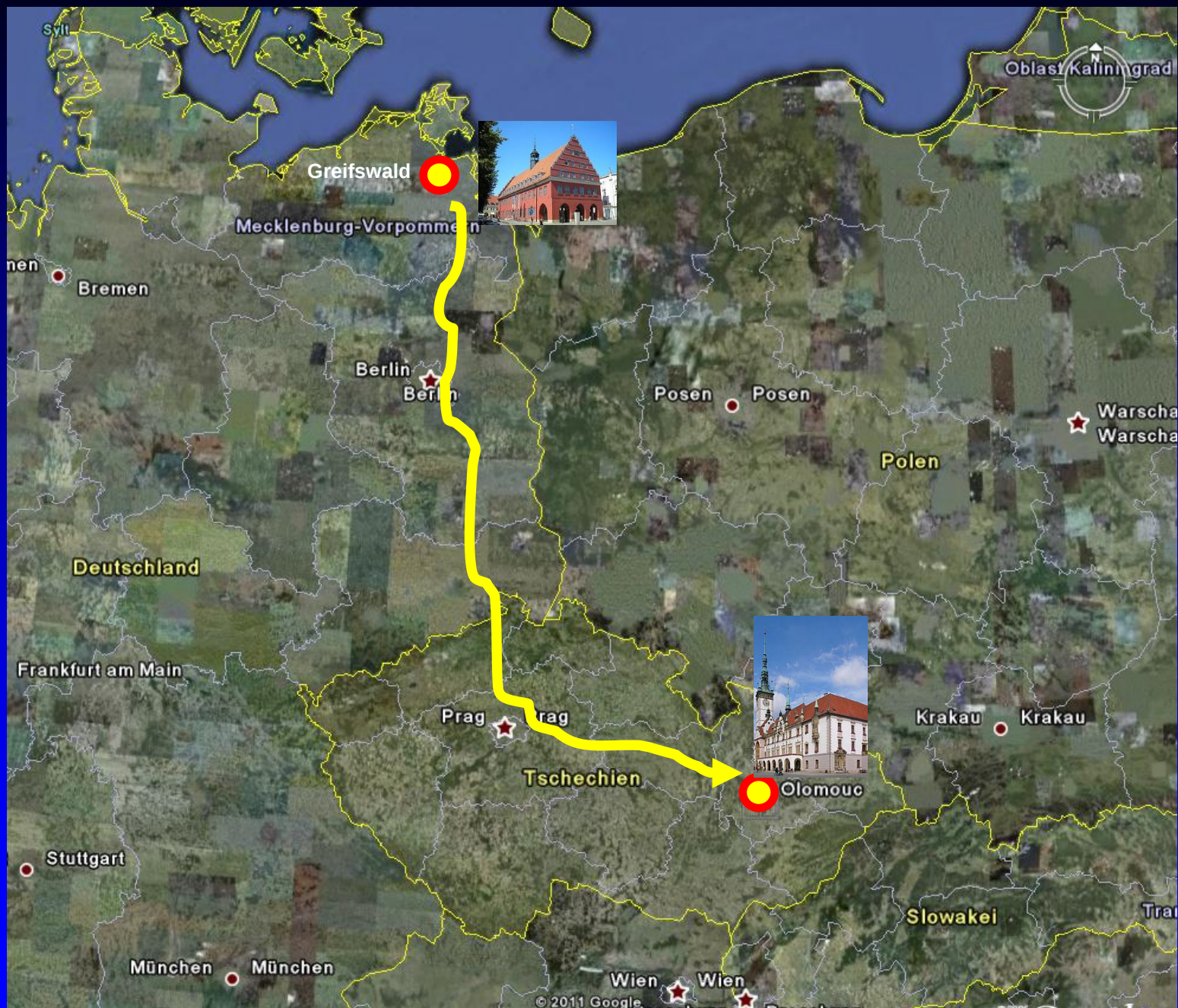
15.12.2011

Sociální determinanty zdraví u sociálně a zdravotně znevýhodněných a jiných skupin populace
Olomouc, 15 December 2011

Subjective Health in Population Studies: Concepts, Measurement and Social Determinants

Thomas Kohlmann

**Institute for Community Medicine
University of Greifswald
Germany**





1

Types and uses of population health indicators

2

Objective and subjective health

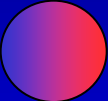
3

How can subjective health be measured?

4

Social determinants of subjective health

Potential uses of population health indicators:

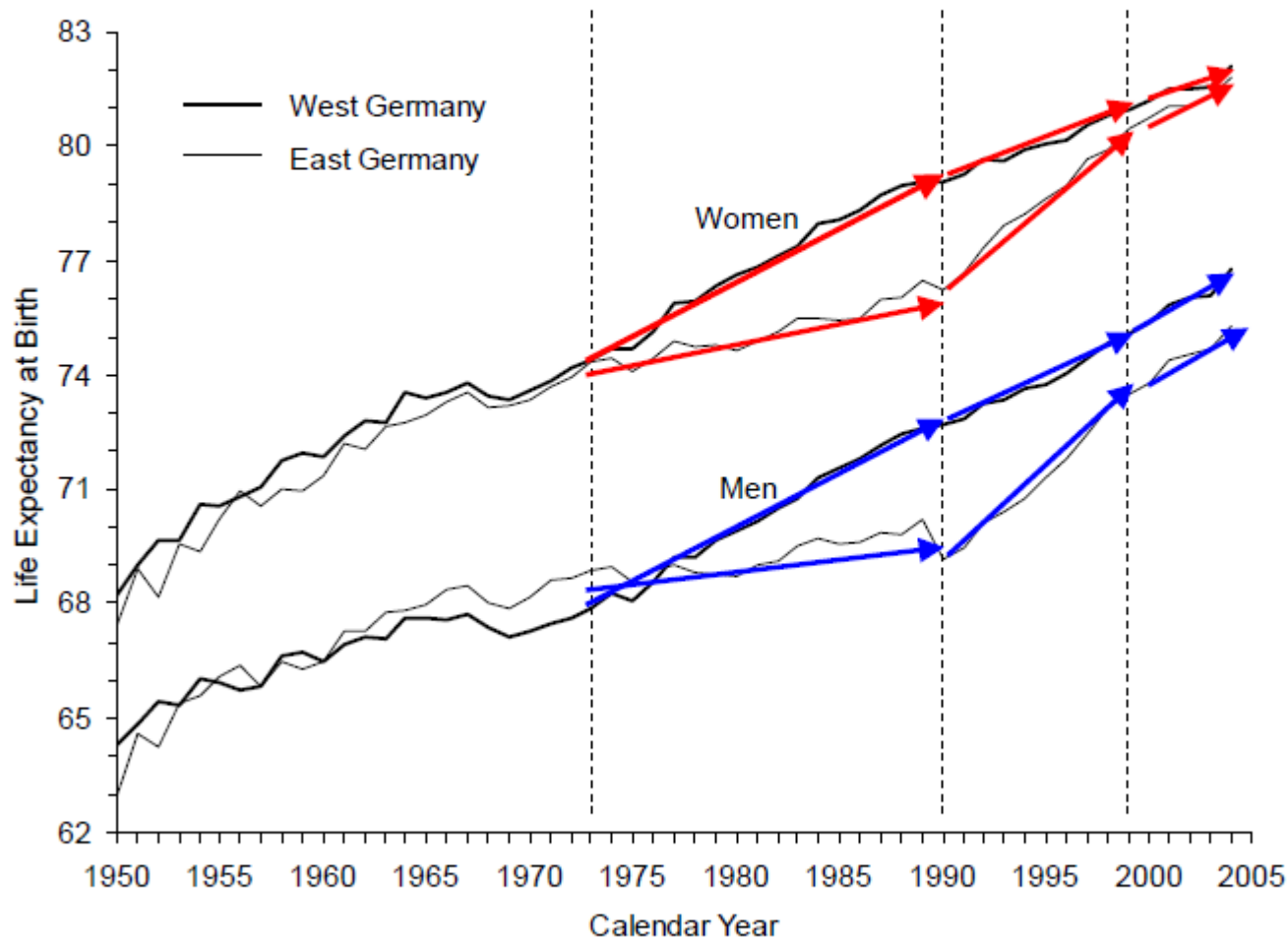
-  Compare population health between countries/regions
-  Monitor trends in population health over time
-  Evaluate the impact of interventions
(on the population level)

Population health indicators

Mortality

- life expectancy
- mortality rates

Trends in life expectancy at birth West and East Germany, 1950-2004



Data: Luy (2004), own calculations

Population health indicators

Mortality

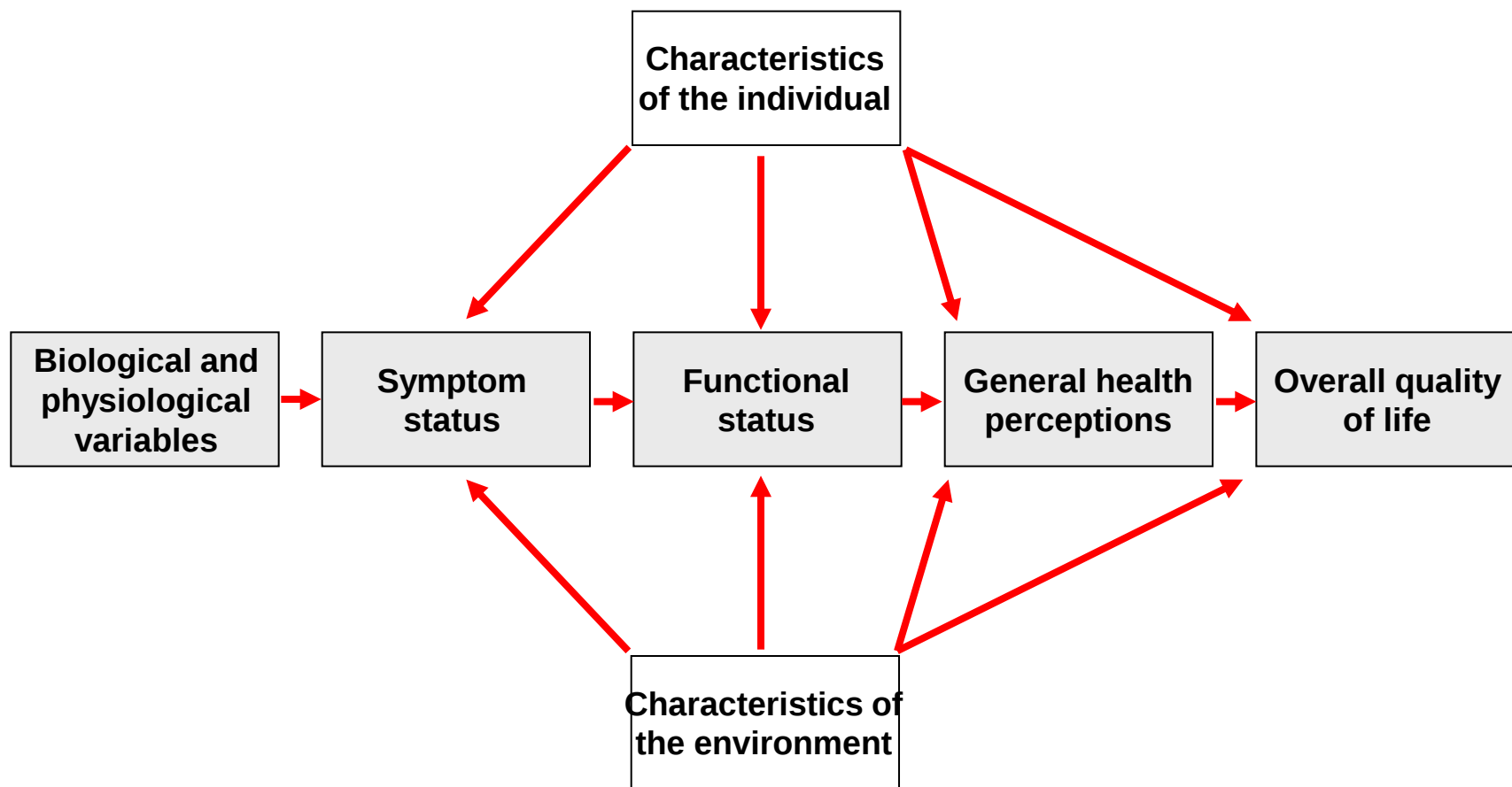
- life expectancy
 - mortality rates
- + available in many countries
 - + often complete coverage
 - +/- validity of diagnoses
 - often no addt'l information
 - causes of mortality $\neq$ morbidity

Morbidity

- epi surveys (examination, interview)
- secondary data

„objective“

„subjective“



r-correlations

Self-Rating

ADL Questionnaire

**Physician
Rating**

0.70

Steinbrocker-Status

**Clinical
Assessment**

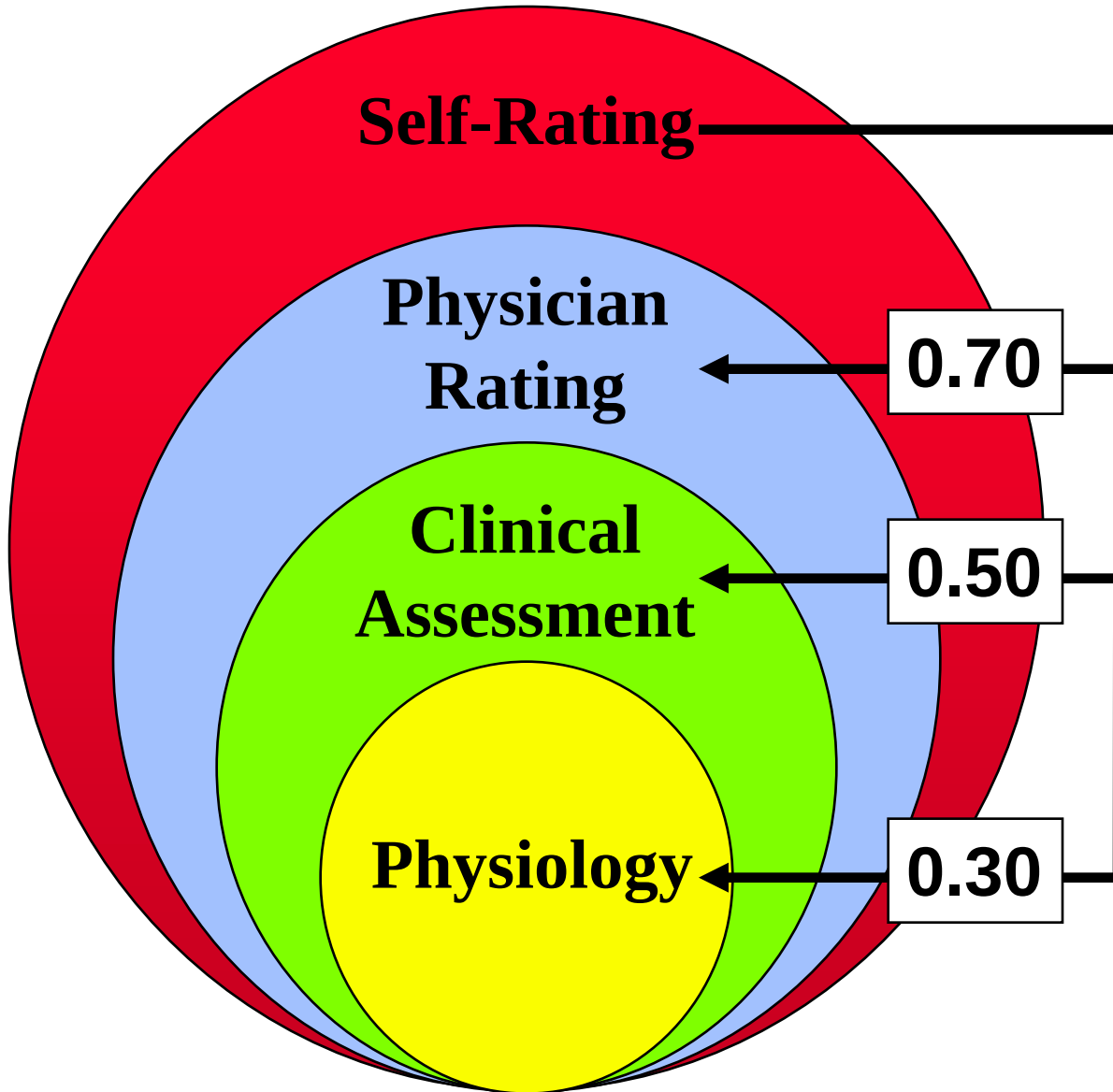
0.50

Joint Count

Physiology

0.30

BSG (ESR)



Why should subjective health be measured?

- „ultimate goal“ of interventions
- objective $\neq$ subjective
- feasible descriptor of health
- prognostic relevance
- health economics

How can subjective health be measured?



Measuring Subjective Health



Face-to-face
Interview

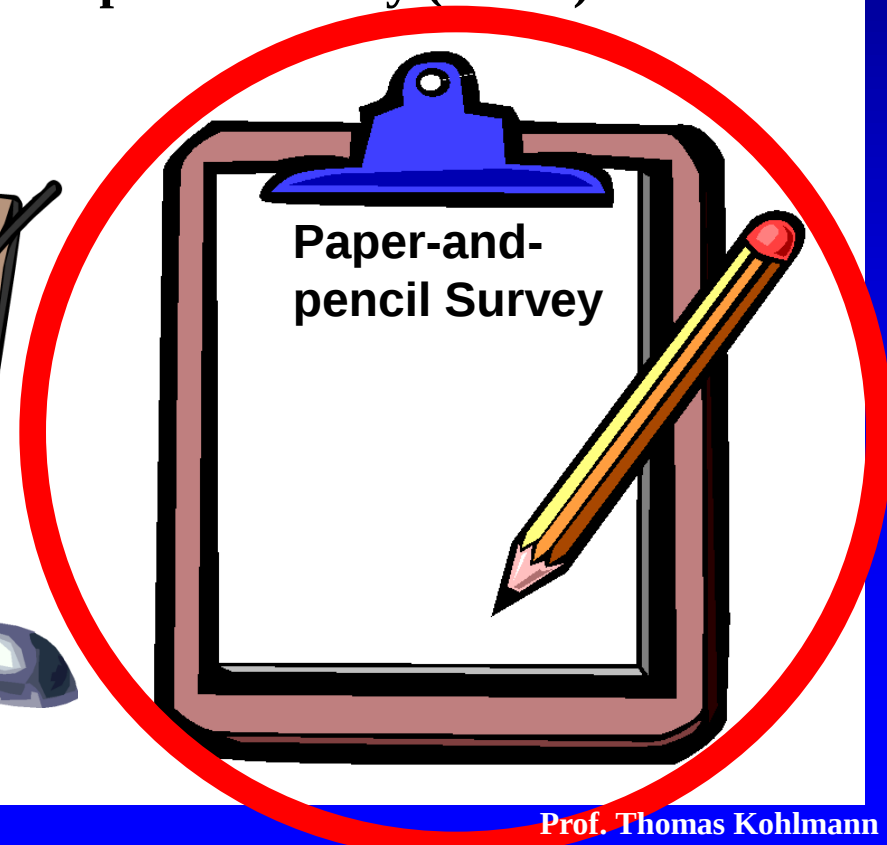


Telephone Survey (CATI)

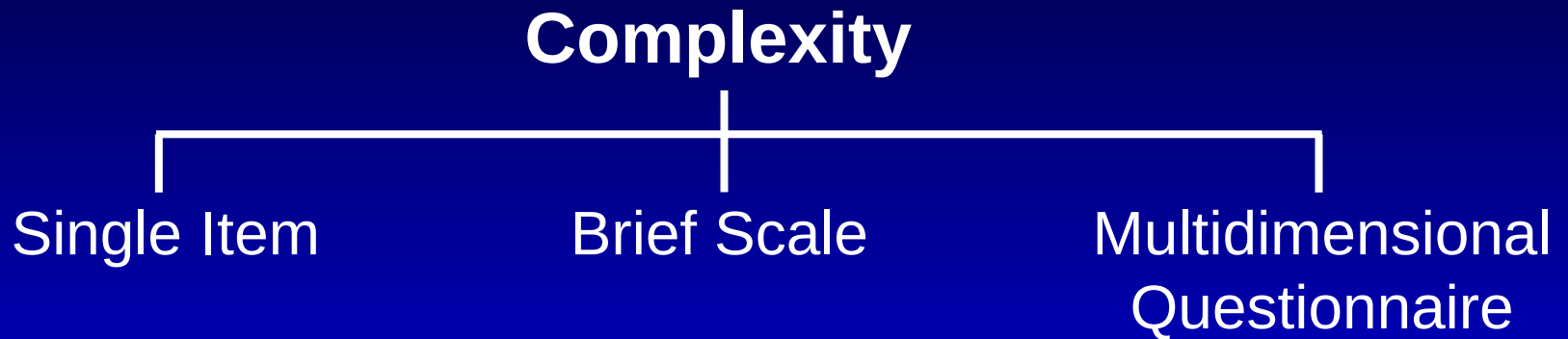


PDA

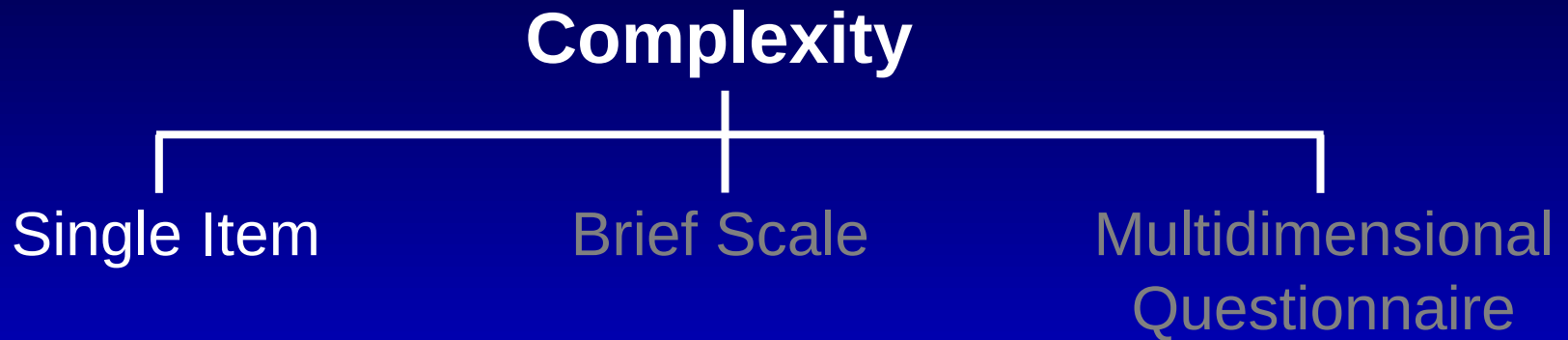
PC / Internet



Types of Subjective Health Measures

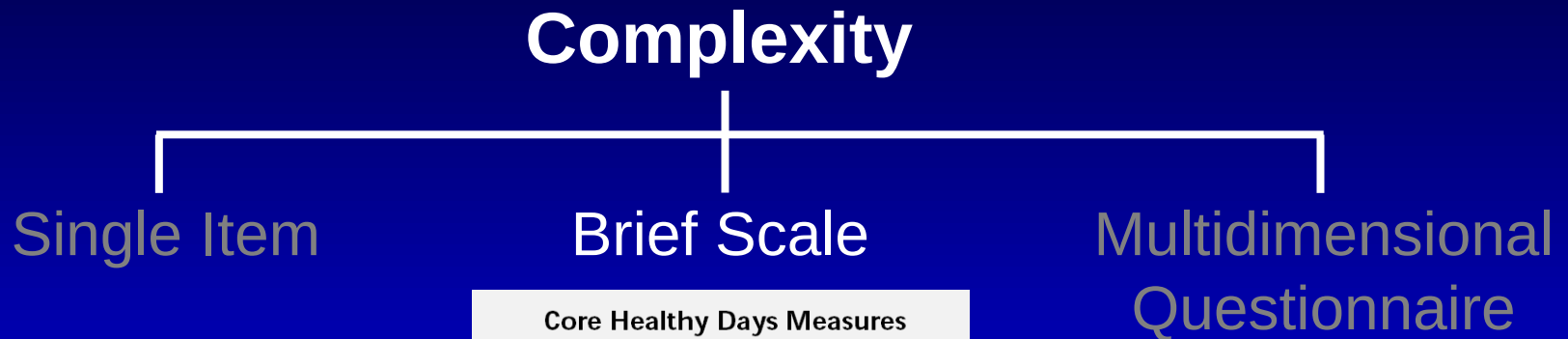


Types of Subjective Health Measures



	Excellent	Very good	Good	Fair	Poor
In general, would you say your health is:	☐	☐	☐	☐	☐

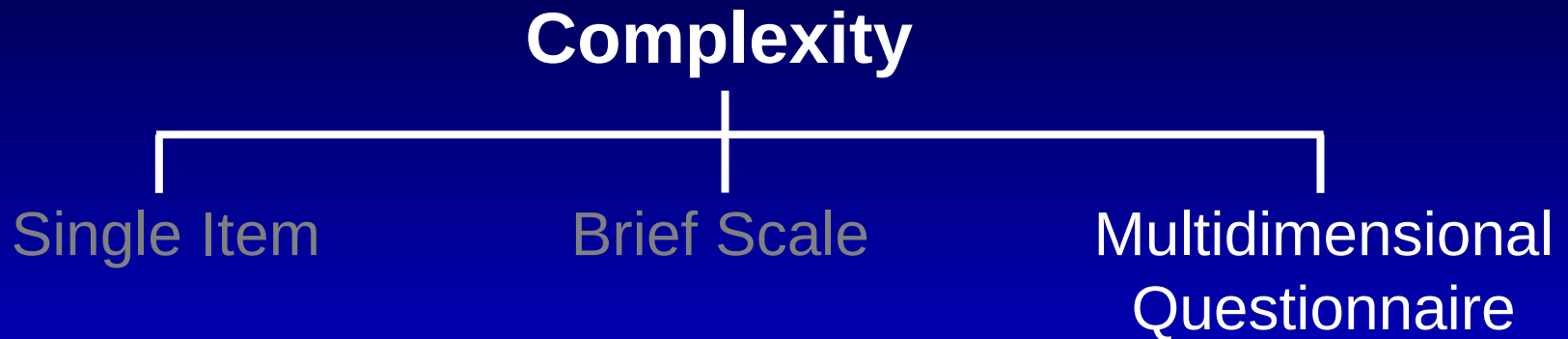
Types of Subjective Health Measures



Core Healthy Days Measures

1. Would you say that in **general** your **health** is excellent, very good, good, fair, or poor?
2. Now thinking about your **physical health**, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?
3. Now thinking about your **mental health**, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?
4. During the past 30 days, for about how many days did poor physical or mental health keep you from doing your **usual activities**, such as self-care, work, or recreation?

Types of Subjective Health Measures





In diesem Fragebogen geht es um die Beurteilung Ihres Gesundheitszustandes. Der Bogen ermöglicht es, im Zeitverlauf nachzuvollziehen, wie Sie sich fühlen und wie Sie im Alltag zurechtkommen.

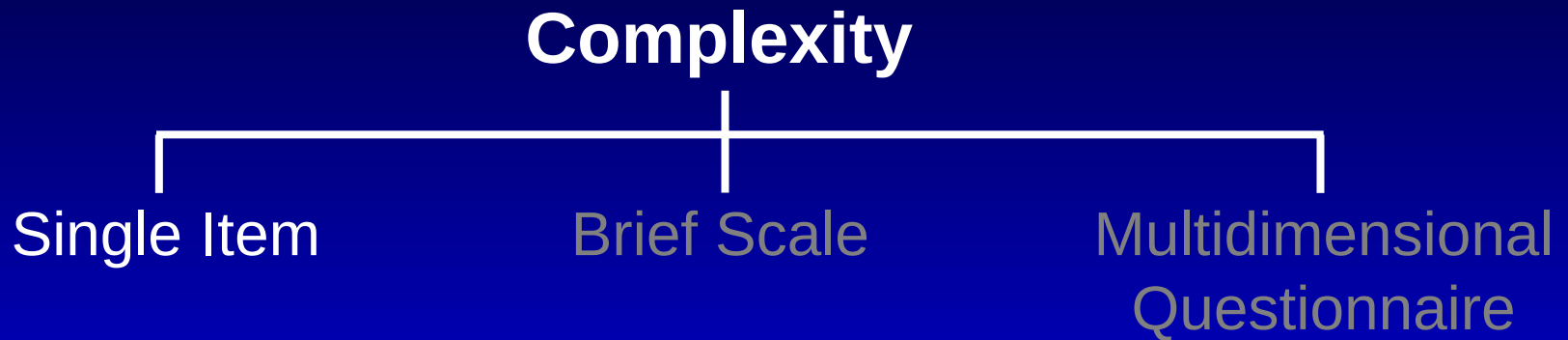
Bitte beantworten Sie jede Frage, indem Sie bei den Antwortmöglichkeiten die Zahl ankreuzen, die am besten auf Sie zutrifft.

	Ausgezeichnet	Sehr gut	Gut	Weniger gut	Schlecht
Wie würden Sie Ihren Gesundheitszustand im Allgemeinen beschreiben?	[1]	[2]	[3]	[4]	[5]
	Derzeit viel besser	Derzeit etwas besser	Etwa wie vor einer Woche	Derzeit etwas schlechter	Derzeit viel schlechter
Im Vergleich zum vergangenen Jahr, wie würden Sie Ihren derzeitigen Gesundheitszustand beschreiben?	[1]	[2]	[3]	[4]	[5]

Im folgenden sind einige Tätigkeiten aufgeführt, die Sie vielleicht an einem normalen Tag ausüben. Sind Sie durch Ihren derzeitigen Gesundheitszustand bei diesen Tätigkeiten eingeschränkt? Wenn ja, wie stark?

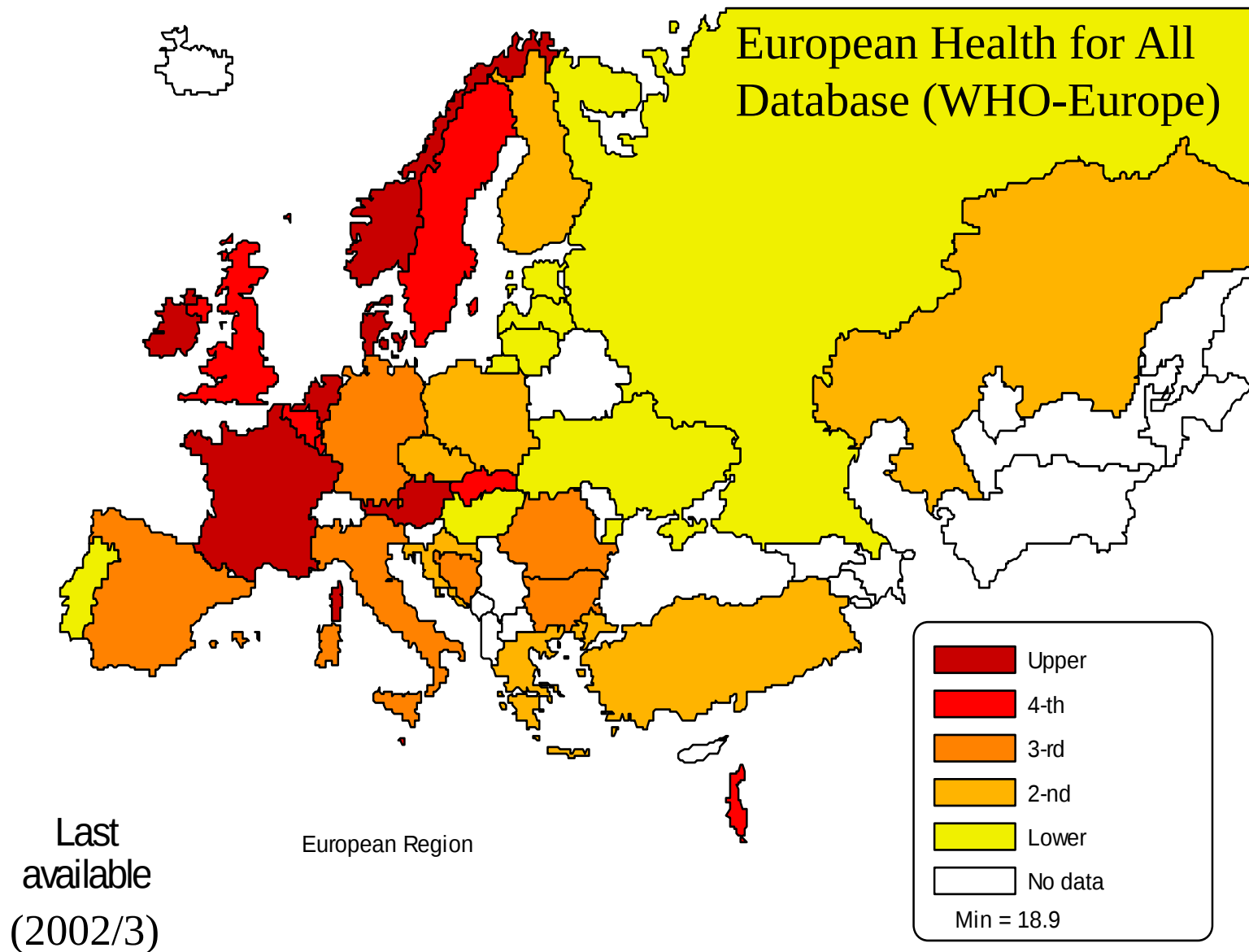
	Ja, stark eingeschränkt	Ja, etwas eingeschränkt	Nein, überhaupt nicht eingeschränkt
a. anstrengende Tätigkeiten, z.B. schnell laufen, schwere Gegenstände heben, anstrengenden Sport treiben	[1]	[2]	[3]
b. mittelschwere Tätigkeiten, z.B. einen Tisch verschieben, staubsaugen, kegeln, Golf spielen	[1]	[2]	[3]
c. Einkaufstaschen heben oder tragen	[1]	[2]	[3]

Types of Subjective Health Measures



	Excellent	Very good	Good	Fair	Poor
In general, would you say your health is:	☐	☐	☐	☐	☐

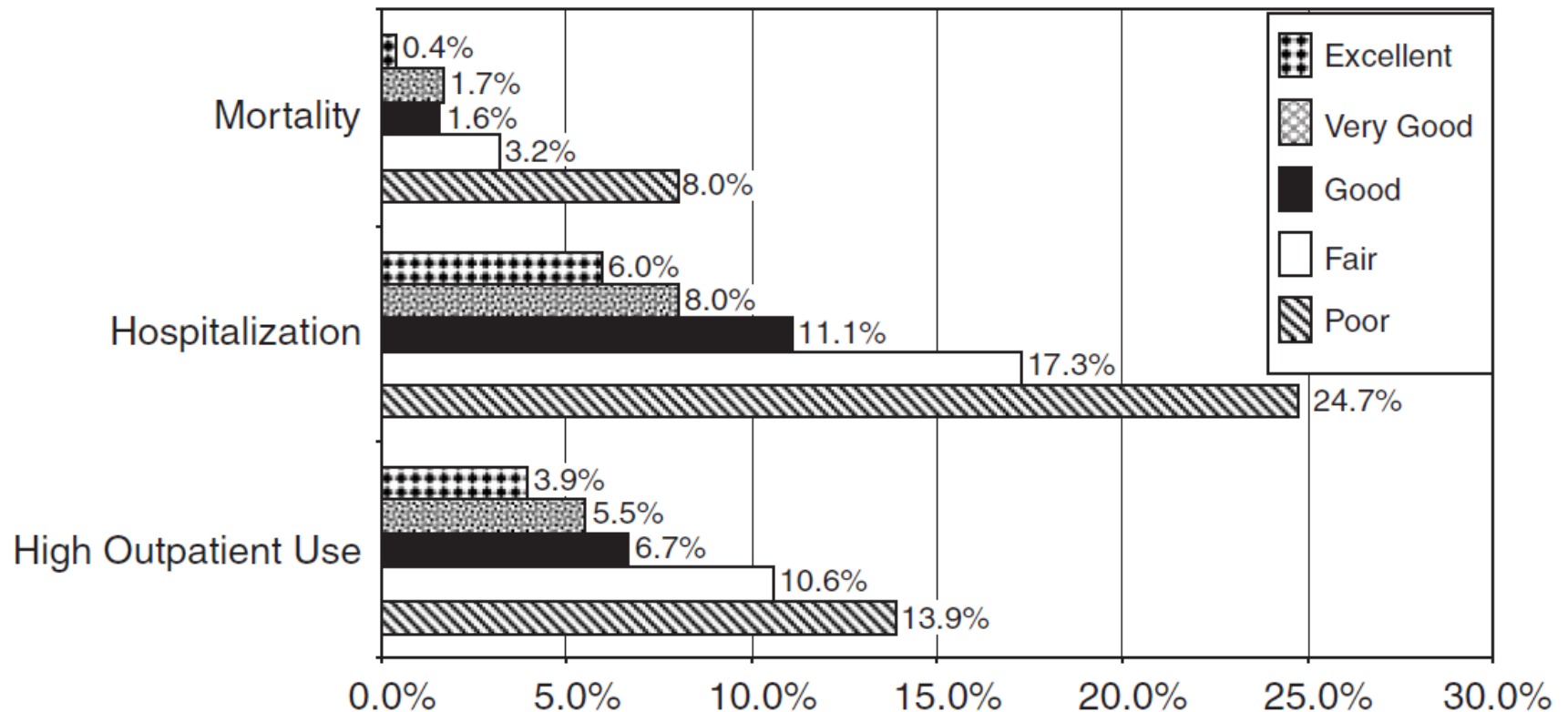
% population self-assessing health as good



DeSalvo et al. 2005

Prospective cohort data from 21,732 VA patients (1 year period)

Figure 1: One-Year Event Rates for Outcomes According to Response Category on a Single-Item General Self-Rated Health Measure



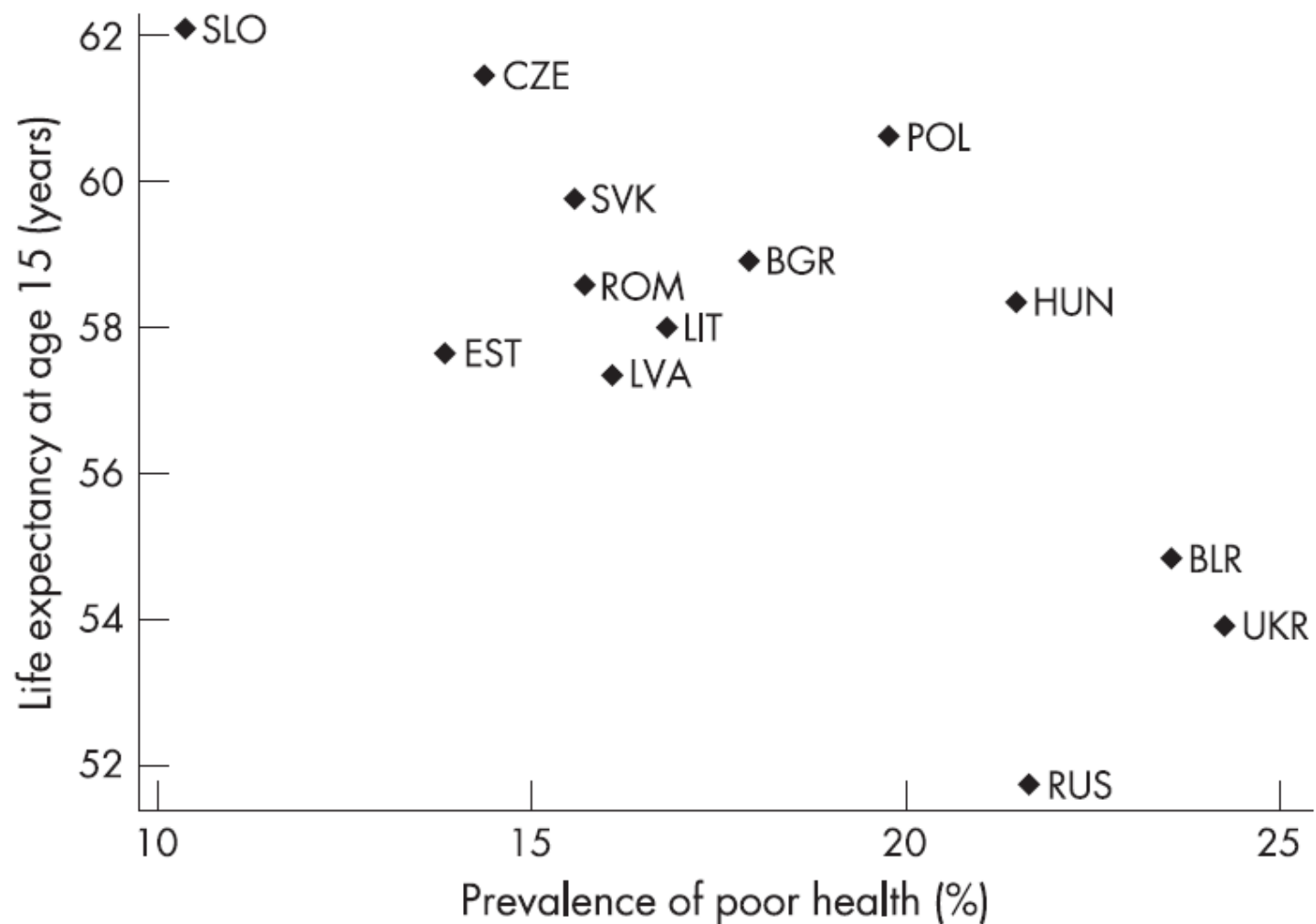
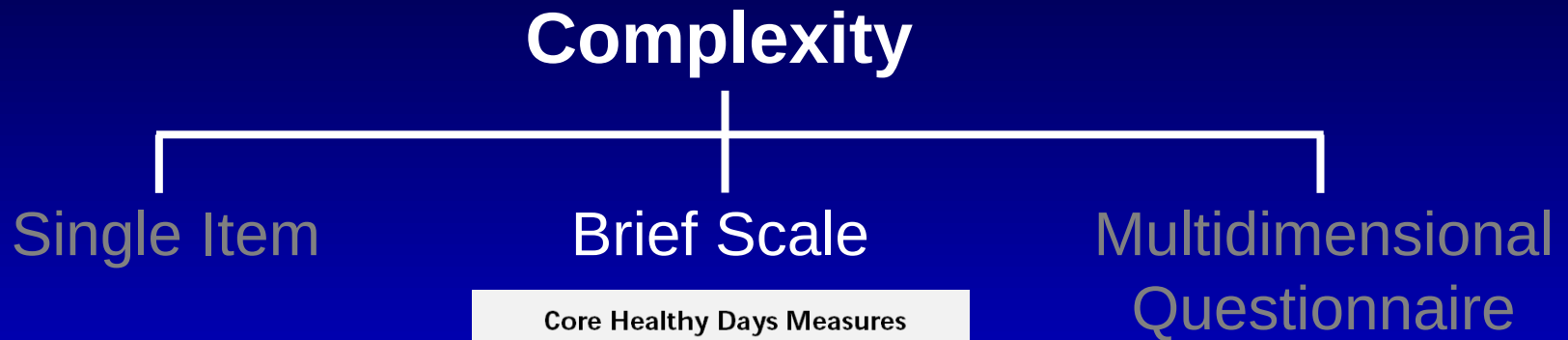


Figure 1 Association between age- and sex-adjusted prevalence of poor self-rated health and life expectancy at age 15 ($r = -0.73$, $p = 0.005$, $n = 13$).

Types of Subjective Health Measures



Core Healthy Days Measures

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Measuring Healthy Days

Population Assessment of Health-Related Quality of Life



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion
Division of Adult and Community Health

November 2000

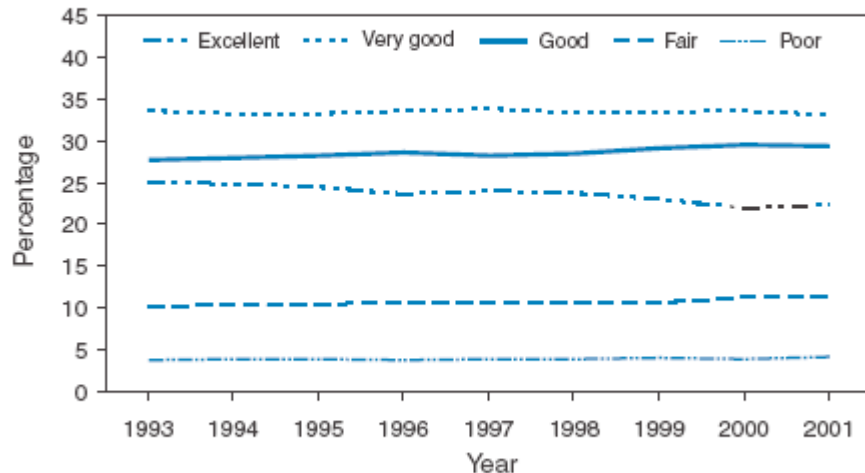


Core Healthy Days Measures

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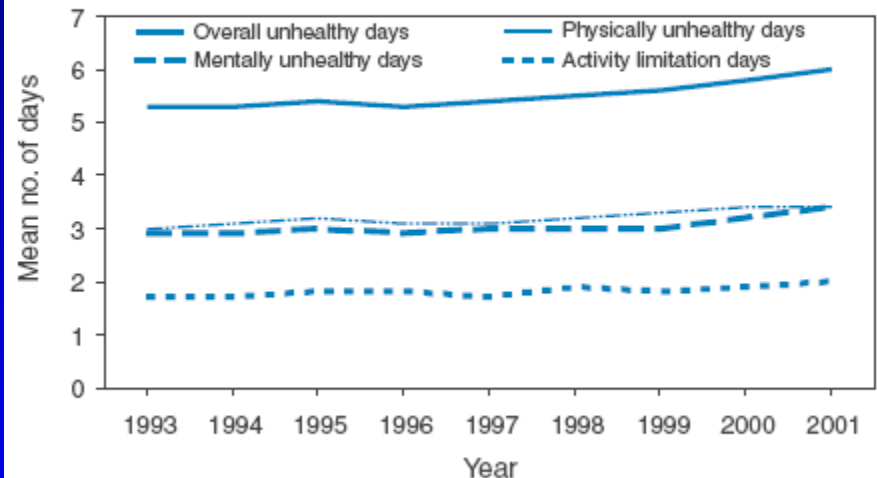
Health-Related Quality of Life Surveillance --- United States, 1993--2002

FIGURE 1. Percentage of adults who self-rated their health status, by year — Behavioral Risk Factor Surveillance System, United States, 1993–2001*



* Age-standardized to the 2000 U.S. standard population.

FIGURE 2. Mean number of unhealthy days and activity limitation days among adults, by year — Behavioral Risk Factor Surveillance System, United States, 1993–2001*

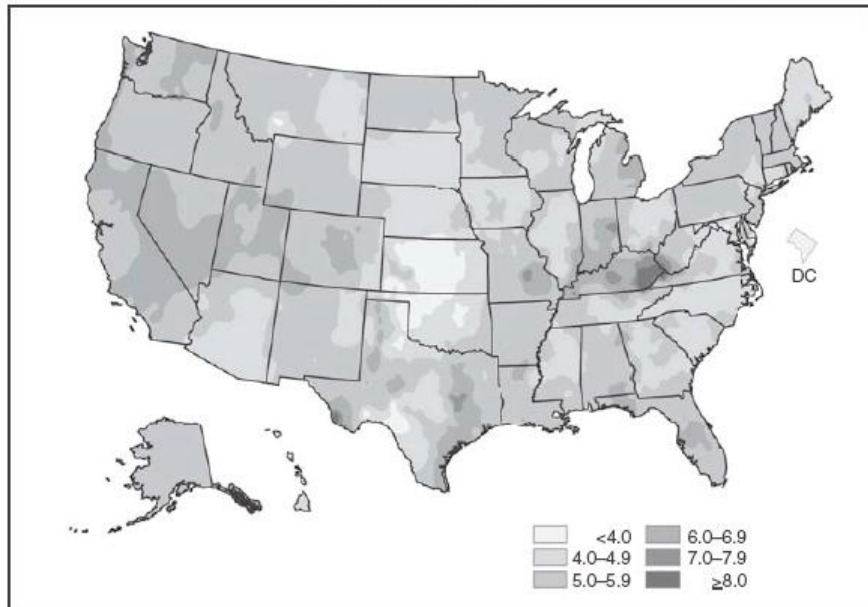


* Age-standardized to the 2000 U.S. standard population.

The findings in this report indicate that, during 1993--2001, the perceived physical and mental health of U.S. adults worsened.

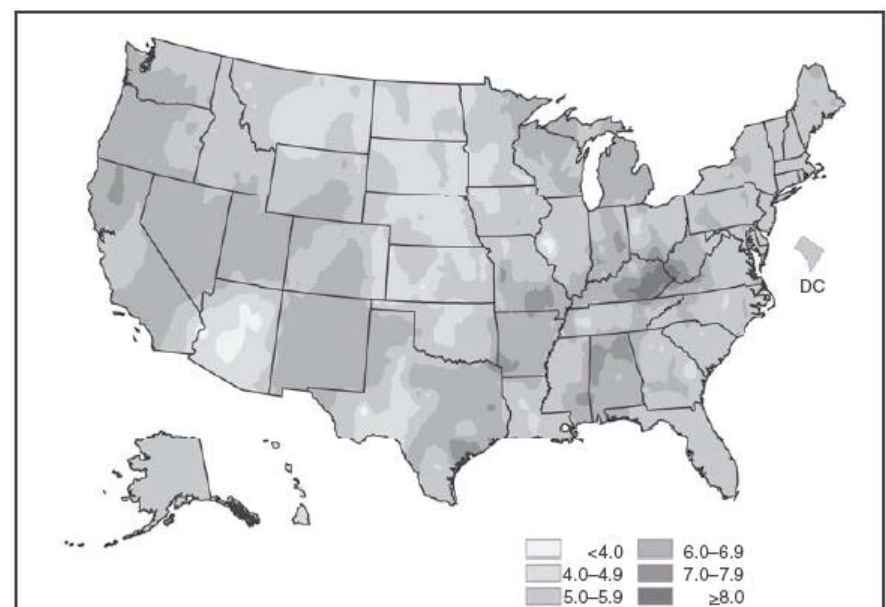
Health-Related Quality of Life Surveillance --- United States, 1993--2002

FIGURE 8. Mean number of overall unhealthy days among adults, by area — Behavioral Risk Factor Surveillance System, United States, 1993–1997*



* Age-standardized to the 2000 U.S. standard population.

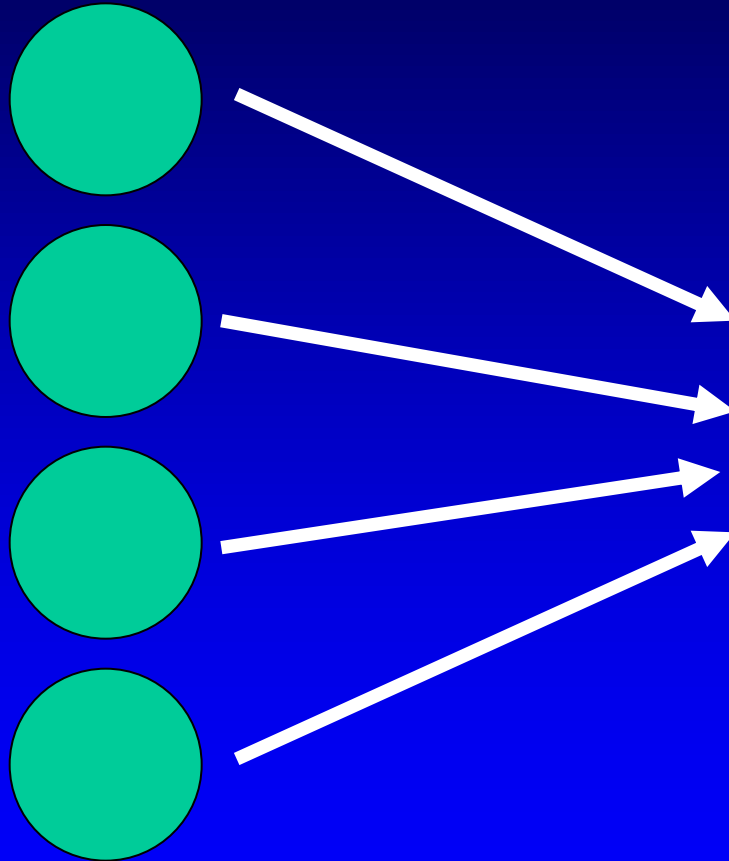
FIGURE 9. Mean number of overall unhealthy days among adults, by area — Behavioral Risk Factor Surveillance System, United States, 1998–2001*



* Age-standardized to the 2000 U.S. standard population.

The percentage of all counties that averaged six or more overall unhealthy days (age-standardized) increased from 29% during 1993--1997 to 42% during 1998--2001.

Predictors of Subjective Health



Core Healthy Days Measures

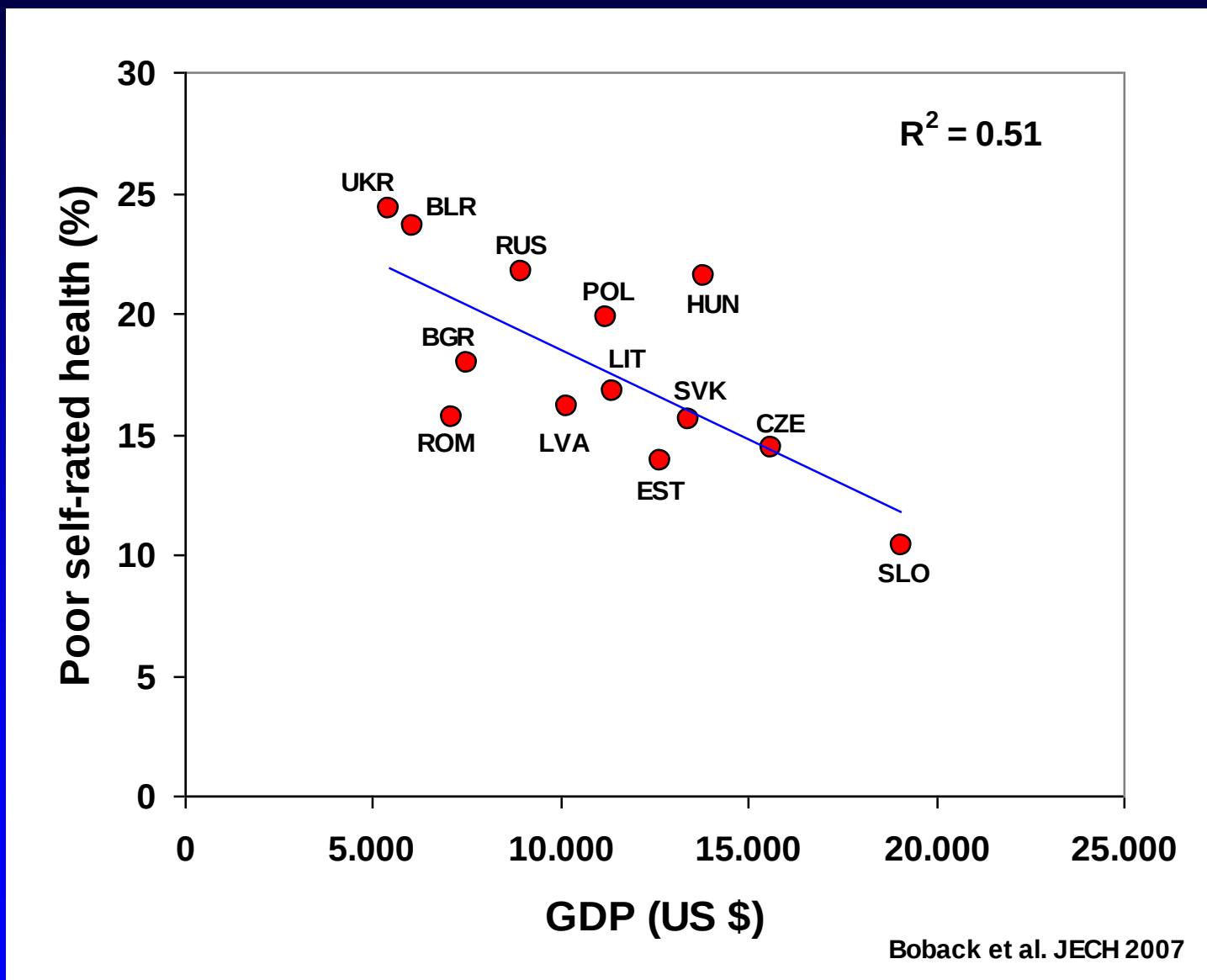
1. Would you say that in **general** your **health** is excellent, very good, good, fair, or poor?
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Table 1: Percentage of good-to-excellent self-rated health, mean unhealthy days, and mean activity limitation days among adults by demographic and health characteristics (age-adjusted*)—Behavioral Risk Factor Surveillance System, 1993–1997

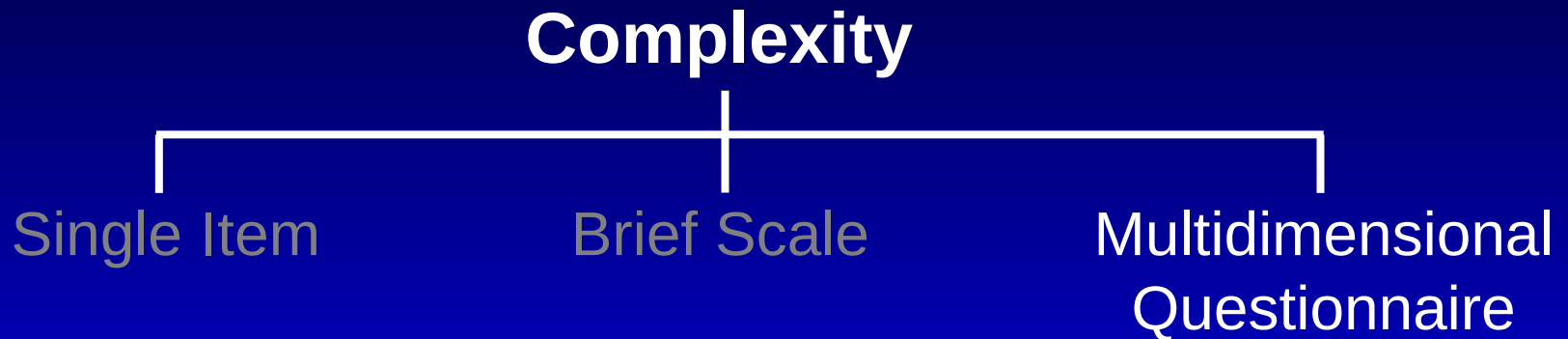
CHARACTERISTIC	COUNT	%GOOD-TO-EXCELLENT HEALTH	MEAN UNHEALTHY DAYS	MEAN ACTIVITY LIMITATION DAYS
Overall	576,367	86.1	5.3	1.7
Sex				
Male	239,094	86.7	4.3	1.6
Female	337,273	85.7	6.0	1.8
Age group				
18-24 yr	53,074	93.5	5.2	1.1
25-34 yr	116,845	93.7	4.7	1.1
35-44 yr	131,184	91.6	5.1	1.4
45-54 yr	93,871	87.1	5.3	1.7
55-64 yr	64,920	79.7	5.6	2.1
65-74 yr	67,469	74.5	5.6	2.2
>= 75 yr	46,458	66.9	6.7	3.0
Self-reported race				
White	492,134	87.2	5.2	1.6
Black	50,877	78.8	5.8	2.2
Asian/Pacific Islander	13,478	87.9	4.2	1.3
American Indian/Alaska Native	7,048	77.6	7.3	2.6
Other	10,985	76.9	6.1	2.1
Ethnicity				
Hispanic	30,610	76.6	5.9	2.0
Non-Hispanic	543,600	86.7	5.2	1.7
Highest grade/year of school completed				
Less than high school	79,505	69.7	7.5	3.0
High school grad	189,372	85.1	5.4	1.7
Some college	157,118	88.8	5.3	1.6
College grad	148,984	93.5	4.0	1.1
Annual household income				
< \$15,000	94,279	72.6	8.2	3.3
\$15,000-\$24,999	108,695	82.8	6.0	2.0
\$25,000-\$34,999	88,475	88.6	4.9	1.4
\$35,000-\$49,999	93,478	91.8	4.3	1.1
≥ \$50,000	115,122	92.2	4.0	1.1
Refused	26,583	89.4	4.1	1.2

	COUNT	%GOOD-TO-EXCELLENT HEALTH	MEAN UNHEALTHY DAYS	MEAN ACTIVITY LIMITATION DAYS
Highest grade/year of school completed				
Less than high school	79,505	69.7	7.5	3.0
High school grad	189,372	85.1	5.4	1.7
Some college	157,118	88.8	5.3	1.6
College grad	148,984	93.5	4.0	1.1
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≥ \$50,000	115,122	92.2	4.0	1.1
Refused	26,583	89.4	4.1	1.2

Association of GDP (\$) with poor subjective health in countries of Central and Eastern Europe



Types of Subjective Health Measures





In diesem Fragebogen geht es um die Beurteilung Ihres Gesundheitszustandes. Der Bogen ermöglicht es, im Zeitverlauf nachzuvollziehen, wie Sie sich fühlen und wie Sie im Alltag zurechtkommen.

Bitte beantworten Sie jede Frage, indem Sie bei den Antwortmöglichkeiten die Zahl ankreuzen, die am besten auf Sie zutrifft.

	Ausgezeichnet	Sehr gut	Gut	Weniger gut	Schlecht
Wie würden Sie Ihren Gesundheitszustand im Allgemeinen beschreiben?	[1]	[2]	[3]	[4]	[5]

	Derzeit viel besser	Derzeit etwas besser	Etwa wie vor einer Woche	Derzeit etwas schlechter	Derzeit viel schlechter
Im Vergleich zum vergangenen Jahr, wie würden Sie Ihren derzeitigen Gesundheitszustand beschreiben?	[1]	[2]	[3]	[4]	[5]

Im folgenden sind einige Tätigkeiten aufgeführt, die Sie vielleicht an einem normalen Tag ausüben. Sind Sie durch Ihren derzeitigen Gesundheitszustand bei diesen Tätigkeiten eingeschränkt? Wenn ja, wie stark?

	Ja, stark eingeschränkt	Ja, etwas eingeschränkt	Nein, überhaupt nicht eingeschränkt
a. anstrengende Tätigkeiten, z.B. schnell laufen, schwere Gegenstände heben, anstrengenden Sport treiben	[1]	[2]	[3]
b. mittelschwere Tätigkeiten, z.B. einen Tisch verschieben, staubsaugen, kegeln, Golf spielen	[1]	[2]	[3]
c. Einkaufstaschen heben oder tragen	[1]	[2]	[3]

Short Form 36 Health Survey / SF-36 (extract)

	Excellent	Very good	Good	Fair	Poor
1. In general, would you say your health is:	☐	☐	☐	☐	☐

•
•
•

3. Does your health now limit you in these activities? If so, how much?	Yes, limited a lot	Yes, limited a little	No, not limited at all
- Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports	☐	☐	☐
- Bending, kneeling, or stooping	☐	☐	☐
- Bathing or dressing yourself	☐	☐	☐

Short-Form (SF-) **36** Questionnaire

- **36 items, different response formats**

- **8 scales**

- **Physical Functioning**
- **Role Function, physical**
- **Social Functioning**
- **Vitality**
- **Psychological Well-Being**
- **Role Function, emotional**
- **Bodily Pain**
- **General Health Perception**

- **2 summary scales (physical: PCS, mental: MCS)**

The Impact of Socioeconomic Status on Health Functioning as Assessed by the SF-36 Questionnaire: The Whitehall II Study

American Journal of Public Health 1997

*Harry Hemingway, BA, MB BChir, MRCP, MSc, MFPHM,
Amanda Nicholson, MB, Mai Stafford, MSc, Ron Roberts, PhD,
and Michael Marmot, MB BS, PhD, FFPHM, FRCP*

TABLE 3—SF-36 Mean Scale Scores by Employment Grade, Adjusted for Age

Grade	No. ^a	General Health Perception	Physical Function	Role: Physical	Pain	General Mental Health	Role: Emotional	Vitality	Social Function
Men									
1 (High)	1272	74.0	93.1	94.0	89.5	77.7	91.9	64.3	93.4
2	1497	72.7	92.9	91.6	87.9	77.5	90.1	63.4	92.1
3	954	73.4	92.4	92.5	87.8	78.2	90.5	64.2	92.0
4	1023	71.7	91.0	90.9	86.8	75.8	88.3	63.0	90.1
5	596	72.0	90.3	90.0	86.4	76.9	86.4	65.6	89.4
6 (Low)	381	69.1	86.3	90.0	83.7	74.9	90.0	64.3	87.1
P for trend		.0001	.0001	.0001	.0001	.0001	.0002	0.5	.0001
Effect size		0.28	0.57	0.48	0.35	0.40	0.33	0.00	0.37
β^b		0.65	1.05	0.76	0.87	0.46	0.78	-0.11	1.08
Women									
1 (High)	154	72.3	89.1	87.5	82.3	73.3	87.4	57.2	85.7
2	249	72.9	89.3	84.8	81.6	75.2	86.9	59.5	91.5
3	202	73.2	85.1	83.4	79.8	73.5	85.9	56.2	88.1
4	383	71.3	85.7	81.0	80.2	73.4	82.7	55.6	85.1
5	574	72.6	85.1	84.8	78.4	73.2	86.2	56.9	86.6
6 (Low)	1004	70.3	80.6	84.3	76.1	73.1	86.4	59.1	83.7
P for trend		.03	.0001	0.6	.0001	.3	.9	.2	.0002
Effect size		0.33	0.45	0.09	0.23	0.01	0.04	-0.09	0.33
β^b		0.54	1.76	0.25	1.26	0.24	0.06	-0.30	1.07

^aMinimum number of observations.

^bRegression coefficient: increase in scale score due to 1 level higher grade.

Health related quality of life among the elderly: a population-based study using SF-36 survey

Qualidade de vida relacionada à saúde em idosos,
avaliada com o uso do SF-36 em estudo de base
populacional

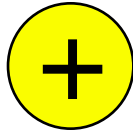
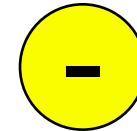
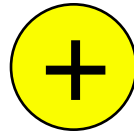
Margareth Guimarães Lima ¹
Marilisa Berti de Azevedo Barros ¹
Chester Luiz Galvão César ²
Moisés Goldbaum ³
Luana Carandina ⁴
Rozana Mesquita Ciconelli ⁵

Cad. Saúde Pública 2009

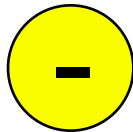
Mean scores, mean differences and confidence intervals (95%) of SF-36 scales according to per capita monthly income and schooling. Multi-Center Health Survey in the State of São Paulo (ISA-SP), 2001-2002.

Scales	Per capita monthly income (in minimum wages)			Crude differences		Adjusted differences *		Crude differences		Adjusted differences *	
	< 1 (1)	1-4 (2)	> 4 (3)	Dif (2)-(1)	p (2)-(1)	Dif (2)-(1)	p (2)-(1)	Dif (3)-(1)	p (3)/(1)	Dif (3)-(1)	p (3)-(1)
Physical functioning	63.7 (60.4-67.1)	72.5 (69.1-75.8)	76.6 (73.6-79.7)	8.7	0.000	9.3	0.000	12.9	0.000	9.7	0.000
Role-physical	72.9 (67.8-78.0)	80.4 (75.5-86.1)	89.9 (86.8-93.1)	7.8	0.027	7.5	0.039	17.0	0.000	14.1	0.000
Bodily pain	69.1 (66.1-72.1)	74.3 (71.4-77.2)	78.9 (75.4-82.4)	5.1	0.010	4.3	0.029	9.7	0.000	5.0	0.060
General health	65.8 (62.8-68.8)	69.7 (67.1-72.3)	74.9 (72.5-77.2)	3.9	0.031	4.2	0.018	9.0	0.000	7.7	0.001
Vitality	58.9 (56.1-61.7)	64.6 (61.8-67.5)	69.1 (66.5-71.8)	5.6	0.003	6.2	0.000	10.1	0.000	8.8	0.000
Role-emotional	80.8 (76.4-85.2)	86.2 (82.6-89.8)	91.0 (87.8-94.3)	5.3	0.063	5.8	0.052	10.1	0.000	9.2	0.003
Social functioning	79.7 (75.7-83.8)	86.4 (83.0-89.8)	91.0 (88.6-93.4)	6.6	0.004	7.5	0.001	11.2	0.000	10.4	0.000
Mental health	66.9 (64.2-69.7)	69.3 (67.2-71.4)	74.0 (71.6-76.4)	2.3	0.138	2.3	0.117	7.0	0.000	4.7	0.023

Objective Health



Subjective
Health



	<i>„Satisfaction-Paradox“</i>
<i>„Dissatisfaction-Dilemma“</i>	

ROC analysis for mortality risk prediction

- Subjective health measures & covariates (AUC:0.883)
 - Multi-biomarker panel & age, gender (AUC:0.872)
- Test of the differences in AUC: $P=0.009$

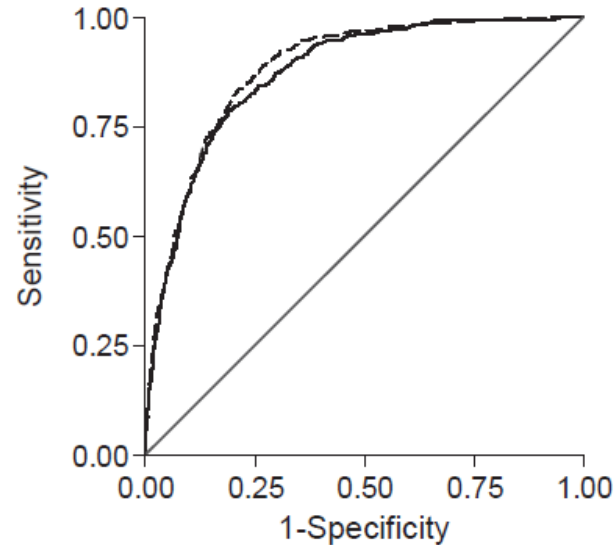


Figure 2 Receiver-operating characteristic (ROC) curves for mortality risk predicted by subjective health measures and covariates vs. multi-biomarker panel. The Cox model including subjective health measures and covariates incorporated age, gender, self-rated health, PCS-12, MCS-12, civil status, educational level, occupational status, equalized income, smoking status, alcohol consumption, physical activity, food consumption, waist circumference, previous history of hypertension, myocardial infarction, stroke, and diabetes mellitus vs. a multi-biomarker panel including age, gender, high sensitive C-reactive protein, fibrinogen, glycated hemoglobin, total cholesterol, triglycerides, glomerular filtration rate, albumin, gamma glutamyltransferase, thyrotropin, and insulin-like growth factor-I.

RESEARCH ARTICLE

Open Access

Self-perceived quality of life predicts mortality risk better than a multi-biomarker panel, but the combination of both does best

Robin Haring^{1,2*}, You-Shan Feng², Jörn Moock², Henry Völzke², Marcus Dörr³, Matthias Nauck¹, Henri Wallaschofski^{1†} and Thomas Kohlmann^{2†}

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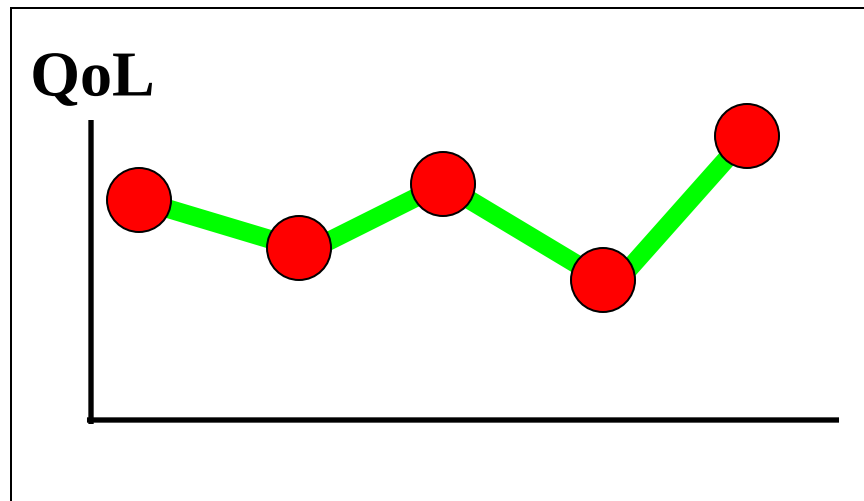


**Thank you very much
for your attention!**

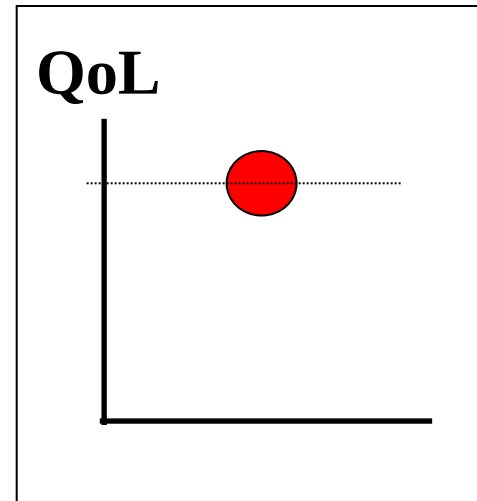
Lebensqualitätsmessung

in der Gesundheitsökonomie

PROFIL



INDEX



QALYs

EuroQol EQ-5D Questionnaire

By placing a check-mark in one box in each group below, please indicate which statements best describe your own state of health today.

Mobility

I have no problems in walking about

☐

I have some problems in walking about

☐

I am confined to bed

☐

Pain/Discomfort

I have no pain or discomfort

☐

I have moderate pain or discomfort

☐

I have extreme pain or discomfort

☐

Self-Care

I have no problems with self-care

☐

I have some problems washing or dressing myself

☐

I am unable to wash or dress myself

☐

Anxiety/Depression

I am not anxious or depressed

☐

I am moderately anxious or depressed

☐

I am extremely anxious or depressed

☐

Usual Activities (*e.g. work, study, housework, family or leisure activities*)

I have no problems with performing my usual activities

☐

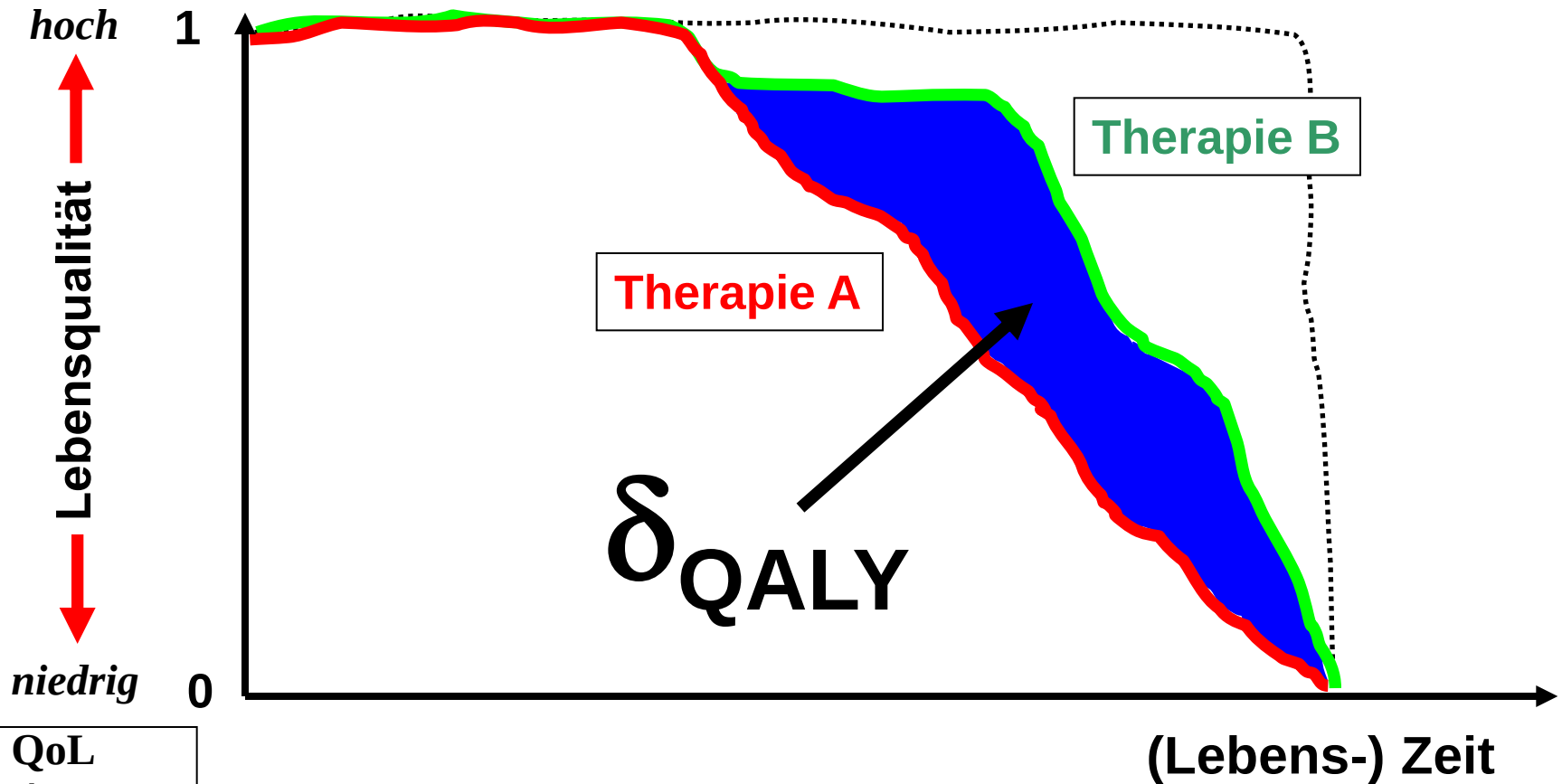
I have some problems with performing my usual activities

☐

I am unable to perform my usual activities

☐

QALYs*) verbinden Lebensqualität (Index) und Lebenszeit



*) „Quality Adjusted Life Years“

Table 2 Odds ratios (and 95% confidence intervals in parentheses) for relationship of adolescent disadvantage and leisure-time physical activities with poor self-assessed health at age 33 for men and women in the NCDS and at age 30 in the BCS70

	Model 1	Model 2	Model 3	Model 4	Model 5
NCDS Men					
Physical activities	0.92 (0.88 – 0.97)	0.92 (0.88–0.97)			0.92 (0.87–0.97)
Material disadvantage			1.30 (1.21–1.40)	1.26 (1.17–1.36)	1.27 (1.18–1.37)
Body mass index		1.15 (1.07–1.24)		1.15 (1.07–1.24)	1.15 (1.07–1.24)
Rutter score		1.06 (1.05–1.08)		1.05 (1.04–1.07)	1.05 (1.04–1.07)
BCS70 Men					
Physical activities	0.97 (0.92–1.02)	0.97 (0.93–1.02)			0.98 (0.93–1.03)
Material disadvantage			1.30 (1.21–1.39)	1.24 (1.15–1.33)	1.24 (1.15–1.33)
Body mass index		1.16 (1.05–1.27)		1.15 (1.05–1.27)	1.16 (1.05–1.27)
Rutter score		1.07 (1.05–1.08)		1.06 (1.04–1.08)	1.06 (1.04–1.08)
NCDS Women					
Physical activities	0.93 (0.89–0.98)	0.94 (0.89–0.99)			0.94 (0.89–0.99)
Material disadvantage			1.40 (1.29–1.51)	1.34 (1.24–1.46)	1.34 (1.24–1.46)
Body mass index		1.13 (1.05–1.21)		1.11 (1.04–1.20)	1.12 (1.04–1.20)
Rutter score		1.08 (1.06–1.09)		1.06 (1.04–1.08)	1.06 (1.04–1.08)
BCS70 Women					
Physical activities	0.95 (0.90–1.00)	0.96 (0.90–1.01)			0.96 (0.91–1.02)
Material disadvantage			1.33 (1.24–1.42)	1.26 (1.18–1.36)	1.26 (1.17–1.36)
Body mass index		1.14 (1.06–1.23)		1.14 (1.05–1.23)	1.14 (1.05–1.23)
Rutter score		1.06 (1.04–1.08)		1.05 (1.03–1.07)	1.05 (1.03–1.07)

Overall health

During the past 2 weeks...
How would you rate your health in general?

Excellent	 1
Very good	 2
Good	 3
Fair	 4
Poor	 5

Social activities

During the past 2 weeks...
Has your physical and emotional health limited your social activities with friends, neighbours or groups?

Not at all	 1
Slightly	 2
Moderately	 3
Quite a bit	 4
Extremely	 5



Friedrich Nietzsche

Die fröhliche Wissenschaft The Gay Science 1882

„Denn eine Gesundheit an sich gibt es nicht und alle Versuche ein Ding derart zu definieren sind kläglich mißraten. Es kommt auf Dein Ziel, Deinen Horizont, Deine Kräfte, Deine Antriebe, Deine Irrtümer und namentlich auf die Ideale und Phantasmen Deiner Seele an, um zu bestimmen, was selbst für Deinen Leib Gesundheit zu bedeuten habe“