Allianz,
Qualität vor Kosten Im Gesundheitswesen

Schwedisches register –
Gute Datengrundlage für Verbesserung

Henrik Malchau, MD, PhD

Professor at Harvard Medical School,
Vice Chief (Research), Co-director The Harris Orthopaedic Laboratory
Attending physician, Orthopedics MGH

Swedish Hip Arthroplasty Register

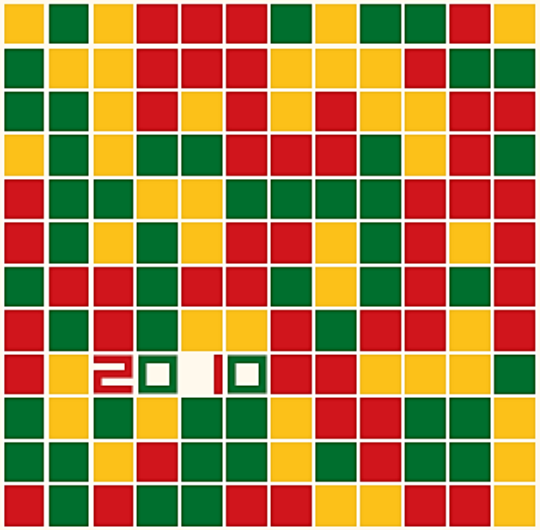
Swedish Association of Local Authorities and Regions

Acknowledgement:

Prof. Göran Garellick, MD, PhD, Göteborg, Sweden
Ass. Prof. Ola Rolfsson, MD, PhD, Göteborg, Sweden
Prof emeritus Peter Herberts, MD, PhD, Göteborg, Sweden

Quality and Efficiency
in Swedish Health Care

Regional Comparisons
2010



Swedish Association of Local Authorities and Regions

Socialstyrelsen
THE NATIONAL BOARD OF HEALTH AND WELFARE

Swedish Association of Local Authorities and Regions

SALAR

Socialstyrelsen
THE NATIONAL BOARD OF HEALTH AND WELFARE

the idea of a national register

…a serious consideration should be given to establishing a central register to keep a finger on the pulse of total implant surgery on a nation-wide basis…

NJR started 2002!

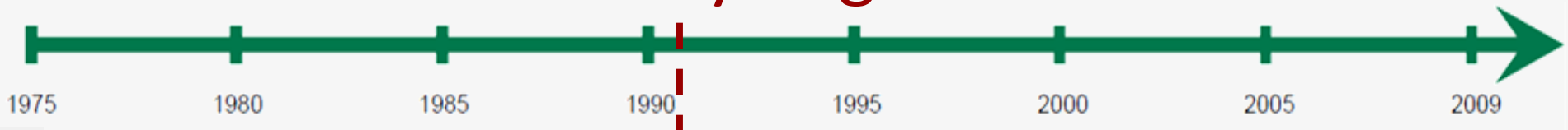
Sir John Charnley 1972

registries in Sweden:

- Knee Arthroplasty 1975
- Hip Arthroplasty 1979
- Hip Fracture 1988
- Vascular Surgery 1988

- 96 other nation-wide medical quality registries 1990 – 2011

National Quality Registries in Sweden



Hip arthoplasty
Knee arthoplasty

Hip fracture
Growth hormone treatment
Vascular surgery

Back surgery
Cardiac arrest
Cataract
Hernia surgery

Stroke

Apheresis
Cornea
Elbow arthoplasty
Gynecological surgery
Shoulder arthoplasty

Eating disorder
Hearth disease
Multiple sclerosis
Otorhinolaryngology
Pain rehabilitation
Prostate cancer
RA
Rectal cancer

Rehabilitation medicine
Maternity welfare

Catheter ablation
Heart failure
Gallstone surgery
Macula
Respiratory failure
Thyroid and parathyroid surgery

Hypophysis
HIV
Leg ulcer

Intensive care

Perinatal

Childhood obesity
Caries & periodontitis
Cruciate ligament
Dental implant
In vitro fertilization
Obesity surgery
Palliative care
Ventral hernia surgery

Asthma
Atrial fibrillation
Blood cancer
Breast cancer
Cardiac arrest
Cerebral palsy
Colon cancer
Dementia
Diabetes
Esophageal & ventricle cancer
Gyn-oncology
Head & neck cancer
Infection diseases
Inflammatory bowel disease
KOL
Liver & gallbladder cancer
PAH
Pancreatic & periampullar cancer
Renal
Swedeheart[1]

Emergent care

Elderly care

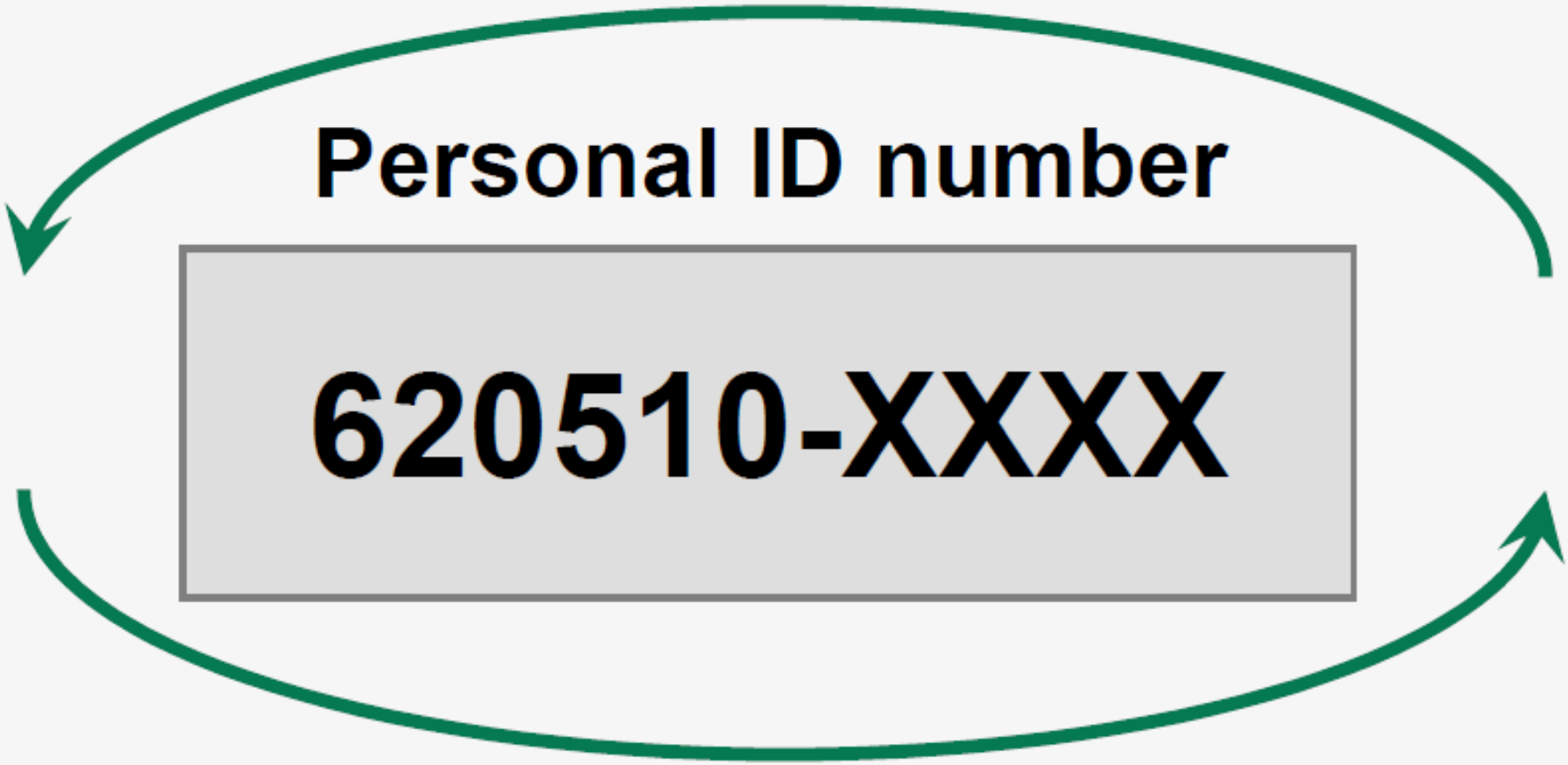
two main categories:

- procedure-specific registries
- condition-specific registries

other nation-wide official registries:

- Cancer Register
- Cause of Death
- Medical Birth Register
- National Patient Register
- The Prescribed Drug Register
- Statistics Sweden

1947



the patient is always traceable

linked databases

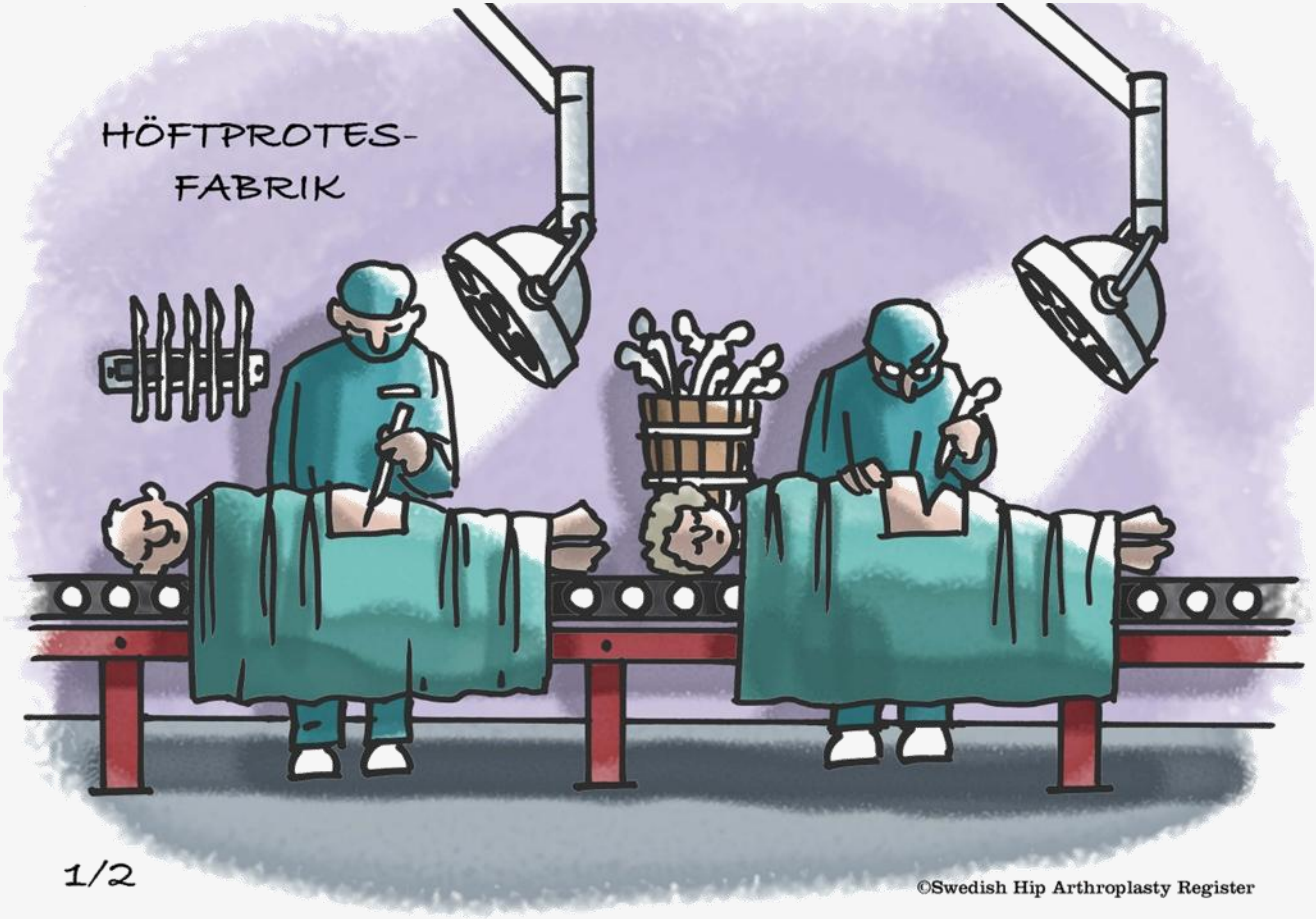
unique databases!

the mission for all registries:

- monitoring of “health care quality”/outcomes
  - local, regional and national
- local analysis and improvement work
- clinical research

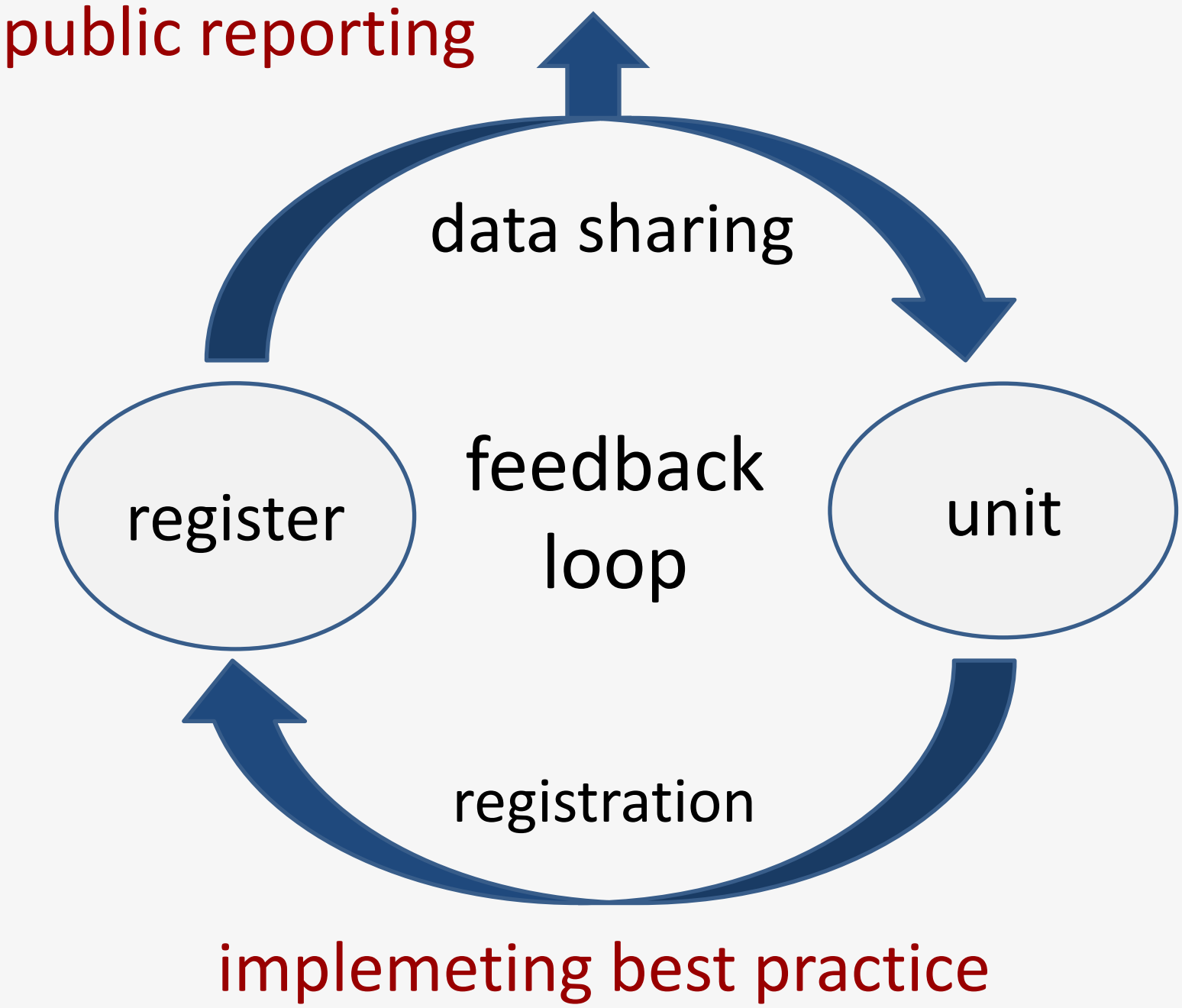
EDITORIAL

The Role of Orthopaedic Device Registries in Improving Patient Outcomes

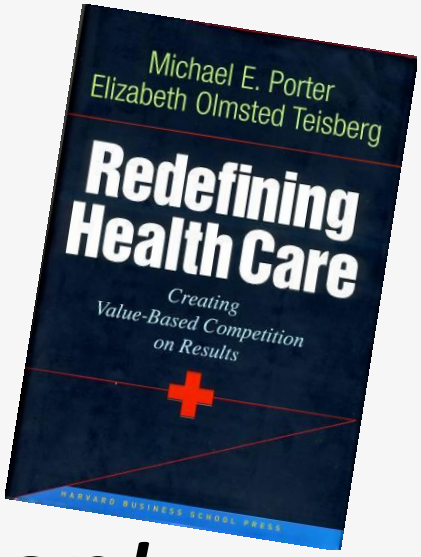


the mission for SHAR:

- monitoring of “health care quality”/outcomes
- local analysis and improvement work
- clinical research
- quality control of the whole process
- not a device register!


public reporting
data sharing
register
feedback loop
unit
registration
implemeting best practice

public reporting…



Porter and Teisberg:

"public reporting of patient outcome is the single most important step in reforming health care systems…"

"…nobody wants to be worst in class…"

how to generate evidence in the field of JR surgery?

- RCT – difficult in JR-surgery
- prospective observational studies (registries)

advantages with register studies vs RCT:

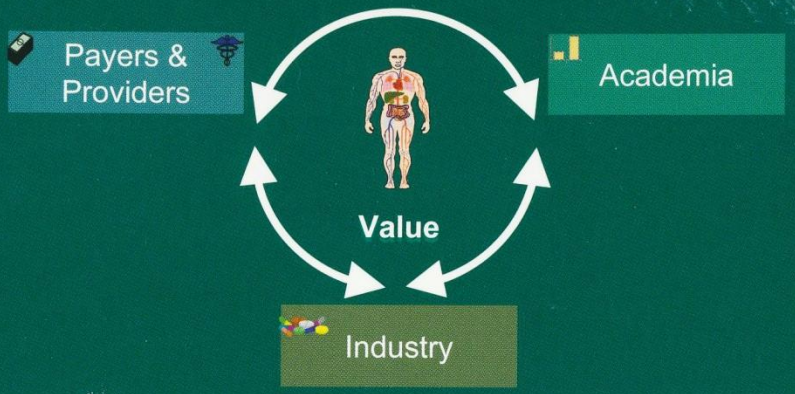
- large materials - statistical power
- uncommon complications and techniques – rare events
- avoiding “performance bias”

”The Cochrane Musculoskeletal Group is now considering incorporation of registry data in Cochrane Reviews”

Advisory Board, CMSG

BCG

THE BOSTON CONSULTING GROUP



Value guided healthcare as a platform for industrial development in Sweden – feasibility study

August 2009

REGERINGSKANSLIET

Ministry of Health and Social Affairs

Swedish Association of Local Authorities and Regions

Review of the National quality registries

The goldmine in the healthcare system

Proposal for expanded support 2011- 2015

financial support - registries:

- 2006 60 million SEK
- 2012 260
- 2013 320
- 2012-16 1,5 billion SEK
- and additional research funds

vision 2012-2016:

Swedish Association of Local Authorities and Regions

- multidimensional outcome assessment
- …public reporting
- …continuous improvement work
- …increased research activity
- …create national performance indicators
- integrate IT-interface for EMR and registries

2012 – classification of registries into different levels:

different levels of development

• level 1	meet 30 different criteria	4
• level 2		20
• level 3		49
• register candidates		27
		100

level 1 registries in Sweden:

- National Diabetes Register
- SWEDEHEART
- Swedish Stroke Register
- Swedish Hip Arthroplasty Register

key points for success in Sweden:

- “small” country – 9.5 million
- the health care system
- long tradition of nation-wide registries
- professional consensus
- **personal ID-number**

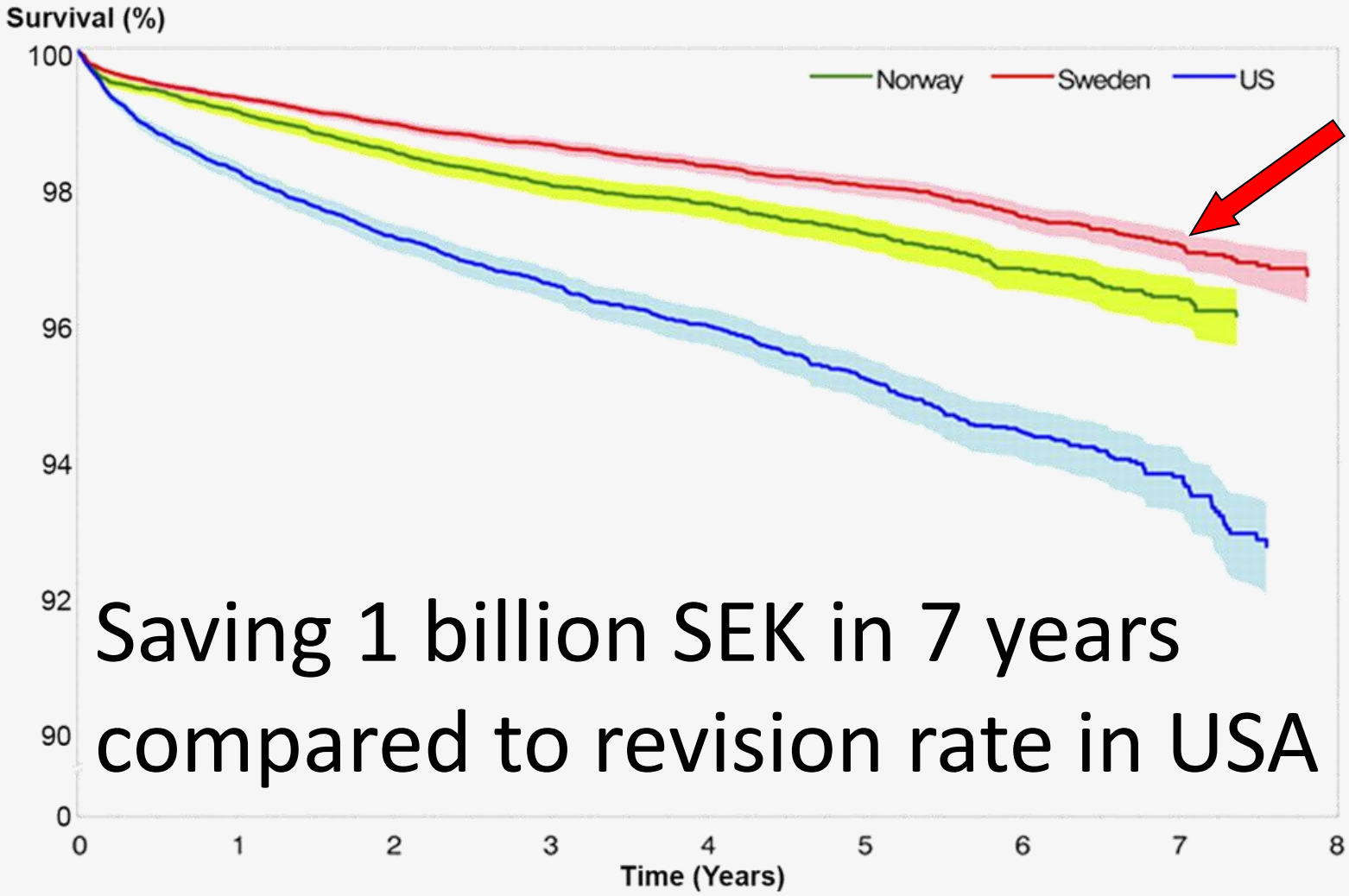
the profession has:

- initiated
- developed
- analyzed
- interpreted
- ...without involvement of decision makers and/or industry

Swedish Hip Arthroplasty Register

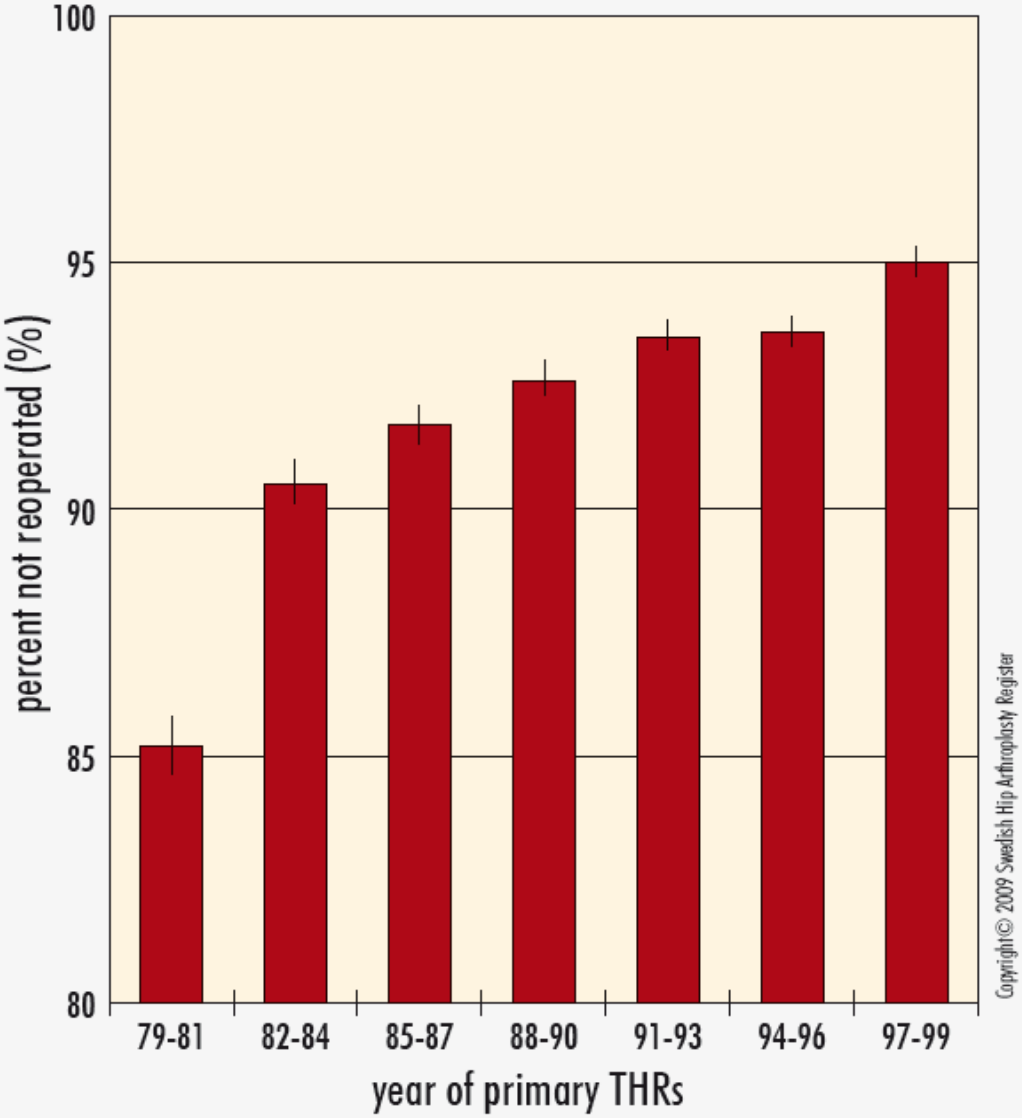
- started 1979
- 100% participation
- public reporting 1999
- 98,5% completeness 2010
- PROM since 2002
- overall 10-year survival 96%
- lowest reported revision rate

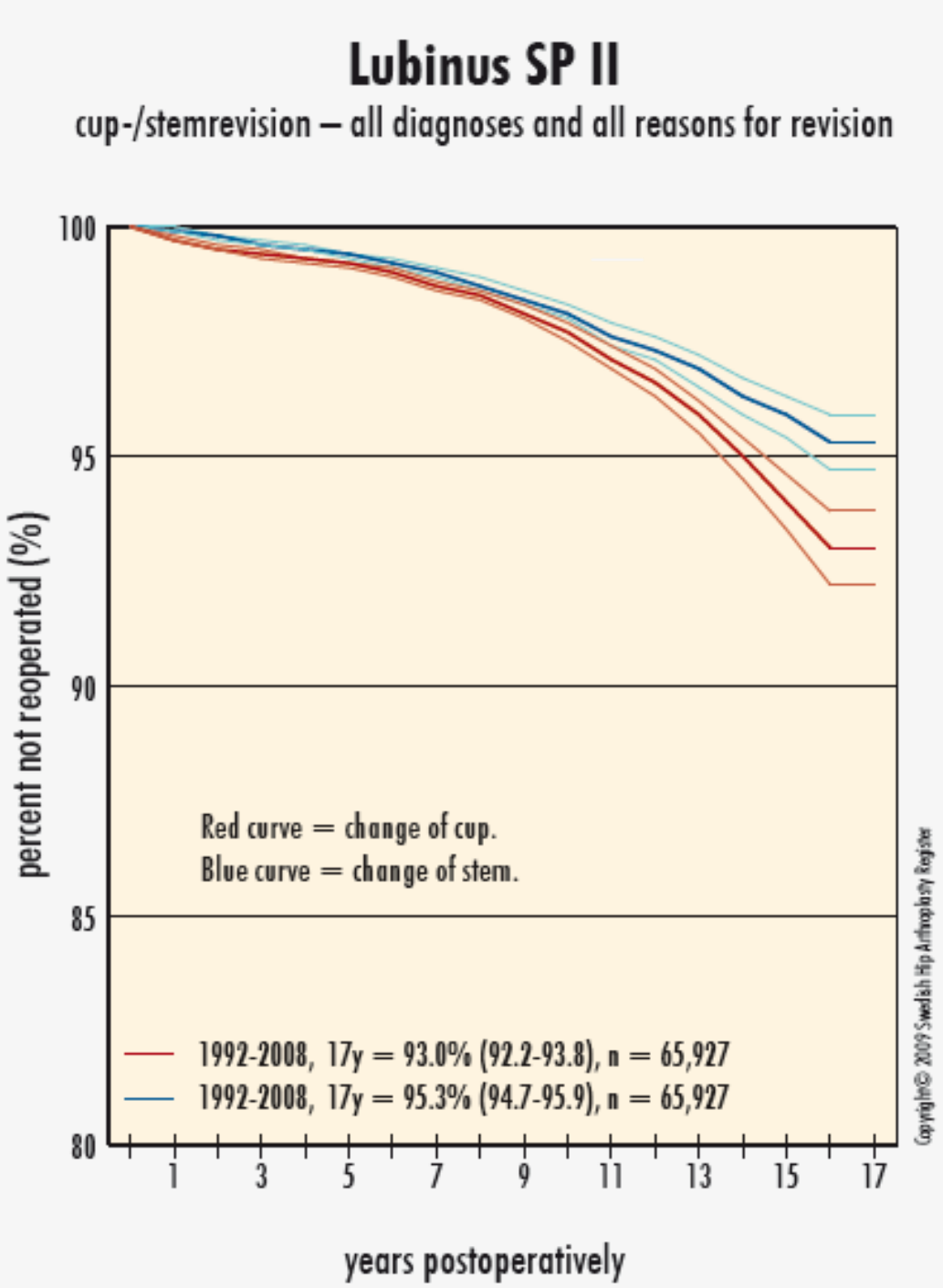
Fig. 4 Survivorship curves (with 95% confidence intervals) for total hip arthroplasty implants in the United States, Sweden, and Norway.



Kurtz S. M. et.al. J Bone Joint Surg 2007:89:144-151

Implant survival after 10 years in different time periods





10-year survival: 97%

how can we improve these results?


what shall we
focus on?

the main indications for JR surgery:

- severe pain
- affected health related quality of life (HRQoL)
- *..it should be mandatory to measure and report these variables*

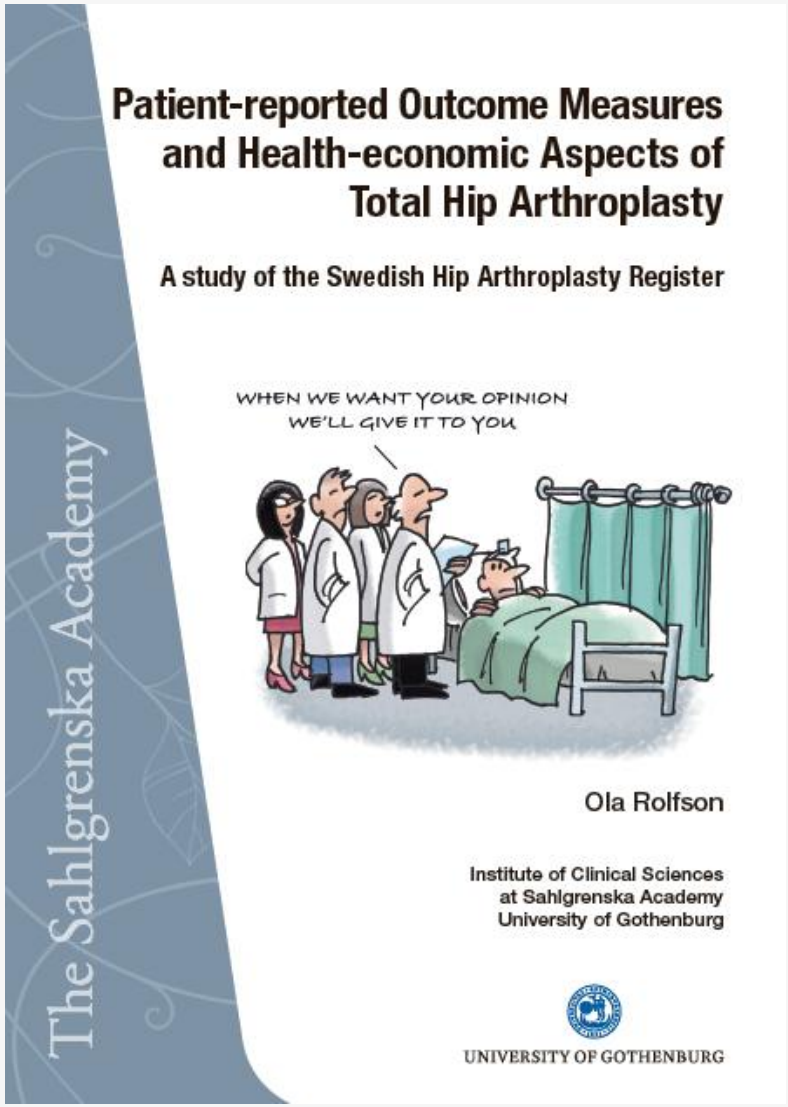
outcome assessment is incomplete without PROM

patient reported outcome measure - PROM:

- preop, @ 1, 6 and 10 years
- Charnley Category (A, B, C)
- pain – VAS
- EQ-5D
- satisfaction – VAS
- 90 – 92% response rate

how can we use the PRO-data?

- local clinical improvement work
- predictors for good and bad outcome
- indications and timing of surgery
- health economic analyses



11% uncertain or dissatisfied @1 year

further surgery @1 year <1.0%

there is an obvious need of outcome predictors:

ongoing linkage-study:

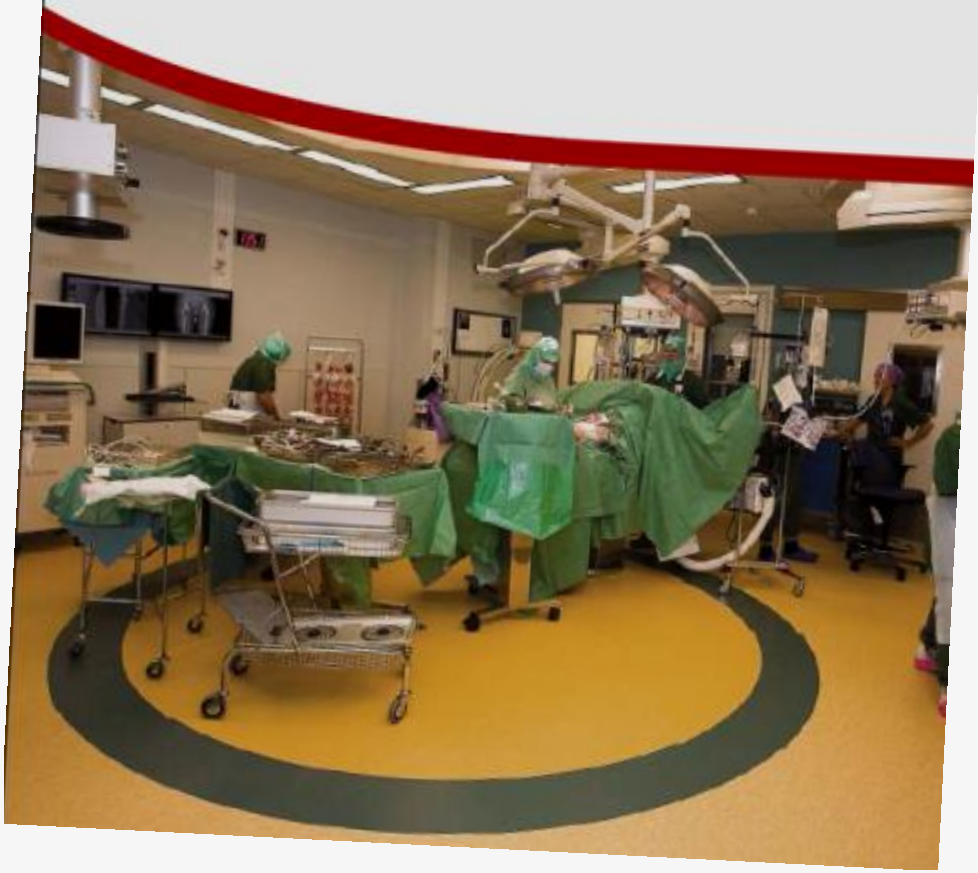
- Hip Registry – 200 000 THRs
- Statistics Sweden
  - socioeconomic variables
- National Patient Register
  - medical comorbidity
- Prescribed Drug Register
- Cause of Death Register

outcome predictors:

- anxiety/depression
- Charnley category C
- comorbidity
- gender
- long waiting-time
- educational level
- information?
- expectations?

Swedish Hip Arthroplasty Register

Annual Report 2010



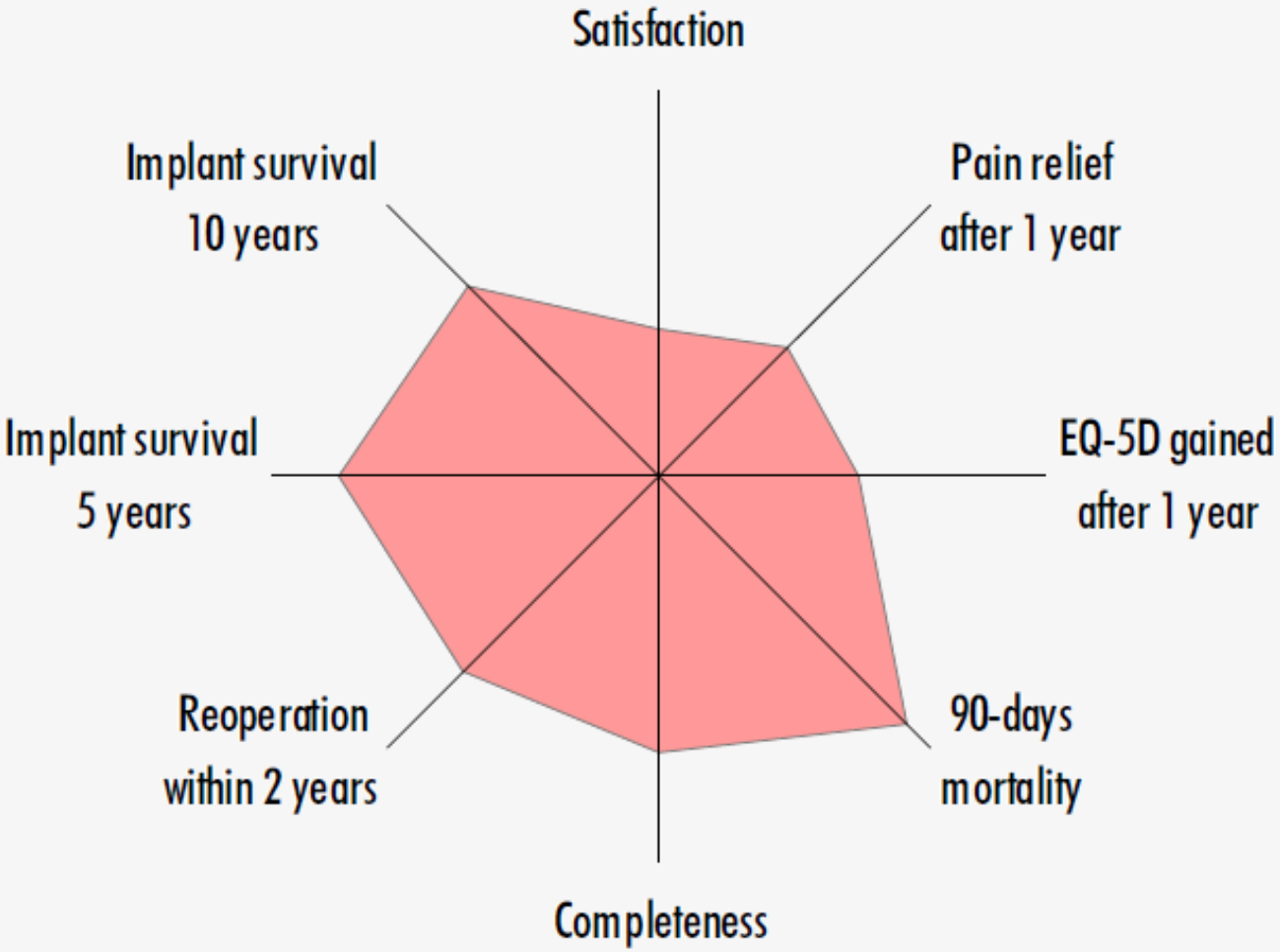
Implant survival per hospital

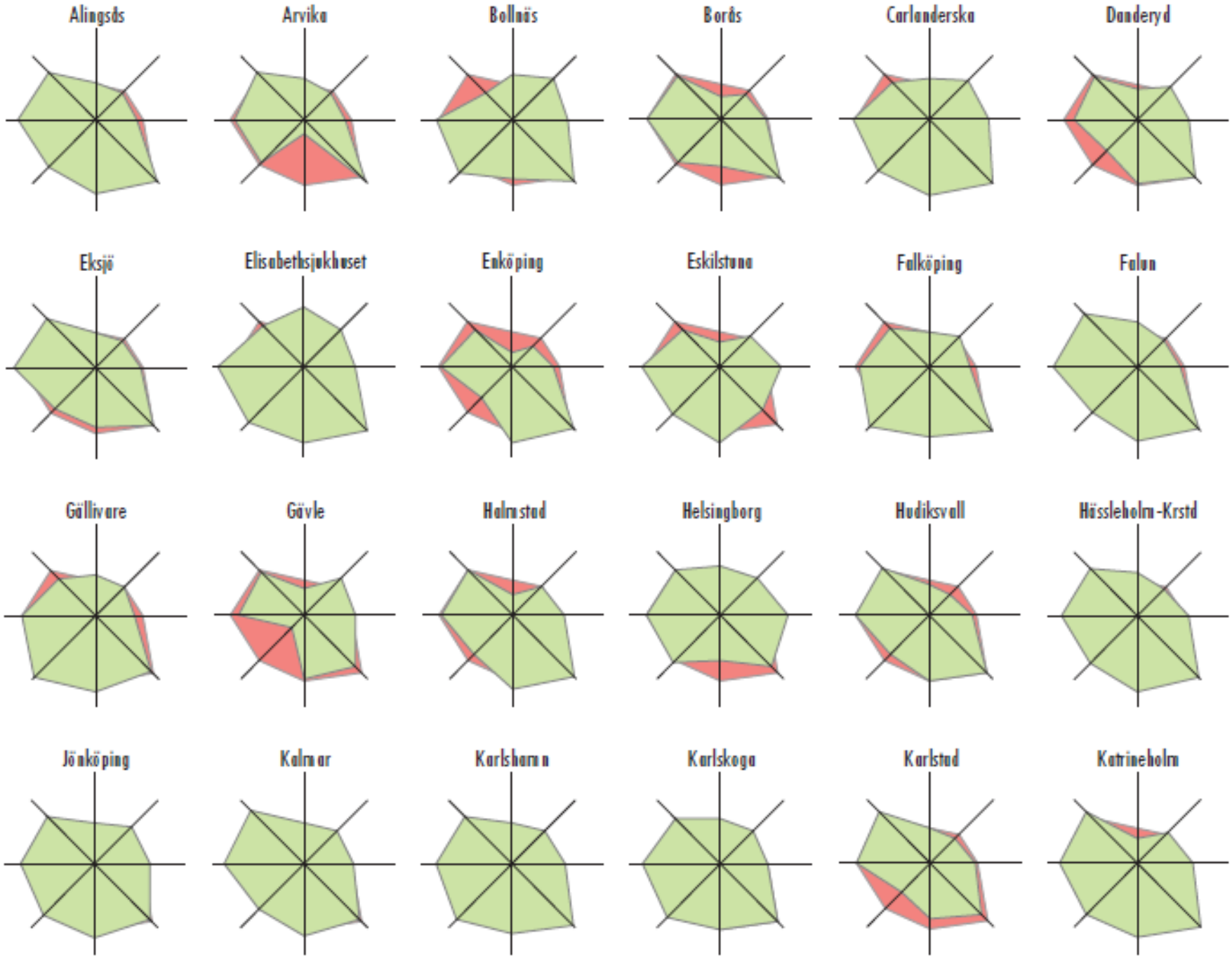
all diagnoses, all reasons for revision and all types of implants, 1999–2008

Hospital	Period [1]	Number [2]	OA [3]	≥ = 60 years [4]	Female [5]	5 years	K.I.	10 years	K.I.
University/Regional Hospitals									
KS/Huddinge	1999–2008	2,070	62.3%	70.4%	61.1%	96.9%	±0.9%	95.8%	±1.3%
KS/Solna	1999–2008	2,422	65.5%	72.9%	62.0%	96.1%	±0.9%	94.7%	±1.3%
Linköping	1999–2008	1,296	60.7%	76.5%	62.1%	99.1%	±0.6%	98.8%	±0.7%
Lund	1999–2008	992	37.1%	67.6%	62.1%	95.0%	±1.6%	85.9%	±5.4%
Malmö	1999–2008	1,375	35.3%	77.2%	70.5%	97.5%	±0.9%	95.8%	±1.6%
SU/Mölndal	1999–2008	1,404	67.2%	79.1%	64.0%	96.0%	±1.3%	89.0%	±5.4%
SU/Sahlgrenska	1999–2008	1,552	61.8%	62.5%	61.3%	98.5%	±0.6%	94.6%	±3.4%
SU/Östra	1999–2008	1,290	76.0%	81.9%	63.4%	97.9%	±0.9%	94.7%	±2.4%
Umeå	1999–2008	780	69.7%	63.6%	59.5%	98.1%	±1.1%	97.2%	±2.0%
Uppsala	1999–2008	2,661	48.9%	71.6%	61.4%	95.9%	±1.0%	92.7%	±1.9%
Örebro	1999–2008	1,719	76.2%	77.4%	59.0%	99.0%	±0.5%	96.9%	±1.9%
Central Hospitals									
Borås	1999–2008	1,842	66.9%	79.6%	58.2%	96.9%	±0.9%	95.2%	±1.9%
Danderyd	1999–2008	3,527	87.3%	85.1%	66.6%	96.4%	±0.7%	94.3%	±2.0%
Eksjö	1999–2008	1,784	91.3%	85.1%	54.9%	98.3%	±0.7%	95.1%	±2.4%
Eskilstuna	1999–2008	973	52.8%	83.5%	60.4%	98.6%	±0.9%	97.7%	±1.3%
Falun	1999–2008	2,449	84.9%	80.2%	57.0%	98.8%	±0.5%	97.0%	±2.3%
Gävle	1999–2008	1,740	69.5%	78.6%	59.4%	96.9%	±0.9%	94.5%	±1.9%

Quality indicators

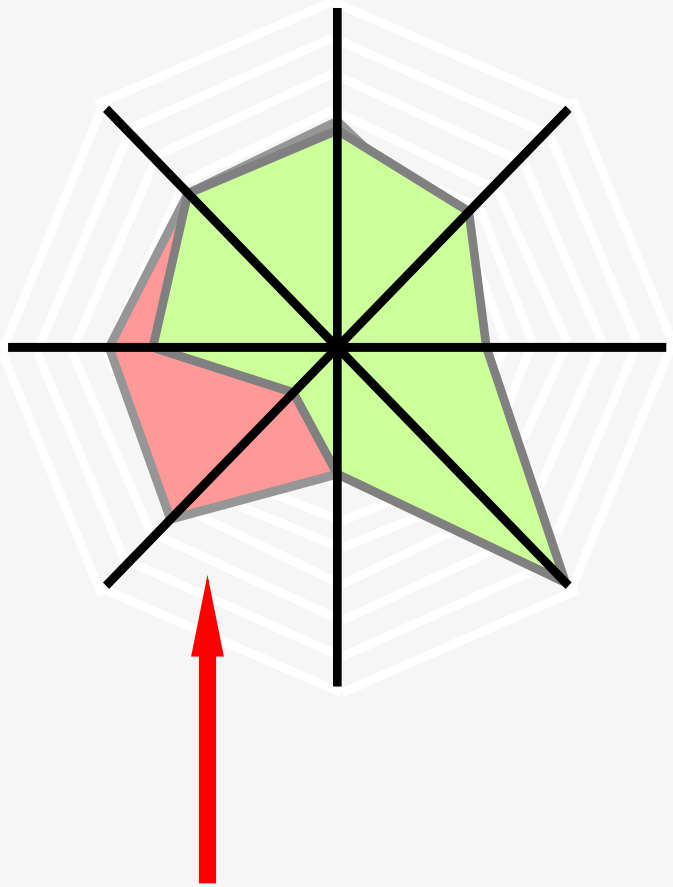
clinical value compass - national averages




Alingsås
Arvika
Bollnäs
Borås
Carlanderska
Danderyd
Eksjö
Elisabethsjukhuset
Enköping
Eskilstuna
Falköping
Falun
Gällivare
Gävle
Halmstad
Helsingborg
Hudiksvall
Hässleholm-Krstd
Jönköping
Kalmar
Karlshamn
Karlskoga
Karlstad
Katrineholm

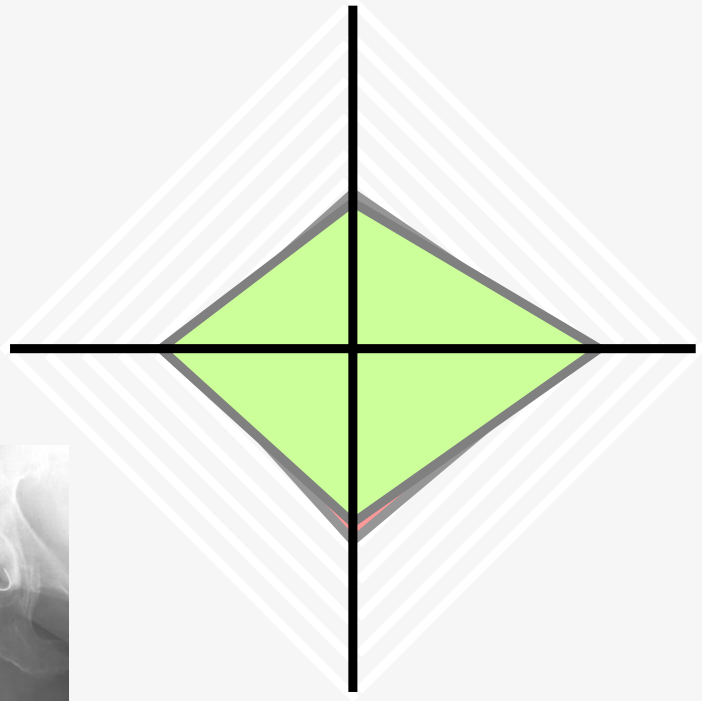
High volume central hospital

Sundsvall



mainly revisions due to recurrent dislocations

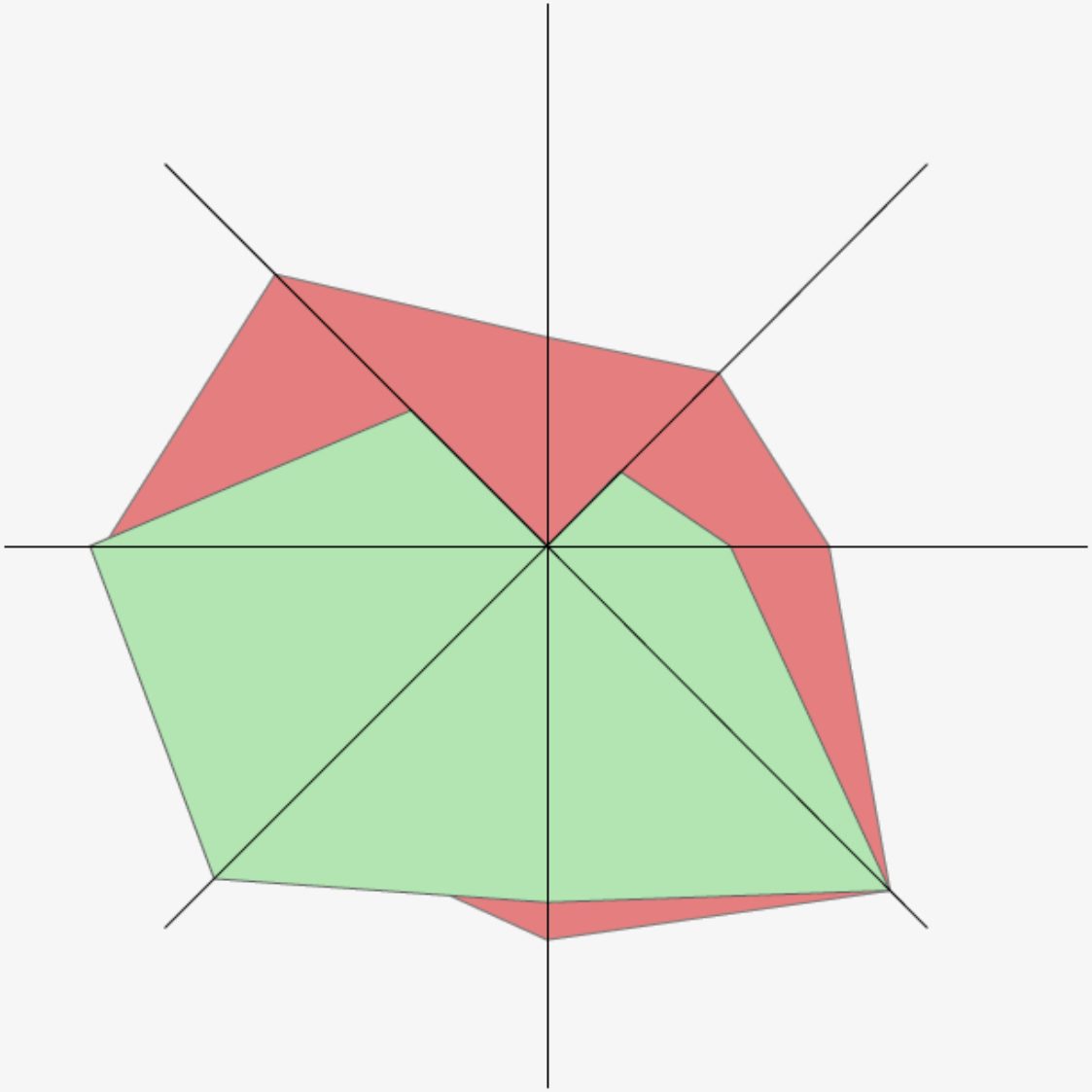
Sundsvall



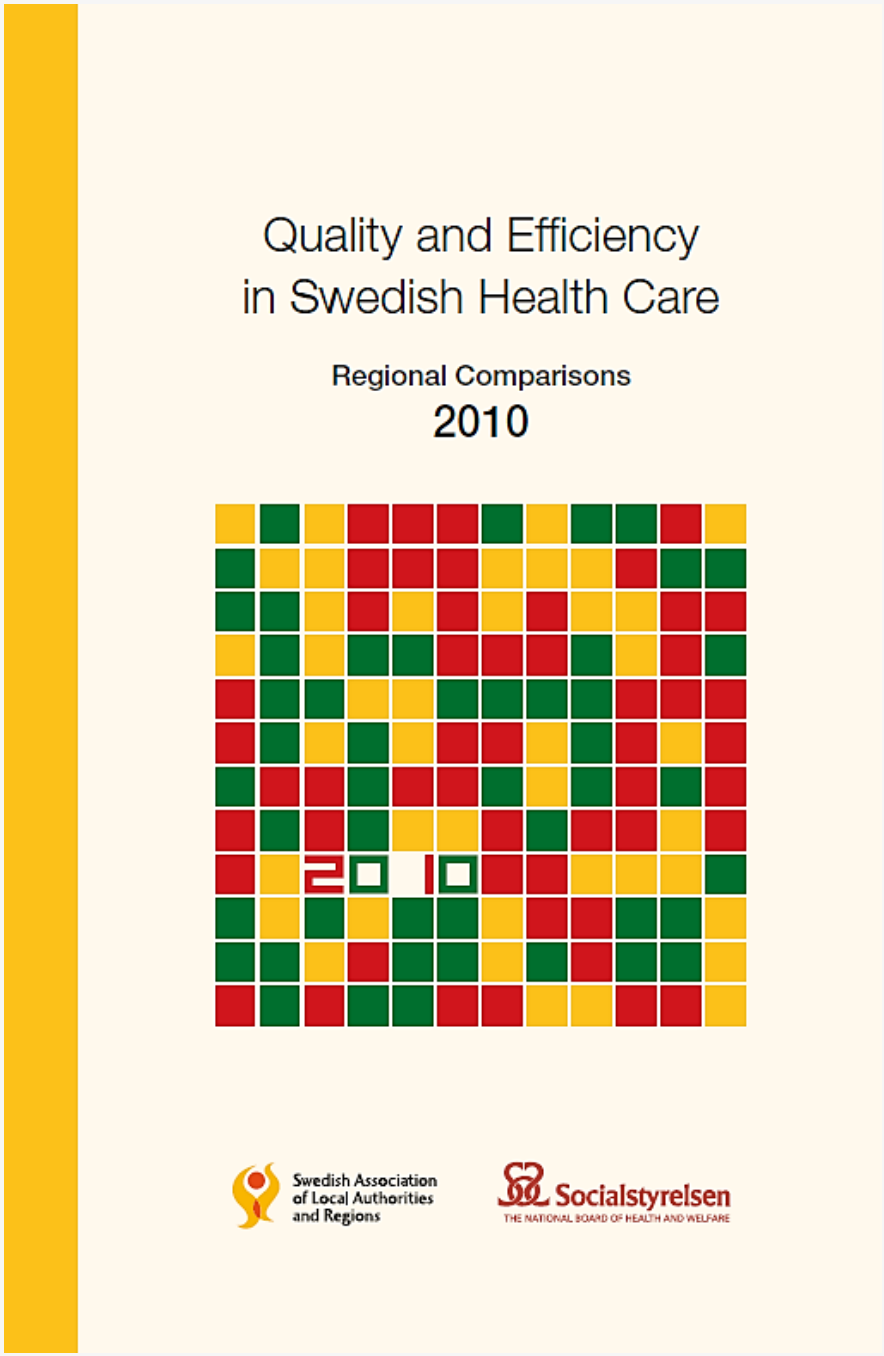
Case mix

- local analysis
- improvement program
- no further dislocation
- saving: 1 milj SEK/year
- direct costs
- excellent example of the register mission

Södertälje



extensive improvement work 2011 -12



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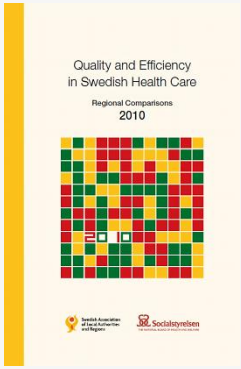


- 2006 – 57 national quality indicators
- 2011 – 179 indicators
- 50% from National Registries
- 50% from National Board and Statistics Sweden

INDICATOR SETS

General Indicators

Mortality, State of Health, etc.
Confidence and Patient Experience
Availability
Costs

Indicators by Area

Pregnancy, Childbirth and Neonatal Care
Gynaecological Care
Musculoskeletal Diseases
Diabetes Care
Cardiac Care
Stroke Care
Kidney Care
Cancer Care
Psychiatric Care
Surgery
Intensive Care
Drug Therapy
Other Care

what is a performance indicator?

- quantifiable and available
- generally accepted and valid
- relevant
- capable of being influenced
- outcome- and process metrics

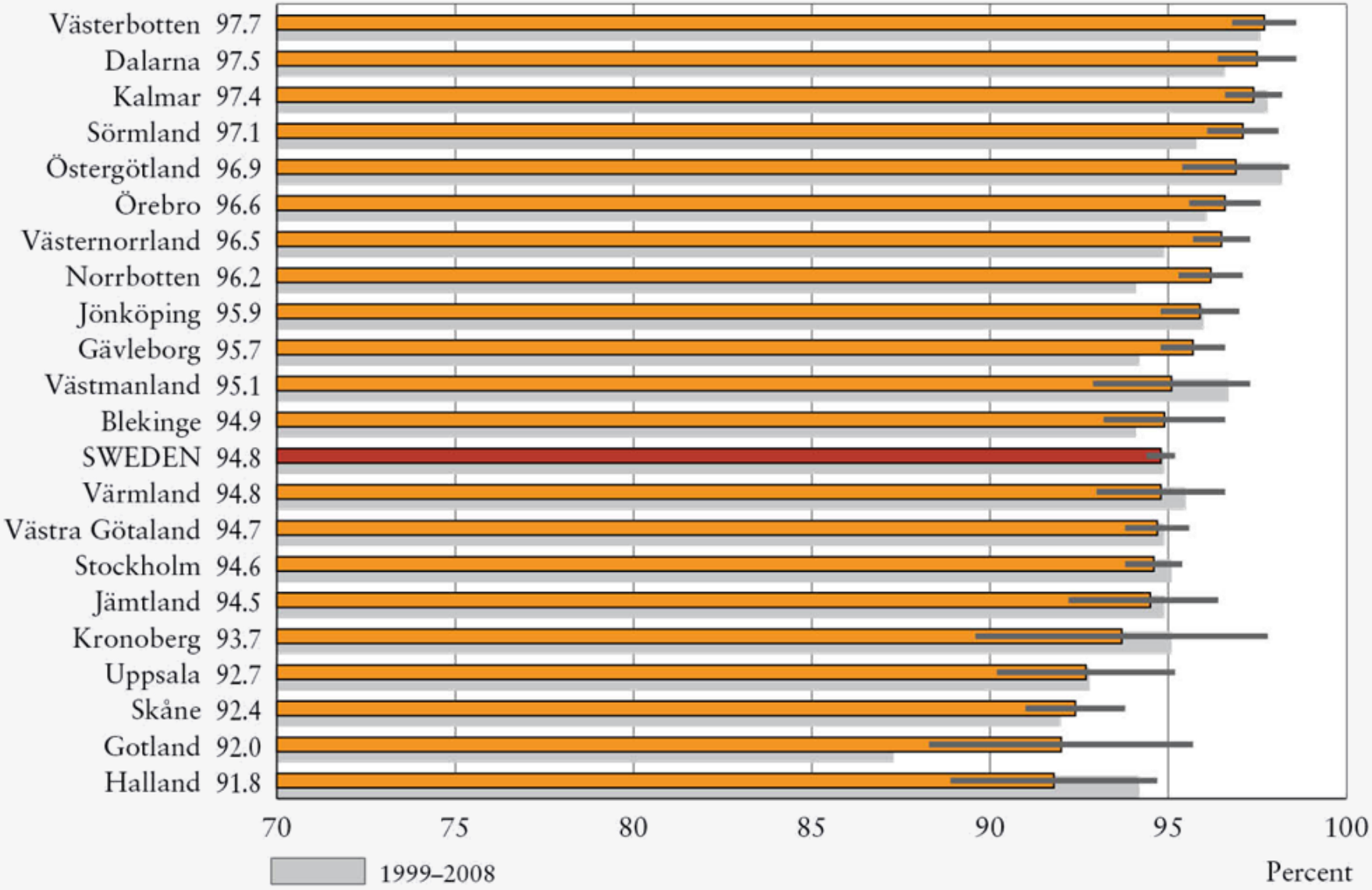


Figure 42
Total

Total hip arthroplasty – 10-year implant survival, 2000–2009.

Source: Swedish Hip Arthroplasty Register

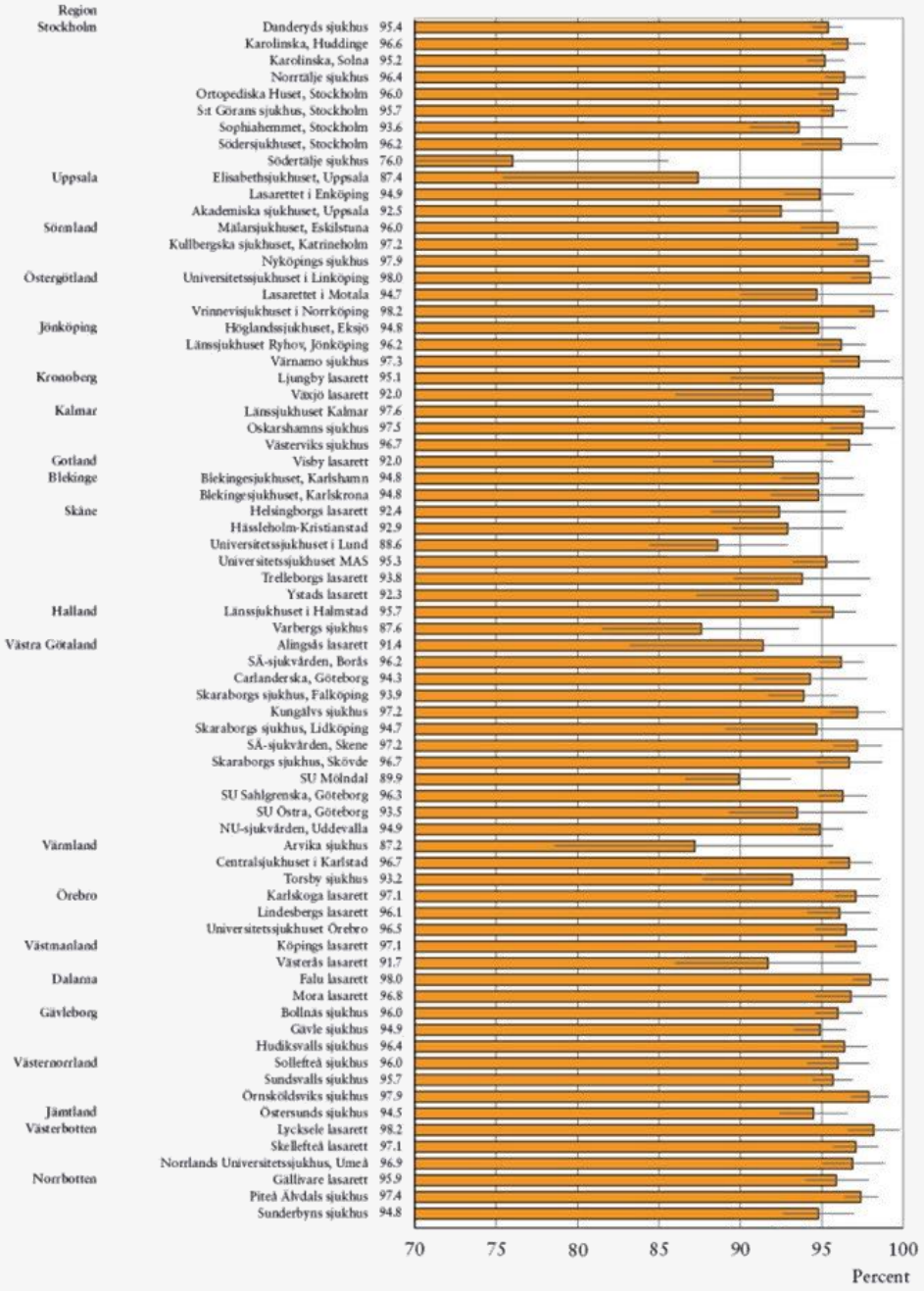


Figure 42 Hospitals Total hip arthroplasty – 10-year implant survival, 2000–2009.

Source: Swedish Hip Arthroplasty Register

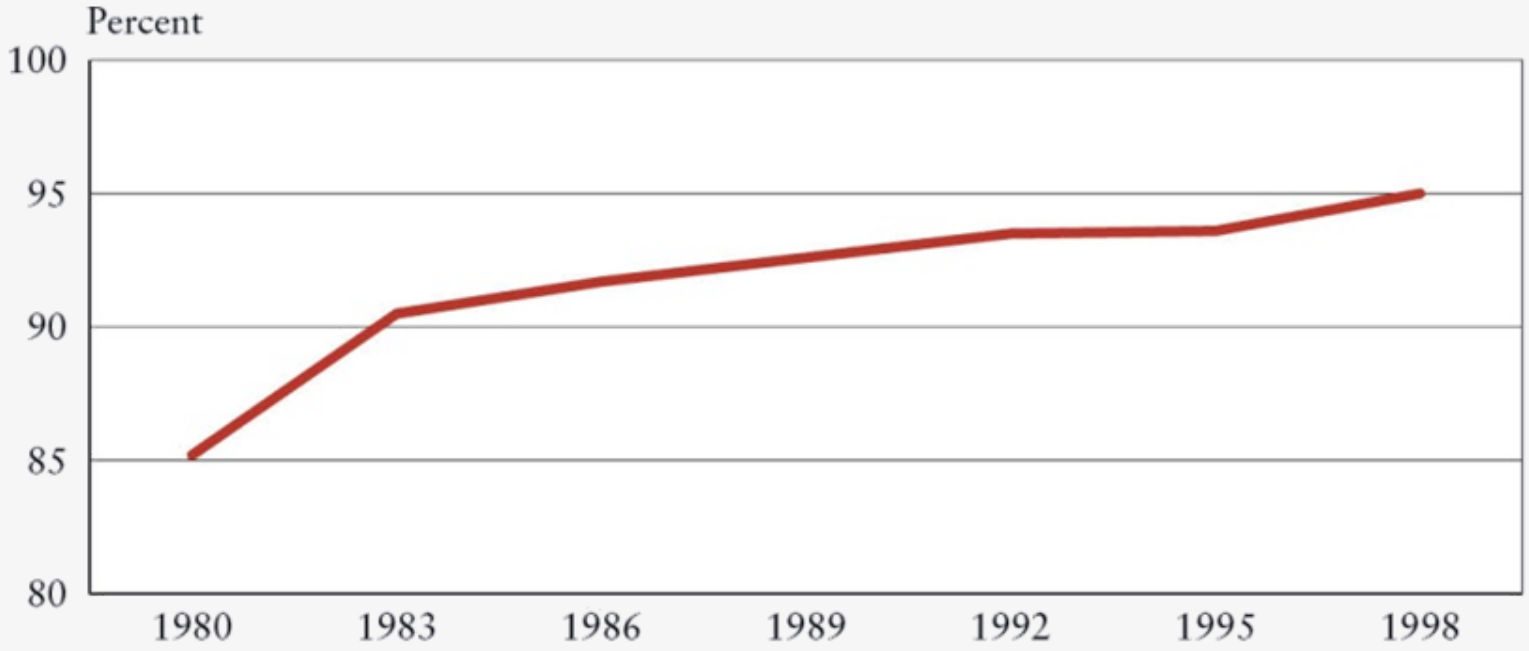


Figure 42
Sweden

Total hip arthroplasty – 10-year implant survival.

Source: Swedish Hip Arthroplasty Register

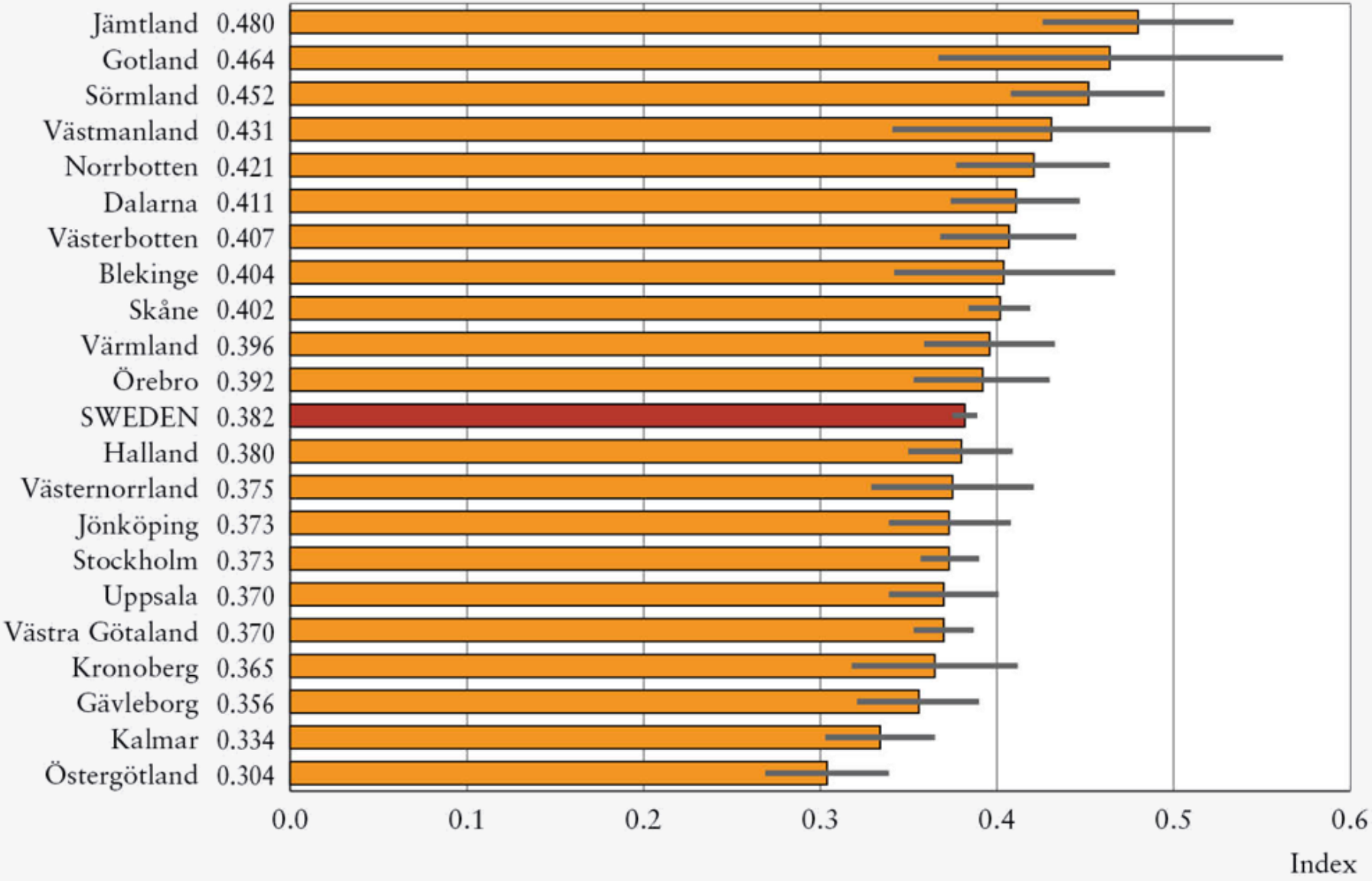


Figure 44
Women

Patient-reported outcome of total hip arthroplasty, 2007–2008.
Improvement in EQ5D after one year.

Source: Swedish Hip Arthroplasty Register

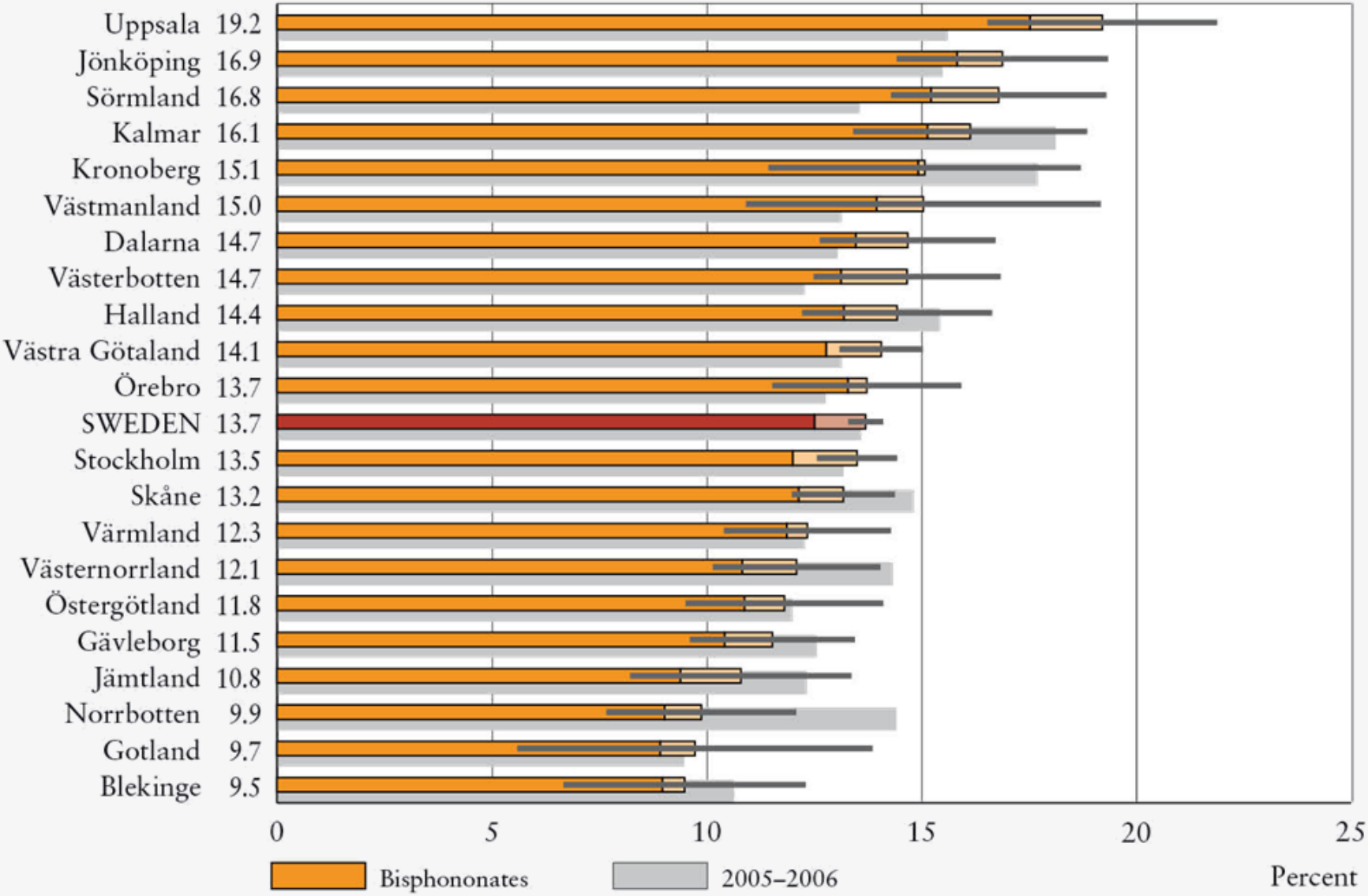


Figure 48 Percentage of women age 50 and older with fracture due to osteoporosis who received recommended drug therapy within 6–12 months, 2007 – June 2009. Age-standardised.

Source: National Patient Register and the Prescribed Drug Register, National Board of Health and Welfare

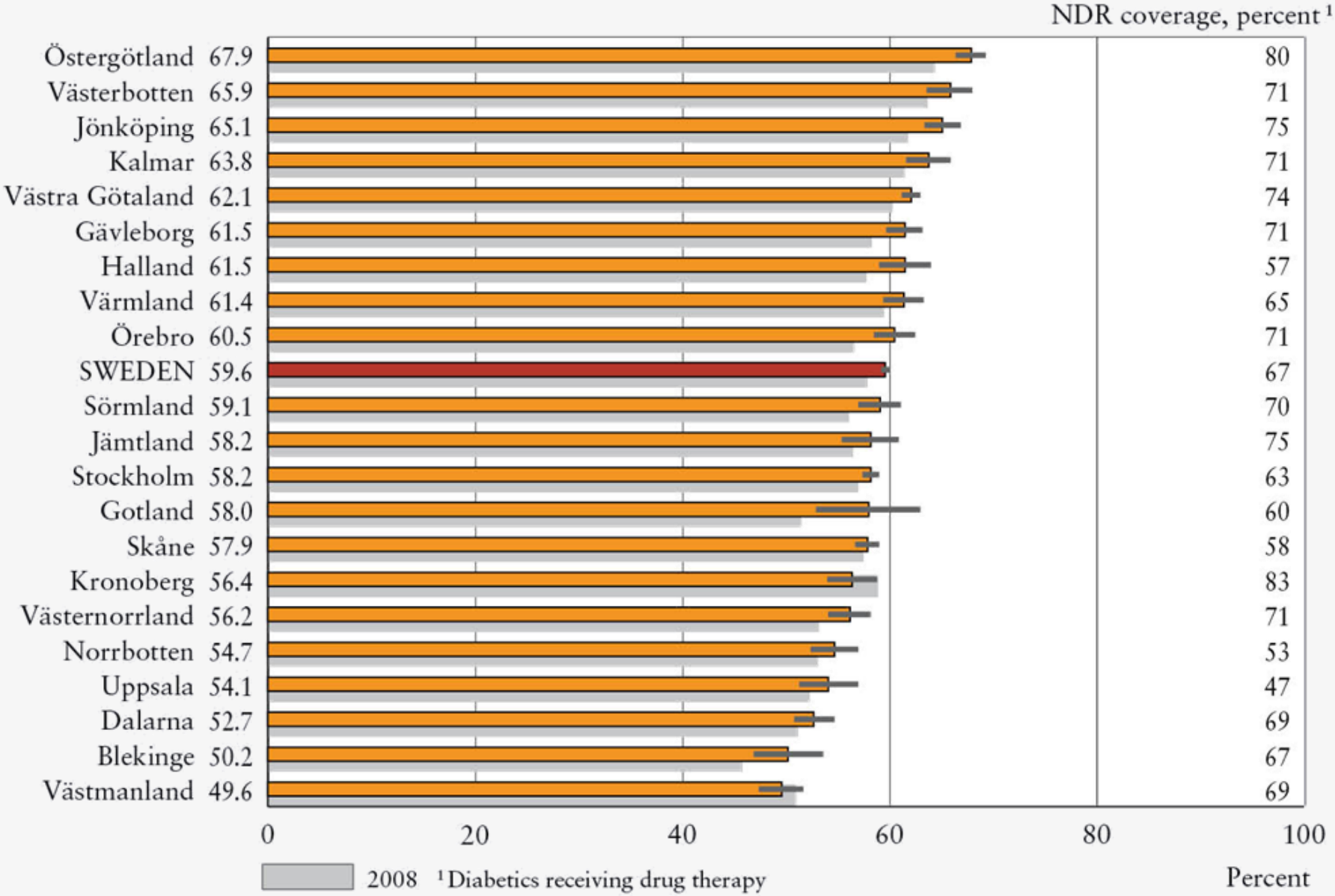


Figure 58
Men

Percentage of diabetics age 70 and younger in primary care who reached the blood pressure goal (≤140), 2009.

Source: Swedish National Diabetes Register

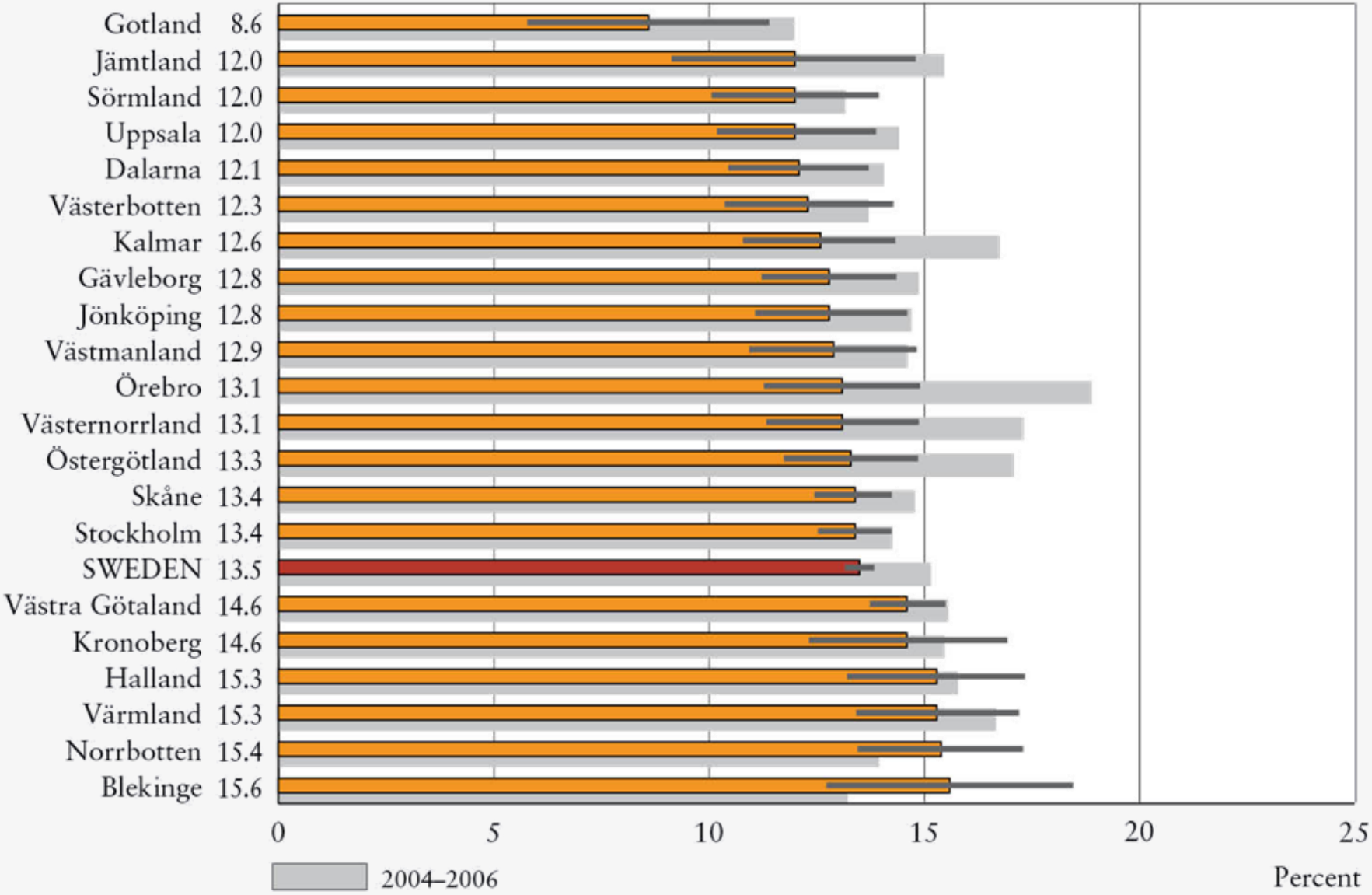


Figure 65
Women

28-day case fatality rate for myocardial infarction, 2007–2009.
Hospitalised patients. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

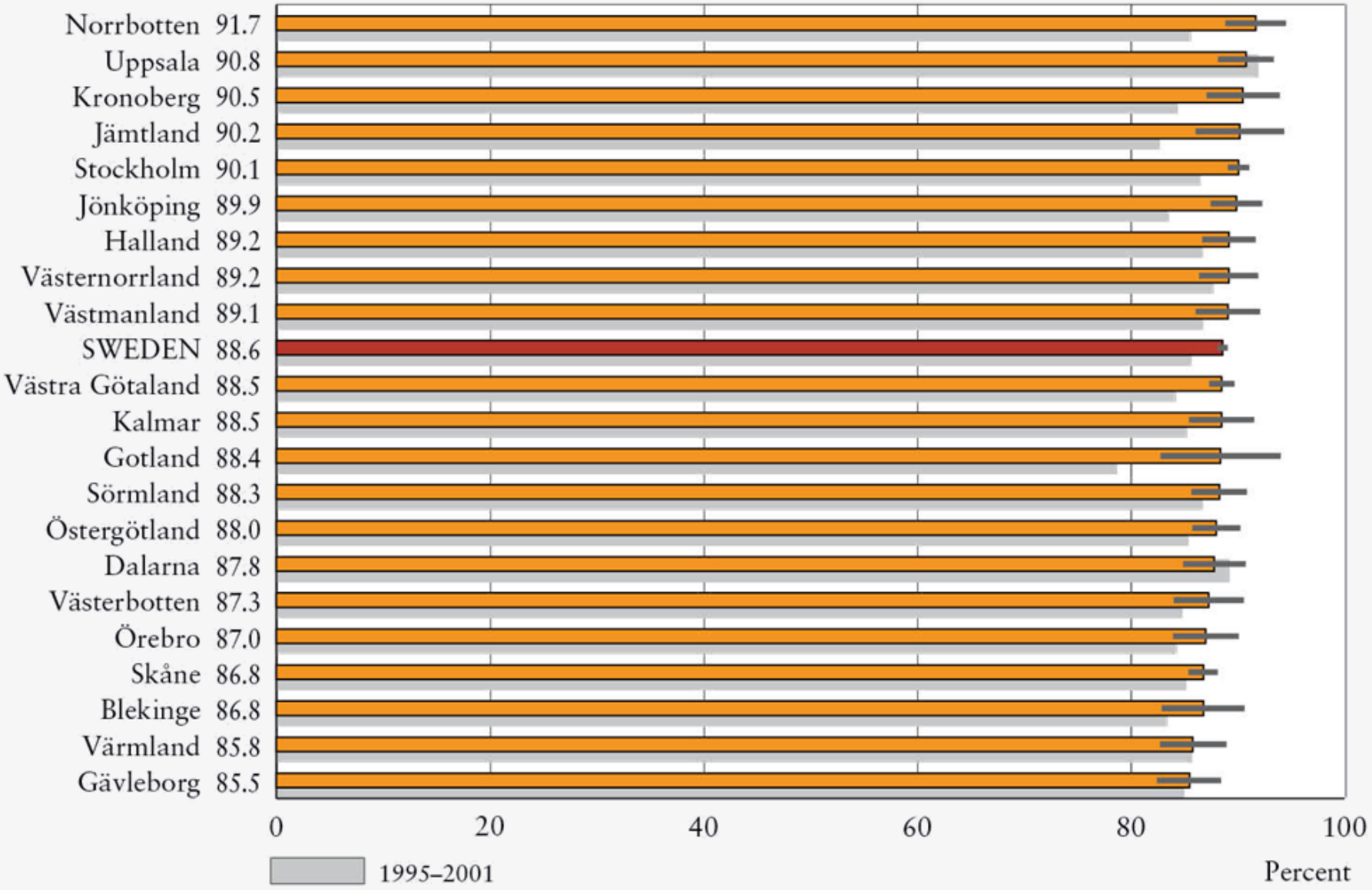


Figure 90
Women

Breast cancer – relative five-year survival rates. Patients diagnosed 2002–2008 with follow-up until December 2008.

Source: Swedish Cancer Registry, National Board of Health and Welfare

Health Statistics > Life expectancy at birth > Total population by country

VIEW DATA: Totals | Definition | Source | Printable version

Bar Graph | Map

Rank	Countries	Amount (top to bottom)
#1	Andorra:	83.51 years
#2	Macau:	82.19 years
#3	Singapore:	
#4	San Marino:	
#5	Hong Kong:	
#6	Japan:	
#7	Switzerland:	
#8	Sweden:	
#9	Australia:	
#41	Puerto Rico:	78.4 years
#42	Jordan:	78.4 ye
#43	Guadeloupe:	78.06 yea
#44	Bosnia and Herzegovina:	78 yea
#45	Bermuda:	77.96 years
#46	Saint Helena:	77.93 years
#47	United States:	77.85 yea
#48	Cyprus:	77.82 yea

U.S. # 47

12% annual rate of in

England

paradigm shift

cost controlled

outcome controlled

National registries and the report ”Regional Comparisons”play an important part in improving health outcomes in Sweden.
They also reduce the costs of health care.

Swedish Hip Arthroplasty Register

research activity:

- theses 11
- published papers 150
- PhD-students 12
- projects 40

National Quality Registries are beneficial for:

- patients
- surgeons/clinicians
- healthcare providers
- tax-payers
- researchers

…are laborious and costly but highly cost-effective…

Margareta Röden, Director of Health and Medical care, Västernorrland County Council:

The shame of being at the lower end of the list, has proved to be a strong driving force for improvement .

Making results and quality transparent, in public and within the health care system, has become an instrument for systematical improvement and quality assessment.

Swedish Hip Arthroplasty Register

…"in developing the Hip Joint Registry for Sweden which innovated the Western World"…

weak spots for the Registry:

- “the impossible country”
- 6 implant brands - 95% of the total THR production
- UK > 150
- Europe?
- US?

- difficult to introduce new implants or techniques
- low usability regarding post market surveillance
- innovation hostile??

NARA

Nordic Arthroplasty Register Association

joint replacement registries in the Nordic countries:

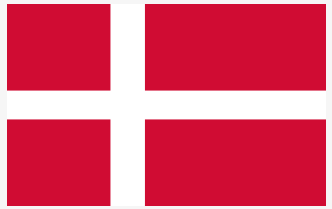
- knee arthroplasty 1975
- hip arthroplasty 1979

- hip and knees 1980

joint replacement registries in the Nordic countries:

- hips 1987
- knees 1994

- hips 1995
- knees 1997



key points for success:

- small countries
- similar health care systems
- long traditions of nation-wide registries
- high coverage/completeness
- **personal ID-number**

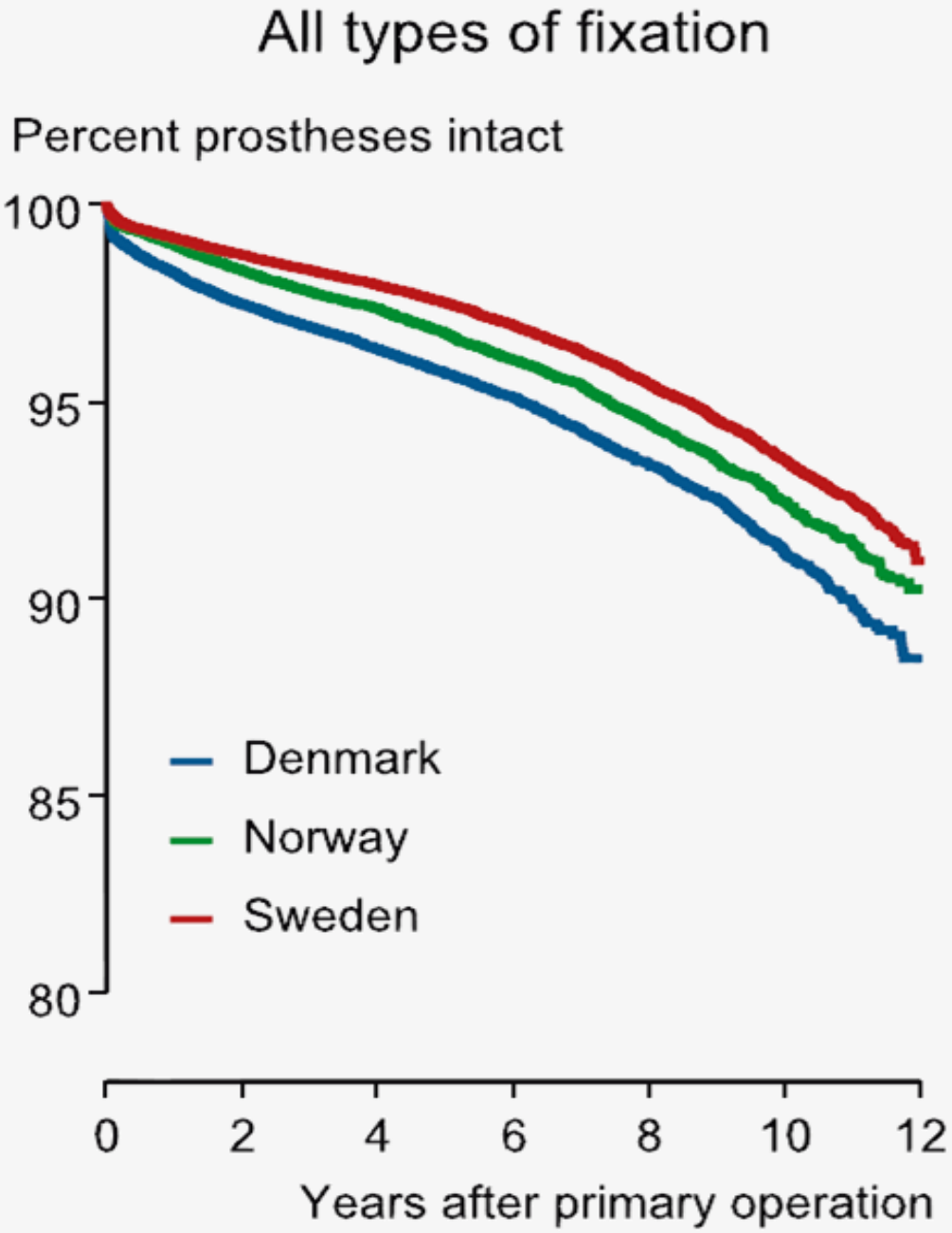
the profession has:

- initiated
- developed
- analyzed
- interpreted
- ...without the involvement of decision makers and/or industry

- **different user profiles!**
  - **techniques and implants**
- ideal setting for widened analyses:
  - uncommon implants, rare events/diagnoses, techniques...

- improved facilities for post market surveillance
- faster system for early warnings?

- 2006 in a bar in Chicago
- 2006 first meeting in Oslo
- 2008 - common database
- 2009 first publication THR
- 2010-2011 5 papers
- 2011 Finland full member
- 2012 10 manuscripts in pipe line

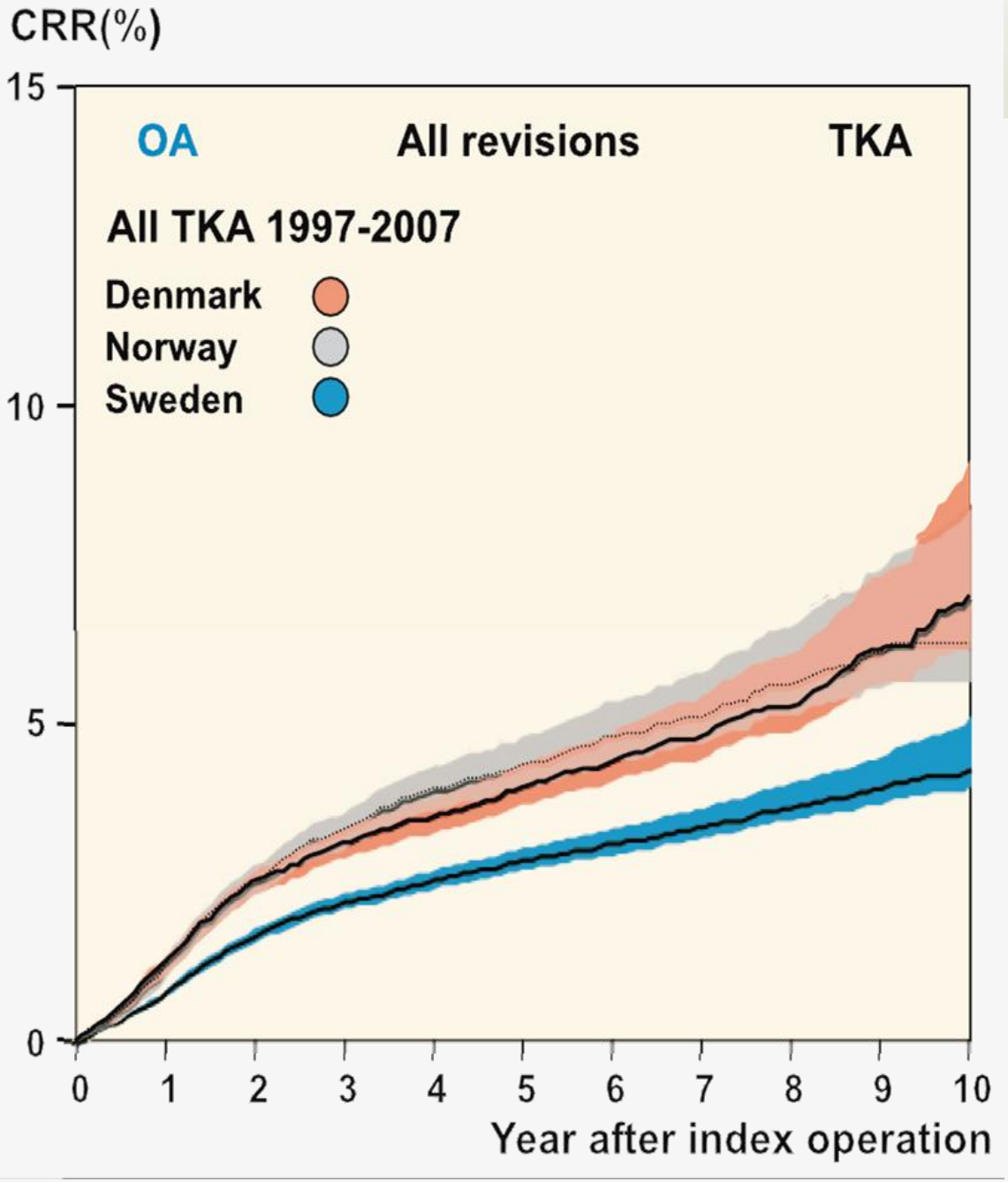


THR

Sweden 1979

Norway 1987

Denmark 1995



TKR

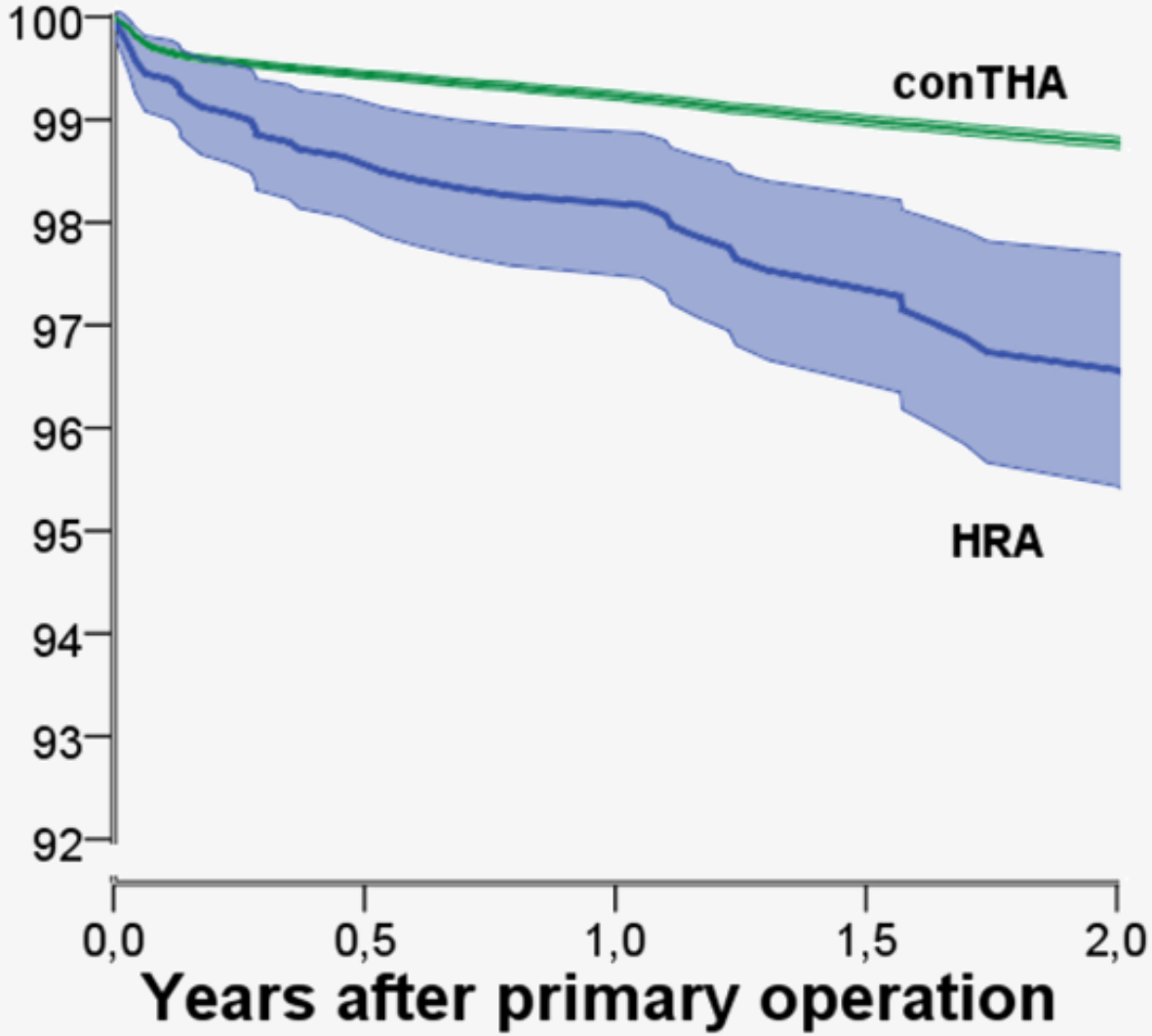
Denmark 1997

Norway 1994

Sweden 1975

Cumulative survival (%)

non-septic revision



A Scandinavian Experience of Register Collaboration: The Nordic Arthroplasty Register Association (NARA)

Leif I. Havelin, MD, PhD, Otto Robertsson, MD, PhD, Anne M. Fenstad, MSc, Søren Overgaard, MD, PhD, Göran Garellick, MD, PhD, and Ove Furnes, MD, PhD

important issues - comparison:

- harmonisation of implants and outcome metrics
- standardisation of statistical methods

do not compare apples and pears!

"The regulatory framework for implants varies worldwide, but has been generally much less rigorous than for drugs. Widespread surveillance of existing implants is urgently needed."

Carr et al. Lancet 2012

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