

Orthopaedica Belgica Digital Congress

24 April 2021

The past and today creates the future; The promise of health care registers

*Peter Fritzell, register manager Swedish national quality register "Swespine"
Swedish Society of Spinal Surgeons (4s), RKC Stockholm, and Futurum Academy Jönköping, Sweden*

- **Background – Historical perspective**
- **7 examples on how register data can be used**

I will address seven examples, all based on national quality registers, and the ultimate question is; "what's in it for me/us!"

- 1. Are we surgeons getting better with time? *Swespine***
- 2. "Register effect" on a specific diagnosis – Lumbar spinal stenosis? *Swespine***
- 3. "Register comparison" in incidence and outcome between countries. *Swespine-NorSpine-Danespine (Sweden-Norway-Denmark)***
- 4. When on a time line is a lumbar disorder costly? *Swespine***
- 5. Value based reimbursement. *Swespine***
- 6. Case-mix adjustment. *Swespine***
- 7. "The Dialogue Support". *Swespine; www.eurospine.org***

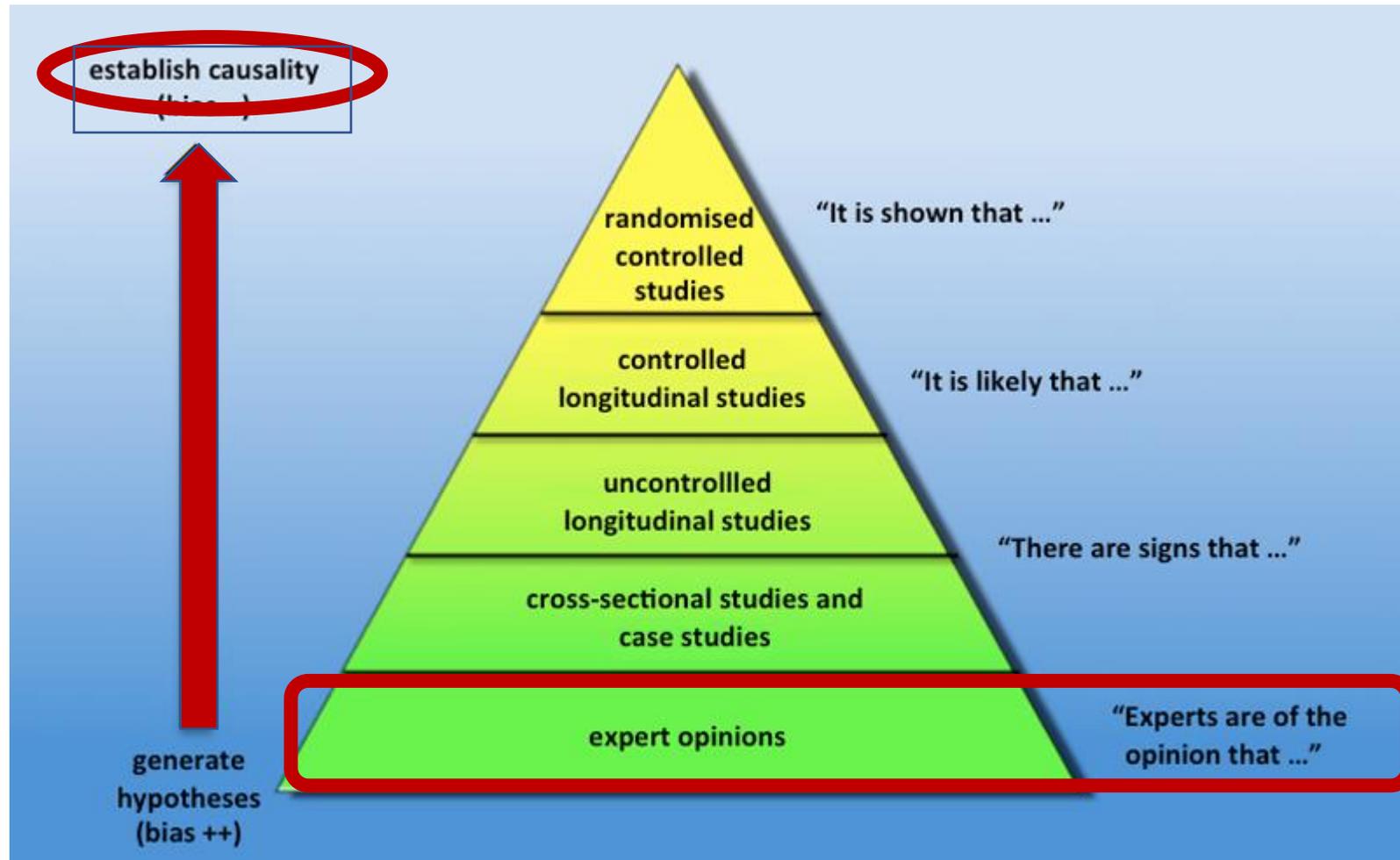
- **Background –
Historical perspective**

Who am I, an orthopedic spine surgeon



- **third generation of spine surgeons – 1985....**
(since Mixter and Barr 1934....)
- **Register manager for the national Swedish spine register, Swespine”, since 1998.**
- **What have I/we learned - a long journey, many “dead ends”**
for example - **don’t use physicians in registering - they should analyse data!**
- **Consequence analyses** are often missing
- I know that securing and **improving quality of care, and research**, benefits from registering
- I know that relevant **international cooperation** can be based on registers
- I am convinced that **Eurospine** can play an important role
- I am convinced that **registers and cost-effectiveness evaluations** is the way forward for the profession to regain the initiative in “health care questions”

Level of evidence – the past (today)



The past – the end result idea*

Florence Nightingale, Amory Codman*, Archie Cochrane

Where/when did they get their "inspiration"?



1820-1910

Crimean war

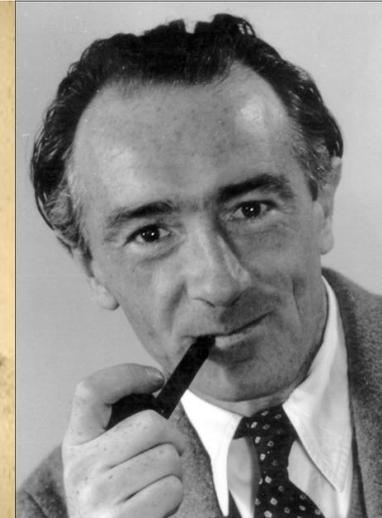
1853-56



1869-1940

First world war

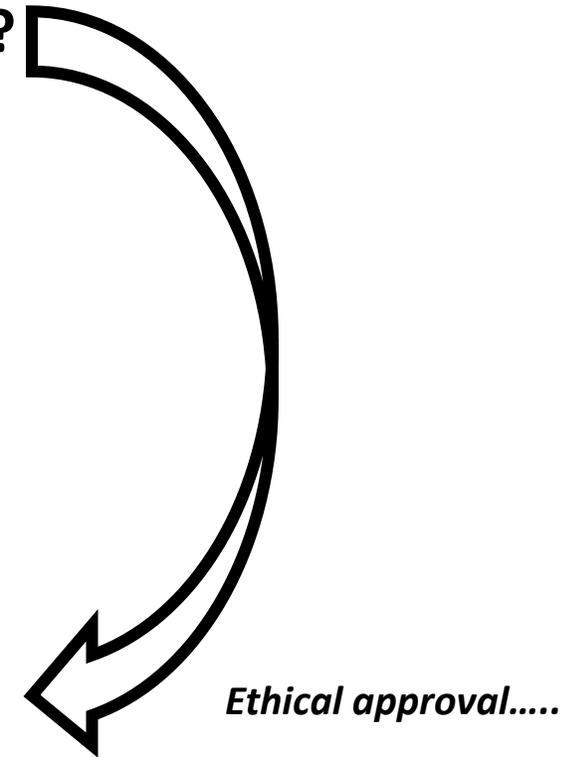
1914-1919



1906-1988

Second world war

1939-1945



Ethical approval....

The end result idea* - 1914

Ernest Amory Codman*

1869-1940

Clinical outcome

"The Shoulder" 1934

Sarcoma register 1920



Florence Nightingale

1820 – 1910

Crimean war 1853-1856

Mortality

1917;

"I am considered eccentric, because I say publicly that if the hospitals want to be sure to get better, then they need to find out what results they have. They have to analyze their results to find strengths and weaknesses.

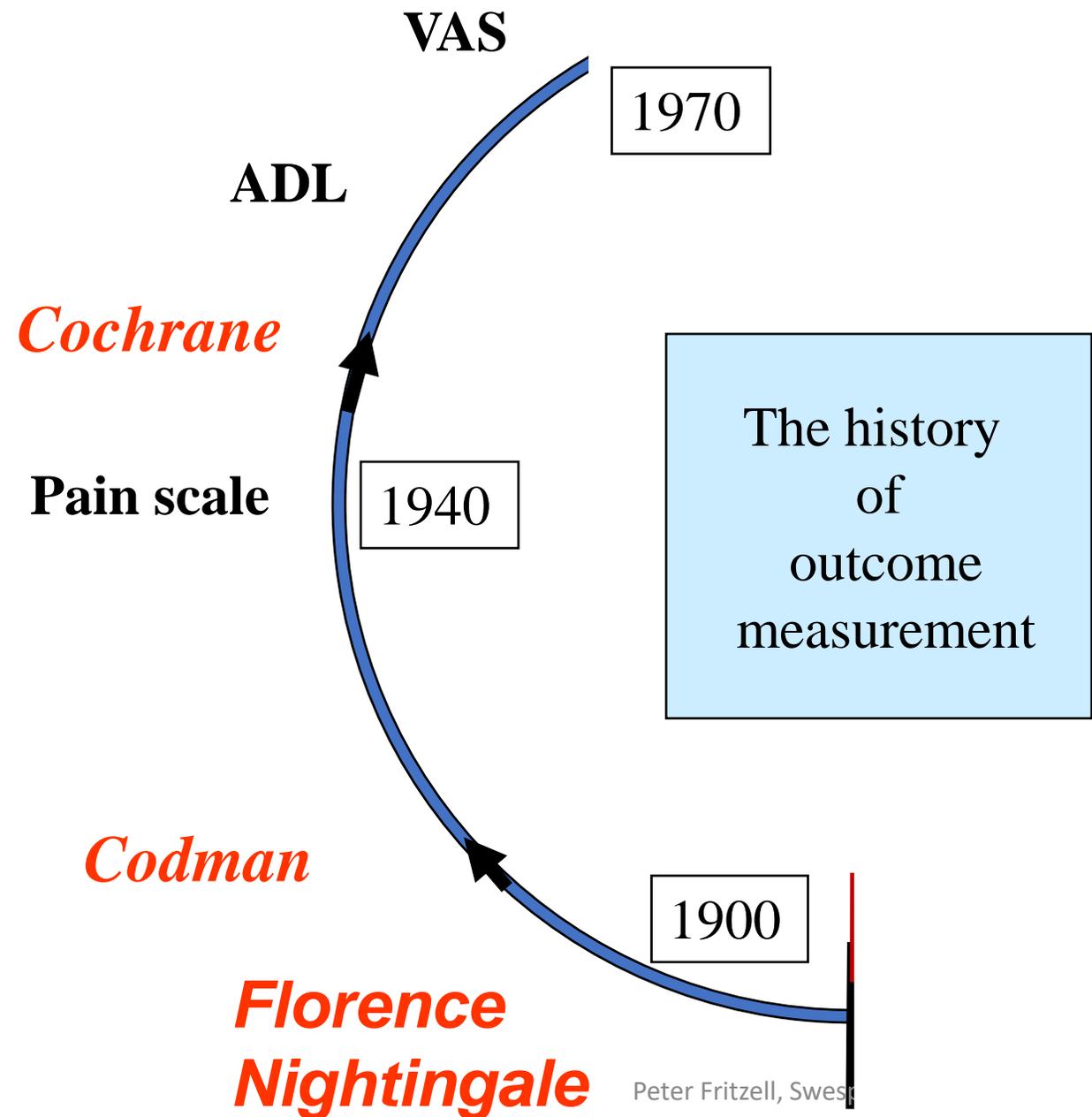
They need to compare their results with others.

Such choices will not be eccentric in a few years. "

100 years later – the end result idea...

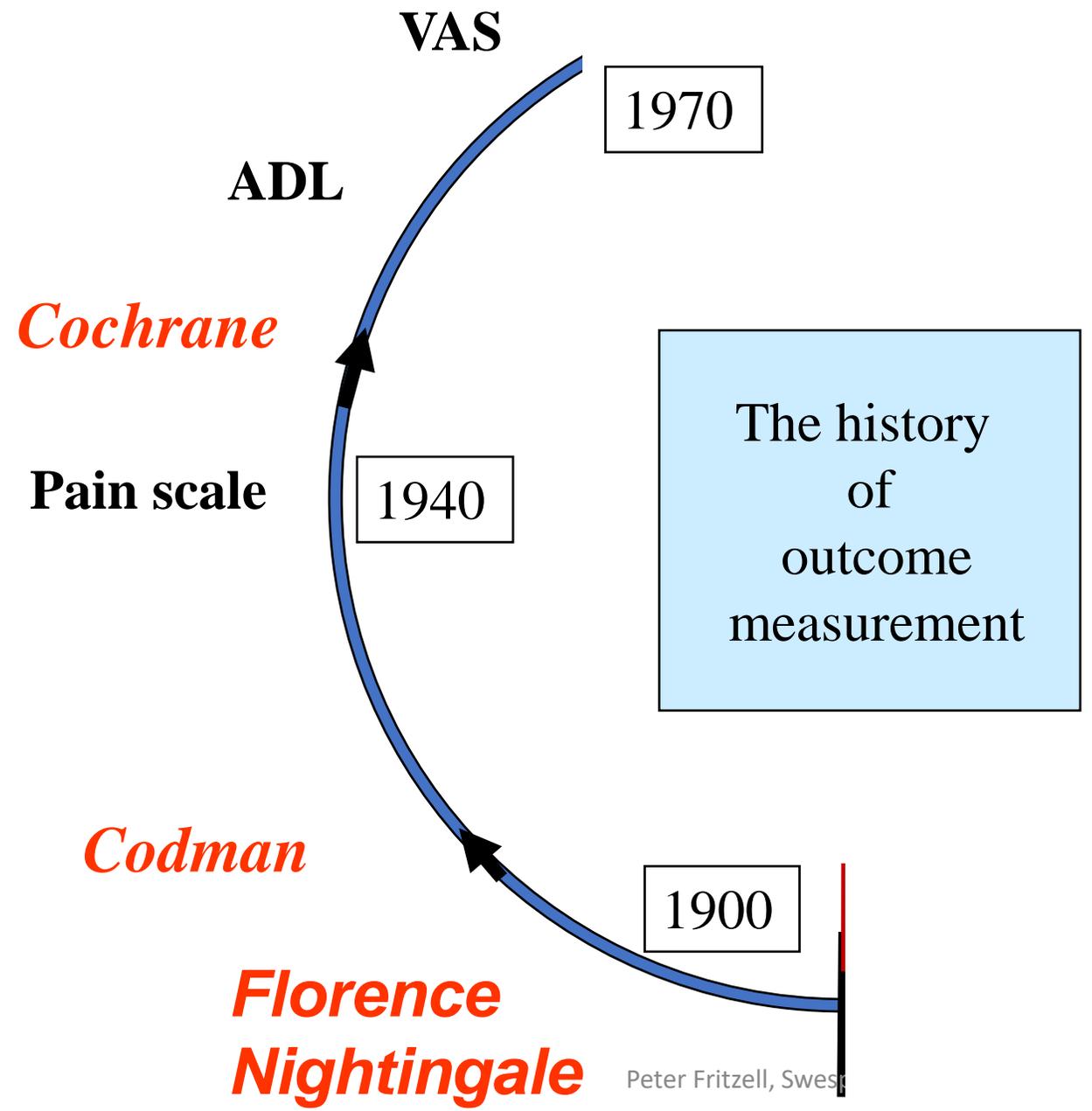
We stand on her shoulders.....

Physician rating



Physician rating

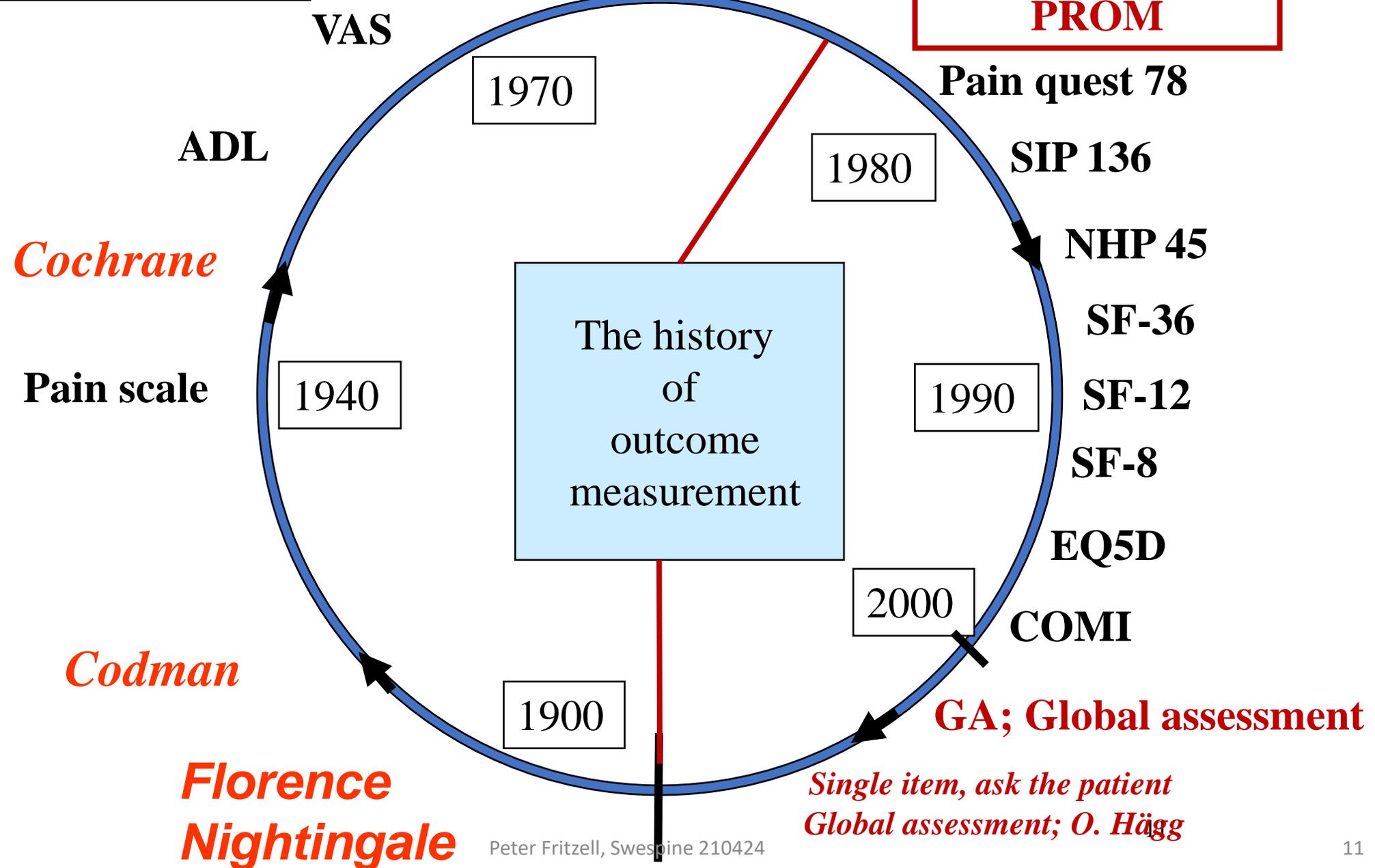
"Independent" observer



Physician rating

"Independent" observer

Patient rating - PROM



The future – we lean on the past

We rely on;

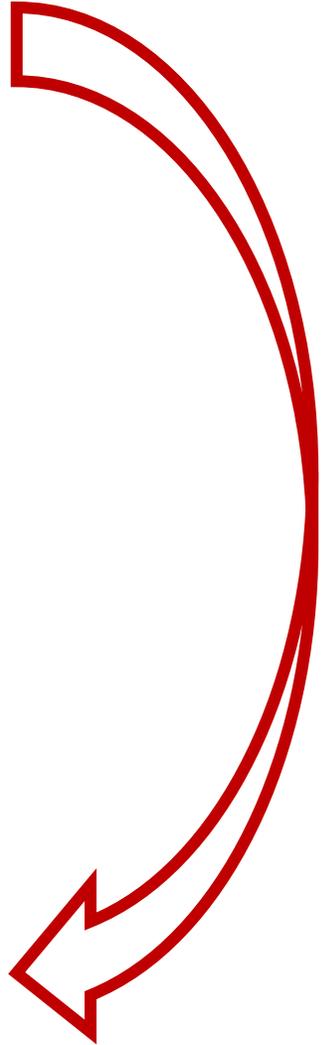
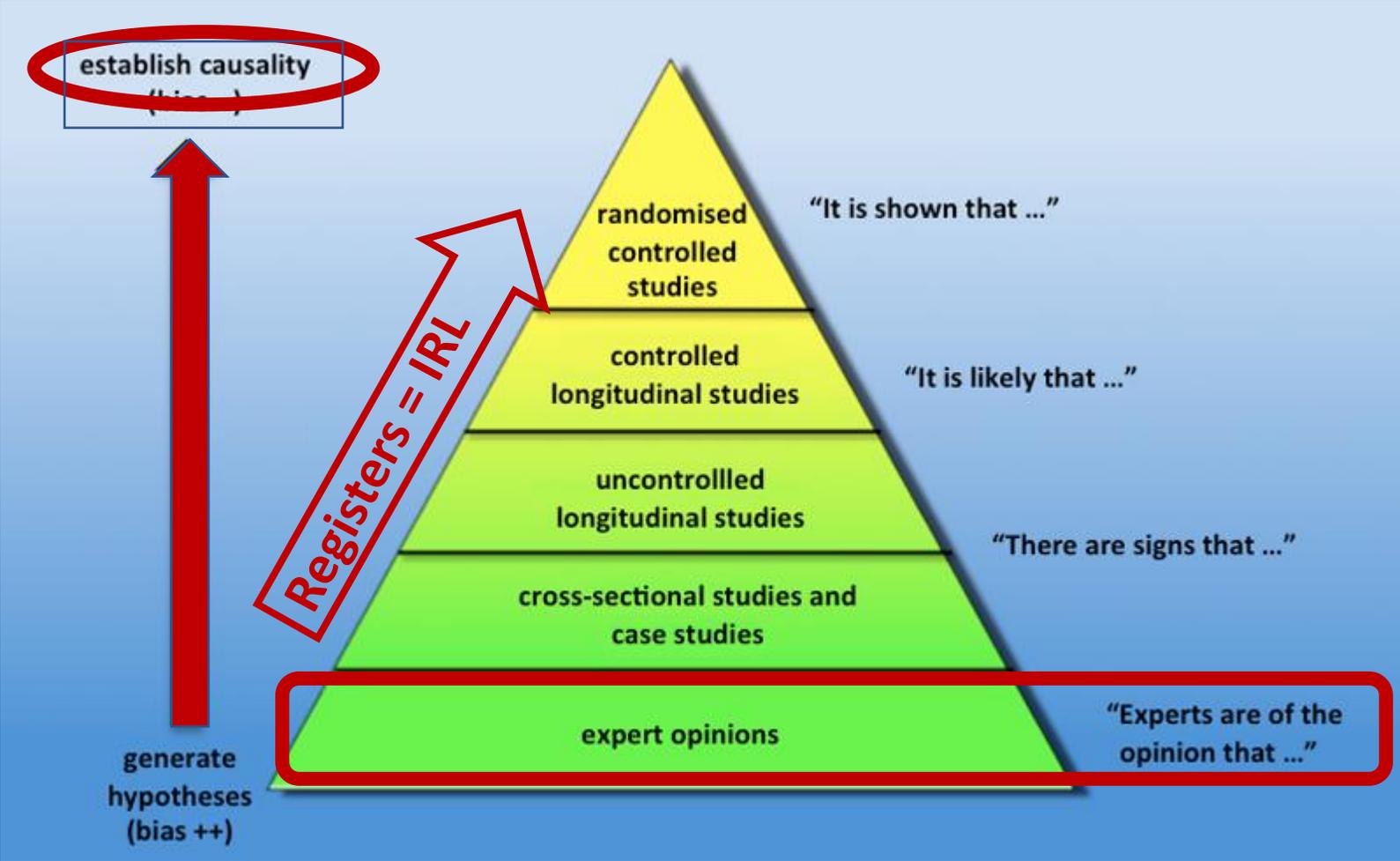
Clinical experience
Comparisons
Trial and error
Clinical expertise
In my hands
Observational studies
Retrospective studies
Prospective studies
RCT
Reviews
Meta-analyses
Registers
Industry

.....

Problems;

Subjective - bias - confounders
Different baseline variables
Different outcome variables
Different populations
Small population samples
Different Diagnoses
Different treatments
Confounders
Biases
Industry
Profit
.....

Level of evidence – today and in the Future



The end result idea - consequence analysis!



Peter Fritzell, Swespine 210424

The end result idea - consequence analysis!



Peter Fritzell, Swespine 210424

What is a register?

Prospective collection of data – and can therefore be used in an “observational study”

The first (sic) “modern” register in Health care was Norwegian (sic), 200 years ago - Lepra

Registers are used in other disciplines for thousands of years
for example in Astronomy

Register study = Observational study vs. RCTs

Can register data be trusted?

Yes - if adequate statistical analyses are used; STROBE

Special Articles

**A COMPARISON OF OBSERVATIONAL STUDIES AND RANDOMIZED,
CONTROLLED TRIALS**

KJELL BENSON, B.A., AND ARTHUR J. HARTZ, M.D., PH.D.



A COMPARISON OF OBSERVATIONAL STUDIES AND RANDOMIZED, CONTROLLED TRIALS

KJELL BENSON, B.A., AND ARTHUR J. HARTZ, M.D., PH.D. *N Engl J Med* 2000;342:1878-86

ABSTRACT

Background

For many years it has been claimed that observational studies find stronger treatment effects than randomized, controlled trials. We compared the results of observational studies with those of randomized, controlled trials.

Methods

We searched the Abridged Index Medicus and Cochrane data bases to identify observational studies reported between 1985 and 1998 that compared two or more treatments or interventions for the same condition. We then searched the Medline and Cochrane data bases to identify all the randomized, controlled trials and observational studies comparing the same treatments for these conditions. For each treatment, the magnitudes of the effects in the various observational studies were combined by the Mantel–Haenszel or weighted analysis-of-variance procedure and then compared with the combined magnitude of the effects in the randomized, controlled trials that evaluated the same treatment.

Results

There were 136 reports about 19 diverse treatments, such as calcium-channel–blocker therapy for coronary artery disease, appendectomy, and interventions for subfertility. In most cases, the estimates of the treatment effects from observational studies and randomized, controlled trials were similar. In only 2 of the 19 analyses of treatment effects did the combined magnitude of the effect in observational studies lie outside the 95 percent confidence interval for the combined magnitude in the randomized, controlled trials.

Conclusion

We found little evidence that estimates of treatment effects in observational studies reported after 1984 are either consistently larger than or qualitatively different from those obtained in randomized, controlled trials.

RCT ≈ Observational studies ≈ Register studies

1. [Benson K](#)¹, [Hartz AJ](#). A comparison of observational studies and randomized, controlled trials. [N Engl J Med](#). 2000 Jun 22;342(25):1878-86.

2. [Concato J](#), [Lawler EV](#), [Lew RA](#), [Gaziano JM](#), [Aslan M](#), [Huang GD](#). Observational methods in comparative effectiveness research. [Am J Med](#). 2010 Dec;123(12 Suppl 1)

3. [Concato J](#)¹, [Shah N](#), [Horwitz RJ](#). Randomized, controlled trials, observational studies, and the hierarchy of research designs. [N Engl J Med](#). 2000 Jun 22;342(25):1887-92.

4. [Colditz GA](#). Overview of the epidemiology methods and applications: strengths and limitations of observational study designs. [Crit Rev Food Sci Nutr](#). 2010;50 Suppl 1:10-2.

5. [Jacobs WC](#) et al. Spine surgery research: on and beyond current strategies. [Spine J](#) 2012.

6. [Phillips et al](#). Lumbar spine fusion for chronic low back pain due to degenerative disc disease: a systematic review. [Spine](#) 2013.

- **Swespine - continuous annual reports : 1 year FU of patients operated on 2012;**
<http://www.4s.nu/4s-f%C3%B6rening/%C3%A5rsrapporter-swespine-42017503>

Registers – in order to be useful;

”what’s in it for me/us!”

Who are “me”/us?

- **Therapists**
- **The staff**
- **Administrators**
- **Secretaries**
- **Politicians**
- **Patients**
- **The public**
- **Scientists**
- **Risk capitalists.....**
- **.....**

What makes a register useful?

ADEQUATE;

- 1. aims**
- 2. agreed upon variables**
- 3. collection of data**
- 4. coverage, completeness and FU**
- 5. analyses**
- 6. reporting**
- 7. daily practice - willingness to change**

Ultimate keys

- **Simplicity**
- **Daily practice**
- **What's in it for me/us**
- **Consequence analyses**
- **Willingness to change practice**

SIMPLICITY = compliance

a register is not a clinical study, although it can be used in such studies!

Registers in Sweden

In 2021 > 100 registries funded by the government

Boston Consulting Group 2011

- **“Sweden has the most cost-effective health care in the world”**
- **It’s because of their use of registers**
- Effect; 32 million EUROS/year for 5 years to health care registers, 2012-2016
- > 100 national quality registers in Sweden

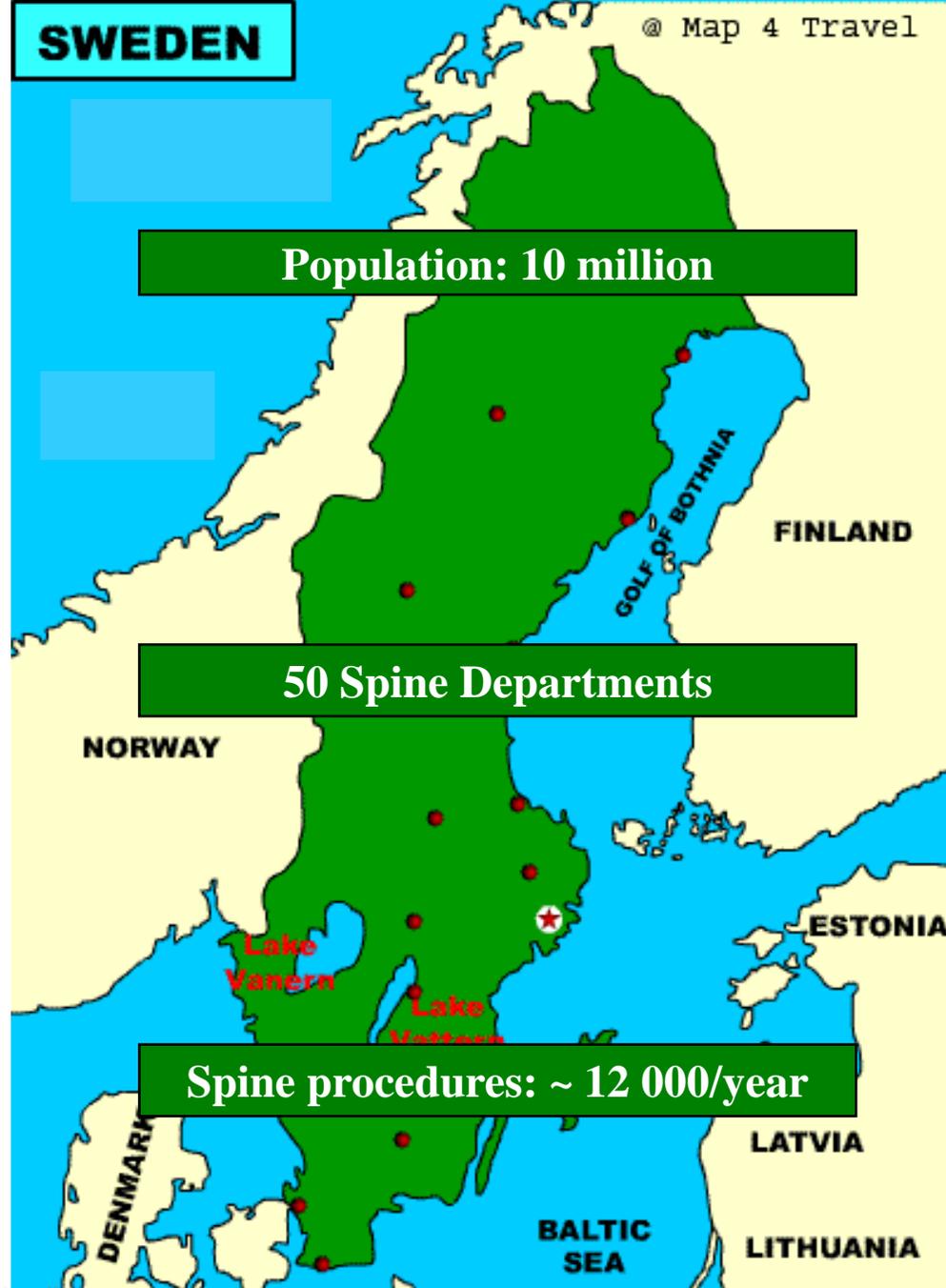
Swespine

relevance on a national level

Coverage = n. clinics registering

Completeness = patients registered
at the time of Index procedure

Follow up = patients followed up
after 1 – 2 – 5 – 10 years.....



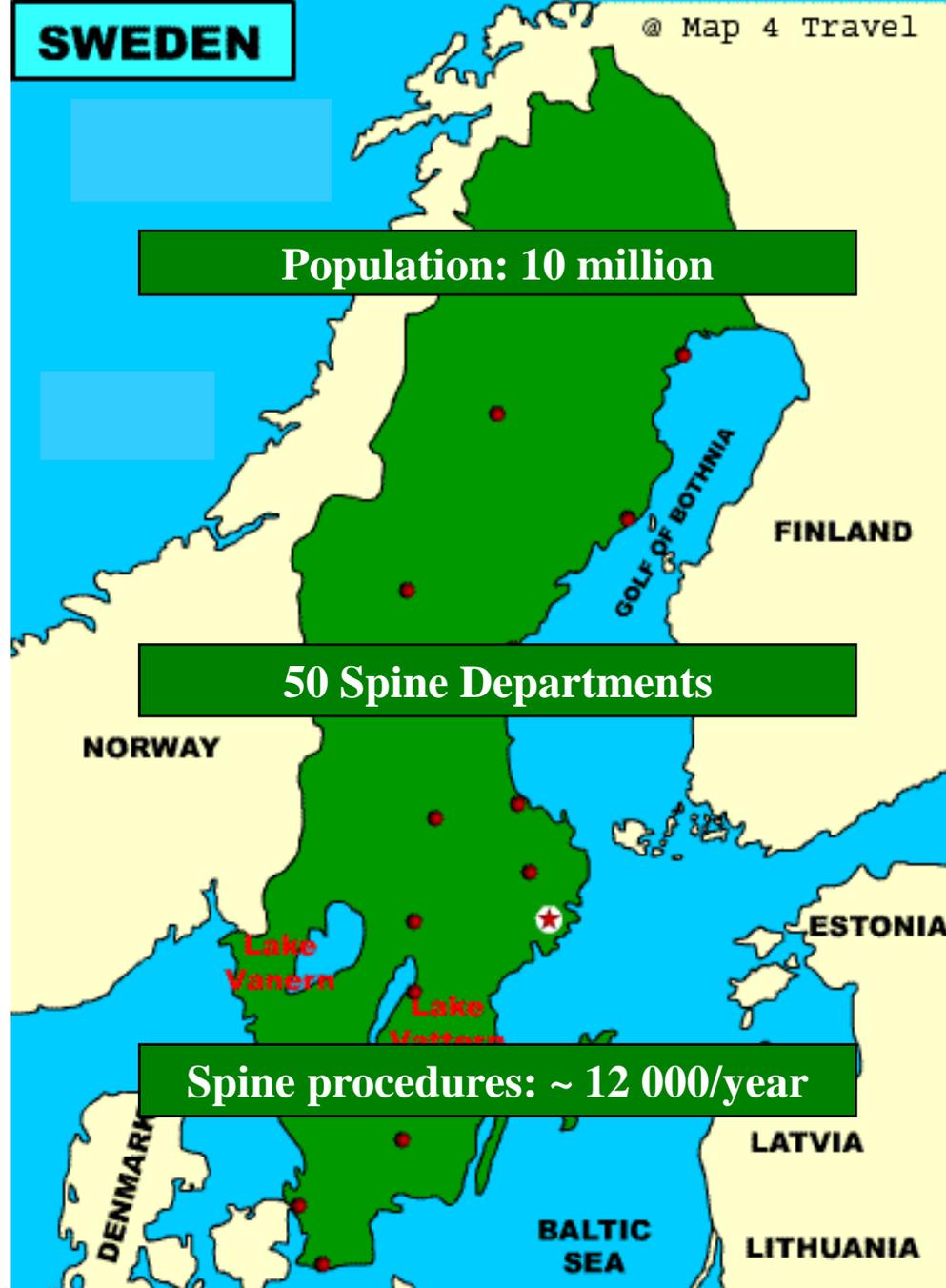
Swespine

relevance on a national level

Coverage = >95%

Completeness = 85%

Follow up > 70%



- **Results based on using Swespine**

- apart from over 120 scientific studies published in international journals

Registers – “what’s in it for me/us!”

Seven examples based on national spine registers

1. **Are we surgeons getting better with time? [Swespine](#)**
2. Effect on a specific diagnosis – Lumbar spinal stenosis. [Swespine](#)
3. Comparison in incidence and outcome between countries. [Swespine-NorSpine-Danespine](#)
4. When on a time line is a lumbar disorder costly, and what are the costs after surgery. [Swespine](#)
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Registers – “what’s in it for me/us!”

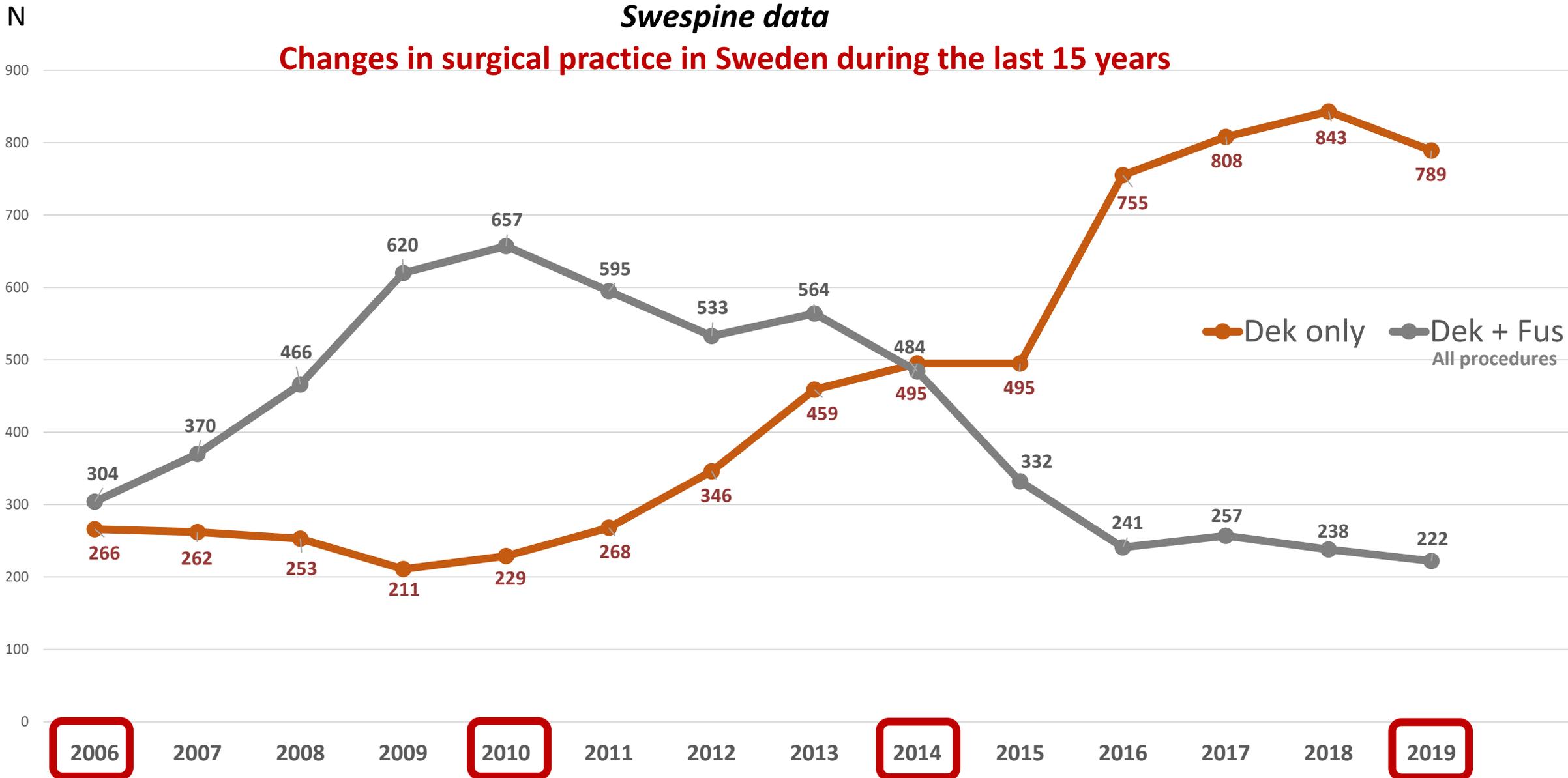
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N of Lumbal Spinal Stenos with olisthesis >3mm – surgical procedure

Swespine data

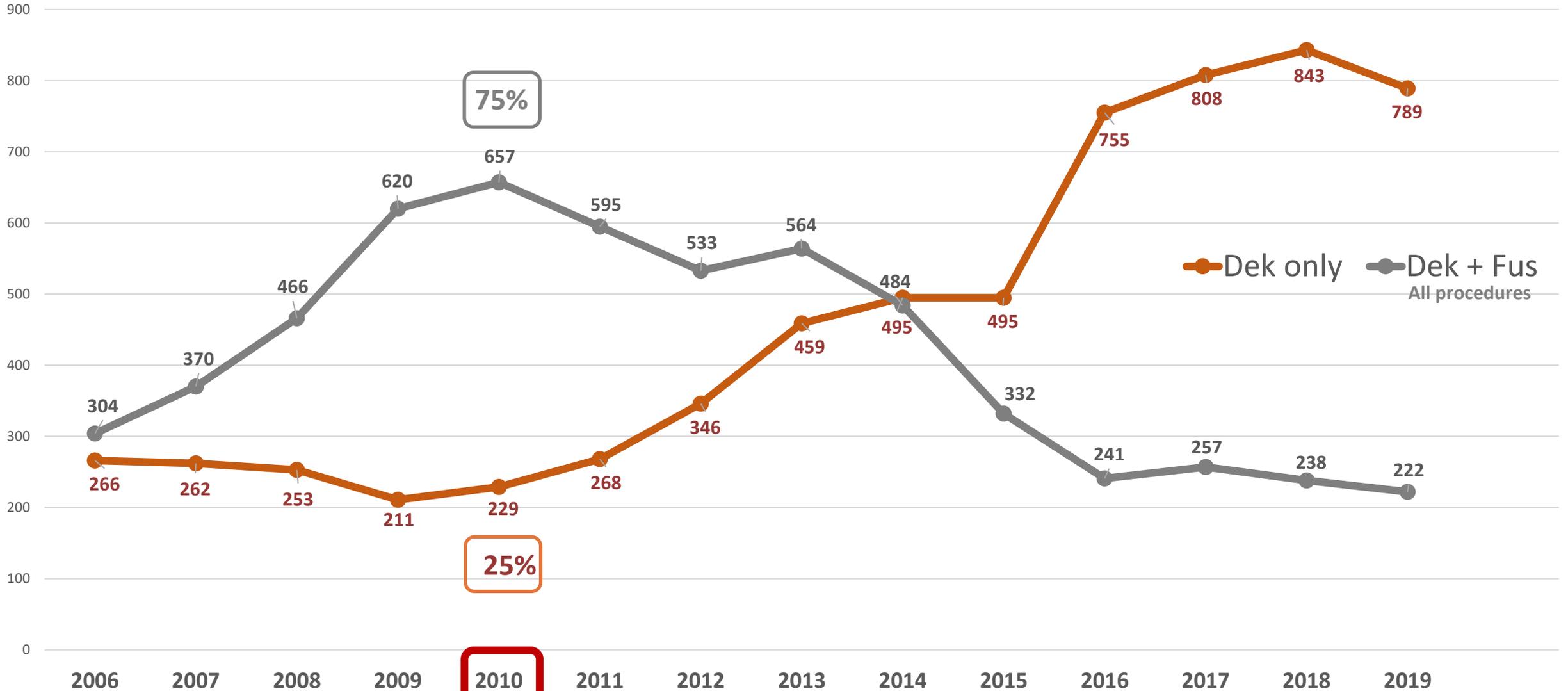
Changes in surgical practice in Sweden during the last 15 years



N of Lumbal Spinal Stenos with olisthesis >3mm – surgical procedure *Swespine data*

Changes in surgical practice in Sweden during the last 15 years

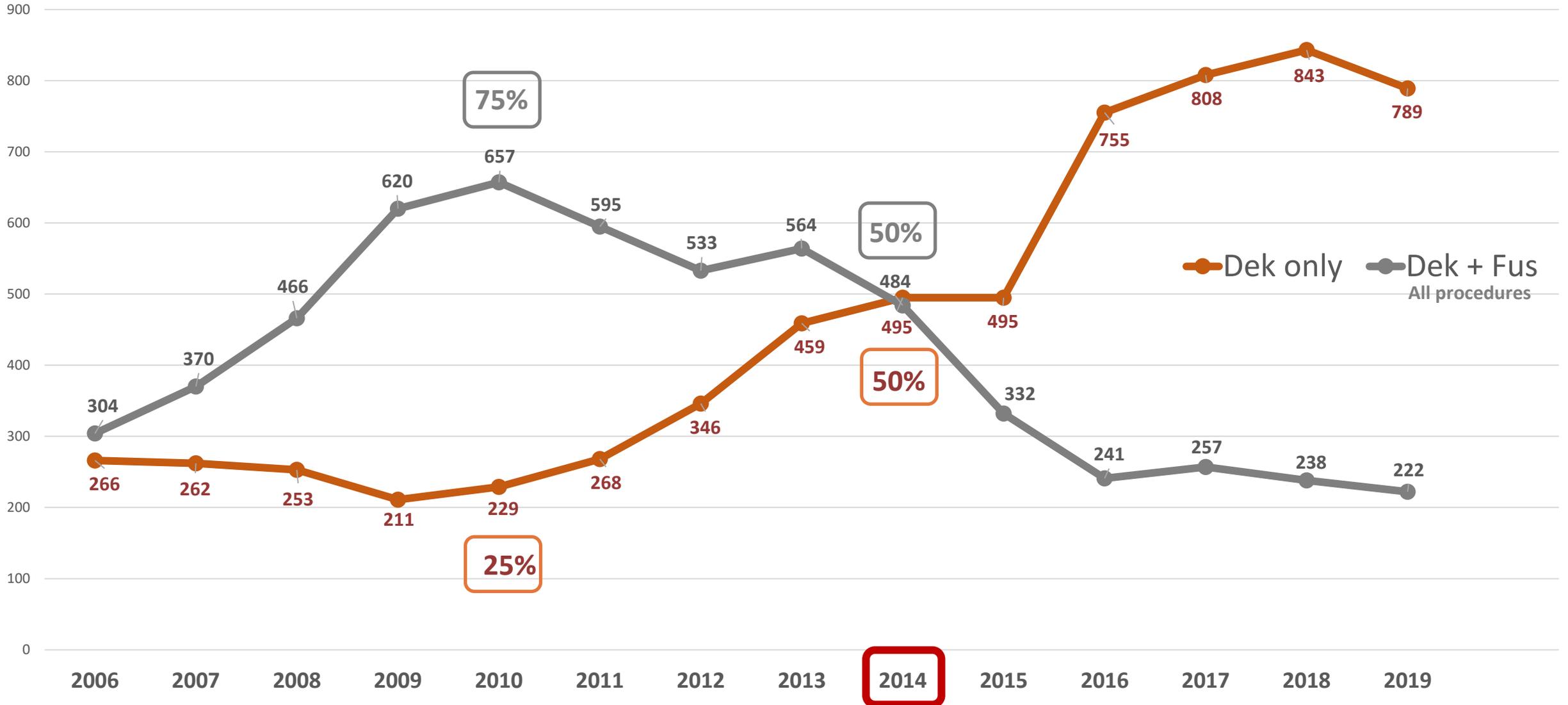
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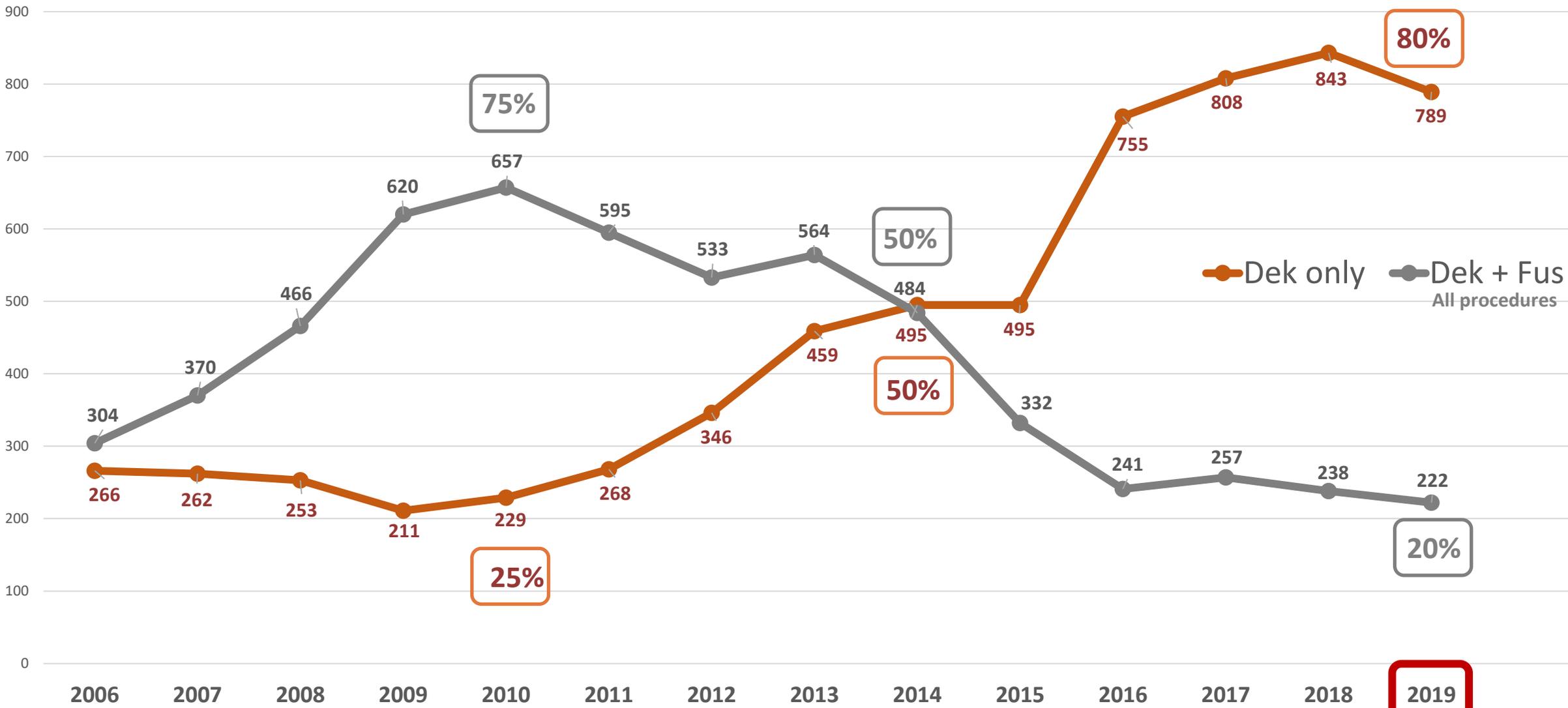
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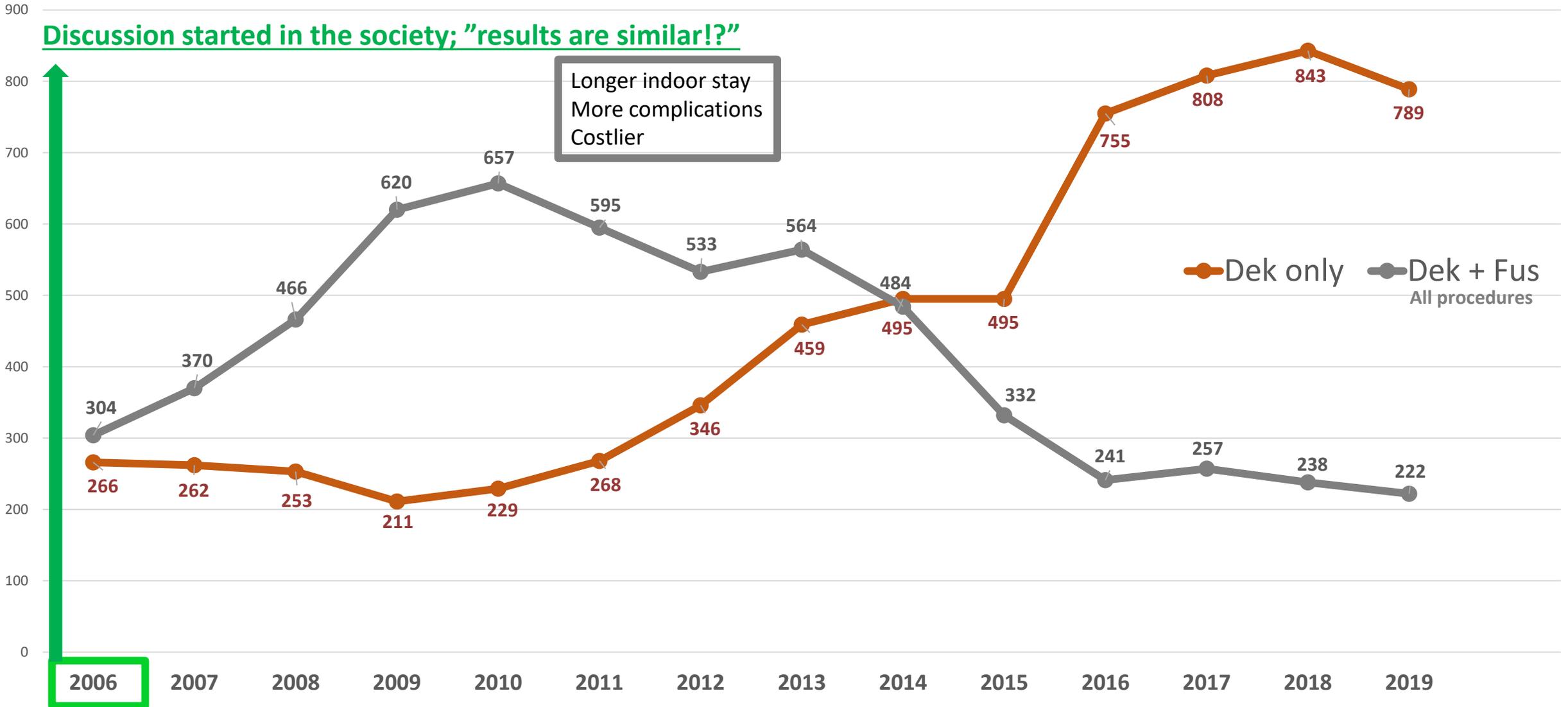
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Changes in surgical practice in Sweden during the last 15 years

N

Discussion started in the society; "results are similar!?"

Longer indoor stay
More complications
Costlier



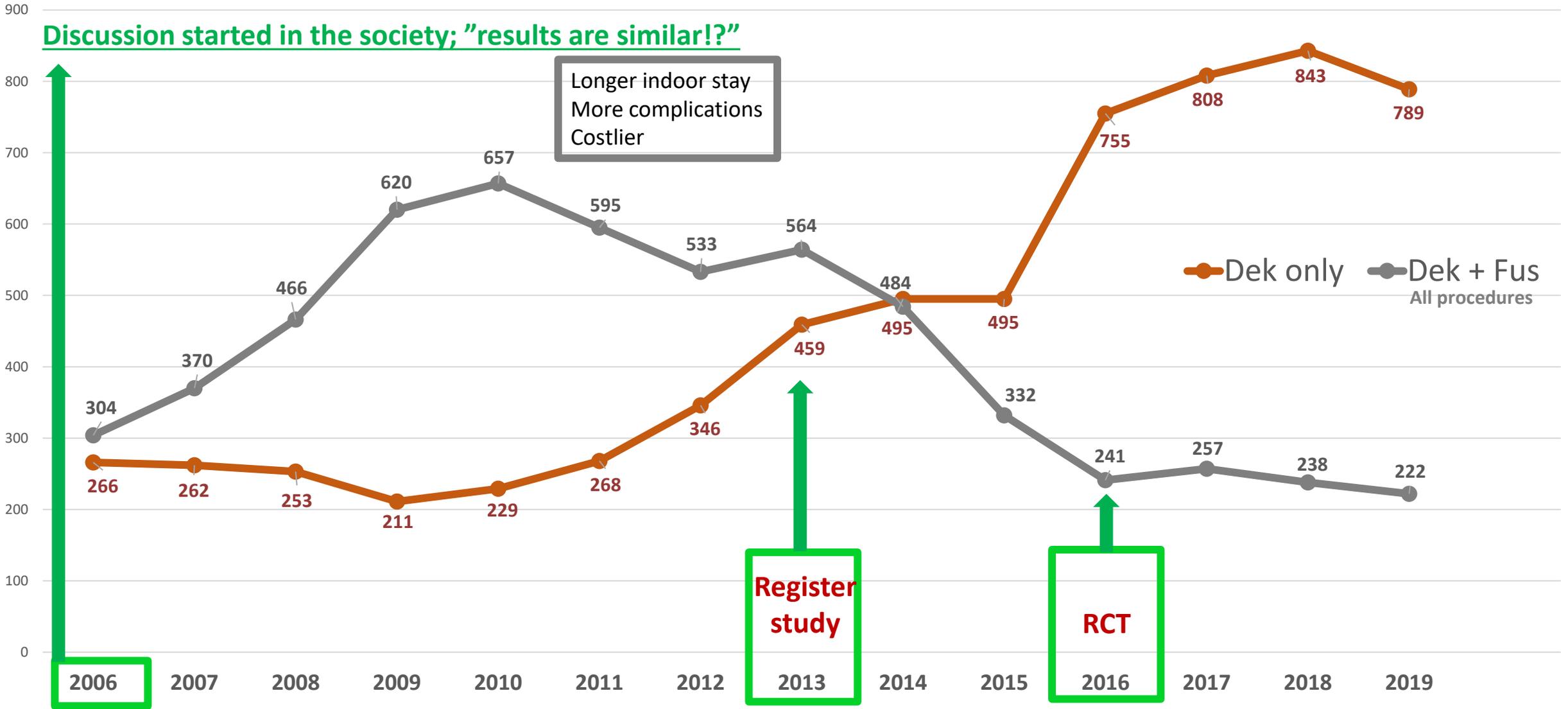
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More complications
Costlier





2013

P. Försth,
K. Michaëlsson,
B. Sandén

*From The Swedish
Spine Register,
Sweden*

■ SPINE Patients with and without olisthesis

Does fusion improve the outcome after decompressive surgery for lumbar spinal stenosis? **A register study based on Swespine**

A TWO-YEAR FOLLOW-UP STUDY INVOLVING 5390 PATIENTS

Whether to combine spinal decompression with fusion in patients with symptomatic lumbar spinal stenosis remains controversial. We performed a cohort study to determine the effect of the addition of fusion in terms of patient satisfaction after decompressive spinal surgery in patients with and without a degenerative spondylolisthesis.

The National Swedish Register for Spine Surgery (Swespine) was used for the study. Data were obtained for all patients in the register who underwent surgery for stenosis on one or two adjacent lumbar levels. A total of 5390 patients fulfilled the inclusion criteria and completed a two-year follow-up. Using multivariable models the results of 4259 patients who underwent decompression alone were compared with those of 1131 who underwent decompression and fusion. The consequence of having an associated spondylolisthesis in the operated segments pre-operatively was also considered.

At two years there was no significant difference in patient satisfaction between the two treatment groups for any of the outcome measures, regardless of the presence of a pre-operative spondylolisthesis. Moreover, the proportion of patients who required subsequent further lumbar surgery was also similar in the two groups.

In this large cohort the addition of fusion to decompression was not associated with an improved outcome.

The NEW ENGLAND
JOURNAL *of* MEDICINE

ESTABLISHED IN 1812

APRIL 14, 2016

VOL. 374 NO. 15

A Randomized, Controlled Trial of Fusion Surgery
for Lumbar Spinal Stenosis

Peter Försth, M.D., Ph.D., Gylfi Ólafsson, M.Sc., Thomas Carlsson, M.D., Anders Frost, M.D., Ph.D.,
Fredrik Borgström, Ph.D., Peter Fritzell, M.D., Ph.D., Patrik Öhagen, Karl Michaëlsson, M.D., Ph.D.,
and Bengt Sandén, M.D., Ph.D.

ABSTRACT

Randomized, Controlled Trial of Fusion Surgery for Lumbar Spinal Stenosis

NEJM 2016 Apr 14;374(15):1413-23.

Methods: We randomly assigned 247 patients between 50 and 80 years of age who had lumbar spinal stenosis at one or two adjacent vertebral levels to undergo either decompression surgery plus fusion surgery (fusion group) or decompression surgery alone (decompression-alone group). **Randomization was stratified according to the presence of preoperative degenerative spondylolisthesis (in 135 patients) or its absence.**

Results: There was no significant difference between the groups in the mean score on the ODI at 2 years (27 in the fusion group and 24 in the decompression-alone group, $P=0.24$) or in the results of the 6-minute walk test (397 m in the fusion group and 405 m in the decompression-alone group, $P=0.72$). **Results were similar between patients with and those without spondylolisthesis.** Among the patients who had 5 years of follow-up and were eligible for inclusion in the 5-year analysis, there were no significant differences between the groups in clinical outcomes at 5 years.

Conclusion: Among patients with lumbar spinal stenosis, with or without degenerative spondylolisthesis, decompression surgery plus fusion surgery did not result in better clinical outcomes at 2 years and 5 years than did decompression surgery alone.

Registers – “what’s in it for me/us!”

Seven examples based on national spine registers

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6. Value based reimbursement. [Swespine](#)
7. “The Dialogue Support”. [Swespine](#); www.eurospine.org

**We pooled three national spine registers into one database
LDH-LSS-DDD operated 2011-2013**



The national surgical spine registers in Sweden, Denmark and Norway 2011-13

	Coverage*	Completeness**	Follow up 1 year***
Swespine	90%	75%	70%
DaneSpine	80%	62%	57%
NORspine	93%	60%	66%

*Coverage; nr of clinics reporting to the register/nr of clinics performing spine surgery in the country

**Completeness; nr of patients registered at baseline/nr of patients actually operated at baseline

***Follow up; nr patients registered at 1 year FU/nr of patients registered at baseline

Sweden; Completeness = number of patients in Swespine (www.swespine.se)/number of patients in the official PAR register administered by the The National Board of Health and Welfare (<http://www.socialstyrelsen.se/English>)

Denmark;

Norway;

Result - **LSS**

	Sweden	Denmark	Norway	Total
Baseline	7,389	3,661	3,173	14,223
1 year FU	5,990 (81%)	2,341 (64%)	2,559 (81%)	10,890 (77%)

- Outcome was similar in the three countries, irrespectively of case-mix adjustment, and irrespectively of arthrodesis
- Surgical incidence varied considerably, as well as concomittant fusion

Smoking - Duration of pain - Born outside EU were negative factors

**Key question;
Cost - effectiveness**

Lumbar spinal stenosis: comparison of surgical practice variation and clinical outcome in three national spine registries

Greger Lønne, MD, PhD; Peter Fritzell, MD, PhD, Olle Hägg, MD, PhD, Dennis Nordvall, MStat, Paul Gerdhem, MD, PhD, Tobias Lagerbäck, MD, Mikkel Andersen, MD, Søren Eiskjaer, MD, Martin Gehrchen, MD, PhD, Wilco Jacobs, MSc, PhD, Miranda L. van Hooff, MSc, PhD, Tore K. Solberg, MD, PhD

Spine J. 2019 Jan;19(1):41-49.

Effectiveness of surgery for sciatica with disc herniation is not substantially affected by differences in surgical incidences among three countries: results from the Danish, Swedish and Norwegian spine registries

Tobias Lagerbäck, Peter Fritzell, Olle Hägg, Dennis Nordvall, Greger Lønne, Tore K. Solberg, Mikkel Ø. Andersen, Søren Eiskjær, Martin Gehrchen, Wilco C. Jacobs, Miranda L. van Hooff, Paul Gerdhem

Eur Spine J. 2019 Nov;28(11):2562-2571.

Surgical Treatment of Degenerative Disk Disease in Three Scandinavian Countries: An International Register Study Based on Three Merged National Spine Registers

Mikkel Østerheden Andersen, MD, Peter Fritzell, MD, PhD, Søren Peter Eiskjaer, MD, Tobias Lagerbaeck, MD, Olle Hagg, MD, PhD, Dennis Nordvall, MSc, Greger Lønne, MD, Tore Solberg, MD, PhD, Wilco Jacobs, MSc, PhD, Miranda van Hooff, MSc, PhD, Paul Gerdhem, MD, PhD, and Martin Gehrchen, MD, PhD

Global Spine J. 2019 Dec;9(8):850-858.

Registers – “what’s in it for me/us!”

Seven examples based on national spine registers

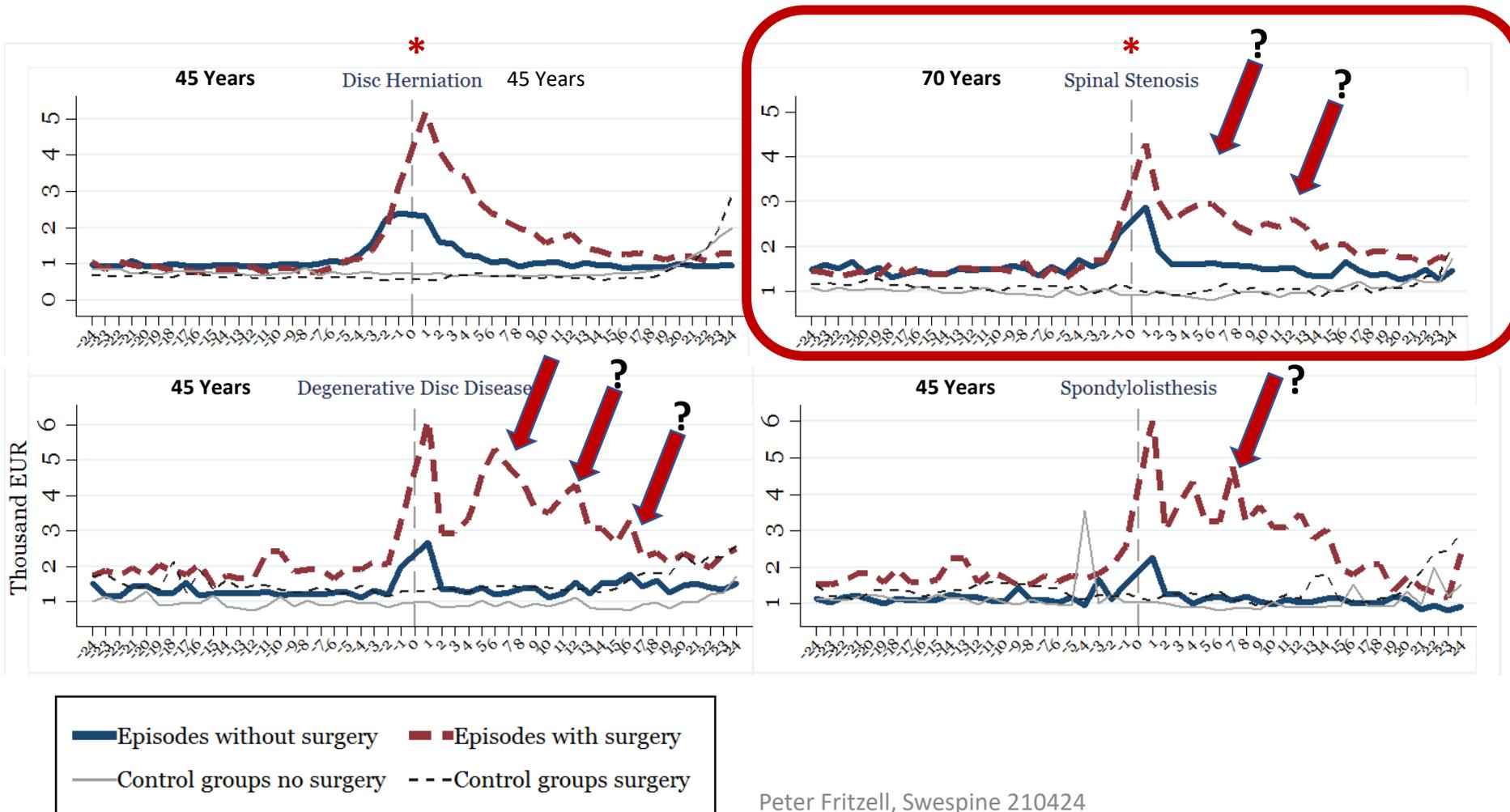
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7. “The Dialogue Support”. [Swespine](#); www.eurospine.org

Health economic pathway in patients with low back pain using five national registers to monitor costs

Profile of Low Back Pain: Treatment and Costs Associated With Patients Referred to Orthopaedic Specialists in Sweden. [Jonsson E](#)¹, [Olafsson G](#), [Fritzell P](#), [Hägg O](#), [Borgström F](#).
Spine 2017, Jan 31

Total cost (1000 Euro) per month, 24 months before and after Index-point * = seeing an orthopedic specialist.

Five national registers; Swespine, Vega (Regional Register), Swedish drug prescription, Patient Administrative Register (PAR), Swedish Social Insurance Agency Register



Registers – “what’s in it for me/us!”

Seven examples based on national spine registers

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6. Value based care/reimbursement. [Swespine](#)
7. “The Dialogue Support”. [Swespine](#); www.eurospine.org

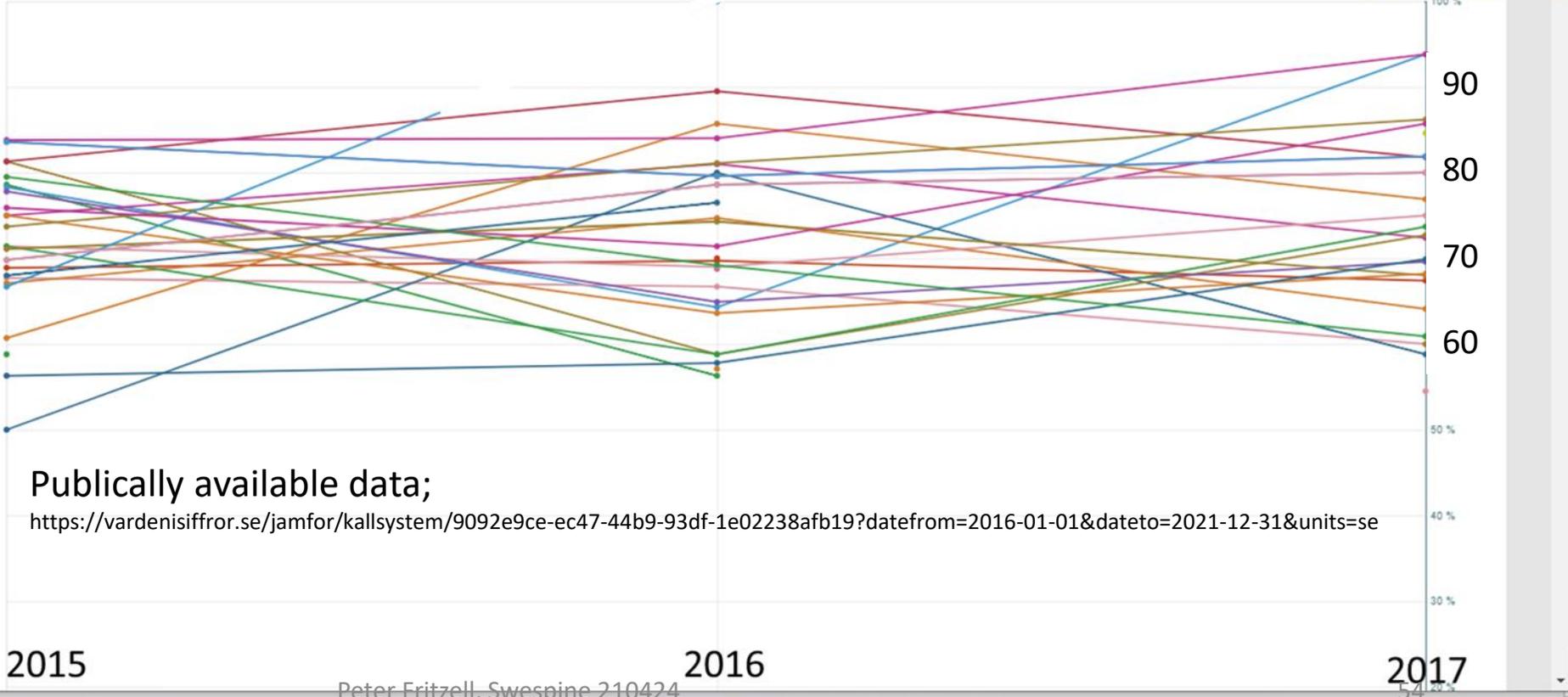
Lumbar Disc Herniation. Improved leg pain – yearly results Swedish clinics

Not adjusted for "case-mix" – comparing results among clinics

Clinics

Senast Rapporterat Värde

✕	SÖDRA ÄLVSBOGERS SJUKHUS	-
✕	PRIMÄRVÅRD OCH NORRTÄLJE SJUKHUS	-
✕	ALERIS SPECIALISTVÅRD SABBATSBERG	-
✕	KALIX SJUKHUS	-
✕	KIRUNA SJUKHUS	-
✕	MÅLARSJUKHUSET ESKILSTUNA	MSK
✕	NYKÖPINGS SJUKHUS	-
✕	KULLBERGSKA SJUKHUSET KATRINEHOLM	-
✕	HALLANDS SJUKHUS KUNGSBACKA	-
✕	HALLANDS SJUKHUS VARBERG	-
✕	SÖDERTÄLJE SJUKHUS AB	-
✕	HELSINGBORGS LASARETT	-
✕	SJUKHUSET ARVIKA	54,5 %
✕	SJUKHUSET TORSBY	-
✕	LJUNGBY LASARETT	-
✕	CENTRALLASARETTET VÄXJÖ	MSK
✕	ELISABETHSJUKHUSET	-
✕	HALLANDS SJUKHUS HALMSTAD	67,4 %
✕	VÄSTERVIKS SJUKHUS	MSK



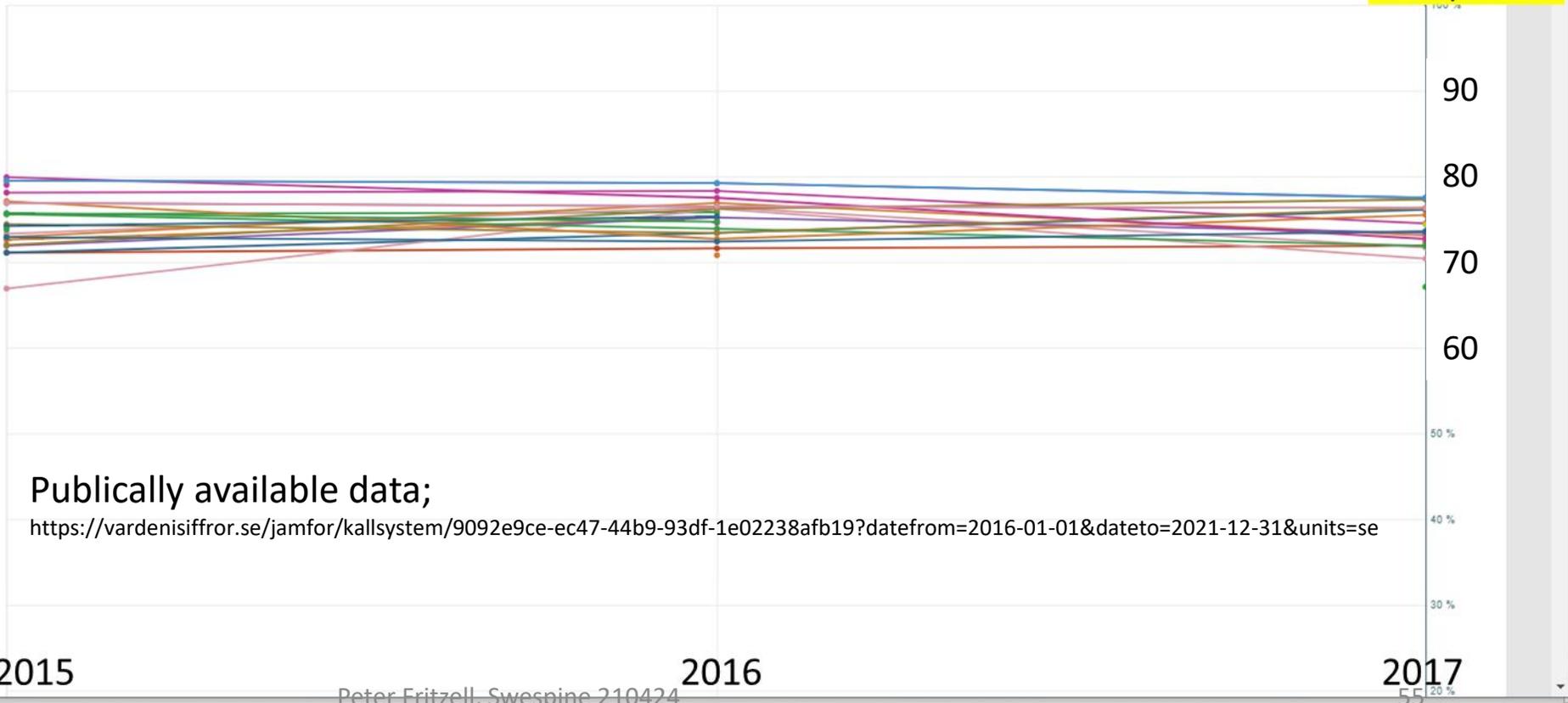
Lumbar Disc Herniation. Improved leg pain – yearly results Swedish clinics

Adjusted for "case-mix" – comparing results among clinics

Clinics

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✕	SÖDRA ÄLVSBOGS SJUKHUS	-
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✕	KIRUNA SJUKHUS	-
✕	MÅLARSJUKHUSET ESKILSTUNA	MSK
✕	NYKÖPINGS SJUKHUS	-
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✕	SÖDERTÄLJE SJUKHUS AB	-
✕	HELSINGBORGS LASARETT	-
✕	SJUKHUSET ARVIKA	MSK
✕	SJUKHUSET TORSBY	-
✕	LJUNGBY LASARETT	-
✕	CENTRALLASARETTET VÄXJÖ	MSK
✕	ELISABETHSJUKHUSET	-
✕	HALLANDS SJUKHUS HALMSTAD	71,9 %
✕	VÄSTERVIKS SJUKHUS	MSK

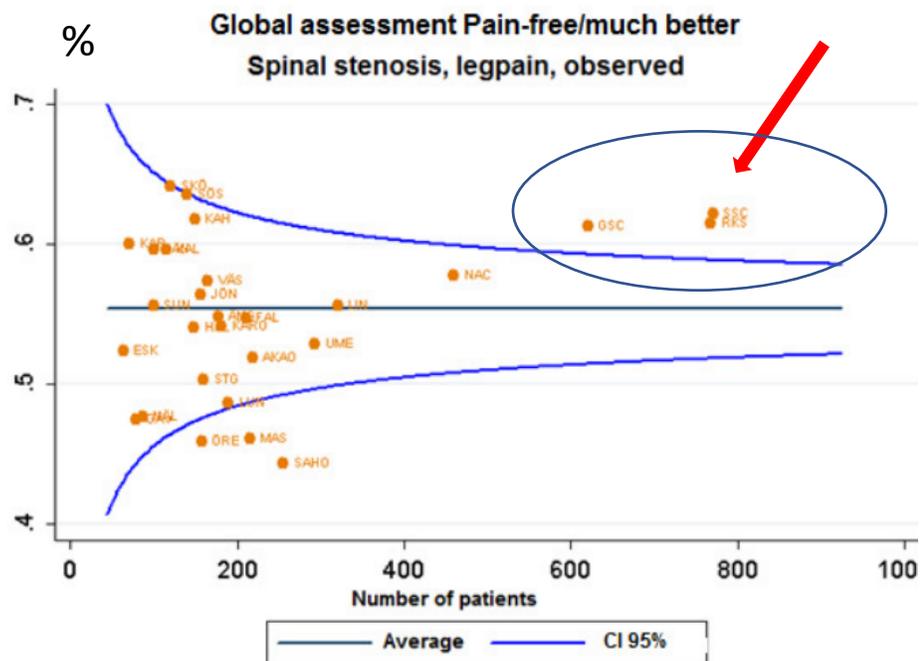


Swespine annual report 2013; Central Spinal Stenosis (>50% of all spine procedures)

Patient reported improvement/clinic (Global assessment CSS)

● Clinic

Does case-mix adjustment make any difference? Funnel plot illustration



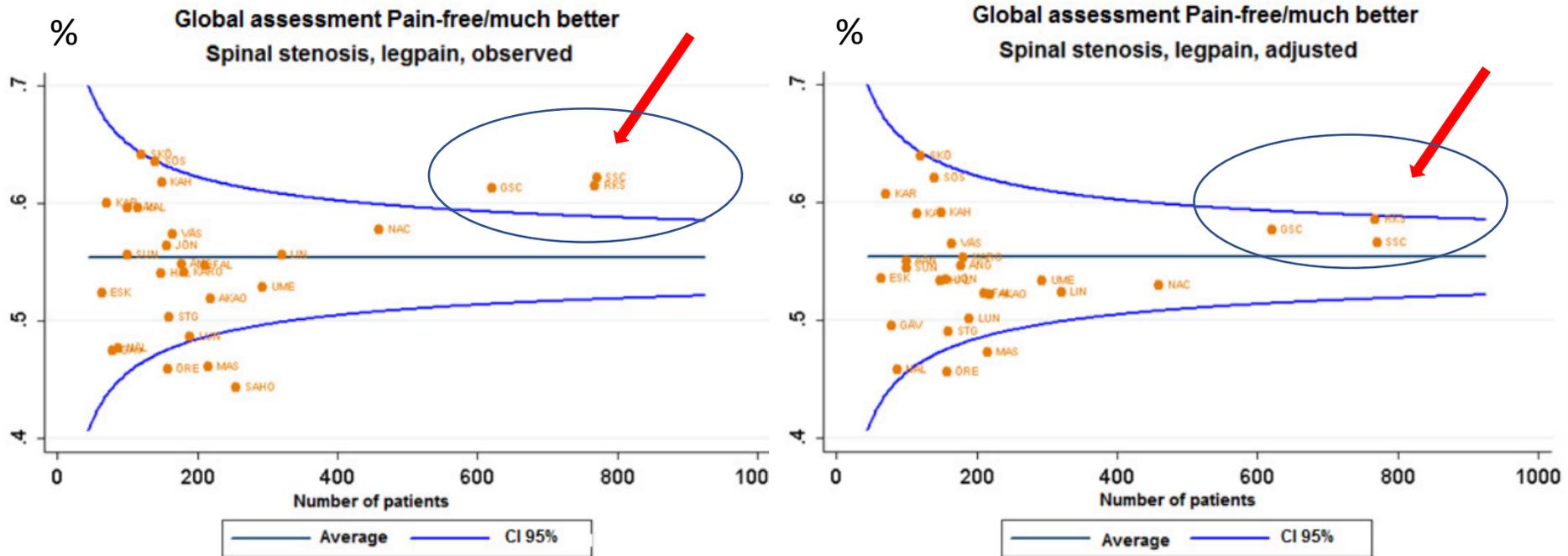
http://www.4s.nu/Homepage/Download-File/f/1265399/h/2716eb57e403a90c6b4cae6a57885bba/Report_2012_swespine_englishversion

Swespine annual report 2013; Central Spinal Stenosis (>50% of all spine procedures)

Patient reported improvement/clinic (Global assessment CSS)

● Clinic

Case-mix adjustment makes a difference! Funnel plot illustration



Registers – “what’s in it for me/us!”

Seven examples based on national spine registers

1. Are we surgeons getting better with time? [Swespine](#)
2. Effect on a specific diagnosis – Lumbar spinal stenosis. [Swespine](#)
3. Comparison in incidence and outcome between countries. [Swespine-NorSpine-Danespine](#)
4. When on a time line is a lumbar disorder costly, and what are the costs after surgery. [Swespine](#)
5. Case-mix adjustment. [Swespine](#)
- 6. Value based care/reimbursement. [Swespine](#)**
7. “The Dialogue Support”. [Swespine](#); www.eurospine.org

VBC – Value Based Care in Europe; OECD January 2017

Organisation for Economic Co-operation and Development. <https://www.oecd.org/els/health-systems/health-care-quality-and-outcomes.htm>

Jan 20, 2017

www.uemo.eu/2017/01/20/oecd-health-ministers-support-new-global-league-table-of-patient-outcomes/

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VBR – Value Based Reimbursement on three private clinics in Sweden since 2013

Registers – “what’s in it for me!”

Seven examples based on national spine registers

1. Are we surgeons getting better with time? [Swespine](#)
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6. Value based reimbursement. [Swespine](#)
7. **“The Dialogue Support”**. [Swespine](#); www.eurospine.org

Variables included in Swespine – “different mix” for different patients

Variables included in Degenerative lumbar spinal disorders (LDH, LSS, DDD)

Diagnose

Type of clinic (University, County hospital, Private clinic)

Age

Gender

Work status

Sick pension

Retention pension

Smoking

Quality of life (EQ5D)

Walking distance

Pain duration LEG

Pain duration BACK

Preop pain LEG (NRS)

Preop pain BACK (NRS)

Function (ODI) How was your spine procedure financed?

Comorbidity

Are you active in sports?

What do you think of your possibilities to return to work?

How physical is your current workload?

Are you out of work?

Since how long have you been unable to work?

Type of previous spine procedure

Acute or Elective surgery

Type of procedure/Index operation

How many previous spine procedures?

Do you take pain killers for your back/leg pain?

Type of instrumentation

Type of implant

Type of bone transplant

Operated from the left/right

Antibiotic prophylaxis

Postop complications

Reoperation during Index stay

Type of reop procedure

Number of reop

Variables used for "case-mix adjustment" in Swespine/the Dialogue support

These variables have been identified, after statistical analyses, as predictive of patient reported outcome one year after surgery for the following Degenerative lumbar spinal disorders; LDH, LSS, DDD

1. Diagnosis
2. Type of clinic (University, County hospital, Private clinic)
3. Age
4. Gender
5. Work status
6. Sick pension
7. Retention pension
8. Smoking
9. Quality of life (EQ5D)
10. Comorbidity
11. Walking distance
12. Pain duration LEG (months)
13. Pain duration BACK (months)
14. Preop pain LEG (NRS)
15. Preop pain BACK (NRS)
16. Function (ODI)

Spine surgery – discussion with the patient

The “Dialogue support”

www.eurospine.org

A prediction tool based on data from
the Swedish national quality spine register;

Swespine

Peter Fritzell/register manager Swespine



Dialogue support for spine surgery – based on Swespine, the Swedish Spine Register



Basic information | **Back-specific information**

Subgroup

Diagnosis group: Spinal Stenosis

Operated levels: 1 2 3 4 5+

Clinical department type (only length of stay): University

Sociodemographics

Age: 20 70 110

Gender: Man

Unemployed:

Disability pension: No

Retirement pension: No

Health profile

Smoker:

Previous spine surgery:

Quality of life (EQ-5D): -0.59 0.4 1

Comorbidity*:

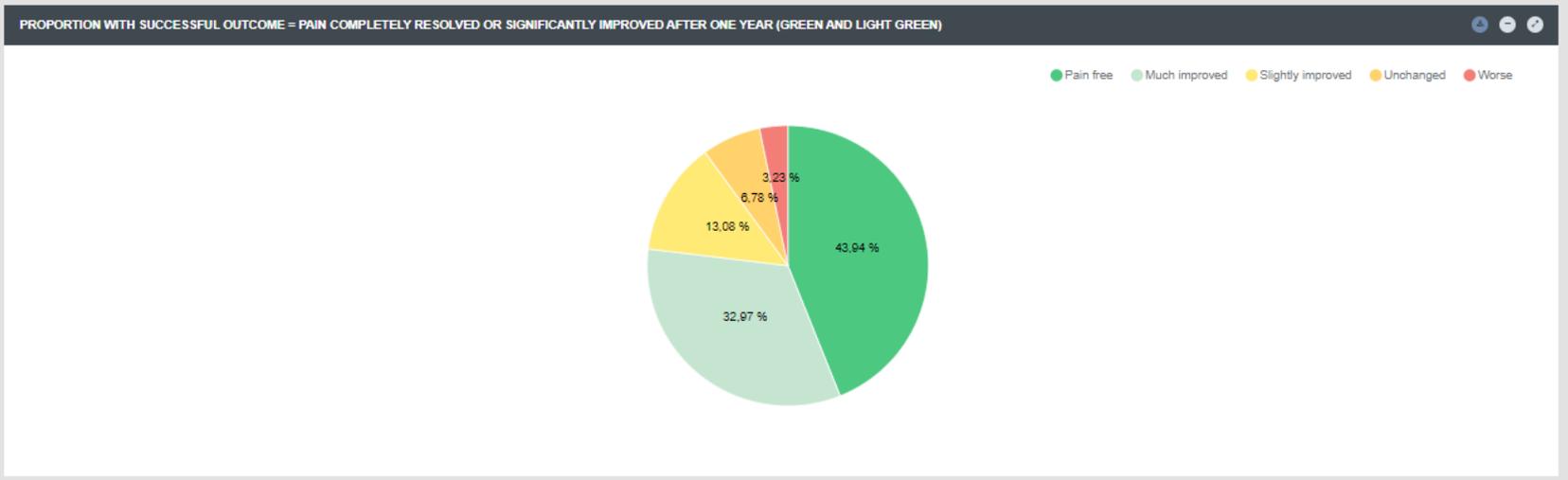
[Back-specific information >>](#)

RESULTS

Proportion satisfied patients: **81 %** (Satisfied with outcome)

Proportion with successful outcome: **77 %** (Pain completely resolved or greatly improved)

Expected length of stay: **1.6 days** (Date of discharge – date of surgery)



DESCRIPTION



Dialogue support for spine surgery – based on Swespine, the Swedish Spine Register

Basic information | **Back-specific information**

Health profile

Walking distance: 100 - 500 meters

Duration of pain in legs: 3 to 12 months

Duration of pain in back: 3 to 12 months

Preoperative pain (NRS) – legs: 5

Preoperative pain (NRS) – back: 4

Functional impairment ODI: 39

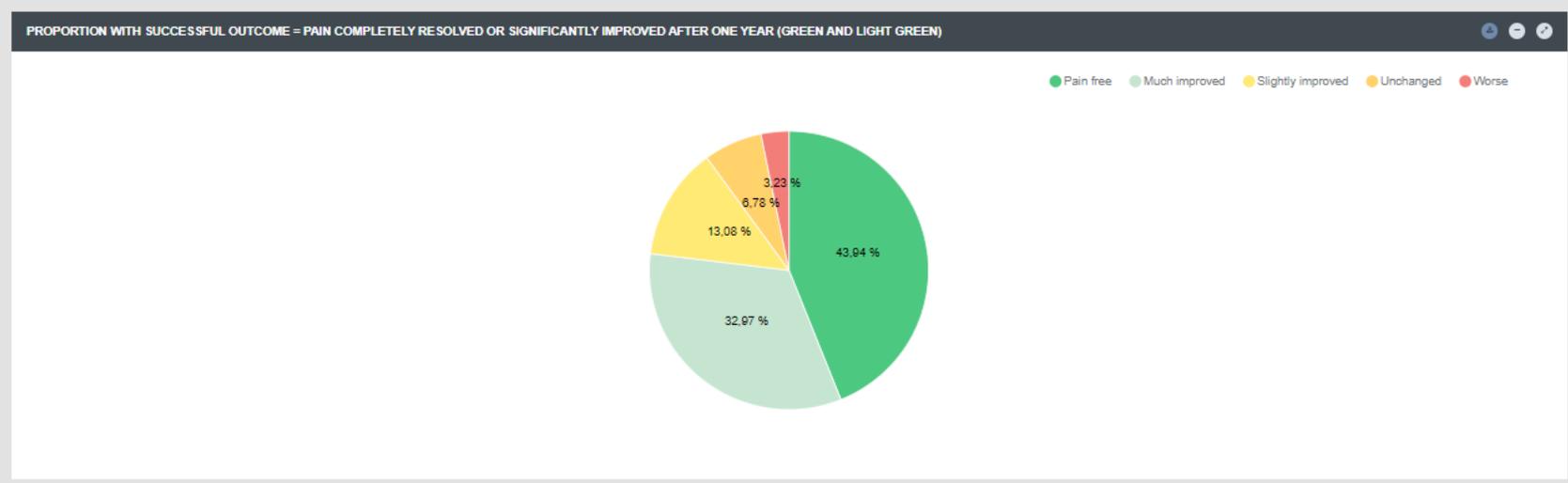
Basic information >>

RESULTS

Proportion satisfied patients: **81 %** (Satisfied with outcome)

Proportion with successful outcome: **77 %** (Pain completely resolved or greatly improved)

Expected length of stay: **1.6 days** (Date of discharge – date of surgery)



DESCRIPTION

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Dialogue support for spine surgery – based on Swespine, the Swedish Spine Register

Basic information | **Back-specific information**

Subgroup

Diagnosis group: Spinal Stenosis

Operated levels: 1 2 3 4 5+

Clinical department type (only length of stay): University

Sociodemographics

Age: 20 70 110

Gender: Woman

Unemployed:

Disability pension: No

Retirement pension: No

Health profile

Smoker:

Previous spine surgery:

Quality of life (EQ-5D): -0.59 0.3 1

Comorbidity*:

[Back-specific information >>](#)

RESULTS

Proportion satisfied patients

80 %

Satisfied with outcome

Proportion with successful outcome

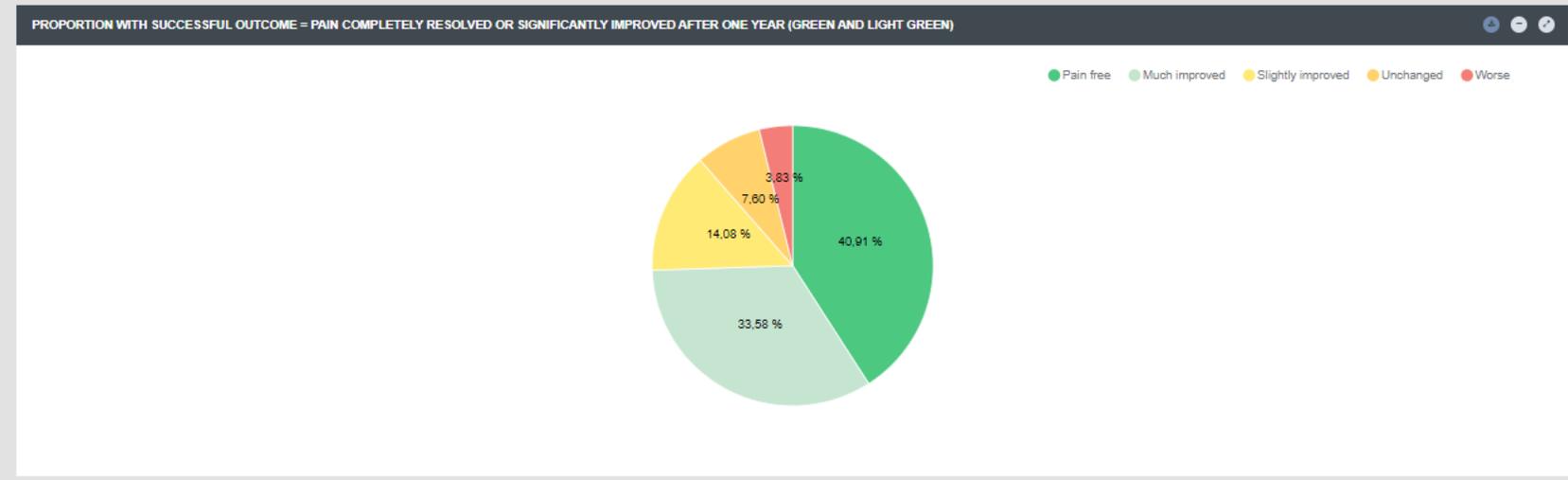
74 %

Pain completely resolved or greatly improved

Expected length of stay

2.5 days

Date of discharge – date of surgery



DESCRIPTION

Proportion satisfied patients

The proportion of satisfied patients has been calculated at: **80 %** for patients with the selected profile.

Question in Swespine:
What is your attitude to the outcome of your spine surgery?

Proportion with successful outcome
(pain completely resolved or greatly improved)

Proportion of patients with a successful outcome is calculated to be: **74 %** for patients with the selected profile.

Question in Swespine:
How would you rate your leg pain/sciatica today compared with prior to surgery?

Expected length of stay

Average length of stay is: **2.5 days** for patients with the selected profile.

Question in Swespine:
Date of Surgery, Date of Discharge



Dialogue support for spine surgery – based on Swespine, the Swedish Spine Register

Basic information | **Back-specific information**

Subgroup

Diagnosis group: Spinal Stenosis

Operated levels: 1 2 3 4 5+

Clinical department type (only length of stay): University

Sociodemographics

Age: 20 70 110

Gender: Woman

Unemployed:

Disability pension: No

Retirement pension: No

Health profile

Smoker:

Previous spine surgery:

Quality of life (EQ-5D): -0.59 0.3 1

Comorbidity:

[Back-specific information >>](#)

RESULTS

Proportion satisfied patients

52 %

Satisfied with outcome

Proportion with successful outcome

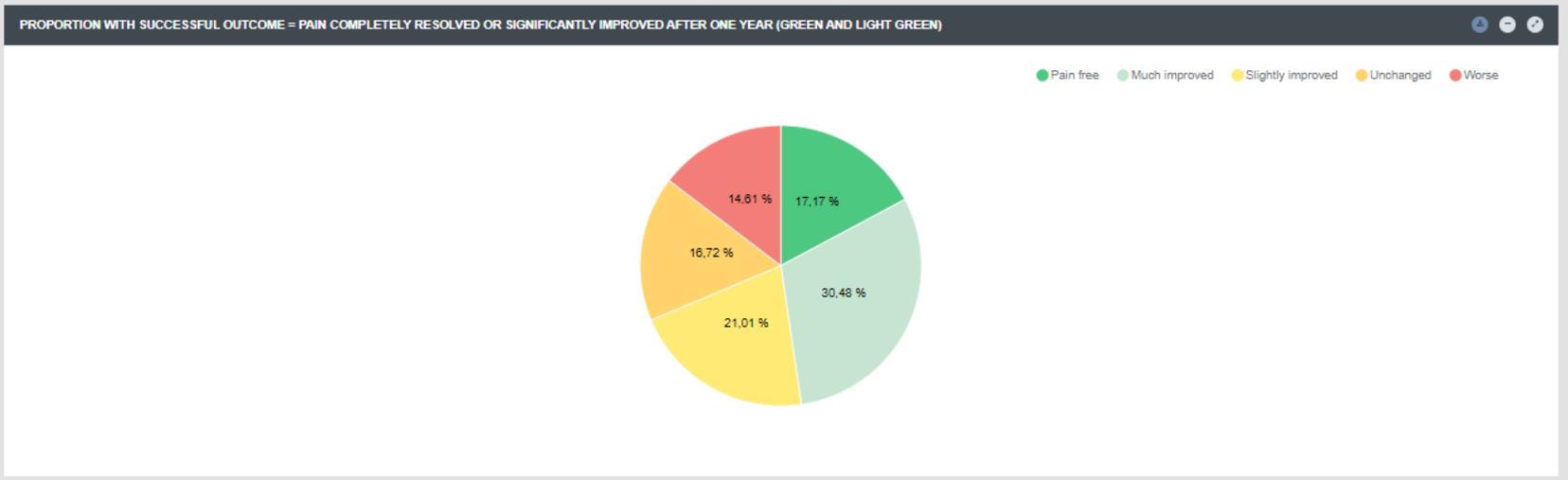
48 %

Pain completely resolved or greatly improved

Expected length of stay

2.6 days

Date of discharge – date of surgery



DESCRIPTION

Proportion satisfied patients

The proportion of satisfied patients has been calculated at: **52 %** for patients with the selected profile.

Question in Swespine:
What is your attitude to the outcome of your spine surgery?

Proportion with successful outcome
(pain completely resolved or greatly improved)

Proportion of patients with a successful outcome is calculated to be: **48 %** for patients with the selected profile.

Question in Swespine:
How would you rate your leg pain/sciatica today compared with prior to surgery?

Expected length of stay

Average length of stay is : **2.6 days** for patients with the selected profile.

Question in Swespine:
Date of Surgery, Date of Discharge

DESCRIPTION

Proportion satisfied patients

The proportion of satisfied patients has been calculated at: 53 % for patients with the selected profile.

Question in Swespine: What is your attitude to the outcome of your spine surgery?

- Definition: Satisfied patient: satisfied, Dissatisfied patient: unsure or dissatisfied.

Number of observations: 22 522 surgeries

The number of observations refers to the total number of surgeries that serve as the basis for the prediction model and is not specific for selected patient type.

- Variables in model: Age, Comorbidity, Disability pension, Duration of pain in back, Duration of pain in legs, Functional impairment ODI, Gender, Operated levels, Preoperative pain (NPS) – back, Preoperative pain (NPS) – legs, Previous spine surgery, Quality of life (EQ-5D), Retirement pension, Smoker, Unemployed, Walking distance

Proportion with successful outcome

(pain completely resolved or greatly improved)

Proportion of patients with a successful outcome is calculated to be: 48 % for patients with the selected profile.

Question in Swespine: How would you rate your leg pain/sciatica today compared with prior to surgery?

- Definition: Successful outcome: Completely resolved or greatly improved

Number of observations: 21 887 surgeries

The number of observations refers to the total number of surgeries that serve as the basis for the prediction model and is not specific for selected patient type.

- Variables in model: Age, Comorbidity, Disability pension, Duration of pain in back, Duration of pain in legs, Functional impairment ODI, Gender, Operated levels, Preoperative pain (NPS) – back, Previous spine surgery, Smoker, Unemployed, Walking distance

Expected length of stay

Average length of stay is : 2.6 days for patients with the selected profile.

Question in Swespine: Date of Surgery, Date of Discharge

- Definition: Date of Discharge minus Date of Surgery = number of days

Number of observations: 29 742 surgeries

The number of observations refers to the total number of surgeries that serve as the basis for the prediction model and is not specific for selected patient type.

- Variables in model: Age, Clinical department type, Comorbidity, Disability pension, Duration of pain in back, Functional impairment ODI, Gender, Operated levels, Preoperative pain (NPS) – back, Preoperative pain (NPS) – legs, Previous spine surgery, Quality of life (EQ-5D), Smoker, Unemployed, Year of surgery

This tool consists of prediction models for two health outcomes and one resource measure, for four different diagnosis groups. The data was derived from patients operated throughout Sweden, as reported to the Swespine quality assessment register during the period 2007-2020.

- The models were designed as follows: 16 variables describing the patient's circumstances and health profile prior to surgery were selected in collaboration with experts. For each health outcome a variable selection method (Stepwise selection using AIC) was used with the goal of choosing the simplest model with the best predictability. Patients for whom information was missing for one or more variables were excluded ("listwise deletion").

Description of the models: The models calculate the average health outcome for patients with different combinations of patient characteristics, based on historical correlations between different patient characteristics and health outcomes. The body of data is comprehensive, which allows the correlation to be estimated with relatively high reliability. However, individual variation still occurs due to factors (known and unknown) that could not be included in the models.

Thank you

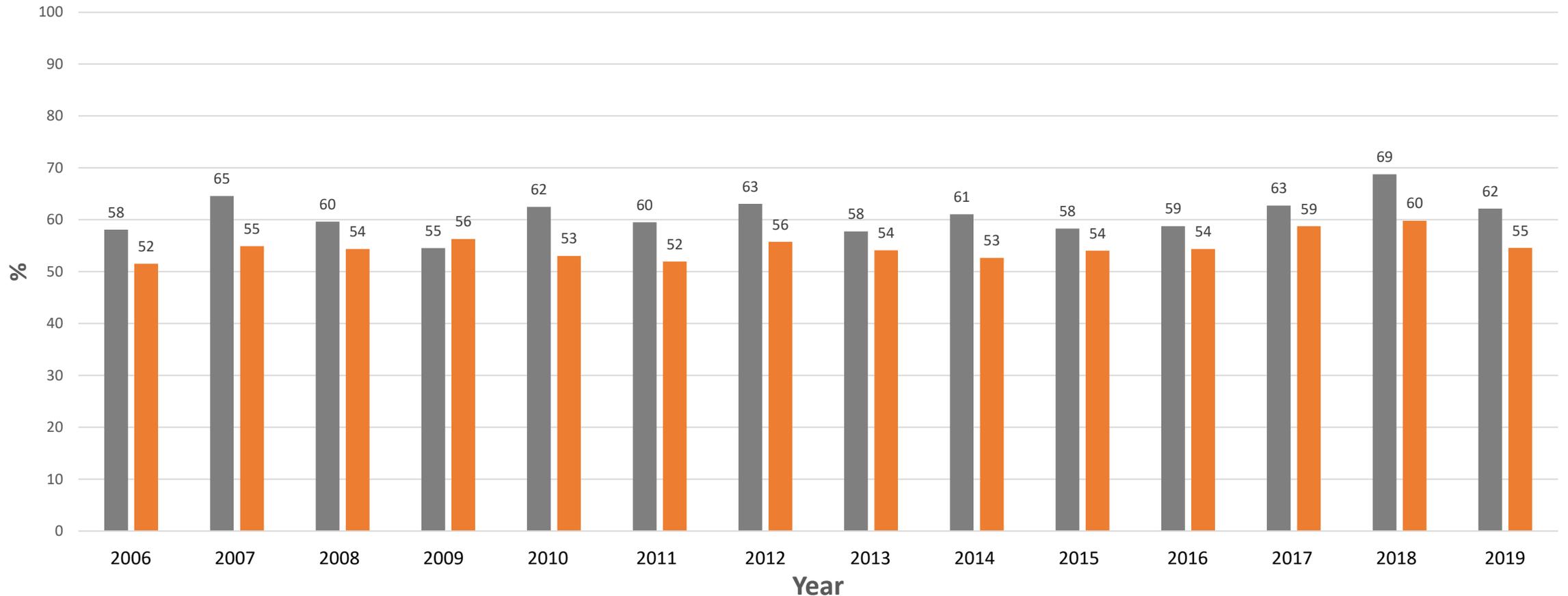
LSS + olistesis > 3mm.

% Success after 1 year; PROM - Global assessment (Pain free + Much better)

Similar results – see OBS below;

OBS! Observational raw data – not adjusted for case-mix (“different populations”)

Dekompression + Fusion = GREY vs. **Dekompressi**



Five questions to be answered

- Why
- What
- Who
- When
- HOW