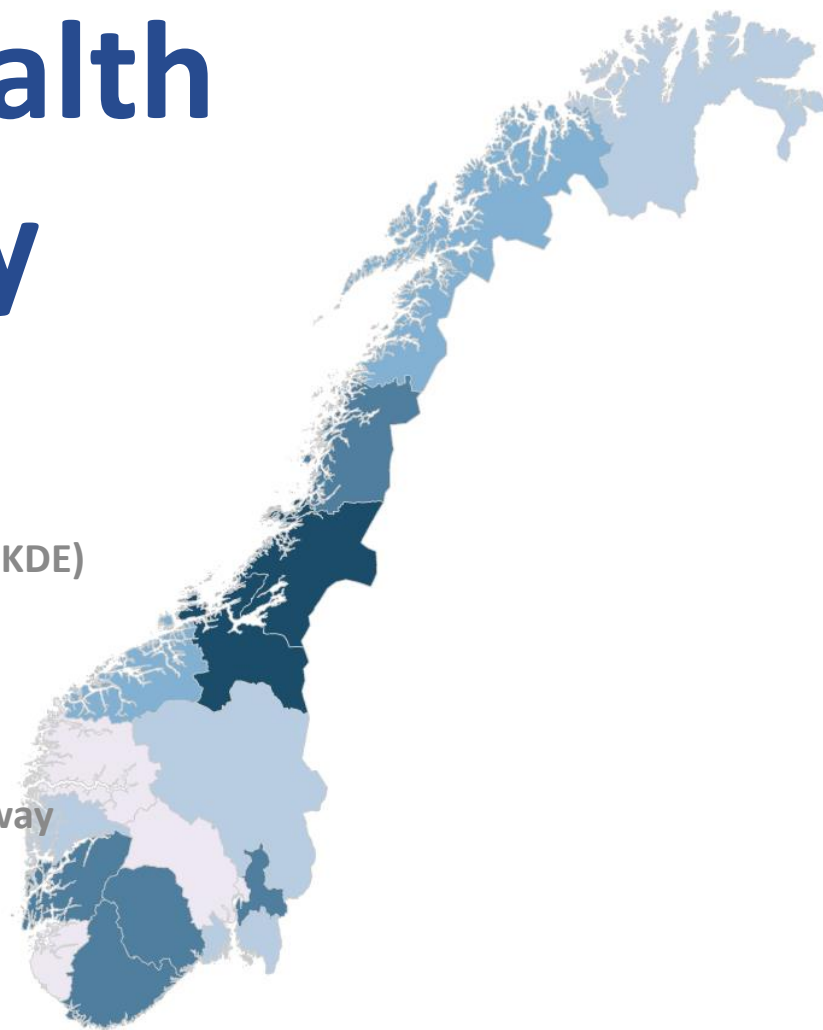


# Introducing Health atlas to Norway

Frank Olsen  
Center for clinical documentation and evaluation (SKDE)  
Northern Norway Regional Health Authority

Barthold Vonen  
Institute for Community Medicine,  
University of Tromsø –The Arctic University of Norway



# What is it with the health care system in Norway?

- Most of the nations specialist health care services is delivered to a population of 5 mill from 50 hospitals in 19 hospital trusts
- A political aim/claim that the population has a right to geographical equity in the distribution and content of health care
- A mostly homogenous population in a country with both typical urbane city areas and large areas with scattered rural population. 10% of the population inhabits the northernmost half of the country.
- Most privately delivered services are financed by government funding – little “out of pocket payment»

# Why a health atlas for Norway?

- Population based geographical contrasts has not yet received any attention in Norway – although we have known that such exist
- An atlas based presentation can be powerful and enlightening - even painful under given circumstances – and a good start
- The almost 100% complete National Patient Record represents a close to «true» status of population used health care with geographical distribution independent of where the care was delivered
- An atlas can elegantly demonstrate a geographical equity – or the lack of it – and thus possibly “rock the political boat”
- It is possible that revelation of unwarranted and unknown contrasts can stimulate towards improvement of health care deliveries – both capacity and repertoire

# The atlas was proposed in february 2014 -What have we done so far?

- Complete atlas of 50% of all day surgery – complete dataset for the population of Norway for 2011 – 2013
  - Interactive atlas
  - Factsheets for each procedure
  - Extensive in depth report
- Areas of possible error:
  - «Cultural» variations in coding practice.

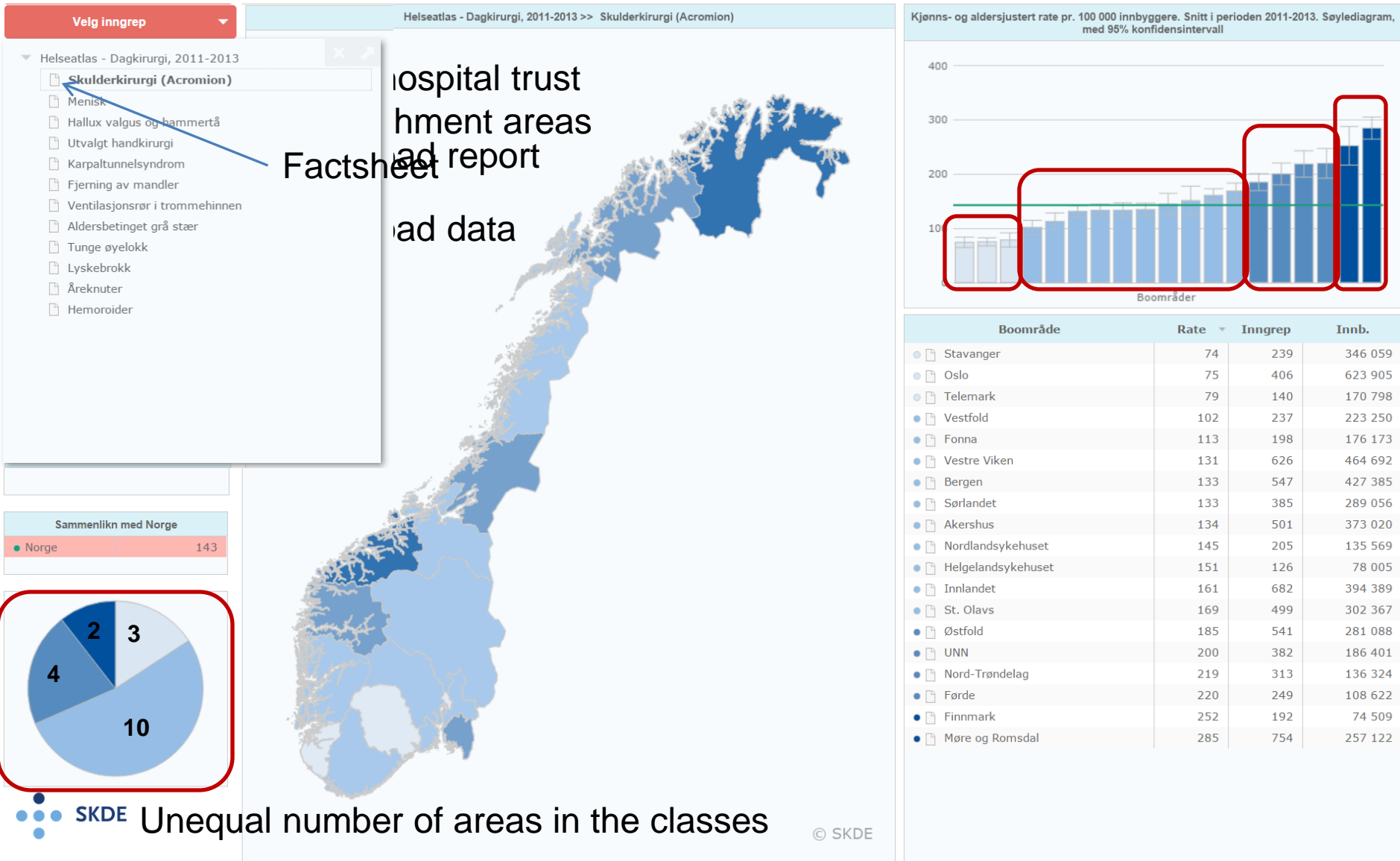
# The Norwegian Health Atlas:

- 12 most frequent day surgical procedures
- Sex and age adjusted rates (direct method)
- Three year average: 2011-2013
- 19 hospital trust catchment areas (74 500 – 624 000)

Meniscus surgery
Shoulder surgery
Hemorrhoid surgery
Ear drum drainage tube insertion
Eyelid surgery
Surgery for Varicose veins
Toncillectomy
Hallux valgus and hammer toe surgery
Carpal tunnel syndrome surgery
Other selected hand surgery
Senile cataract surgery
Inguinal hernia surgery

# Shoulder surgery

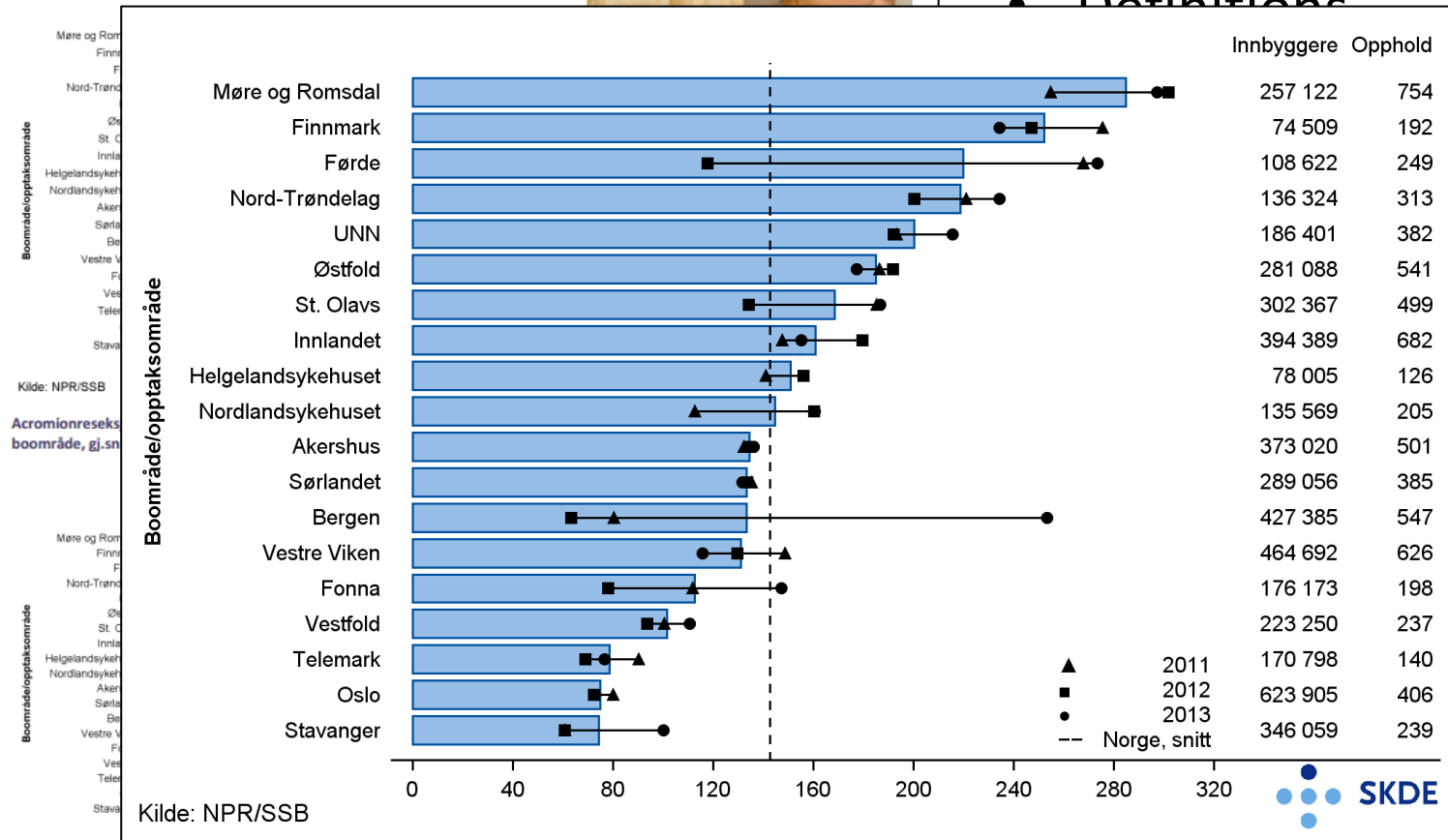
Jenks natural breaks to determine the arrangement of classes:  
 minimize variation within classes and  
 maximize variation between classes.



Betennelser i muskelsener i rommet mellom skulderleddet og skulderbladframspringet er vanlig i skulder. Det er ofte utfordrende å stille presis diagnose, fordi ulike lidelser/tilstander kan ha samme funn ved klinisk undersøkelse. Der ikke-kirurgisk behandling ikke gir bedring, kan fjerning av ben (acromionreseksjon) bedre plassforholdene for senene og dermed påskynde tilhelingsprosessen og normalisering av skulderfunksjonen.

# One page factsheet (pdf)

- Short description
- Definitions



Kilde: NPR/SSB

■ Privat behandler □ Offentlig sykehus



likeverdig fordelt mellom boområder. Siden nytten av slike skulderoperasjoner er usikker, må et overforbruk av inngrepet i enkelte boområder diskuteres.

Acromionreseksjon, kjønns- og aldersjusterte rater pr. 100.000 innbygger pr. boområde, fordelt på offentlig og privat behandler, gj.snitt 2011-2013

# Meniscus surgery

Velg inngrep

Hjelp    Skriv ut    Del

Om Helseatlas.no

Last ned Rapport

Last ned Faktaark

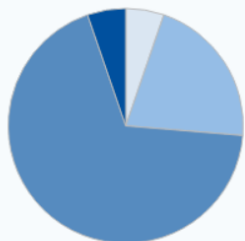
Last ned Data

Inndeling i kategorier

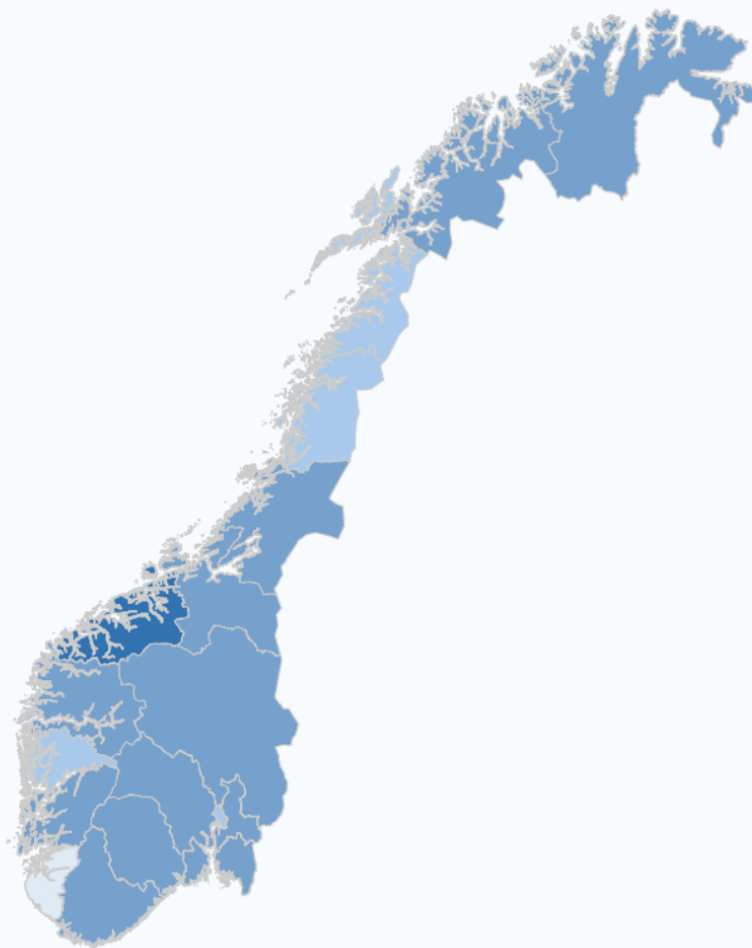
- Boområder HF
- 119,0
  - 119,1 - 210,8
  - 210,9 - 330,4
  - 330,5 - 491,1

Sammenlikn med Norge

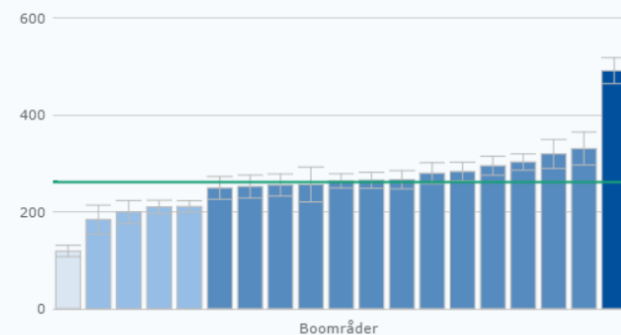
Norge 261



Helseatlas - Dagkirurgi, 2011-2013 >> Menisk



Kjønns- og aldersjustert rate pr. 100 000 innbyggere. Snitt i perioden 2011-2013. Søylediagram, med 95% konfidensintervall



Boområde	Rate	Inngrep	Innb.
Stavanger	119	406	346 059
Helgelandsykehuset	184	146	78 005
Nordlandsykehuset	199	274	135 569
Bergen	210	875	427 385
Oslo	211	1 212	623 905
Telemark	249	438	170 798
Fonna	252	441	176 173
UNN	255	482	186 401
Finnmark	256	195	74 509
Vestre Viken	264	1 255	464 692
Akershus	265	999	373 020
Sørlandet	266	764	289 056
Vestfold	280	644	223 250
Østfold	283	821	281 088
St. Olavs	295	878	302 367
Innlandet	303	1 255	394 389
Nord-Trøndelag	319	445	136 324
Førde	330	365	108 622
Møre og Romsdal	491	1 297	257 122



# Inguinal hernia

Velj inngrep

Hjelp

Skriv ut

Del

Om Helseatlas.no

Last ned Rapport

Last ned Faktaark

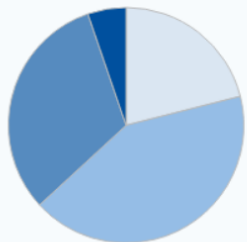
Last ned Data

Inndeling i kategorier

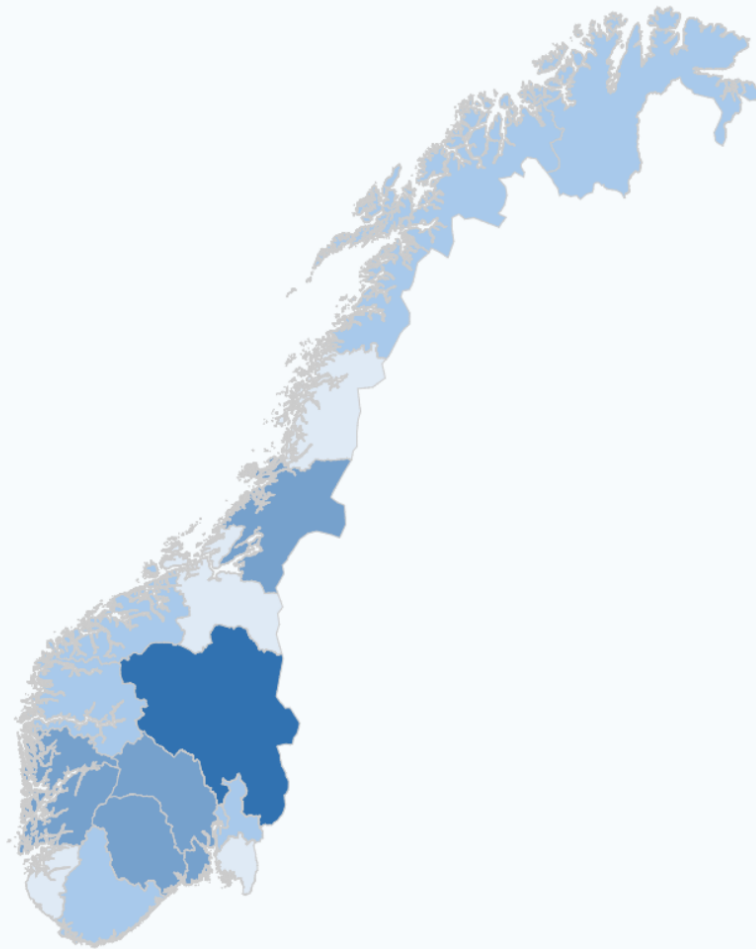
- Boområder HF
- 110,7 - 116,9
- 117,0 - 125,7
- 125,8 - 132,8
- 132,9 - 137,6

Sammenlikn med Norge

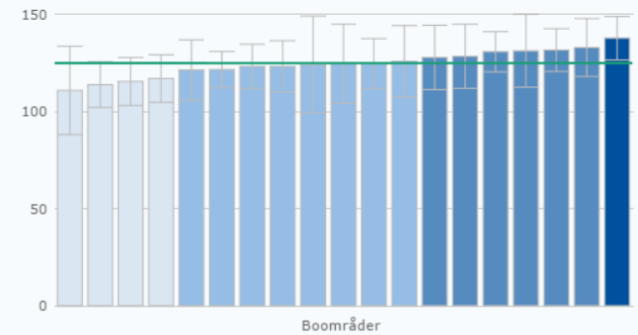
Norge 125



Helseatlas - Dagkirurgi, 2011-2013 >> Lyskebrokk



Kjønns- og aldersjustert rate pr. 100 000 innbyggere. Snitt i perioden 2011-2013. Søylediagram, med 95% konfidensintervall



Boområde	Rate	Inngrep	Innb.
Helgelandsykehuset	111	93	78 005
Stavanger	114	366	346 059
Østfold	115	338	281 088
St. Olavs	117	350	302 367
UNN	121	234	186 401
Oslo	122	671	623 905
Akershus	123	450	373 020
Møre og Romsdal	123	335	257 122
Finnmark	124	96	74 509
Førde	124	145	108 622
Sørlandet	125	360	289 056
Nordlandsykehuset	126	181	135 569
Fonna	128	229	176 173
Telemark	128	235	170 798
Vestre Viken	131	617	464 692
Nord-Trøndelag	131	191	136 324
Bergen	132	547	427 385
Vestfold	133	306	223 250
Innlandet	138	594	394 389

# Results

	<b>EQ</b>
<b>Meniscus surgery</b>	4.13
<b>Shoulder surgery</b>	3.85
<b>Hemorrhoid surgery</b>	3.67
<b>Ear drum drainage tube insertion</b>	2.99
<b>Eyelid surgery</b>	2.88
<b>Surgery for Varicose veins</b>	2.51
<b>Toncillectomy</b>	2.30
<b>Hallux valgus and hammer toe surgery</b>	2.23
<b>Carpal tunnel syndrome surgery</b>	2.06
<b>Other selected hand surgery</b>	1.86
<b>Senile cataract surgery</b>	1.68
<b>Inguinal hernia surgery</b>	1.24

Extremal quotient

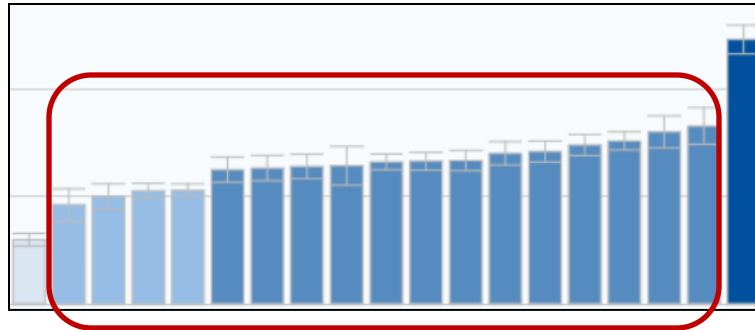
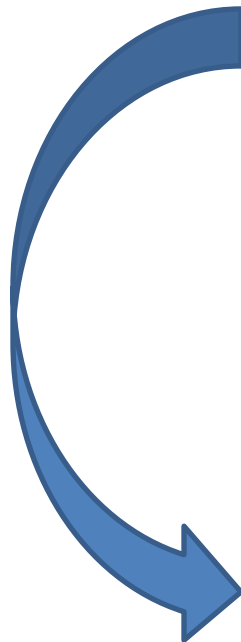
EQ = Max rate / Min rate

EQ > 2 : Unwarranted variation

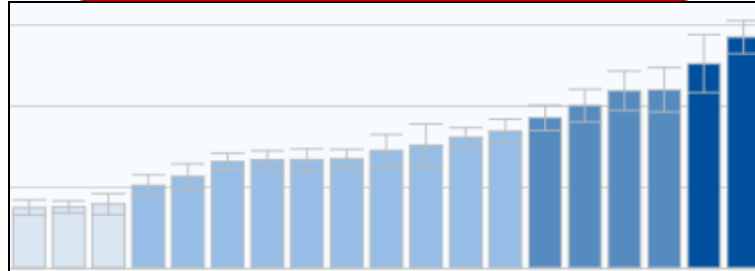
Rule of thumb – based on a clinical judgement and stability over time (three years)

**Significant variation?**

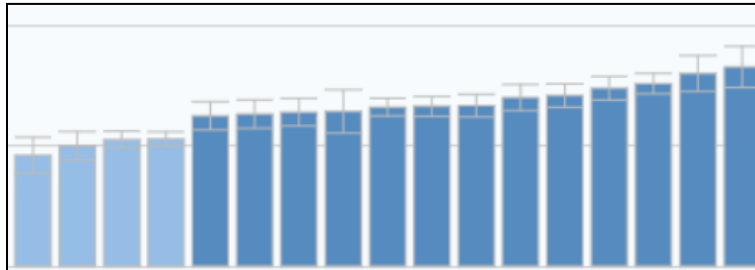
# How much variation is variation?



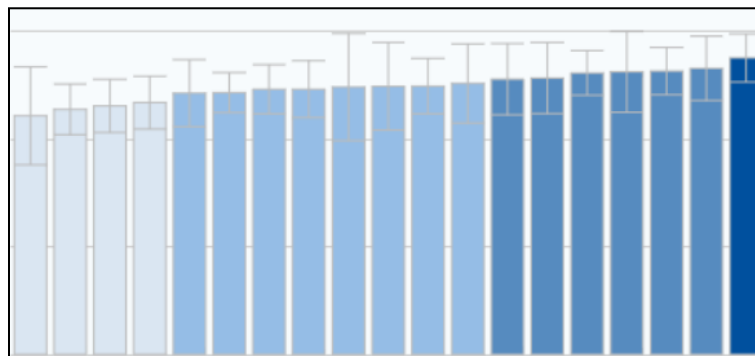
YES (Meniscus)



YES (Shoulder)



Maybe



NO (Hernia)

# Statistical measures of variation

	EQ	CV	SCV	Chi-square
<b>Meniscus surgery</b>	4.13	0.28	7.64	<0.0001
<b>Shoulder surgery</b>	3.85	0.38	16.65	<0.0001
<b>Inguinal hernia surgery</b>	1.24	0.05	0.09	0.3994

## CV (Coefficient of Variation):

Sensitive to: rate, population, number of areas, readmissions

## SCV (Systematic Component of Variance):

Sensitive to: rate, population, number of areas, readmissions

## Chi-square test:

Less sensitive to: rate, population

Overall p-value and pairwise test between residential areas

# How to measure variation?

- EQ
- CV “I still haven’t found what I’m looking for...”
- SCV
- Chi-square
  
- Empirical Bayes (EB)\*

\*EB is recommended by Ibáñez et al. 2009, BMC Health Services Research

# A Norwegian health atlas – what's next:

- More Atlas:
  - Pediatrics is next – later other topics.
- Methodological improvements to the atlas–
  - What is the optimal method to describe variation?
    - Can international collaboration enlighten us - and others?
    - Is international methodological consensus desirable?

## ... What's next contd:

- Can our atlas represent a driving force for change in the delivery of health care in Norway?
  - (Any) response from management and clinicians is crucial for the role of our atlas in contributing to improve delivery of health care in a desired direction!
- We have already seen
  - A certain interest within the orthopaedic communities
  - A strong interest from the Dept. of Health addressing specific questions to the 4 regional health trusts about the documented contrasts in treatment in their respective catchment areas – the first confrontation last moday

# What can we expect....?

- Leadership and management in hospitals/trusts will use the atlas in internal discussions about resource allocation – this can contribute to adjust the outliers – in both ends!
- However, engagement of clinical environments is crucial to initiate a serious discussion about avoidable or lower value health care.
  - It is possible to argue that the population in areas with the lower rates of some of the procedures (i.e. surgery on eye lids, meniscus, shoulder) might have an everyday QoL and health status as good as populations in any other area in Norway.



# Conclusion after a pilot health atlas in Norway

1. The analytical method can most likely be improved
  2. In order to fully explore and utilize the atlas, in- depth discussions in clinical environments is necessary – this can most likely only be achieved by engaging respected peers to present topics for discussion and challenges in formal national settings
- We have only just begun  
Significant change will most likely come slowly  
in a country that has been spared the financial crisis*