



AI I KLINISK KVALITETSARBEJDE

POTENTIALE OG FÆLDER

MARTIN SILLESEN
AFDELINGLÆGE, PHD
KLINISK FORSKNINGSLEKTOR
AFDELING FOR ORGANKIRURGI OG TRANSPLANTATION
RIGSHOSPITALET

DISCLOSURES

- Medstifter af Aiomic – healthtech firma der benytter AI til kirurgisk kvalitetsarbejde

ER DER RUM TIL FORBEDRING

- US flyselskaber flyver med 8 milliarder passagere
- 264.000 potentielt undgåelige hospitalsdødfald
- Svarer til 565 jumbojets der crasher – eller et flystyrt hver uge

REDNING AF DET DANSKE SUNDHEDSVÆSEN OG VEJEN TIL NOBELPRISEN

THE LANCET
Digital Health

Submit Article Log in Register

This journal Journals Publish Clinical Global health Multimedia Events About

Search for... Advanced search

ARTICLES | VOLUME 3, ISSUE 8, E471-E485, AUGUST 2021 [Download Full Issue](#)

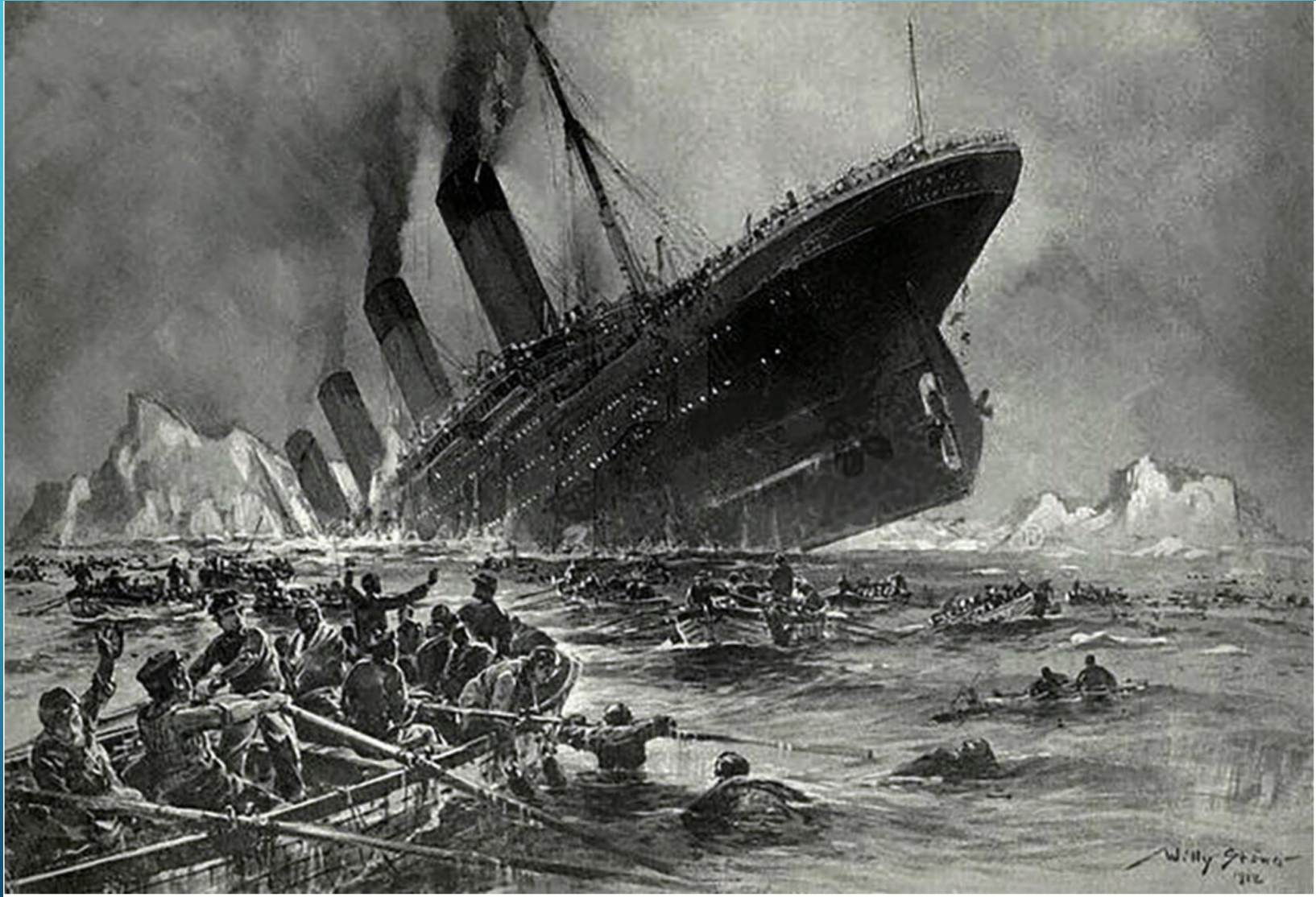
Assessing the utility of deep neural networks in predicting postoperative surgical complications: a retrospective study

Alexander Bonde, MD • Kartik M Varadarajan, PhD • Nicholas Bonde, MD • Prof Anders Troelsen, PhD • Orhun K Muratoglu, PhD • Prof Henrik Malchau, PhD • et al. [Show all authors](#)

Open Access • Published: June 29, 2021 • DOI: [https://doi.org/10.1016/S2589-7500\(21\)00084-4](https://doi.org/10.1016/S2589-7500(21)00084-4) • [Check for updates](#)

PDF [582 KB] Figures Save Share Reprints Request

PlumX Metrics



Hvordan tager vi turen igen?
Uden isbjerget



ENDEMÅLET



VÆRDISKABELSE

$$\text{Værdi} = \frac{\text{Kvalitet}}{\text{Omkostning}}$$

ER VI I GANG?



("Artificial Intelligence"[Mesh]) AND "Medicine"[Mesh]



Search

[Advanced](#) [Create alert](#) [Create RSS](#)

[User Guide](#)

Save

Email

Send to

Sort by:

Most recent



Display options

MY NCBI FILTERS

10,056 results



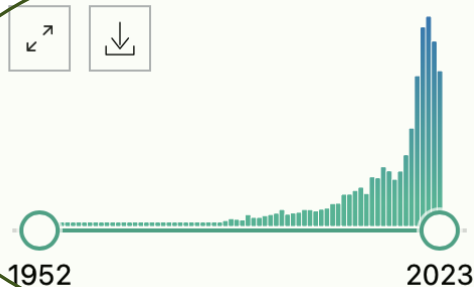
Page

1

of 1,006



RESULTS BY YEAR



[An AI revolution is brewing in medicine. What will it look like?](#)

1

Lenharo M.

Cite

Nature. 2023 Oct;622(7984):686-688. doi: 10.1038/d41586-023-03302-0.

PMID: 37875622 No abstract available.

Share



[Interpretable spatial identity neural network-based epidemic prediction.](#)

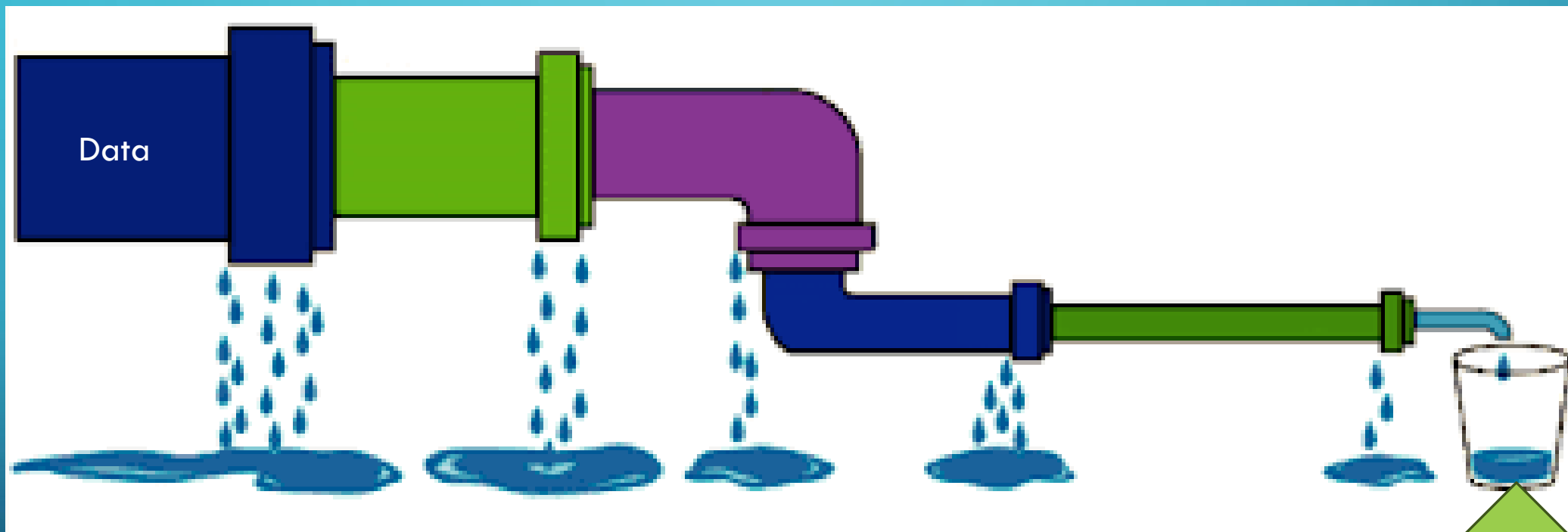
2

Luo L, Li B, Wang X, Cui L, Liu G.

AKTUEL VÆRDI VERSUS POTENTIALE FOR AI

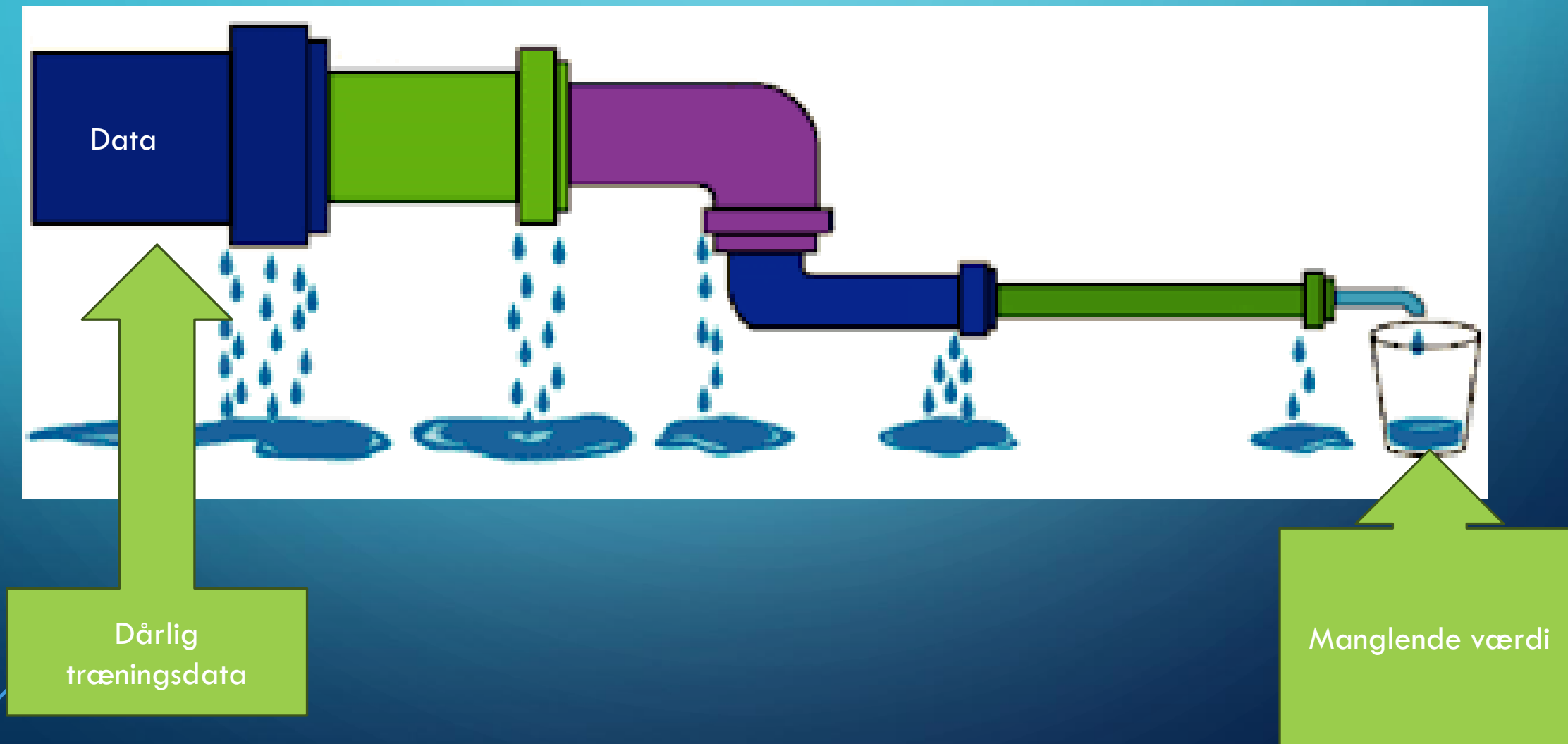


LEAKY PIPELINE I AI KVALITETSKÆDEN

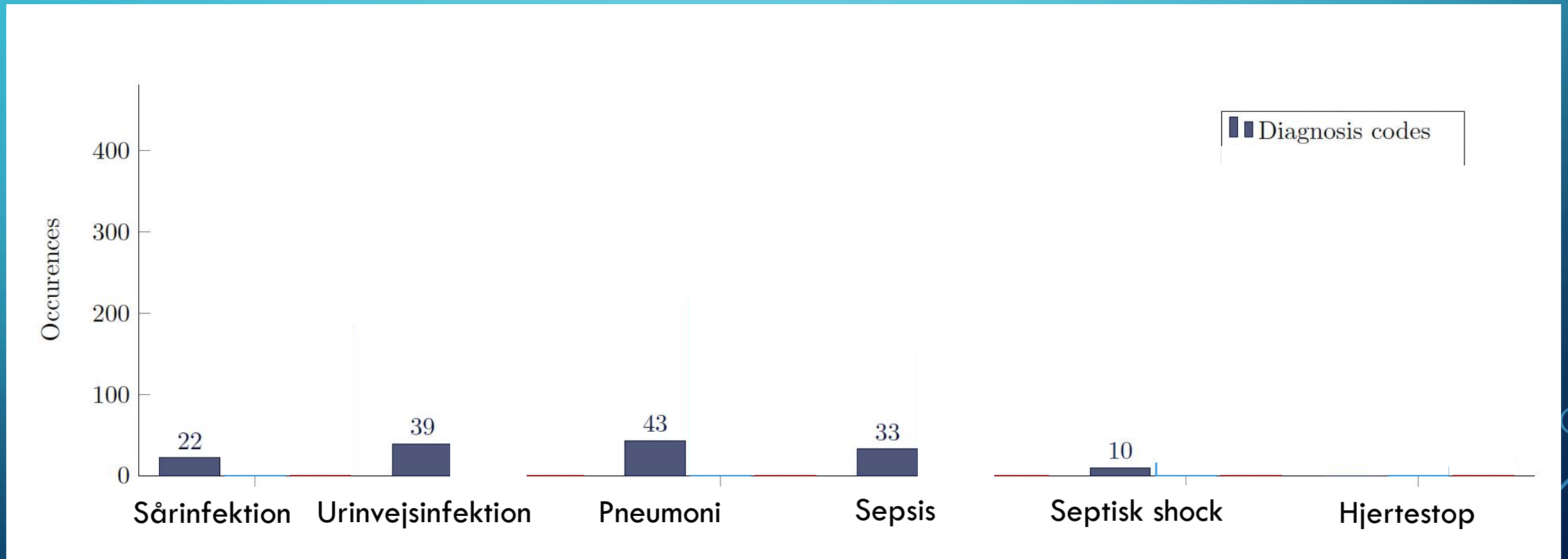


Manglende værdi

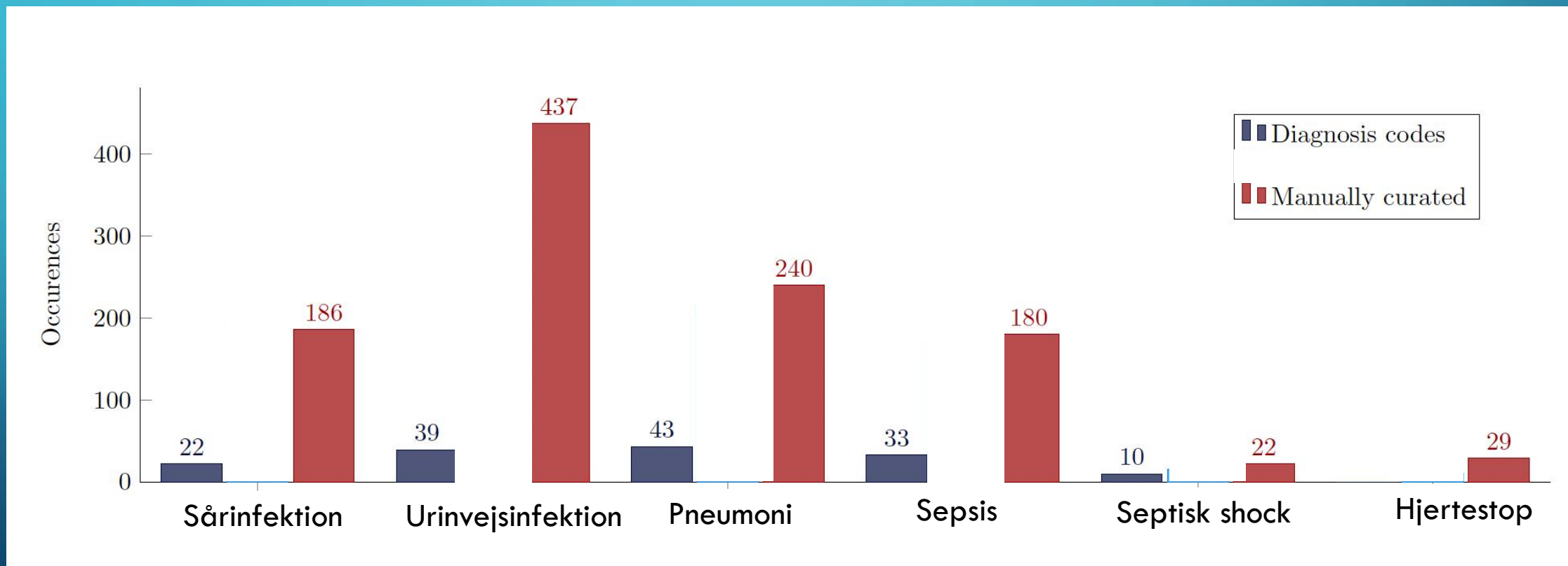
LEAKY PIPELINE I AI KVALITETSKÆDEN



HVOR MANGE PATIENTER OPLEVER KOMPLIKATIONER? - REGIONH NOV. 2021

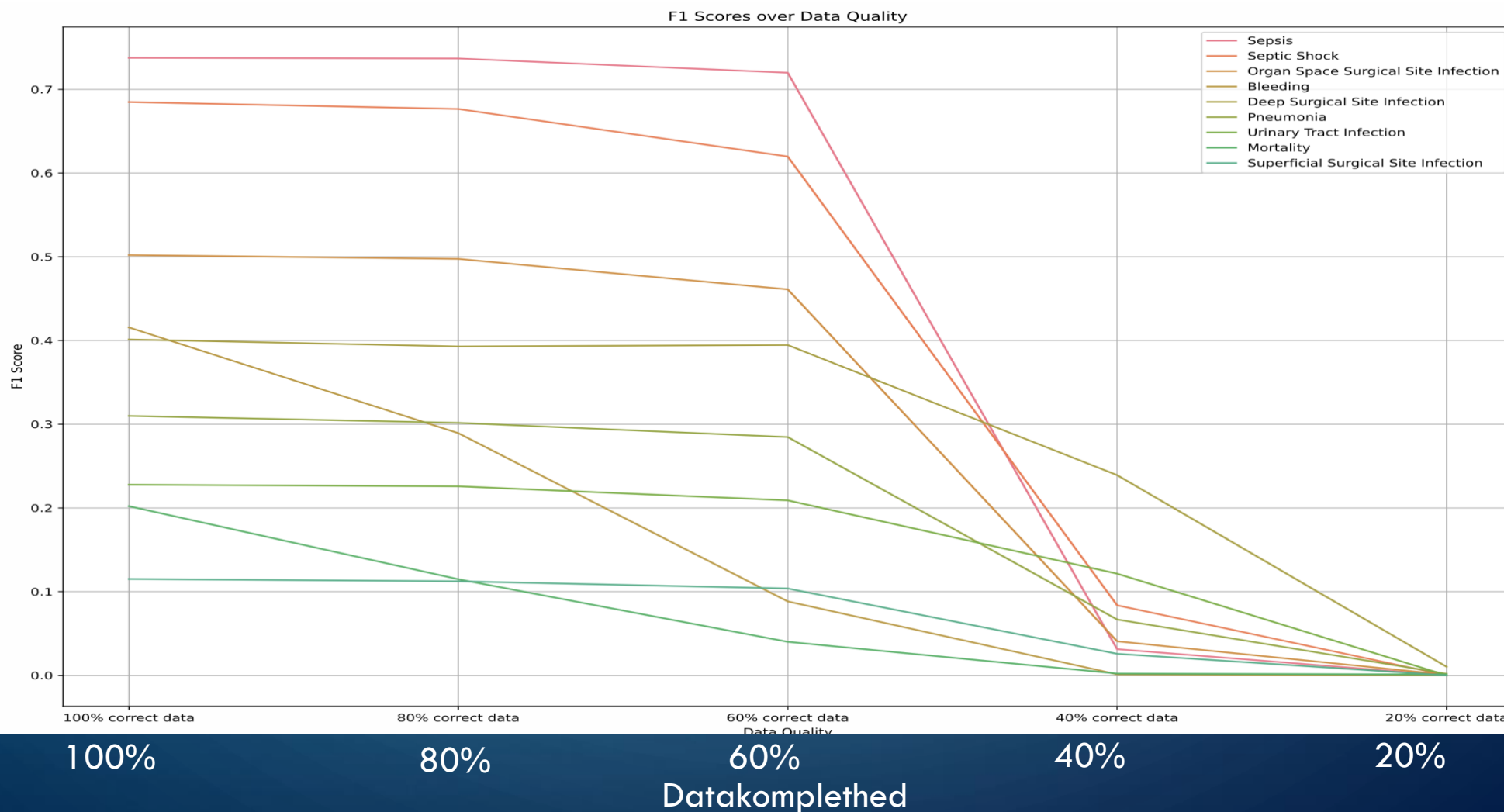


DÅRLIGE TRÆNINGSDATA – KIRURGISKE KOMPLIKATIONER



HVAD SKER DER NÅR MAN TRÆNER PÅ DÅRLIGE TRÆNINGSDATA?

Performance



KAN VI SKABE HØJKVALITETSDATA AUTOMATISK?

Article

Assessing the Utility of Deep Neural Networks in Detecting Superficial Surgical Site Infections From Free Text Electronic Health Record Data

Alexander Bonde¹

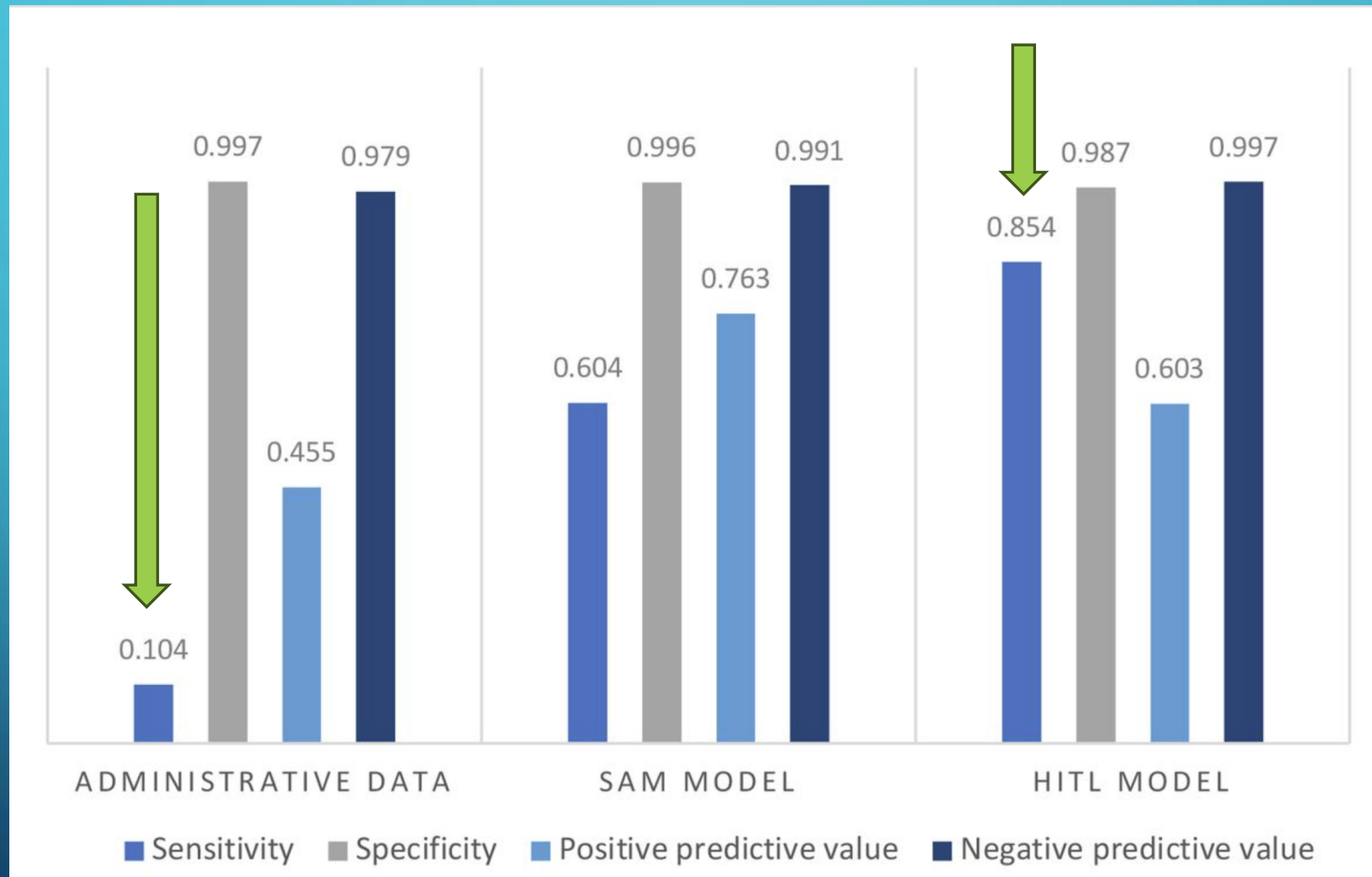
Stephan Lorenzen¹

Gustav Brixen²

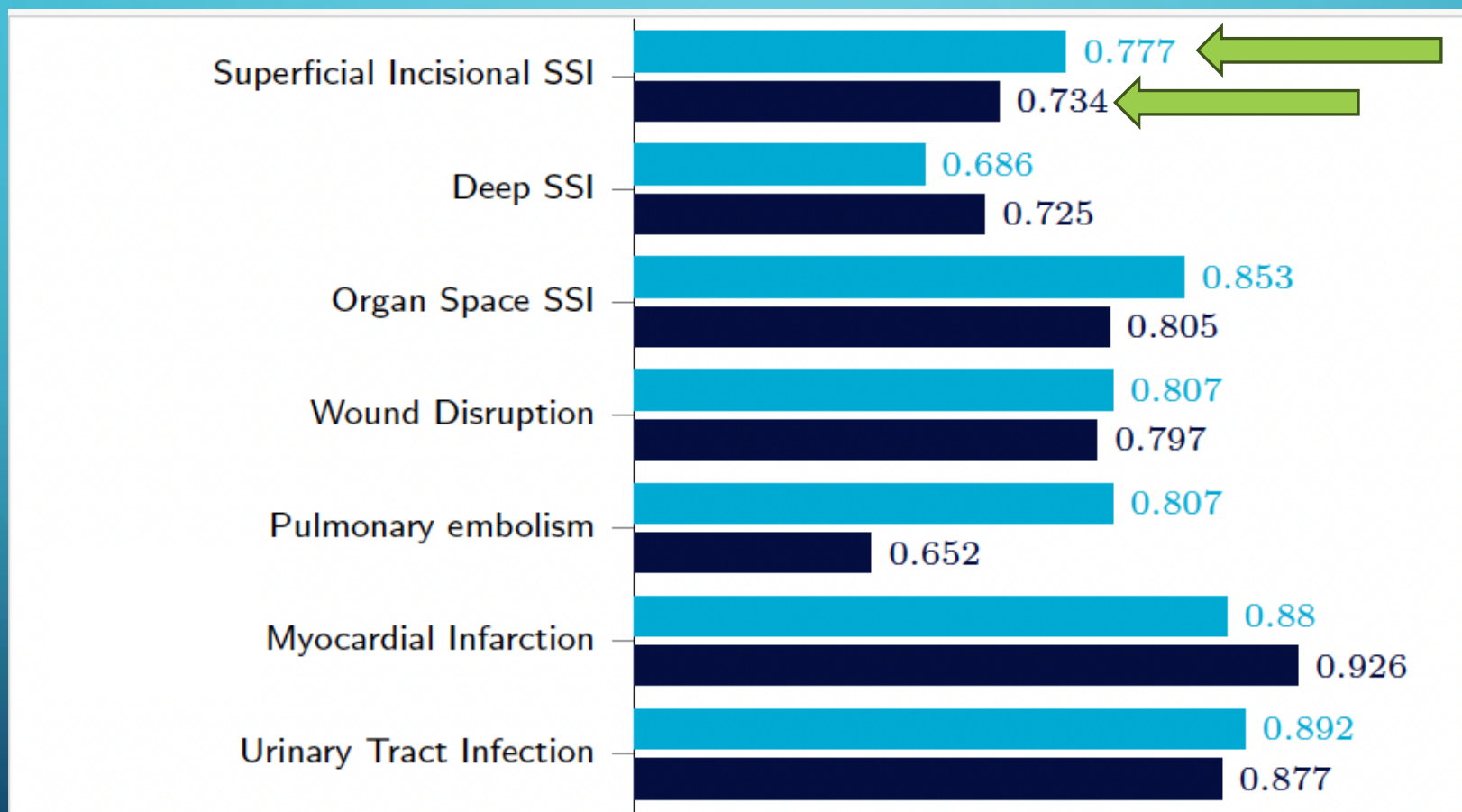
Anders Troelsen³

Martin Sillesen⁴ [ORCID](#) [Email](#)

NATURAL LANGUAGE PROCESSING- SÅRINFEKTIONER

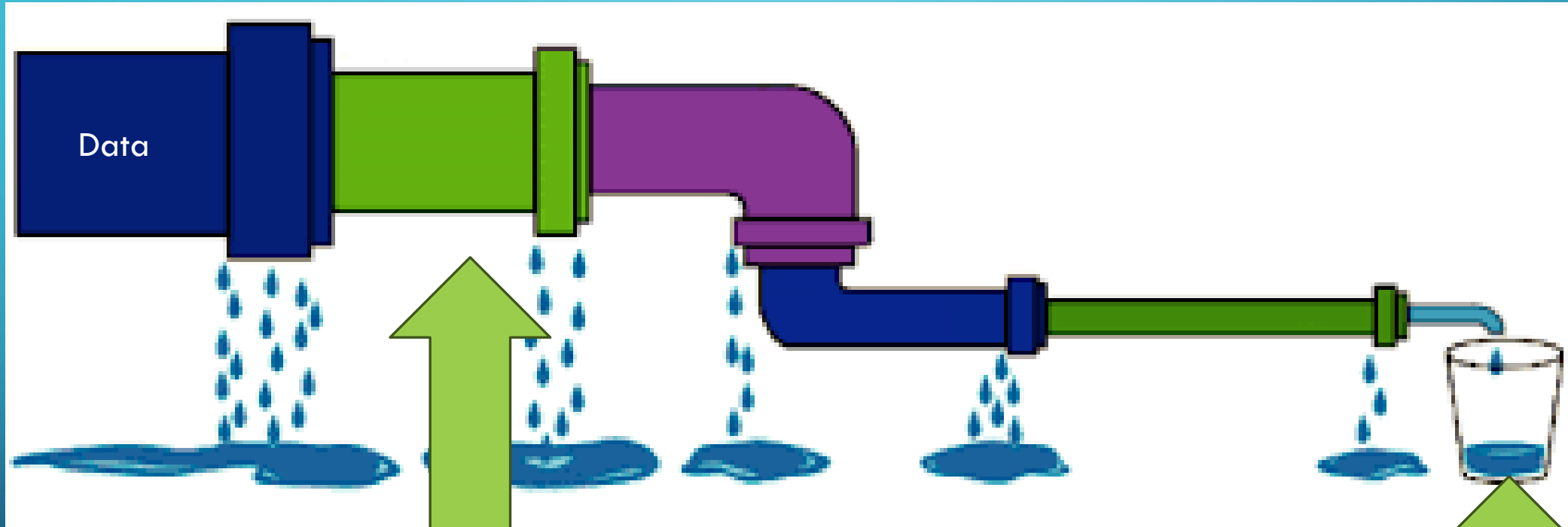


TRÆNING PÅ LAV VS. HØJKVALITETSDATA



Manuskript under udarbejdelse

LEAKY PIPELINE I AI KVALITETSKÆDEN



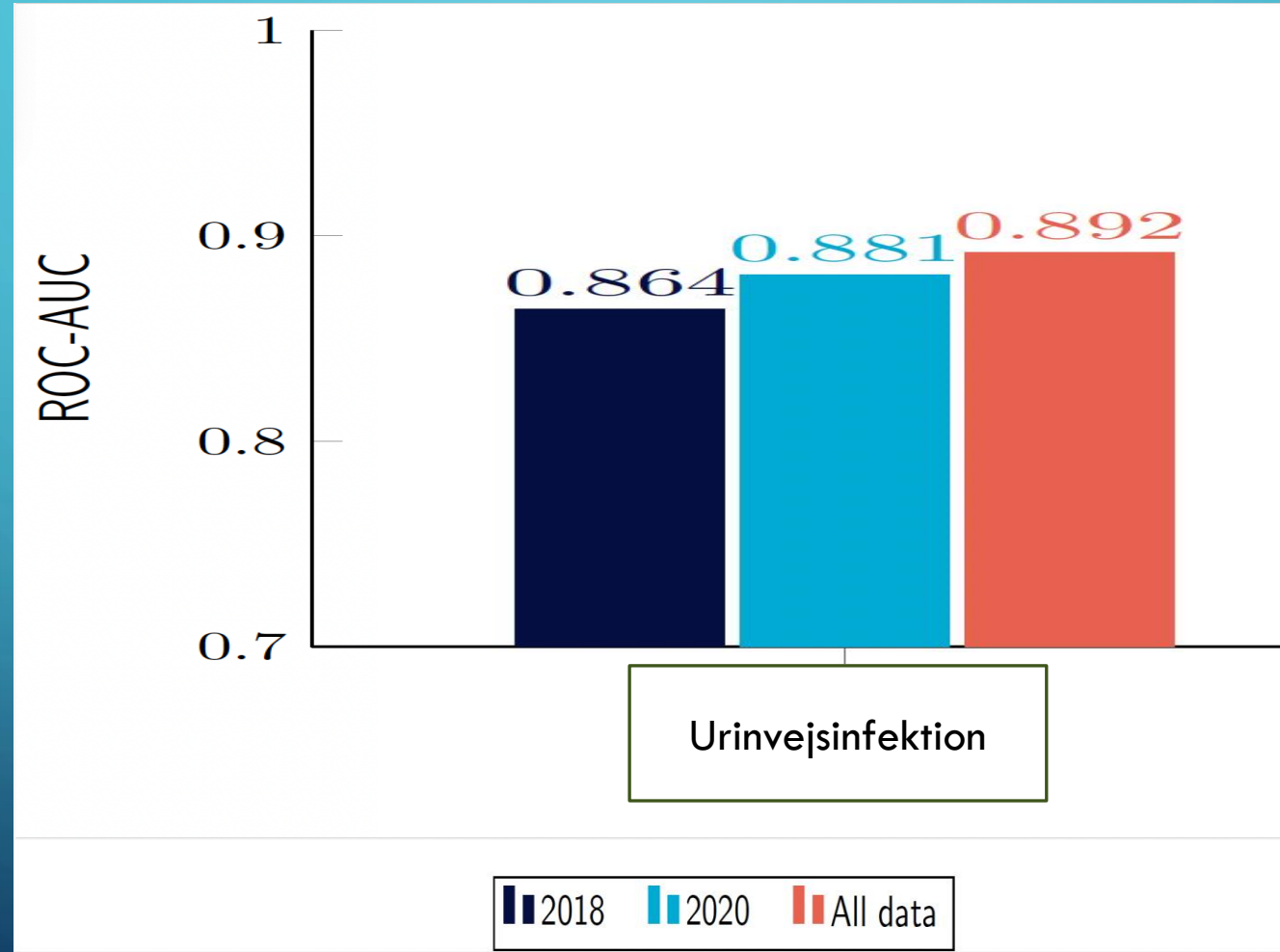
Statistiske modeller
og ringe mobilitet

Manglende værdi

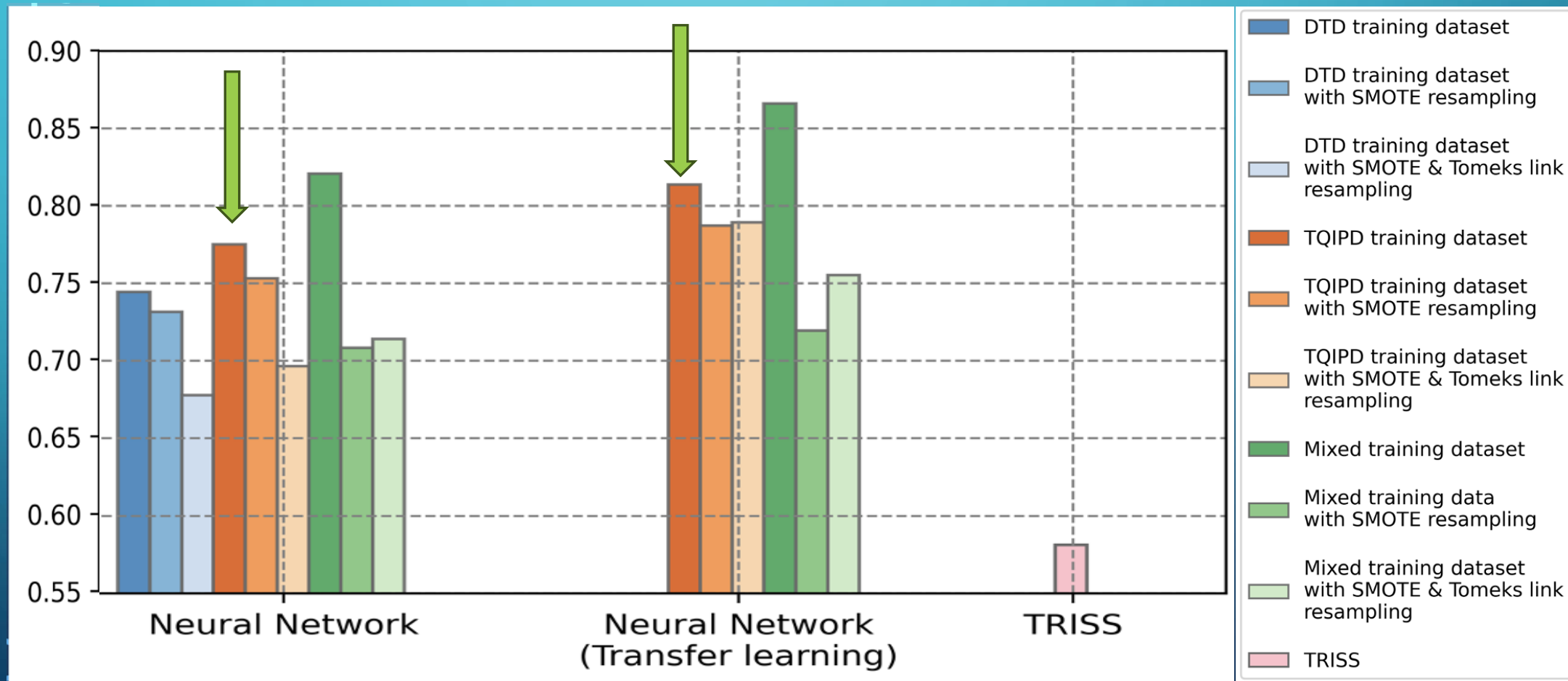
STATISKE MODELLER



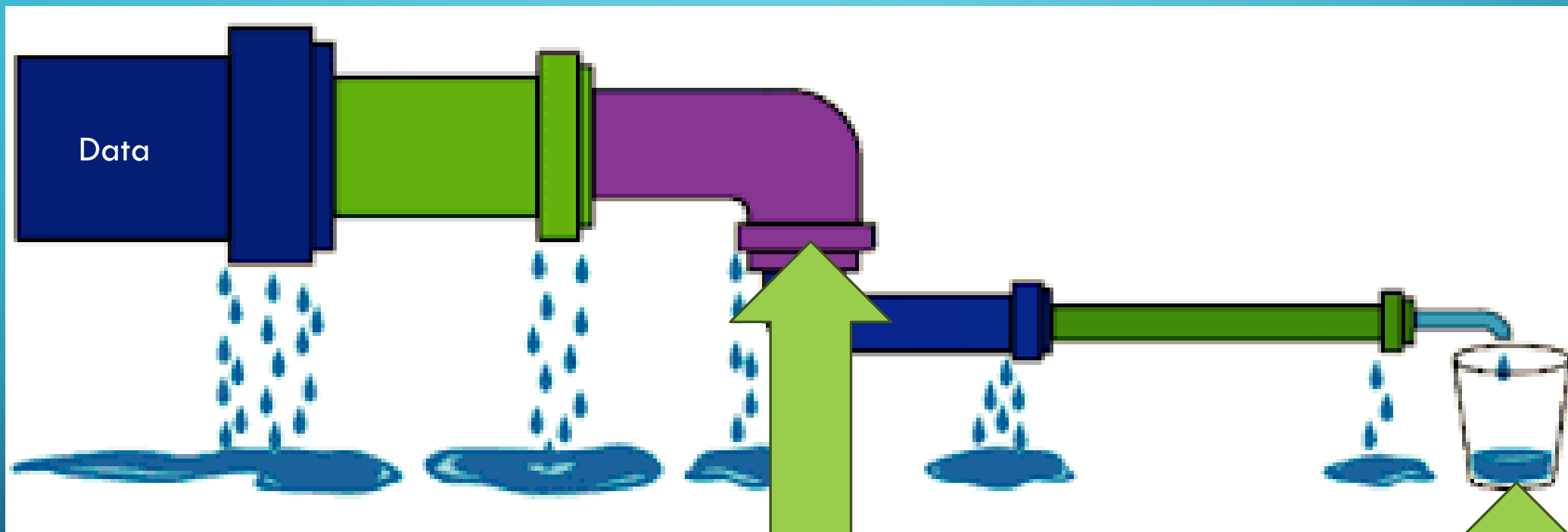
TAB AF MODEL PERFORMANCE OVER TID



MODELLER SKAL GENTRÆNES LOKALT



LEAKY PIPELINE I AI KVALITETSKÆDEN



Ingen validering af værdiskabelsen og/eller forkerte mål

Manglende værdi

MANGLENDE VÆRDISKABELSE

www.nature.com/scientificreports


scientific reports

 Check for updates

OPEN

Assessing the utility of a sliding-windows deep neural network approach for risk prediction of trauma patients

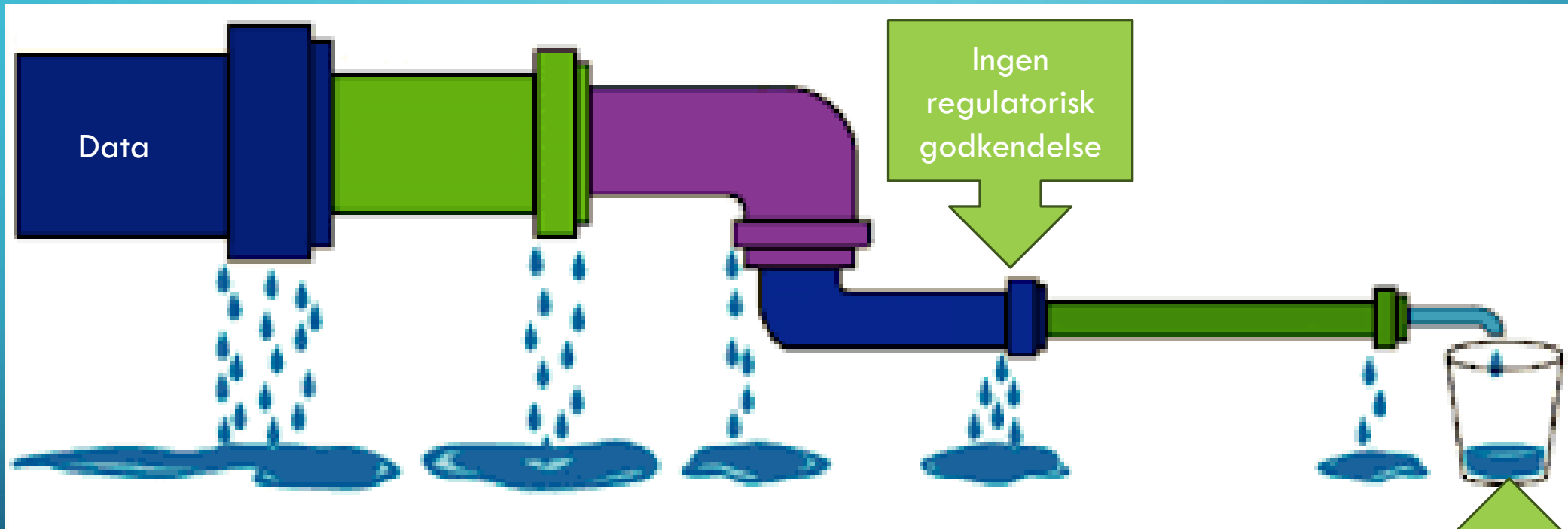
Alexander Bonde^{1,2}, Mikkel Bonde^{1,2}, Anders Troelsen³ & Martin Sillesen^{1,2,4}✉

The background is a dark teal gradient. In the corners, there are decorative white line-art patterns resembling circuit boards or neural networks, with lines connecting to small circles.

...If indeed we have the ability to use AI to detect mortality with a nearly 100% accuracy in the prehospital scenario, we are entering a new era by which all these patients should be directed straight to the morgue rather than the emergency department...

Annals of Surgery reviewer

LEAKY PIPELINE I AI KVALITETSKÆDEN



Manglende værdi

FDA GODKENDELSE – MEDICAL DEVICES

Low risk devices like toothbrushes, tongue depressors, pads, band-aids etc.



1

Class 1

No FDA Approval Needed*

Must Register device & company on FDA website

Moderate risk devices like CPR aids, ultrasound, surgical gloves, etc.



2

Class 2

FDA Clearance Required

Most require a 510(k) Premarket notification to FDA

High risk life-supporting devices like implants and pacemakers, etc.



3

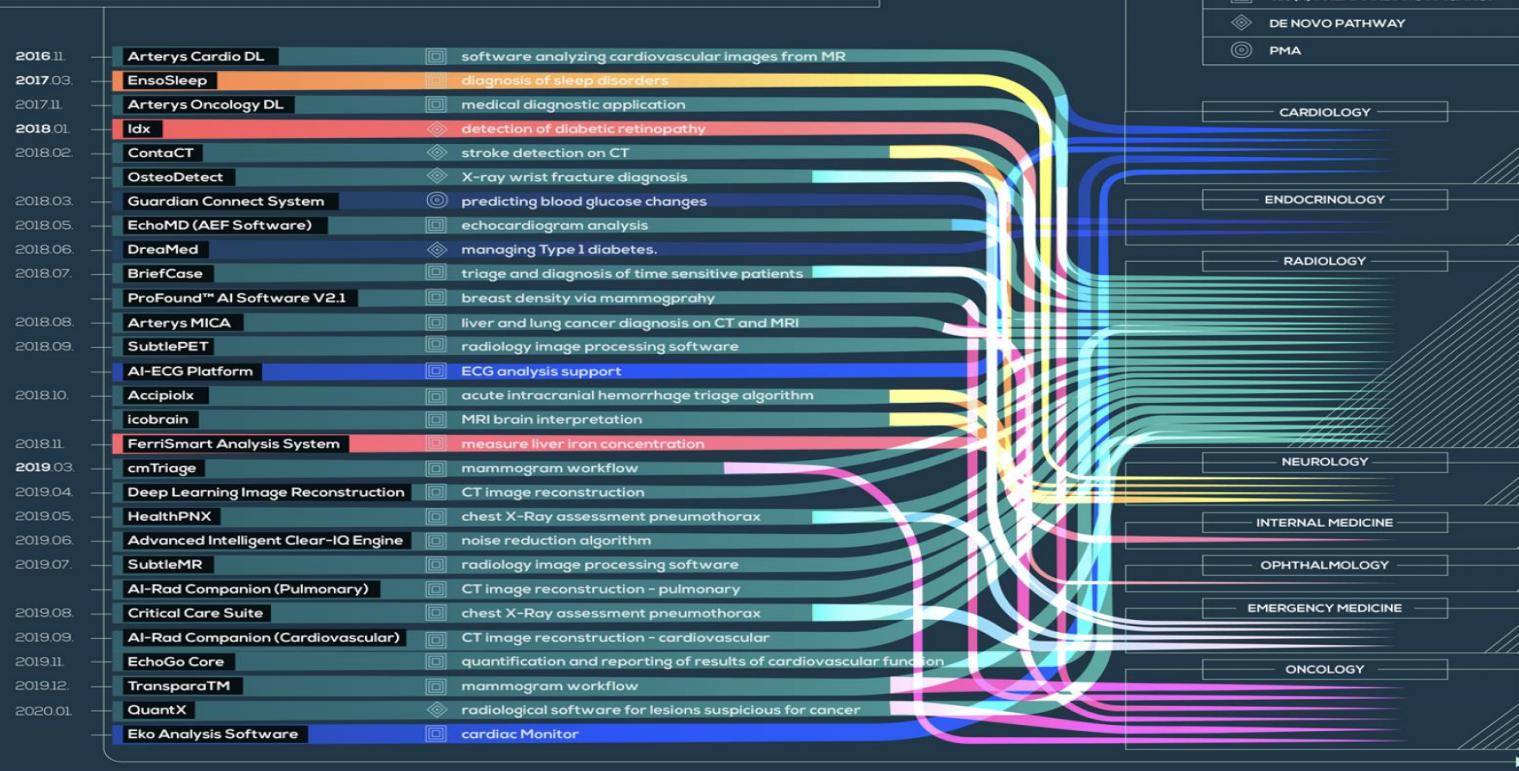
Class 3

FDA Approval Required

Normally a Premarket Approval (PMA) process

78 FDA GODKENDTE MODELLER

FDA APPROVALS FOR ARTIFICIAL INTELLIGENCE-BASED DEVICES IN MEDICINE



MEN VI BRUGER DET?



("Artificial Intelligence"[Mesh]) AND "Medicine"[Mesh]



Search

[Advanced](#) [Create alert](#) [Create RSS](#)

[User Guide](#)

Save

Email

Send to

Sort by:

Most recent



Display options

MY NCBI FILTERS

10,056 results



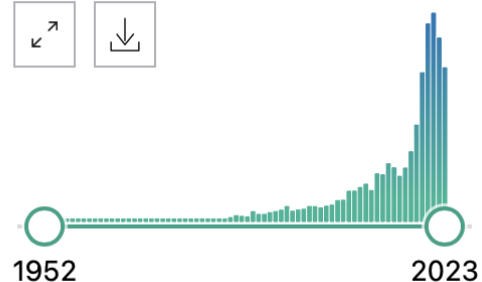
Page

1

of 1,006



RESULTS BY YEAR



[An AI revolution is brewing in medicine. What will it look like?](#)

1

Lenharo M.

Cite

Nature. 2023 Oct;622(7984):686-688. doi: 10.1038/d41586-023-03302-0.

PMID: 37875622 No abstract available.

Share



[Interpretable spatial identity neural network-based epidemic prediction.](#)

2

Luo L, Li B, Wang X, Cui L, Liu G.



KLONDIKE GOLD RUSH



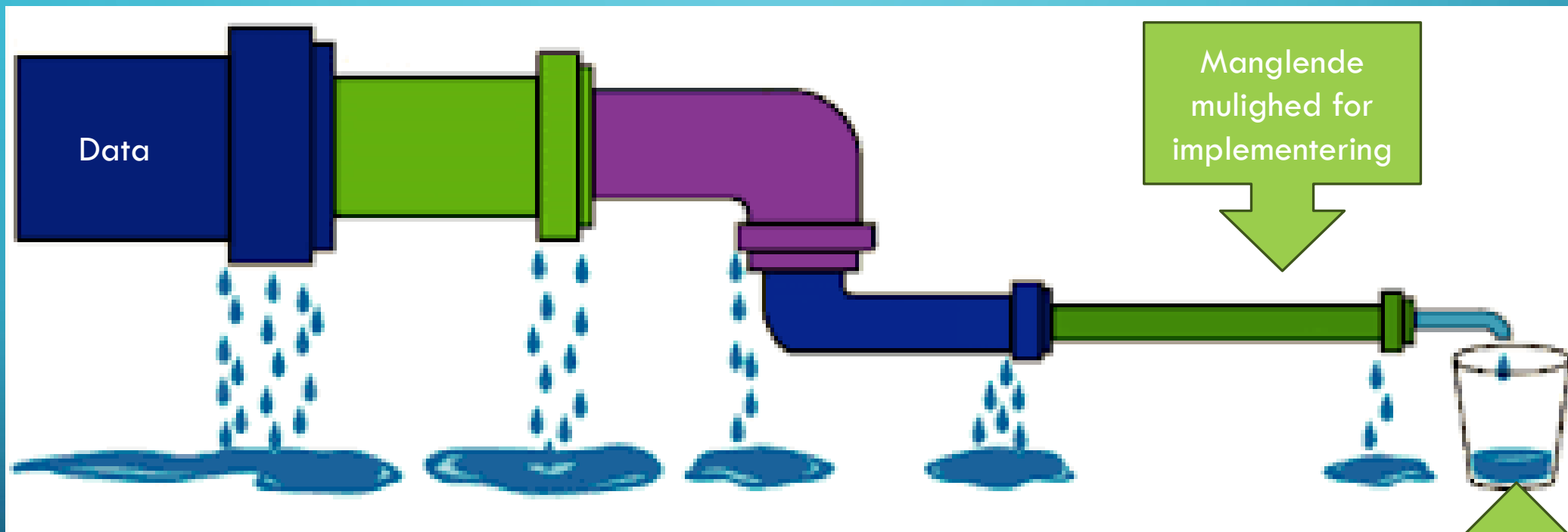


KlondAlke

KLONDIKE
GOLD
RUSH



LEAKY PIPELINE I AI KVALITETSKÆDEN



Manglende mulighed for implementering

Manglende værdi

MANGLENDE IMPLEMENTERING

- Manglende overblik over juridisk ansvar
- Manglende mulighed for at mobilisere data i realtid
- Manglende mulighed for at eksekvere modeller i elektroniske patientjournaler
- Manglende mulighed for national dataadgang

EN VEJ FOR FREMTIDEN

1- Bedre data

NLP understøttede
registre og realtids
dataadgang

EN VEJ FOR FREMTIDEN

2- Krav om lokal validering

Værdien af AI
modellen skal vises
der hvor den bruges

EN VEJ FOR FREMTIDEN

**3- Slutbrugeren
med i udviklingen**
Endemål skal være
actionable

EN VEJ FOR FREMTIDEN

**4- Modeller skal
godkendes før reel
klinisk brug**

Proces på linje med
regulatorisk
godkendelse

EN VEJ FOR FREMTIDEN

**5- Infrastruktur
skal opbygges**
IT-infrastruktur er
nøglen

TAK FOR OPMÆRKSOMHEDEN

Martin Sillesen

Afdelingslæge, PhD

Afdeling for Organkirurgi og
Transplantation

Rigshospitalet

Martin.Sillesen@RegionH.dk



Rigshospitalet, Blegdamsvej. Foto: Adam Mørk.