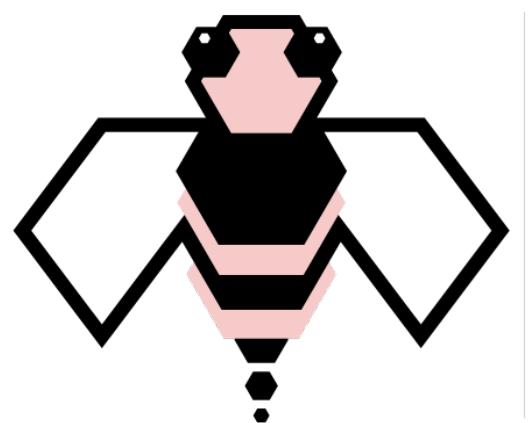




ÜLIKOOLIST ANDMETEADUSSE: KIRURGILINE INFORMAAATIKA

RIINU OTS, PHD
ANDMETEADLANE:



Surgical
Informatics
@University of Edinburgh

ETTEKANDE SISU:

- ▶ PROJEKTID: GLOBALSURG, TWIST
- ▶ MINU HARIDUS JA KOGEMUS/TÖÖRIISTAD

GLOBAL SURG

Ühisloome
(ingl *crowdsourcing*)
kas reaalses aegruumis või onlain toimuv,
osalejatelt tavasiselt vabatahtlikku panust eeldav
probleemlahenduse meetod.

[Allikas: Wikipedia]

tõlkevastetena eesti keelde on pakutud ka
talguhange ja rahvahange



GLOBAL SURG - KIRURGILISE ANDMETEADUSE ÜHISLOOME

PATSIENDID (KOHORT):

- **SISEELUNDKONNA OPERATSIOON**
- **KÕIK SAMA HAIGLA PATSIENDID 2 NÄDALA
JOOKSUL**
- **6 KUU PIRES**
- **34 MUUTUJAT (PATSIENDI INFO,
OPERATSIOONI INFO, 30-PÄEVA KONTROLL)**



GLOBAL SURG - KIRURGILISE ANDMETEADUSE ÜHISLOOME

► GLOBAL SURG 1 (1-JUULI - 31-DETS 2014)

- **58 RIIKI**
- **10 745 PATSIENTI**
- **1 480 KIRURGI/ARSTITUDENGIT**



► GLOBAL SURG 2 (1-JAAN - 31-JUULI 2016)

- **66 RIIKI**
- **12 539 PATSIENTI**
- **~2 000 KIRURGI/ARSTITUDENGIT**
- (VALIDEERIJAD KAASA ARVATUD)**

ANDMETEADLASE ROLL

- ▶ PROGRESSI JÄLGIMINE + KVALITEEDIKONTROLL
- ▶ ANDMEANALÜÜS + INTERAKTIIVNE ARUANDLUS

INTERAKTIIVNE ARUANDLUS:

GlobalSurg 2 dataset explorer

Main input parameters:

Explanatory variable: HDI tertile

Split by: ALL

Outcome variable: Surgical Site Infection (SSI)

Relative to total (x-axis to %)

Advanced parameters:

Reverse order: Explanat. Split Outcome

Shift outcome levels: 0

Plot Width (%): 80

Plot Height (px): 400

Subsetting: included countries

High HDI

Middle HDI

Low HDI

Colour palette: Paired

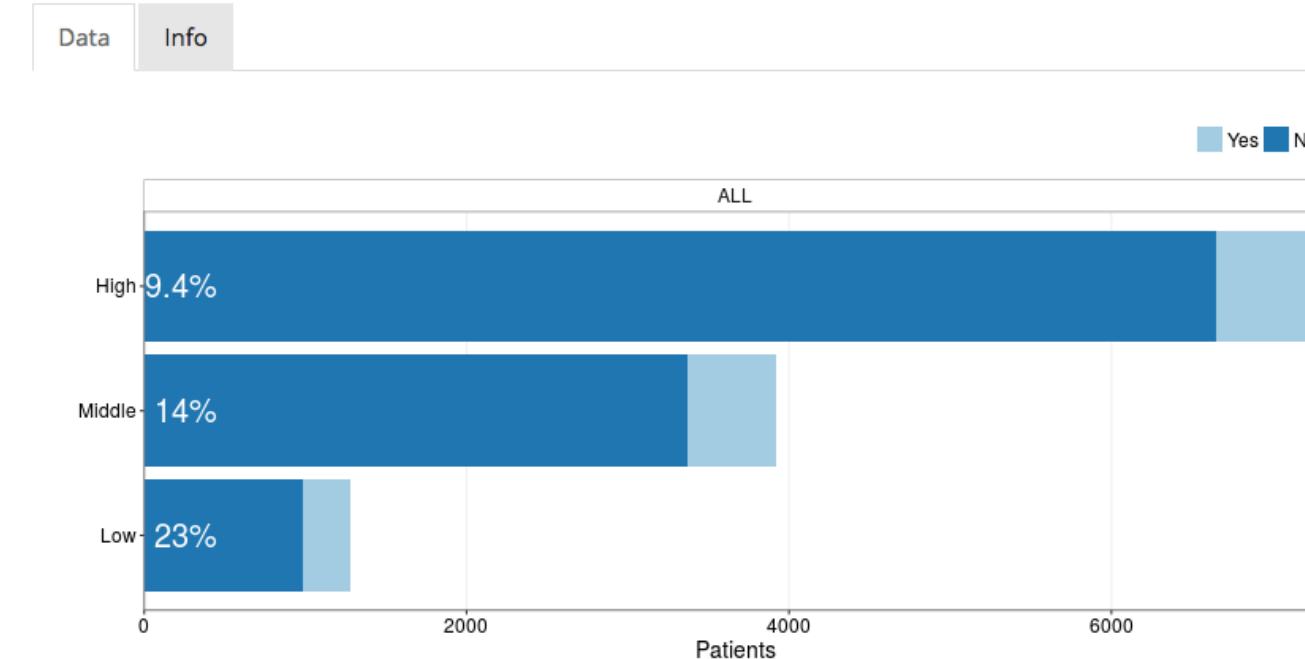
Reverse colours

2-col legend

Legend columns: 2

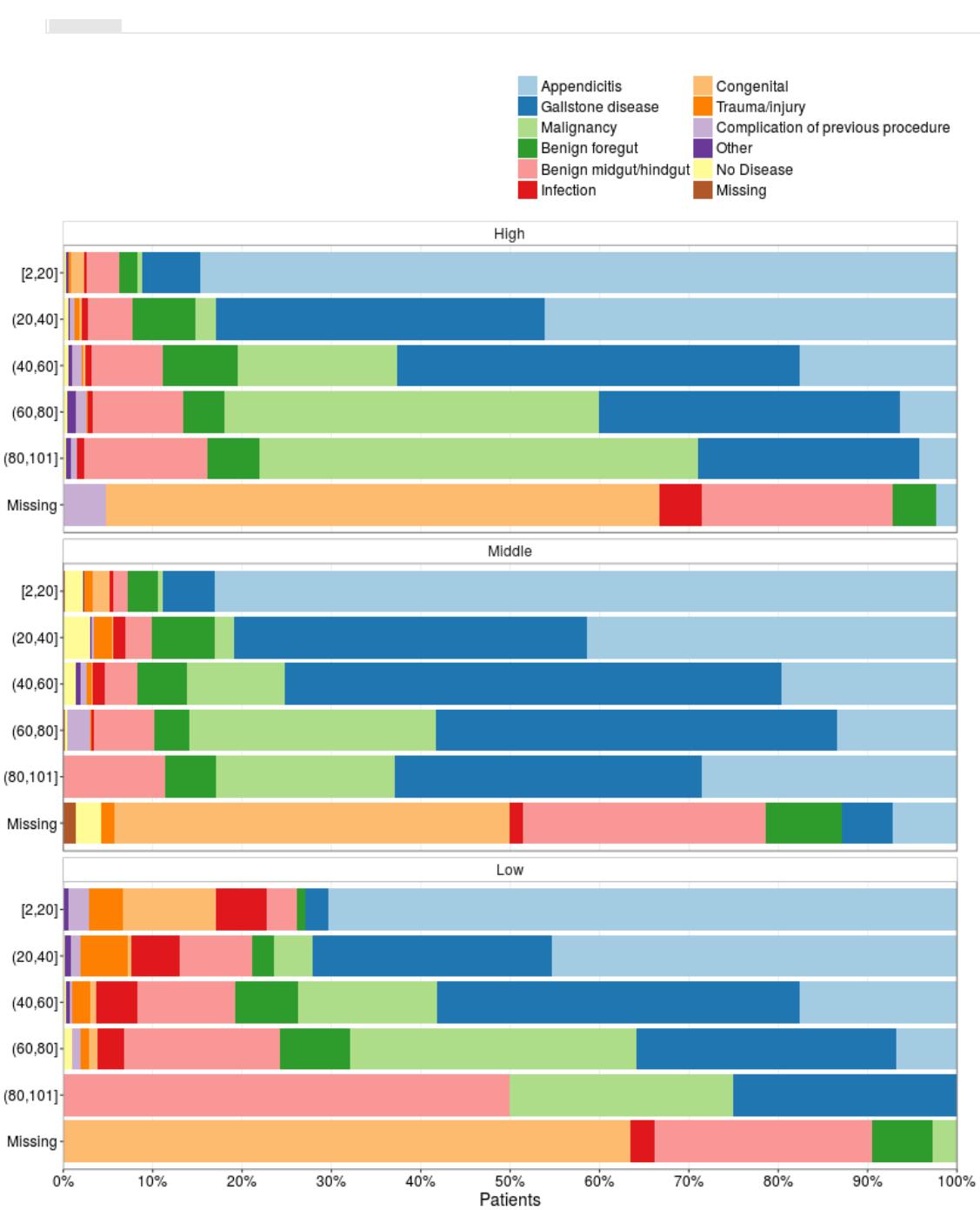
% label:

Black White



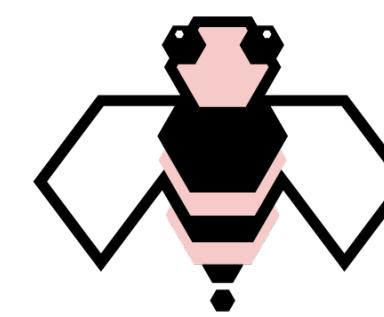
Numbers:

expl1	expl2	Yes	No	total	Yes %	No %
Low	ALL	298.00	984.00	1282	23.24	76.76
Middle	ALL	549.00	3369.00	3918	14.01	85.99
High	ALL	691.00	6648.00	7339	9.42	90.58



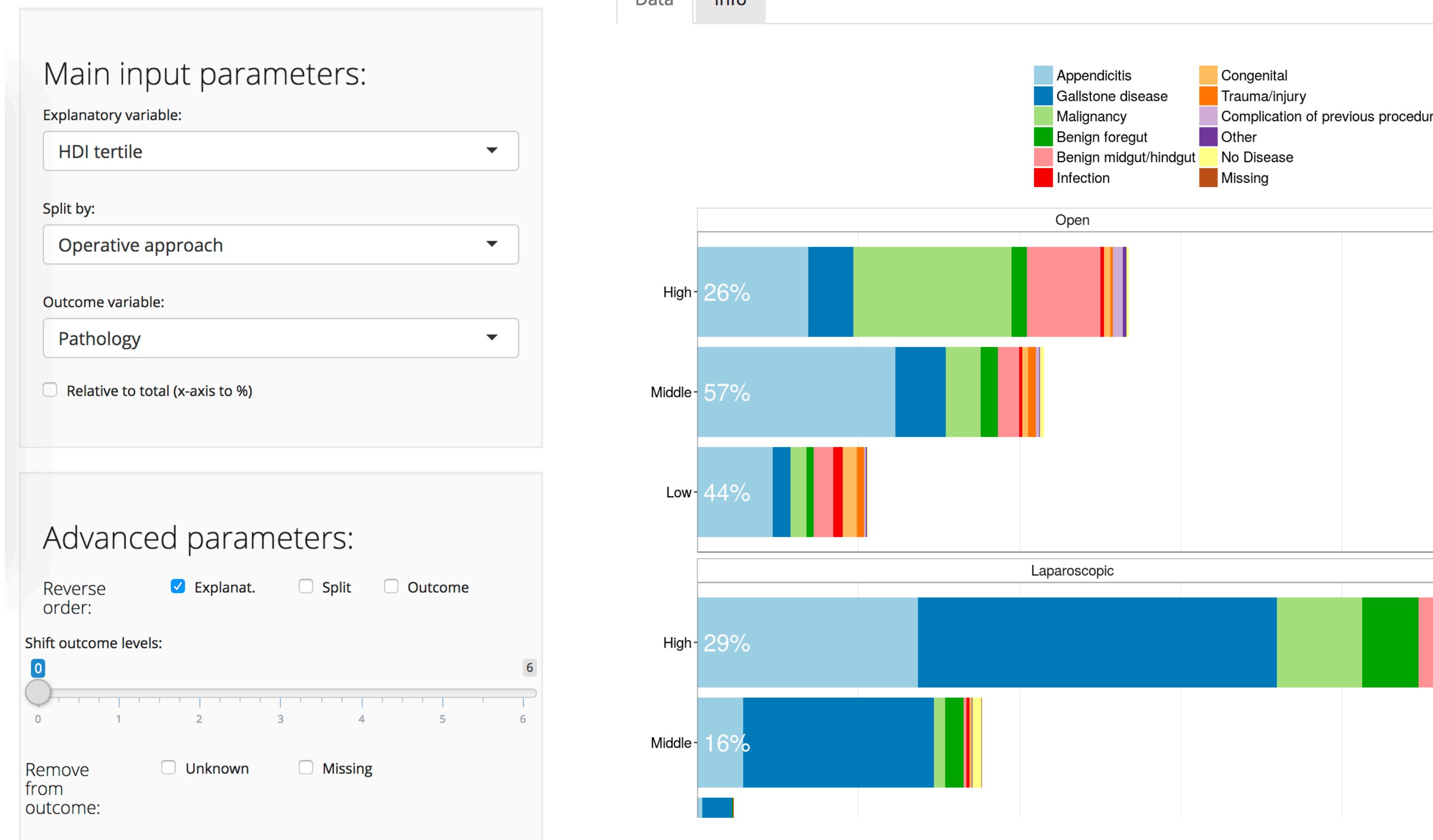
LINK: [SSI.GLOBALSURG.ORG](https://ssi.globalsurg.org)

Kood: https://github.com/riinuots/gs2_ssi_app
<https://github.com/riinuots/shinyviz>



INTERAKTIIVNE ARUANDLUS: [SSI.GLOBALSURG.ORG](http://ssi.globalsurg.org)

GlobalSurg 2 dataset explorer



Relative to total (x-axis to %)

Advanced parameters:

Reverse order: Explanat. Split Outcome

Shift outcome levels: 0 1 2 3 4 5 6

Remove from outcome: Unknown Missing

Plot Width (%): 20 80 100

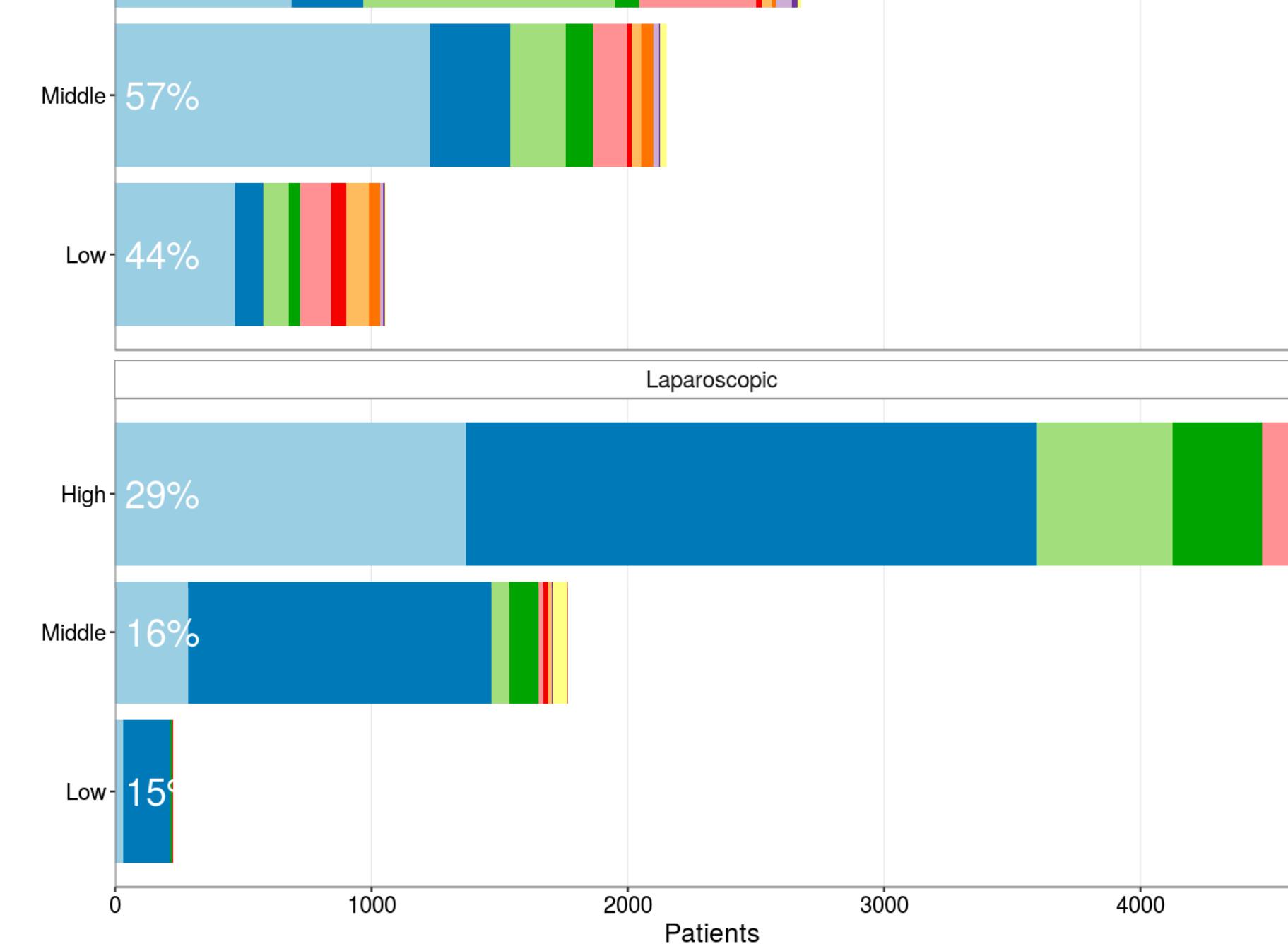
Plot Height (px): 100 800 1,000

Subsetting: included countries
 High HDI
 Middle HDI
 Low HDI

Colour palette: Reverse colours

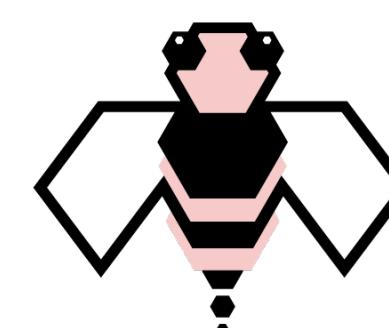
Legend columns: 1 2 3

% label:
 Black White



Table

Explan.	Split	Appendicitis	Gallstone disease	Malignancy	Benign foregut	Benign midgut/hindgut	Infection	Congenital	Trauma/injury
Low	Open	469	109	102	44	119	61	85	44
Low	Laparoscopic	33	181	2	5	2	2	0	1
Middle	Open	1231	310	216	107	133	20	36	46
Middle	Laparoscopic	285	1183	71	113	17	21	13	1
High	Open	691	279	979	97	454	24	38	18
High	Laparoscopic	1370	2226	531	349	116	22	9	0





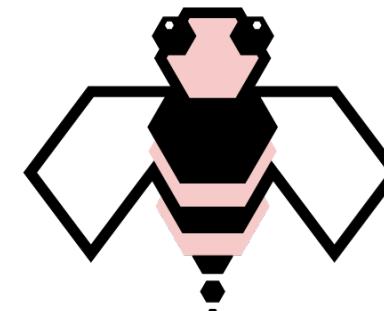
ÜHISLOOMELINE KOHORTUURING



RANDOMISEERITUD KONTROLLITUD UURING

datasci.ee

ÜLIKOOlist ANDMETEADUSSE: RIINU OTS
22-SEPTEMBER 2017, TARTU

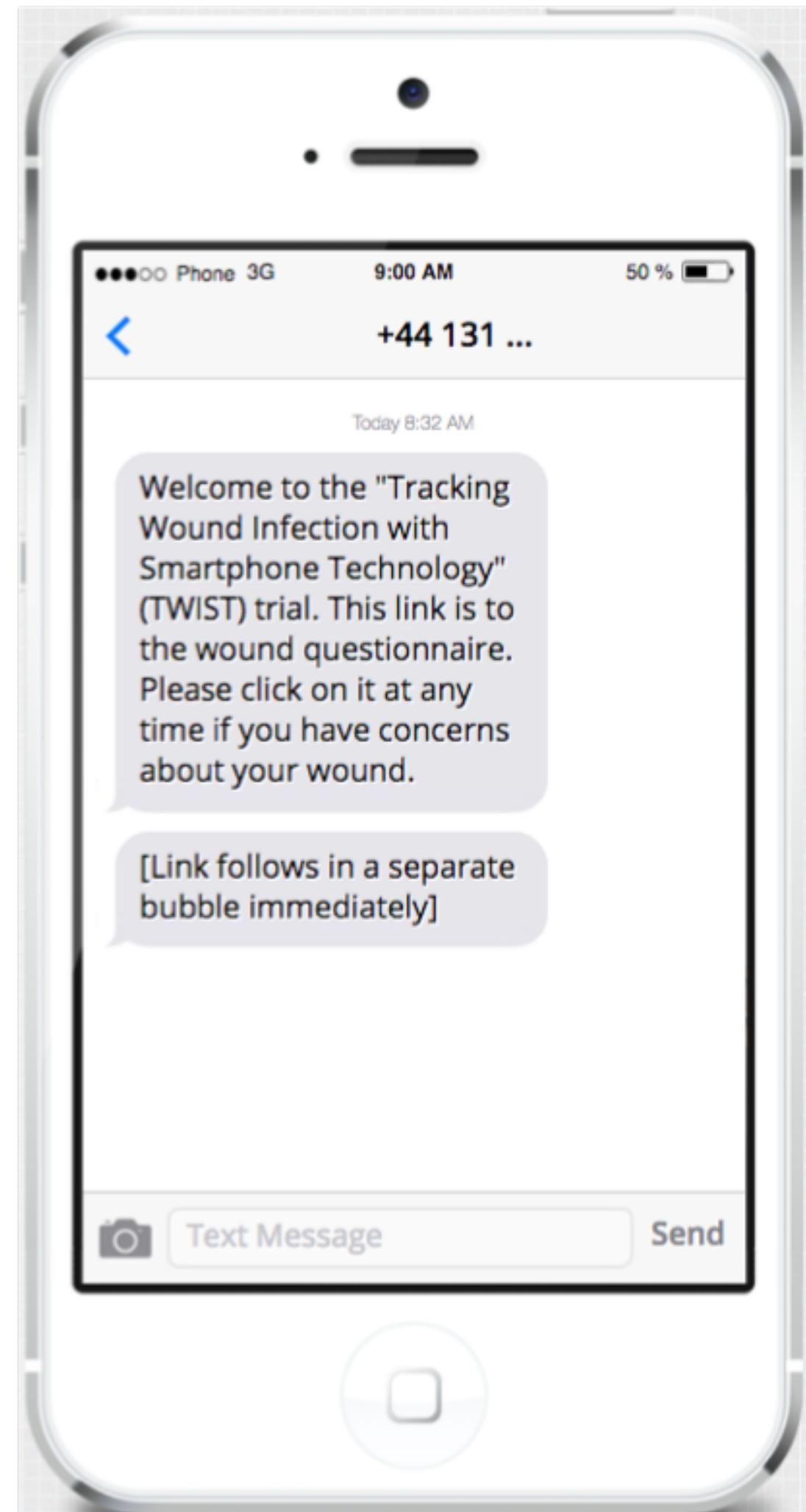


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HAAVAPÕLETIK:

- **KUNI ~25% PATSIENTIDEST**
- **AINULT 1% HAAVAPÕLETIKEST VAJAB HAIGLARAVI**
- **KAS NUTITELEFONI ABIL SAAB PÕLETIKKU VAREM DIAGNOOSIDA?**



TWIST

Tracking Wound Infection with Smartphone Technology

Messag... 4G 09:33 92% redcap.cir.ed.ac.uk

Yes
 No

reset

Have you experienced fevers in the last 24 hours?

Yes
 No

reset

Have you been diagnosed with a wound infection since surgery?

Yes
 No

reset

Please upload a photo of your wound.

The photo will be reviewed by a qualified doctor, who will contact you if there are any concerns not picked up in the questions above.

[Upload document](#)

Submit

Response

No concerns
 Possible infection - see GP
 Probable infection - contact surgery nurses

Event

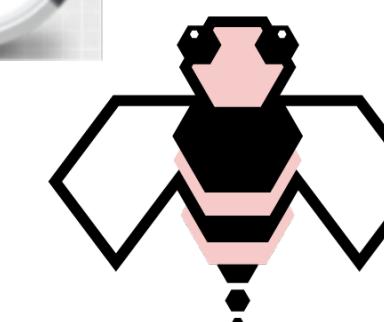
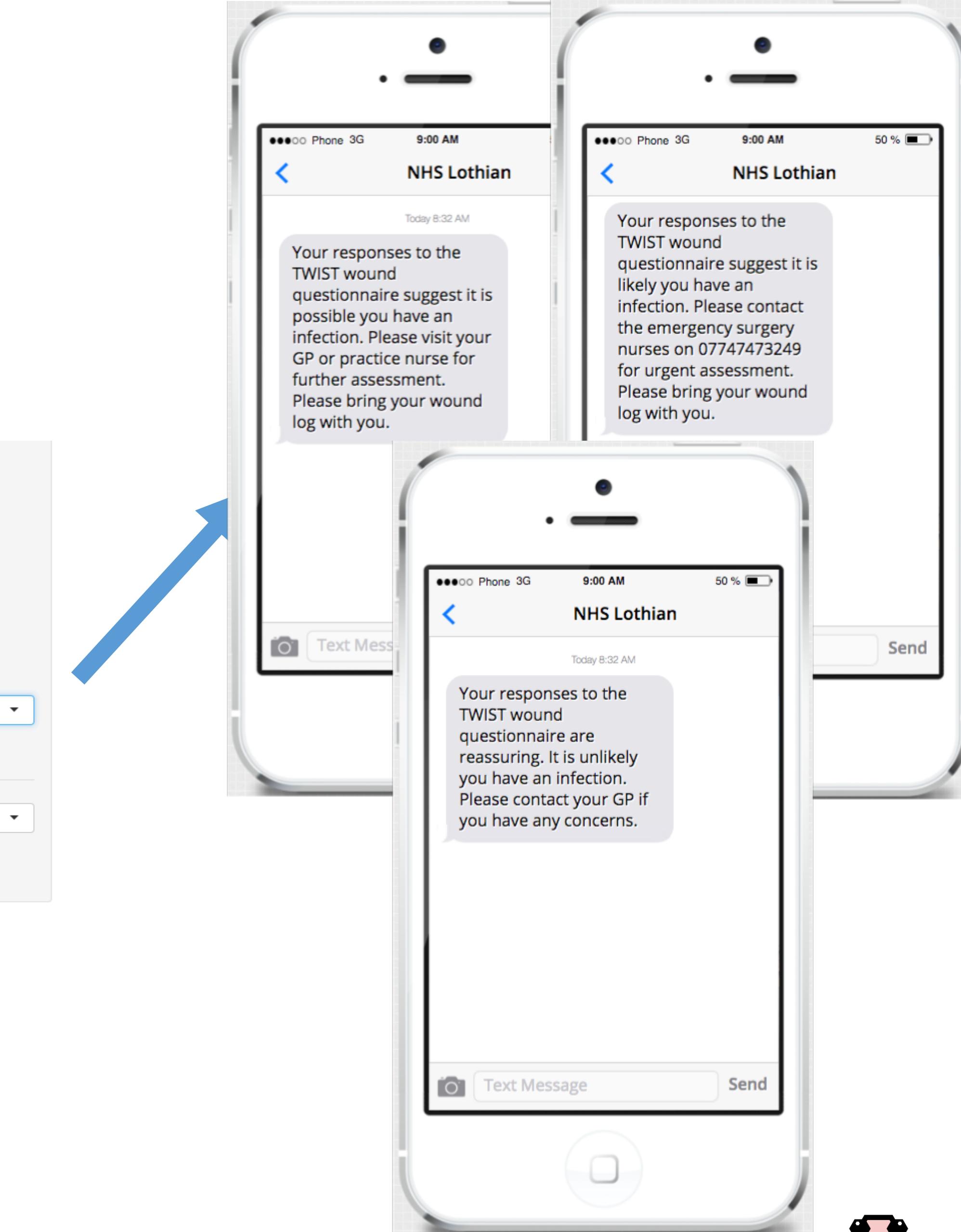
Clinician response 1
 Clinician response 2
 Clinician response 3
 Wound concerns

Your name:
Test (Riinu)

Royal Western

Record ID:
Royal: 1

SEND TEXT TO PATIENT



ANDMETEADLASE ROLL:

Patient consents to take part in the TWIST Randomised Control Trial



Control arm

Response

- No concerns
- Possible infection - see GP
- Probable infection - contact surgery nurses

Event

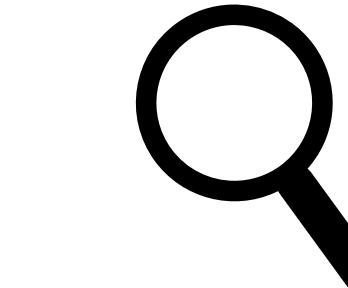
- Clinician response 1
- Clinician response 2
- Clinician response 3
- Wound concerns

Your name:

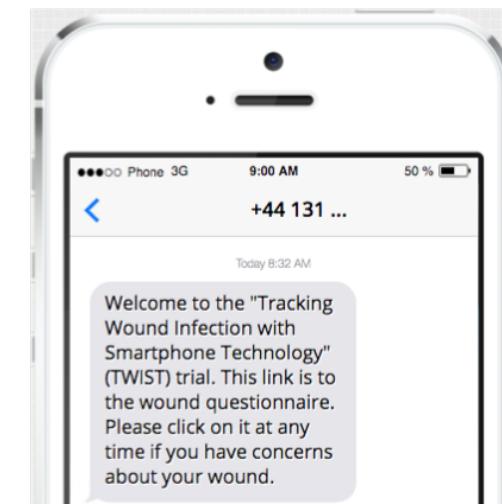
Royal Western

Record ID:

SEND TEXT TO PATIENT

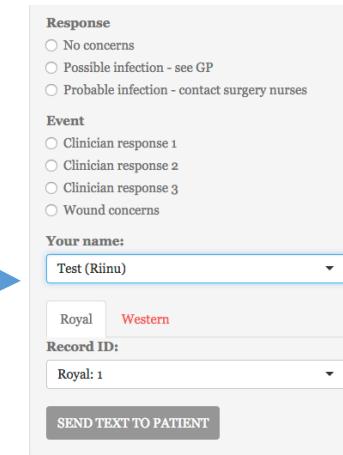


Patient's phone:

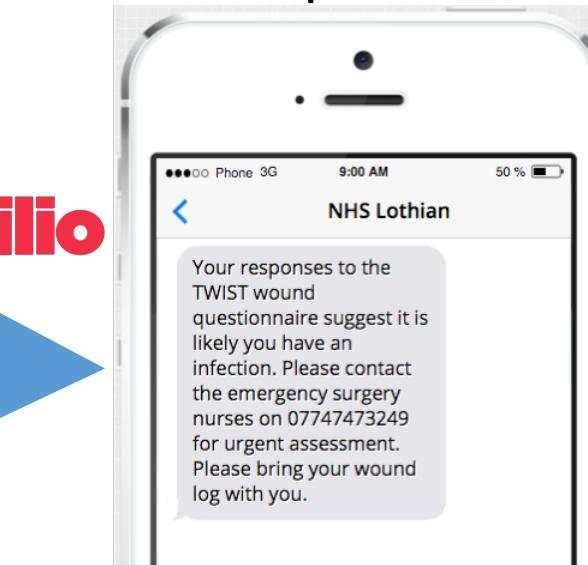


Intervention arm

Clinician's response



Patient's phone:



Control arm

30-day follow-up
by a blinded
clinician

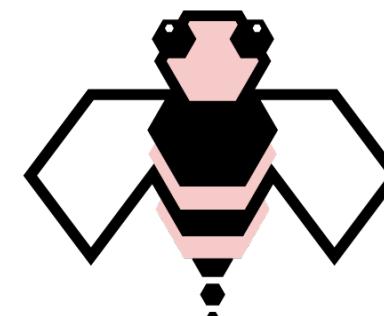




EDINBURGHI ÜLIKOOL

datasci.ee

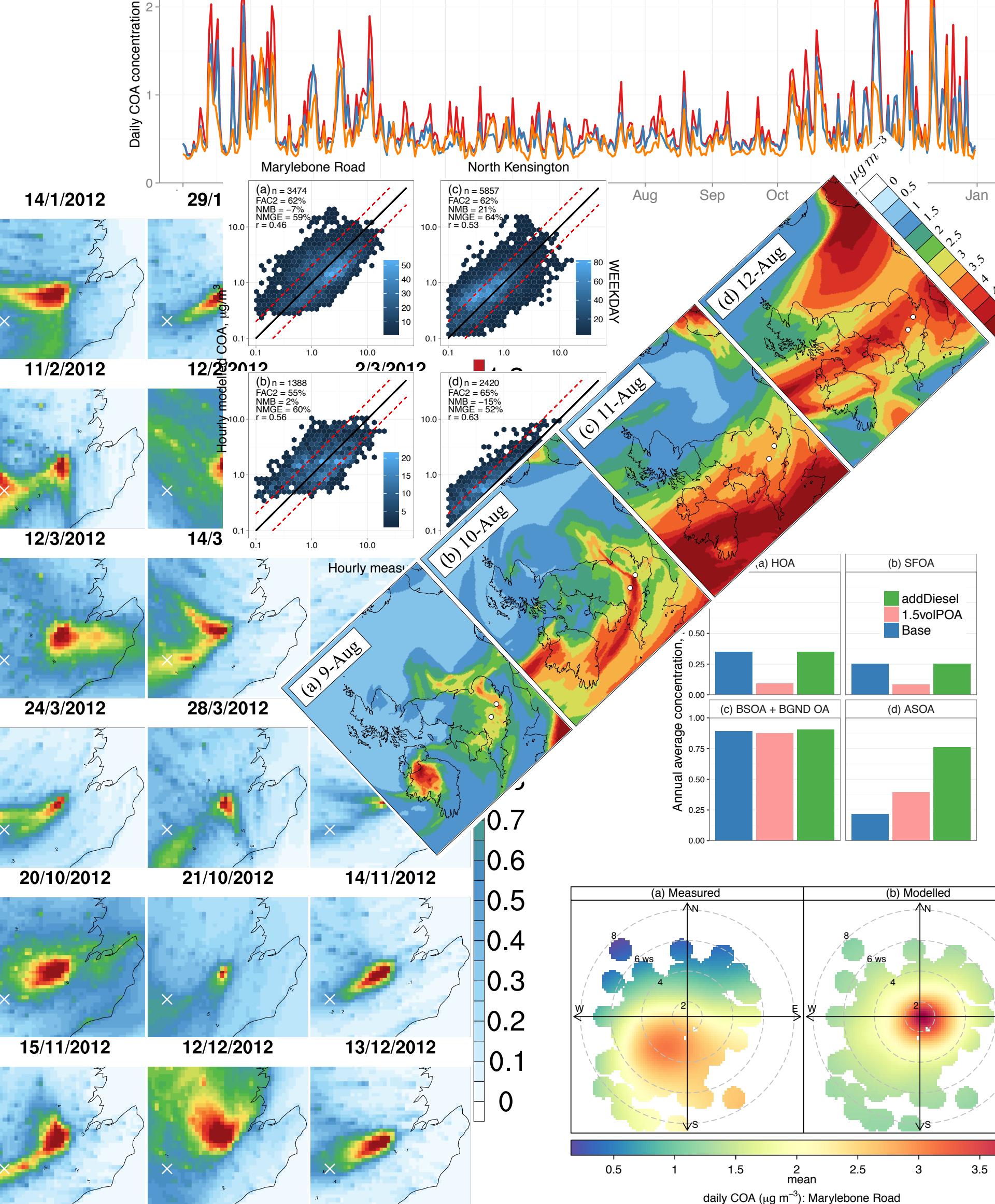
**ÜLIKOOLIST ANDMETEADUSSE: RIINU OTS
22-SEPTEMBER 2017, TARTU**



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HARIDUS JA KOGEMUS

- ▶ PÕHIKOOLIS: ÕPILASTE TEADUSLIKU ÜHINGU LIIGE, VÄLITÖÖD
- ▶ KESKKOOLIS: 2 UURIMISTÖÖD ÕHUSAASTEST, (JUH. MARKO KAASIK)
- ▶ TARTU ÜLIKOOL: FÜÜSIKA BAKALAUREUS: ÕHUSAASTE MODELEERIMINE
- ▶ EDINBURGHI ÜLIKOOL: DOKTORANTUUR
KESKKONNAKEEMIAS: IKKA ÕHUSAASTE MODELEERIMINE



MINU TÖÖRIISTAD:



The tidyverse

Components



QGIS

REDCap



FORTRAN



2005

2007

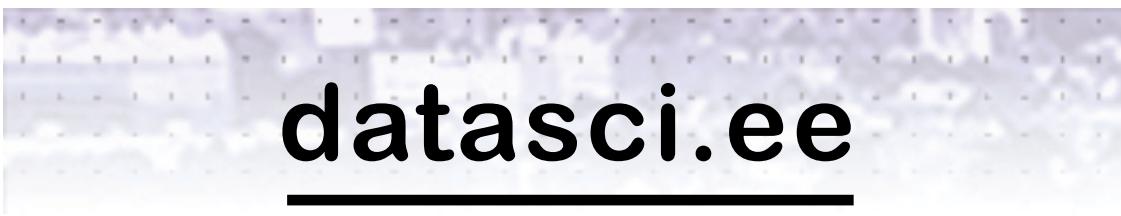
2009

2012

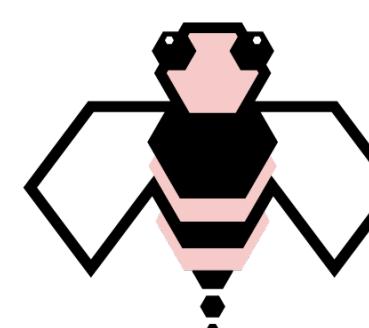
2016 - ...



OpenMP



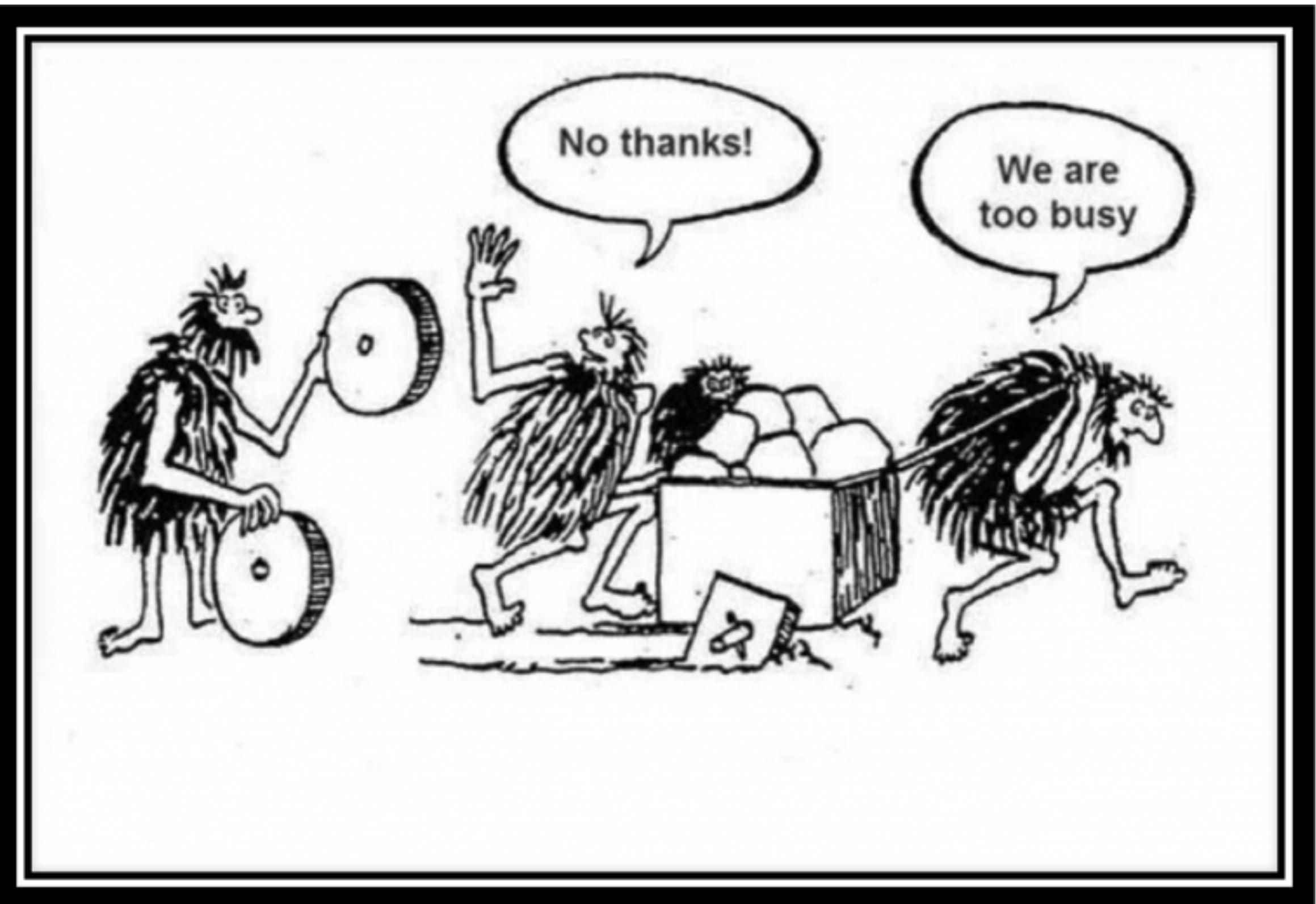
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TARGUTAMINE

- ▶ **AUSÕNA TASUB KULUTADA 1 TUND, ET AUTOMATISEERIDA MIDAGI, MIDA SA KÄSITSI TEEKSID 10 MINUTIGA**
- ▶ **SAMA UUTE ASJADE ÕPPIMISE KOHTA - ÄRA NÜHI VANA TEHNOLOOGIAGA, JULGE "ALUSTADA NULLIST"**





TÄNAN TÄHELEPANU EEST!

- ▶ RIINU OTS
- ▶ R.OTS@ED.AC.UK
- ▶ TÖÖGRUPP: SURGICALINFORMATICS.ORG
- ▶ KOOD: [GITHUB.COM/RIINUOTS](https://github.com/riinuots)