MSFeCARE

MSFeCARE
electronic Clinical Algorithms and REcommendations

The potential of operational eCDSS-derived data to guide evidence-informed clinical decision making

Swiss TPH CDSS symposium
8 February 2023

MEDECINS SANS FRONTIERES

EPFL GH intelligent GLOBAL HEALTH

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Jocelyne Cumunel

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REcommendations

- ❓ What / Where / Why is MSFeCARE?
- 🎯 Aim
- 🤝 Collaboration
- 🔮 Results
- 🔭 Outlook

What / Where / Why is MSFeCARE?

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TARGET: eCDSS to guide acute outpatient care in <5 year old children (ped), 0 to 2 months old (YI) and vaccination routine and campaigns.

GEOGRAPHIC SCOPE: Tanzania, Kenya, Chad, Niger, Nigeria, Mali, CAR, Sierra Leone, South Sudan

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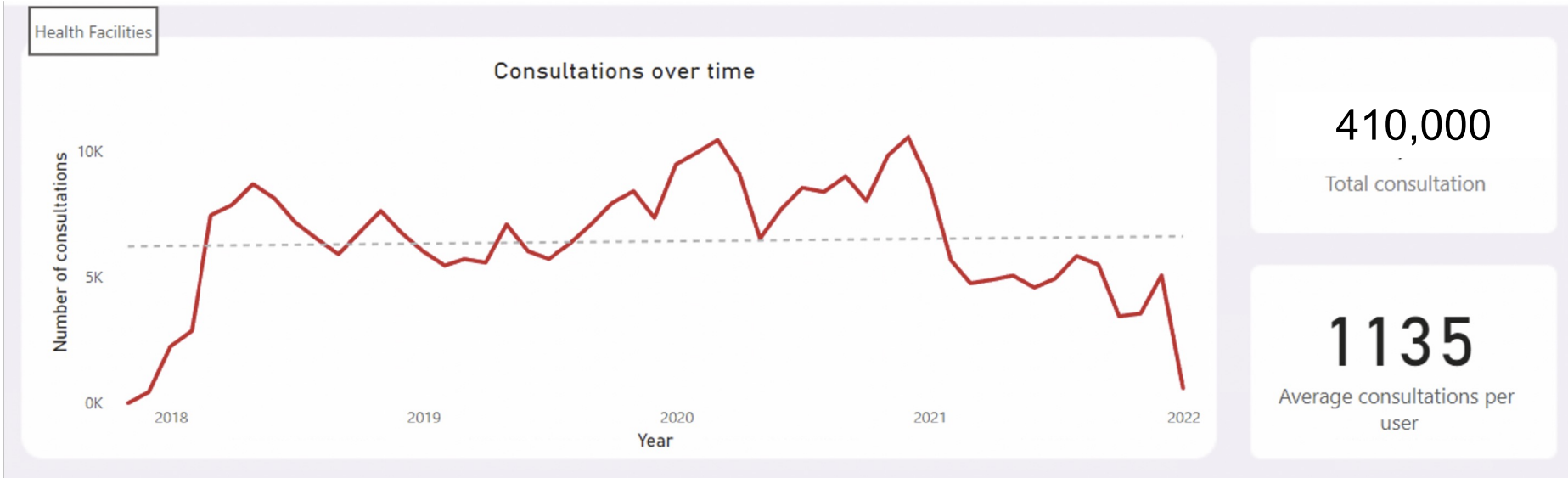
TEMPORAL SCOPE: 2016-current



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IMPACT: Improvements in consultation process, better communication between health workers and caretakers and decrease of antibiotics overuse.

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IMPACT: Improvements in consultation process, better communication between health workers and caretakers and decrease of antibiotics overuse.

PROPERTIES:

- OPERATIONAL tool (not research)
- Simple
- Robust to volatile and (very) low-resource settings
- MSF guidelines

→ Static, generic predictions → maximize performance on the MAJORITY of patients

Aim

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OBJECTIVE

- Sharing, externally, the reality of analysing the data from the field

REALITY CHECK

- MSF is collecting huge amount of data
- Our data collection is not predictive
- Hidden potential in the data

To unlock data potential, **collaboration with EPFL**

Collaboration (EPFL-MSF)

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Mary-Anne Hartley (aka Annie)
- MD, PhD, MPH

AIM: Use data to improve clinical practice in resource-limited settings

1. *Make algorithms that predict results of expensive tests/expertise*
2. *Better represent neglected populations*

Collaboration (EPFL-MSF)

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EPFL iGH intelligent GLOBAL HEALTH → **Supervise 30-40 students/year**

JOIN US

Students → invaluable resource to provide access to data science

- **MSc Semester Projects** (30% for 4 months)
- **MSc Thesis Projects** (100% for 4-6 months)
- **Internships** (variable time)

So what did we find?

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QUESTION

- What is the predictive potential of the data?

Data cleaning, visualization, outbreak detection

Paloma Cito
Semester Project

Lynn-Kelly Tchoffa
Semester Project

The “value” of CDSS questions

Kuan Tung
MSc Thesis

Patterns of anomalous use

Henrik Myrhe
Semester Project

Mobile app

Batuhan Faik
Intern

The problem with CDSS-derived data

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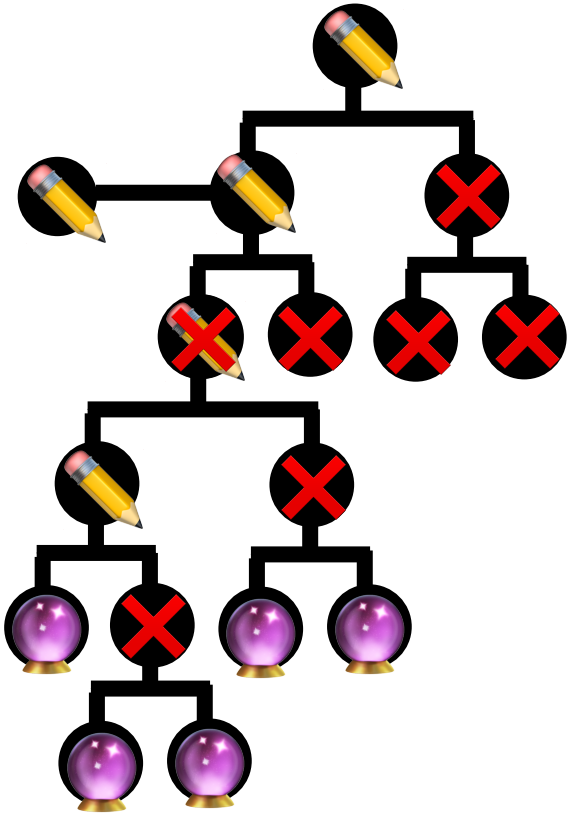

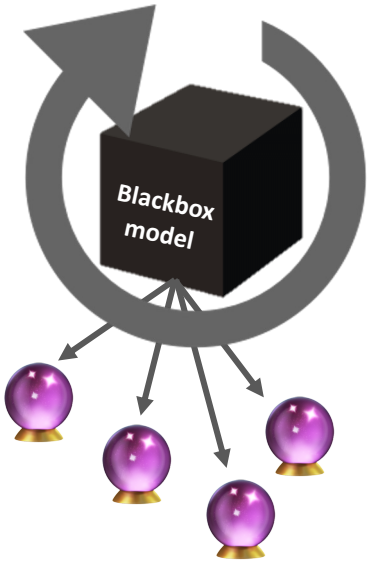

The problem with CDSS-derived data

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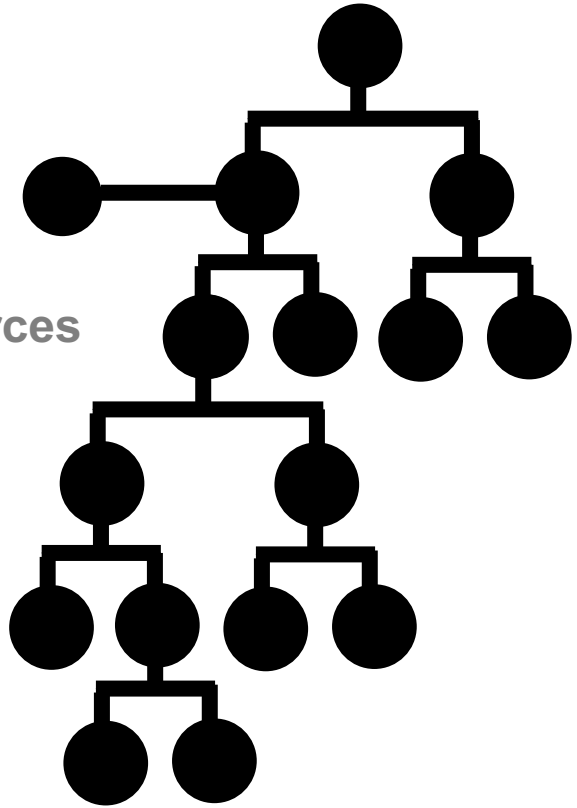
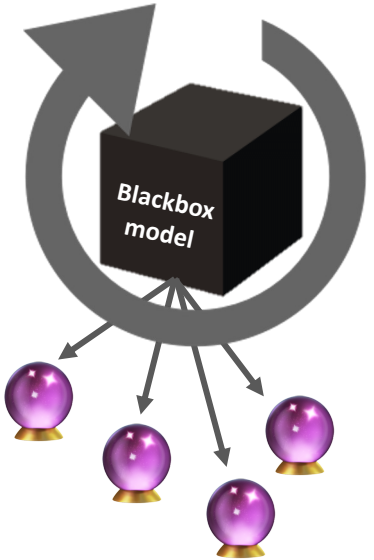
- **Challenges**
  - Systematic missingness
  - Interpretability
  - Robustness to variable resources
  - Portability to new contexts





Modular clinical decision support

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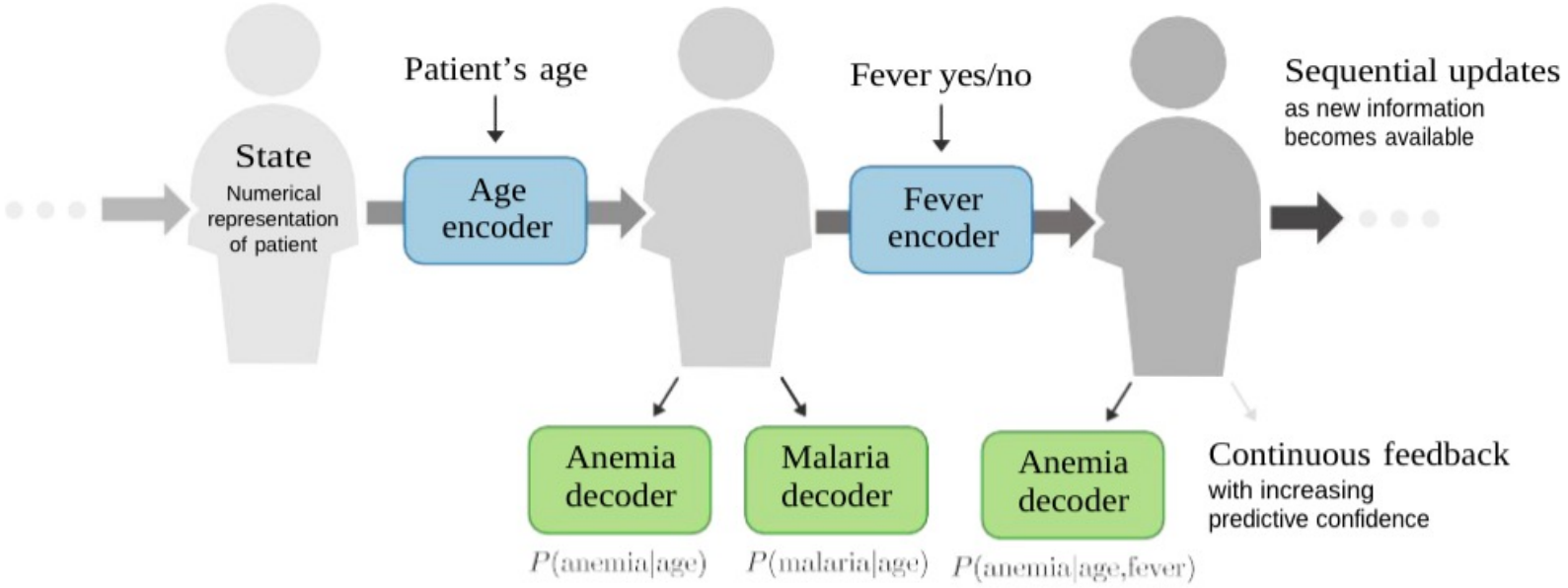

Predicting what you need with what you *HAVE*

The problem with CDSS-derived data

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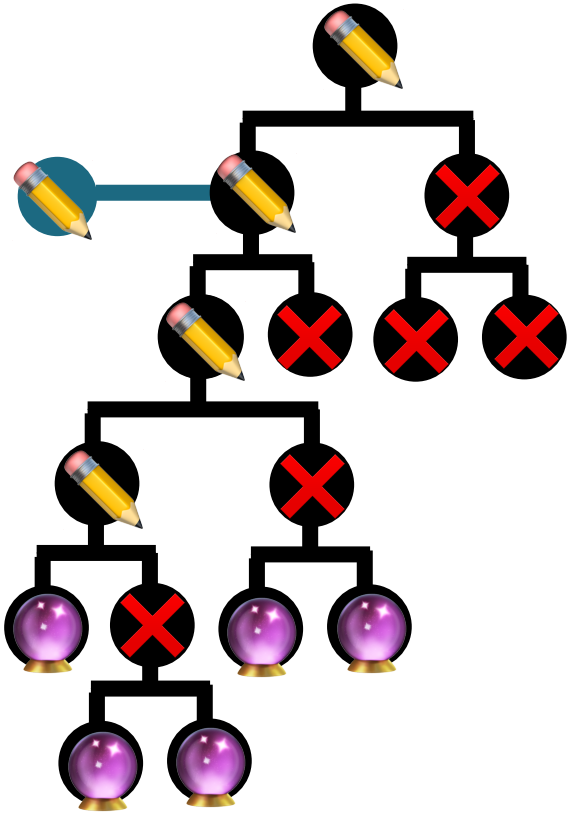

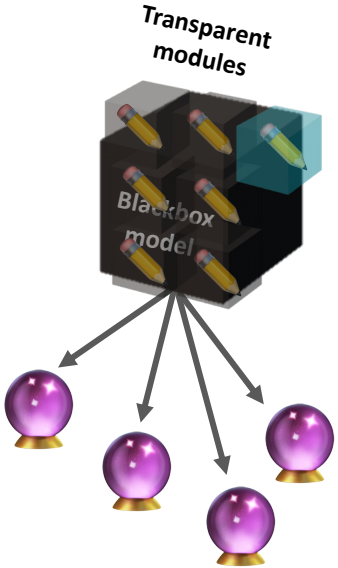

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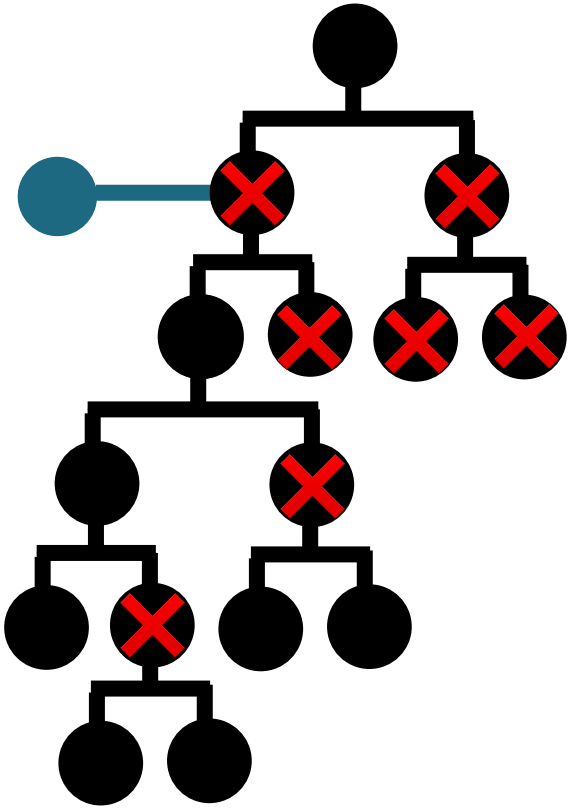

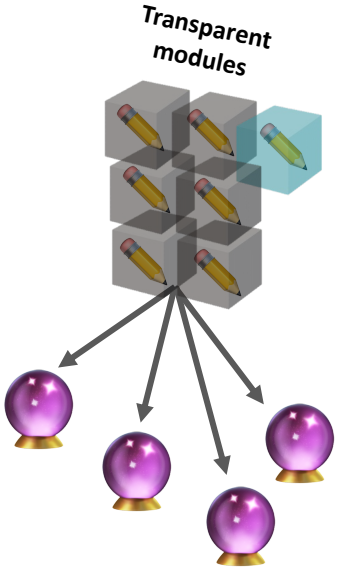

Modular clinical decision support (app)

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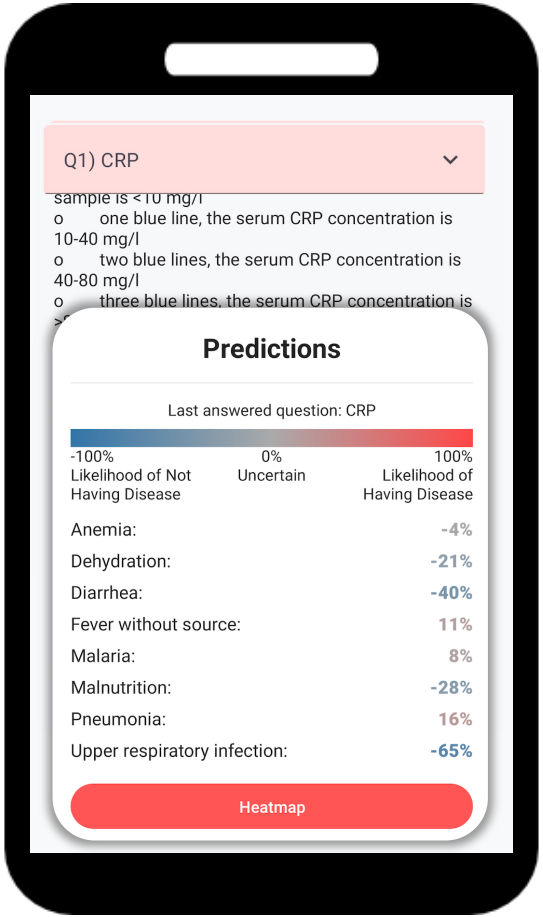

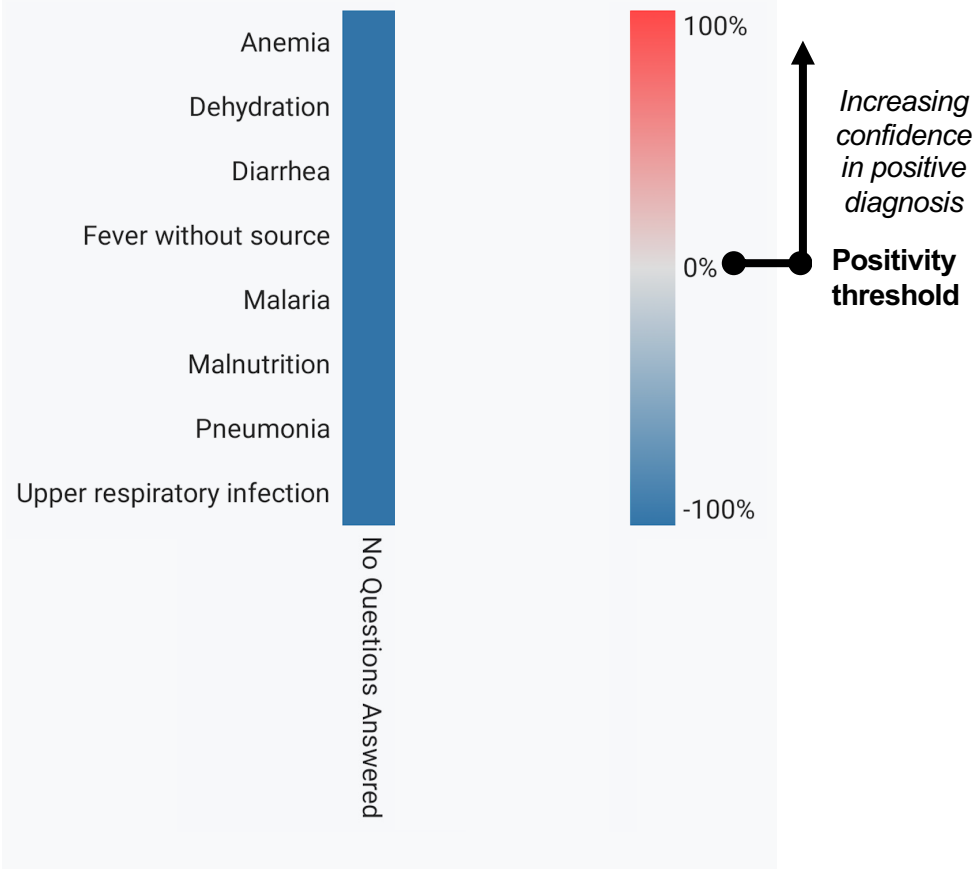

Questionnaire optimization

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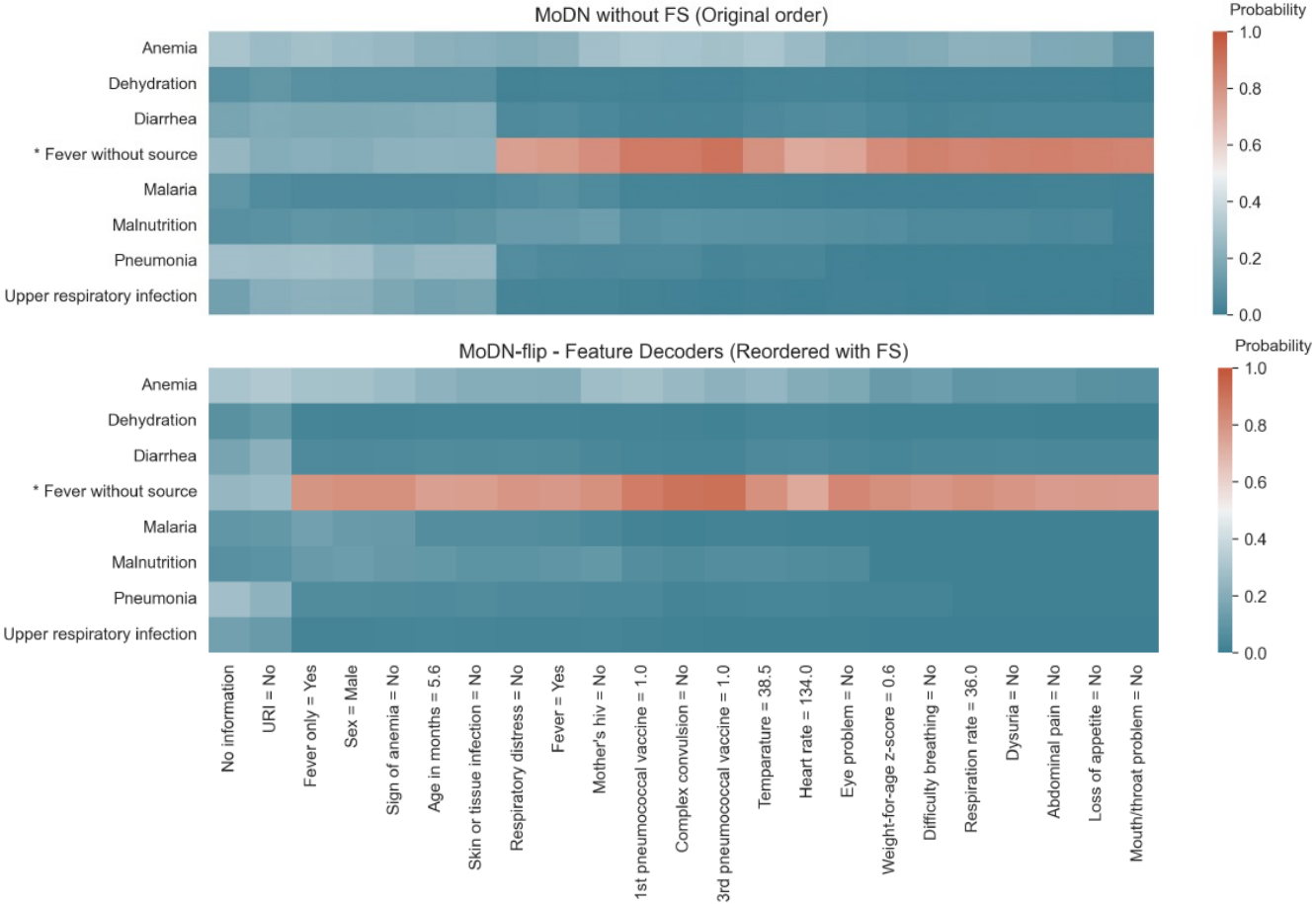

Anomalous use detection

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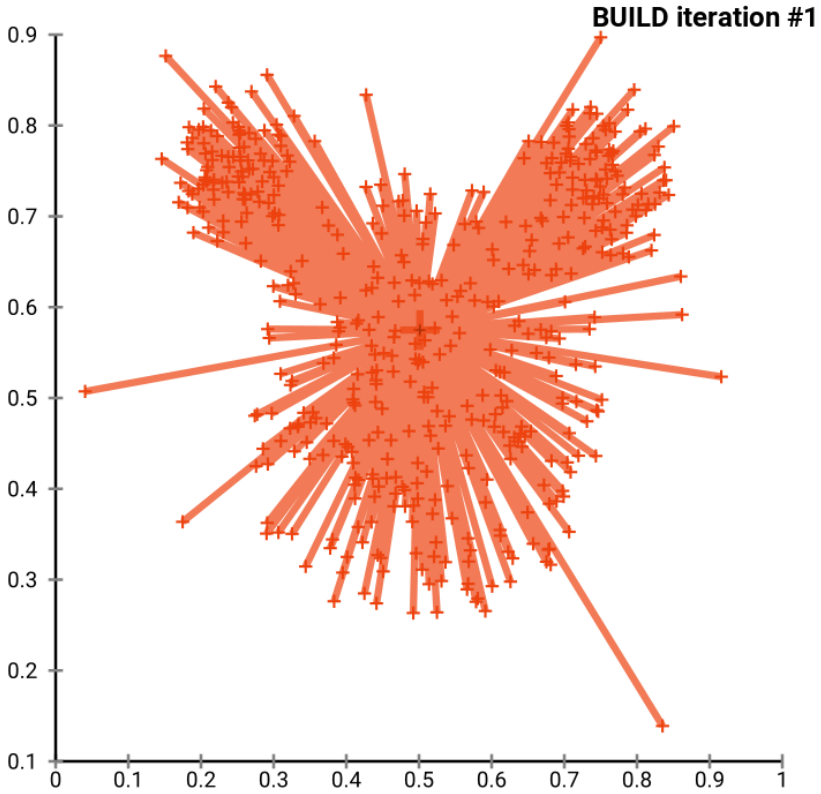

Examples:

- Missing values
- Physiological improbable entries
- Variance between patients

Anomalous use detection

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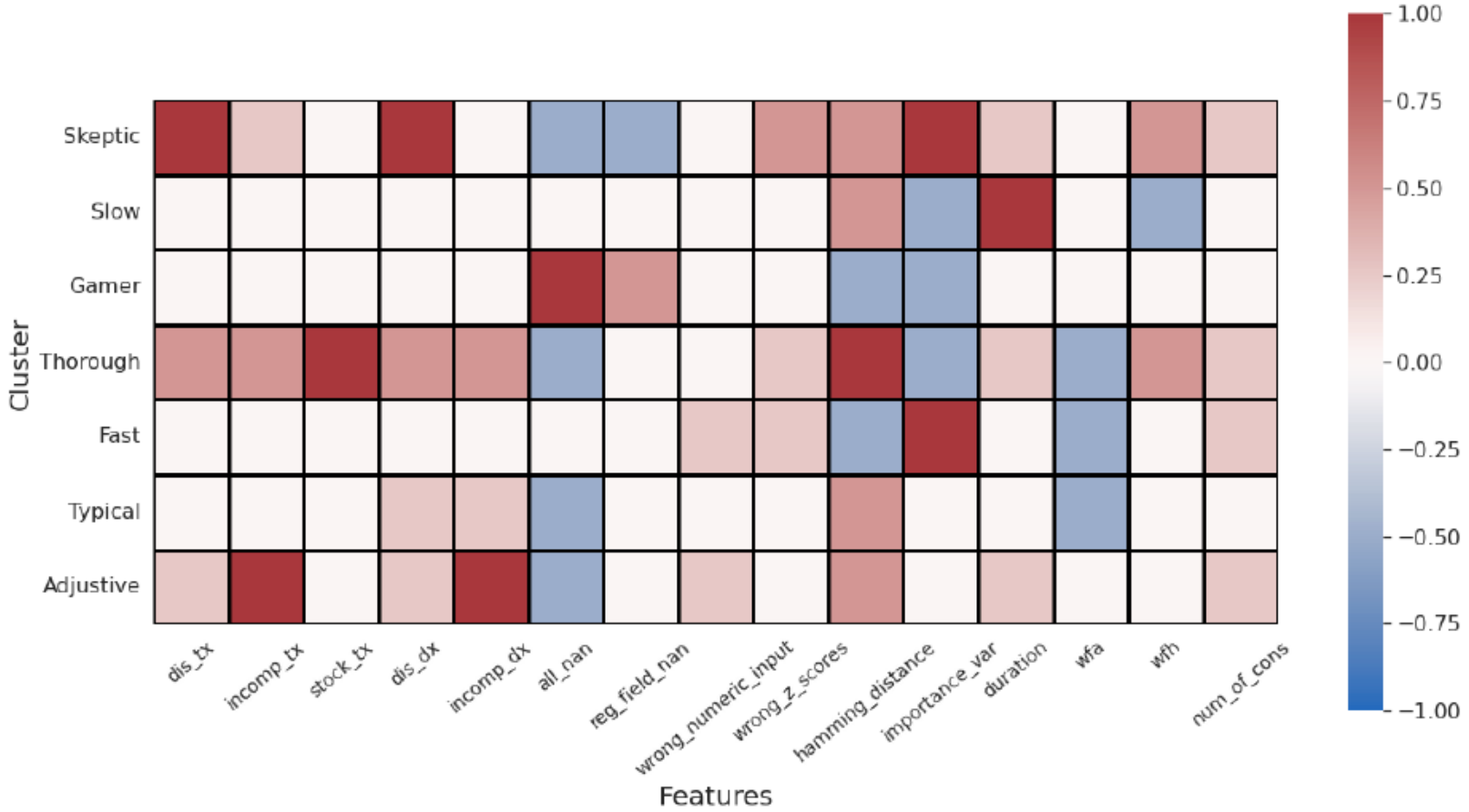

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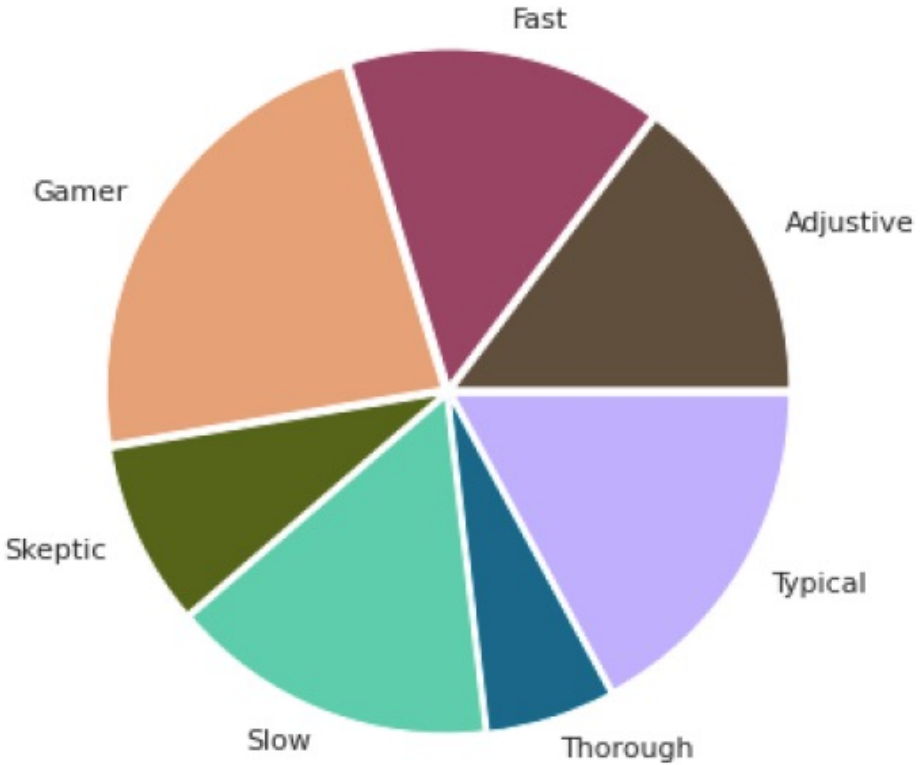

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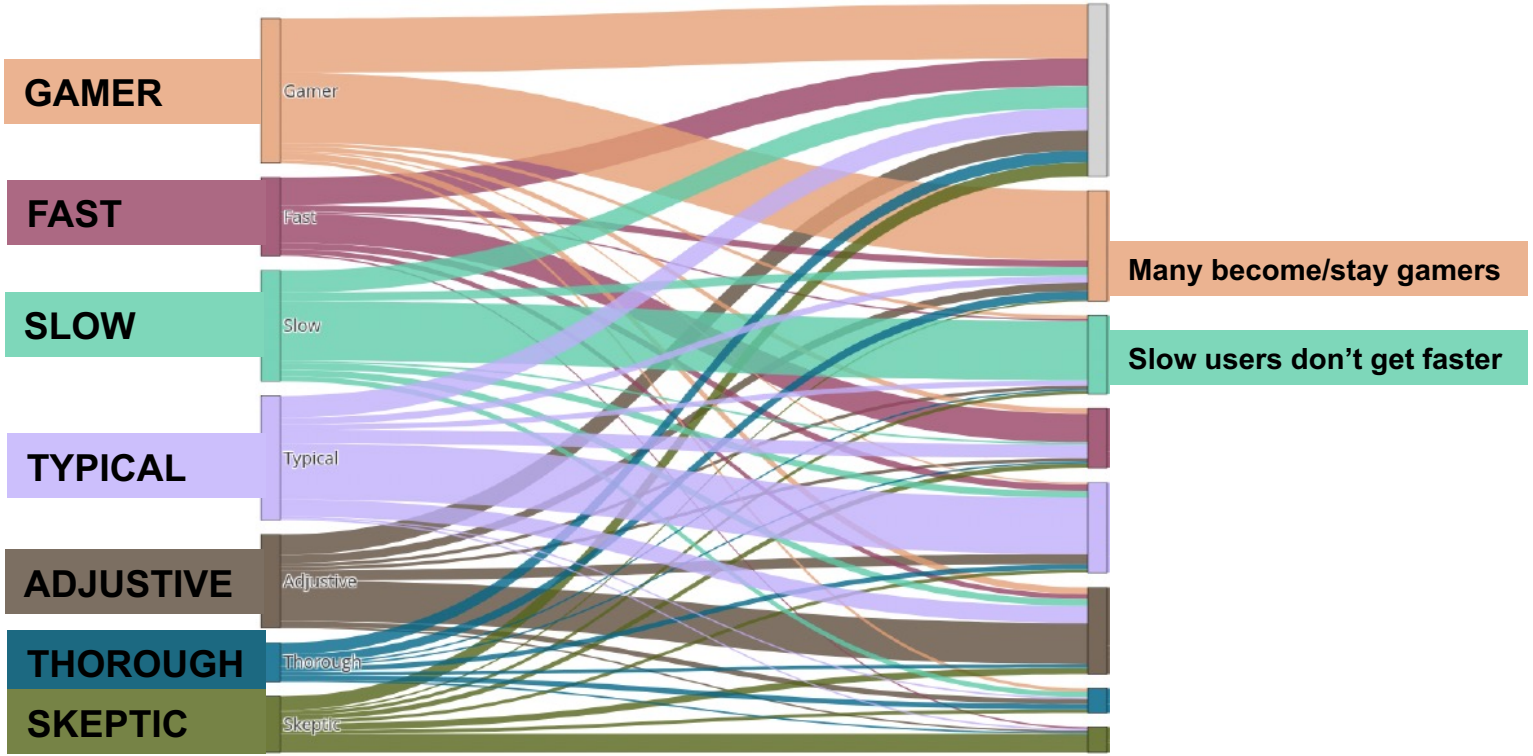

- Responsibility
- Resistance
- Barrier to healthcare
- Uncertainty
- Call for **evidence** in the use of **data-driven tool**

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