EHDEN

EUROPEAN HEALTH DATA & EVIDENCE NETWORK

"Reducing risk of reproducing research ~~w~~rong: creation of a Patient-Level Prediction model library"

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imi innovative medicines initiative

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OBSERVATIONAL HEALTH DATA SCIENCES AND INFORMATICS

BACKGROUND

Lots of prediction models are made, few are validated, even fewer are implemented in clinical practice

This is because of technical difficulties in validating (e.g. different coding systems ICPC, ICD10 etc.)

Infeasibility of application (e.g. excessive numbers of covariates)

Lack of trust in modelling

A new toy is more fun than an old one…

MOTIVATION

How can we remove these barriers?

OMOP CDM removes many of the technical barriers to replication but doesn't necessarily help with increasing trust and usability

This is where a library containing evidence that can be explored interactively adds value

No need to trawl through rds files on github

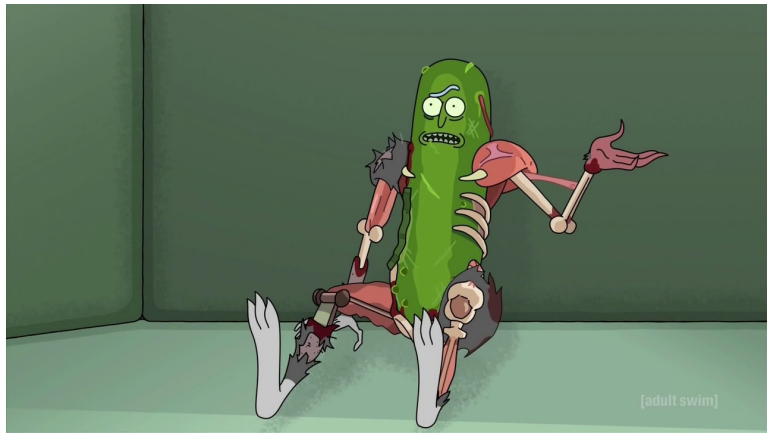
Prediction Model Library

The library will contain the model, the cohorts and the performance as well as various metadata about developer, database and package versions

At each iteration of maturity a DOI will be created preserving the research at that moment

The interactivity will allow any party to explore the

results of the study themselves



How will the library work?

Filters

Model: All

Development Database All

Validation Database All

Target Cohort All

Outcome Cohort All

Time-at-risk start: All

Time-at-risk end:

Results | Development Settings | Summary | Discrimination | Calibration | Validation

Show 10 entries Search:

T	O	TAR	AUC	Dev	# of External Validations	Model	T Size	O Count	O Incidence (%)
GP/OP/ER visits of patients presenting with Covid flu or flu-like symptoms AND no symptoms or pneumonia in prior 60d	Hospitalizations with pneumonia	0 to 30 days	0.85	OptumDoD	11	Lasso Logistic Regression - Data Driven	37500	1678	4.47
GP/OP/ER visits of patients presenting with Covid flu or flu-like symptoms AND no symptoms or pneumonia in prior 60d	Hospitalizations with pneumonia	0 to 30 days	0.84	OptumDoD	13	COVER-H	2082277	105030	5.04
GP/OP/ER visits of patients presenting with Covid flu or flu-like symptoms AND no symptoms or pneumonia in prior 60d	Hospitalizations with pneumonia or ARDS or sepsis or AKI requiring intensive services or resulting in death in 30d	0 to 30 days	0.84	OptumDoD	12	COVER-I	2082277	29905	1.44
GP/OP/ER visits of patients presenting with Covid flu or flu-like symptoms AND no symptoms or pneumonia in prior 60d	Persons who die	0 to 30 days	0.90	OptumDoD	13	COVER-F	2082277	11407	0.55
GP/OP/ER visits of patients presenting with Covid flu or flu-like symptoms AND no symptoms or pneumonia in prior 60d	Hospitalizations with pneumonia or ARDS or sepsis or AKI	0 to 30 days	0.87	OptumDoD	13	Lasso Logistic Regression - Data Driven	37500	2617	6.98

https://rdwilliams.shinyapps.io/predictionlibrary/

WHAT DOES THIS ADD?

Centralised, version controlled location for storing studies

Ability to explore results with a variety of metrics and graphics

Ability to download study package directly and run against local data

This can then be uploaded to increase number of external validations

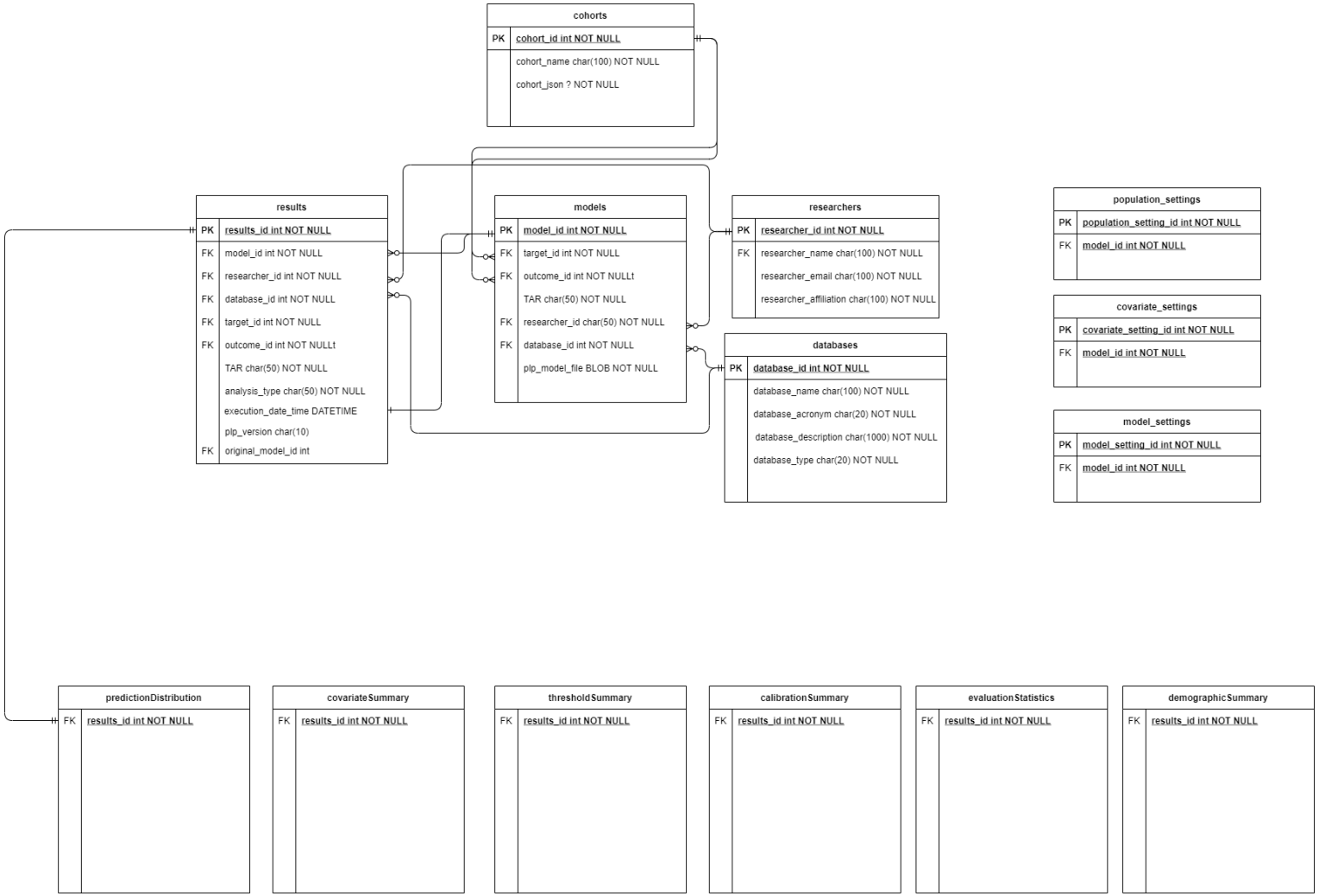
CONT.

A database of these models will be created that will be searchable by author, name, model type, setting etc

This is again a focus on increasing the accessibility and usability

This feature will be helpful for clinicians/regulators looking for relevant models as well as prediction researchers looking for a set of problems to apply new methods too.

CURRENT SCHEMA



THANKS FOR LISTENING

Questions?

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