OHDSI Coordinating Center

OHDSI Community Call
Nov. 28, 2023 • 11 am ET

Upcoming Community Calls

Date	Topic
Nov. 28	OHDSI Coordinating Center
Dec. 5	Recent Publications
Dec. 12	Happy Birthday OHDSI! Where Have We Come In 10 Years, and in 12 Months?
Dec. 19	Holiday-Themed Goodbye to 2023!

Three Stages of The Journey

Where Have We Been?

Where Are We Now?

Where Are We Going?

OHDSI Shoutouts!

Congratulations to the team of **Fan Bu, Martijn Schuemie, Akihiko Nishimura, Louisa Smith, Kristin Kostka, Thomas Falconer, Jody-Ann McLeggon, Patrick Ryan, George Hripcsak, and Marc Suchard** on the publication of **Bayesian safety surveillance with adaptive bias correction** in *Statistics in Medicine*.

Received: 23 May 2023 | Revised: 3 November 2023 | Accepted: 8 November 2023
DOI: 10.1002/sim.9968

RESEARCH ARTICLE

Statistics in Medicine WILEY

Bayesian safety surveillance with adaptive bias correction

Fan Bu[1,2] | **Martijn J. Schuemie**[1,3] | **Akihiko Nishimura**[4] | **Louisa H. Smith**[5,6] | **Kristin Kostka**[6] | **Thomas Falconer**[7] | **Jody-Ann McLeggon**[7] | **Patrick B. Ryan**[3] | **George Hripcsak**[7] | **Marc A. Suchard**[1]

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Postmarket safety surveillance is an integral part of mass vaccination programs. Typically relying on sequential analysis of real-world health data as they accrue, safety surveillance is challenged by sequential multiple testing and by biases induced by residual confounding in observational data. The current standard approach based on the maximized sequential probability ratio test (MaxSPRT) fails to satisfactorily address these practical challenges and it remains a rigid framework that requires prespecification of the surveillance schedule. We develop an alternative Bayesian surveillance procedure that addresses both aforementioned challenges using a more flexible framework. To mitigate bias, we jointly analyze a large set of negative control outcomes that are adverse events with no known association with the vaccines in order to inform an empirical bias distribution, which we then incorporate into estimating the effect of vaccine exposure on the adverse event of interest through a Bayesian hierarchical model. To address multiple testing and improve on flexibility, at each analysis time-point, we update a posterior probability in favor of the alternative hypothesis that vaccination induces higher risks of adverse events, and then use it for sequential detection of safety signals. Through an empirical evaluation using six US observational healthcare databases covering more than 360 million patients, we benchmark the proposed procedure against MaxSPRT on testing errors and estimation accuracy, under two epidemiological designs, the historical comparator and the self-controlled case series. We demonstrate that our procedure substantially reduces Type 1 error rates, maintains high statistical power and fast signal detection, and provides considerably more accurate estimation than MaxSPRT. Given the extensiveness of the empirical study which yields more than 7 million sets of results, we present all results in a public R ShinyApp. As an effort to promote open science, we provide full implementation of our method in the open-source R package `EvidenceSynthesis`.

Three Stages of The Journey

Where Have We Been?

Where Are We Now?

Where Are We Going?

Upcoming Workgroup Calls

Date	Time (ET)	Meeting
Tuesday	12 pm	Common Data Model Vocabulary Subgroup
Wednesday	7 am	Medical Imaging
Wednesday	10 am	Surgery and Perioperative Medicine
Wednesday	4 pm	Vulcan/OHDSI Meeting
Thursday	9 am	Medical Devices
Thursday	7 pm	Dentistry
Friday	9 am	GIS – Geographic Information System General
Friday	11 am	Clinical Trials
Monday	10 am	Healthcare Systems Interest Group
Monday	6 pm	OMOP & FHIR
Tuesday	9 am	ATLAS & WebAPI
Tuesday	10 am	Common Data Model

Dec. 10 Career Speaker Series: Fan Bu

organized by the Early-Stage Researchers WG

Fan Bu, the soon-to-be Assistant Professor in Biostatistics at the University of Michigan, will be the featured guest at the Dec. 10 (11 am) Career Speaker Series event.

Fan is a leading researcher in OHDSI's vaccine safety surveillance collaboration with the FDA CBER Best Initiative and has collaborated on several OHDSI network studies.

bit.ly/OHDSILeaders

#OHDSISocialShowcase This Week

MONDAY

"OMOP Anywhere": Daily Updates from EHR Data Leveraging Epic's Native Tools

(Mujeeb A Basit, Mereeja Varghese, Aamirah Vadsariya, Bhavini Nayee, Margaret Langley, Ashley Huynh, Jennifer Cai, Donglu Xie, Cindy Kao, Eric Nguyen, Todd Boutte, Shiby Antony, Tammye Garrett, Christoph Lehmann, Duwayne L Willett)

"OMOP Anywhere":
Daily Updates from EHR Data Leveraging Epic's Native Tools

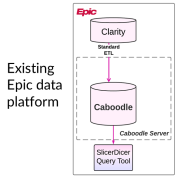
PRESENTERS: **Mujeeb Basit, DuWayne Willett**

INTRO:

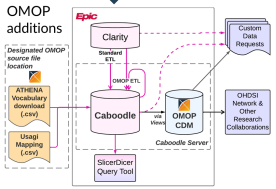
- Many health systems want to transform their EHR data into the OMOP CDM so they can participate in valuable OHDSI network studies.
- But needing to create and operate a separate Extract-Transform-Load (ETL) system can be a substantial barrier.

METHODS

Existing Epic data platform



With OMOP additions



RESULTS

Caboodle Nightly Job (including OMOP)
- Rows extracted: 1,225,517,247
- Duration: 4h 04m
- Completion: 9/23/2023 05:09:19

OMOP Clinical Tables

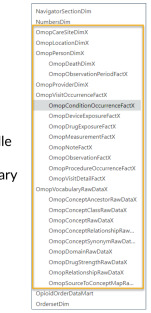
Table Name	Source(s)	Row Count	Processing
CONDITION_OCCURRENCE	Encounter/Billing Dx; Problem List; PMHx	229,167,075	1h 09m
DEATH	Patients; Hospital D/C	39,787	3m
DEVICE_EXPOSURE	Flowsheets (O2 delivery method)	128,627	4m
DRUG_EXPOSURE	Med Orders (Rx); Med Administrations	112,457,739	1h 25m
MEASUREMENT	Lab Values; Flowsheets (vitals)	374,847,278	2h 26m
NOTE	Clinical Notes (full text)	87,906,612	21m
OBSERVATION	Social Hx (smoking); "History of" Dx's	55,328,282	23m
OBSERVATION_PERIOD	Encounters	7,268,385	8m
PERSON	Patients	5,247,456	2m
PROCEDURE_OCCURRENCE	Billed procedures; Surgical procedures	14,085,158	9m
VISIT_DETAIL	Hospital ADT Events	1,957,345	2m
VISIT_OCCURRENCE	Encounters	41,921,402	14m

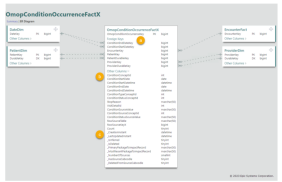
Epic Caboodle OHDSI OBSERVATIONAL HEALTH DATA SCIENCES AND INFORMATICS

Any health system on Epic can have their full EHR data transformed into the OMOP common data model and updated nightly.

Take a picture to download the full paper

Caboodle Data Dictionary





Research benefits:
- Organization's entire history on Epic automatically updates daily, as part of existing nightly Caboodle ETL run.
- OMOP data in Caboodle can be extended with additional patient data elements in Caboodle (and Clarity) if needed.
- Patient MRN merges handled gracefully in OMOP tables.
- SlicerDicer can be employed for OMOP data exploration.

Technical benefits:
- Makes use of Caboodle's advanced ETL capabilities and existing data backup and disaster recovery.
- "Low-code, no-code": Install shareable Caboodle data model components (DMCs) for OMOP tables, analogous to installing new Epic-released DMCs.
  No need to write any ETL code.
- Leverages existing terminology mappings already done in Epic, including for Care Everywhere or Cosmos.

Mujeeb A Basit, Mereeja Varghese, Aamirah Vadsariya, Bhavini Nayee, Margaret Langley, Ashley Huynh, Jennifer Cai, Donglu Xie, Cindy Kao, Eric Nguyen, Todd Boutte, Shiby Antony, Tammye Garrett, Christoph U Lehmann, Duwayne L Willett

This project was supported by the National Center for Advancing Translational Sciences, Award # UL1TR003163.

UT Southwestern Medical Center OHDSI

#OHDSISocialShowcase This Week

TUESDAY

Open-Source Tools and Terminology to Increase Representativeness in OHDSI Data

(Andrew Kanter)

Open Source Tools and Terminology to Increase Representativeness in OHDSI data

PRESENTER: **Andrew S, Kanter, MPH FACMI FAMIA**

INTRO:
The Observational Health Data Science and Informatics (OHDSI) network is a global community of open-science interdisciplinary stakeholders who collaborate on large scale analytics of health data. It includes users in 80 countries with 453 data sources coming from 41 countries and representing 928 million unique patients.[1] Unfortunately, there is currently little representation from low and middle income countries (LMICs).

METHODS
Using **open source** "Global Goods for Health"[2], it is possible to stitch together a pipeline for operational health data from LMICs into OMOP CDM databases. Key tools include:

- OpenMRS[3] – Open source EMR platform built on a standardized dictionary
- Columbia International eHealth Lab (CIEL) terminology[4] – Open source, LMIC interface terminology of >54K concepts
- Open Concept Lab (OCL)[5] – Open source, cloud-based terminology server

RESULTS

- OpenMRS implemented in 40 countries, >8000 facilities and 16M patients.
- CIEL is dictionary of choice for OpenMRS and is basis of national health data dictionaries in several countries. CIEL is included in Athena for OHDSI and is mapped to standard terminologies in multiple languages
- OCL provides an open and transparent way to view and incorporate CIEL into OpenMRS and other point of care systems
- The LAISDAR program[6] in Rwanda demonstrated ETL pathways from OpenMRS and OpenClinic GA to OMOP.

OpenMRS

OpenMRS combined with the CIEL concept dictionary is used in >40 Low & Middle Income Countries and can serve as a new data pipeline for OHDSI studies.

Take a picture to **download** the poster and more information

Existing OHDSI data partners entirely misses the continent of Africa:

OpenMRS implementations by type, 2023:

CIEL Terminology mapped to standards:

Code System (Top 10)	Number of Mapped Concepts
SNOMED-CT	53,460
ICD-10-WHO	37,931
IMO-ProblemIT	37,015
3BT	7,705
RxNORM	7,586
ICPC2	6,944
IMO-ProcedureIT	1,079
LOINC	778
ICD-11-WHO	641
HL-7-CVX	146

CIEL managed through Open Concept Lab:

References:
1. OHDSI State of the Community, OHDSI Symposium, 2022.
2. https://digitalsquare.org/digital-health-global-goods (accessed June 14, 2023)
3. https://openmrs.org (accessed June 14, 2023)
4. http://CIELterminology.org
5. https://openconceptlab.org (accessed June 14, 2023)
6. A Nishimwe, et. al. doi: 10.1186/s12911-022-01965-9

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CIEL COLUMBIA INTERNATIONAL EHEALTH LABORATORY

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#OHDSISocialShowcase This Week

WEDNESDAY

Developing phenotypes across pregnant persons and infants: Utilizing pregnancy episode identification and mother-infant linkage algorithms to define outcomes

(Rupa Makadia, Jill Hardin, Kevin Haynes, Dave Kern, Amir Sarayani, Melanie Jacobson)

Developing phenotypes across pregnant persons and infants: Utilizing pregnancy episode identification and mother-infant linkage algorithms to define outcomes

PRESENTER: **Rupa Makadia**

INTRODUCTION:

- Identification of adverse pregnancy outcomes including preterm birth, small for gestational age, and congenital malformations, is challenged by the ability to accurately phenotype a pregnancy episode and capture coded diagnoses which may appear on the maternal or infant record.
- By combining both pregnancy episode and linkage algorithms, phenotypes can be developed for both pregnant people and infants.
- Few studies have evaluated whether preterm birth can be empirically estimated or how mother-infant linkage may affect this phenotype development process, including when and on whom (mother and/or infants) diagnostic codes occur.

METHODS:

- *Database*
  - IBM MarketScan® Databases [Commercial Claims (CCAE)
  - Optum© De-Identified Clinformatics® Data Mart Database – Date of Death-(DOD) (Clinformatics)
- *Phenotypes & Characterization*
  - Utilizing a pregnancy episode identification algorithm and a mother-infant linkage algorithm, we created cohorts in ATLAS for preterm birth, small for gestational age, and major congenital malformations among mother-infant (<1 year old) pairs using diagnostic codes on either mother or infant.
  - CohortDiagnostics was used to evaluate the phenotype algorithms for the frequency of codes, incidence rates, and characterization.
  - An additional phenotype for preterm birth was developed using an empirical derivation: pregnant people with live birth deliveries that resulted from gestations of less than 37 weeks (259 days) were identified.

Accurate identification of maternal-fetal phenotypes need to include both the infant and pregnant person

Figure 1. Empirical estimation of preterm birth

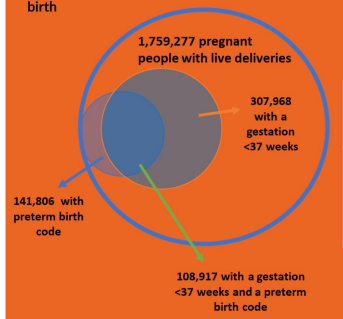

Table 1. Percentage of codes in Optum DOD with pre-term birth codes in cohort.

Database	Concept Name	Vocabulary	% of codes utilized in cohort
Optum DOD	Prematurity of infant	SNOMED	32.2%
	Premature delivery	SNOMED	24.0%
	Premature pregnancy delivered	SNOMED	21.4%
	Neonatal jaundice associated with preterm delivery	SNOMED	18.6%
	Low birth weight infant	SNOMED	9.7%

Table 2. Counts of persons with preterm birth codes stratified by pregnant people and infants.

Optum DOD	Total patients with a preterm birth code (ATLAS)	Total by subgroup	Total linked patients with ≥1 preterm birth code	Total linked by subgroup	Total linked with code in mother OR infant (only one of pair has the code)	Total linked with code on mother AND infant (both have code)
Mother	454,147	142, 976	308, 887	120, 800	29, 975	90, 825
Infant		311, 171		188, 087	75, 763	112, 324

RESULTS:

- Table 1 shows the top 5 SNOMED codes in Clinformatics in a cohort with pregnant people and infants with ≥1 code for preterm birth. The most common code occurred on infants (32%) and the second most common occurred on mothers at delivery (24%).
- The total number of persons identified by the phenotype and stratified by mother vs. infant is shown in Table 2. When restricted to linked mother-infant pairs, 70% of the cohort remained (n=308,887). Among the linked pairs where ≥1 preterm code was present, ~25% occurred only on the infant, ~10% occurred only on the pregnant person and 65% occurred on both records.
- Figure 1 shows the overlap between mothers with live deliveries who had ≥1 preterm birth code on the mother or infant record and those that had calculated gestations <37 weeks. Among ~1.7 pregnant people with a live birth outcome, 17.5% had gestations estimated to be less than 37 weeks, 8.1% had ≥1 preterm code within 30 days of delivery and 6.2% had both ≥1 preterm birth code and a gestation estimated to be less than 37 weeks.

CONCLUSIONS:

- Utilizing the pregnancy identification algorithm to generate an empirical estimation of preterm birth (i.e., < 37 weeks) and comparing it with the more conventional use of codes highlights a complexity in defining the phenotype.
- The use of a rigorous data-driven approach applied to multiple databases provides confidence that the phenotype algorithm can correctly identify preterm birth infants.

Rupa Makadia[1,2], Jill Hardin[1,2], Kevin Haynes[1], Dave Kern[1], Amir Sarayani[1], Melanie Jacobson[1]
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[2]Observational Health Data Sciences and Informatics, New York, NY

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#OHDSISocialShowcase This Week

THURSDAY

Refactoring OHDSI cohort queries for performance: lessons from VA study participation

(Benjamin Viernes, Marc A. Suchard, Patrick R. Alba, Katherine R. Simon, Michael E. Matheny, Scott L. DuVall)

Title: Refactoring OHDSI cohort queries for performance: *lessons from VA study participation*

PRESENTER: **Benjamin Viernes**

INTRO:

- Complex study cohorts can create very complex SQL queries. Circe created many SQL queries from Atlas-derived cohort JSON files that were unable to run on VA servers. Changes to the way Circe creates correlated subqueries were required to generate complex cohorts in VA.

METHODS

1. 41 different Atlas-derived phenotype definitions were used to generate Circe SQL.
2. Circe SQL was refactored by replacing all OMOP domain subqueries with indexed temporary tables.
3. This study evaluated the run time of Circe's original SQL code vs. refactored Circe SQL code (VA SQL) on the same server hardware using Microsoft SQL Server.
4. This study also evaluated the differences in cohort criteria complexity between Circe SQL queries that could not generate cohorts versus those that had no issues.

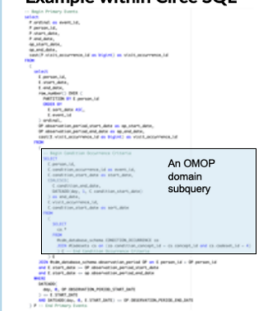
RESULTS

- Among cohorts where Circe SQL completed, mean runtime was 180 seconds shorter with VA SQL.
- 12 of 41 cohorts could not complete using Circe SQL.
- All were completed using VA SQL.
- 9 of 12 that only completed using VA SQL contained OMOP Visit domain inclusion criteria compared to 0 of 29 of those that completed using Circe SQL.
- All 12 VA SQL only executions contained at least 3 correlated criteria sections vs 4 of the 29 executed in both versions.

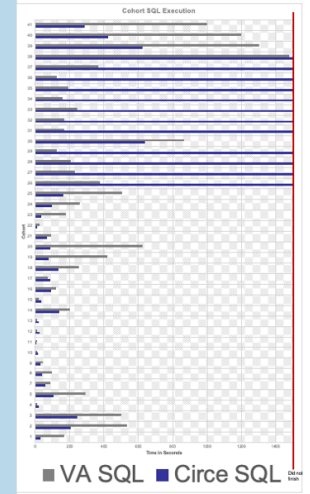
SQL code generated by Circe using complex cohort criteria frequently fails to generate cohorts on VA servers, but runs efficiently when refactored to avoid the use of repeated OMOP domain subqueries.

Take a picture to **download** the **full paper**

OMOP Domain Subquery Example within Circe SQL



Circe SQL vs VA SQL by execution time



Benjamin Viernes, Marc A Suchard, Patrick R Alba, Katherine R Simon, Michael E Matheny, Scott L Duvall

OHDSI

#OHDSISocialShowcase This Week

FRIDAY

Characteristics Associated with Persistent Opioid Use Following Total Joint Arthroplasty

(Aurora Quaye, Janelle Richard, Henry Stoddard, Robert Krulee, Blaire Beers-Mulroy, Kristin Kostka, John DiPalazzo)

Characteristics Associated with Persistent Opioid Use Following Total Joint Arthroplasty

Robert Krulee

INTRO:

Total joint arthroplasties are among the most commonly performed elective surgical procedures in the United States. As a clinically effective intervention that alleviates pain, improves physical function, and quality-of-life for individuals with end-stage joint arthritis, surgical volume is projected to see continued substantial growth in the ensuing decades.[1] Opioid use is a prominent component of analgesic regimens to treat acute pain following joint arthroplasty, and patients undergoing these procedures are at risk of persistent postoperative opioid use.[2] Long term opioid use is associated with an elevated risk of postoperative complications, has been linked to increased total health care costs, and can lead to opioid dependence.[3] The purpose of this study is to identify the incidence of persistent opioid use following total hip, knee, and shoulder arthroplasty in opioid naïve individuals at our institution. Additionally, we seek to identify the clinical characteristics associated with persistent opioid use to inform the development of predictive models and risk stratification algorithms aimed at preventing persistent opioid use following surgery.

METHODS:

After Institutional Review Board approval, we utilized a retrospective observational cohort study design to develop a LASSO Logistic Regression prediction model with a large, US Electronic Health Record dataset in the Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM) format. We included patients that had either a total knee, hip or shoulder replacement performed at our institution from 12/1/2015-12/1/2020. Patients were included if they were ≥18 years of age, were opioid-naïve – defined as not receiving an opioid prescription in the 365 days prior to surgical encounter – and received an opioid prescription at hospital discharge. We excluded patients who had revision arthroplasty, malignant neoplasm excluding non-melanoma skin cancer or death during index hospitalization. Only the first surgical procedure was used for analysis during the study period. Data was analyzed using a 2-tailed t-test, and p-value <0.05 was considered statistically significant. Analyses were performed using R version 4.2.1.

We used 10-fold cross-validation on a 75% training data set to select the optimal LASSO regression model, as well as the optimal threshold level to determine positive and negative outcome predictions. We then used a 25% testing data set to assess the model's performance. Our final model had a threshold of 0.85 for a negative prediction; i.e., if the model gave a patient a negative-outcome probability greater than the threshold, the predicted outcome was negative. The overall model performance was evaluated using an ROC curve (Figure 2) which showed sensitivity of 0.762 and specificity of 0.509, and an Area Under the Curve (AUC) of 0.672.

METHODS:

Figure 1: Retrospective observational cohort study design

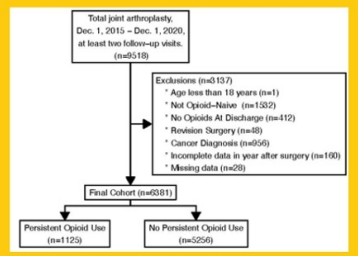
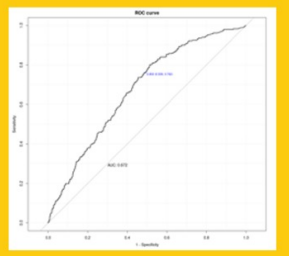


Figure 2: ROC curve with predictive model probability threshold 0.85



RESULTS:

6,381 patients met inclusion criteria and 1,125 had persistent opioid use over the one-year period post-surgery (Table 1). More women compared to men had a total joint arthroplasty performed during the study period. Probability of persistent opioid use was not associated with age, sex, or ethnicity. Persistent opioid use was most strongly associated with history of substance misuse (OR 2.0), pre-operative benzodiazepine use (OR 1.7) and BMI > 40 (OR 2.2). Other significant variables with lower associated model coefficients include diabetes, fibromyalgia, chronic liver disease, chronic lung disease, dementia, ASA score > 4, preoperative gabapentin and antidepressant use (Table 2). Among the surgical procedures evaluated, total knee replacement surgery (OR 2.3) had the highest likelihood of persistent opioid use. Postoperative inpatient lengths of stay of less than 36 hours, BMI < 25 and an ASA score of 1 were protective against persistent use.

Table 1: Characteristics associated with persistent opioid use in total joint arthroplasty patients

Characteristic	No Persistent Opioid Use, N = 5,256	Persistent Opioid Use, N = 1,125	p-value
Demographics			
Age Over 65	3,265 (62%)	675 (60%)	0.2
Male Sex	2,216 (42%)	466 (41%)	0.6
White Race	5,098 (97%)	1,093 (97%)	0.8
Non-Hispanic Ethnicity	5,155 (98%)	1,106 (98%)	0.6
Substance/Behavioral			
Depression/Anxiety	1,940 (37%)	514 (46%)	<0.001
Smoker or Nicotine-dependent	431 (8.2%)	141 (13%)	<0.001
Substance Abuse	156 (3.0%)	65 (5.8%)	<0.001
Preoperative Drug Use			
Antidepressants	1,408 (27%)	437 (39%)	<0.001
Benzodiazepines	283 (5.4%)	99 (8.8%)	<0.001
Gabapentin	562 (11%)	218 (19%)	<0.001
Comorbidities			
Back Pain	1,553 (30%)	415 (37%)	<0.001
Cerebrovascular Disease	227 (4.3%)	61 (5.4%)	0.11
Chronic Kidney Disease	396 (7.5%)	112 (10.0%)	0.006
Chronic Liver Disease	53 (1.0%)	22 (2.0%)	0.007
Chronic Obstructive Lung Disease	375 (7.1%)	121 (11%)	<0.001
Coronary Artery Disease	634 (12%)	164 (15%)	0.021
Dementia	63 (1.2%)	24 (2.1%)	0.014
Diabetes Mellitus	795 (15%)	228 (20%)	<0.001
Essential Hypertension	3,130 (60%)	735 (65%)	<0.001
Fibromyalgia	128 (2.4%)	48 (4.3%)	<0.001
Peripheral Vascular Disease	215 (4.1%)	63 (5.6%)	0.024
Surgery and Hospitalization			
Anesthesia Type			<0.001
General	3,549 (68%)	608 (54%)	
Spinal	1,692 (32%)	511 (45%)	
MAC or regional	15 (0.3%)	6 (0.5%)	
ASA Score			<0.001
1	274 (5.2%)	24 (2.1%)	
2	3,686 (70%)	728 (65%)	
3	1,271 (24%)	359 (32%)	
4	25 (0.5%)	14 (1.2%)	
BMI	29.4 (25.9, 33.8)	31.4 (27.5, 36.6)	<0.001
Discharge Location			<0.001
Home or Self Care	2,600 (49%)	406 (36%)	
Home, With Home Health Service	2,171 (41%)	584 (52%)	
Skilled Nursing Facility	435 (8.3%)	126 (11%)	
Length of Stay (hours)	27 (24, 50)	47 (26, 54)	<0.001
Regional Anesthesia Provided	2,330 (44%)	732 (65%)	<0.001
Surgery Type			<0.001
Hip	2,777 (53%)	384 (34%)	
Knee	2,074 (39%)	671 (60%)	
Shoulder	405 (7.7%)	70 (6.2%)	

Maine Medical Center MaineHealth

RESULTS:

Table 2: Odds ratio of persistent opioid use in total joint arthroplasty patients and associated model coefficient

Characteristic	Odds Ratio (CI)	p-value	Model Coefficient
Demographics			
Rurality: Metro	1.084 (0.949-1.219)	0.234	0.055
Substance / Behavioral			
Behavioral Syndromes	1.590 (1.453-1.727)	< 0.001	0.15
Smoker or Nicotine-dependent	1.593 (1.392-1.794)	< 0.001	0.094
Substance Abuse	2.047 (1.753-2.341)	< 0.001	0.383
Preoperative Drug Use			
Antidepressants	1.721 (1.587-1.855)	< 0.001	0.248
Antipsychotics	1.326 (1.183-1.469)	< 0.001	0.112
Benzodiazepines	1.700 (1.462-1.938)	< 0.001	0.329
Gabapentin	1.996 (1.824-2.168)	< 0.001	0.248
Medical Comorbidities			
Back Pain	1.389 (1.254-1.522)	< 0.001	0.084
Cerebrovascular Disease	1.258 (0.968-1.548)	0.129	-0.017
Chronic Liver Disease	2.040 (1.546-2.534)	0.006	0.064
Chronic Obstructive Lung Disease	1.552 (1.336-1.768)	< 0.001	0.116
Dementia	1.706 (1.234-2.178)	0.023	0.173
Diabetes Mellitus	1.427 (1.264-1.590)	< 0.001	0.031
Fibromyalgia	1.793 (1.425-2.101)	0.002	0.014
Surgery and Hospitalization			
Anesthesia Type: General	0.569 (0.439-0.699)	< 0.001	-0.211
ASA Score: 1	0.395 (-0.027-0.817)	< 0.001	-0.2
ASA Score: 4	2.524 (1.871-3.177)	0.008	0.075
BMI over 40	2.186 (1.985-2.392)	< 0.001	0.65
BMI 25 to 40	1.049 (0.901-1.197)	0.551	0.193
Regional Anesthesia Provided	2.334 (2.200-2.468)	< 0.001	0.463
Surgery: Knee	2.267 (2.136-2.398)	< 0.001	0.177
Length Of Stay: 13-36 hrs	0.505 (0.373-0.637)	< 0.001	-0.065
Length Of Stay: 37-60 hrs	1.672 (1.538-1.806)	< 0.001	0.097
Length Of Stay: 61-84 hrs	1.534 (1.358-1.710)	< 0.001	0.132
Discharge Site: Home or Self Care	0.581 (0.448-0.714)	< 0.001	-0.123

The LASSO regression model identified statistically significant variables for patient level prediction of persistent opioid use after total joint arthroplasty (Table 2).

DISCUSSION:

In our study, we found 16% of patients who underwent total joint arthroplasty at our institution experienced persistent opioid use. There were various clinical characteristics and medical comorbidities associated with persistent opioid use. Notably, total knee arthroplasty exhibited the highest likelihood of persistent opioid use among the evaluated procedures. Institutions should consider implementing tailored multimodal pain management protocols for these surgeries, while also adopting measures to restrict opioid prescribing. Our findings can help contribute to identifying patient populations that would benefit from interventions aimed at mitigating persistent postoperative opioid use.

REFERENCES:

1) Klug A, Gramlich Y, Rudert M, et al. The projected volume of primary and revision total knee arthroplasty will place an immense burden on future health care systems over the next 30 years. Knee Surg Sports Traumatol Arthrosc. 2021;29(10):3287-3298.
2) 2) Neuman MD, Bateman BT, Wunsch H. Inappropriate opioid prescription after surgery. Lancet. 2019;393(10180):1547-1557.
3) Brummett CM, England C, Evans-Shields J, et al. Health Care Burden Associated with Outpatient Opioid Use Following Inpatient or Outpatient Surgery. J Manag Care Spec Pharm. 2019;25(9):973-983.

Robert Krulee[1], Meredith Peck[2], Blaire Beers-Mulroy[2], Janelle Richard[2], Henry Stoddard[3], Kristin Kostka[3], John DiPalazzo[3], Aurora Quaye[1,4]

[1]Department of Anesthesiology Maine Medical Center, Portland, ME; [2]University of New England, Biddeford, ME ; [3]MaineHealth Institute for Research, Scarborough, ME; [4]Spectrum Healthcare Partners, Portland, ME

OHDSI HADES releases: FeatureExtraction 3.3.2

FeatureExtraction 3.3.2 Reference Articles Changelog HADES

FeatureExtraction

R-CMD-check passing codecov 93%

FeatureExtraction is part of HADES.

Introduction

An R package for generating features (covariates) for a cohort using data in the Common Data Model.

Features

- Takes a cohort as input.
- Generates baseline features for that cohort.
- Default covariates include all drugs, diagnoses, procedures, as well as age, comorbidity indexes, etc.
- Support for creating custom covariates.
- Generate paper-ready summary table of select population characteristics.

Technology

Links

Browse source code

Report a bug

Ask a question

License

Apache License 2.0

Citation

Citing FeatureExtraction

Developers

Martijn Schuemie
Author

Marc Suchard
Author

Patrick Ryan
Author

Jenna Reps
Author

OHDSI HADES releases: Andromeda 0.6.4

Andromeda 0.6.3 | Reference | Articles | Changelog | hadesLogo

Andromeda

R-CMD-check passing | codecov 89% | CRAN 0.6.4 | downloads 1470/month

Andromeda is part of HADES.

Introduction

AsynchroNous Disk-based Representation of MassivE DAta (ANDROMEDA): An R package for storing large data objects. Andromeda allow storing data objects on a local drive, while still making it possible to manipulate the data in an efficient manner.

Features

- Allows storage of data objects much larger than what can fit in memory.
- Integrates with dplyr package for data manipulation.
- Objects are stored in a temporary location on the local file system.
- Ability to save and load the objects to a compressed file in a permanent location on the local file system.

Examples

Links

View on CRAN

Browse source code

Report a bug

Ask a question

License

Apache License 2.0

Citation

Citing Andromeda

Developers

Adam Black
Author, maintainer

Martijn Schuemie
Author

Marc A. Suchard
Author

More about authors...

Global Symposium Homepage

2023 OHDSI Symposium

Oct. 20-22 · East Brunswick, New Jersey

The 2023 OHDSI Global Symposium welcomed more than 440 of our global collaborators together for three days of sharing research, forging new connections and pushing forward together the OHDSI mission of improving health by empowering a community to collaboratively generate the evidence that promotes better health decisions and better care.

This page will be home to all materials from the global symposium. Check back in the coming days for all video presentations from the event! #JoinTheJourney #OHDSI2023




State of the Community

Various leaders within OHDSI shared a presentation on the state of the community, with specific focuses on data standards, vocabulary enhancements and open-source development. **Speakers included**:

George Hripcsak, Columbia University
Clair Blacketer, Johnson & Johnson
Alexander Davydov, Odysseus Data Services
Katy Sadowski, Boehringer Ingelheim
Peter Rijnbeek, Erasmus MC
Mengling 'Mornin' Feng, National University of Singapore

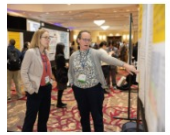
State of the Community Slides

Collaborator Showcase Posters & Software Demos

ceived a record number of submissions for the 2023 Collaborator case, following detailed review by community volunteers in the Scientific w Committee, there were 137 posters and 24 software demos that were nted during the collaborator showcase.

e visit the link below to visit the posters, brief reports and other ementary materials for each showcase submission. Each submission will filed in the #OHDSISocialShowcase, so please make sure you follow l on Twitter/X, LinkedIn and Instagram.

2023 Collaborator Showcase Posters & Demos




Tutorial: Introduction to OHDSI

urney from data to evidence can be challenging alone but is greatly nabled through community collaboration. In this half-day tutorial, we will introduce newcomers to OHDSI. Specifically, about the tools, practices, and open-science approach to evidence generation that the OHDSI community has developed and evolved over the past decade.

Faculty will highlight the ways community individuals can participate as well as receive value from the community's outputs. The course will include topics such as open community data standards – including the OMOP Common Data Model and OHDSI Standardized Vocabularies, opensource analytic tools

2023 Global Collaborator Showcase

Observational Data Standards & Management

2 – FinOMOP – a population-based data network (Javier Gracia-Tabuenca, Perttu Koskenvesa, Pia Tajanen, Sampo Kukkurainen, Gustav Klingstedt, Anna Hammais, Persephone Doupi, Oscar Brück, Leena Hakkarainen, Annu Kaila, Marco Hautalahti, Toni Mikkola, Marianna Niemi, Pasi Rikala, Simo Ryhänen, Anna Virtanen, Arto Mannermaa, Arto Vuori, Joanne Demmler, Eric Fey, Terhi Kilpi, Arho Virkki, Tarja Laitinen, Kimmo Porkka)
3 – From OMOP to CDISC SDTM: Successes, Challenges, and Future Opportunities of using EHR Data for Drug Repurposing in COVID-19 (Wesley Anderson, Ruth Kurtycz, Tahsin Farid, Shermarke Hassan, Kalynn Kennon, Pam Dasher, Danielle Boyce, Will Roddy, Smith F. Heavner)
4 – Augmenting the National COVID Cohort Collaborative (N3C) Dataset with Medicare and Medicaid (CMS) Data, Secure and Deidentified Clinical Dataset (Stephanie Hong, Thomas Richards, Benjamin Amor, Tim Schwab, Philip Sparks, Maya Choudhury, Saad Ljazouli, Peter Leese, Amin Manna, Christophe Roeder, Tanner Zhang, Lisa Eskenazi, Bryan Laraway, James Cavallon, Eric Kim, Shijia Zhang, Emir Amaro Syailendra, Shawn O'Neil, Davera Gabriel, Sigfried Gold, Tricia Francis, Andrew Girvin, Emily Pfaff, Anita Walden, Harold Lehmann, Melissa Haendel, Ken Gersing, Christopher G Chute)
5 – Integrating clinical and laboratory research data using the OMOP CDM (Edward A. Frankenberger, Chun Yang, Vamsidhar Reddy Meda Venkata, Alyssa Goodson)
6 – Development of Medical Imaging Data Standardization for Imaging-Based Observational Research: OMOP Common Data Model Extension (Woo Yeon Park, Kyulee Jeon, Teri Sippel Schmidt, Haridimos Kondylakis, Seng Chan You, Paul Nagy)
7 – Conversion of a Myositis Precision Medicine Center into a Common Data Model: A Case Study (Zachary Wang, Will Kelly, Paul Nagy, Christopher A Mecoli)
8 – Implementing a common data model in ophthalmology: Comparison of general eye examination mapping to standard OMOP concepts across two major EHR systems (Justin C. Quon, William Halfpenny, Cindy X. Cai, Sally L. Baxter, Brian C. Toy)
9 – Enhancing Data Quality Management: Introducing Capture and Cleanse Modes to the Data Quality Dashboard (Frank DeFalco, Clair Blacketer)
10 – "OMOP Anywhere": Daily Updates from EHR Data Leveraging Epic's Native Tools (Mujeeb A Basit, Mereeja Varghese, Aamirah Vadsariya, Bhavini Nayee, Margaret Langley, Ashley Huynh, Jennifer Cai, Donglu Xie, Cindy Kao, Eric Nguyen, Todd Boutte, Shiby Antony, Tammye Garrett, Christoph U Lehmann, Duwayne L Willett)
11 – A Toxin Vocabulary for the OMOP CDM (Maksym Trofymenko, Polina Talapova, Tetiana Nesmiian, Andrew Williams, Denys Kaduk, Max Ved, Inna Ageeva)
12 – Challenges and opportunities in adopting OMOP-CDM in Brazilian healthcare: a report from Hospital Israelita Albert Einstein (Maria Abrahao, Uri Adrian Prync Flato, Mateus de Lima Freitas, Diogo Patrão, Amanda Gomes Rabelo, Cesar Augusto Madid Truyts, Gabriela Chiuffa Tunes, Etienne Duin, Gabriel Mesquita de Souza, Soraya Yukari Aashiro, Adriano José Pereira, Edson Amaro)
13 – Transforming the Optum® Enriched Oncology module to OMOP CDM (Dmitry Dymshyts, Clair Blacketer)
14 – Mapping Multi-layered Oncology Data in OMOP (John Methot, Sherry Lee)
15 – Development of psychiatric common data model (P-CDM) leveraging psychiatric scales (Dong Yun Lee, Chungsoo Kim, Rae Woong Park)
16 – Brazilian administrative data for real-world research: a deterministic linkage procedure and OMOP CDM harmonization (Jessica Mayumi Maruyama, Julio Cesar Barbour Oliveira)
17 – Integration of Clinical and Genomic Data Mapped to the OMOP Common Data Model in a Federated Data Network in Belgium (Tatjana Jatsenko, Murat Akand, Joris Robert Vermeesch, Dries Rombaut, Michel Van Speybroeck, Martine Lewi , Valerie Vandeweerd)

ohdsi.org/OHDSI2023

Opening: Limerick Digital Cancer Research Centre

University of Limerick local time: 21-November-2023 14:39

Navigation Section

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Job Spec

Advertisement/Information for Applicants

Please click on Information for Applicants/Job Description link below for full job

Post Doctoral Researcher (Level 1 or 2) in Cancer Digital Health Real World Evidence (2 Positions)

With over 18,000 students and 2,000 members of staff, the University of Limerick (UL) is an energetic, research led and enterprising institution with a proud record in innovation and excellence in education, research and scholarship. The dynamic, entrepreneurial and pioneering values which drive UL's mission and strategy ensure that we capitalise on local, national and international engagement and connectivity. We are renowned for providing an outstanding student experience and conducting leading-edge research. Our commitment is to make a difference by shaping the future through educating and empowering our students.
With the River Shannon as a unifying focal point, UL is situated on a superb riverside campus of over 130 hectares. Outstanding recreational, cultural and sporting facilities further enhance the campus's exceptional learning and research environment.

Applications are invited for the following position:

Faculty of Education & Health Sciences

School of Medicine

Post Doctoral Researcher (Level 1 or 2) in Cancer Digital Health Real World Evidence (2 Positions) Specific Purpose Contract

Salary Scales: PD1 €42,033 - €48,427 p.a. pro rata

PD2 €49,790 – €54,153 p.a. pro rata

Informal enquires regarding the post may be directed to:
Professor Aedin Culhane
School of Medicine
University of Limerick
Email: aedin.culhane@ul.ie

"This is a professional training and development role and the training and development relevant to this position will be completed within the period of the contract. Postdoctoral Researchers appointed will be expected to complete the Researcher Career Development Programme."
The closing date for receipt of applications is Friday, 15th December 2023.
Applications must be completed online before 12 noon, Irish Standard Time on the closing date.

The University of Limerick supports blended working

Openings: Bill and Melinda Gates Foundation

Distinguished Scientist, Artificial Intelligence & Large Language Models

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Job Opening: Stanford University

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- Fellowships at Stanford
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Open Postdoctoral position, faculty mentor Brian Bateman

Our research team is looking for a postdoctoral scholar in perinatal pharmacoepidemiology. The scholar will work closely with Drs. Brian Bateman and Stephanie Leonard on NIH-funded research projects on the comparative safety and effectiveness of medications in pregnancy and related research topics. Our projects employ advanced analytical methods in large databases, which include claims data and electronic health record data in conventional structures and in common data models. Current topical focus areas include mental health, behavioral health and cardiovascular health of people who are pregnant or postpartum.

Our research group prioritizes a collaborative and inclusive team environment. The principal investigators are experienced mentors who are highly committed to supporting the postdoctoral scholar in advancing their career as a future independent investigator. The

Important Info

Faculty Sponsor (Last, First Name):
Bateman, Brian

Other Mentor(s) if Applicable:
Stephanie Leonard

Stanford Departments and Centers:
Anesthes, Periop & Pain Med

Postdoc Appointment Term:
Initial appointment is 1 year with renewal after the first year for an additional 1-2 years by mutual agreement

Appointment Start Date: Flexible start date

Group or Departmental Website:

Vocabulary Update

Call for frequency of LOINC codes in your data

Vocabulary Users

zhuk Oleg Zhuk 2 2h

In OMOP vocabularies, SNOMED and LOINC are two foundations of the Measurement domain.

Many measurements or Lab tests exist in both Snomed and LOINC and can be chosen during ETL. They are similar to each other, but not identical, typically LOINC is much more granular than SNOMED. Given the differences in the granularity of the concepts, it is impossible to build simple horizontal 'Maps to' relationships in most cases. To harmonize the two vocabularies, we instead started creating a hierarchy, where LOINC concepts are descendants of SNOMED. This will support the analytical use case of selecting a whole group of lab tests by picking only one top-level concept, like what we have in Conditions or Procedures.

The problem is - there are thousands of LOINC codes. To prioritise our work, we need to know LOINCs that are used in the data more often. Therefore, we ask you to calculate some numbers for us.

Please use the scripts below to calculate frequency of LOINC codes in your data (SQL and R adaptation, connection details should be modified in R script). Share the counts here or in PM if you have trouble attaching documents to forum posts.

- ▶ SQL
- ▶ R code

Thank you for your collaboration!

Where Are We Going?

Any other announcements of upcoming work, events, deadlines, etc?

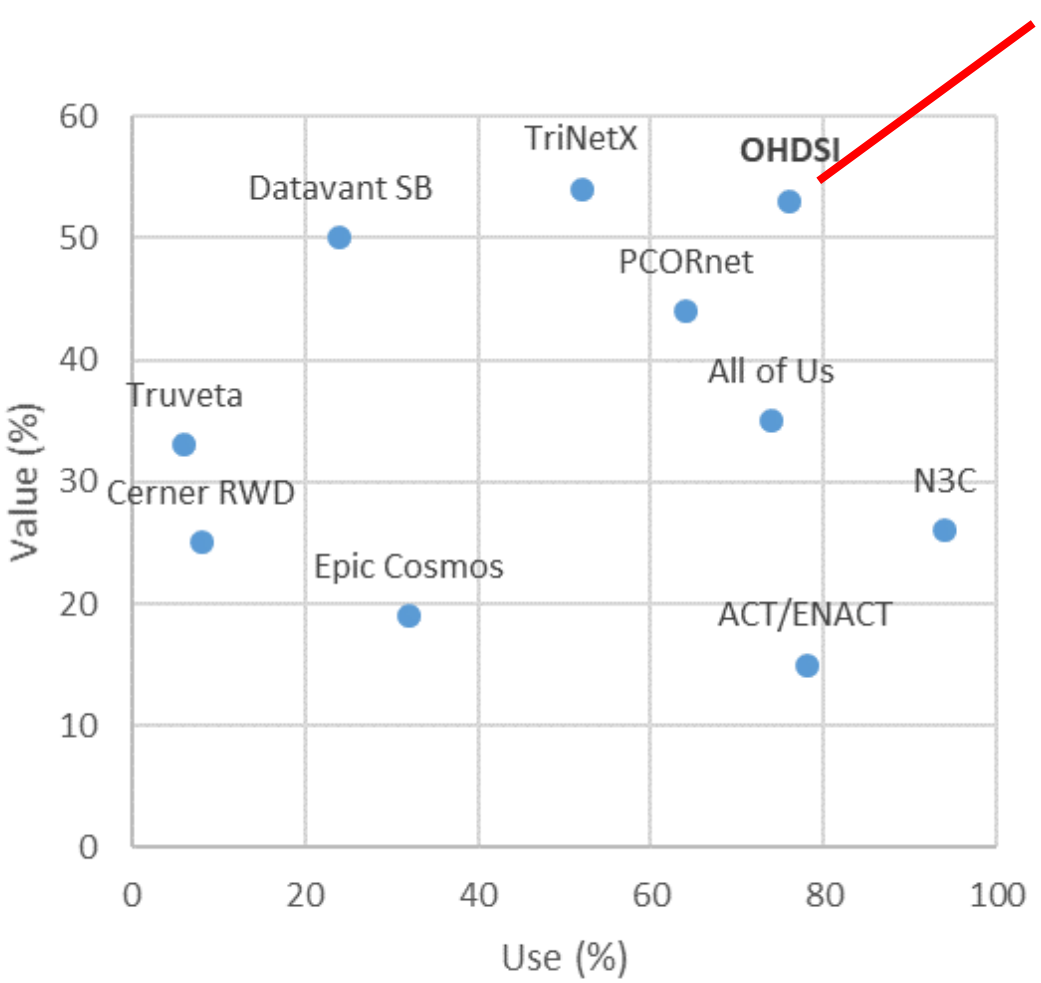
Three Stages of The Journey

Where Have We Been?

Where Are We Now?

Where Are We Going?

OHDSI in US academic med centers



Program or tool	Use of 50 (%)	High value (% of use)
ACT/ENACT	39 (78)	6 (15)
All of Us	37 (74)	13 (35)
Cerner Real-World Data	4 (8)	1 (25)
Datavant Switchboard	12 (24)	6 (50)
Epic Cosmos	16 (32)	3 (19)
N3C	47 (94)	12 (26)
OHDSI	**38 (76)**	**20 (53)**
PCORnet	32 (64)	14 (44)
TriNetX	26 (52)	14 (54)
Truveta	3 (6)	1 (33)

Hall ES, Melton GB, Payne PRO, Dorr DA, Vawdrey DK. How are leading research institutions engaging with data sharing tools and programs? 2023 AMIA Symposium.