

Standardising National-NHS APC Data with OMOP CDM

A Pilot for Secure Federated Research

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Introduction

Our Goal: To understand persistent frequent use of acute admission services in South Yorkshire.

Problem: Identify the key determinants that drive this behaviour. The insights we gain will help policymakers allocate resources more effectively and design better interventions.

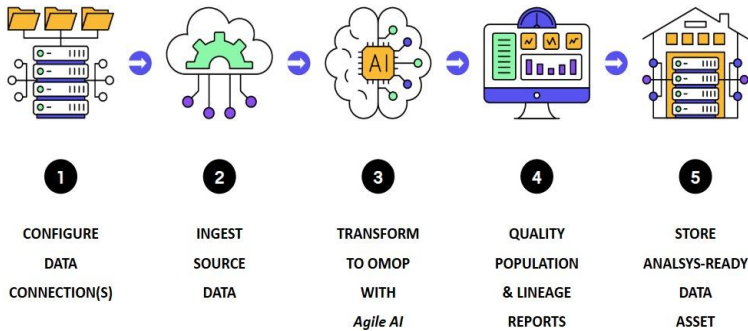
Solution: Use **Observational Medical Outcomes Partnership** common data model (**OMOP-CDM**). OMOP-CDM is ideal for handling data from multiple NHS trusts and ensuring consistency and reproducibility in our analysis.

CUREd+ An Urgent and Emergency Care Database

- In Data Connect we have CUREd+ Database: A National England Dataset
- 57 million population; 2011-2023
- 11 different health data sets linked
- NHS England patient tracing used
- All NHS ethics and HRA CAG approvals in place for researchers



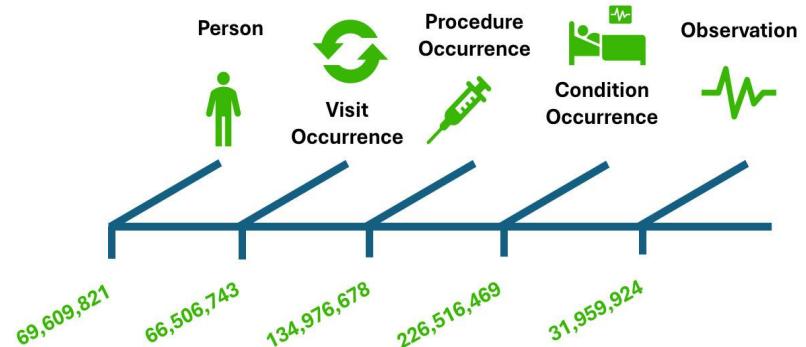
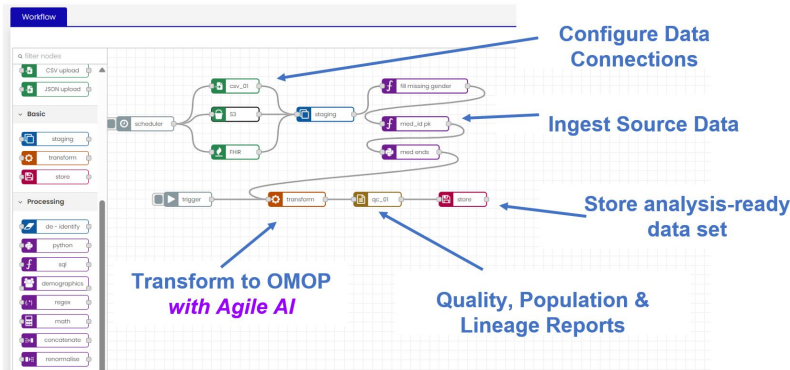
PIANO Workflow



Status	Column Name	Mapping	Options	Source
✓	person_id	103 Sequence	<input checked="" type="checkbox"/>	cdc.cc_patientid
✓	gender_concept_id	103 Concept Coding	<input checked="" type="checkbox"/>	Code: cdc.cc_sdcdata.gender (Gender)
✓	year_of_birth	103 Derive from Database	<input checked="" type="checkbox"/>	
✓	month_of_birth	103 Derive from Database	<input checked="" type="checkbox"/>	
✓	day_of_birth	103 Derive from Database	<input checked="" type="checkbox"/>	
✓	birth_datetime	103 Copy from Source	<input type="checkbox"/> 1	cdc.cc_patientbirthdate
✓	race_concept_id	103 Concept Coding	<input checked="" type="checkbox"/>	Code: cdc.cc_sdcdata.race (Race) Description: cdc.cc_sdcdata.race

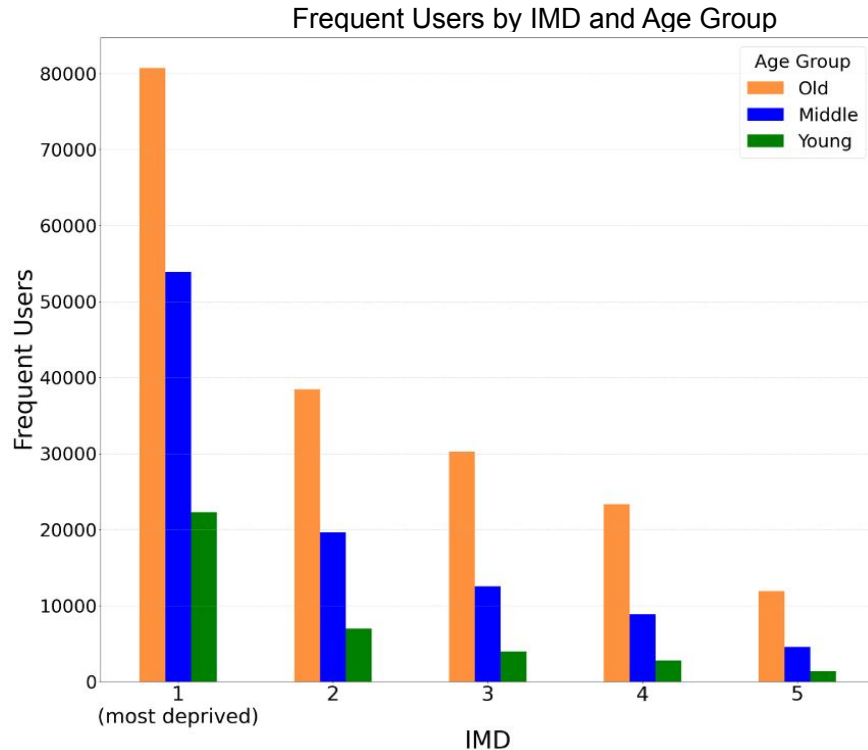
34 NHS England-designated attributes

- with additional variables for future projects
- APC data (>50GB) was transformed into OMOP-CDM



APC OMOP-ed Database

Frequent Attenders : Age and Social Economic Factors

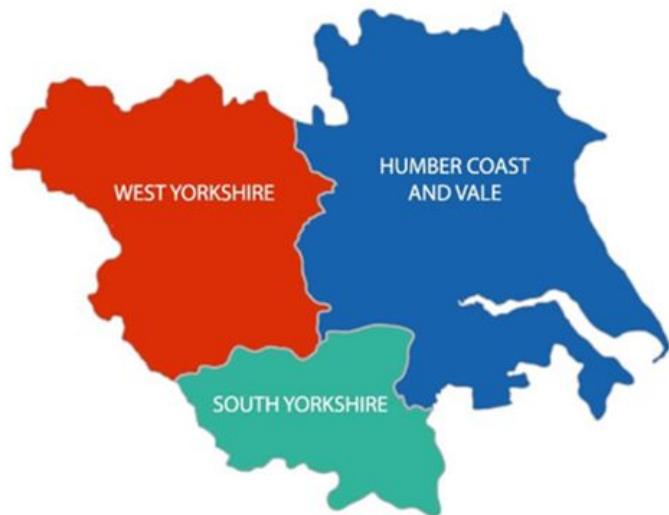


- Over 1.8 million hospital attendances
- Adults from four **South Yorkshire trusts** over a **10-year period (2013-2023)**
- 18% of these were frequent attenders.
- Patients over 65 and from the most deprived areas were more likely to be frequent attenders



Lessons Learned

Yorkshire and Humber Integrated Care System (ICS) Map



- Leveraging OMOP-CDM **enables powerful and scalable federated analysis**
- OMOP-CDM implies data harmonisation
- Quality of the source data is still critical
- Extensive ethical preparation is still a hurdle
- Not all crucial variables map to the OMOP
- Successful OMOP-based federated analysis, requires skilled teams and seamless communication
- Mapping rules during the ETL process influence how data is represented

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