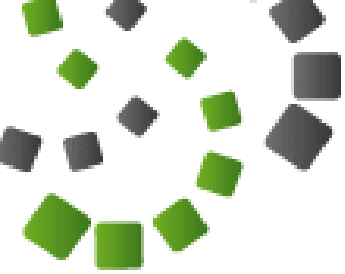


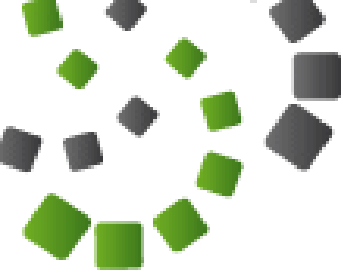


RE02 - Synthesized Real World Data: JSON and the Argonauts



3 Stage Process





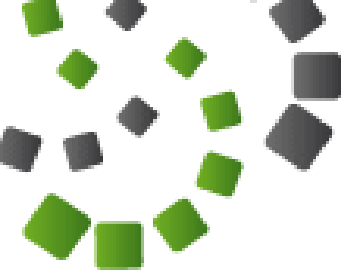
EHR Synthesis

- Synthea Open Source Software
- Synthea Customizer Toolkit
- 150 Alzheimer's Patients
- Synthesis Slow Process
- HL7 FHIR Data JSON files



Data JSON File

```
Object {  
  resourceType : Bundle  
  type : transaction  
  ▼ entry [744]  
    ▼ 0 {3}  
      fullUrl : urn:uuid:b0a06ead-cc42-aa48-dad6-841d4aa679fa  
      ▼ resource {15}  
        resourceType : Patient  
        id : b0a06ead-cc42-aa48-dad6-841d4aa679fa  
        ▼ meta {1}  
          ▼ profile [1]  
            0 : http://hl7.org/fhir/us/core/StructureDefinition/us-core-patient  
        ▼ text {2}  
          status : generated  
          div : <div xmlns=\"http://www.w3.org/1999/xhtml\">Generated by <a  
            href=\"https://github.com/synthetichealth/synthea\">Synthea</a>.Version  
            identifier: master-branch-latest-7-gcc27279b\\n .   Person seed:  
            8026383961327351951 Population seed: 0</div>  
        ▼ extension [7]  
          ▼ 0 {2}  
            url : http://hl7.org/fhir/us/core/StructureDefinition/us-core-race  
            ▼ extension [2]  
              ▼ 0 {2}  
                url : ombCategory  
                ▼ valueCoding {3}  
                  system : urn:oid:2.16.840.1.113883.6.238
```

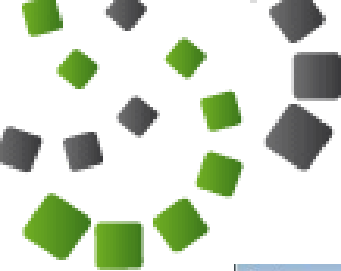


SAS JSON Engine

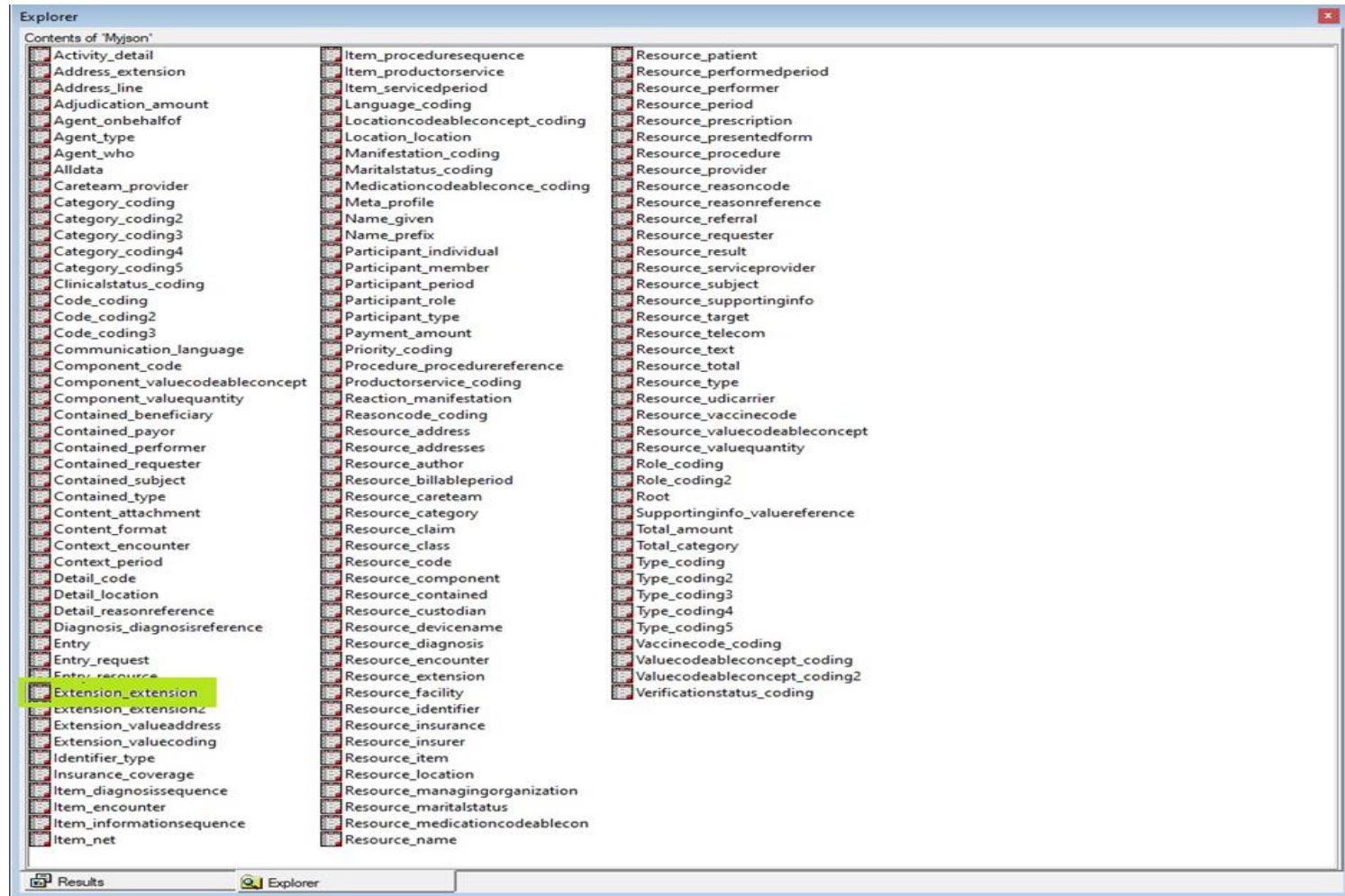
`LIBNAME myjson JSON fileref=mydata;`

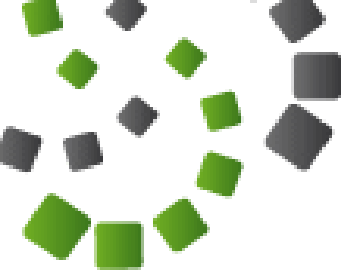
- Creates SQL tables from the input JSON file





100+ Datasets

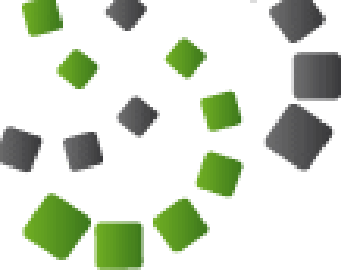




ALLDATA table

Library ALLDATA										
Freeze Hide Show... Format Filter... Font... Find Go to row										
Table View										
	P	P1	P2	P3	P4	P5	P6	P7	V	Value
4	2	entry	fullUH						1	um:uid:31a2e8ec-69fc-8a71-3ab6-36cbdd508713
5	2	entry	resource						0	
6	3	entry	resource	resource Type					1	Patient
7	3	entry	resource	id					1	31a2e8ec-69fc-8a71-3ab6-36cbdd508713
8	3	entry	resource	meta					0	
9	4	entry	resource	meta	profile				0	
10	5	entry	resource	meta	profile	profile1			1	http://hl7.org/fhir/us/core/StructureDefinition/us-core-patient
11	3	entry	resource	text					0	
12	4	entry	resource	text	status				1	generated
13	4	entry	resource	text	div				1	<div xmlns="http://www.w3.org/1999/xhtml">Generated by Synthea.Versio...
14	3	entry	resource	extension					0	
15	4	entry	resource	extension	url				1	http://hl7.org/fhir/us/core/StructureDefinition/us-core-race
16	4	entry	resource	extension	extension				0	
17	5	entry	resource	extension	extension	url			1	ombCategory
18	5	entry	resource	extension	extension	valueCoding			0	
19	6	entry	resource	extension	extension	valueCoding	system		1	um:oid:2.16.840.1.113883.6.238
20	6	entry	resource	extension	extension	valueCoding	code		1	2106-3
21	6	entry	resource	extension	extension	valueCoding	display		1	White
22	4	entry	resource	extension	extension				0	
23	5	entry	resource	extension	extension	url			1	text
24	5	entry	resource	extension	extension	valueString			1	White
25	3	entry	resource	extension					0	
26	4	entry	resource	extension	url				1	http://hl7.org/fhir/us/core/StructureDefinition/us-core-ethnicity

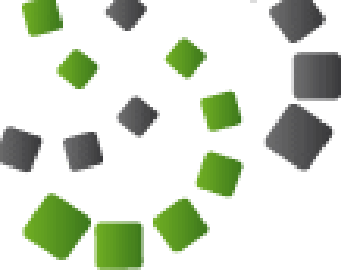
Rows 1-10000 of 47079 Filter: Off Sort: none



OMOP+ Domains

Condition_occurrence	Measurement
Death	Observation
Drug_exposure	Person_extension
Fact_relationship	Visit_occurrence

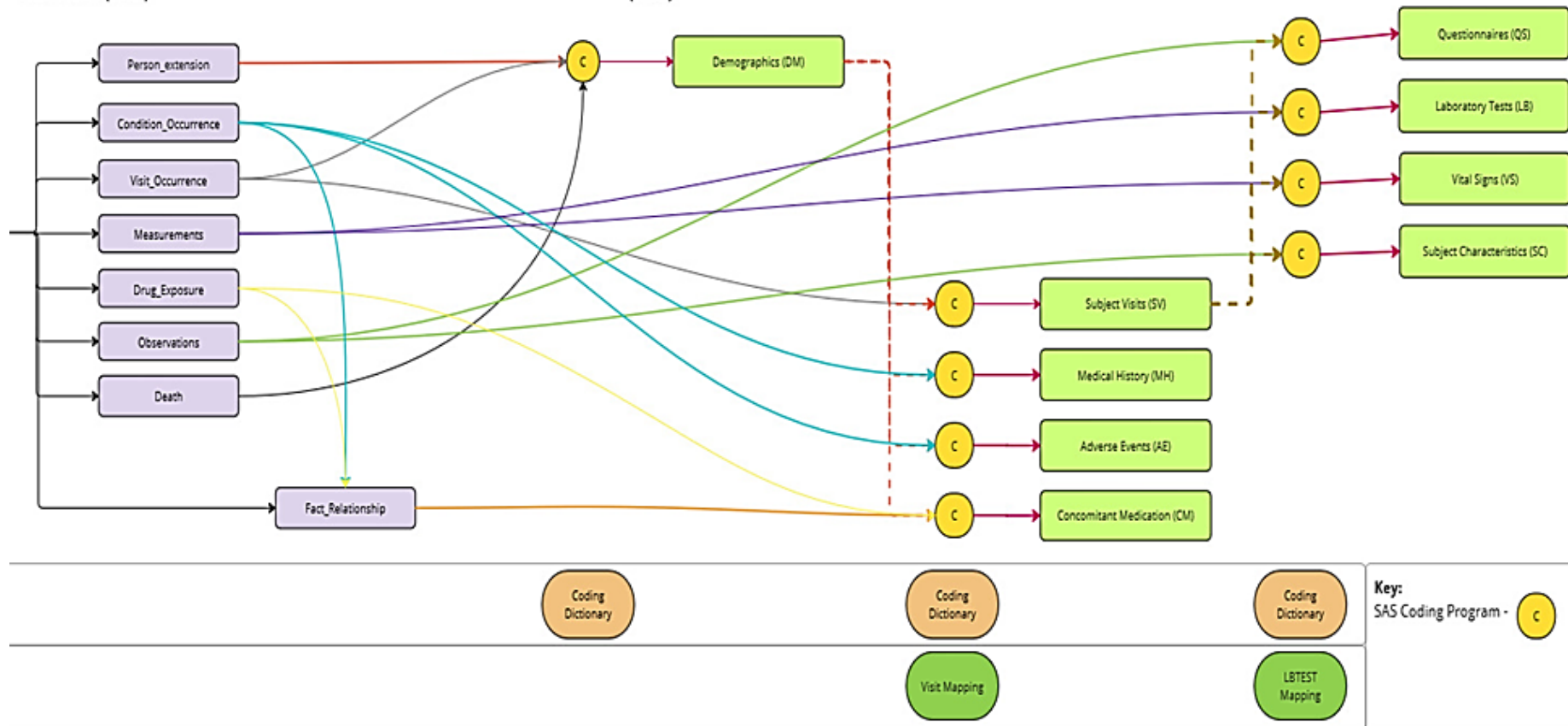
- Use of dictionaries to convert HL7 FHIR codes to the OMOP equivalent (e.g. LOINC, SNOMED)

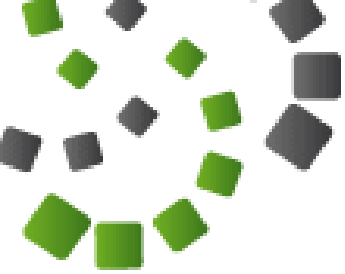


OMOP+ to SDTM

Conversion to OMOP+ domains (SAS)

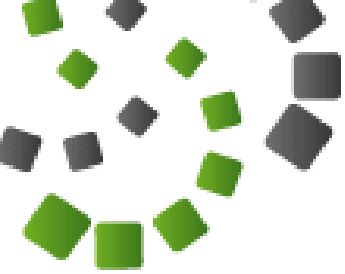
OMOP+ to SDTM Conversion (SAS)





Conclusion

- Success
- Intensive manual
- Highly complex
- Multi-stage process
- Time consuming



Questions ?