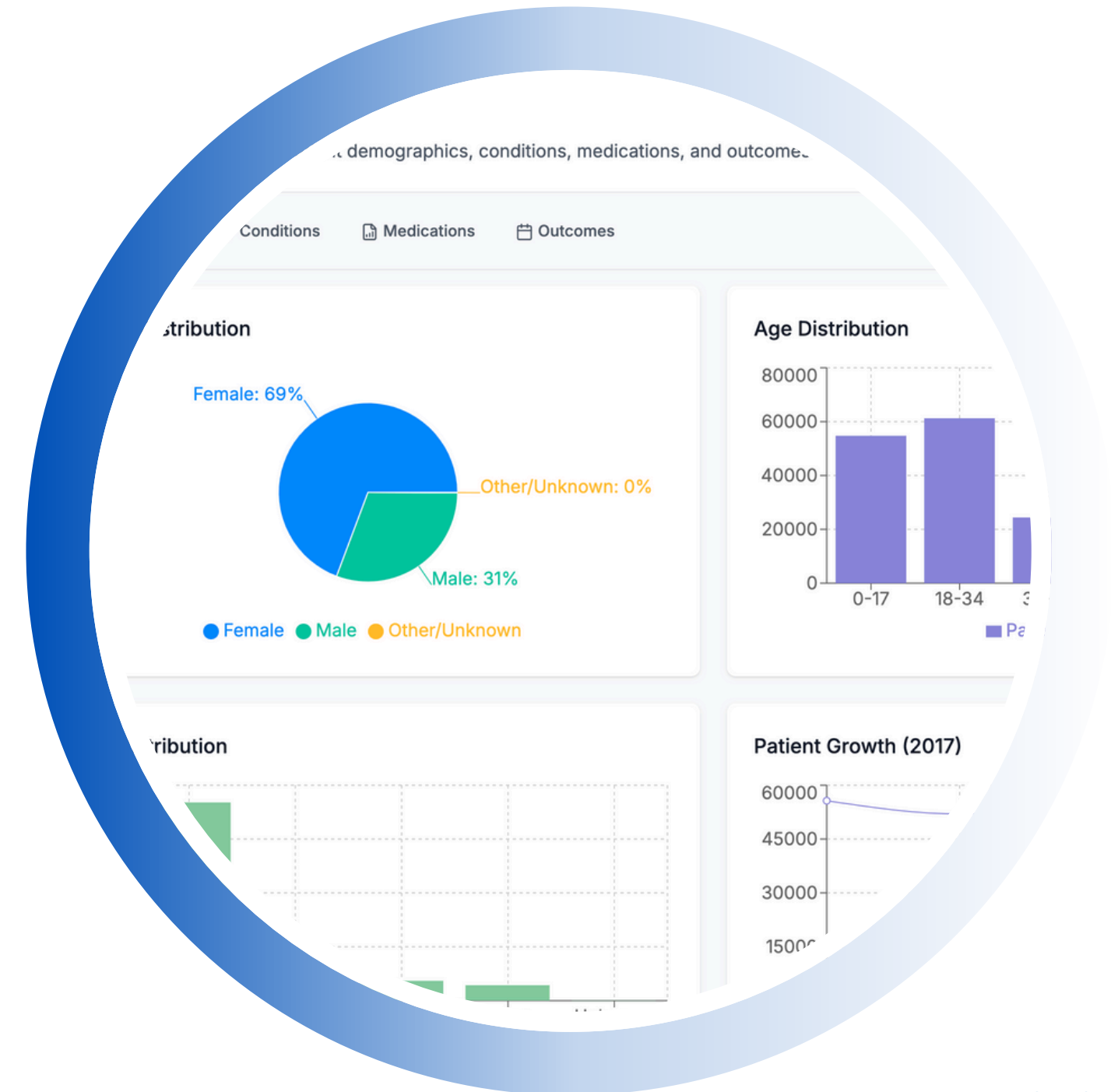
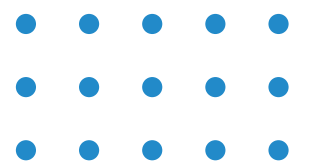


MedGraph Navigator

Patient Journey & Risk Analytics Platform



ArangoDB Hackathon Submission



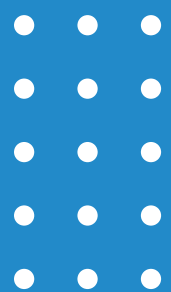
Who Am I?



Ajito Nelson Lucio da Costa

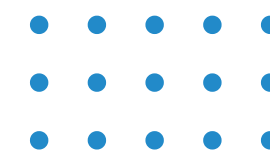
**Data Engineer | AI
Enthusiast**

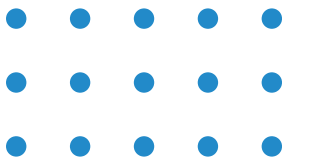
Timor - Leste 🇹🇱



Why I Participated

- ✓ Excited about combining graph databases with LLMs
- ✓ Passionate about creating innovative solutions that make data more accessible.
- ✓ Perfect opportunity to explore GraphRAG architecture





Dataset Selection

Synthea Healthcare Dataset

- ✓ Comprehensive synthetic medical data
- ✓ 100K+ patient records
- ✓ Realistic clinical pathways and relationships
- ✓ Multiple entity types (patients, encounters, conditions, etc.)
- ✓ Rich relationship networks

The screenshot shows the 'Downloads' page of the SyntheticMass website. The page header includes the SyntheticMass logo and navigation links for Home, FHIR API, Downloads, and About. The main content area provides information about the data hosted, including its origin (Synthea™ simulation by MITRE Corporation) and its free availability for secondary uses. It includes a citation for Synthea™ or SyntheticMass. The 'Download the Data' section lists two main data sets: SyntheticMass Data, Version 2 (24 May, 2017) and SyntheticMass Data, Version 1 (27 Feb, 2017), both available in HL7 FHIR, C-CDA, and CSV formats. It also mentions sample files for 100 or 1,000 patient records. The 'Latest Version of Synthea' section lists sample files for 100 synthetic patient records in C-CDA, CSV, FHIR R4, FHIR STU3, and FHIR DSTU2 formats. The 'Previous Versions (2019-2021)' section is partially visible at the bottom.

SyntheticMass

Home FHIR API Downloads Ab

Downloads

Data hosted within SyntheticMass has been generated by [Synthea™](#), an open-source patient population simulation made available by [The MITRE Corporation](#). The data is free from cost, privacy, and security restrictions. It can be used without restriction for a variety of secondary uses in academia, research, industry, and government.

Please cite Synthea™ or SyntheticMass as:

Jason Walonoski, Mark Kramer, Joseph Nichols, Andre Quina, Chris Moesel, Dylan Hall, Carlton Duffett, Kudakwashe Dube, Thomas Gallagher, Scott McLachlan, Synthea: An approach, method, and software mechanism for generating synthetic patients and the synthetic electronic health care record, *Journal of the American Medical Informatics Association*, Volume 25, Issue 3, March 2018, Pages 230–238, <https://doi.org/10.1093/jamia/ocx079>

Download the Data

The SyntheticMass data set is available for download in bulk as gzip archives. Each archive contains one million synthetic patient medical records, encoded in HL7 FHIR, C-CDA, and CSV.

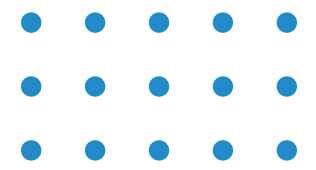
- [SyntheticMass Data, Version 2 \(24 May, 2017\)](#): 21GB. FHIR 3.0.1, CSV, C-CDA
- [SyntheticMass Data, Version 1 \(27 Feb, 2017\)](#): 28GB. FHIR 1.8.0, CSV, C-CDA

In addition, sample files containing 100 or 1,000 patient records in multiple formats are available:

Latest Version of Synthea

- [100 Sample Synthetic Patient Records, C-CDA](#): 7 MB
- [100 Sample Synthetic Patient Records, CSV](#): 7 MB
- [100 Sample Synthetic Patient Records, FHIR R4](#): 36 MB
- [100 Sample Synthetic Patient Records, FHIR STU3](#): 22 MB
- [100 Sample Synthetic Patient Records, FHIR DSTU2](#): 14 MB

Previous Versions (2019-2021)



Business Problem

Challenges in Healthcare Analytics

- ✓ Medical data is highly connected but stored in silos
- ✓ Complex relationships between patients, conditions, and treatments
- ✓ Healthcare professionals struggle with technical query interfaces
- ✓ Need for intuitive access to patient journey insights
- ✓ Risk patterns are difficult to identify across large datasets





Complete Step-by-Step MedGraph Navigator

 github.com/ajitnelsonn/H_ArngoDB



Demo App

 github.com/ajitnelsonn/medgraph-navigator

 medgraph-navigator.onrender.com



Thank You !

For your attention to this presentation.

 medgraph-navigator.onrender.com



ArangoDB



nVIDIA



NetworkX

[ArangoDB Hackathon Submission](#)



github.com/ajitnelsonn/H_ArangoDB



github.com/ajitnelsonn/medgraph-navigator