



Capturing and linking heterogeneous SDOH data for health equity research

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CLINICAL AND COMMUNITY DATA INITIATIVE

Background

The **Clinical and Community Data Initiative (CODI)** cultivates partnerships among healthcare and community service providers to improve health outcomes. CODI brings together data stored across different sectors and organizations to create individual-level, linked longitudinal records that include clinical interventions and outcomes, participation in community programs, and other social determinants. CODI is currently in implementation in Denver, Colorado and the Triangle region in North Carolina. The CODI project is led by the Centers for Disease Control and Prevention (CDC) and supported by the MITRE Corporation, the Public Health Informatics Institute, and the National Association of Community Health Centers, along with local clinical, community, government, and academic partners.

Social Determinants of Health

Social determinants of health (SDOH) are conditions and circumstances that can affect a wide range of health risks and outcomes. Example determinants are situations concerning housing, food, and personal safety. **The ability to analyze SDOH data is key to understanding and achieving health equity.**

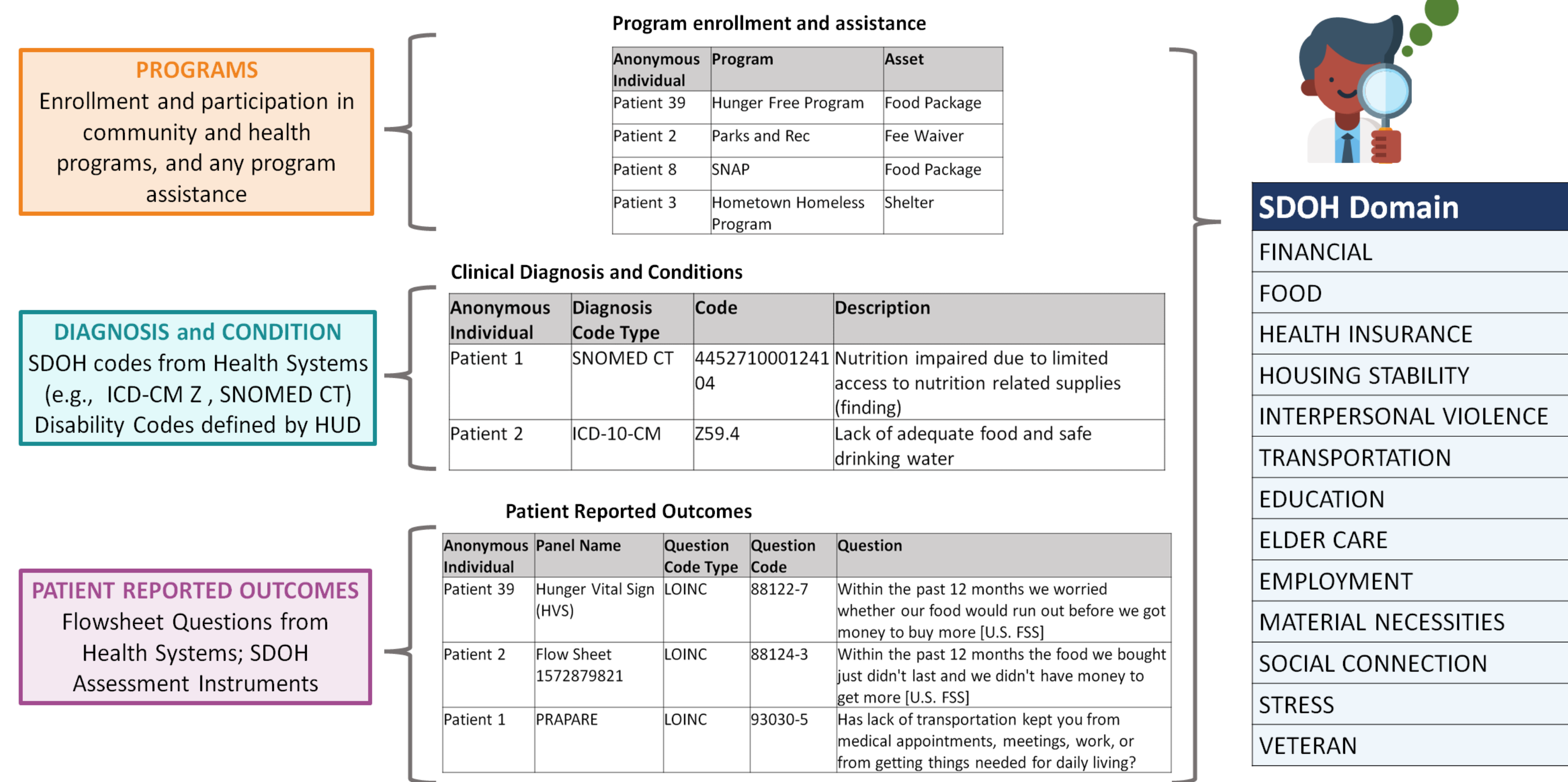
Challenge

There are rich sources of existing SDOH data stored across clinical and community settings. SDOH evidence can be found in multiple record types, from clinical encounter records to program participation records, and in a variety of SDOH assessment instruments. But these **data are non-standard and unevenly populated**. The variety of form and content makes it challenging for researchers to capture, compare, and analyze SDOH data about individuals from multiple clinics and communities and to pursue health equity.

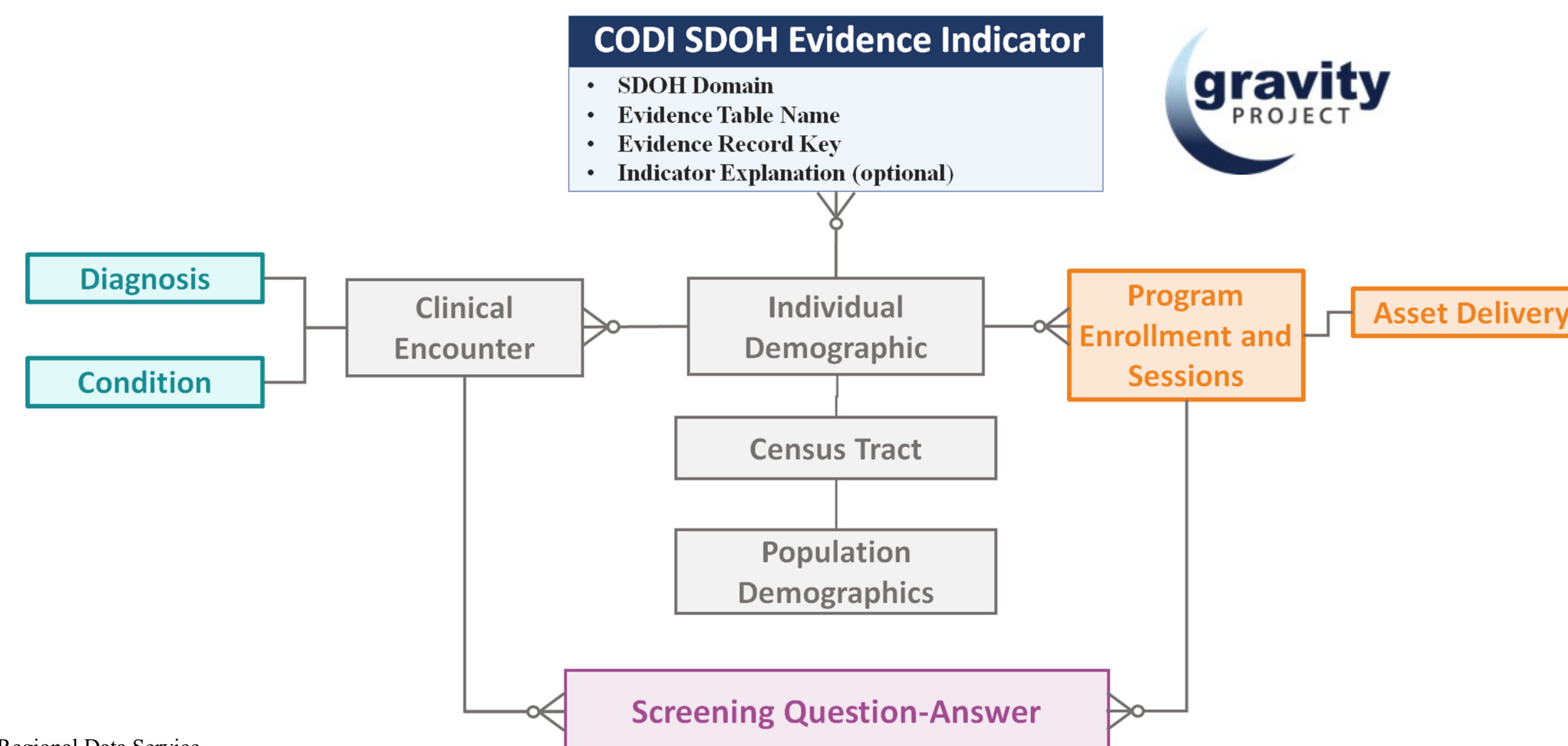
Methods

- To scope the problem, the CODI project first established research, public health surveillance, and service utilization and evaluation scoping questions that CODI would be designed to answer.
- Then, using CODI technical environmental scan instruments, the CODI technical team surveyed existing healthcare and community data models for their ability to represent answers to the scoping questions.
- The team evaluated alternative approaches to representing the existing variety of SDOH data while also providing users a common view of SDOH.
- The team designed the CODI data model by adopting an existing clinical data model and augmenting it to account for community service information and for the pace of SDOH data collection evolution.
- The CODI data partners are mapping their data to the CODI data model to populate CODI data marts from which data will be pulled and linked across partners to answer the scoping questions.

CODI captures diverse SDOH data from clinics and communities and maps to person-level SDOH evidence indicators



CODI Logical Data Model



References

- <https://pcornt.net>
- <https://www.hl7.org/gravity>
- Colorado Health Observation Regional Data Service <https://www.coloradohealthinstitute.org/research/CHORDS>

Solution

The CODI data model reuses part of the **Patient Centered Outreach Research Network (PCORnet)** data model in use by other clinical health record sharing networks. This captures clinical assessed SDOH data. PCORnet includes a table for collecting any kind of patient reported outcome or assessment instrument data. This captures SDOH screening data.

The CODI data model augments the PCORnet model with Program and Asset tables to collect community service utilization. An individual's use of services can be evidence of social risk.

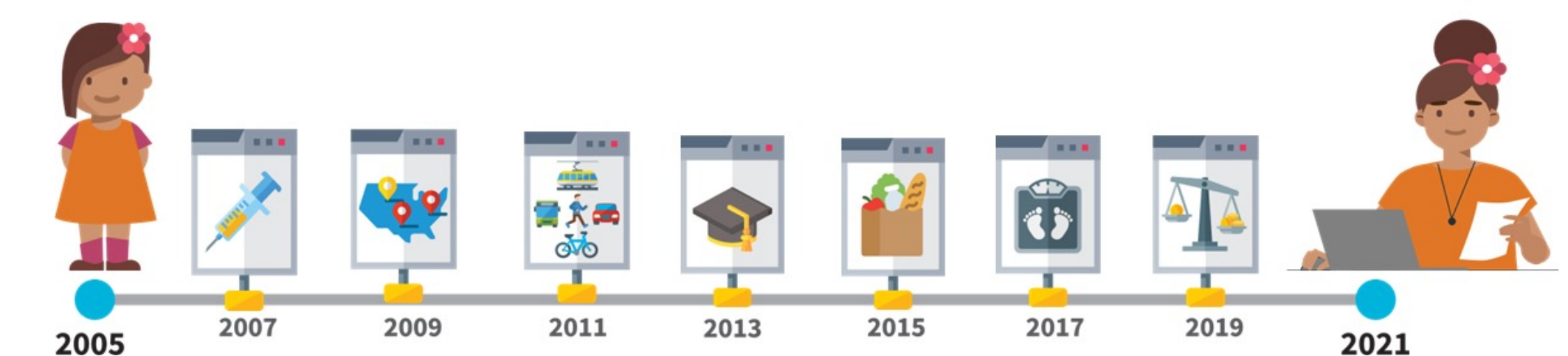
CODI added **SDOH evidence indicators to classify existing SDOH data into standard domains so that end users can easily assess the availability and type of SDOH data**. CODI's SDOH classification scheme is based on **The Gravity Project** (an HL7 FHIR accelerator) initiated in 2018 to convene broad stakeholder groups in identifying and harmonizing social risk factor data for interoperable electronic health information exchange.

The CODI Data Model SDOH evidence indicator model is a mitigation strategy for non-standard SDOH data and is a remedial solution while SDOH data standards continue to evolve and achieve greater adoption.

Conclusions

The CODI data model represents existing clinical and community **SDOH data from heterogeneous sources and maps it to common SDOH domains**. This CODI solution allows for the evolution of SDOH data standards.

The CODI network of clinical and non-clinical organizations can **link SDOH information longitudinally at the person-level**. This will **support equity-focused chronic disease research and community programs** that aim to improve health equity and reduce health disparities.



CODI Technical Documentation



CODI at North Carolina

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