



COLORADO
Department of Public
Health & Environment

PRIMARY CARE OFFICE

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STRATEGIC RESOURCE ALLOCATION IN BEHAVIORAL HEALTH

LEVERAGING BIG-DATA TO ADDRESS COLORADO'S BEHAVIORAL HEALTH CLINICIAN SHORTAGES

INFORMING DATA SOURCES

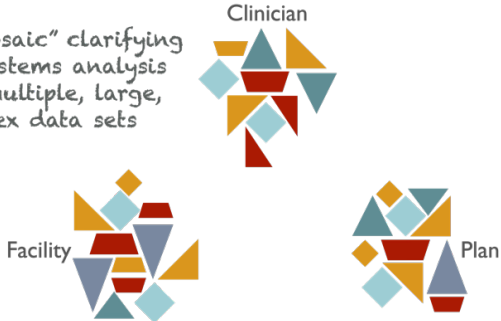
National Plan & Provider Enumeration System (NPI)	taxonomy (specialization), national unique identifier
Colorado Medicaid enrolled provider list (HCPF)	licensing, certification, practice information, state identifiers
Division of Professions and Occupations (DORA)	plan networks, practice information, state identifiers
Medicare Provider Specific Data Public Use File (CMS)	plan networks, practice information, national identifiers
All Payer Claims Database (CIVHC)	identifiers, care volume, plan networks, practice characteristics
Controlled Substance Prescribers Number (DEA)	national identifier, practice characteristics
Vital Records Death File (CDPHE)	deceased clinicians
commercial data service	address normalization, identity validation, demographics
CHSD trusted users	data quality
health professional associations	practice information, demographics, specialty
Colorado Drivers License data* (CDL)	personal information redaction, state identifier
Unemployment Benefit System (CDLE)	employer information, wage data
Licensed Facilities (CDPHE)	health facilities data
direct survey & manual validation (PCO-CDPHE)	practice information, productivity, demographics
Division of Insurance health plan regulatory data (DORA)	plan networks

- High quality and reliable health systems data is **required for multiple important state statutory functions**...and it is also critical to **informing policy and resource allocation** decisions of government.
- Health professional practice data is currently **only available in multiple uncoordinated sources**, or through manual survey data collection and **these sources are often incomplete, inaccurate and out of date**.
- In order to meet the data needs of these initiatives and functions, a **cooperative health professional data system** needs to be created that provides a **master provider directory**.

STRUCTURED, STANDARDIZED

(NORMALIZED)

a data "mosaic" clarifying health systems analysis across multiple, large, complex data sets



"GOLD RECORD" CREATION

- Normalization** of incoming data
- Matching** of records based on an:
 - Evaluation of source **quality**
 - Evaluation of source **trust**
 - Evaluation of source **age**
- Determination of **corroboration** among sources
- Iterative regeneration** of "Gold Record" at the field level
- Shared **data quality management** across trusted users

DATA SOURCE INPUTS

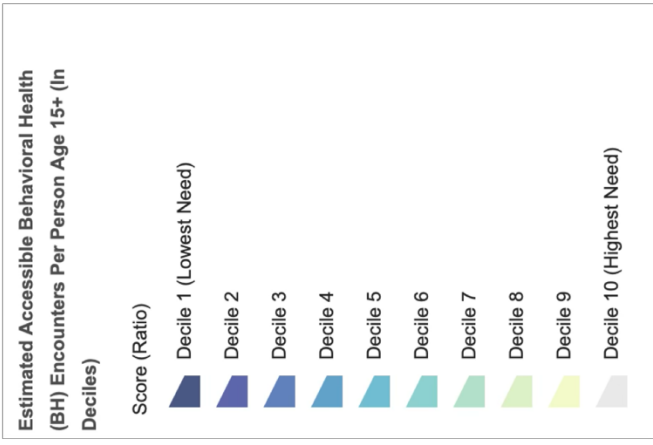
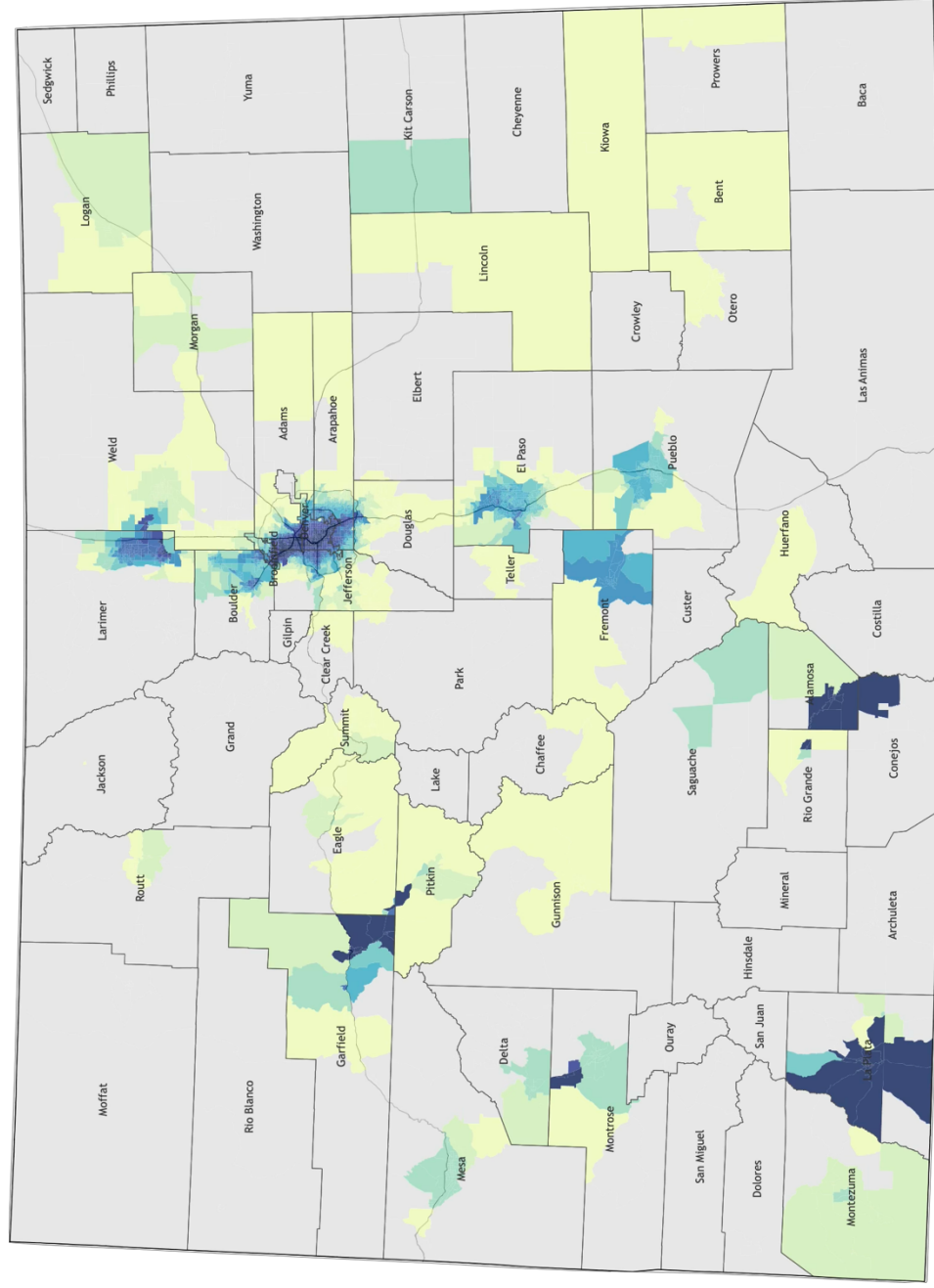


- six years of data inputs
- eighteen discrete data sources
- 26.5 million source rows of data

RENDERED DIRECTORY RECORDS

- 215,311 total licensed clinicians in Colorado
- 36,909 total health care delivery locations
 - 19,050 active physicians
 - 4,415 active dentists
 - 8,547 active advanced practice nurses

ESTIMATING SUPPLY & DEMAND AT THE COMMUNITY LEVEL FOR BEHAVIORAL HEALTH



ORIGIN-DESTINATION MODEL OF BEHAVIORAL HEALTH
SERVICE AREAS, 2021 ALL-PAYER CLAIMS ANALYSIS

