CHIA: USING DATA AND ANALYTICS TO SUPPORT HEALTHCARE POLICY

Ray Campbell
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Massachusetts places greater emphasis on measuring its healthcare system than any other state in the country.

Massachusetts has a long history of innovation not only in healthcare delivery, but also in healthcare policy, which benefits from more data for evidence-based policy making.

CHIA’s mission is to create the factual foundation to support better healthcare policy in Massachusetts.

CHIA has extensive authority to compel the submission of data from Massachusetts healthcare stakeholders.

CHIA uses this authority to create and curate several major data assets that support evidence based policy making and program oversight. CHIA also releases numerous publications documenting key features and metrics of the system.
CHIA’s Major Data Assets

CHIA receives more than 25,000 data submissions per year from over 1,500 data submitters. Major data assets include:

- **Hospital discharge database**: Patient-level information on every acute and behavioral health hospital discharge in the state.
- **Emergency department database**: Patient-level information on every ED visit in the state.
- **All-Payer Claims Database**: Despite gaps, the APCD is a massive, powerful repository of claim-level data about healthcare delivery and finance. APCD 2.0 is coming soon.
- **Payer expenditure reports**: Annual submissions of aggregate spending and cost data broken out by product, service category, ZIP code, market segment, cost sharing, and more.
**CHIA’s Major Data Assets (continued)**

- **Provider financial reports:** CHIA collects financial and cost information from hospitals, nursing homes, community health centers, and other types of providers.

- **Statewide surveys of employers and households:** Large surveys provide rich information about individuals, households, and employers.

- **Registered Provider Organizations:** CHIA’s newest area of data collection gathers information on the financial condition and the clinical and contractual affiliations of medical groups.
Supporting the State’s COVID-19 Response

Boosted CHIA’s data collection efforts:

- Monthly Inpatient Case Mix Submissions – Voluntary then Mandatory
- Monthly Hospital and Health System Financial Submissions – Voluntary
- Nursing Facility Staff Hours and Staff Preparedness Bi-Weekly Report
- Supplemental Hospital COVID Testing Collection

Increased the frequency of reports to provide timely insights:

- Monthly Enrollment Trends
- Monthly Hospital and Health System Finances
- Monthly Hospital Case Mix Reporting

Leveraged resources and relationships to support sister agencies:

- Operational support for management of clinical rapid response teams
- Provider forums with Division of Insurance to discuss the rollout of emergency health insurance provisions
CHIA’s Major Analytic Activities

- Mandated benefit reviews for the Legislature
- Inter-agency data sharing (AGO, SAO, EOHHS, Connector, GIC, DOI)
- Inter-agency data linking projects (e.g., Chapter 55)
- HPC data support and referrals
- Payer/Provider/Researcher data sharing

- Total healthcare expenditures (THCE)
- Total medical expenditures (TME)
- Health equity
- Healthcare affordability
- Behavioral health and substance use disorders
- Primary care spending
- Provider finances
- Hospital readmissions
- Insurance coverage and enrollment trends
- Price variation and price transparency
- Prescription drug spending and prices
- Rate setting
# Hospital Financial Monitoring

<table>
<thead>
<tr>
<th>Entity</th>
<th>Organization Type</th>
<th>Months Reported</th>
<th>Operating Margin</th>
<th>Total Margin</th>
<th>COVID Funding in Operating Revenue</th>
<th>Excess (Deficit) of Revenue over Expenses</th>
<th>Total COVID Funding Reported</th>
<th>Current Ratio</th>
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<td>$0.1</td>
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</tbody>
</table>
Hospital Utilization

FY 2018 Top Discharges Statewide, by Hospital Type

Community-HPP hospitals have the largest share of all but two of the top 10 discharges types.

- Normal Neonate Birth (60,761)
- Vaginal delivery (45,348)
- Septicemia Infections (35,371)
- Heart Failure (26,893)
- Caesarean Delivery (21,757)
- Knee Joint Replacement (18,613)
- Other Pneumonia (17,851)
- Chronic Obstructive Pulmonary Disease (15,784)
- Hip Joint Replacement (15,118)
- Cardiac Arrhythmia (12,656)
Total Health Care Expenditures

Total Health Care Expenditures by Service Category, 2017-2018

- Non-Claims 2017: $2.7B (3.1%)
  - 2018: $3.0B (3.1%)

- Other Professional 2017: $4.1B (8.4%)
  - 2018: $4.5B (8.4%)

- Other Medical 2017: $8.5B (-0.2%)
  - 2018: $8.6B (0.3%)

- Physician 2017: $9.3B (2.8%)
  - 2018: $9.5B (2.8%)

- Pharmacy (Gross of Rebates) 2017: $9.4B (5.8%)
  - 2018: $9.9B (5.9%)

- Hospital Outpatient 2017: $10.6B (3.8%)
  - 2018: $11.0B (3.8%)

- Hospital Inpatient 2017: $11.3B (3.7%)
  - 2018: $11.7B (3.7%)

Total Health Care Expenditures 2017: $38.0B
Total Health Care Expenditures 2018: $40.3B
Massachusetts Health Insurance Survey
Monitors health care coverage, access, utilization and affordability

- 3.7% of Massachusetts residents uninsured
- 89% respondents had usual source of care
- 35% respondents visiting the emergency department who sought care for a non-emergency condition
- 45% of respondents reported a health care affordability issue

Massachusetts Employer Survey
Monitors employer insurance market, cost-sharing, and benefit decision making

- 71% of Massachusetts firms offered health insurance
- 51% eligible employees enrolled in their employer’s health plans
- 36% of firms who offer insurance offered it to their part-time employees. One in ten part-time employees enrolled in their employer’s health plan.
- The 2018 average total monthly premium was $617 for single coverage and $1,687 for family coverage. The average percent employee contribution was 26% for single coverage and 30% for family coverage.
Transparency: A “Wide Field” View of Prices

Provider Price Variation Across 300 Procedures
Chapter 55 Opioid Study – Massive Inter-Agency Data Sharing

Data Sources
- Public Health
- Medical Claims & Hospital
- MassHealth (Medicaid)
- Mental Health
- Public Safety
- Jails & Prisons
- DHCD (Homelessness)
- Veterans’ Services
- Service Flags
- Aggregate

Chapter 55 Data Structure

Service Indicator Flags
- Children & Families
- Dept Dev Services
- Commission for Blind

Community Level Data
- NARCAN Enrollment
- NARCAN Refills
- NARCAN Rescues
- Town & Zip Census Data
- Drug Seizure Data
- First Responder NARCAN
- I.C.E. Measures
- Medical Claims
- Hospital and ED
- Cancer Registry
- BSAS Treatment
- MATRIS (EMS)
- Birth Records
- PDMP
- Toxicology
- OCME Intake
- State Police Heroin
- MA Prisons
- MA Jails
- MassHealth
- DMH
- DHCD
- Veterans’ Services
- Cancer Registry
- Children & Families
Data De-Identification: CHIA’s FileSecure

Data File
- Data Element 1
- Data Element 2
- ... Data Element n

Demographic File
- First Name
- Middle Name
- Last Name
- Suffix
- Address 1
- Address 2
- City/Town
- State
- ZIP
- Gender
- Birthday
- SSN
- Member ID

CHIA’s FileSecure Application

Step 1 – Pre-process and standardize key demographic data elements.
Step 2 – Hash key demographic data elements and remove clear-text values.

New Demographic File
- HASHED First Name
- HASHED Middle Name
- HASHED Last Name
- HASHED Suffix
- HASHED Address 1
- HASHED Address 2
- City/Town
- State
- ZIP
- Gender
- HASHED Birthday
- HASHED SSN
- Member ID

To CHIA

Data Submitter’s Internal IT environment