

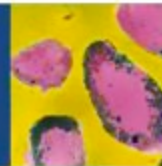


Exploring Data Opportunities at CPHIT: MHCC and OptumLabs Data

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Protecting Health, Saving Lives—*Millions at a Time*

OVERVIEW

- **CPHIT**
 - Brief overview
 - Research priorities
- **Maryland Healthcare Cost Commission**
 - Brief overview
 - Data availability
 - Process to access data
- **OptumLabs**
 - OptumLabs/CPHIT arrangement
 - Available Data
 - Next Steps



JOHNS HOPKINS

BLOOMBERG SCHOOL
of PUBLIC HEALTH

CENTER FOR POPULATION HEALTH
INFORMATION TECHNOLOGY

CPHIT

Mission: To improve the health and well-being of populations by advancing the state-of-the-art of Health IT across public and private health organizations.

Focus: The application of electronic health records (EHRs), “big data” and other e-health tools targeted at communities and populations

CPHIT PORTFOLIO

- **Research Portfolio** *(selected list)*
- **eACG:** Developing a wide range of state of the art EHR-based population focused predictive modeling “e-ACG” tools
 - EHR ICD and e-prescribing Rx input (coordinated with claims)
 - Non-claims data: Lab Data; BMI and Vitals; and Social History
- **VHA:** Collaborating with the Veteran Health Administration
 - Developed population health analytic framework
 - Linking geo and social data for obesity trend analysis
 - Adding social/geo framework to PCMH (PACT) case finding program
- **Frailty:** Developing a new geriatric/frailty “e-risk” score utilizing structured and unstructured EHR data and Claims

CPHIT PORTFOLIO *(CONT)*

- **Falls:** Developing analytics with Baltimore City Health Department for regional collaboration to identify and predict elder's fall injuries in the community using social, medical, and public health data
- **Opioid:** Using multiple novel sources of data to develop predictive models to identify persons at risk for opioid overdose
 - CRISP/HIE's PDMP data; Department of Justice; & DHMH
- **Consumer Data:** Linking consumer/marketing data with medical data to identify health outcomes (e.g., consumer reports)
- **Pop e-Measures:** Collaborating with Maryland State Health Department, HIE and Hospital Commission
 - Assist in the building of a statewide population health digital measurement infrastructure for "waiver" and beyond
 - Develop population health focused measures

SELECT LIST OF DATA SOURCES

- Sample list of data sources (accessed or hosted; fully or partially):
 - IMS Claims
 - Optum Labs Claims + EHR
 - Claims and EHR records of various national and regional integrated health delivery systems
 - VHA, Atrius, HealthPartners
 - Maryland's HSCRC (case-mix / hospital discharges)
 - Maryland's MHCC (all-payer claims database)
 - Maryland's HIE (CRISP; health information exchange)
 - *and other novel sources of data...*

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MARYLAND HEALTH CARE COMMISSION

Maryland Medical Care Data Base (MCDB or APDB)

MHCC: ALL-PAYER CLAIMS DATABASE

- Brief overview
- Data availability
- Process to access data

MHCC: ALL-PAYER CLAIMS DATABASE (OVERVIEW)

- An independent regulatory agency whose mission is to plan for health system needs, promote informed decision making, increase accountability, and improve access in a rapidly changing health care environment (<http://mhcc.maryland.gov/>)
- Made up of 4 centers:
 - Center for Health Care Facilities Planning and Development
 - Center for Health Information Technology and Innovative Care Delivery
 - Center for Analysis and Information Systems
 - Center for Quality Measurement and Reporting

MHCC: ALL-PAYER CLAIMS DATABASE *(OVERVIEW CONT)*

- Previously, each request had to go directly through MHCC and commissioner review board
- JHU has entered into an agreement with MHCC to receive the MCDB at no cost for 2 years for JHSPH faculty to perform pilot projects.
 - Faculty/students will need to apply internally for approval

MHCC: ALL-PAYER CLAIMS DATABASE: DATA

- Enrollment, provider, and claims data for Maryland Residents enrolled in private insurance (some medicare fee-for service, Medicare Advantage, Medicaid Managed care is in the database, but not approved for data release) Does not include self-insured ERISA health plans
- Years available: 2010-2015 with data refresh for 2016 when available
- Includes Dates of Service, Date of Birth, and 5 digit Zipcode
- Standard file includes 4 files:
 - Eligibility information
 - Professional services claims
 - Institutional claims
 - Pharmacy claims
- Data dictionary and Application for data request can be found in JHBox:
<http://preview.tinyurl.com/cphitmhcc>

Exhibit 16. Spending Among Maryland's Younger-Than-65 Population, 2015

	Market			
	Total	Large Employers	Small Employers	Individual
Members				
Total members as of December 31	1,229,516	772,714	213,075	243,727
Member Months				
Total member months	14,993,456	9,361,152	2,634,609	2,997,695
Spending				
PMPM spending, all services combined	\$376	\$365	\$368	\$411
PMPM OOP, all services combined	\$71	\$55	\$87	\$105
PMPM OOP, Medical Only	\$55	\$42	\$66	\$87
PMPM OOP, Prescription Drugs	\$16	\$13	\$22	\$18
PMPM Spending By Service Category				
Inpatient Hospital Facility	\$61	\$63	\$55	\$62
Inpatient Non-Hospital Facility	\$0.5	\$0.5	\$0.4	\$0.8
Outpatient Hospital Facility	\$71	\$68	\$67	\$86
Outpatient Non-Hospital Facility	\$8	\$8	\$8	\$10
Professional Services	\$109	\$107	\$108	\$115
Labs/Imaging	\$32	\$29	\$32	\$39
SubTotal (Medical Only)	\$282	\$276	\$270	\$313
Prescription Drugs ¹	\$94	\$90	\$98	\$98

Note: (1) Prescription drug spending is missing for some Federal Employees Health Benefits Program (FEHBP) members; therefore, drug spending for large employers is calculated using only members who have the prescription drug benefit.

(2) FEHBP members are included in the large employer market.

(3) PMPM portion of spending for insurers is overall PMPM (all services combined) less PMPM OOP (all services combined).

Analyses using MHCC's MCDB for 2015

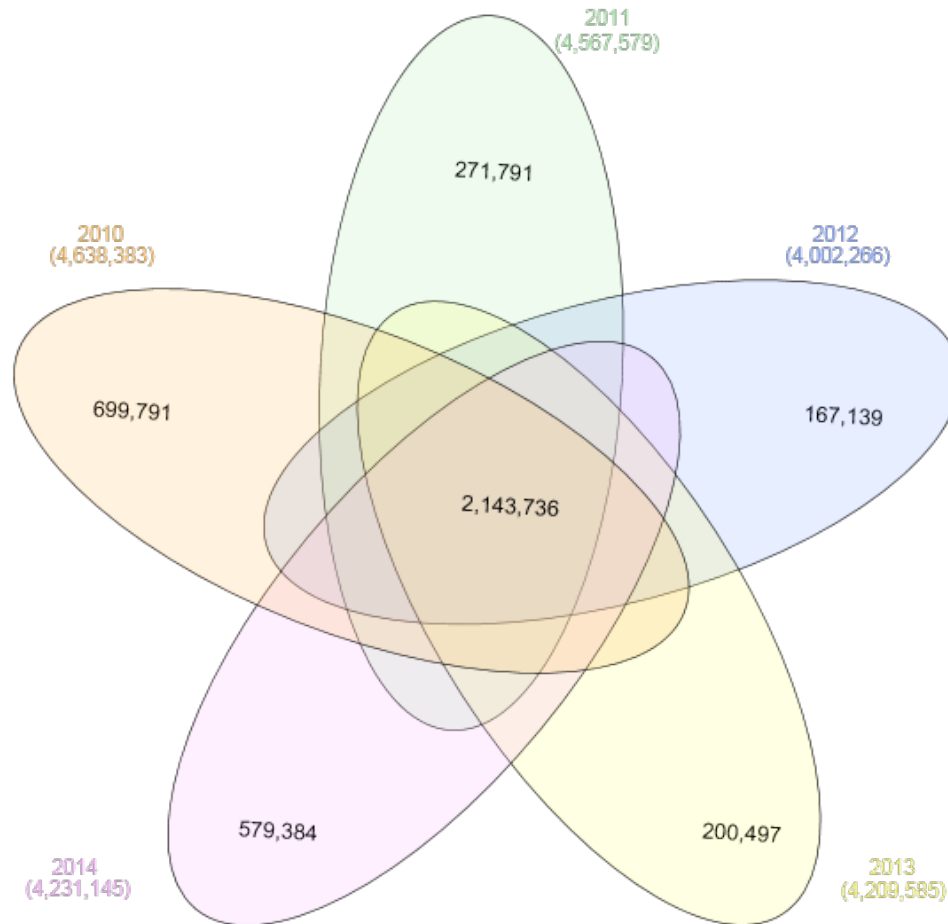
Source: MHCC 8/17 report

MHCC: ALL-PAYER CLAIMS DATABASE: COUNTS 2010-2014

Patients	7,476,648
Professional encounters	370,557,205
with non-null zip	370,524,870 (99.99%)
Institutional encounters	17,288,503
with non-null zip	17,286,606 (99.99%)
Pharmacy claims	102,035,561
Diagnosis lines	767,286,922
Procedure lines	403,417,139

* 2015 is in house and is currently going through the intake process

MHCC: ALL-PAYER CLAIMS DATABASE: PATIENT OVERLAP



MHCC: ALL-PAYER CLAIMS DATABASE: TRANSFORMATION PIPELINE

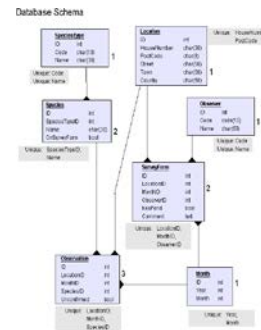
Raw Data



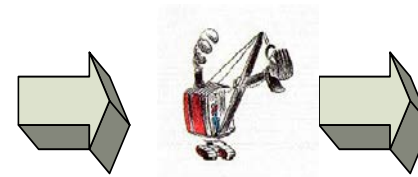
Extract and Transform



CPHIT
Research
Data Model



Data Mining



Analytic
Files



MHCC: ALL-PAYER CLAIMS DATABASE: CPHIT RESEARCH DATA MODEL



MHCC: ALL-PAYER CLAIMS DATABASE: ANALYTIC DEVELOPMENT EXAMPLE

Encounters

- 1) 3/1/2017
Delivery
Obesity
- 2) 7/1/2017
IUD Insertion
Hypertension
Obesity
Asthma
- 3) 9/1/2017
IUD Surveillance
- 4) 12/1/2017
IUD Removal

Monthly Events

Delivery	03
OBESITY	03
IUD INSERTION	07
HTN	07
OBESITY	07
ASTHMA	07
IUD SURVEILLANCE	09
IUD REMOVAL	12

Event Vectors

DELIVERY	001000000000
OBESITY	001000100000
IUD INSERTION	000000100000
HTN	000000100000
ASTHMA	000000100000
IUD SURVEILLANCE	000000001000
IUD REMOVAL	000000000001
PREGNANT	111000000000
POSTPARTUM	000110000000
IUD INSERTED	000000111111

MHCC: ALL-PAYER CLAIMS DATABASE: APPLICATION PROCESS

- Review Data Dictionary and complete application found in JHBox
- Receive IRB approval on project (only IRB approved projects can access MHCC data)
- Set up SAFE Virtual Desktop with CCDA for data access
 - Potential cost from IT@JH for storage: \$4 per 100GB per month
 - Depends on the extracted data users need
 - Data must remain at the Mount Washington Data Center
- CPHIT can assist in:
 - Developing full analytic data set
 - Provide small sample of data for researcher to write code to pull full data including inclusion/exclusion criteria.
 - Involvement will be dependent on support needed

OPTUMLABS

Unified View (linked EHR and Claims data)

OPTUMLABS

Who is OptumLabs?

An entity of **United Health Group**

- **United Healthcare** provides health benefits to 45 million people in the US and Brazil
- **Optum** provides Health services to 5,000 hospitals and 80,000 physician practices and other health care facilities

OptumLabs was founded as a partnership between Optum and Mayo Clinic as an open center for collaborative research and innovation with a state of the art facility based in Cambridge, MA.

OPTUMLABS: RESEARCH ADVANTAGE PROGRAM

Provide **access to the Unified View** (Linked EHR/Claims database) to 10 faculty at low to no cost based on project funding availability.

Goal is to meet specific **financial targets** based on the number of faculty signed up on the RAP (5 faculty minimum, 10 faculty max)

Funded projects should **budget 20% of direct costs** for OptumLabs data

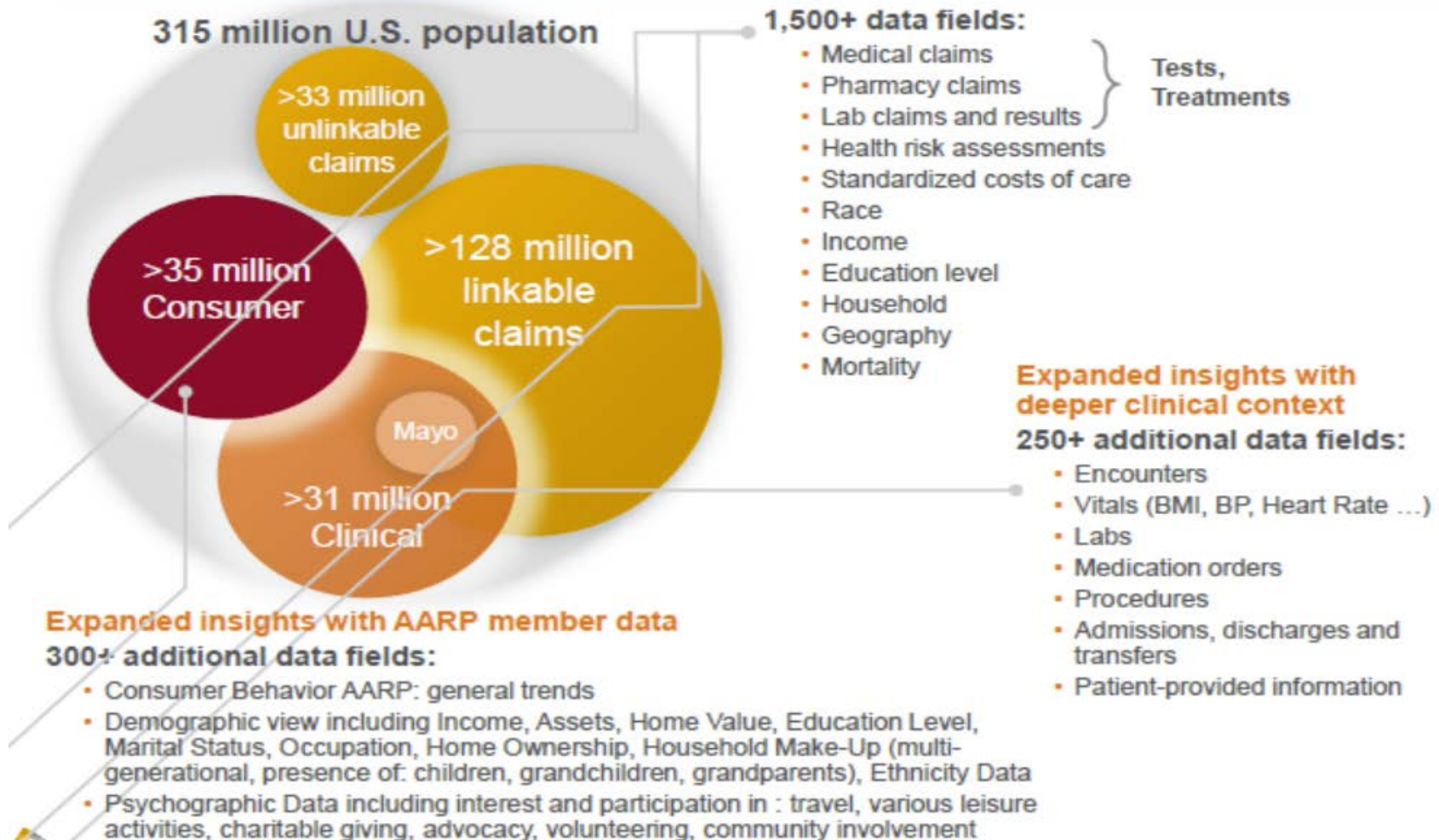
Ability to collaborate with a number of other partners

All projects are reviewed by their research council

OptumLabs has **regular presentations and ideas exchange meetings** for researchers to share work in progress.

Overview of Optum Labs Databases

Our Data Today: Claims, EHRs & Consumer Behavior



OPTUMLABS: UNIFIED VIEW

- Administrative Claims
 - Enrollment, medical and pharmacy
 - Approximately 128 million individuals
 - Varying duration (as far back as 20 years)
 - Commercially insured, some Medicare Advantage and Medicare PDP
- Electronic Health Record
 - Encounters, Signs, diseases and symptoms, Observations and clinical findings, medication administration
 - Approximately 31 million patients
 - Longitudinal data vary up to 8 years
 - From 30+ Large provider practices and IDNs
 - Tables with extractions from clinical notes

OPTUMLABS: UNIFIED VIEW

- Overlap is about 10 million patients
- At the Census Region only
- Education/Income data from the EHR only

OPTUMLABS: ACCESS

- Access through VDI (virtual portal) with VMware Horizon Client
 - Windows Server 2012
 - 2 factor authentication (password and text)
 - Can bring own tools/software, but OptumLabs must install
 - sFTP process to move files in and out (no patient level data)
 - PostgreSQL database

OPTUMLABS: NEXT STEPS

- Identify 5-10 faculty who would like to explore the OptumLabs Unified view
- Determine log-ins (at most 2 per named faculty)
- OptumLabs:
 - Perform a boot camp/onboarding process with all named faculty to
 - Provide limited analytic support for each faculty