



Database & Methods Cyberseminar Series

Informational seminars to help VA researchers access and use VA databases.

Topics

- VA data sources & data access systems
- Application of VA data to research and quality improvement questions
- Limitations of secondary data use
- Resources to support VA data use



FY '18 Database & Methods Schedule

First Monday of the month* | 1:00pm-2:00pm ET

Date	Topic
10/2/2017	Overview of VA Data & Research Uses
11/6/2017	Requesting Access to VA Data
12/4/2017	VA Medicare Data (VA/CMS)
1/8/2018*	Mortality Ascertainment & Cause of Death
2/5/2018	Assessing Race & Ethnicity
3/5/2018	VA DSS Lab Data
4/2/2018	Pharmacy Data
5/7/2018	VA Healthcare Utilization
6/4/2018	TBD
7/9/2018*	TBD
9/10/2018*	Comorbidity Measures Using VA & CMS Data

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<https://www.hsrd.research.va.gov/cyberseminars/catalog-archive-virec.cfm>

Where can I download a copy of the slides?



Dear Hira Khan,

This is a reminder that you're a panelist for "Using Data and Information Systems to Measure Colonoscopy Quality" which will begin in 3 Hours on:

Tue, Jul 18, 2017 12:00 PM - 1:00 PM EDT

Add to Calendar: [Outlook® Calendar](#) | [Google Calendar™](#) | [iCal®](#)

Please send your questions, comments and feedback to: cyberseminar@va.gov

Please download a copy of today's slides here:

http://www.hsrdr.research.va.gov/for_researchers/cyber_seminars/archives/2330-notes.pdf

Live captions for today's session are available here: <http://www.fedrcc.us//Enter.aspx?EventID=3314665&CustomerID=321>

Check out the Tip of the Month in the September issue of VIREC's Data Issues Brief,
"How to get the most out of your VIREC cyberseminar:"

<http://vaww.virec.research.va.gov/DIB/2017/DIB-Sep-CY17.html>



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VIReC Database & Methods Cyberseminar Series



Session 3

Measuring Veterans' Medicare Health Services Use

Kristin de Groot, MPH

VA Information Resource Center

Database & Methods Cyberseminar Series

Session #3: Measuring Veterans' Medicare Health Services Use

The purpose of this cyberseminar is to

*demonstrate how researchers can obtain
information on Veterans' healthcare use
received through Medicare*

Why is it important to know about Medicare when studying Veterans?

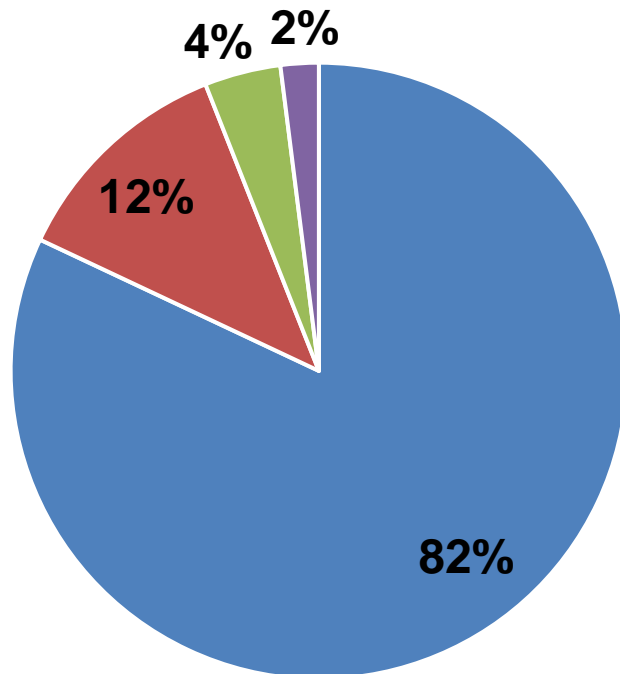
- Researchers need knowledge of health care use to draw accurate conclusions
- Many Veterans who use VA health care also obtain care outside VA
- Not included in VA data

Veterans' Enrollment in Medicare & Medicaid

Percent of VHA Enrollees in Medicare and/or Medicaid during FY09

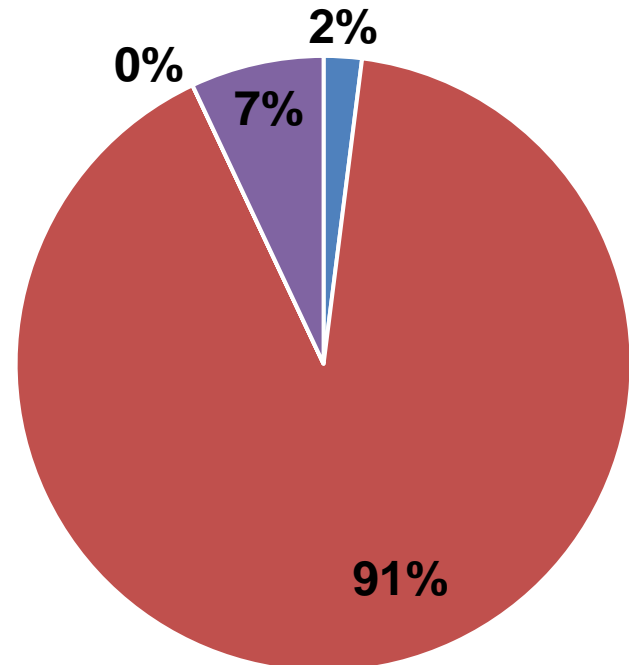
Veterans age <65

N = 4.7 million



Veterans age 65+

N = 3.8 million



Poll #1: Your experience with Medicare Data

Have you ever used Medicare data for a VA project?

- Yes
- No



Session roadmap

- Medicare 101
- Types of Medicare Data
- Using Medicare Data in Research
- Research Examples
- Medicare data in OMOP Common Data Model
- Data Access and Assistance

Session roadmap

- **Medicare 101**
- Types of Medicare Data
- Using Medicare Data in Research
- Research Examples
- Medicare data in OMOP Common Data Model
- Data Access and Assistance

Eligibility

- Who is eligible for Medicare?
 - Almost everyone over age 65
 - Some disabled individuals
 - Patients with End Stage Renal Disease
- Eligibility not dependent
 - Income
 - Other health insurance
 - VHA coverage

Medicare Parts A & B

- Part A: Hospital Insurance
 - Usually no premium
- Part B: Medical Insurance
 - Monthly premium required
 - 9% of veterans enrolled in Part A aren't enrolled in Part B

Ways to receive Part A & B coverage

- Fee for Service (FFS)
 - aka Original Medicare
 - Administered by Centers for Medicare and Medicaid Services (CMS)
- Managed Care Plans
 - aka Medicare Advantage, Part C, HMOs
 - Many different types of plans
 - Administered by insurance companies under contracts with CMS
- In 2015, 26% of veterans in Medicare were enrolled in a managed care plan

Part D

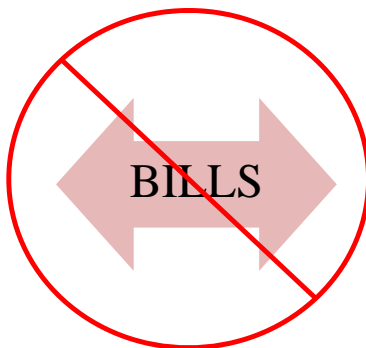
- Part D: Prescription Drug Plans
 - New in 2006
 - Administered by insurance companies under contracts with CMS
 - Premiums often required
- Enrollment in 2015
 - 47% of Veterans
 - 72% of all Medicare beneficiaries (Vets + non-Vets)

Who pays?

VA Medical Center



VA pays



Community Hospital



Medicare pays

The VA does NOT bill Medicare for services provided at a VA facility.

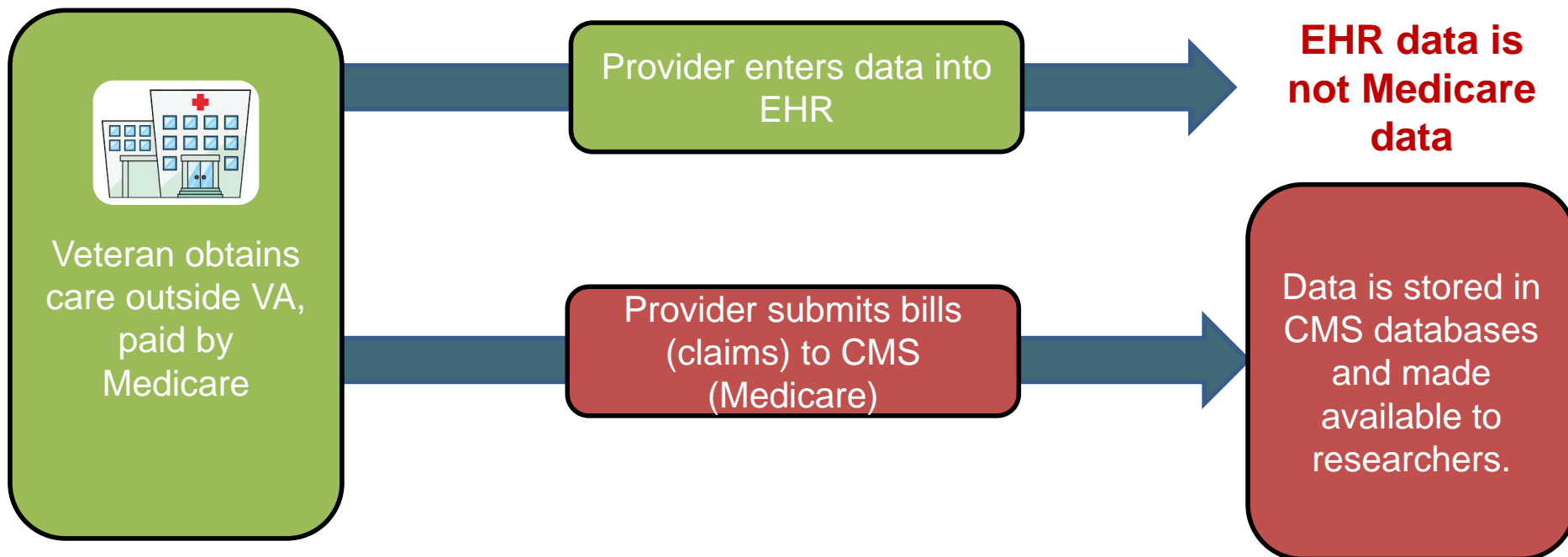
Except in special situations, community providers can NOT bill the VA for services provided

Source of VA and Medicare Data

VA Data Flow



Medicare Data Flow



What are included in Medicare data?

COMPLETE DATA

- Social Security Number
- Date of birth, date of death, address
- Other insurance - primary to Medicare
- Enrollment dates
- Managed care contract number
- Dates of service
- Provider & place of service
- Costs
- Procedure codes*
- Diagnosis codes*

NO or INCOMPLETE DATA

- Marital Status, Income
- Clinical data (Lab Results, Vital Signs, Symptoms)
- Services not itemized (bundled services)
- Other insurance – secondary to Medicare (e.g. Medigap plans)
- Services paid for by managed care plans

*When needed for billing

Session roadmap

- ✓ Medicare 101
- **Types of Medicare Data**
- Using Medicare Data in Research
- Research Examples
- Medicare data in OMOP Common Data Model
- Data Access and Assistance

Poll #2: Your knowledge of Medicare Data

How would you rate your overall knowledge of Medicare data?

- 1 (No knowledge)
- 2
- 3
- 4
- 5 (Expert-level knowledge)

Enrollment & Demographic File

- One record per person, per calendar year
- Monthly indicators for
 - Parts A, B, D
 - Managed care
 - Medicaid premium payment (state buy-in)
- Actual name varies by year
 - Denominator (1997-2008)
 - Beneficiary Summary (2009-10)
 - Master Beneficiary Summary File: Base (2011-15)

EDB Extracts

- Extracts of Medicare's Enrollment Database (EDB)
- Cumulative files; updated annually
 - Vital Status
 - Parts A & B Entitlement & Enrollment History
 - Group Health Organization
 - Incarceration History
 - Primary Payer

Type of Provider → Type of Bill → Type of Data

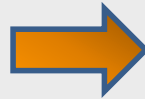
Institutional



Hospital or
nursing
facility



Home health agency
or hospice



**CMS 1450/
UB-04**



Part A or B

5 Institutional Files

Inpatient
Skilled Nursing
Home Health
Hospice
Outpatient

Non-Institutional



Clinical
laboratories



Individual
physicians,
chiropractors,
other providers



Physician
groups



Medical
Suppliers



Ambulances



CMS 1500



Part B

2 Non-Institutional Files

Carrier
Durable Medical
Equipment

Medicare Claims Files

- 5 Institutional Files
 - Inpatient
 - Skilled Nursing Facility (SNF)
 - Hospice
 - Home Health Agency (HHA)
 - Outpatient
- Institutional Stay Level File
 - Medicare Provider Analysis and Review (MedPAR)
- 2 Non-institutional Files
 - Carrier (Physician/Supplier)
 - Durable Medical Equipment (DME)
- Part D Files

Inpatient & Skilled Nursing Facility Files

- Inpatient
 - 90% short-term (acute) hospitals
 - Rehab, psych, other long-term hospitals
- Skilled Nursing Facility (SNF)
 - Skilled nursing and rehabilitation care
 - Does not include custodial care
- Includes facility charges and payments
- A stay may involve one or multiple claims

Example: Single stay with multiple claims

Stay	Claims	
Admit: July 10 Discharge: August 8	Claim 1	From July 10 Thru July 31
	Claim 2	From August 1 Thru August 8

MedPAR File

- Created from Inpatient and SNF claims
- Claims are “rolled up” to the stay level
 - Eliminates need for researchers to do this manually
- Variables
 - Many stay-level summary variables
 - Doesn't have all variables from IP/SNF files
 - Only diagnosis and procedures codes from last IP/SNF claim

Hospice & Home Health Agency Files

- Hospice
 - End-of-life care provided by hospice agencies
 - Care at home (80-90%) or as inpatient
- Home Health Agency
 - Skilled nursing
 - Physical/occupational/speech therapy
 - Home health aide

Outpatient File

- Types of facilities
 - Hospital (87%)
 - Dialysis facilities, rural health clinics, Federally Qualified Health Center, mental health centers, rehab centers
- Types of services
 - Laboratory
 - Radiology
 - Physical therapy
 - Dialysis
 - Emergency room
- Includes facility charges and payments

Carrier File

- Previously known as Physician/Supplier File
- Includes:
 - Physician services
 - Outpatient setting: Office visits, procedures
 - Inpatient settings: Consultations, services in hospitals & nursing facilities
 - Emergency room
 - Ambulance providers
 - Clinical laboratories

Durable Medical Equipment File

Includes:

- Wheelchairs and hospital beds
- Prosthetics and orthotics
- Oxygen equipment and supplies
- Diabetic testing supplies
- Drugs (limited coverage) provided in outpatient setting

Part D “Claims”

- Part D is administered by insurance companies
- Claims for drugs paid by insurance companies, not CMS
- Insurance companies submit data to CMS on all prescription fills

Part D Data for Research Use

- Prescription Drug Event (PDE), can be linked to characteristics of the:
 - Drug
 - Pharmacy
 - Prescriber
 - Plan
- Slim File is subset of PDE data, includes
 - Drug Characteristics

What are the Annual Summary Files?

- Variables created by CMS, based on the FFS claims
- One record per person, per calendar year
- Two types of summary data
 1. Cost and Use
 - Medicare and Beneficiary payments
 - Number of “events”
 2. Chronic Conditions
 - Uses standard definitions for chronic conditions
 - Disease flags & diagnosis date

Examples of Annual Summary Variables

- Cost & Use
 - Medicare payments for dialysis
 - Beneficiary payments for acute inpatient
 - Inpatient Stays
 - Skilled Nursing Facility Days
 - Emergency Room Visits
 - Part D Fills
- Chronic Conditions
 - First occurrence of chronic kidney disease
 - Alzheimer's disease mid-year flag
 - Bipolar disorder end-of-year flag

Where to find annual summary data?

Types of variables	1999-2010	2011- forward
Cost and Use	Beneficiary Annual Summary File (BASF)	MBSF: Cost and Use
Chronic Condition (common in Medicare population)		MBSF: Chronic Conditions
Disabilities & Other Chronic Conditions (common in Medicare- Medicaid dually enrolled population)	N/A	MBSF: Other Chronic or Potentially Disabling Conditions

MBSF = Master Beneficiary Summary File

HEDIS

Healthcare Effectiveness Data and Information Set

- Tool used by health plans to measure quality of care
- Can be used to approximate amount and types of utilization
 - One record per person, per plan, per calendar year
- Limitations of HEDIS data
 - No data on Dates, Diagnosis or procedure codes, Provider
 - Limited assistance for researchers

Examples of HEDIS Measures

- Preventive care
- Medication management
- Comprehensive Diabetes Care
- Surgeries & major procedures
- Hospitalizations
- Antibiotic use

Session roadmap

- ✓ Medicare 101
- ✓ Types of Medicare Data
- **Using Medicare Data in Research**
- Research Examples
- Medicare data in OMOP Common Data Model
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Using Medicare Claims

Common techniques for using Medicare data in research:

1. Procedures
2. Diagnoses
3. Costs
4. Inpatient Stays
5. Outpatient Visits



Procedures

Two types of procedure codes in Medicare claims data

1. ICD-9 & ICD-10 procedure/surgery codes
 - MedPAR and Inpatient files

2. Healthcare Common Procedure Coding System (HCPCS)
 - CPT procedure codes + CMS developed codes
 - CMS developed codes are alpha-numeric
 - Outpatient, HHA, Carrier, DME files

Diagnoses

- Medicare claims data contain ICD-9/ICD-10 diagnosis codes
 - No diagnosis codes in Part D data
- Inpatient/MedPAR claims include Diagnostic Related Group (DRG)

Using Procedures & Diagnoses in Research

- Inclusion or exclusion criteria
- Outcome measure
- Risk adjustment
 - Comorbidity index

Costs

- Charges submitted to Medicare
- Payments made to providers by
 - Medicare
 - Beneficiaries (deductibles & co-payments)
 - Primary payers
- Claims do not include payments made by secondary payers



Inpatient & Skilled Nursing Stays

- Common measures:
 - Number of stays
 - Length of stay
 - Readmissions
 - Facility, type of facility
 - Within the stay:
 - Procedures
 - Diagnoses
 - Costs

Identifying Inpatient & SNF Stays

Inpatient/Skilled Nursing care are provided by institutional providers.

(And often non-institutional providers too)

Types of Providers	Examples	Dataset
Institutional	Hospitals/SNF	Inpatient/SNF or MedPAR files
Non-institutional	Physicians	Carrier file

What File(s) Should I use when Studying Inpatient & SNF Stays?

Choose **MedPAR** when studying:

- Number of stays
- Length of stay
- Total payments

Choose **Inpatient or SNF** when studying:

- Detailed charges
- All diagnosis & procedure codes

Add **Carrier** when studying:

- Consults
- All procedures

Inpatient Stays: VA vs. Medicare

VA Facility

- Acute care
- Rehab

1 stay



Medicare

- Acute care facility
- Rehab care facility

2 stays



Outpatient Visits

Common Measures

- Dates
- Place of service
- Provider (type, specialty, location)
- Within the visit:
 - Procedures
 - Diagnoses
 - Costs

Identifying Outpatient Services

Outpatient services may be provided by both institutional and non-institutional providers.

Types of Providers	Examples	Dataset
Institutional	Hospitals	Outpatient File
Non-institutional	Physicians	Carrier File

What File(s) Should I use when Studying Outpatient Events?

- In most cases, use both Outpatient and Carrier
- Some events will have claims in both files
 - Emergency room
- Add HHA when studying services that could be provided at home
 - Physical or occupational therapy

Outpatient Visits: VA vs. Medicare

VA (same day)

- Primary care
- Specialist
- Therapy

**1 visit, 3 events
1 day of care**



Medicare

- Primary care
- Specialist
- Therapy

**3 visits/claims
1, 2, or 3 days of care**



Are annual summary files right for me?

Pros

- Easy to work with, small files
- Beneficial if you have limited resources

Cons

- Summarized by calendar year, not fiscal year
- Doesn't itemize all types of events/conditions
- Uses CMS's definitions

Annual summary files: Examples

- Cost and Use
 - How many people in my cohort used Medicare?
 - How many people were hospitalized?
 - Total Medicare payments for dialysis?
- Chronic Conditions
 - Who in my cohort has been diagnosed with lung cancer?
 - How can we exclude all patients who were diagnosed with diabetes prior to 2010?

Session roadmap

- ✓ Medicare 101
- ✓ Types of Medicare Data
- ✓ Using Medicare Data in Research
- **Research Examples**
 - Medicare data in OMOP Common Data Model
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Example 1

Suda, K, et al. Opioid dispensing and overlap in veterans with non-cancer pain eligible for Medicare Part D. J Am Pharmacists Assoc. 57 (2017) 333-340.

Overview (Suda, 2017)

Goal

To evaluate opioid dispensing patterns and predictors for overlap among veterans eligible for Part D

Cohort

- All female & 10% sample of male veterans, age 66+ as of 2004
- Enrolled in Medicare; eligible to enroll in Part D
- 1+ opioid prescription 2005-2009
- No cancer diagnosis

Methods (Suda, 2017)

Data Sources

- VA Vital Status file
- MCA Pharmacy NDE
- Medicare Part D Slim file

Used VA and Medicare data to identify

- Type of opioid (short acting or long acting)
- Source of opioid (VA or Medicare)
- Other Part D utilization (non-opioid)
- Overlaps between opioid prescriptions
- Co-morbidities

Selected Results (Suda, 2017)

	2007	2008	2009
% of opioid RX at VA pharmacies	48.3	45.6	44.3
% of opioid RX at VA pharmacies, among Part D utilizers	18.8	16.8	15.8
% of study sample with opioid overlap			
Rx from VA Pharmacy, among Part D utilizers	4.1	3.9	3.9
Rx from VA Pharmacy, among Part D non-utilizers	11.6	10.5	8.8
Rx from Part D Pharmacy, among Part D utilizers	9.2	9.7	10.3

Example 2

Chavez L, et al. The Association Between Unhealthy Alcohol Use and Acute Care Expenditures in the 30 Days Following Hospital Discharge Among Older Veterans Affairs Patients with a Medical Condition. J Behav Health Serv. 2017;44:4

Overview (Chavez, 2017)

Objective

To assess utilization and expenditures within 30 days of discharge, for different categories of alcohol use

Cohort

- VA outpatient users age 65+
- Hospitalized in VA or Medicare 2009-2011
- Alcohol screening in year prior to hospitalization
- Not in Medicare managed care plan in year prior to or 30 days after hospitalization
- N=416,050

Methods (Chavez, 2017)

Data Sources

- VA CDW (inpatient and outpatient utilization, AUDIT-C alcohol screening scores)
- HERC average cost datasets
- Medicare inpatient, outpatient, carrier files

Used VA and Medicare data to

- Identify index hospitalizations
- Identify co-morbid conditions
- Measure readmissions, ED visits, & costs following discharge
- Medicare: Exclude patients in managed care

Selected Results (Chavez, 2017)

	Non-drinker (64%)	Low risk drinking (25%, Ref)	Moderate risk drinking (9%)	High risk drinking (1%)
Probability of any readmission	16%*	14%	14%	17%*
Means expenditures, if readmission	\$16,696	\$17,066	\$16,699	\$14,986*
Probability of any acute care use	26%*	22%	22%	26%*
Means expenditures, if any use	\$10,702	\$10,796	\$10,632	\$9,953

After adjusting for demographics

* p<0.05

Additional Research Examples

- Incident dementia (identified using diagnosis codes)
 - Orkaby A, et al. Continued use of warfarin in veterans with atrial fibrillation after dementia diagnosis. *J Am Geriatr Soc*. Epub 2016 Dec.
- Imaging (identified using procedure codes)
 - Makarov, et al. Appropriateness of prostate cancer imaging among veterans in a delivery system without incentives for overutilization. *Health Serv Res*. 2016 Jun;51(3):1021-51.
- Hospice
 - Mor V, et al. The rise of concurrent care for veterans with advanced cancer at the end of life. *Cancer*. 2016 Mar;122(5):782-90.

Session roadmap

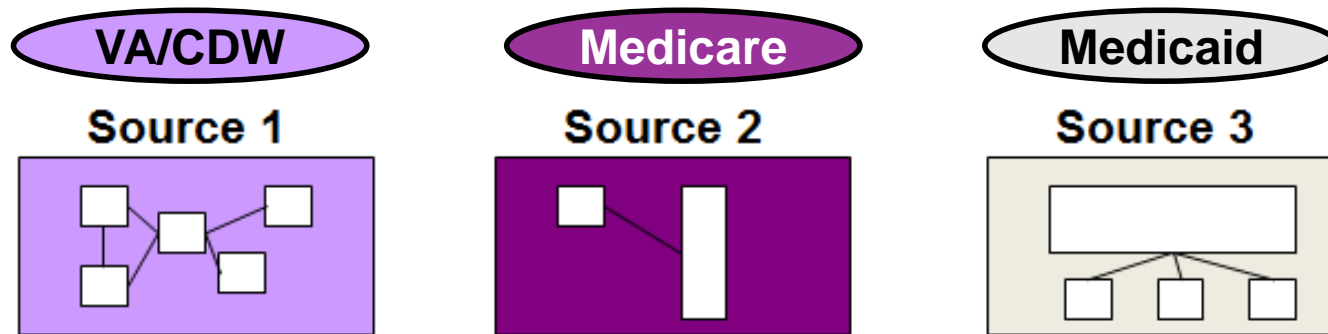
- ✓ Medicare 101
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- ✓ Research Examples
- **Medicare data in OMOP Common Data Model**
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Poll #3: Your knowledge of OMOP

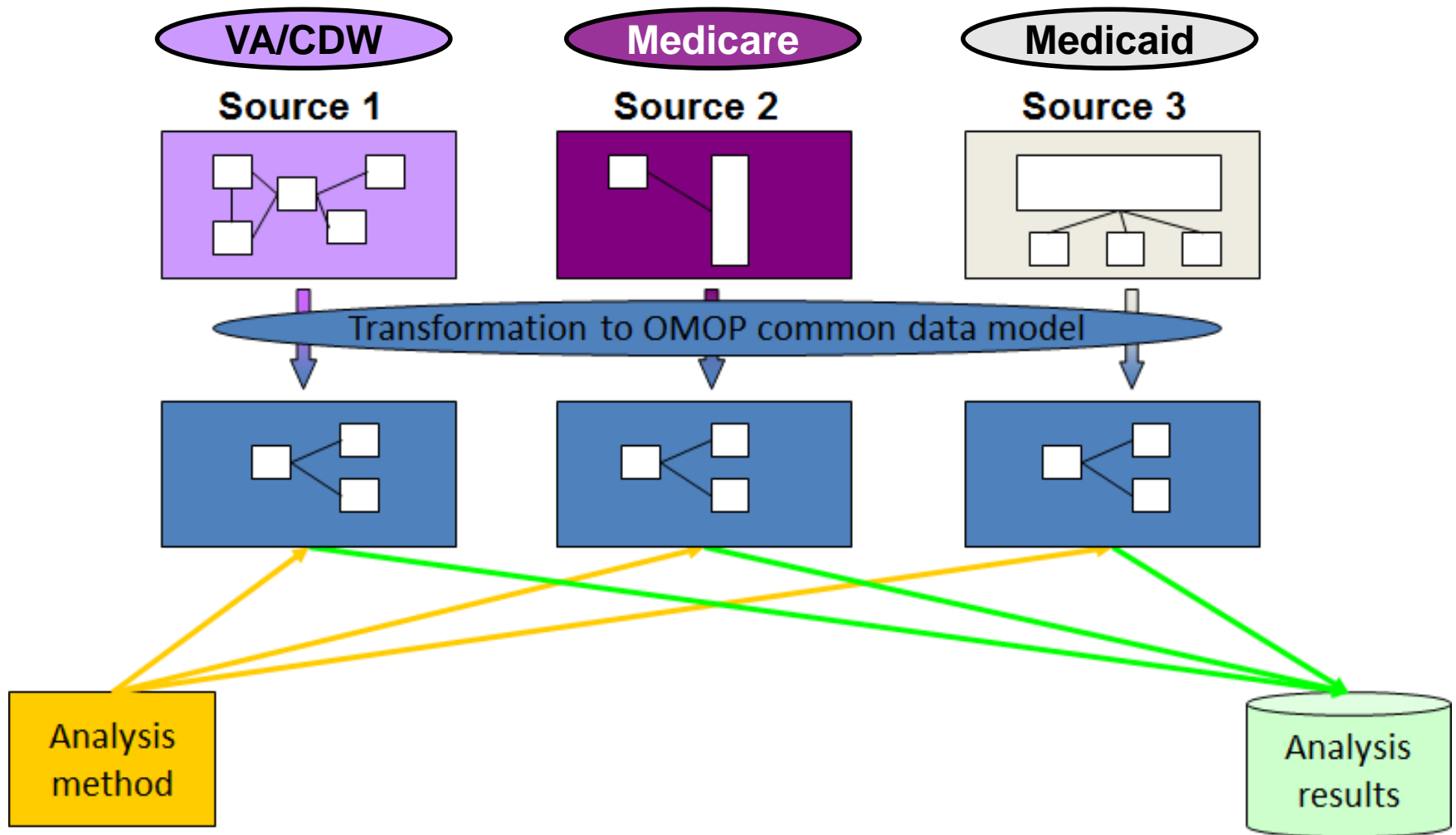
How would you rate your knowledge of and experience with OMOP?

- 1 (Have not heard of it)
- 2
- 3
- 4
- 5 (Extensive experience)

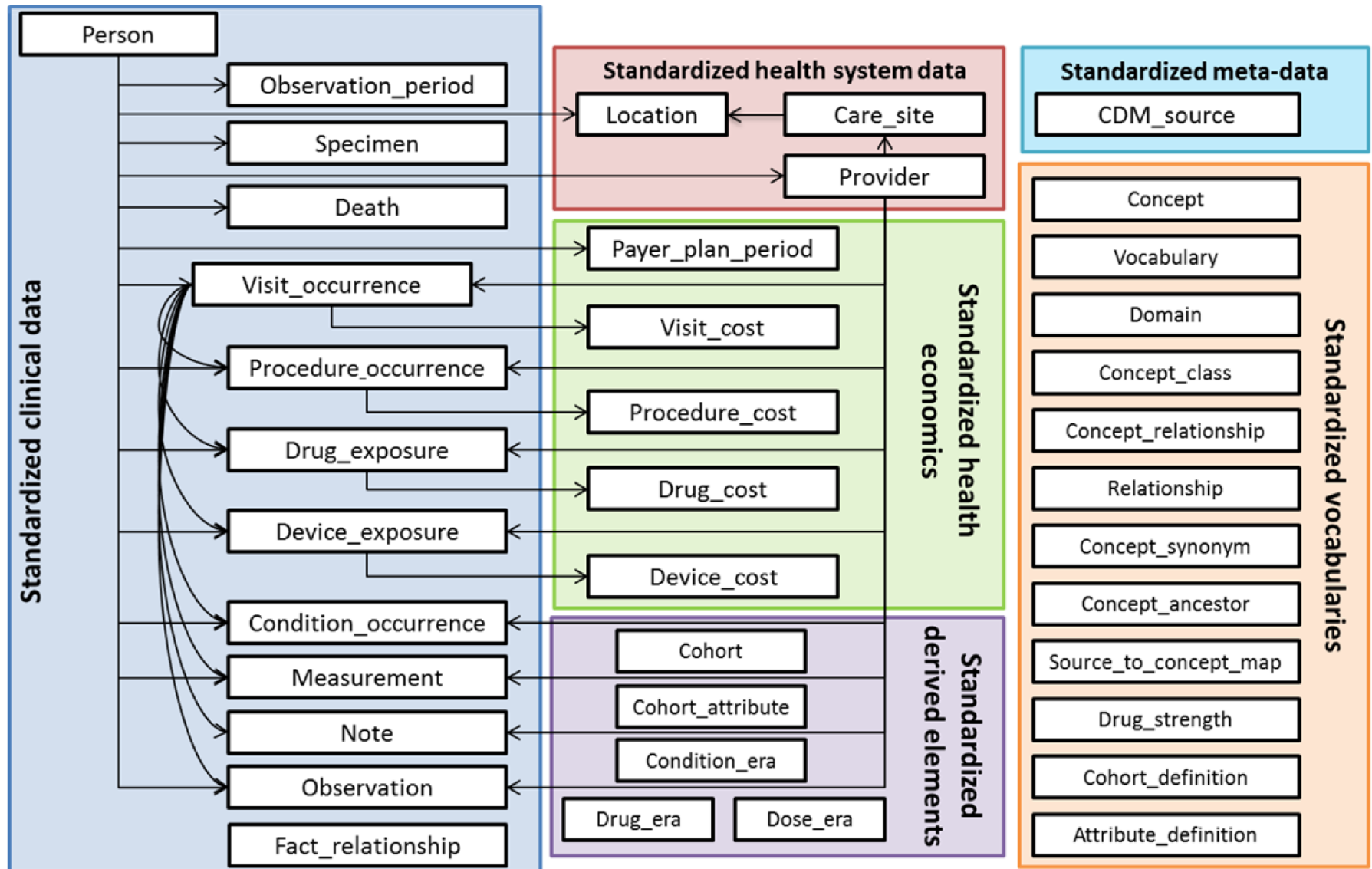
Benefits of Having Data in OMOP Common Data Model



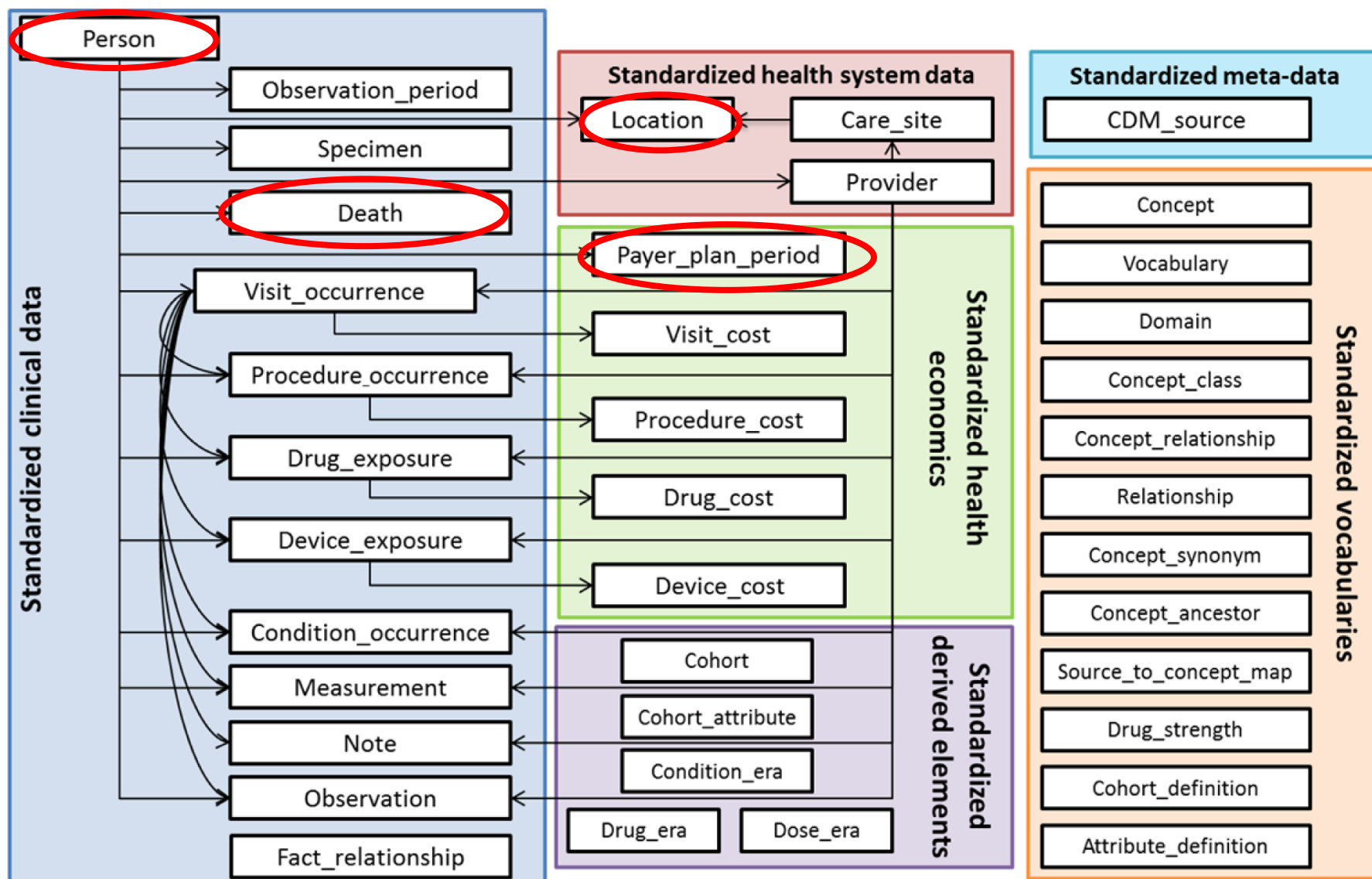
Benefits of Having Data in OMOP Common Data Model



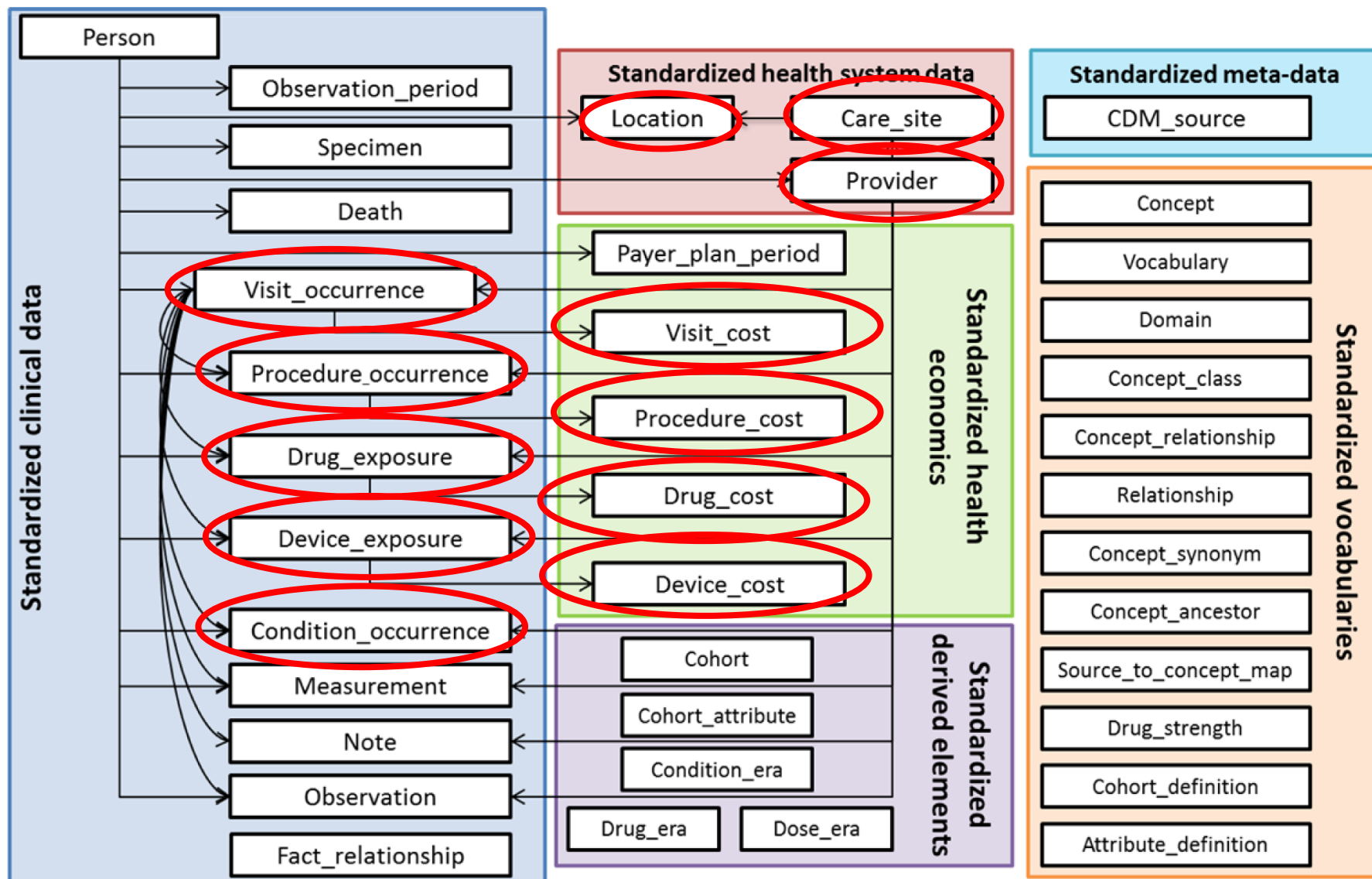
OMOP CDM Version 5 Schema



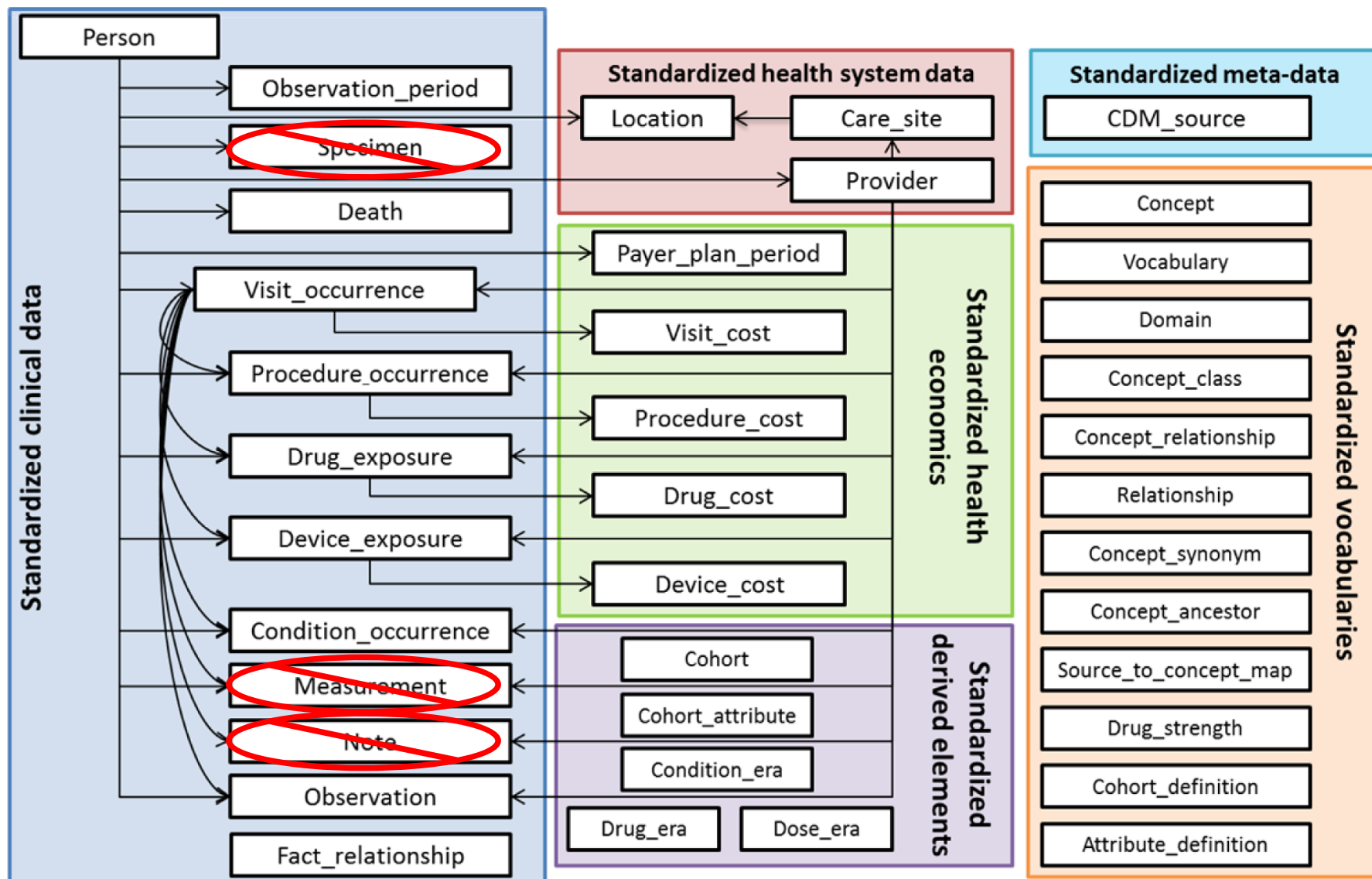
Medicare Enrollment Files






Medicare Claims Files



Not found in Medicare data



Example: Challenges in Transforming Medicare Claims Data to OMOP CDM

Claim Type	Provider number represents...	Maps to OMOP Care Site Table?
Institutional Claims Hospital 	Facility where care took place	Yes <i>Provider number corresponds to care site</i>
Home Health Agency 	Agency providing care	No <i>Agency is not where care took place</i>
Non-institutional Claim Physician 	Billing physician <i>Includes general place of service and provider billing location</i>	Sometimes <i>May not be able to determine exact care site</i>

Next Steps



Looking For Research Projects with OMOP & Medicare Data Experience

Tasks include:

- Using OMOP and original Medicare data to compare results
- Reporting problems discovered using OMOP data
- Reviewing and providing feedback on Medicare OMOP data documentation

Estimated Timeline:

- Testing – mid FY18
- Data Available – during FY19

Session roadmap

- ✓ Medicare 101
- ✓ Types of Medicare Data
- ✓ Using Medicare Data in Research
- ✓ Research Examples
- ✓ Medicare data in OMOP Common Data Model
- **Data Access and Assistance**

VA/CMS DATA FOR RESEARCH

- VIREC is data steward for CMS (Medicare) data used for VA research
- Projects must be approved by:
 - VA Research & Development (R&D) Committee
 - Institutional Review Board (IRB)
- Data available for VA researchers at no cost
- VA employees may not obtain CMS data directly from CMS/ResDAC

VIReC Resources on CMS data

- Website (VA intranet only)
 - vaww.virec.research.va.gov/Index-VACMS.htm
- Data Descriptions and Documentation
- Request Process and Forms
- Pre-Request Consultation

Other VIREC Resources

HSRData Listserv

- Community knowledge sharing
- ~1,200 VA data users
- Researchers, operations, data stewards, managers
- Subscribe by visiting <http://vaww.virec.research.va.gov/Support/HSRData-L.htm> (VA Intranet)



HelpDesk

- Individualized support



virec@va.gov

(708) 202-2413



- Part of Office of the Assistant Deputy Under Secretary for Health for Policy and Planning
- Data steward for CMS (Medicare) data used for VHA operations
 - VHA Program Offices
 - Quality Improvement/Quality Assurance
- Website (VA intranet only)
 - vaww.va.gov/medicareanalysis/



- CMS contractor based at the University of Minnesota
- Provides free assistance and training to researchers using CMS data
 - Help desk
 - Knowledge base
 - Webinars
 - In-person workshops
- www.resdac.org

Chronic Conditions Data Warehouse

Your source for national CMS Medicare and Medicaid research data

- Source of most CMS data that VA receives
- Documentation
 - Data dictionaries
 - Summary tables
 - User guides & technical guides
 - White papers & presentations
- www.ccwdata.org

Contact information

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708-202-2413



**Next session:
January 8, 2018**



Database & Methods Cyberseminar Series

Ascertaining Veterans' Vital Status: VA Data
Sources for Mortality Ascertainment and
Cause of Death

Charles Maynard, PhD
Seattle Denver COIN

Quick links for VA data resources

Quick Guide: Resources for Using VA Data

<http://vaww.virec.research.va.gov/Toolkit/QG-Resources-for-Using-VA-Data.pdf> (VA Intranet)

VIReC: <http://vaww.virec.research.va.gov/Index.htm> (VA Intranet)

VIReC Cyberseminars: <http://www.virec.research.va.gov/Resources/Cyberseminars.asp>

VHA Data Portal: <http://vaww.vhadatportal.med.va.gov/Home.aspx> (VA Intranet)

VINCI: <http://vaww.vinci.med.va.gov/vincicentral/> (VA Intranet)

Health Economics Resource Center (HERC): <http://vaww.herc.research.va.gov> (VA Intranet)

CDW: <https://vaww.cdw.va.gov/Pages/CDWHome.aspx> (VA Intranet)

Archived cyberseminar: What can the HSR&D Resource Centers do for you?

http://www.hsrld.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=101