

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





FY21 Upcoming Sessions

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

Date	lopic
1/4/21	Meet VIReC: The Researcher's Guide to VA Data

Visit our Education page for more information & registration links:

https://bit.ly/39B1JUo

Visit HSR&D's VIReC Cyberseminar Archive to watch previous sessions:

https://bit.ly/3dZFJWG



Where can I download a copy of the slides?

VA HSR&D CYBERSEMINARS



SAMPLE EMAIL

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VIReC Database & Methods Cyberseminar Series

FY21 Session 3

Measuring Veterans' Medicare Healthcare Use



Kristin de Groot, MPH Technical Director, VA/CMS Data for Research Project VA Information Resource Center



Today's objective

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

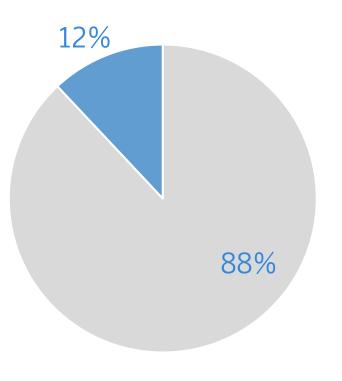


Veterans' Enrollment in Medicare

Percent of VHA Enrollees in Medicare in September 2016

Veterans age < 65

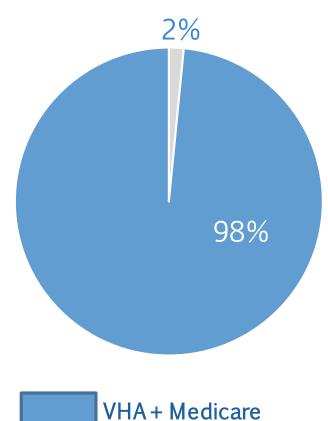
N = 4.9 million



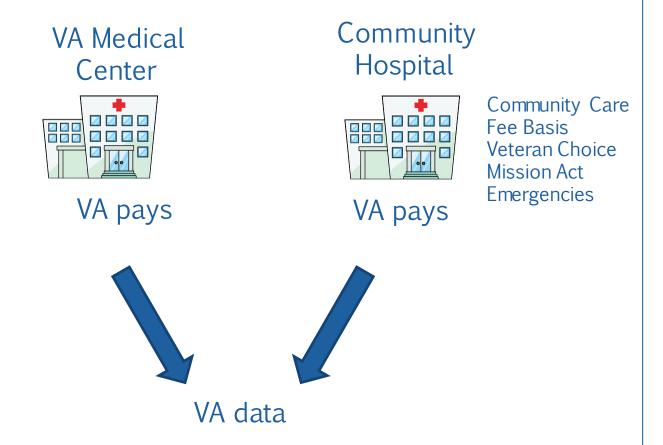


Veterans age 65+

N = 4.7 million



Where's the data?





Medicare data



Poll #1: What is your **role** in research and/or quality improvement projects?

- Investigator, PI, Co-I
- Statistician, data manager, analyst, or programmer
- Project coordinator
- Other please describe via the chat function





Poll #2: How many **years of experience** working with VA data?

- None I'm brand new to this!
- One year or less
- More than 1, less than 3 years
- At least 3, less than 7 years
- At least 7, less than 10 years
- 10 years or more





Poll #3: Rate your knowledge of Medicare data

- None
- Little
- Some
- Moderate
- Expert





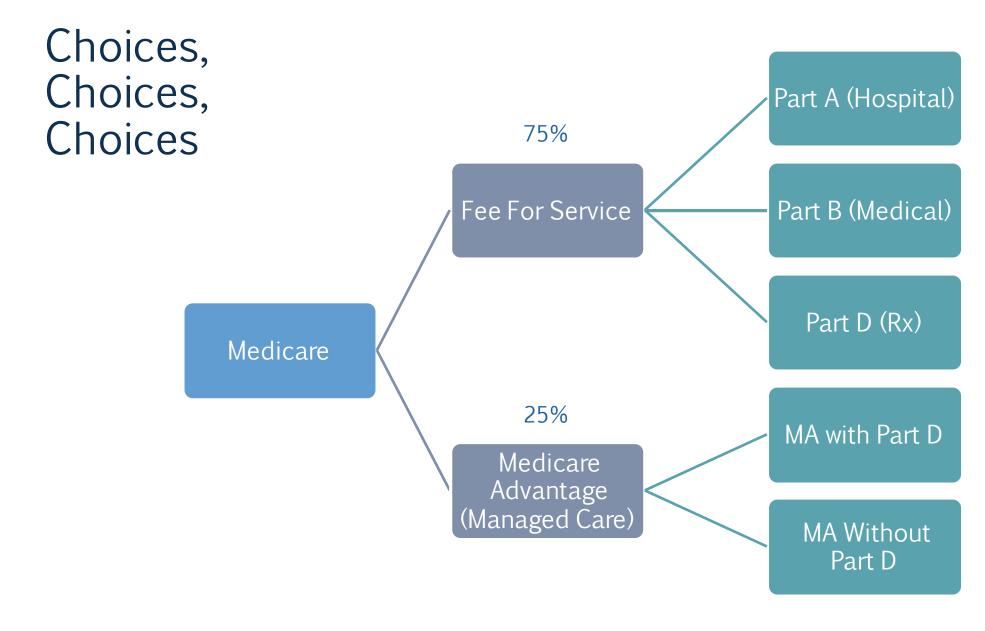


Medicare Eligibility

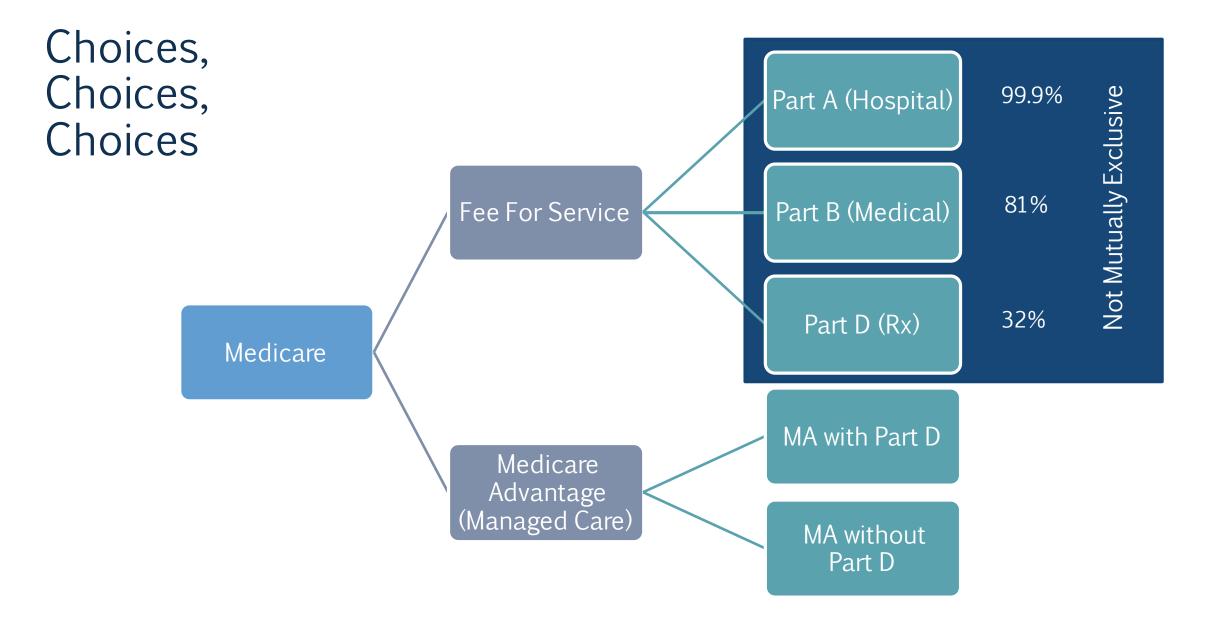
- Who is eligible for Medicare?
 - Almost everyone over age 65
 - Some disabled individuals
 - Patients with End Stage Renal Disease

- Eligibility not dependent on
 - Income
 - Other health insurance
 - VHA coverage

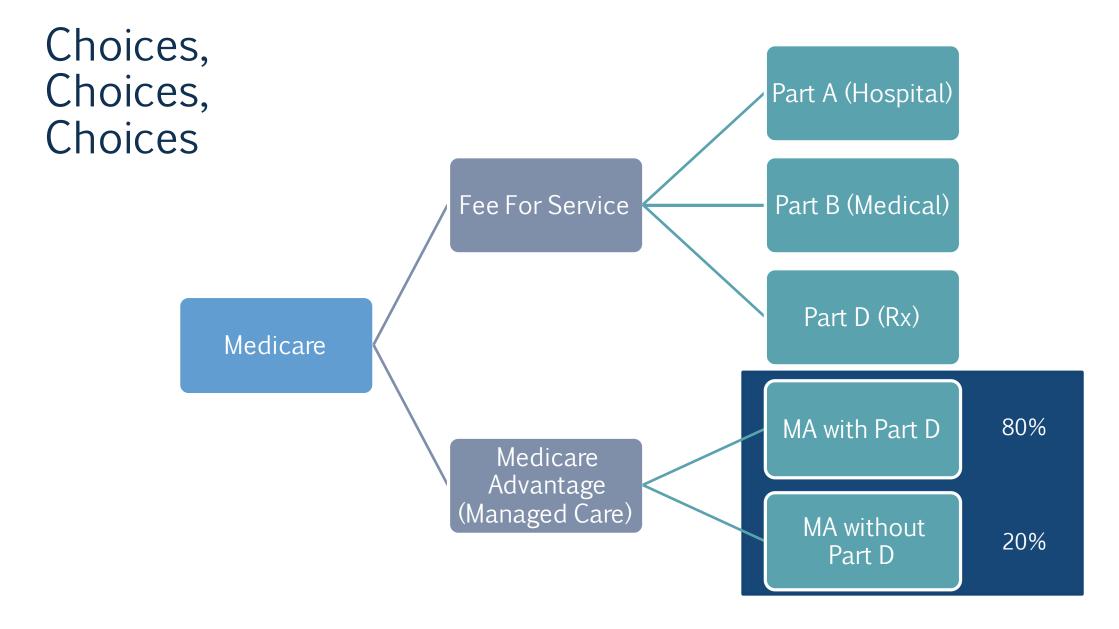




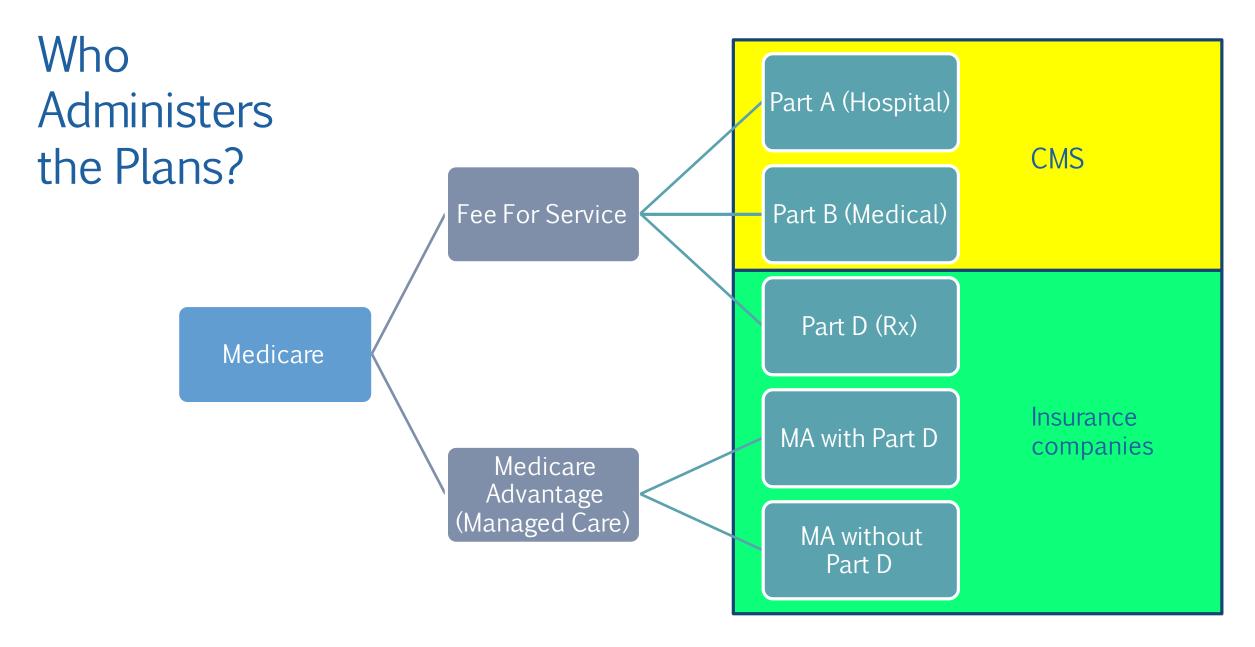




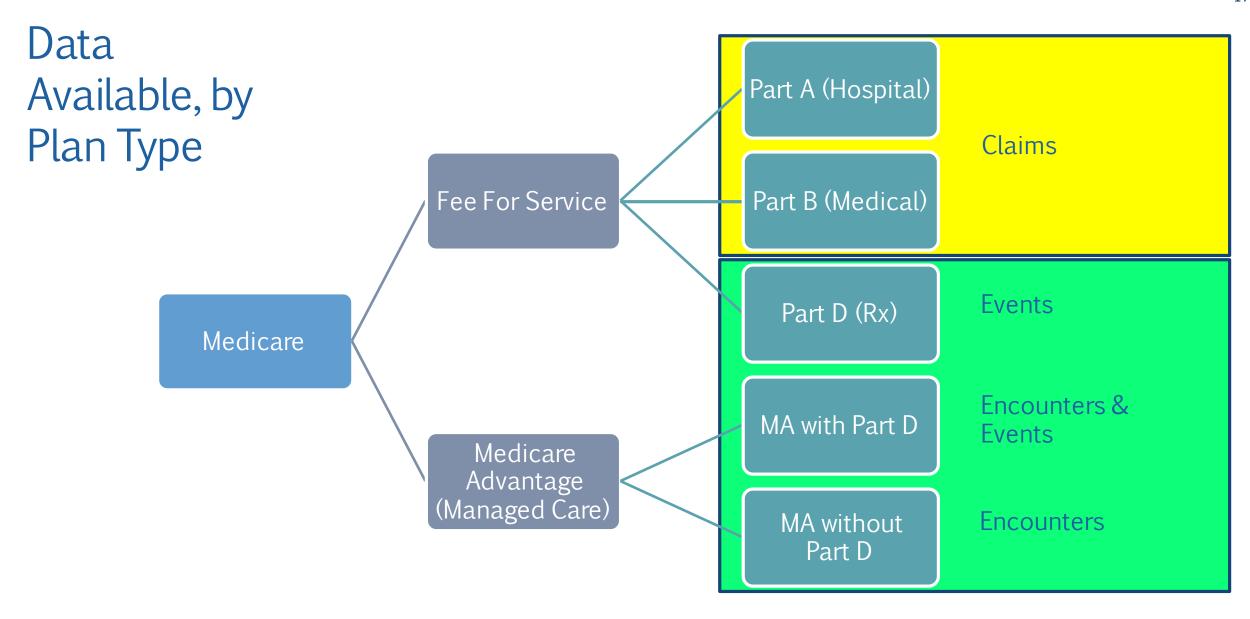




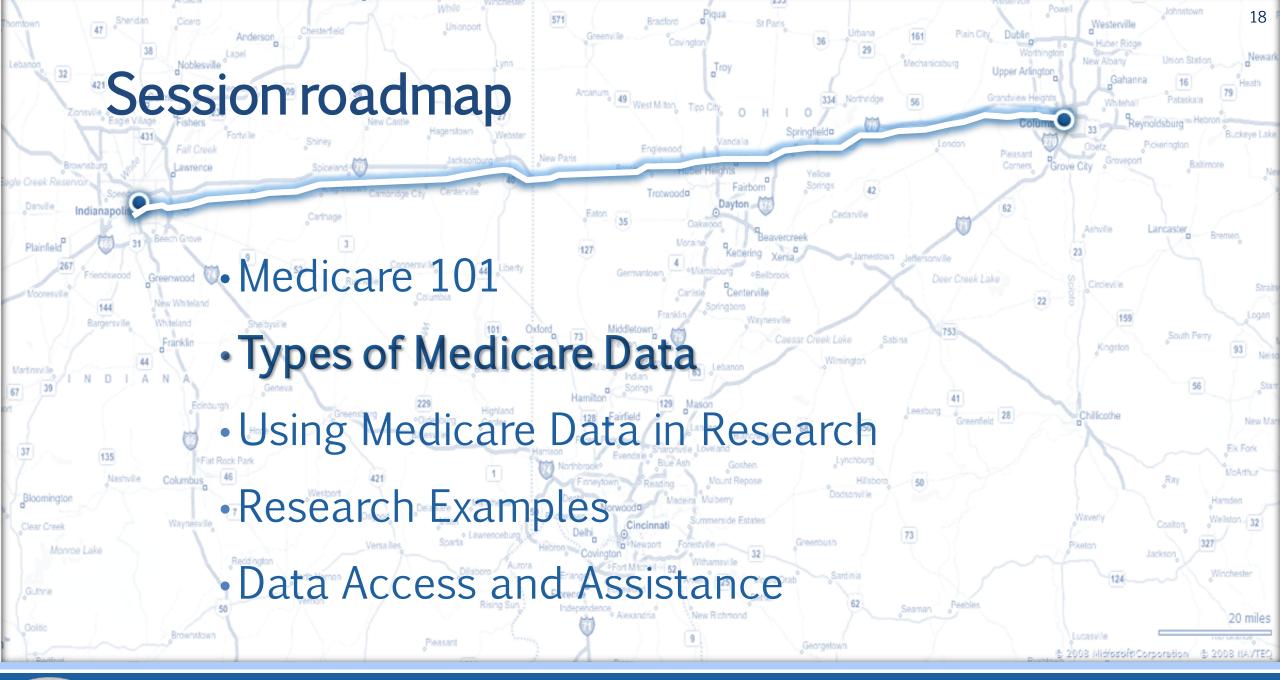












Types of Medicare Data

- Enrollment & Demographics
- Claims & Stay level file
- Part D events
- Annual Summary files
- Medicare Advantage
 - Encounter
 - HEDIS



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Enrollment & Demographic File

- One record per person, per calendar year
- Actual name varies by year
 - Denominator (1997-2008)
 - Beneficiary Summary (2009-10)
 - Master Beneficiary Summary File: Base (2011-)



Contents of Enrollment & Demographic File

- Contains monthly indicators for
 - Parts A, B, D
 - Medicare Advantage
 - Medicaid
- Demographics
 - Sex, date of birth, date of death
 - Race/ethnicity
 - State, county, ZIP
 - Does NOT contain
 - Education, marital status, income



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

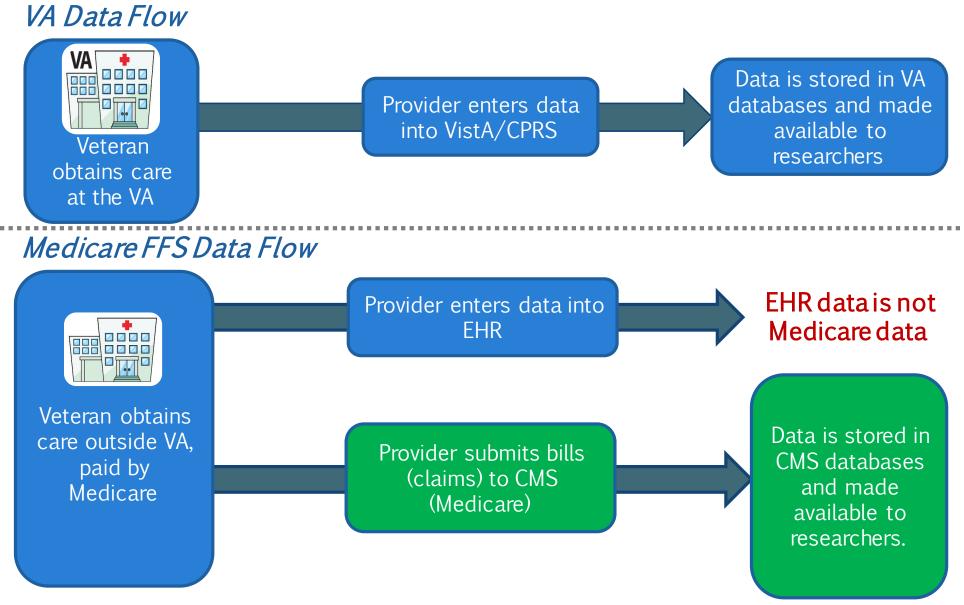


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Source of VA & Medicare Data





Type of Provider



Type of Bill



Type of Data

Institutional



Hospital or nursing facility



Home health agency or hospice



Part A or B

Part B

CMS 1450/ **UB-04**



5 Institutional Files

Inpatient **Skilled Nursing** Home Health Hospice Outpatient

Non-Institutional



laboratories

Medical **Suppliers**



Individual physicians, chiropractors, other providers



Physician groups









2 Non-Institutional Files Carrier Durable Medical Equipment





What types of information are included in Medicare claims?

COMPLETE DATA

Social Security Number

Dates of service

Provider & place of service

Costs

Procedure codes*

Diagnosis codes*

NO or INCOMPLETE DATA

Clinical data (Lab Results, Vital Signs, Symptoms)

Services not itemized (bundled services)



What does a claim represent?

- 1 claim = multiple visits
- Multiple visits to same provider, for same purpose in short time period
 - Physical therapy
 - Dialysis
 - · Home healthcare

1 claim = 1 visit

- Acute inpatient stay
- Office visits

Multiple claims = 1 visit

- Emergency room visits (hospital + physician)
- Long stays, especially in Skilled Nursing Facilities



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



MedPAR Stay-Level File

- Created from Inpatient and SNF claims
- Claims are "rolled up" to the stay level
 - Eliminates need for researchers to do this manually
- Includes some stays from Medicare Advantage enrollees

- Variables
 - Many stay-level summary variables
 - Doesn't have all variables from IP/SNF files (e.g. physician's NPI)
 - 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 centers, 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



Types of Medicare Data

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Part D Events

- 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
- Includes Part D events from all plans
 - Stand alone plans and Medicare Advantage plans



Part D Data for Research Use

 Prescription Drug Event (PDE), can be linked to characteristics of the:

- Drug
- Pharmacy
- Prescriber
- Plan
- Formulary

- Slim File is subset of PDE data, includes
 - Drug Characteristics



Currently available



Types of Medicare Data

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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



Where to find annual summary data?

Types of variables	1999-2010	2011-forward
Cost and Use	Beneficiary	MBSF: Cost and Use
Chronic Condition (commonin Medicare population)	Annual Summary File (BASF)	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



Types of Medicare Data

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 - -Encounter
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Medicare Advantage Encounter Data

- Utilization for beneficiaries in managed care plans
- Data submitted to CMS by insurance companies
- Data structure and files types are similar to claims files, except:
 - No hospice file
 - No cost variables
 - Includes chart review records

- Limitations
 - Only 2 years currently available (CY 2015-16)
 - Best practices & pitfalls unknown



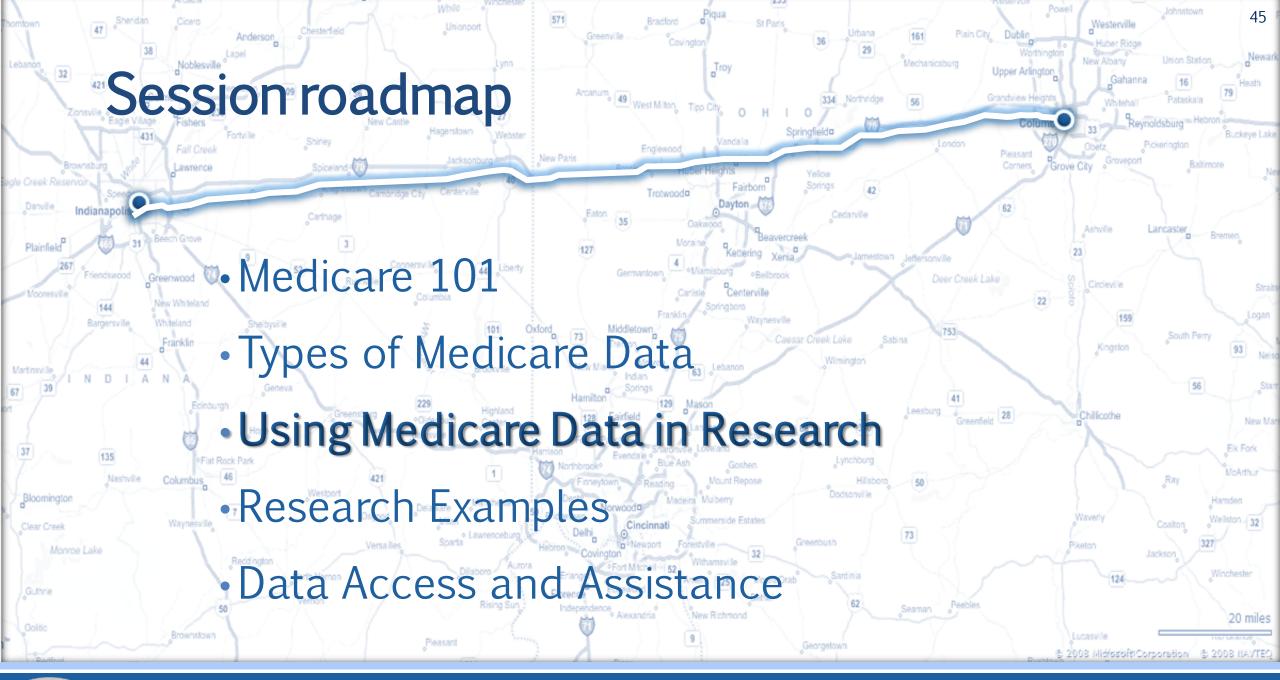
HEDIS

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
- Examples
 - Received eye exam?
 - Number of hospitalizations, length of stay

- Limitations
 - No dates, diagnosis or procedure codes, provider info
 - More limited assistance for researchers





Commonly used data elements & measures

- Procedures
- Diagnoses
- Costs
- Inpatient Stays
- 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, home health, 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



Risk Adjustment Study

- Cohort of VHA-Medicare dual users (40-60% of care in Medicare)
 - Age 66+, died from cancer FY10-14
- Data sources
 - VA Inpatient & Outpatient MedSAS
 - VA Inpatient & Outpatient Fee Basis
 - Medicare MedPAR, Outpatient, Carrier
- Comorbidities Use ICD-9 diagnosis and procedure codes
 - Elixhauser
 - Charlson

Gidwani-Marszowski, R, et al. Comorbidity Assessment Is Uneven Across Veterans Health Administration and Medicare for the Same Patient: Implications for Risk Adjustment. Med Care 2020; 58: 717–721



TABLE 2. Comorbidity Assessment in VA Versus Medicare Administrative Data

Risk Adjustment Study Results

- Clinical comorbidities were more likely to be recorded in Medicare than in VA datasets.
- Use both VA & Medicare data for complete risk adjustment

Elixhauser	VA/Fee [n (%)]	Medicare [n (%)]	P (Medicare vs. VA/Fee)	Difference in Proportions (Medicare vs. VA/Fee) (%)*
Hypertension	1852 (49.0)	2427 (64.2)	< 0.001	31
Fluid and electrolyte disorders	574 (15.2)	1588 (42.0)	< 0.001	177
Deficiency anemias	838 (22.2)	1354 (35.8)	< 0.001	62
Chronic pulmonary disease	890 (23.5)	1293 (34.2)	< 0.001	45
Diabetes without chronic complications	860 (22.7)	1068 (28.2)	< 0.001	3
Weight loss	278 (7.4)	801 (21.2)	< 0.001	188
Renal failure	485 (12.8)	755 (20.0)	< 0.001	56
Congestive heart failure	350 (9.3)	750 (19.8)	< 0.001	94
Other neurological disorders	276 (7.3)	504 (13.3)	< 0.001	83
Peripheral vascular disease	307 (8.1)	497 (13.1)	< 0.001	50
Depression	299 (7.9)	388 (10.3)	< 0.001	30
Coagulation deficiency	128 (3.4)	377 (10.0)	< 0.001	195
Hypothyroidism	281 (7.4)	373 (9.9)	< 0.001	33
Valvular disease	133 (3.5)	272 (7.2)	< 0.001	105
Diabetes with chronic complications	189 (5.0)	235 (6.2)	0.0083	22
Pulmonary circulation disorders	123 (3.3)	215 (5.7)	< 0.001	75
Paralysis	67 (1.8)	198 (5.2)	< 0.001	196
Obesity	111 (2.9)	173 (4.6)	< 0.001	56
Liver disease	96 (2.5)	162 (4.3)	< 0.001	69
Alcohol abuse	95 (2.5)	145 (3.8)	0.002	53
Psychoses	108 (2.95)	132 (3.5)	0.0833	22
Blood loss anemia	36 (1.0)	109 (2.9)	< 0.001	203

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 Stay: Common Measures

- Number of stays
- Length of stay
- Readmissions



Identifying Inpatient Stays

Inpatient care are provided by institutional providers.

(And often non-institutional providers too)

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



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

Choose **MedPAR** when studying:

- Number of stays
- Length of stay
- Total payments

Choose **Inpatient** when studying:

- Detailed charges
- · Physicians' NPI
- All diagnosis & procedure codes

Add **Carrier** when studying:

- Consults
- · All procedures



Inpatient Stays: VA vs. Medicare

VA Facility

- Acute care
- Rehab

Medicare

- Acute care facility
- Rehab care facility



Outpatient Visits: Common Measures

- Number of visits
- Type of visits



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

Use **Outpatient** when studying:

 Services provided in a facility

Use **Carrier** when studying:

Physician services

Add **Home Health** when studying:

 Services that could be provided at home, like physical therapy

Some events will have claims in both files



Outpatient Visits: VA vs. Medicare

VA (same day)

- Primary care
- Specialist
- Therapy

Medicare

- Primary care
- Specialist
- Therapy



Are annual summary files right for me?

Pros

Easy to work with, small files

How many people in my cohort used Medicare?

Who has been diagnosed with lung cancer?

Cons

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

How many people were hospitalized in 2010?





Common says Medicare data are used in VA research

Compare groups of users

- · VA users
- · Medicare users
- · "Dual" users

Add Medicare data for more complete healthcare utilization or health status



Example 1

Ambulatory Care Fragmentation and Hospitalization Among Veterans With Diabetes

Mangala Rajan, MBA; Drew Helmer, MD; Mazhgan Rowneki, MS; Dennis Fried, PhD, MBA; and Lisa M. Kern, MD, MPH

Rajan M, et al. Ambulatory Care Fragmentation and Hospitalization Among Veterans With Diabetes. Am J Managed Care. 2020; 27(4): In Press.



Overview (Rajan, 2020)

Objective

To determine whether having a usual provider of care outside VHA and whether having highly fragmented care increases the risk of hospitalization among Veterans with diabetes

Cohort

- Community dwelling Veterans with diabetes age 65+
- Enrolled in VHA and Medicare 2005-2010
- Approximately 500,000 for each of 5 overlapping cohorts



Methods (Rajan, 2020)

Data Sources

- VA utilization data
- Medicare Parts A & B utilization data

Used VA and Medicare data to

- Identify patients with diabetes
- Calculate Charlson comorbidity score
- Capture provider data (NPI) to identify Usual Provider of Care (UPC) and to measure care fragmentation
- Outcomes: hospitalization



TABLE 2. Ambulatory Care and Hospitalizations by Fragmentation and UPC Categories Among Veterans With Diabetes for Each 2-Year Period

Years	Total	Low fragmentation scores (rBBI < 0.85)	High fragmentation scores (rBBI≥0.85)
F	irst 2-year period		
Ambulatory care, 2005			
n	492.479	325,193	167,286
n (%) with non-VHA UPC	347,346 (70.5%)	230,128 (70.8%)	117,218 (70.1%)
n (%) with VHA UPC	145,133 (29.5%)	95,065 (29.2%)	50,068 (29.9%)
Hospitalizations, 2006			
n (%) with at least 1 hospitalization	142,359 (28.9%)	90,025 (27.7%)	52,334 (31.3%)
Among non-VHA UPC	104,006 (29.9%)	66,305 (28.8%)	37,701 (32.2%)
Among VHA UPC	38,353 (26.4%)	23,720 (25.0%)	14,633 (29.2%)

Selected Results (Rajan, 2020)

TABLE 3. Association Between Fragmentation and Any Hospital Admission in the Subsequent Year From 2006 to 2010^a

Outcome: hospital admissions	Odds ratio (95% CI)	
Model 1: fragmentation score (high vs low)	1.07 (1.06-1.08)	
Model 2: UPC (non-VHA vs VHA)	1.11 (1.10-1.12)	
Model 3: analysis using a 4-level variable that incorporates fragmentation score and UPC		
Group 1: veterans with low fragmentation and a VHA UPC	Reference	
Group 2: veterans with high fragmentation and a VHA UPC	1.11 (1.10-1.13)	
Group 3: veterans with low fragmentation and a non-VHA UPC	1.13 (1.10-1.14)	
Group 4: veterans with high fragmentation and a non-VHA UPC	1.19 (1.18-1.20)	



Example 2

JAMA | Original Investigation

Association of Statin Use With All-Cause and Cardiovascular Mortality in US Veterans 75 Years and Older

Ariela R. Orkaby, MD, MPH; Jane A. Driver, MD, MPH; Yuk-Lam Ho, MPH; Bing Lu, MD, PhD; Lauren Costa, MPH; Jacqueline Honerlaw, RN, MPH; Ashley Galloway, MPH; Jason L. Vassy, MD, MPH; Daniel E. Forman, MD; J. Michael Gaziano, MD, MPH; David R. Gagnon, MD, PhD; Peter W. F. Wilson, MD; Kelly Cho, PhD; Luc Djousse, MD, ScD

Orkaby A, et al. Association of Statin Use With All-Cause and Cardiovascular Mortality in US Veterans 75 Years and Older. JAMA. 2020 324(1): 68-78.



Overview (Orkaby, 2020)

Objective

To evaluate the role of statin use for mortality and primary prevention of atherosclerotic cardiovascular disease (ASCVD)

Cohort

- Veterans age 75+
- Used VHA 2002-2012
- No ASCVD diagnosis or prior statin use
- N=326,981



Methods (Orkaby, 2020)

Data Sources

- VA CDW
- Medicare & Medicaid claims and pharmacy data
- National Death Index (NDI)

Used VA and Medicare data to capture

- Diagnosis codes to assess comorbidities
- Statin prescriptions
- Outcomes: MI, stroke, CABG surgery or PCI



Selected Results (Orkaby, 2020)

Table 2. Association Between Statin Use, All-Cause Mortality, and Major Cardiovascular Events in 326 981 US Veterans 75 Years and Older Free of Atherosclerotic Cardiovascular Disease at Baseline, After Propensity Score Overlap Weighting

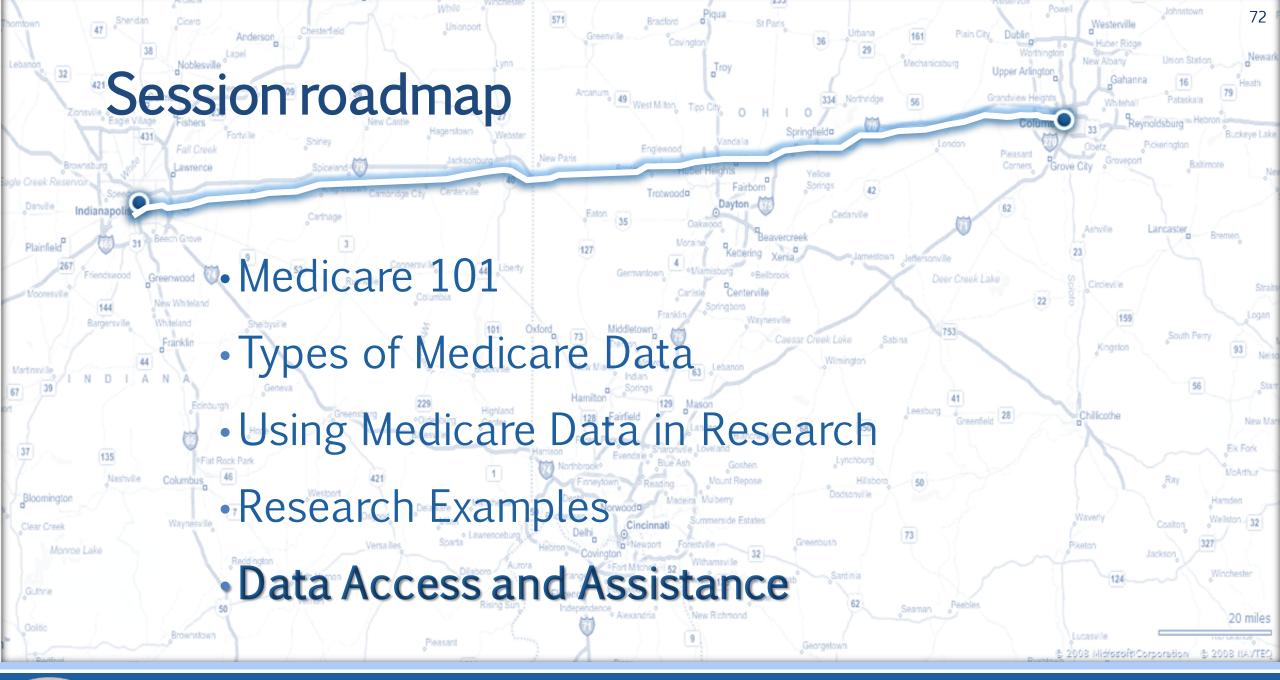
	Weighted rate/10	000 person-years	_ Weighted incidence rate		
Outcome	Statin user (N = 57 178)	Statin nonuser (N = 269 803)	difference/1000 person-years (95% CI) ^a	HR (95% CI)	P value
Primary outcomes					
All-cause mortality (n = 206 902)	78.7	98.2	-19.45 (-20.38 to -18.52)	0.75 (0.74 to 0.76)	<.001
All CV death (n = 53 296)	22.6	25.7	-3.09 (-3.63 to -2.55)	0.80 (0.78 to 0.81)	<.001
Secondary outcomes				\succ	
ASCVD composite (n = 123 379) ^b	66.3	70.4	-4.05 (-5.09 to -3.02)	0.92 (0.91 to 0.94)	<.001
Myocardial infarction ($n = 24951$)	13.2	12.6	0.56 (0.13 to 0.98)	0.99 (0.97 to 1.03)	.94
Ischemic stroke (n = 35 630)	18.4	18.2	0.25 (-0.26 to 0.76)	0.98 (0.96 to 1.01)	.20
CABG surgery/PCI (n = 74 362)	35.2	39.2	-3.38 (-4.12 to -2.64)	0.89 (0.88 to 0.91)	<.001

Abbreviations: ASCVD, atherosclerotic cardiovascular disease; CABG, coronary artery bypass graft; CV, cardiovascular; HR, hazard ratio; PCI, percutaneous coronary intervention.



^a Weighted incidence rate difference comparing statin users to nonusers after overlap weighting was applied.

^b ASCVD composite: time to first MI or ischemic stroke or CABG/PCI. There were fewer composite ASCVD events compared with total individual events, as participants were censored at first event of interest.





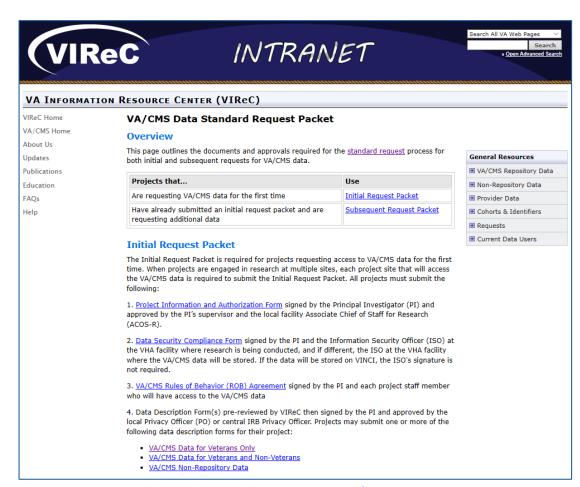
- The data steward for Centers for Medicare & Medicaid Services (CMS) data used for VA research
- Distributing data from to VA approved projects since 2003
- Providing assistance to VA research projects using CMS data
- No cost to VA researchers



Requesting Medicare data

- Pre-Request Consultation
- Request Process and Forms
- Data Descriptions and Documentation

virec.vacmsdata@va.gov



<u>vaww.virec.research.va.gov/Index-VACMS.htm</u> (VA intranet only)



VIReC Options for Specific Questions

HSRData Listserv

- Community knowledge sharing
- ~1,400 VA data users
- Researchers, operations, data stewards, managers
- Subscribe by visiting
 https://vaww.virec.research.va.gov/Suppor
 t/HSRData-L.htm(VA Intranet)

HelpDesk

Individualized support



virec@va.gov

(708) 202-2413







- Field office of VHA's Chief Strategy Office
- Data steward for CMS (Medicare) data used for VHA operations
 - VHA Program Offices
 - Quality Improvement/Quality Assurance
- vaww.va.gov/medicareanalysis/
 (VA intranet only)





- 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



- Documentation
 - Data dictionaries
 - Summary tables
 - User guides & technical guides
 - White papers & presentations
- www.ccwdata.org



Thank you! Questions?



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Database & Methods Cyberseminar Series

Next session:

January 4th at 1 pm Eastern

Meet VIReC: The Researcher's Guide to VA Data



Additional Resources



Electronic Health Record Modernization Resources for Researchers

"EHRM & Research" page on the Research Resource Guide SharePoint

https://dvagov.sharepoint.com/sites/VHAPugResearch/RRG/Pages/EHRM-Research.aspx

"EHRM and Implications for Data Users" page on the VIReC website

https://vaww.virec.research.va.gov/EHRM/Overview-and-Implications.htm

Data Management and Migration Knowledgebase" on the Data Migration, Management, and Syndication SharePoint

https://vaww.cdw.va.gov/sites/EHRMDataIntegration/DIRAKnowledgeShare/Pages/DIRAKnowledgeShare Home.aspx

Syndicated Data Bits - Weekly Webinars

https://tinyurl.com/y3wgxzu5

Office of Electronic Health Record Modernization (OEHRM) Intranet site

https://vaww.ehrm.va.gov/



Quick Guide: Resources for Using VA Data

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

VIReC: https://vaww.virec.research.va.gov/Index.htm (VA Intranet)

VIReC Cyberseminars: https://www.virec.research.va.gov/Resources/Cyberseminars.asp

VHA Data Portal: https://vaww.vhadataportal.med.va.gov/Home.aspx (VA Intranet)

VINCI: https://vaww.vinci.med.va.gov/vincicentral/ (VA Intranet)

Health Economics Resource Center (HERC): https://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?

https://www.hsrd.research.va.gov/for researchers/cyber seminars/archives/video archive.cfm?SessionID=1014

