

## **Database & Methods Cyberseminar Series**

### **Session #4. *Ascertaining Veterans' Vital Status: VA Data Sources for Mortality Ascertainment and Cause of Death***

*The objectives of this cyberseminar are to:*

- Identify data sources for Veteran vital status ascertainment
- Understand the contents and structure of the VA Vital Status Files and their appropriate use for mortality ascertainment
- Describe the respective strengths and limitations of available VA data sources for mortality ascertainment
- Identify other relevant sources of death data including the National Death Index and state death certificates
- Demonstrate how these data resources can be used in research studies

## Session roadmap

- Data sources for Veteran vital status ascertainment
- VHA Vital Status Files
- Data sources for Veteran & Non-Veteran mortality
- Date of Death Workgroup
- Other resources for mortality data
- Examples of using mortality data for research

# Poll Question #1

**What is your role in research and/or quality improvement?**

- Investigator, PI, Co-I
- Data manager, analyst, or programmer
- Project coordinator
- Other – please describe via the Q&A function

## Poll Question #2

**How would you rate your knowledge of methods to ascertain death dates for Veterans in the VA?**

- a. 1 (No knowledge)
- b. 2
- c. 3
- d. 4
- e. 5 (Expert)

# Session roadmap

- **Data sources for Veteran vital status ascertainment**
  - Sources in VHA Vital Status Files
  - Sources not in VHA Vital Status Files
- VHA Vital Status Files
- Data sources for Veteran & Non-Veteran mortality
- Date of Death Workgroup
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# BIRLS Death File

<b>Received from</b>	Veterans Benefits Administration (VBA) Beneficiary Identification and Records Locator System (BIRLS) database extract
<b>Information Sources</b>	Family, VHA hospitals, VA National Cemetery Administration, Social Security Administration (SSA)
<b>Coverage</b>	Veterans known to VA
<b>Update Schedule</b>	Monthly (complete overlay)
<b>Location</b>	Austin Information Technology Center (AITC) and on VINCI



**Available in the VSF**

# VA/CMS Medicare Vital Status File

<b>Received from</b>	Centers for Medicare & Medicaid Services (CMS) annually
<b>Information Sources</b>	SSA, Medicare claims, Other (e.g., family)
<b>Coverage</b>	Veterans enrolled in Medicare ( $\geq 65$ years old or disabled)
<b>Update Schedule</b>	Annual (deaths through October 2017)
<b>Location</b>	Available from VIREC



Available in the VSF



# SSA Death Master File

<b>Received from</b>	Social Security Administration (SSA)
<b>Information Sources</b>	Family, funeral directors, post offices, financial institutions, other federal agencies, state vital records agencies
<b>Coverage</b>	Individuals with SSN (first issued 1936) Includes deaths occurring outside United States More complete for over 65 population and for beneficiaries
<b>Update Schedule</b>	Weekly (and VA receives annual overlay)
<b>Location</b>	AITC



Available in the VSF

# Medical SAS Inpatient File

<b>Received from</b>	Austin Information Technology Center (AITC)
<b>Information Sources</b>	VistA PTF File (#45), Date of Disposition (DISDAY), and Type of Disposition (DISTYPE) fields
<b>Coverage</b>	Inpatient deaths in VA facilities Inpatient deaths in non-VA hospitals
<b>Update Schedule</b>	Weekly
<b>Location</b>	AITC (MedSAS) and Corporate Data Warehouse (CDW)



Available in the VSF

# Corporate Data Warehouse (CDW)

<b>Received from</b>	Corporate Data Warehouse (CDW)
<b>Information Sources</b>	VISTA
<b>Coverage</b>	Deaths verified by official source including VHA facilities, death certificates, and National Cemetery Administration (NCA)
<b>Update Schedule</b>	Daily
<b>Location</b>	[CDW Patient 3.0 ]

 Not Available in the VSF

# CDW

## SPatient.SPpatient Table

*Columns were updated in 2017 Patient release*

### *Columns*

#### **DeathDateTime**

*DeathVistaErrorDate and DeathDateTransformSID  
Death date may contain defaulted month and day*

#### **DeceasedFlag (created by CDW)**

*Flag set to 'Y' if there is information in the DeathDateTime column that can be converted to a date and 'N' otherwise. There are a small number of records with invalid values in the death date time that have an 'N' in this column, previously the Deceased column contained a 'Y' for these records.*

# CDW

## New Fields

*Fields*

**DeathDocumentationType**

**DeathEnteredByStaffSID**

**DeathLastUpdatedByStaffSID**

**DeathModifiedDateTime**

**DeathModifiedDateTimeTransformSID**

**DeathModifiedVistaErrorDate**

**DeathNotificationSource**

# CDW Limitations

Current policy: Information to be entered from “official sources” only

- **VHA Directive 1906**

- *VHA facility* (if patient died in the VHA facility or while under VA auspices)
- *Death certificate*
- *National Cemetery Administration*

- **38 CFR 3.211 – Death**

- **EVVE Certification**

CDW Date of Death Analysis and Vital Status File Comparison

# Session roadmap

- Data sources for Veteran vital status ascertainment
- **VHA Vital Status Files**
  - Structure and contents
  - Challenges in using the VHA VSF
- Data sources for Veteran & Non-Veteran mortality
- Date of Death Workgroup
- Other resources for mortality data
- Examples of using mortality data for research

## Poll Question #3

**Have you ever used the VHA VSF?**

- a. Yes, both the Master File and Mini File
- b. Yes, only the Mini File
- c. Yes, only the Master File
- d. No



# VHA VSF Background

- Single sources are incomplete
- Using the National Death Index as the gold standard:

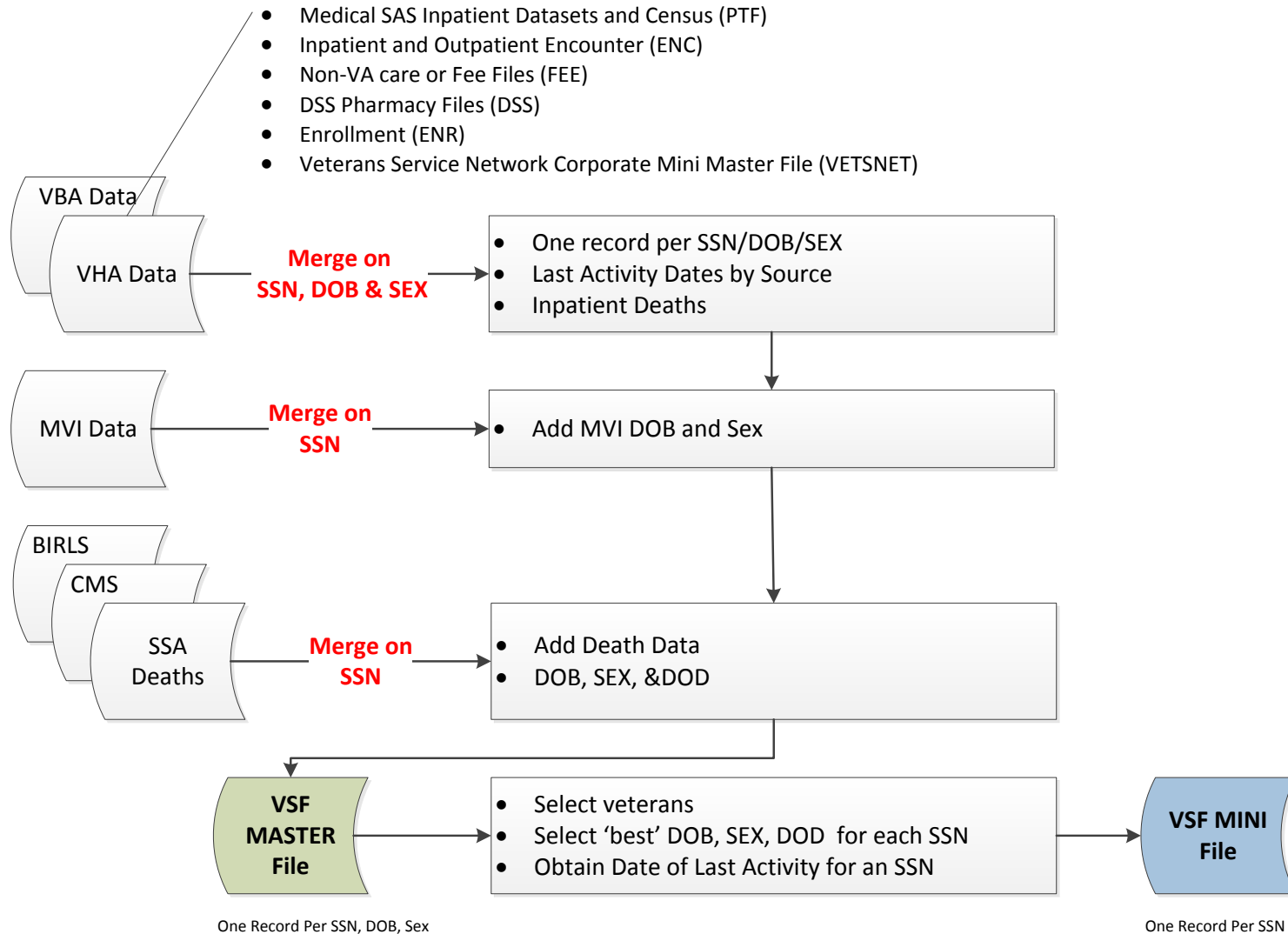
DOD Source	Sensitivity
BIRLS	64-80%
VA/CMS Medicare	83%
SSA	89-95%
PTF	5-12%

- Combined sources provide **97.5%-98.3% sensitivity**
- VIREC VA-NDI Mortality Data Merge Project

# VHA VSF Creation

<b>Owner</b>	Built by National Data Systems (NDS) First available in October 2006
<b>Data Access</b>	See VHA Data Portal website: <a href="http://vaww.vhadataportal.med.va.gov/Home.aspx">http://vaww.vhadataportal.med.va.gov/Home.aspx</a> (Intranet only)
<b>Coverage</b>	Veterans known to VA VHA activity FY 1992 or later VBA compensation and pension
<b>Update Schedule</b>	Updated quarterly
<b>Files</b>	Two files + conversion file: Master, Mini, scrambled/real SSN

# Construction of VHA VSF



# More detail on VHA VSF Construction

VIReC Database & Methods Cyberseminar Series

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

May 4, 2015

**Presented by:**

Noreen Arnold, M.A.L.S., M.S, Data Quality Analyst  
VHA OIA Data Quality Program

Claire Hoffmire, PhD, Epidemiologist  
VISN19 Rocky Mountain MIRECC for Suicide Prevention

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

Noreen Arnold, MS & Claire Hoffmire, PhD

5/4/2015

[http://www.hsrd.research.va.gov/for\\_researchers/cyber\\_seminars/archives/video\\_archive.cfm?SessionID=982](http://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=982)

2014 VIReC Database and Methods Cyber Seminar Series

## Ascertaining Veterans' Vital Status and Dates of Death:

The VHA Vital Status File and Other  
Data Sources for Mortality  
Ascertainment in VA

July 14, 2014

Elizabeth Tarlov, PhD, RN



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## Ascertaining Veterans' Vital Status and Dates of Death: The VHA Vital Status File and Other Data Sources for Mortality Ascertainment in VA

Elizabeth Tarlov, PhD

7/14/2014

[http://www.hsrd.research.va.gov/for\\_researchers/cyber\\_seminars/archives/video\\_archive.cfm?SessionID=857](http://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=857)

# Vital Status Files

January 8, 2019

Master	Mini
	<i>Combined data from multiple Master records</i>
Veterans & Non-Veterans	Veterans only
1 record per SSN/DOB/Sex combination	1 record per SSN
125 variables	16 variables
31,265,546 records	19,168,889 records
21,696,734 SSNs	19,168,889 SSNs
39% of SSNs have >1 record (8,514,506)	-

# Vital Status Mini Contents

1/8/2019  
*n* = 19,168,889

Variable	Label
ACT_LAST_DT	LAST HEALTHCARE OR BENEFIT ACTIVITY DATE
ACT_LAST_DT_IND	LAST HEALTHCARE OR BENEFIT ACTIVITY DATE INDICATOR
ACT_LAST_DT_SRC	LAST HEALTHCARE OR BENEFIT ACTIVITY DATE SOURCE
DOB	BEST DATE OF BIRTH
DOB_IND	BEST DATE OF BIRTH INDICATOR
DOB_SRC	DATA SOURCE BEST DATE OF BIRTH
DOD	BEST DATE OF DEATH
DOD_IND	BEST DATE OF DEATH INDICATOR
DOD_SRC	DATA SOURCE BEST DATE OF DEATH
LIVING_IND	PRESUMED LIVING INDICATOR
SCRSSN	SCRAMBLED SOCIAL SECURITY NUMBER
SEX	BEST GENDER
USE_AFTER_DTH_FLG	UTL_LAST_DT IS GT DOD +31 DAYS (0=NO 1=YES)
UTL_LAST_DT	LAST HEALTHCARE UTILIZATION DATE
UTL_LAST_DT_IND	LAST HEALTHCARE UTILIZATION DATE INDICATOR
UTL_LAST_DT_SRC	LAST HEALTHCARE UTILIZATION DATE SOURCE

# Best DOB and DOD Sources on VSF Mini

*VHA VSF Mini on January 8, 2019*

## Best Birth Date Data Source

BIRLS DEATH FILE	1,194
MEDICARE DATA	500,294
DECISION SUPPORT SYSTEM	10,906
OUTPT/INPAT ENCOUNTER	1,742,011
ENROLLMENT SYSTEM	99,263
FEE BASIS	6,780
MVI	16,413,512
PATIENT TREATMENT FILE	130,297
SOCIAL SECURITY DEATH FILE	22,431
VBA	242,201
<b>Total</b>	<b>19,168,889</b>

## Best Death Date Data Source

No Death Date	11,694,950
BIRLS DEATH FILE	174,115
MEDICARE DATA	4,513,388
FEE BASIS	103,842
PATIENT TREATMENT FILE	822,105
SOCIAL SECURITY DEATH FILE	1,860,489
<b>Total</b>	<b>19,168,889</b>






# Potential Challenges when using VHA VSF

- Demographics do not match
- Multiple dates of death
- Activity after date of death
- Erroneously recorded dates of death in sources

***Note: VHA VSF should not be used for business operations regarding individual veterans***



# Possible Strategies for Matching Cohorts

<b>Use the Mini File for the initial search for deaths</b>		<i>Match on SSN</i>
<b>Use the Master File to investigate unusual cases</b>		<p><i>For example:</i></p> <ul style="list-style-type: none"> <li>• Cohort DOB/Sex do not match Mini DOB/Sex</li> <li>• May be records on the Master File with matching demographics</li> </ul>
<b>Activity after death</b>		<ul style="list-style-type: none"> <li>• Check DOB/Sex for DOD sources on Master File</li> <li>• Are all DOD on Master File the same?</li> </ul>
<b>Consider additional supplementary data sources</b>		<p><i>Use the NDI or State Vital Statistics Offices for cases lost to follow up, i.e.,</i></p> <ul style="list-style-type: none"> <li>• No death date</li> <li>• No VHA or VBA activity after end of follow up</li> </ul>
<b>Consider using CDW</b>		<i>Use for individuals without activity after 1991 or very recent deaths</i>

# Session roadmap

- Data sources for Veteran vital status ascertainment
- VHA Vital Status Files
- **Data sources for Veteran & Non-Veteran mortality**
- Date of Death Workgroup
- Other resources for mortality data
- Examples of using mortality data for research

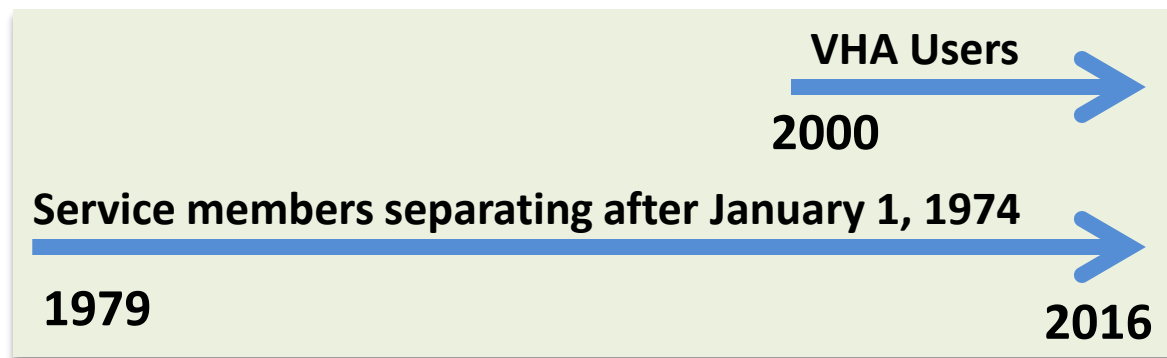
# National Death Index

- Gold standard for death ascertainment
- Available from the National Center for Health Statistics
  - Source of data: State Vital Statistics Offices
  - Records from 1979 through 2018 early release (~12 month lag)
- Contains cause of death from death certificates
- Information about fees & access:
  - <http://www.cdc.gov/nchs/ndi.htm>
- Suicide Data Repository

# National Death Index for Veterans

CDC's National Death Index Plus contains ~3.0 million records (1979-2016)

- Date and cause of death (ICD-10 codes)
- Veteran decedents only, all causes of death
- Current mortality archive:
  - Service members who separated from active duty service (including deactivation NG & Reserve) between 1979-2011
  - All users of VHA services, FY2000-2016
  - Please see <http://vaww.virec.research.va.gov/Mortality/Overview.htm>



# National Death Index for Veterans

**Availability**

Suicide Data Repository (SDR), which is administered jointly between VA Office of Mental Health and DoD

**Data Access**

All applications for access to NDI data available from SDR

Reviewed by a joint VA-DoD Board of Governance (meets quarterly – January, April, July, October)

**Contact Information**

Contact [VHACANSDRDataRequests@va.gov](mailto:VHACANSDRDataRequests@va.gov) for more information about accessing NDI data from the SDR.

Data through 2016 will be available soon.

# SSA Epidemiological Search

- Provides date of death
- Validates SSN
- Provides 'presumed living' status
  - Based on SSA administrative data including:
    - Payroll deductions, railroad retirement or disability payments, death claims filed by beneficiaries
    - Advantage: Reduces loss to follow up
- Deaths occurring outside the US
- Fees & Access
  - <http://www.ssa.gov/policy/about/epidemiology.html>

# State Death Certificates

- States' policies regarding the release of death certificates vary considerably, as deceased individuals are not human subjects.
- An informal review of state vital statistics offices websites revealed that 24 mentioned a process for obtaining death records.

# State Death Certificates

## Advantages and Disadvantages

- Veteran status is reported on the death certificate.
- The whole death record, including contributing causes and not just underlying cause, is available.
- With identifiers can be linked to VA data.
- Limited in scope-not all states allow release of records for research.
- Death record is the official record but concerns about accuracy of information remain.



# Defense Manpower Data Center (DMDC)

- Contains files that report casualties in past and ongoing conflicts.
- These publicly available files contain the actual names, rank, pay grade, unit, and place of death.
- This reporting is part of the Defense Casualty Analysis System (DCAS).
- For more information:  
<https://dcas.dmdc.osd.mil/dcas/pages/casualties.xhtml>
- These files have been used for research purposes, e.g. The association of state per capita income and military service deaths in the Vietnam and Iraq wars. *Population Health Metrics* 2009; 9:2.

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# Date of Death Project

- VHA Date of Death Workgroup evolved into the Date of Death Project that now includes leadership and participation from VHA, VBA, and NCA
- Purpose: improve VA ascertainment and documentation of death of individuals known to the VA
- Develop processes and procedures to improve accuracy and completeness of date of death
- Master Veteran Index (MVI) is the authoritative service for date of death
- Electronic Verification of Vital Events is now in use at the VA

# Date of Death Project (cont.)

EVVE – Electronic Verification of Vital Events

- NAPHSIS
  - National Association for Public Health Statistics and Information Systems
- Online query system of state vital statistics data bases
  - Death Certificates
  - Birth Certificates

## Date of Death Project (cont.)

### Status

- MVI became the authoritative source for date of death in August 2017.
- In the fall of 2017, MVI was seeded with dates of death originating from VistA.
- In November 2017, MVI began accepting dates of death from the weekly SSA DMF file after internal verification of the deaths.
- The MVI in 2019 includes deaths from the SSA DMF.
- Dates of death in the MVI are being pushed out to the VistA records, thus more death dates will be found in the CDW.

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# CDC National Center for Health Statistics

- The Centers for Disease Control (CDC) also has a number of death search tools as well as limited individual death files.
- Examples include CDC Wonder underlying cause of death search tool
  - <http://wonder.cdc.gov>
  - Individual level multiple cause of death files are also available
  - [http://www.cdc.gov/nchs/data\\_access/VitalStatsOnline.htm#Mortality\\_Multiple](http://www.cdc.gov/nchs/data_access/VitalStatsOnline.htm#Mortality_Multiple)

# CDC Injury Prevention & Control

## Data & Statistics

- Web-based Injury Statistics Query and Reporting System (WISQARS)
  - <http://www.cdc.gov/injury/wisqars/index.html>
- These databases have limited information due to privacy concerns, but have research applications.
- Essentially these files are de-identified.



# Benefits of Additional Mortality Information

- Findings derived from information on VHA Veterans alone are unlikely to be broadly generalizable to all Veterans
  - 70% of the 22 million living U.S. Veterans in 2012 not enrolled/using VHA service
- Relative to the Vital Status File, additional data sources allow VA researchers to:
  - Study the whole/general Veteran population
  - Compare Veterans who use VHA services prior to death to those who do not
  - Compare Veteran and non-Veteran by cause of death

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## Service Connected Disability (Veteran National Death Index)

- Maynard et al. Cause of death in Veterans with service connected conditions, *Military Medicine* 2018;183:e371-e376.
- Veterans were categorized by 3 age groups, corresponding to period of service.
- In the group born after 1957, cardiovascular disease and cancer accounted for about 1/3 of deaths, whereas deaths due to accidents, suicide, or assault accounted for nearly 35% of deaths.

## Service Connected Disability and One Year Survival

- Maynard et al. Disability rating and one-year mortality in Veterans with service connected conditions. *Public Health Reports* 2018;133:692-699.
- Linked VETNSET file with VS Mini file.
- Veterans with a 100% rating had poorer 1 year survival than did those with lower ratings.

# State Death Certificates

- Washington State offers death records for purchase.
- Files of decedent names and the death records themselves are available from 1968 to current with each file costing \$20 per year.
- For more information:  
<http://www.doh.wa.gov/DataandStatisticalReports/VitalStatisticsData/OrderDataFiles>.

# Studies using Washington State Death Records

- Dominitz, et al. Assessment of vital status in Department of Veterans Affairs National Databases: Comparison with state death certificates. *Annals of Epidemiology* 2001;11:281-86.
- Maynard, et al. Differences in cause of death between Washington State veterans who did and did not use VA health care services. *Journal of Rehabilitation Research and Development* 2006;43:825-830.
- Maynard, et al. Suicide rates in the Washington State veteran population. *Psychiatric Services* 2008;6:3.
- Maynard, et al. Cause of death in Washington state veterans hospitalized with acute coronary syndromes in the Veterans Health Administration. *Population Health Metrics* 2008;6:3.
- Maynard. Accidental deaths in Veterans and non-veterans in Washington State. *Internet Journal of Epidemiology* 2010;8:2.
- Maynard. Cause of death in middle age white non-Hispanic Washington State veterans, 2000-2003. *Internet Journal of Epidemiology* 2015;13:1.

# Additional Resources

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# Mortality Data Sources Cheat Sheet

Data Source	Coverage	Update schedule	Included in VHA VSF?
<b>BIRLS Death File</b>	Veterans known to VA	Monthly (complete overlay)	<b>YES</b>
<b>VA/CMS Medicare Vital Status File</b>	Veterans enrolled in Medicare (≥65 years old or disabled)	Annual	<b>YES</b>
<b>SSA Death Master File</b>	Individuals with SSN (first issued 1936); Includes deaths occurring outside United States; More complete for over 65 population and for beneficiaries	Weekly (and VA receives annual overlay)	<b>YES</b>
<b>Patient Treatment File</b>	Inpatient deaths (VA hospitals, Non-VA when covered by VA)	Weekly	<b>YES</b>
<b>Corporate Data Warehouse</b>	Veterans	Daily	<b>NO</b>
<b>National Death Index</b>	Veterans and non-veterans	Search engine, lags 1 year	<b>NO</b>
<b>SSA Epidemiological Search</b>	Social Security recipients and applicants	Search engine	<b>NO</b>
<b>State death records</b>	Veterans and non-veterans	Annually	<b>NO</b>



# Resources

## VHA Data Quality

<http://vaww.virec.research.va.gov/DataQuality/Overview.htm>

## National Data Systems

Dorothea Garrett ([Dorothea.Garrett@va.gov](mailto:Dorothea.Garrett@va.gov))

## VIReC Website Resources

<http://vaww.virec.research.va.gov> (VA Intranet only)

Information on VA data sources and how to access data

Documentation on VA data sources like VHA VSF

(<http://vaww.virec.research.va.gov/VSF/Overview.htm>)

## VHA Data Portal

Integrates information from multiple sources into a single location to promote a comprehensive knowledge base

<http://vaww.vhadataportal.med.va.gov/Home.aspx> (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 <http://vaww.virec.research.va.gov/Support/HSRData-L.htm> (VA Intranet)



## HelpDesk

- Individualized support



[virec@va.gov](mailto:virec@va.gov)

(708) 202-2413

## 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?  
<https://www.hsrdr.research.va.gov/cyberseminars/catalog-archive.cfm>

# References

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- Sohn MW, Arnold N, Maynard C, Hynes DM. Accuracy and completeness of mortality data in the Department of Veterans Affairs. *Popul Health Metr* 2006;4:2.
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- Hoffmire C, Kemp J, Bossarte R. Changes in Suicide Mortality for Veterans Relative to Non Veterans by Gender and History of VHA Service Utilization, 2000-2010. *Psychiatric Services* 2015; 00:1–7; doi: 10.1176/appi.ps.201400031
- Maynard C. Databases. *The Encyclopedia of Death and the Human Experience*. Thousand Oaks CA: Sage Publications, 2009:258-261.

# Contact information

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**Next session:  
March 4<sup>th</sup> at 1 pm Eastern**



**Database & Methods Cyberseminar Series**

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## **Measuring Veterans' Medicare Health Services Use**

Kristin de Groot, MPH  
VA Information Resource Center

Register here: <https://www.hsrd.research.va.gov/cyberseminars/catalog-upcoming-session.cfm?UID=3545>

