

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

I am interested in VA data primarily due to my role as:

- a. Research investigator
- b. Data manager
- c. Project coordinator
- d. Program specialist or analyst
- e. Other (specify)

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
- Other resources for mortality data
- Examples of using mortality data for research

BIRLS Death File

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



Available in the VSF

VA/CMS Medicare Vital Status File

Received from	Centers for Medicare & Medicaid Services (CMS) annually
Information Sources	SSA, Medicare claims, Other (e.g., family)
Coverage	Veterans enrolled in Medicare (≥ 65 years old or disabled)
Update Schedule	Annual (deaths through April 2015)
Location	Available from VIREC



Available in the VSF

SSA Death Master File

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



Available in the VSF

Medical SAS Inpatient File

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



Available in the VSF

Corporate Data Warehouse (CDW)

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

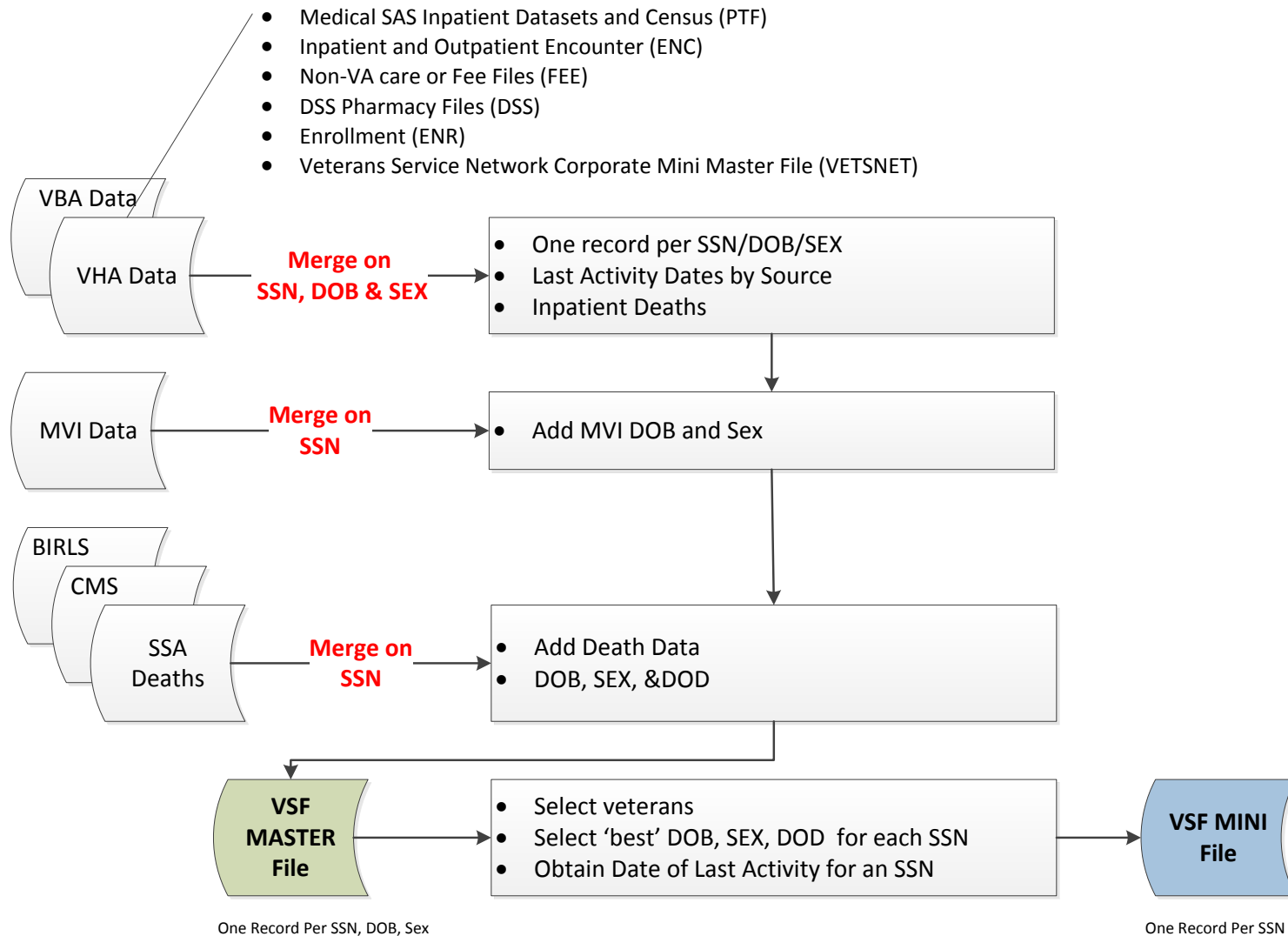
DOD Source	Sensitivity
BIRLS	64-80%
VA/CMS Medicare	83%
SSA	89-95%
PTF	5-12%

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

VHA VSF Creation

Owner	Built by National Data Systems (NDS) First available in October 2006
Data Access	See VHA Data Portal website: http://vaww.vhadataportal.med.va.gov/Home.aspx (Intranet only)
Coverage	Veterans known to VA VHA activity FY 1992 or later VBA compensation and pension
Update Schedule	Updated quarterly
Files	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

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

Vital Status Files

December 8, 2017

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
28,935,000 records	17,385,952 records
19,756,939 SSNs	17,385,952 SSNs
41% of SSNs have >1 record (8,162,408 SSNs)	-

Vital Status Mini Contents

12/8/2017
n = 17,385,952

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 December 8, 2017

Best Birth Date Data Source

BIRLS DEATH FILE	1,322
MEDICARE DATA	543,123
DECISION SUPPORT SYSTEM	15,305
OUTPT/INPAT ENCOUNTER	696,170
ENROLLMENT SYSTEM	263,260
FEE BASIS	8,409
MVI	15,426,359
PATIENT TREATMENT FILE	157,887
SOCIAL SECURITY DEATH FILE	24,237
VBA	249,880
Total	17,385,952

Best Death Date Data Source

No Death Date	10,645,328
BIRLS DEATH FILE	147,688
MEDICARE DATA	4,281,024
FEE BASIS	100,195
PATIENT TREATMENT FILE	799,630
SOCIAL SECURITY DEATH FILE	1,412,087
Total	17,385,952

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

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

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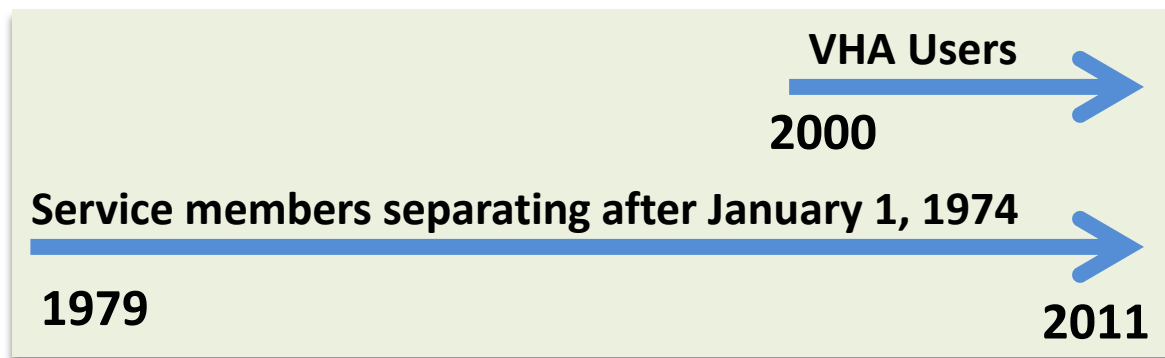
National Death Index

- Gold standard for death ascertainment
- Available from the National Center for Health Statistics
 - Source of data: State Vital Statistics Offices
 - Records from 1979 through 2015 (~12 month lag)
- Contains cause of death from death certificates
- Information about fees & access:
 - <http://www.cdc.gov/nchs/ndi.htm>
- Suicide Data Repository from the VHA Office of Public Health

National Death Index for Veterans

CDC's National Death Index Plus contains ~2.7 million records (1979-2014)

- 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, FY2000-2014
 - Please see <http://vaww.virec.research.va.gov/Cause-of-Death/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 for more information about accessing NDI data from the SDR.

Data through 2014 are now available.

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://www.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.)

- Analyses (DQ, IdM, and HEC) March of 2015
- Individuals in the CDW without a date of death in the CDW
 - 2.7 million had a date of death in another source (SSA Death Master File, BIRLS, NCA, Department of Defense, etc.)
- Activity after death
 - Most individuals had only one event after death
 - Research into individual cases found few individuals where the activity after death indicated individual was living (Individuals with many events need careful research)

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 weekly files contain recent deaths
- In the spring of 2018, MVI will begin updating records with the older dates of death on the SSA DMF file
- 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

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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Research Example #1

Mental Health (Veteran National Death Index)

- Trivedi, et al. Life expectancy and common causes of death among Veterans with mental illnesses (submitted for publication).
- Used Veteran NDI to examine life expectancy and cause of death in Veterans with mental health conditions.
- Veterans with mental health conditions died prematurely of preventable conditions such as ischemic heart disease.

Research Example #2

Service Connected Disability (Veteran National Death Index)

- Maynard et al. Cause of death in Veterans with service connected conditions, submitted for publication.
- 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.

Research Example #3

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, 2000-2103. (*Internet Journal of Epidemiology* 2015;13:1).

Additional Resources

Mortality Data Sources Cheat Sheet

Data Source	Coverage	Update schedule	Included in VHA VSF?
BIRLS Death File	Veterans known to VA	Monthly (complete overlay)	YES
VA/CMS Medicare Vital Status File	Veterans enrolled in Medicare (≥65 years old or disabled)	Annual	YES
SSA Death Master File	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)	YES
Patient Treatment File	Inpatient deaths (VA hospitals, Non-VA when covered by VA)	Weekly	YES
Corporate Data Warehouse	Veterans	Daily	NO
National Death Index	Veterans and non-veterans	Search engine, lags 1 year	NO
SSA Epidemiological Search	Social Security recipients and applicants	Search engine	NO
State death records	Veterans and non-veterans	Annually	NO

Resources

VHA Data Quality

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

National Data Systems

Dorothea Garrett (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
- ~1,300 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

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.hsrds.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=101

References

- Da Graca B, Filardo G, Nicewander D. Consequences for healthcare quality and research of the exclusion of records from the death master file. *Circ Cardiovasc Qual Outcomes* 2013;6:124-128.
- U.S. Department of Veterans Affairs. VHA Directive 1906 Data Quality Requirements for Healthcare Identity Management and Master Veteran Index Functions. April 29, 2013.
- Doody MM, Chimes K. The Social Security Administration "presumed living" search. *Am J Public Health* 2000;90:1948-1949.
- Savas LS, del Junco DJ, Bastian LA, Vernon SW. Mortality ascertainment of women veterans: a comparison of sources of vital status information, 1979-2002. *Med Care* 2009;47:125-128.
- 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.
- Arnold N, Sohn M, Maynard C, Hynes DM. VIREC Technical Report 2: VA NDI Mortality Data Merge Project. April 9, 2006. VA Information Resource Center. Available: <http://vaww.virec.research.va.gov/Reports/TR/TR-VA-NDI-Mortality-CY06-ER.pdf>
- 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.

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**Next session:
February 5, 1 pm Eastern**



Database & Methods Cyberseminar Series

Assessing Race & Ethnicity

Maria K. Mor, PhD

Co-Director of the Biostatistics, Informatics, and
Computing Core VA Center for Health Equity
Research and Promotion (CHERP)
Pittsburgh, PA