



Database & Methods Cyberseminar Series

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

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Database & Methods Cyberseminar Series

Informational seminars to help VA researchers understand how to use VA and non-VA data in research and quality improvement

Topics

- Application of VA and non-VA data to research and quality improvement questions
- Limitations of secondary data use
- Resources to support VA data use



FY '17 Database & Methods Schedule

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

Date	Topic
10/3/16	Overview of VA Data & Research Uses
11/7/2016	Requesting Access to VA Data
12/5/2016	Healthcare Utilization with MedSAS & CDW
1/9/2017	VA Medicare Data (VA/CMS)
2/6/2017	Assessing Outpatient Utilization with VA Data
3/6/2017	Mortality Ascertainment & Cause of Death
4/3/2017	Assessing Race & Ethnicity
6/5/2017	Pharmacy Data
7/10/2017*	CAPRI/VistAWeb for EHR Access
8/7/2017	Comorbidity Measures Using VA and CMS Data
8/21/2017	Advanced Topics in Comorbidity Measures
9/11/2017*	CDW microbiology, lab, & pharmacy domains

Visit our Education page for more information & registration links.

www.virec.research.va.gov



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

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- Identify data sources for Veteran vital status ascertainment
- Describe the contents and structure of the VA Vital Status Files and their appropriate use for mortality ascertainment
- Outline 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

Poll Question #1

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

- a. Principal investigator/Co-PI
- b. Research staff (Project coordinator, data manager, programmer)
- c. Clinical Staff
- d. Operations Staff
- e. 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)

Today's Topics

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

Session Topics

- **Data sources for Veteran vital status ascertainment**
 - **Sources in VHA Vital Status Files**
 - **Sources not in VHA Vital Status Files**
- VHA Vital Status Files
- Date of death project
- Data sources for Veteran & Non-Veteran mortality
- 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 (AITC) 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**

Information sources

- **Family members**
- **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**

Information source

- **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**

Updates

- **Weekly**

Location

- **AITC (MedSAS)**
- **CDW**

Available in the VSF

Corporate Data Warehouse (CDW)

Received from

- **Corporate Data Warehouse**

Information Source

- **VISTA**

Coverage

- **Deaths verified by official source including VHA facilities, death certificate, and National Cemetery Administration**

Update Schedule

- **Daily**

Location

- **[CDW Patient 2.0]**

CDW

SPatient.SPatient Table

Columns:

- DateofDeath
 - Date of death in SQL date format if complete and valid date in DateofDeathText
- DateOfDeathText
- Deceased (created by CDW)
 - Flag set to 'Y' if there is information in the DateOfDeathText column and 'N' if DateOfDeathText column is empty.

CDW Limitations

- Current policy: Information to be entered from “official sources” only
 - VHA facility (if patient died in the VHA facility or while under VA auspices)
 - Death certificate
 - National Cemetery Administration
 - VHA Directive 1906
- CDW Date of Death Analysis and Vital Status File Comparison

CDW Limitations

“CDW Date of Death Analysis and Vital Status File Comparison”

Report Highlights

http://vaww.vhadataportal.med.va.gov/Portals/0/DataQualityProgram/Reports/CDW_Date_of_Death_Analysis_and_VSF.pdf

Results

- Dates of death are not recorded in the CDW for an estimated 30% of deaths.
- There is high agreement (91-99%) between dates of death recorded in the CDW and dates of death recorded in external sources that feed the VHA Vital Status File.

Recommendations

- Dates of death in the CDW should be augmented with deaths from other sources such as the VHA Vital Status File for more complete death ascertainment.
- Both the DateofDeath and Deceased columns should be used to identify deceased patients.
- We recommend adding the VistA Source of Notification field (Field .353) in the Patient File (File 2), which contains the source of the death notification, to the CDW.

Session Topics

- Data sources for Veteran vital status ascertainment
- **VHA Vital Status Files**
 - **Structure and contents**
 - **Challenges in using the VHA VSF**
- Date of death project
- Data sources for Veteran & Non-Veteran mortality
- 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:

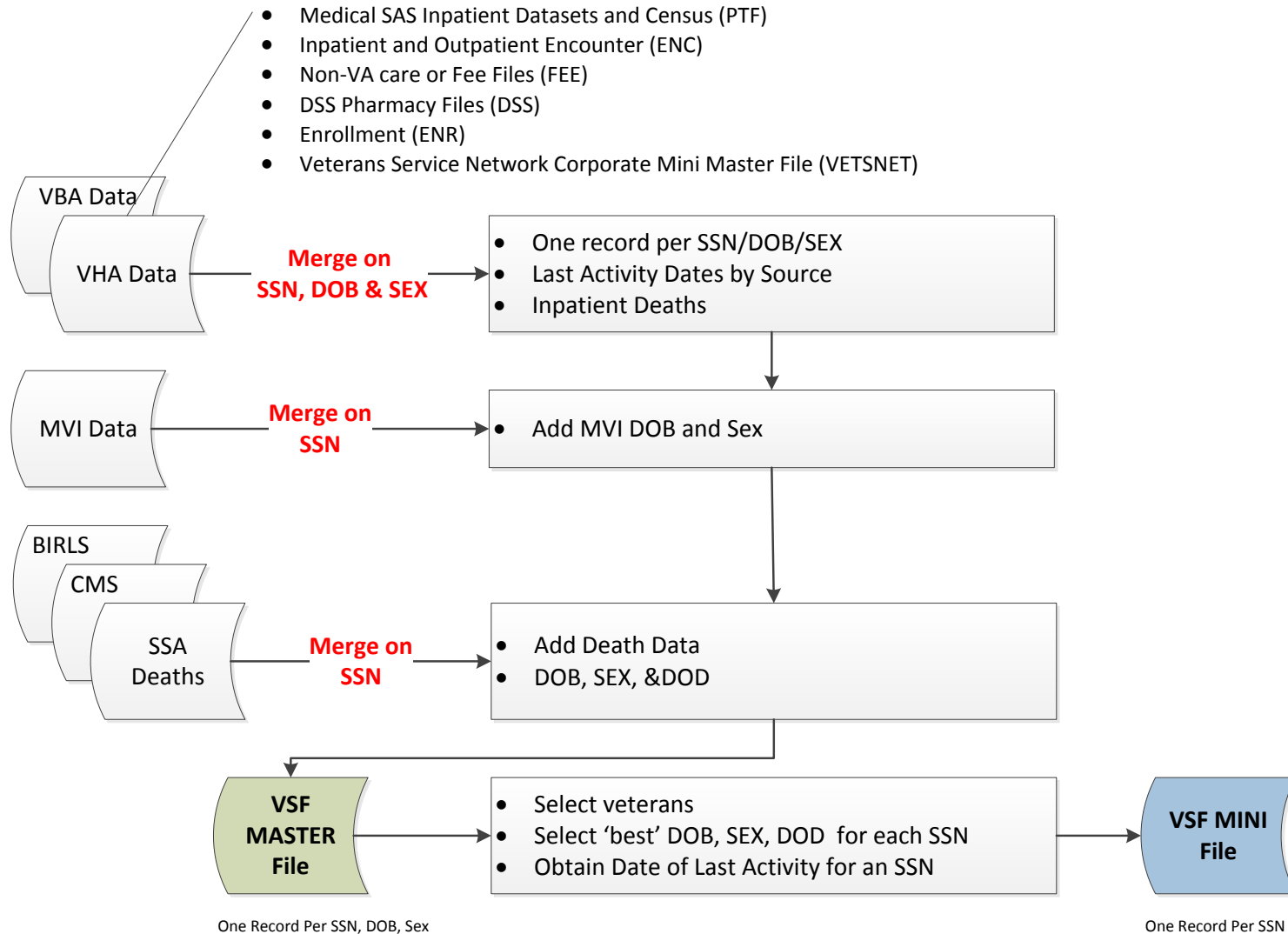
DOD Source	Sensitivity
BIRLS	64-80%
VA/CMS Medicare	83%
SSA	89-95%
PTF	5-12%

- 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 information
 - See VHA Data Portal website
<http://vaww.vhadataportal.med.va.gov/Home.aspx> (Intranet only)
- Updated quarterly
- Veterans known to VA
 - VHA activity FY 1992 or later
 - VBA compensation and pension
- Two files + conversion file
 - Master, Mini, scrambled/real SSN

Construction of VHA VSF



More detail on VHA VSF Construction

Ascertaining Veterans' Vital Status: VA Data Sources for Mortality Ascertainment and Cause of Death by Noreen Arnold, MS and Claire Hoffmire, PhD.

Seminar date: 5/4/2015

http://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=982

Ascertaining Veterans' Vital Status and Dates of Death: The VHA Vital Status File and Other Data Sources for Mortality Ascertainment in VA by Elizabeth Tarlov, PhD.

Seminar date: 7/14/2014

http://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=857

Vital Status Files (April 5, 2016)

Master

- Veterans and Non-Veterans
- One record per SSN/DOB/Sex combination
- 125 variables
- 27,390,242 records
- 18,829,560 SSNs
- 7,596,188 SSNs have more than one record (40% of SSNs)

Mini

- Veterans
- One record per SSN
- Combined data from multiple Master records
- 16 variables
- 16,740,637 records (SSNs)

Vital Status Mini Contents (July 6, 2016)

(n=16,740,637)

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 on VSF Mini

• Best Birth Date Data Source

BIRLS DEATH FILE	1,692
MEDICARE DATA	516,366
DECISION SUPPORT SYSTEM	14,496
OUTPT/INPAT ENCOUNTER	464,682
ENROLLMENT SYSTEM	148,082
FEE BASIS	8,346
MVI	15,054,134
PATIENT TREATMENT FILE	159,944
SOCIAL SECURITY DEATH FILE	30,474
VBA	241,289
Total	16,639,505

• Best Death Date Data Source

No Death Date	10,518,393
BIRLS DEATH FILE	146,115
MEDICARE DATA	3,803,854
FEE BASIS	94,303
PATIENT TREATMENT FILE	758,767
SOCIAL SECURITY DEATH FILE	1,318,073
Total	16,639,505

VHA VSF Mini on April 5, 2016

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, for example:
 - Cohort DOB/Sex do not match Mini DOB/Sex
 - May be records on the Master File with matching demographics
- Activity after death
 - Check DOB/Sex for DOD sources on Master File
 - Are all DOD on Master File the same?

Possible Strategies for Matching Cohorts (cont.)

- Consider additional supplementary data sources
 - Use the NDI or State Vital Statistics Offices for cases lost to follow up, i.e.,
 - No death date
 - No VHA or VBA activity after end of follow up
- CDW for individuals without activity after 1991 or very recent deaths

Session Topics

- Data sources for Veteran vital status ascertainment
- VHA Vital Status Files
- **Date of death project**
- Data sources for Veteran and Non-Veteran mortality
- Other resources for mortality data
- Examples of using mortality data for research

Date of Death Project

- The Date of Death Project 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) will be authoritative service for date of death (First Phase)
- Dates of death will be synchronized across Administrations (Second Phase)
- Electronic Verification of Vital Events (EVVE) is now available on a limited basis

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.)

First Phase

- Final phases of implementation in 2nd and 3rd QTR of FY 2017
 - MVI promotes 'validated' dates of death to the MVI Primary View
 - Death dates promoted to Primary View are pushed to consuming systems (VHA, VBA, etc.)
 - Rules for promoting a date of death
 - Date passes rules it is considered 'Validated'
 - New sources for Primary View dates of death
 - NCA (current source)
 - SSA Death Master File (Weekly and Full)
 - Department of Defense
 - VBA Corporate Database
 - VHA Medical Centers and Enrollment

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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 2013 (~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 which contains approximately 2.5 million records (1979-2011)

- 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, FY2000-2011
 - Please see <http://vaww.virec.research.va.gov/Cause-of-Death/Overview.htm>



National Death Index for Veterans

- Is available through Suicide Data Repository (SDR) which is administered jointly between VA Office of Mental Health and DOD.
- All applications for access to NDI data available from SDR are reviewed by a joint VA-DoD Board of Governance, which meets quarterly (January, April, July, October) to review requests.

National Death Index for Veterans

- Contact VHACANSDRDataRequests@va.gov for more information about accessing NDI data from the SDR.
- Data through 2014 will be available in early 2017.

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).

Defense Manpower Data Center (DMDC) (cont.)

- 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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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: Trivedi et al. (2015). Prevalence, comorbidity, and prognosis of mental health among US Veterans. *American Journal of Public Health*. 105:2564-2569.

Mental Health (Vital Status File)

- Used vital status file to assess 1 year mortality after PACT implementation.
- Veterans with substance use disorders had higher risk of mortality, whereas those with PTSD had lower risk.
- Integrating primary care and mental health treatment was associated with lower risk of death for individuals with anxiety, depression, and substance use disorders

Research Example 2: Mental Health (NDI cause of death)

- New ongoing study to examine cause of death in veterans with mental health conditions
- Examines underlying cause of death from the NDI Plus which will soon include deaths through 2014
- Compare leading cause of death according to type of mental health condition (e.g. major depression, PTSD, SUD, anxiety, and serious mental illness)

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>.

Research Example 3: State Death Certificates

Dominitz, J. A., Maynard, C., & Boyko, E. J. (2001). Assessment of vital status in Department of Veterans Affairs national databases: Comparison with state death certificates. *Annals of Epidemiology*, 11(5), 286-291.

Maynard, C., & Boyko, E. J. (2006). Differences in cause of death of Washington State Veterans who did and did not use Department of Veterans Affairs healthcare services. *Journal of Rehabilitation Research and Development*, 43(7), 825-831.

Maynard, C., & Boyko, E. J. (2008). Datapoints: Suicide rates in the Washington State Veteran population. *Psychiatric Services*, 59(11), 1245.

Maynard, C., Lowy, E., McDonell, M. & Fihn, S. D. (2008). Cause of death in Washington state Veterans hospitalized with acute coronary syndromes in the Veterans Health Administration. *Population Health Metrics*, 6(13).

Maynard, C. (2010). Accidental deaths in Veterans and non-veterans in Washington State. *Internet Journal of Epidemiology*, 8(2).

Maynard, C. (2015). Cause of death in middle-age white non-Hispanic Washington State Veterans, 2000-2103. *Internet Journal of Epidemiology*, 13(1).

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

References

Arnold N., Sohn, M., Maynard, C., Hynes, D.M. 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>

da Graca, B., Filardo, G., & Nicewander, D. (2013). Consequences for healthcare quality and research of the exclusion of records from the Death Master File. *Circulation: Cardiovascular Quality and Outcomes*, 6(1), 124-128.

Doody, M. M., & Chimes, K. (2000). The Social Security Administration "presumed living" search. *American Journal of Public Health*, 90(12), 1948.

Hoffmire, C. A., Kemp, J. E., & Bossarte, R. M. (2015). Changes in suicide mortality for veterans and nonveterans by gender and history of VHA service use, 2000–2010. *Psychiatric Services*, 66(9), 959-965.

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- Maynard C. (2009). Databases. In *The Encyclopedia of Death and the Human Experience*. (pp. 258-261). Thousand Oaks CA: Sage Publications.
- Savas, L. S., del Junco, D.J., Bastian, L.A., and Vernon, S. W. (2009). Mortality ascertainment of women Veterans: A comparison of sources of vital status information, 1979-2002. *Medical Care*, 47(1), 125.
- Sohn, M. W., Arnold, N., Maynard, C., & Hynes, D. M. (2006). Accuracy and completeness of mortality data in the Department of Veterans Affairs. *Population Health Metrics*, 4(1), 2.
- U.S. Department of Veterans Affairs. VHA Directive 1906 Data Quality Requirements for Healthcare Identity Management and Master Veteran Index Functions. April 29, 2013.

Contact information

VA Information Resource Center

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Additional Resources

Resources

VHA Data Quality

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

National Data Systems

- Dorothea Garrett (Dorothea.Garrett@va.gov)
- **VIReC Mortality Data page**
<http://vaww.virec.research.va.gov/Mortality/Overview.htm>
- **VIReC Accuracy and Completeness of Death Dates page -**
<http://vaww.virec.research.va.gov/Mortality/Accuracy-of-Death-Dates.htm>.

Resources (cont.)

VHA Data Portal

- <http://vaww.vhadataportal.med.va.gov/Home.aspx> (Intranet only)
 - Integrates information from multiple sources into a single location to promote a comprehensive knowledge base

HSRData Listserv

- Join at the VIREC Web site
- Discussion among data stewards, managers, and users
- Past messages in archive (on VA intranet)

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

VIReC Options for Specific Questions

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

**Next session:
April 3, 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