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Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS)

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Inter-university Consortium for
Political and Social Research
(ICPSR)

Introduction

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Robert J. Ursano, MD
Uniformed Services University of the Health Sciences (USUHS)

Overview of Army STARRS

Description of All Army Study and New Soldier Study

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Army STARRS Background

- Historically, Army suicide rate has been lower than civilian rate

- Around the beginning of Iraq & Afghanistan conflicts, Army suicide rate began increasing

- Army suicide rate exceeded demographically-matched civilian rate in 2009

- Persistent rise in Army suicide rate led the Army to seek academic scientists with expertise to design and conduct an independent research program that was large, creative, and comprehensive enough to address this complicated problem

- Army STARRS involved multiple integrated studies that were designed & conducted from 2009 to 2015 by a consortium of investigators from Uniformed Services University of the Health Sciences (USUHS), University of California-San Diego (UCSD), Harvard Medical School (HMS), University of Michigan (UM)

Suicide Rate Trends for Active Duty Army & Matched Civilians
(Suicides per 100,000 person-years)
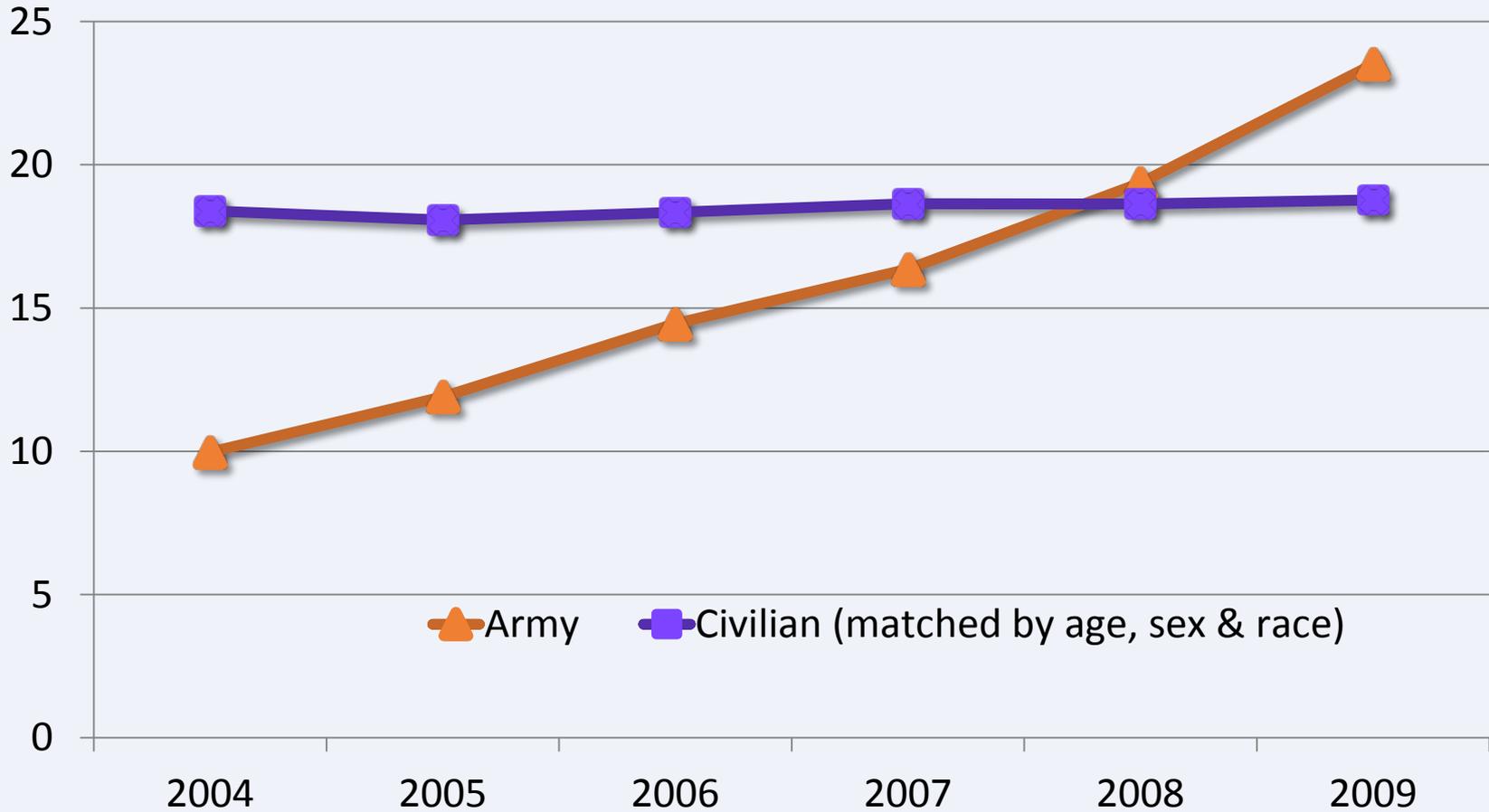
SOURCES: Army STARRS calculations (Army); Centers for Disease Control (civilian)

Army STARRS Goals

To comprehensively investigate risk factors and protective factors for suicide, suicide-related behavior, and other mental and behavioral health issues in Army Soldiers

Specifically:

- To identify risk and protective factors that impact Soldiers' well-being so the Army can use them in risk reduction efforts
- To identify salient risk and protective factors in Army Soldiers to inform the development and testing of empirically-derived interventions for Army Soldiers
- To deliver "actionable" findings to the Army rapidly
- To establish an Army cohort for future follow-up studies to provide continued and long-term benefit to the Army

Army STARRS Approach to Producing Actionable Findings

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Concentration of Risk (using highly complex algorithms)

- Who (e.g., MOS, rank, demographics, mental disorders)

- When (e.g., time in service, deployment status, time pre/post deployment)

- Where (e.g., installations, training, combat zones, transitioning)

Risk and Resilience Factors

- Identify "at risk" and "resilient" sub-groups (who, when, where)

- Army can consider using in prevention or intervention programs

- Enhance effectiveness & efficiency of Army programs

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Army STARRS is Unique in a Number of Ways

Large: Largest research study of mental health risk & resilience ever conducted among Army Soldiers.

Complex: Suicide behavior is a function of multiple, interrelated risk & protective factors including individual psychological health, neurobiology, cognition & group/unit function, context & adversities.

Broad: Examined outcomes across a range of suicide behaviors & precursors (completed suicide, attempts, ideation, accidents, psychological health).

Rich: Collected data & biospecimens directly from Soldiers, and linked new data with extensive existing Army & DoD administrative data.

Rapid Dissemination: Communicated actionable findings directly to the SA, CSA, VCSA & DUSA in quarterly in-person briefings.

Groundbreaking: Utilized a creative & comprehensive multi-study design, involved historical & prospective data, included large & representative samples, ensured confidential data collection, and provided practical & actionable information.

All Army Study (AAS)
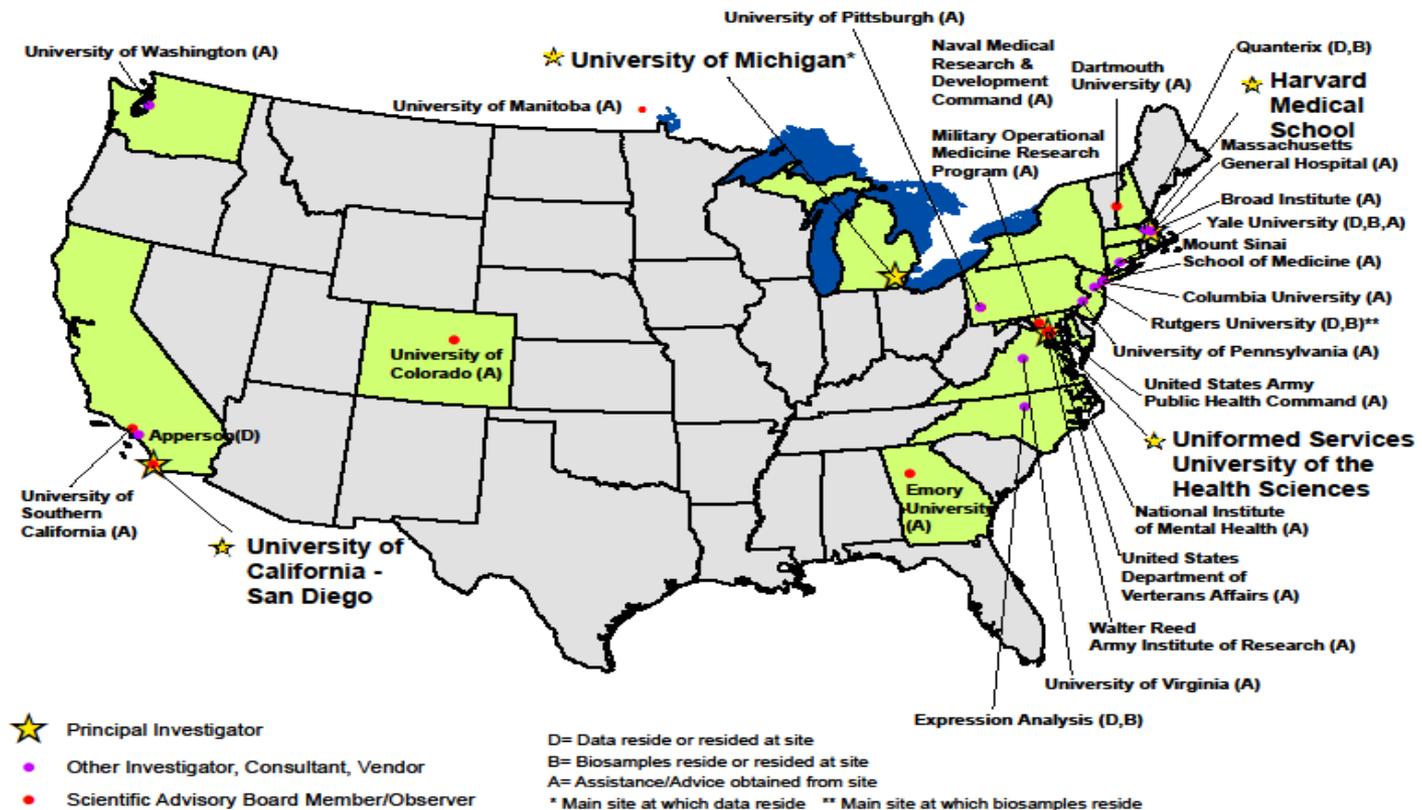
- Included Soldiers across all phases of Army service
- 90 minute self-administered questionnaire (SAQ)
- Assessed health, perceptions, experiences, relationships, personality characteristics, etc.
- Quarterly samples of active duty units
- Army Reserve & National Guard included
- Included in-theater Soldiers ("outbound" and "inbound" during R&R processing in Kuwait)
- Data collected at more than 50 CONUS & OCONUS sites from Jan 2011 to Apr 2013
- ~35,000 Soldiers completed the survey
- Asked for consent to link survey data to Army & DoD administrative data

New Soldier Study (NSS)

- Assessed pre-Army health, personal characteristics, experiences, etc. of Soldiers at time of entry into Army
- Two-part SAQ administered in two 90 minute sessions
- Included 3 basic training sites (Ft. Jackson, Ft. Benning, Ft. Leonard Wood)
- Data collected from Feb 2011 to Nov 2012
- Blood collected from Sep 2011 to Nov 2012
- ~50,000 Soldiers completed the survey
- ~33,000 Soldiers completed the survey & provided blood sample (80% of those asked for blood)
- Asked for consent to link survey data to Army & DoD administrative data

NSS Data Collection Locations
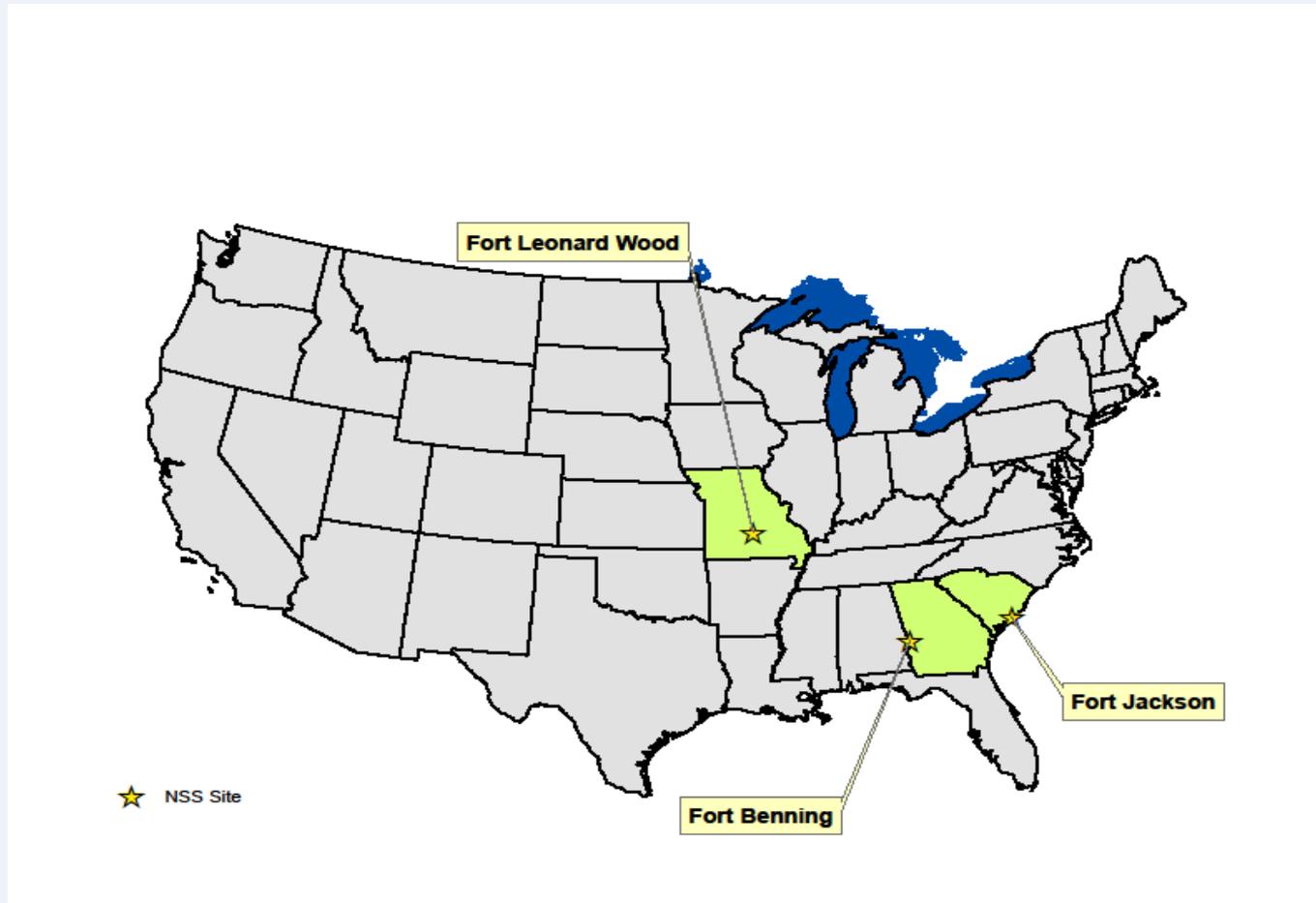
Number of AAS and NSS Participants

Number of Soldiers	AAS	NSS
Sample selected	47,744	53,418
Attended consent session	40,148	53,418
Started survey	36,591	53,349
Completed survey	34,813	50,012
Survey data at ICPSR* *Completed survey, consented to linking survey data to Army/DoD admin data, and data were successfully linked	21,449	38,507

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**Murray B. Stein, MD, MPH
University of California, San Diego
(UCSD)**

New Soldier Study (NSS) Opportunities

ICPSR **New Soldier Study (NSS) Opportunities**

- NSS is really a survey about pre-military characteristics of future Soldiers
  - We have published primarily on risk factors for suicidality
  - Risk factors for *many* other disorders could be considered
    - Age-at-onset of multiple disorders included in NSS

- NSS diagnostic phenotypes can (often) be used to count symptoms or to look at particular symptom types or clusters
  - Can facilitate an RDoC approach to looking at mental disorders
    - Where particular domains of function can be queried

- Many topics so far untapped by our research team
  - e.g., spirituality; prior treatment for mental health problems

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**Ronald C. Kessler, PhD
Harvard Medical School**

All Army Study (AAS) Opportunities

Content of the AAS

- **Content of the AAS**

  - http://starrs-ls.org/sites/default/files/2016-03/army_starrs_aas_instrument.pdf

Content of the AAS (Continued)

- Demographics and basic career information
  - Extensive assessment of 30-day symptoms/impairments. In addition to MDE, GAD, and PTSD, these include anger, sleep, pain, TBI, Sheehan Disability Scales
  - 30-day disorders (ADHD, MDE, GAD, PTSD, substance use disorder)
- Limited assessments of lifetime disorders
  - Full lifetime assessments of panic disorder, IED, mania-hypomania, suicidality
  - Self-focused FHRDA assessment of MDE, GAD, OCD, PTSD, phobias (agora, specific, social)
  - Basic questions about concussions

Content of the AAS (Continued)

- Stressful experiences
  - Lifetime TE exposure
  - Lifetime deployment-related TE exposure
  - 12-month stressful life events
  - 12-month chronic difficulties
  - Unit experiences (both resources and stresses)
  - Social support networks (both resources and stresses)

Content of the AAS (Continued)

- Relatively extensive assessment of 12-month treatment
  - Type (SMH, GM, HS, CAM) distinguishing civilian and military
  - Frequency of contact
  - Current status
  - Perceived need for treatment
  - Reasons for not seeking treatment and for dropout

Important design considerations

- Left censoring
- Survey nonresponse bias
  - Failure to participate in the survey
  - Failure to allow administrative data linkage
- Nonrandom exposure to deployment
- Right censoring

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Accessing Army STARRS Public Use Data

Overview

- Public-Use Datasets, Restricted Access
- Starting the Application Process
- Application Requirements
- Project Review and Authorization
- Data Access Fees and Licensing
- Working in the Virtual Data Enclave (VDE)
- Removing Work from the VDE
- Publication Requirements – Citation and Acknowledgement

ICPSR **Public-Use Datasets, Restricted Access**

- Army STARRS public-use survey data are available through the Inter-university Consortium for Political and Social Research (ICPSR) at the University of Michigan.

- Although the datasets have been de-identified in preparation for public use, Army STARRS data are restricted from general dissemination.

- A Confidential Data Use Agreement must be established prior to access. Researchers interested in gaining access to the data can submit their applications via ICPSR's online Restricted Contracting System.

Starting the Application Process

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ICPSR Virtual Data Enclave Management System

Begin Request

Applying for the Army Study To Assess Risk and Resilience in Servicemembers (STARRS)

Welcome to the Inter-university Consortium for Political and Social Research General Archive (ICPSR) Restricted Data Contracting System. Below is an overview of the application and access process:

Step 1: User submits completed Data Use Agreement application including:
- Contact information
- Project summary
- List of data files requested
- List of and contact information for research staff
- IRB documentation (approval, exemption, etc.)
- Agreement to Data Security Plan procedures
- Agreement document with PI signature and Institutional Representative signature

Step 2: ICPSR reviews and approves the application, or sends it back to the applicant if further work is necessary.

Step 3: User submits payment and ICPSR staff configure data access accounts:
- User submits payment to ICPSR (Each license is $350 and will apply to one user. All licenses will expire one year after date of purchase.)
- ICPSR staff will work with your team members to configure University of Michigan accounts.

Please note that when your application to use the Army STARRS public use data is approved by ICPSR, your name, institutional affiliation and the project summary from your application will be shared in confidence with a designated committee of scientific representatives of the U.S. Army, the U.S Department of Defense and the National Institute of Mental Health.

Start a new project

Application Requirements

- Investigators wishing to apply for data access will be required to:

  1. Complete the *Agreement for the Use of Confidential Data*

  2. Submit an IRB approval/exemption letter
     - ✓ Application review and project authorization by ICPSR

  3. Submit payment of $350 per user, per year data access fee

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1. Data Use Agreement

- <u>Investigators</u> must meet the following criteria:
  - Hold a Ph.D. or other terminal degree(s)
  - Hold a faculty appointment or research position
- <u>Research Staff</u> include:
  - Authorized project staff
  - Students conducting dissertation or thesis research
- Institution Representative
  - University representative with signature authority; a person legally authorized to enter into contractual agreements on behalf of the institution
    - ✓ e.g., Representative from contracts or research office, Dean, Provost

<u>Please note:</u>

Any proposed modification to the Data Use Agreement must be reviewed and approved by the **University of Michigan's Office of Research and Sponsored Projects.** This process may result in a significant delay in project authorization.

ICPSR 2. IRB Approval/ Exemption Letter

- Investigators must submit a research proposal to their university's Institutional Review Board

- A letter indicating IRB approval or exemption of the proposed research project must be submitted to ICPSR and must meet the following criteria:

  - Must name the Investigator from the DUA
    - In the case of student (Research Staff) conducting dissertation or thesis research, the Investigator (PhD) must be named rather than the Research Staff student

  - Must be dated and signed by an IRB representative

Project Review and Authorization

- An ICPSR research staff member assigned to the Army STARRS project will review the application documents for completion and accuracy

- Project authorization lasts 2 years from the date the DUA is signed

- Approval notification will be sent via an automated email, which will contain instructions for purchasing data access licenses and configuring user accounts

3. Data Access Fees and Licensing

- Data access fee is $350 per user, per year

- License lasts 1 year and 1 week

- Data access is provided through ICPSR's secured Virtual Data Enclave (VDE)

- Each staff member requiring data access must have a separate user account and license to access the VDE

Virtual Data Enclave (VDE)

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- The Virtual Data Enclave (VDE) provides access to restricted-use data via a virtual private network connection

- The VDE is launched from the user's desktop computer, but operates on a secured remote server

- The workspace is isolated from the user's desktop computer, restricting the user from accidentally or intentionally downloading files, emailing, copying, or otherwise moving files outside of the VDE.

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- A VDE directory will be created for each project
- The "original data" folder
  - Contains the **All Army Study** (-0001) and the **New Soldier Study** (-0002)
  - **ICPSR Full Product Suite** – SPSS, SAS, Stata, R, Excel/TSV, and ASCII-text with SPSS, SAS, and Stata setup and supplementary syntax files
  - **Supporting documentation** – STARRS user guide, codebooks, questionnaires, and data crosswalks
  - This folder is **read-only**; all work must be saved in a separate folder

Name	Date modified	Type	Size
cb35197-0001_REST.pdf	8/24/2015 3:31 PM	Adobe Acrobat Document	7,540 KB
cb35197-0002_REST.pdf	8/24/2015 3:31 PM	Adobe Acrobat Document	17,948 KB
da35197-0001_REST.dta	8/24/2015 3:31 PM	Stata Dataset	34,573 KB
da35197-0001_REST.rda	8/24/2015 3:31 PM	RDA File	5,144 KB
da35197-0001_REST.sav	8/24/2015 3:31 PM	SPSS Statistics Data Document	19,346 KB
da35197-0001_REST.stc	8/24/2015 3:31 PM	SAS Cport Transport File	54,932 KB
da35197-0001_REST.tsv	8/24/2015 3:31 PM	TSV File	34,549 KB
da35197-0001_REST.txt	8/24/2015 3:31 PM	Text Document	26,037 KB
da35197-0002_REST.dta	8/24/2015 3:31 PM	Stata Dataset	50,710 KB
da35197-0002_REST.rda	8/24/2015 3:31 PM	RDA File	8,919 KB
da35197-0002_REST.sav	8/24/2015 3:31 PM	SPSS Statistics Data Document	28,504 KB
da35197-0002_REST.stc	8/24/2015 3:31 PM	SAS Cport Transport File	85,658 KB
da35197-0002_REST.tsv	8/24/2015 3:31 PM	TSV File	51,351 KB
da35197-0002_REST.txt	8/24/2015 3:31 PM	Text Document	32,867 KB
qu35197-0001_REST.pdf	8/24/2015 3:31 PM	Adobe Acrobat Document	3,934 KB
qu35197-0002_REST.pdf	8/24/2015 3:31 PM	Adobe Acrobat Document	1,742 KB
set35197-0001_REST.dct	8/24/2015 3:31 PM	DCT File	88 KB
set35197-0001_REST.do	8/24/2015 3:31 PM	DO File	164 KB
set35197-0001_REST.sas	8/24/2015 3:31 PM	SAS System Program	149 KB
set35197-0001_REST.sps	8/24/2015 3:31 PM	SPSS Statistics Syntax File	223 KB
set35197-0002_REST.dct	8/24/2015 3:31 PM	DCT File	75 KB
set35197-0002_REST.do	8/24/2015 3:31 PM	DO File	134 KB
set35197-0002_REST.sas	8/24/2015 3:31 PM	SAS System Program	114 KB
set35197-0002_REST.sps	8/24/2015 3:31 PM	SPSS Statistics Syntax File	189 KB
ssf35197-0001_REST.do	8/24/2015 3:31 PM	DO File	15 KB
ssf35197-0001_REST.sas	8/24/2015 3:31 PM	SAS System Program	16 KB
tb35197-0001_AAS_crosswalk.xlsx	8/24/2015 3:31 PM	Microsoft Excel Worksheet	134 KB
tb35197-0002_NSS_crosswalk_REST.xlsx	8/24/2015 3:31 PM	Microsoft Excel Worksheet	104 KB
ug35197-all.pdf	8/24/2015 3:31 PM	Adobe Acrobat Document	1,185 KB

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Removing Work from the VDE

- ✓ Place files in a single folder
- ✓ Request a review from ICPSR staff
- ✓ Files will be reviewed, vetted, and extracted from the VDE by an ICPSR staff member
- ✓ User will receive requested files via email attachment

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What can I remove from the VDE?

Data Files 👎

* ✖ Full Army STARRS dataset
* ✖ Partial data subset

Analysis Files 👍

* ✓ Descriptive statistics – summary stats, frequencies, crosstabs
* ✓ Statistical models – regressions, tables, graphs, etc.

Citation and Acknowledgement

Publications based on analyses of the Army STARRS data must include the following citation in the References section:

> Ursano, Robert J., Murray B. Stein, Ronald C. Kessler, and Steven G. Heeringa. Army Study to Assess Risk and Resilience in Servicemembers (STARRS). ICPSR35197-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2015-07-01.
> http://doi.org/10.3886/ICPSR35197.v1

Additionally, publications must include the following paragraph in the Acknowledgements section:

> This publication is based on public use data from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). The data are available from the Inter-university Consortium for Political and Social Research (ICPSR) at the University of Michigan (http://doi.org/10.3886/ICPSR35197-v1). Army STARRS was funded by the U.S. National Institute of Mental Health (grant number U01MH087981). The contents of this publication are solely the responsibility of the authors and do not necessarily represent the views of the Army STARRS investigators, funders, Department of the Army, or Department of Defense.

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James Wagner, PhD
University of Michigan

Use of Army STARRS Data

Use of Army STARRS Data

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- AAS and NSS have **complex** sample designs

- "Complex" designs include features that need to be accounted for in variance estimation:
  - Stratification
  - Clustering
  - Weights

- *See Applied Survey Data Analysis by Heeringa, West, and Berglund (2010) for a discussion of analysis of data from complex sample designs and available software*

AAS Design Features

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- Weight variable: **WGT_AAS**
  - "Maps" the sample onto the population
  - Cases have different weights, unweighted analysis produced incorrect "mapping"
  - Table 2 from AAS Analysts' Guide: Properties of WGT_AAS

Weight	n (WGT>0)	Mean	Min	Max
WGT_AAS	21,449	31.439	1.061	276.420

- Stratification variable: **SESTRAT**
- Clustering variable: **SECLUSTER**
- Two clusters per stratum

NSS Design Features

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- Weight variable: **WGT_NSS**
  - Performs the same "mapping" function of sample to population
  - Table 2 from NSS Analysts' Guide: Properties of WGT_NSS

Weight	n (WGT>0)	Mean	Min	Max
WGT_NSS	38,507	1.0	0.27	2.93

- Stratification variable: **SESTRAT**

- Clustering variable: **SECLUSTER**

- Two clusters per stratum

ICPSR   **Software**

- "User Guide" on ICPSR STARRS data website contains information on using **SAS, R, Stata, SUDAAN, and SPSS** to produce variance estimates that reflect the complex sample design

  http://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/35197

- <u>Applied Survey Data Analysis</u> by Heeringa, West, and Berglund (2010) is another useful source

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Questions & Answers (Q&A) and Discussion

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Thank you for joining us!

For further information or questions regarding Army STARRS Public Use Data, please contact ICPSR User Support:

help@icpsr.umich.edu