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

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Overview of Army STARRS

Description of All Army Study, New Soldier Study, Pre-Post Deployment Study, and STARRS-LS

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

Accessing STARRS Data at ICPSR

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 study that was large, creative, and comprehensive enough to address this complicated problem

Army STARRS Background

- 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 (U-M)

- Beginning in 2015, STARRS-LS (Longitudinal Study) conducted follow-up interviews with STARRS participants

  - Waves 1 and 2 complete

  - Wave 3 nearing completion

  - Wave 4 begins November 2022

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

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
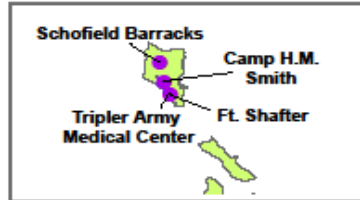- Asked for consent to link survey data to Army & DoD administrative data

ICPSR

STARRS-LS

AAS Data Collection Locations
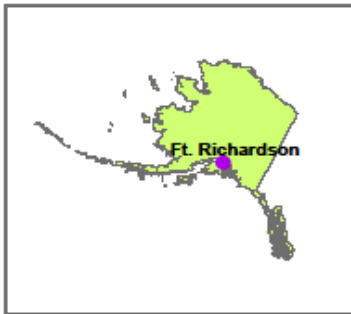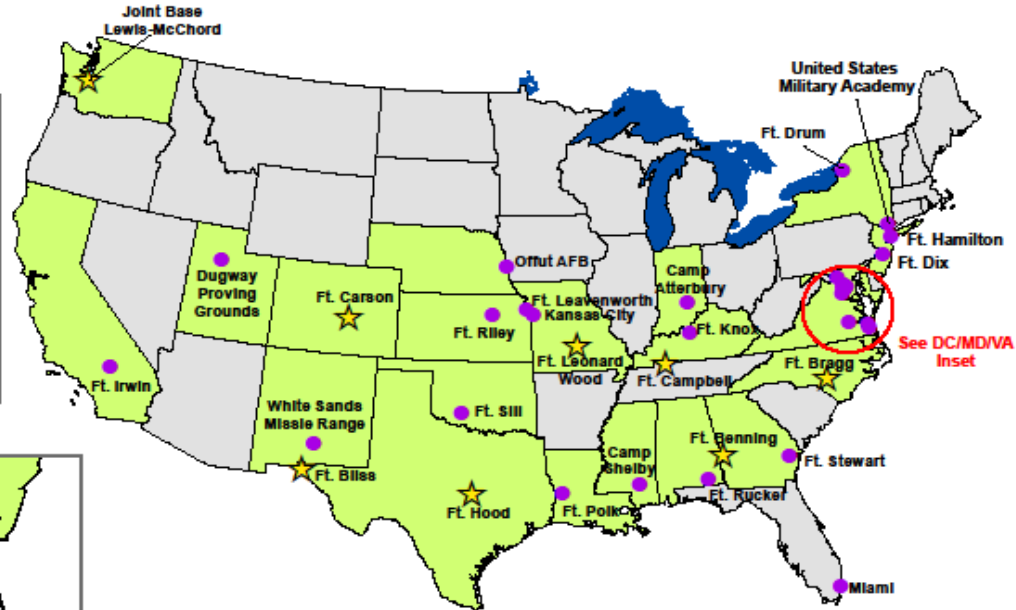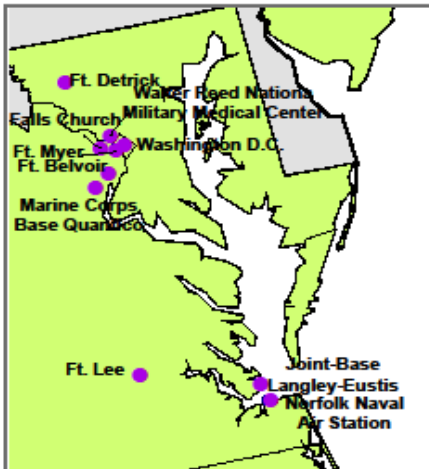
New Soldier Study (NSS)

- 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
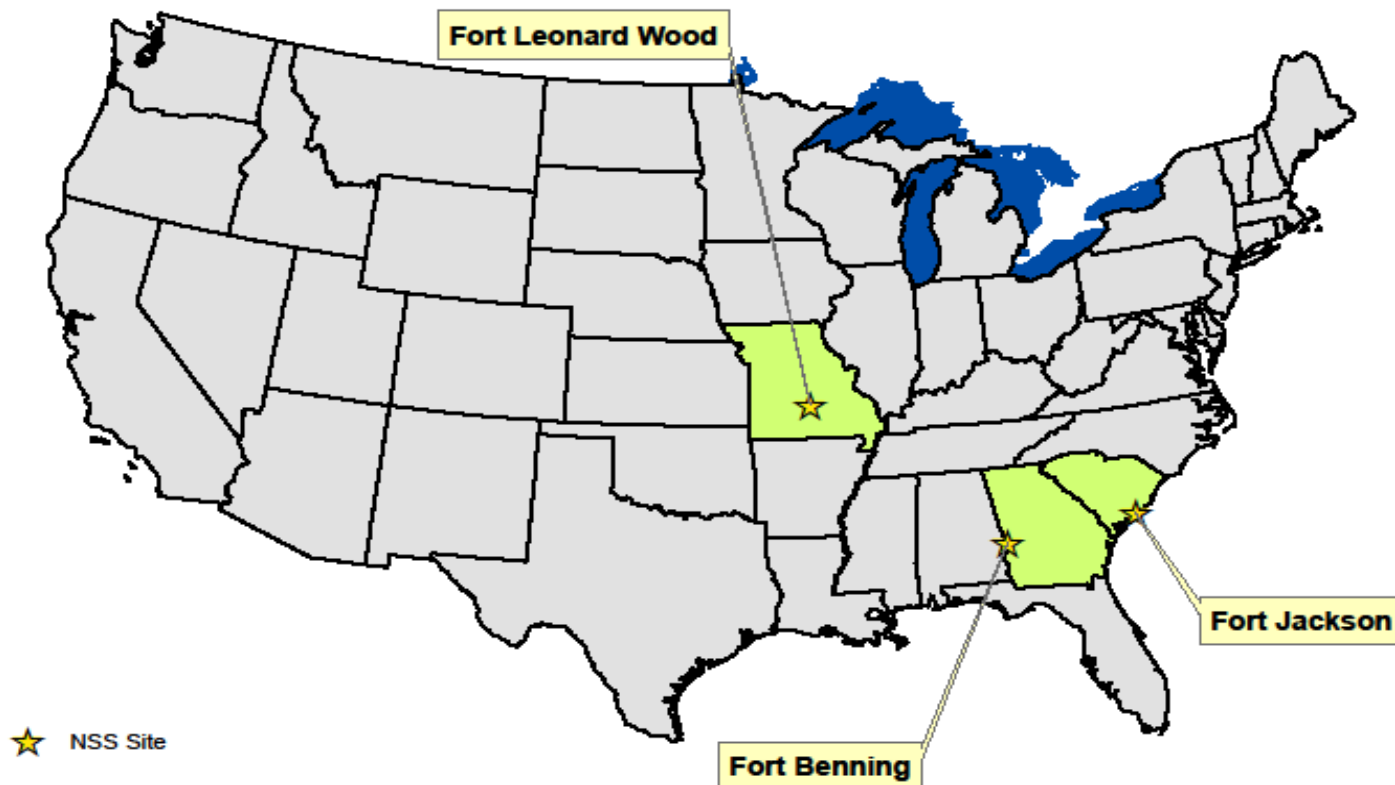
Pre-Post Deployment Study (PPDS)

- Longitudinal study of soldiers from 3 Army brigade combat teams (at Joint Base Lewis-McChord, Ft. Bragg and Ft. Carson)
- Designed to follow deploying soldiers over time to assess the effects of deployment
- Interviews at 4 time points – one prior to and three after return from deployment to Afghanistan
- Blood collection at 2 time points - one prior to and one after deployment
- Data collected from January 2012 through April 2014.
- Asked for consent to link survey data to Army & DoD administrative data

PPDS Data Collection Locations

Joint Base Lewis-McChord

Ft. Carson

Ft. Bragg
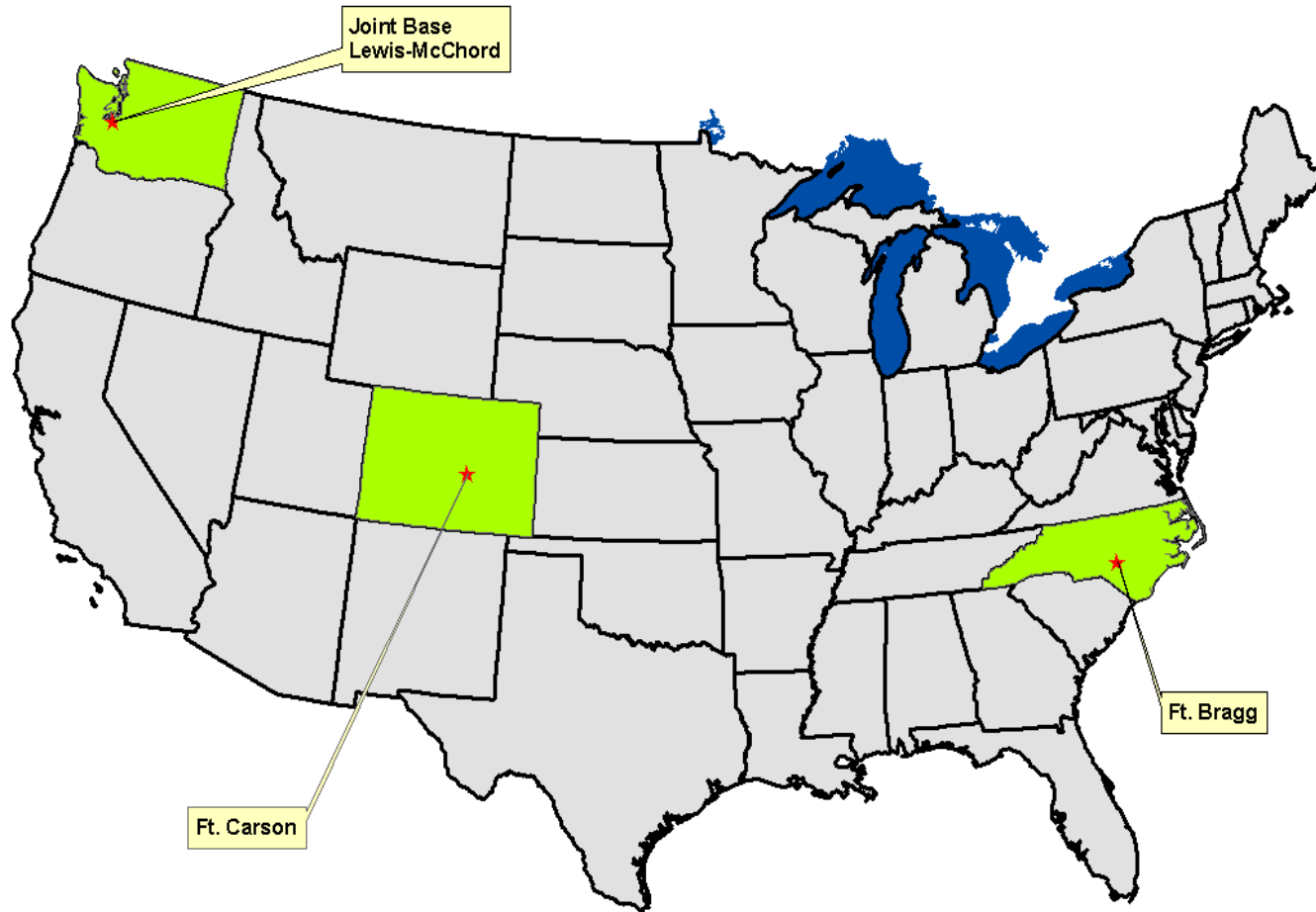
Number of AAS, NSS and PPDS Participants

Number of Soldiers	AAS	NSS	PPDS
Sample selected	47,744	53,418	9,616
Attended consent session	40,148	53,418	
Started survey	36,591	53,349	
Completed survey	34,813	50,012	9,488
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	8,558

STARRS-LS Goals

To administer periodic follow-up tracking surveys of baseline Army STARRS survey respondents, to capture changes over time in the behavioral health and well-being of the participants

Specifically:

- To continue to refine the identification of risk and protective factors for suicide and other adverse outcomes

- To update and extend Army STARRS risk prediction models for suicide, suicide attempts, and other outcomes (e.g., PTSD, accidental deaths, violence toward others)

STARRS-LS Wave 1 and Wave 2

- Longitudinal follow-up of AAS, NSS and PPDS respondents
- Mixed-mode design. Participant have options:
  - Complete self-administered **web** interview
  - Complete interviewer-administered **telephone** interview
- Wave 1: Sept 2016 – April 2018
- Wave 2: April 2018 – July 2019
- The interview averaged 45 minutes on the web, and 60 minutes by phone
- Asked for consent to link survey data to Army & DoD administrative data

Number of STARRS-LS Participants

Number of Soldiers	Wave 1	Wave 2
Eligible for survey	72,387	14,508
Sampled for survey	51,962	14,508
Consented to survey	16,094	12,263
Completed survey and Survey data at ICPSR* *Completed survey, consented to linking survey data to Army/DoD admin data, and data were successfully linked	14,508	12,156

Army STARRS and STARRS-LS Survey Content

- Demographics, basic career information, education

- Active Army career and after separation from military service, i.e., Veteran

- General health, injuries, tobacco use, substance abuse

- Mental Health
  - Depression
  - Bipolar disorder
  - Anxiety
  - Anger Attacks
  - Panic
  - Suicidality and self harm
  - Stressful experiences

- Perceptions of Unit

- Deployment experiences

Survey Content (Continued)

- Help-seeking
- Family mental health history
- Personal relationships, social networks
- Personality characteristics
- Ownership of firearms
- Income
- Childhood experiences

- Neurocognitive Tests (NSS Only)
    - Motor Praxis Test
    - Continuous performance Test
    - Emotional Stroop Test
    - Go-No Go Test

Publications Summary (as of June 27, 2022)

115 studies published, accepted, or submitted

Status details of 115 studies:
- 112 studies published
- 1 study accepted for publication
- 2 studies submitted for publication

Highlighted Findings

Premilitary Mental Health & Suicide Attempt Risk during Service (NSS, linked admin)

- 21,772 Regular Army enlisted soldiers followed via administrative records over their first 48 months of service

- Self-reported lifetime (pre-enlistment) risk factors at baseline:

  Mental disorder: 37.7%
  Suicide ideation (SI): 13.0%
  Suicide attempt (SA): 1.7%
  Non-suicidal self-injury (NSSI). 7.3%
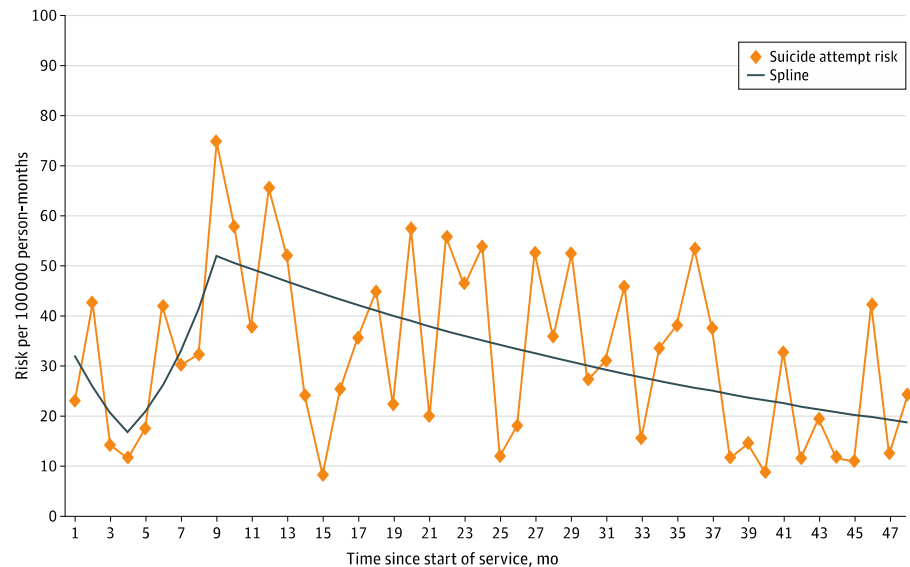
- Among soldiers who do not receive a mental health diagnosis (MH Dx), baseline (pre-enlistment) risk factors for future SA during service are: SI (OR=2.2 [95%CI=1.1-4.4]), SA (OR=11.3 [95%CI=4.3-29.2]), and NSSI (OR=3.0 [95%CI=1.3-6.8])

- Among those with a MH Dx, baseline risk factors for future SA during service are: mental disorder (OR=1.4 [95%CI=1.0-1.9]), SA (OR=3.4 [95%CI=2.1-5.6]), and NSSI (OR=1.8 [95%CI=1.1-2.8])

- Pre-enlistment SA is the only baseline predictor that significantly differs by MH Dx history, having a larger OR among Soldiers with no MH Dx in their military medical records

Predicting Homelessness Following Separation or Deactivation

- LS1 and LS2 surveys followed soldiers after separation or deactivation, allowing us to learn about subsequent self-reported homelessness and pre-separation/deactivation predictors

- Pooled across LS1 and LS2, 2.9% of the n=16,589 respondents who had separated or deactivated before the survey reported being homeless at some time in the prior 12 months

- A generalized stacked ensemble machine-learning model was used to predict homelessness from administrative and survey data available prior to separation or deactivation. The model was developed in a 70% equal-probability subsample and evaluated the remaining 30% test sample

- AUC was .78 in the total sample and higher among respondents who left active duty 0-2 years before the LS survey (.81) and those whose most recent baseline (i.e., prior to separation or becoming inactive) survey was less than 3 years before their LS survey (.85). Model calibration was excellent (ECE=0.012). The 17% of respondents with highest predicted risk included 51.5% of the homeless. Prevalence of homelessness in this high-risk segment of the population was 8.3%

- These results show that Service members at high risk of homelessness following military separation or deactivation can be identified using a brief battery that could be administered prior to transition out of service to target preventive interventions

- Ongoing analyses are exploring the possibility of finding distinct risk profiles based on data available pre-separation/deactivation or process measures obtained in the LS surveys among the 17% of high-risk soldiers that might help guide selection of best preventive interventions

Koh, et al (2022) *American Journal of Preventive Medicine*

Associations of Vulnerability to Stressful Life Events with Suicide Attempts after Active Duty among High-Risk Soldiers*

- As a follow-up to developing the prediction model for suicide attempts after leaving active duty, we investigated the possibility that these predictive effects were mediated or modified by stressful life events (SLEs) faced by transitioning soldiers. Although SLEs are thought to be implicated in post-separation/deactivation suicidality, systematic prospective evidence is lacking

- We asked about SLEs in the follow-up surveys. Conventional demographic rate standardization methods were used to examine their role in predicting suicide attempts

- The 15% of respondents identified as high-risk had significantly elevated prevalence of some post-separation/deactivation SLEs. In addition, the associations of some SLEs with SAs were significantly stronger among predicted high-risk than lower-risk respondents. 59.5% of the overall association between the predicted high-risk index and subsequent SAs was linked to these SLEs

- These results suggest that targeted preventive interventions for high-risk transitioning Service members aimed at reducing exposure/vulnerability to commonly occurring SLEs might prevent a substantial proportion of post-separation/deactivation Sas

* The study population was a mix of former Soldiers, i.e., Veterans, and Guard/Reserve members who deactivated following active military service, but who are still members of the Selected Reserve, i.e., (usually) not Veterans.

Applying for Data Access
Army Study to Assess Risk and Resilience in Servicemembers (STARRS)

Alexandra Toma
Data Project Manager, ICPSR

Overview

- Public-Use Datasets, Restricted Access

- Starting an Application

- Application Requirements
    - Restricted Data Use Agreement
    - IRB Approval/Exemption
    - Data Security Plan
    - Annual VDE Access Fees

- Application Review and Authorization

- Publication Requirements – Citation and Acknowledgement

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 Restricted Data Use Agreement must be established prior to access. Researchers interested in accessing restricted data must submit their request via ICPSR's online application system

Starting the Application Process

Guidelines for Applying for Restricted Data ✕

The Army Study to Assess Risk and Resilience in Servicemembers (STARRS) is restricted from general dissemination. Users interested in obtaining these data must complete a Restricted Data Use Agreement, specify the reasons for the request, and obtain IRB approval or notice of exemption for their research.

Applicants may request access via Secure Dissemination or via ICPSR's Virtual Data Enclave (VDE). Those requesting VDE access will be required to pay an access fee.

Methods of Accessing Restricted-Use Data

ICPSR offers two methods of accessing the restricted-use data from this study:

- secure dissemination of the microdata
- remote access to the microdata via ICPSR's Virtual Data Enclave (VDE)

Which Method Should You Choose?

Applicants with a terminal degree (e.g., PhD, MD, DrPH, JD, etc) in a social science field and an appointment at a research institution are likely to be able to access the data via secure dissemination. Most other applicants will need to access these restricted-use data via the VDE.

Information to Help You Complete Your Request

Applicants should be prepared to provide the following:

- Project description supporting need to access the data
- IRB document (approval or exemption)
- Data Use Agreement signed by the Investigator and a legal representative of the institution
    1. Secure Dissemination: DUA is available within the request system
    2. VDE: DUA is emailed to requester after request is initiated
- Data security plan
    1. Secure Dissemination: created within the request system
    2. VDE: In DUA as Attachment A
- Roster of research staff who will access the data; may need to include IT staff able to view the data or access the computer where the data are hosted

Not Sure? Contact ICPSR user support

[Secure Dissemination] [Virtual Data Enclave] lose

The Army Study to Assess Risk and Resilience in Servicemembers (STARRS) is an extensive study of mental health risk and resilience among military personnel. Army STARRS has five study components: (1) Historical Administrative Data Study, (2) New Soldier Study (NSS), (3) All Army Study (AAS), (4) Pre-Post Deployment Study (PPDS), and (5) Special Studies. At this time, the AAS, NSS, and PPDS data are available from ICPSR under a restricted-use data agreement via the Virtual Data Enclave (VDE). In addition, data for the STARRS-Longitudinal Study

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Application Requirements

In addition to describing the proposed research, investigators wishing to apply for data access will be required to:

1. Complete the *Restricted Data Use Agreement*
2. Submit an IRB approval/exemption letter
3. Select and agree to a *Data Security Plan*
4. For VDE use: pay annual access fee

1. Restricted Data Use Agreement (RDUA)

- <u>Investigators</u> must meet the following criteria:
  - Hold a Ph.D. or other terminal degree(s)
  - Hold a faculty appointment or research position at an academic or research institution
- <u>Research Staff</u> may include:
  - Authorized project staff who are affiliated with the Investigator's institution
  - Students conducting dissertation or thesis research under the Investigator's supervision
- <u>Institutional Representative</u>:
  - University representative with signatory authority; someone who is legally authorized to enter into contractual agreements on behalf of the institution
    - ✓ e.g., Representative from contracts or research office, President, Provost

Please note:

The RDUA is valid for two years from the date of the Institutional Representative signature, with an option to extend the RDUA annually.

Any requests to modify the terms of the RDUA must be reviewed and approved by ICPSR's legal team, which can result in significant delays.

2. IRB Approval/ Exemption Letter

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

- A letter or email indicating IRB approval or exemption of the proposed research project must be submitted to ICPSR

3. Data Security Plan

Virtual Data Enclave (VDE)

- The VDE provides access to restricted data via a Virtual Desktop Interface that is managed by ICPSR

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

- The VDE includes most statistical software packages, including SPSS, Stata, SAS, Mplus, and R

- The VDE Data Security Plan is appended to the VDE RDUA, all users must read and agree

- All output must be vetted and removed from the VDE by ICPSR staff

Secure Dissemination

- Restricted data files are sent directly to the user via a secure electronic file transfer

- The user is required to store and access the files in a secure manner that adheres to the Data Security Plan selected in the online application portal

- Users have three Data Security Plan options:
  - Encrypted external hard drive
  - Standalone, non-networked PC
  - Local VDI or local physical enclave

- The user must destroy all data files at the conclusion of the project and self-vet any output prior to publication

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For those who opt to access Army STARRS data via ICPSR's VDE, user licensing fees apply:

- Data access fee is $485 per user, per year as of July 2022

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

Application Review and Authorization

- An ICPSR Project Manager assigned to the Army STARRS project will review the application documents for completion and accuracy within 1-2 weeks of submission

- If the application is not approved, ICPSR will indicate which items require corrections, and users may resubmit application materials as many times as needed

- Approval notification will be sent via an automated email containing further access instructions

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, Steven G. Heeringa, and James Wagner. Army Study to Assess Risk and Resilience in Servicemembers (STARRS). ICPSR35197-v7. Ann Arbor, MI: Interuniversity Consortium for Political and Social Research [distributor], 2020-08-27. http://doi.org/10.3886/ICPSR35197.v7

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 (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.v7). The contents of this publication are solely the responsibility of the authors and do not necessarily represent the views of the STARRS investigators, funders, Department of the Army, or Department of Defense.

Questions & Answers (Q&A) and Discussion

Thank you for joining us!

For further information or questions regarding Army STARRS and STARRS-LS Public Use Data, please contact ICPSR User Support:
help@icpsr.umich.edu

Additional Resources:
ICPSR webinar recording from 2017:
"An Introduction to the Army STARRS Survey Data"

Army STARRS ICPSR web page:
https://www.icpsr.umich.edu/web/ICPSR/studies/35197