

# GROWING OLDER IN AMERICA



## GETTING TO KNOW HRS

CCADMR Meeting  
March 8, 2019

# CCADMR SUPPORT FOR HRS



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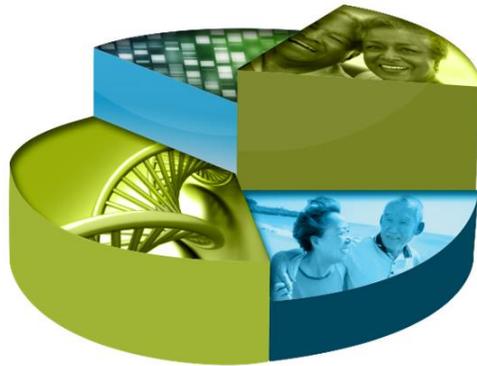
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Doctoral Candidate, Sociology  
Graduate Assistant, Analysis Core CCADMR

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# TABLE OF CONTENTS

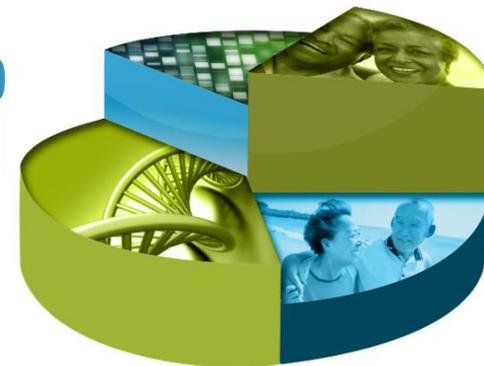
1.

HEALTH AND  
RETIREMENT  
STUDY  
OVERVIEW



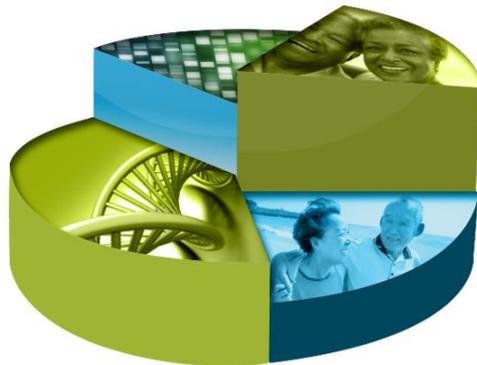
2.

HEALTH AND  
RETIREMENT  
STUDY  
RAND FILES



3.

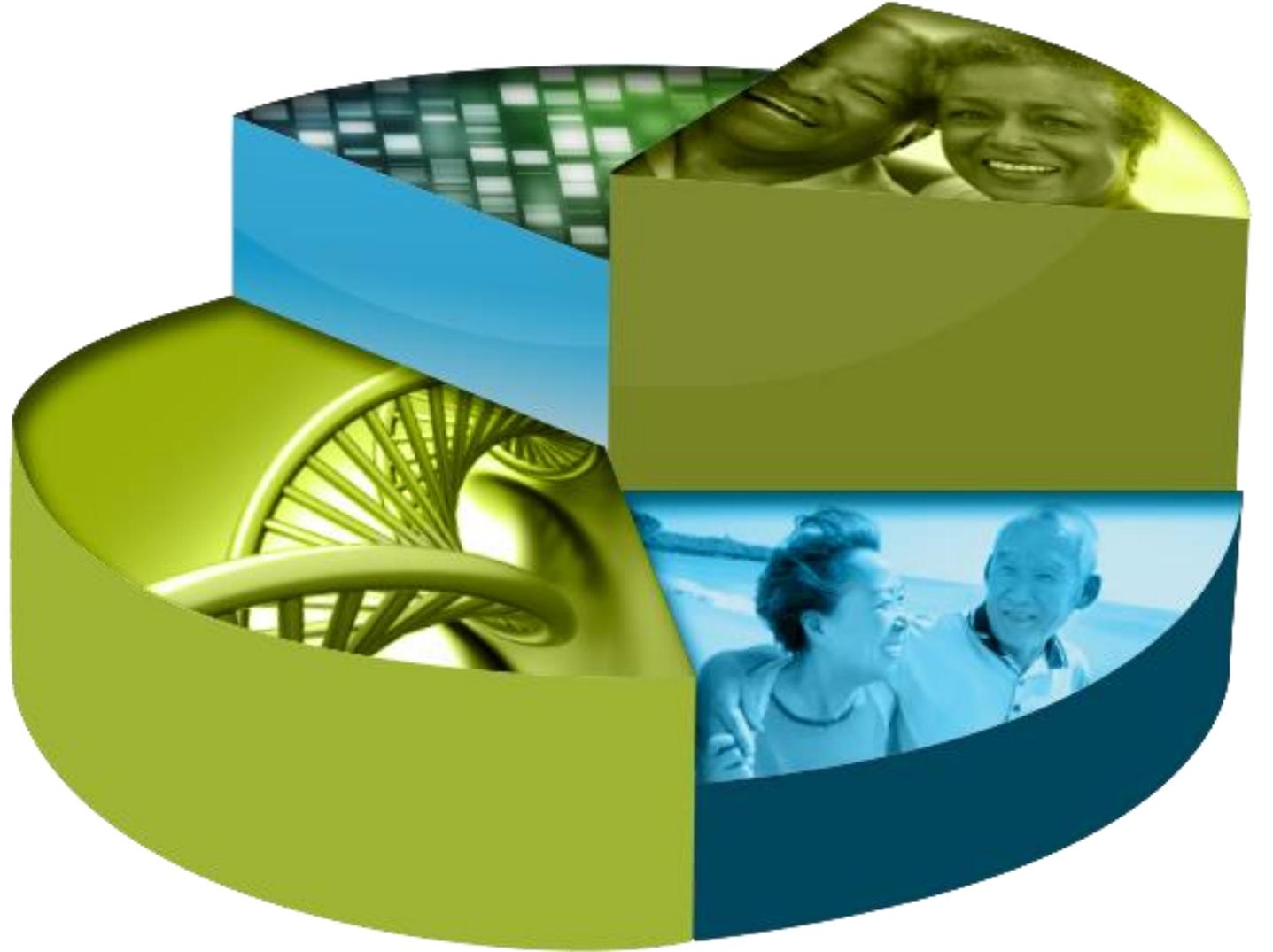
HEALTH AND  
RETIREMENT  
STUDY  
COGNITION  
DATA



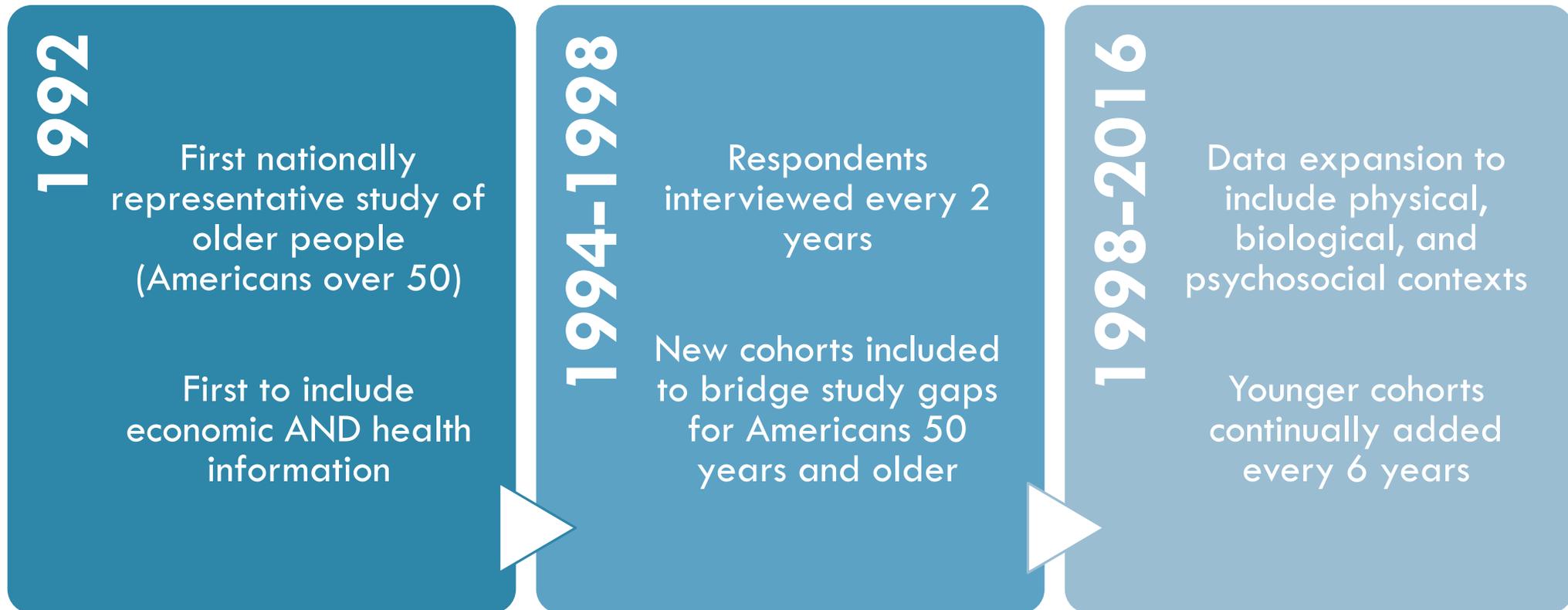
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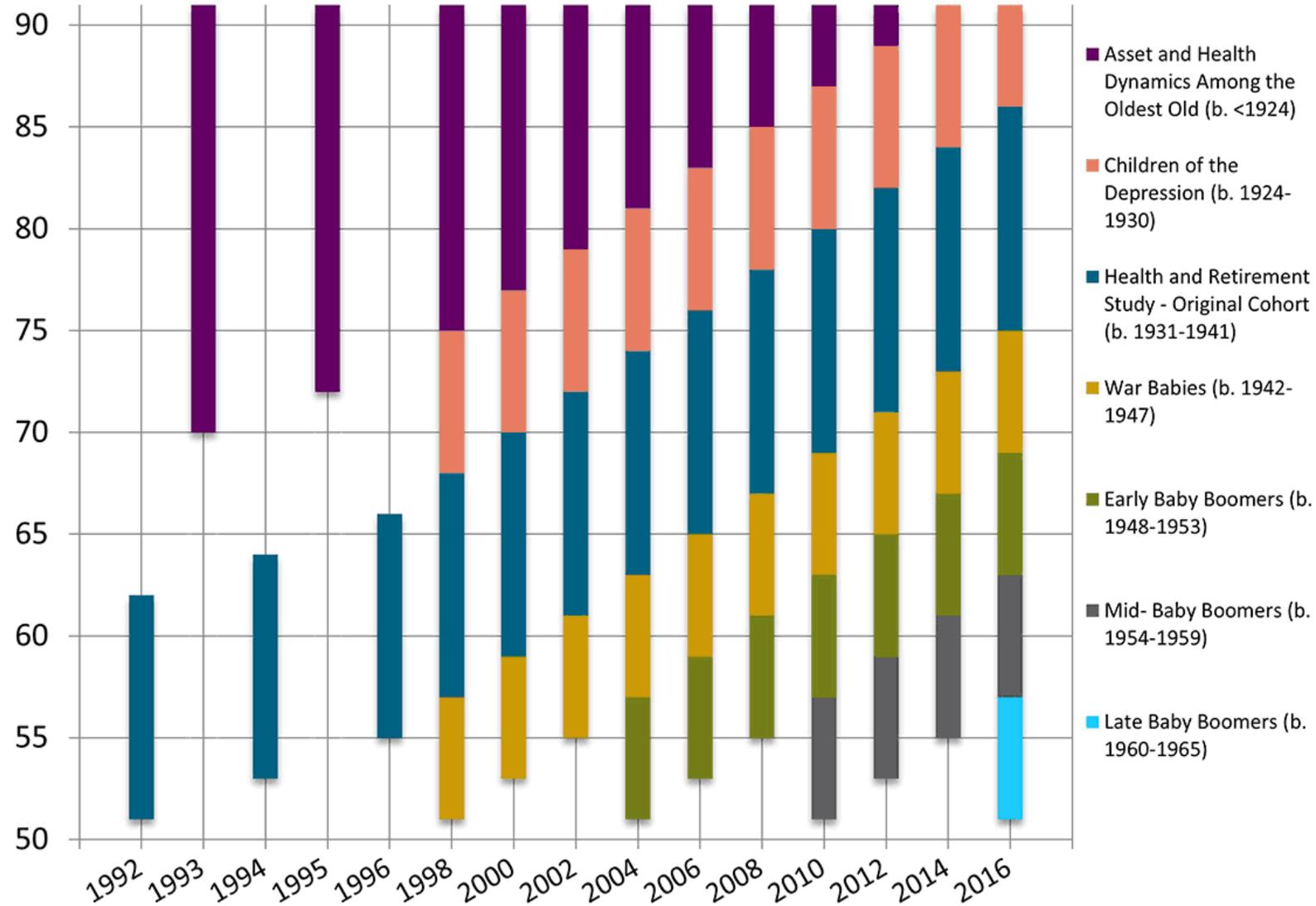


# HISTORY



HRS sponsored by the National Institute on Aging (NIA) and Social Security Administration

# SAMPLE DESIGN



# RESPONSE RATES

Cohort	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10
HRS	81.6 1992	89.4 1994	86.9 1996	86.7 1998	85.4 2000	86.6 2002	86.4 2004	88.6 2006	88.6 2008	86.6 2010
AHEAD	80.4 1993	93.0 1995	91.4 1998	90.5 2000	90.1 2002	89.4 2004	90.6 2006	90.7 2008	89.3 2010	
CODA	72.5 1998	92.3 2000	91.2 2002	90.1 2004	91.4 2006	90.4 2008	89.0 2010			
WB	69.9 1998	90.9 2000	90.6 2002	87.9 2004	88.1 2006	87.0 2008	87.4 2010			
EBB	75.3 2004	87.7 2006	86.3 2008	85.9 2010						

# STUDY DESIGN

1992-2004

## Face-to-face interviews

- All baseline core interviews (some exceptions: e.g. AHEAD cohort)

## Telephone interviews

- All follow up interviews (some exceptions: e.g. respondents over 80 years of age, 2004 face-to-face follow up to increase consent)

2006-

## Mixed mode design / Enhanced face-to-face interviews

- Half of sample assigned face-to-face interview (given physical, biological, and psychosocial measures)
- Half of sample assigned telephone interview (NOT given physical, biological, or psychosocial measures)
- Samples randomly assigned
- Samples alternate every 2 years

	2006	2008	2010	2012	2014
EFTF Sample	A	B	A	B	A

A=First random half sample  
B=Second random half sample

# STUDY DESIGN: RESPONDENTS

	DATA TYPES	
	RESPONDENT LEVEL	HOUSEHOLD LEVEL
 Single respondents		
 Coupled respondents	 	 Financial respondent  Family respondent
 Proxy respondents		

# STUDY CONTENT

CORE INTERVIEW	EXPERIMENTAL MODULES	ENHANCED FACE-TO-FACE INTERVIEWS	SUPPLEMENTAL STUDIES	ADMINISTRATIVE DATA
<ul style="list-style-type: none"> <li>• Sample 18,000 – 23,000 at any given wave</li> <li>• Topics include:               <ul style="list-style-type: none"> <li>• Health</li> <li>• Health services</li> <li>• Labor force</li> <li>• Economic status</li> <li>• Family structure</li> <li>• Expectations (decision making)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Given at end of core interview to random subsample</li> <li>• About 10 each wave</li> <li>• Sample ~1,500</li> <li>• Includes various topics:               <ul style="list-style-type: none"> <li>• More detail on core topic</li> <li>• Topics not in core</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Given to half of core sample (alternates every 2 years)</li> <li>• Includes biological, physical, and psychosocial topics               <ul style="list-style-type: none"> <li>• Physical measures</li> <li>• Saliva sample (DNA)</li> <li>• Blood sample (biomarker)</li> <li>• Psychosocial questionnaire (mail back)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Employed in off years</li> <li>• Linkable to core study</li> <li>• Sample 3,000 – 7,000</li> <li>• Studies include:               <ul style="list-style-type: none"> <li>• ADAMS ←</li> <li>• Consumption and activities</li> <li>• Diabetes care</li> <li>• Prescription drugs</li> <li>• Human capital investments in children</li> <li>• Subjective well being</li> <li>• Internet surveys</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Linkable to core study at individual level</li> <li>• Confirms self reported data and adds new information</li> <li>• Includes:               <ul style="list-style-type: none"> <li>• Social security earnings and benefits</li> <li>• Medicare claims</li> <li>• National death index</li> <li>• Veteran’s administration</li> <li>• Employer provided pension plans</li> </ul> </li> </ul>

# ACCESSING HRS DATA

<https://hrs.isr.umich.edu/data-products> → **Register and Access Public Data**

(registration is required) click Registered Users or New Users

After logging in, proceed to Data Downloads page...

### HRS Biennial Data Products

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- [1992 HRS Imputations \(Final\) \(v.3.0\)](#)
- [1992 RAND HRS Fat File \(v.1B\)](#)
  
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- [1995 AHEAD Exit Imputations \(Final\) \(v.1.0\)](#)
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- [1996 HRS Core \(Final\) \(v.4.1\)](#)
- [1996 HRS Core Supplement \(Final\) \(v.1.0\)](#)
- [1996 HRS Exit \(Final\) \(v.1.0\)](#)
- [1996 HRS Core Imputations \(Final\) \(v.3.0\)](#)
- [1996 HRS Exit Imputations \(Final\) \(v.1.0\)](#)
- [1996 RAND HRS Fat File \(v.4A\)](#)
  
- [1998 HRS Core \(Final\) \(v.2.3\)](#)
- [1998 HRS Exit \(Final\) \(v.1.0\)](#)
- [1998 HRS Post-Exit \(Final\) \(v.1.0\)](#)
- [1998 HRS Core Imputations \(Final\) \(v.3.0\)](#)
- [1998 HRS Exit Imputations \(Early\) \(v.2.0\)](#)
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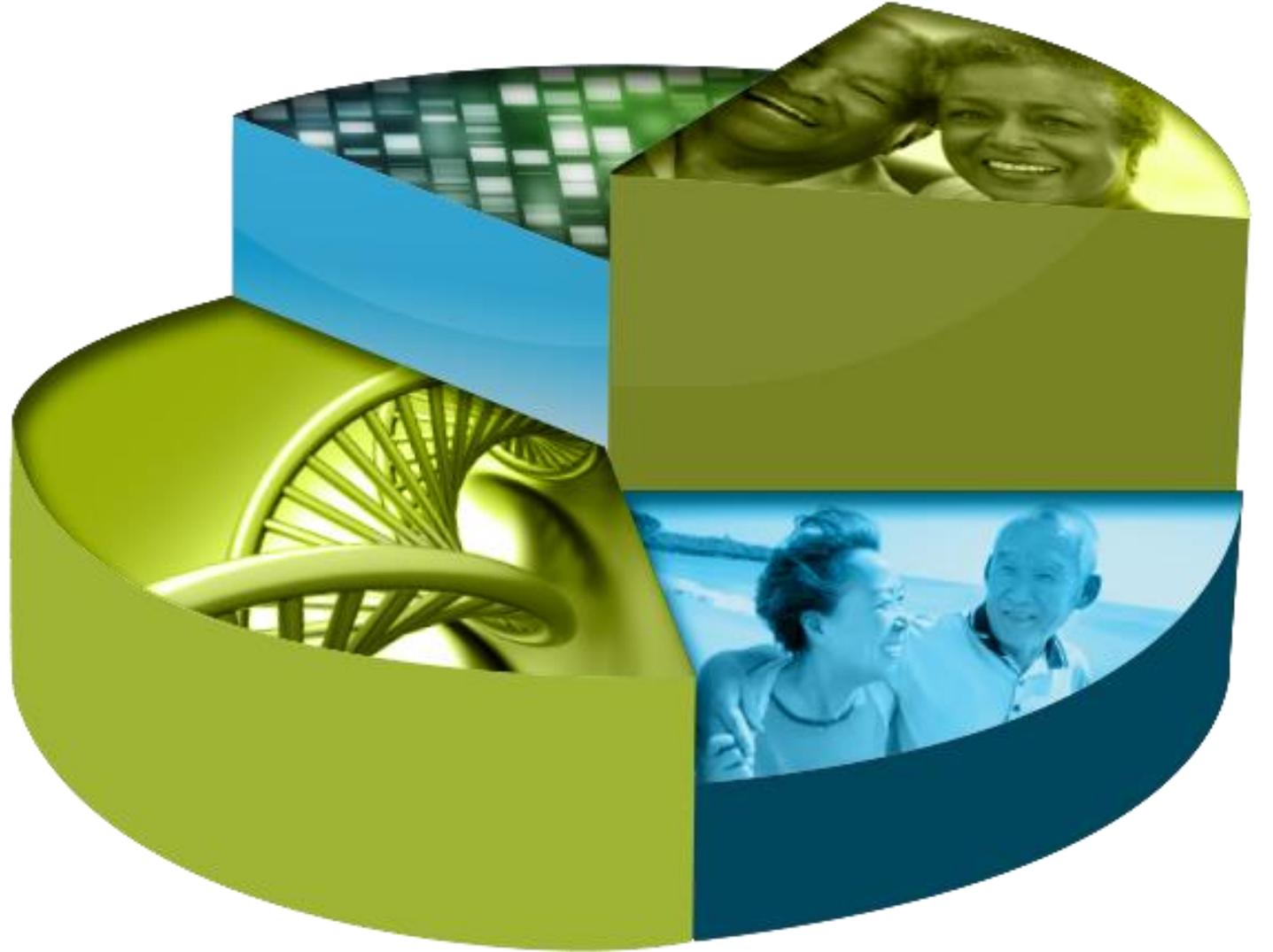
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HEALTH AND  
RETIREMENT  
STUDY  
RAND FILES



# RAND FILES

Harmonized database of select HRS measures by RAND Center for the Study of Aging

Easy to use files containing select HRS data in multiple data formats

Variables longitudinally comparable across years and some variables imputed

Multiple files available...



# RAND: FAT FILES

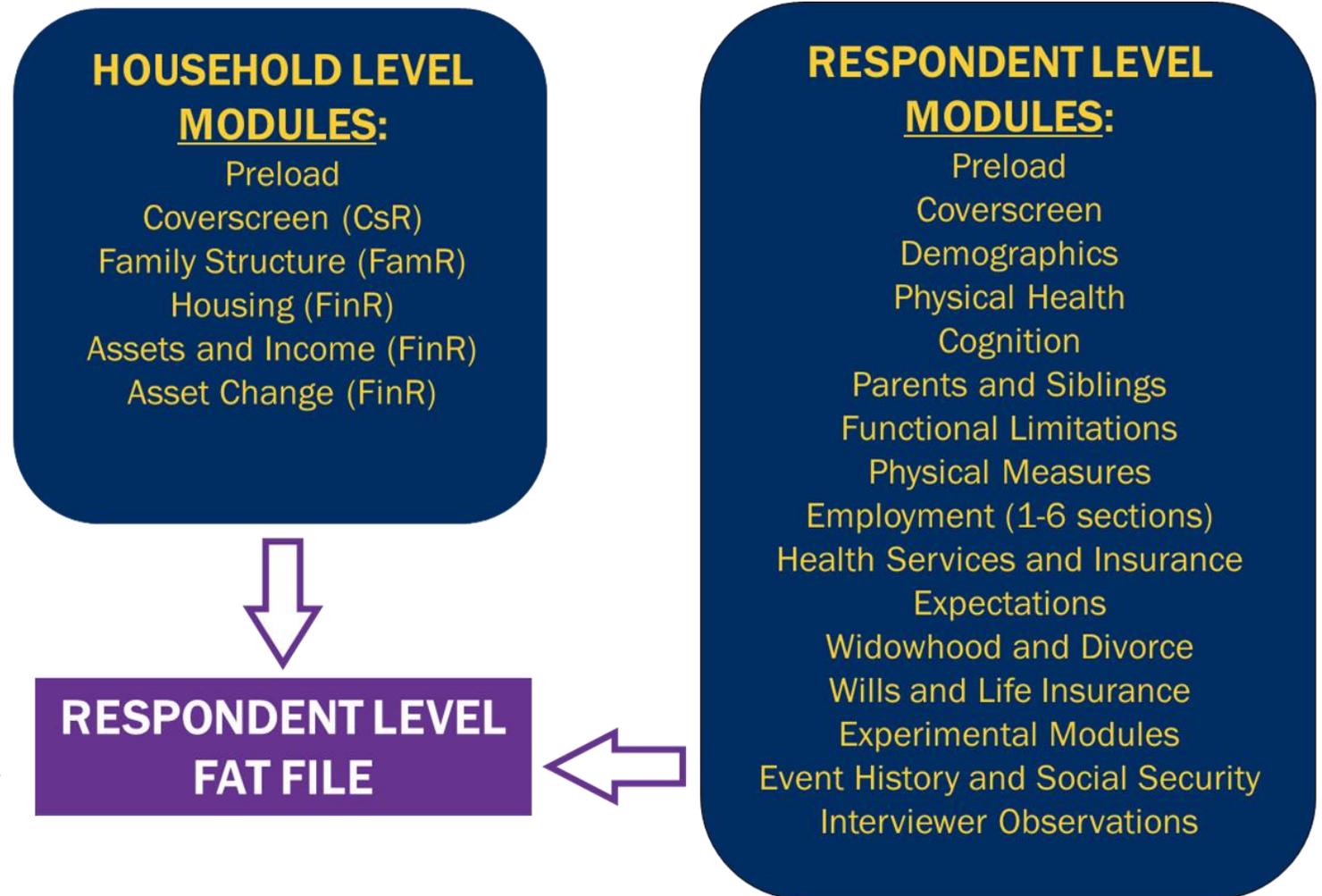
One file for each survey year merged to respondent level

Includes:

- (most) raw variables from respondent and household level modules

For coupled respondents, household information attached to both respondent and spouse record

- Variables included to indicate which respondent the information applies to (i.e. who answered the raw question)



# ACCESSING RAND DATA

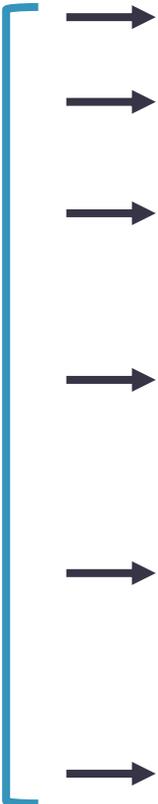
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RAND  
Fat Files

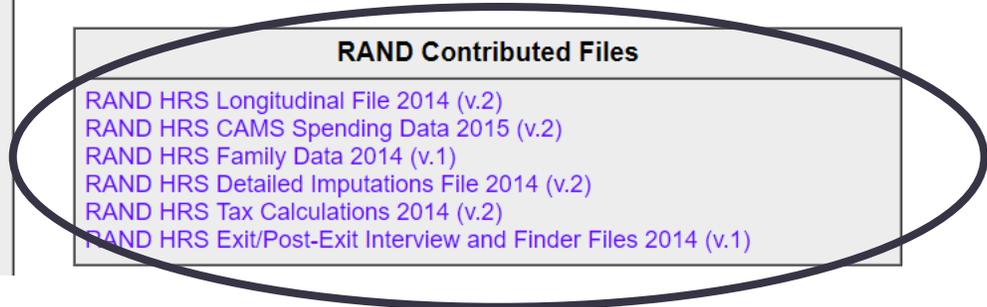


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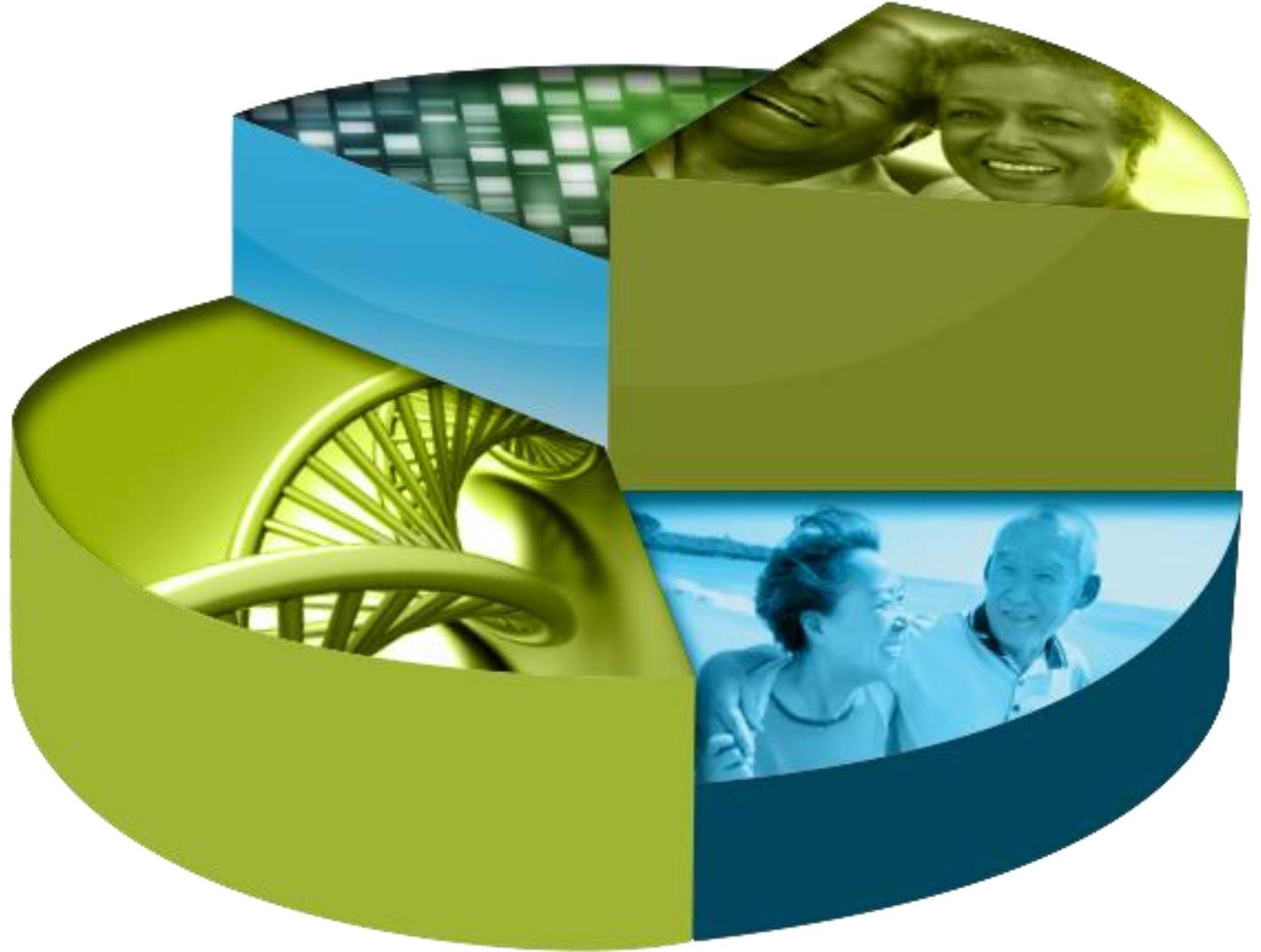
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HEALTH AND  
RETIREMENT  
STUDY  
COGNITION  
DATA



# COGNITION DATA

**Core Interview**

**ADAMS**

**HCAP**

# COGNITION DATA

## Core Interview

- Multiple sections
- Available alongside full HRS data

## ADAMS

## HCAP

# COGNITION DATA: CORE INTERVIEW

MEASURES	DESCRIPTION
Immediate and Delayed Free Recall	List 10 nouns (1998-2006); List 20 nouns (1992 and 1994)
Serial 7s	Count backwards from 100 by 7 (5 times)
Count Backwards	From 10 and 86
Vocabulary (Crystallized Knowledge)	Define 5 words from two sets
Mental Status (65+)	(1) Name U.S. president and vice president; (2) Describe two objects; (3) Report the day's date
Self-Rated Memory	(1) How would you rate your current memory?; (2) Compared with previous wave interview how is your memory?
Self-Reported Diagnosis (Section C)	Has doctor told you that you have memory-related disease?
Need for Cognition (Leave Behind)	Index of how much R likes thinking/challenging mental tasks
Quantitative Reasoning (Numeracy)	(1) Everyday number problem; (2) Number series problems
Verbal Fluency	Name examples from a category within 1 minute period
Verbal Analogies	E.g. Mother is to Father as Daughter is to _____.

# CORE INTERVIEW: WAVE DIFFERENCES

MEASURE	92	93	94	95	96	98 & later	10 & later
Immediate Recall (20)	Yes	No	Yes	No	No	No	No
Immediate Recall (10)	No	Yes	No	Yes	Yes	Yes	Yes
Delayed Recall (20)	Yes	No	Yes	No	No	No	No
Delayed Recall (10)	No	Yes	No	Yes	Yes	Yes	Yes
Serial 7s	No	Yes	No	Yes	Yes	Yes	Yes
Count Backwards from 10 & 86	No	Yes	No	Yes	Yes	Yes	Yes
Everyday Numbers (02 onwards)	No	No	No	Yes	Yes	Yes	Yes
Number Series	No	No	No	No	No	Yes	Yes
Verbal Fluency	No	No	No	No	No	Yes	Yes
Rate Memory	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mental Status (TICS 65+ Only)	No	Yes	No	Yes	Yes	Yes	Yes
Vocabulary (65+: After 04 Alternate Yrs)	No	No	No	Yes	Yes	Yes	Yes
Proxy Interview	No	Yes	No	Yes	Yes	Yes	Yes

# SUMMARY VARIABLES (RAND)

Summary Measure	Episodic Memory	Mental Status	Cognitive Functioning
Variables Included	Immediate word recall Delayed word recall	Serial 7's Backwards counting by 20 Naming tasks: (object, date, VP/President)	Total Word Recall Mental Status Summary
Range	0-20	0-15	0-35
Variable Name	RwTR20 (Total Word Recall)	RwMSTOT (Mental Status Summary)	RwCOGTOT (Total Cognition Score)

# COGNITION DATA

## Core Interview

- Multiple sections
- Available alongside full HRS data

## ADAMS

- Aging, Demographics, and Memory Study
- Supplemental

## HCAP

# COGNITION DATA: ADAMS

## Aging, Demographics, and Memory Study

- First national study of dementia in the US

## Off year study starting in 2001

- 1,770 HRS respondents aged 70+ selected from HRS 2000 & 2002 waves
- 856 completed interview 2001-2003
- Followed over 10 years for four data waves

Sample stratified by cognitive functioning determined in core interview:

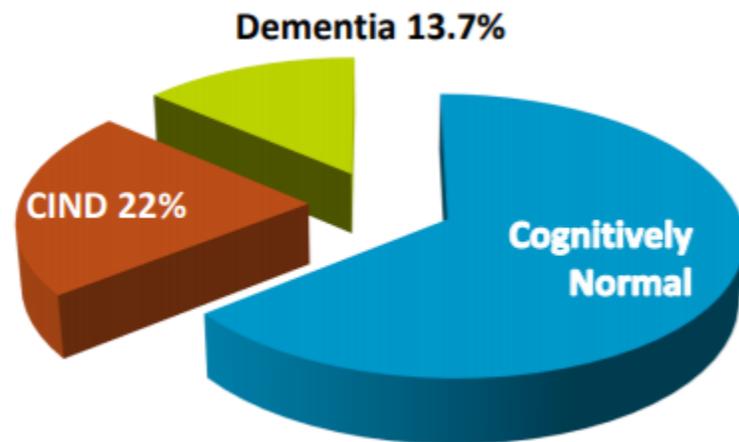
Normal Functioning											Borderline Impaired	Low functioning (proxy info.)	
High				Moderate				Low			Borderline Impaired	Low functioning	
Male		Female		Male		Female		Male		Female			
≤ 79	80+	≤ 79	80+	≤ 79	80+	≤ 79	80+	≤ 79	80+	≤ 79	80+		

# ADAMS: DATA AVAILABILITY

Extensive in-home clinical evaluations and neuropsychological assessments

- Determines normal function, cognitive impairment not dementia (CIND), or dementia

## U.S. Estimates from ADAMS



Plassman et al. (2007) *Neuroepidemiology*, 29, 125-132

- Clinical and medical history
- Clinical dementia rating scale
- Family history and memory problems
- Informant questionnaire
- Blessed dementia scale
- Modified Hachinski Ischemic score
- Dementia severity rating scale
- Neuropsychiatric inventory (e.g. trail making, CERAD tests, symbol digit test)
- Composite interactional diagnostic interview
- CIDI depression screen
- Memory impairment screen
- Buccal DNA sample for APOE genotyping, height/weight, BP, pulse
- Standardized neurological physical examination
- Current prescription medications
- Caregiving questionnaire

All 4 waves

# COGNITION MEASURE CUT POINTS

## Herzog & Wallace (1997)

Cognitive Impairment	No Cognitive Impairment
8 or less	9 or more

## Langa, Kabeto, & Weir (2009)

Dementia	CIND	No Cognitive Impairment
0-6	7-11	12-27*

CIND = Cognitive Impairment No Dementia

\*To apply cut points to those under 65 years of age, orientation and naming items are not included

Crimmins, E.M., Kim, J.K., Langa, K.M., & Weir, D.R. (2011). Assessment of cognition using surveys and neuropsychological assessment: the health and retirement study and the aging, demographics, and memory study. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 66B(S1), 1162-1171, doi:10.1093/geronb/gbr048

## Assessment of Cognition Using Surveys and Neuropsychological Assessment: The Health and Retirement Study and the Aging, Demographics, and Memory Study

Eileen M. Crimmins,<sup>1</sup> Jung Ki Kim,<sup>1</sup> Kenneth M. Langa,<sup>2,3</sup> and David R. Weir<sup>4</sup>

# COGNITION DATA

## Core Interview

- Multiple sections
- Available alongside full HRS data

## ADAMS

- Aging, Demographics, and Memory Study
- Supplemental

## HCAP

- Healthy Cognitive Aging Project
- Newest data

# COGNITION DATA: HCAP

## Healthy Cognitive Aging Project (or Harmonized)

- Newest cognition data available
- Compared to ADAMS: less intensive, less expensive
- Designed to be comparable to HRS sister studies (global comparisons – [Gateway to Global Aging](#))

## Two interviews:

### 1. 1-hour respondent interview

- Cognitive test battery (overlaps with HRS core interview and ADAMS)
- Only self-interview, no proxy interviews

### 2. 20 minute informant interview

- Individual nominated by respondent
- Questions about respondent's functioning and changes in abilities over last 10 years

# HCAP: SAMPLE AND DATA

~3400 respondents

- Subset of HRS respondents, 65+ years old who completed HRS 2016 interview
- 1/2 uncoupled respondents, 1 respondent from each couple
- Self or proxy respondents from HRS – BUT HCAP must be self-interview

Various neuropsychometric tests and HRS core measures

## Respondent Tests

- MMSE
- CERAD word list learning recall and recognition CERAD construction praxis
- Animal Naming
- Symbol digit substitution test
- Story recall via brave man and logical memory
- Letter cancellation
- Backwards counting (from MIDUS)
- Number series (from HRS)
- TICS (from HRS)
- Raven's standard progressive matrices (on subset of sample)
- CES-D
- Smell test (from NSHAP) (optional)

## Informant Questionnaire

- Jorm IQ-Code
- Blessed
- 10-66 activity questions
- New HRS-developed activity questions

# ACCESSING COGNITION DATA: CORE

<https://hrs.isr.umich.edu/data-products>

On the Public Survey Data page... Biennial Data and Imputations

- Online Questionnaire – provides sections for core cognition data
- Codebook – gives variable information for core cognition data

On the Public Survey Data page... Longitudinal Data

- Cross-Wave Imputation of Cognitive Functioning Measures 1992-2014 (Final V5.0)
- Renames variables to match RAND naming convention
- Data documentation – provides information on imputation process
- Flag variables created for imputation eligibility

On the RAND HRS Data page...

- RAND HRS Longitudinal File Codebook
- Health section – lists all cognition variables including summary measures and constructed variables

# Questionnaires

Biennial Interview Questionnaires

Off-Year and Health Questionnaires

## Biennial Interview Questionnaires

The following table cross-references Core interview content by section across waves. Instructions for identifying Exit Questions appear at the top of the pdf (some Exit Questions appear in fuchsia, others in gray.)

Data collection software changed in 2002 from Surveycraft to Blaise. From 2002 onward, each question retains the 2000 Surveycraft question number and short label, just below the Blaise question number.

Some questions are asked every second, third, or fourth waves; details are available in the [Alternate Wave Questions Master Chart](#).

Columns ▾

Content Area	1992	1993	1994	1995	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018
Table of Contents		Contents	-	Contents	-	Contents	Contents	-	-	-	-	-	-	-	-	-
Preface	-	-	-	Summary	-	Preface	Preface	-	-	-	-	-	-	-	-	-
Preload	-	-	PRE	PRE	-	-	-	-	-	-	-	-	-	-	-	-
Coverscreen	CS	CS	CS	CS	CS	CS	CS	A	A	A	A	A	A	A	A	A
Demographics	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B
Health Status	B	B	B	B	B	B	B	C	C	C	C	C	C	C	C	C
Health Care Utilization	-	E	B	E	E	E	E	N	N	N	N	N	N	N	N	N
Health Care Costs	-	E	B		E	E	E	N	N	N	N	N	N	N	N	N
Functional Limitations, ADL/IADL, Helpers	-	E	B	E	E	E	E	G	G	G	G	G	G	G	G	G
Cognition	L	C	C	C	C	C	C	D	D	D	D	D	D	D	D	D
Proxy Cognition	-	PC	-	PC	PC	PC	PC	D	D	D	D	D	D	D	D	D
Expectations	L	H	C	H	-	H	H	P	P	P	P	P	P	P	P	P

# Sensitive Health Data

The Health and Retirement Study strives to provide high quality data without compromising respondent confidentiality. Since respondent health data records contain particularly sensitive information, such data products are released to researchers who qualify for access only through a supplemental registration system. Product availability, application steps, and download instructions are described below on this page.

Sensitive Health Data:

[Product List](#)

[Access Information](#)

## Available Data Products

### Harmonized Cognitive Assessment Protocol (HCAP)

Name	Documentation	Release Date	Link
Harmonized Cognitive Assessment Protocol (HCAP) 2016 (Final V1.0)	<ul style="list-style-type: none"> <li>Data Description</li> <li>Codebook</li> <li>Questionnaire</li> </ul>	Jan 2019	<a href="#">More Info</a>

### Venous Blood Study (VBS)

Name	Documentation	Release Date	Link
Venous Blood Study (VBS) 2016 (Early V1.0)	<ul style="list-style-type: none"> <li>Data Description</li> <li>Codebook</li> </ul>	Dec 2017	<a href="#">More Info</a>

### Biomarker Data

Name	Documentation	Release Date	Link
Biomarker Data 2014 (Early V1.0)	<ul style="list-style-type: none"> <li>Data Description</li> <li>Codebook</li> </ul>	Dec 2017	<a href="#">More Info</a>
Biomarker Data 2012 (Final V1.0)	<ul style="list-style-type: none"> <li>Data Description</li> <li>Codebook</li> </ul>	Apr 2015	<a href="#">More Info</a>
Biomarker Data 2010 (Final V1.0)	<ul style="list-style-type: none"> <li>Data Description</li> <li>Codebook</li> </ul>	Apr 2015	<a href="#">More Info</a>
Biomarker Data 2008 (Final V1.0)	<ul style="list-style-type: none"> <li>Data Description</li> <li>Codebook</li> </ul>	Apr 2013	<a href="#">More Info</a>
Biomarker Data 2006 (Final V1.0)	<ul style="list-style-type: none"> <li>Data Description</li> <li>Codebook</li> </ul>	Apr 2013	<a href="#">More Info</a>

### The Aging, Demographics, and Memory Study (ADAMS)

#### Tracker File

Name	Documentation	Release Date	Link
The Aging, Demographics, and Memory Study (ADAMS) Cross-Wave Tracker File (Early V7.0)	<ul style="list-style-type: none"> <li>Data Description</li> <li>Codebook</li> </ul>	Dec 2010	<a href="#">More Info</a>

#### Wave Data

Questionnaires

### Prescription Drug Study (PDS)

Name	Documentation	Release Date	Link
Prescription Drug Study (PDS) 2007 (Final V1.0)	<ul style="list-style-type: none"> <li>Data Description</li> <li>Codebook</li> <li>PDS 2007 Questionnaires</li> </ul>	Mar 2011	<a href="#">More Info</a>
Prescription Drug Study (PDS) 2005 (Final V1.0)	<ul style="list-style-type: none"> <li>Data Description</li> <li>Codebook</li> <li>Questionnaire</li> </ul>	Nov 2008	<a href="#">More Info</a>

### Telomere Data

Name	Documentation	Release Date	Link
Telomere Data 2008 (Final V1.0)	<ul style="list-style-type: none"> <li>Data Description</li> <li>Codebook</li> </ul>	Dec 2013	<a href="#">More Info</a>

### Sensitive Health Data:

- Product List
- Harmonized Cognitive Assessment Protocol (HCAP)
- Venous Blood Study (VBS)
- Biomarker Data
- The Aging, Demographics, and Memory Study (ADAMS)
- Diabetes Study
- Health and Well-Being Study (HWB)
- Prescription Drug Study (PDS)
- Telomere Data
- Access Information

## ➔ Access Sensitive Health Data

### Downloading the Data

#### How to Apply

1. Create an account on the [HRS User Registration/File Download Web site](#), if you don't already have one
2. Download and complete the [Sensitive Data Access Use Agreement](#)
3. Submit the [Sensitive Data Order Form](#)
4. *If you did not attach your Agreement in Step 2 to the Order Form in Step 3, send a signed copy of the Agreement via email to [hrsdatareq@umich.edu](mailto:hrsdatareq@umich.edu).*
5. You will be notified when access to download the files has been granted

#### The Approval Process

The Health and Retirement Study will review your request, and based on the information that you provided when you registered at the [HRS Data Download System Web site](#), verify your identity and institutional affiliation. Once this authentication process has been completed to our satisfaction, we will authorize access to the desired data set(s). We will communicate with you at the email address that you provided when you registered at the [File Download Web site](#).

#### Download Instructions

1. Once you receive your approval notification, login at the [HRS Data Download System Web site](#).
2. In the **HRS Special Access Files** box on the right hand side of the page you will now see links to the data set(s) that you have requested.
3. Click on the appropriate link and follow instructions to download the file(s) you need.

#### Access via the MiCDA Enclave

If you have access to [HRS Restricted Data](#) in the MiCDA Enclave (physical or VDI), submit the [Sensitive Data Order Form](#) to have the data added to your Enclave user profile.

# ACCESSING COGNITION DATA: USER GUIDES

<https://hrs.isr.umich.edu/documentation>

On the User Guides page...

- Numerous User Guides available for use of cognition data

Ware EB, Schmitz LL, Faul JD. **HRS Polygenic Scores: 2006-2010 Genetic Data**. Ann Arbor, Michigan: Survey Research Center, Institute for Social Research, University of Michigan; 2017.

📄 Download PDF (599.95 KB)

## Cognition

Fisher GG, McArdle JJ, McCammon R, Sonnega A, Weir DR. **New Measures of Fluid Intelligence in the HRS**. Ann Arbor, Michigan: Institute for Social Research, University of Michigan; 2013.

📄 Download PDF (401.25 KB)

Fisher GG, Hassan H, Faul JD, Rogers W, Weir DR. **Health and Retirement Study Imputation of Cognitive Functioning Measures: 1992-2014**. Ann Arbor, Michigan: Survey Research Center, University of Michigan; 2017.

📄 Download PDF (321.27 KB)

Heeringa SG, Fisher GG, Hurd MD, et al. **Aging, Demographics and Memory Study (ADAMS): Sample Design, Weighting and Analysis for ADAMS**. Ann Arbor, Michigan: Institute for Social Research, University of Michigan; 2009.

📄 Download PDF (581.8 KB)

McClain CA, Ofstedal MB, Couper MP. **Measuring Cognition in a Multi-mode Context**. Ann Arbor, MI: Survey Research Center, Institute for Social Research, University of Michigan; 2018:1-48.

📄 Download PDF (411.01 KB)

Ofstedal MB, Fisher GG, Herzog AR. **Documentation of Cognitive Functioning Measures in the Health and Retirement Study**. Ann Arbor, Michigan: Institute for Social Research, University of Michigan; 2005.

📄 Download PDF (266.73 KB)

Weir DR, McCammon R, Ryan LH, Langa KM. **Cognitive Test Selection for the Harmonized Cognitive Assessment Protocol (HCAP)**. Ann Arbor, Michigan: Institute for Social Research, University of Michigan; 2014.

📄 Download PDF (187.29 KB)

Weir DR, Langa KM, Ryan LH. **2016 Harmonized Cognitive Assessment Protocol (HCAP) Study Protocol Summary**. Ann Arbor, MI: Health and Retirement Study, Survey Research Center, Institute for Social Research, University of Michigan; 2016:1-15.

📄 Download PDF (441.6 KB)

## Family

### User Guide Categories:

General

**Health**

Cognition

Family

Employment and Work

Economics

Methods

Psychosocial and Well-being

Archive

# GROWING OLDER IN AMERICA



**HRS Help Desk**

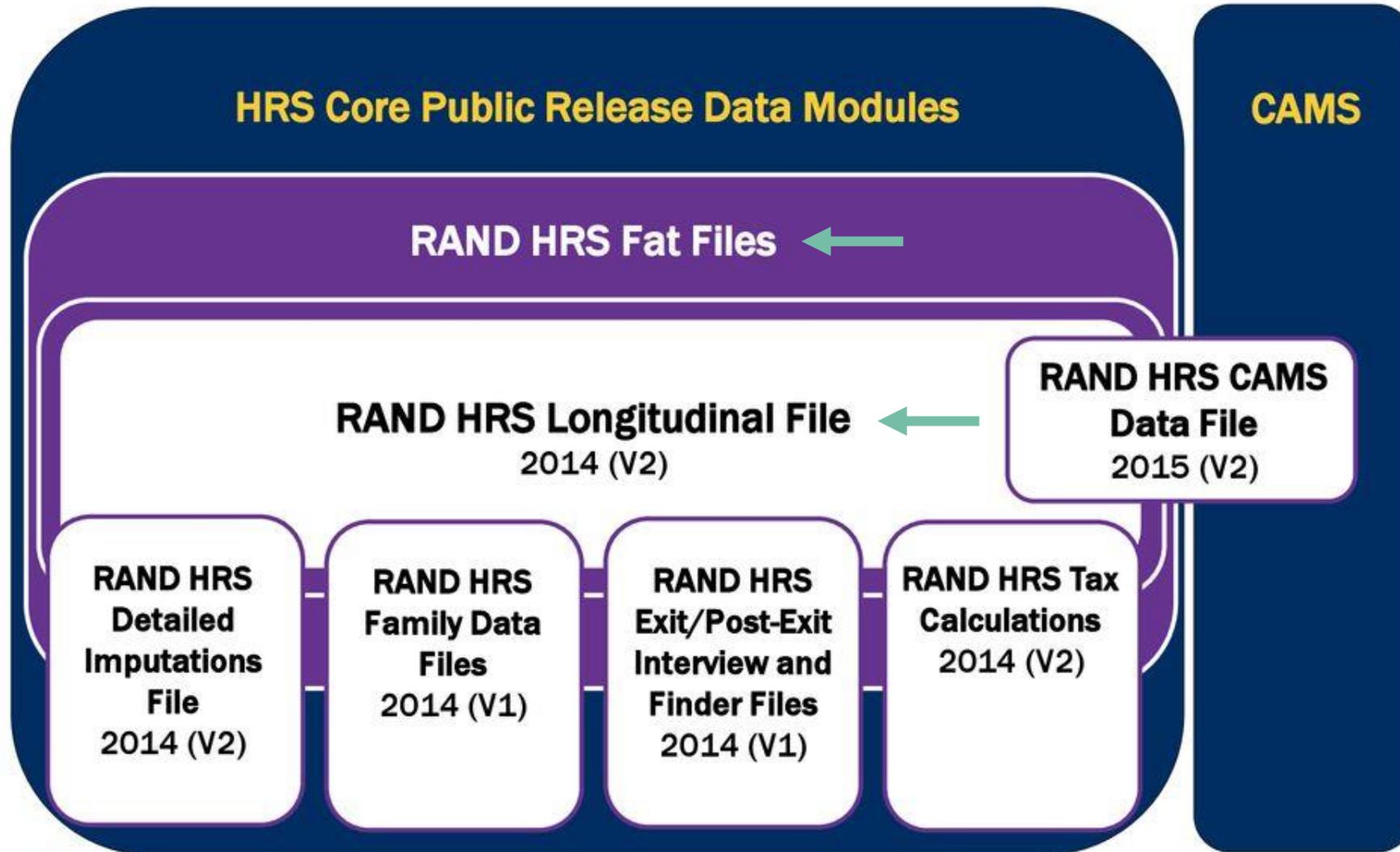
<https://hrs.isr.umich.edu/help>

hrsquestions@umich.edu

## QUESTIONS?

Thank you!

# RAND HRS Data Products



# RAND: LONGITUDINAL FILES

**Table 1. Source of Data for Entry Cohorts in RAND HRS Longitudinal File by Wave**

Wave	Entry Cohort					
	HRS HACOHORT=3	AHEAD HACOHORT=0,1	CODA HACOHORT=2	WB HACOHORT=4	EBB HACOHORT=5	MBB HACOHORT=6
1	1992	1992 (HRS/AHEAD overlaps only)	Not available			
2	1994 (Wave 2H)	1993 (Wave 2A)	Not available			
3	1996 (Wave 3H)	1995 (Wave 3A)	Not available			
4	1998	1998	1998	1998	Not available	
5	2000	2000	2000	2000	Not available	
6	2002	2002	2002	2002	Not available	
7	2004	2004	2004	2004	2004	Not available
8	2006	2006	2006	2006	2006	
9	2008	2008	2008	2008	2008	
10	2010	2010	2010	2010	2010	2010
11	2012	2012	2012	2012	2012	2012
12	2014	2014	2014	2014	2014	2014

Data available from 1992-2014

Merges with other RAND HRS data and raw HRS data modules

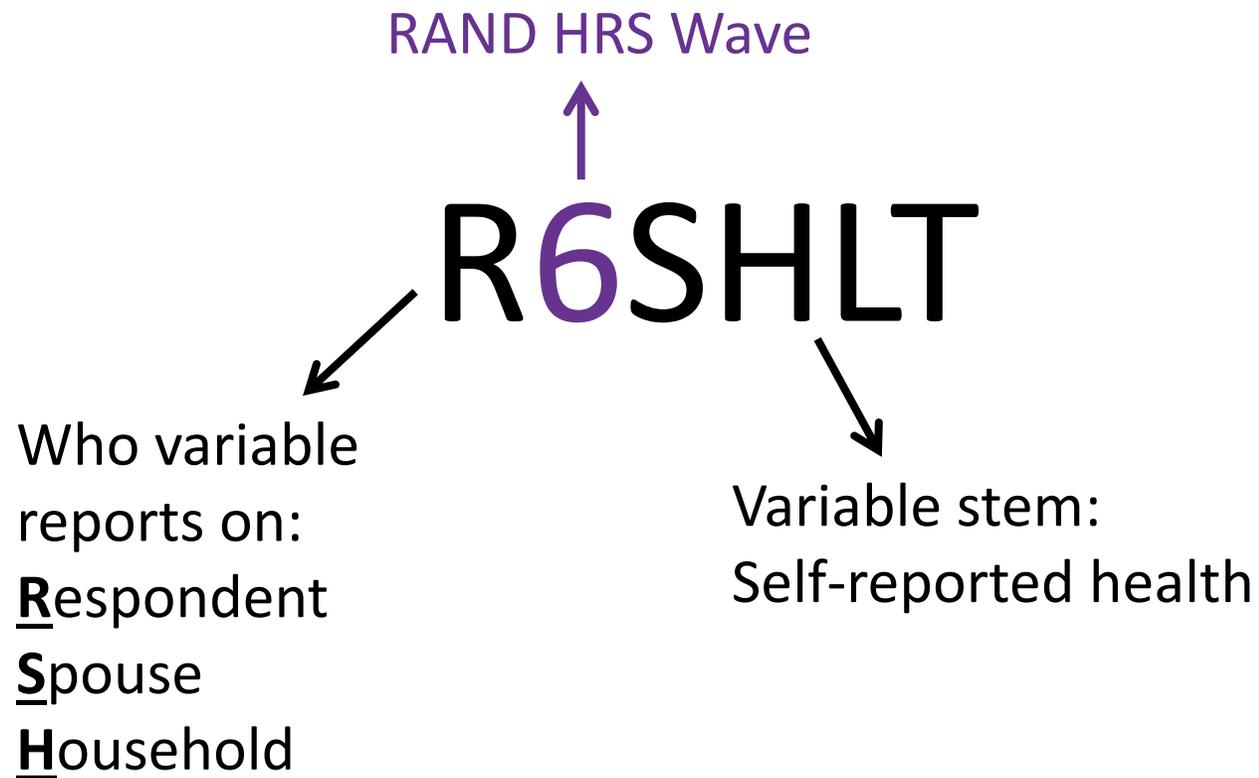
Includes:

- Derived variables from Tracker
- Respondent and household level modules (e.g. demographics, health, income, financial/housing wealth, family structure, etc.)

Standardized naming conventions:

- **HHIDPN**: unique identifier (used to merge)
- **SwHHIDPN**: unique identifier for spouse in given wave
- **INWw**: flags for whether respondent completed a particular survey wave
- **w**=wave #

# RAND: LONGITUDINAL FILES



Data available from 1992-2014

Merges with other RAND HRS data and raw HRS data modules

Includes:

- Derived variables from Tracker
- Respondent and household level modules (e.g. demographics, health, income, financial/housing wealth, family structure, etc.)

Standardized naming conventions:

- **HHIDPN**: unique identifier (used to merge)
- **SwHHIDPN**: unique identifier for spouse in given wave
- **INWw**: flags for whether respondent completed a particular survey wave
- **w**=wave #

# CORE INTERVIEW: WAVE DIFFERENCES

Most measures found in Section D

- Prior to 2002 Section C
- 1992 Section L

All variables 2010 & later available in 2016

Beginning in 2014, verbal analogy and number series measures alternate

- 2012: number series asked, verbal analogy asked of subsample
- 2014: verbal analogy only
- 2016: number series only

Proxy questions differ slightly

- Rates respondent's memory and ability
- 16-item Jorm IQ-CODE (e.g. compared to two years ago how good is respondent at remembering birthdays, addresses, etc.?)
- Behavior and activity problems

Imputations available as separate file (take into account missing not at random, usually due to proxy respondents and age restricted measures)

# ACCESSING COGNITION DATA: ADAMS AND HCAP

<https://hrs.isr.umich.edu/data-products>

On the Biomarker and Health Data page... HCAP and ADAMS

- Documentation different than core – data description same for all waves, codebook wave specific

On the Biomarker and Health Data page... Access Information

- Quick and manageable application process

# Biennial Data

- [HHID](#) HOUSEHOLD IDENTIFICATION NUMBER
- [PN](#) RESPONDENT PERSON IDENTIFICATION NUMBER
- [PSUBHH](#) 2016 SUB HOUSEHOLD IDENTIFICATION NUMBER
- [OSUBHH](#) 2014 SUB HOUSEHOLD IDENTIFICATION NUMBER
- [PPN\\_SP](#) 2016 SPOUSE/PARTNER PERSON NUMBER
- [PCSR](#) 2016 WHETHER COVERSHEET RESPONDENT
- [PFAMR](#) 2016 WHETHER FAMILY RESPONDENT
- [PFINR](#) 2016 WHETHER FINANCIAL RESPONDENT
- [PD190](#) ALTWAVE FLAG FOR D159 AND D178 SEQUENCES
- [PD290](#) Altwave flag for number series
- [PD101](#) RATE MEMORY
- [PD102](#) RATE MEMORY PAST
- [PD103](#) WORDS PREAMBLE
- [PD104](#) D104 WORD LIST ASSIGNMENT
- [PD182M1](#) WORD RECALL IMMEDIATE - 1
- [PD182M2](#) WORD RECALL IMMEDIATE - 2
- [PD182M3](#) WORD RECALL IMMEDIATE - 3
- [PD182M4](#) WORD RECALL IMMEDIATE - 4
- [PD182M5](#) WORD RECALL IMMEDIATE - 5
- [PD182M6](#) WORD RECALL IMMEDIATE - 6
- [PD182M7](#) WORD RECALL IMMEDIATE - 7
- [PD182M8](#) WORD RECALL IMMEDIATE - 8
- [PD182M9](#) WORD RECALL IMMEDIATE - 9
- [PD182M10](#) WORD RECALL IMMEDIATE - 10
- [PD182M11](#) WORD RECALL IMMEDIATE - 11
- [PD182M12](#) WORD RECALL IMMEDIATE - 12
- [PD182M13](#) WORD RECALL IMMEDIATE - 13
- [PD182M14](#) WORD RECALL IMMEDIATE - 14
- [PD182M15](#) WORD RECALL IMMEDIATE - 15
- [PD182M16](#) WORD RECALL IMMEDIATE - 16
- [PD182M17](#) WORD RECALL IMMEDIATE - 17
- [PD182M18](#) WORD RECALL IMMEDIATE - 18
- [PD174](#) NUMBER GOOD - IMMEDIATE
- [PD175](#) NUMBER WRONG - IMMEDIATE
- [PD176](#) NUMBER FORGOTTEN - IMMEDIATE
- [PD177](#) NONE REMEMBERED - IMMEDIATE - FLAG

```
IF (((((SecA.ContinuuInterview.A218_AgeGreaterThan17 > 17) OR
(SecA.ContinuuInterview.A019_RAge > 17)) AND (RVAR.S.Z145_TypeExit_V <>
NEWPOSTEXIT)) AND (RVAR.S.Z145_TypeExit_V <> FIRSTREPEATPOST)) AND
(RVAR.S.Z145_TypeExit_V <> SECREPEATPOST) THEN
```

```
IF piSecAStartInterviewA009_SelfPrxy = SLF THEN
```

```
-----
PD101                RATE MEMORY
Section: D          Level: Respondent      Type: Numeric      Width: 1      Decimals: 0
Ref: SecD.Cognition1.D101_
```

Part of this study is concerned with people's memory, and ability to think about things.

First, how would you rate your memory at the present time?  
 Would you say it is excellent, very good, good, fair or poor?

- ```
.....
1297          1.  EXCELLENT
4754          2.  VERY GOOD
8123          3.  GOOD
4818          4.  FAIR
966           5.  POOR
16            8.  DK (Don't Know); NA (Not Ascertained)
2             9.  RF (Refused)
942          Blank. INAP (Inapplicable); Partial Interview
```

```
-----
{PREVIOUS ASK} SecD.Cognition1.D101_
```

```
-----
PD102                RATE MEMORY PAST
Section: D          Level: Respondent      Type: Numeric      Width: 1      Decimals: 0
Ref: SecD.Cognition1.D102_
```

Compared to [[Previous Month], [Year]/two years ago], would you say your memory

# Longitudinal Imputed Data

- [HHID](#) HRS HOUSEHOLD IDENTIFIER
- [PN](#) HRS PERSON NUMBER IDENTIFIER
- [STUDY](#) STUDY MEMBERSHIP
- [R1STATUS](#) R1STATUS: W1 IMPUTATION ELIGIBILITY STATUS
- [R1IMRC20](#) R1IMRC20: W1 IMMEDIATE WORD RECALL
- [R1DLRC20](#) R1DLRC20: W1 DELAYED WORD RECALL
- [R1TR40](#) R1TR40: W1 TOTAL WORD RECALL SUMMARY SCORE
- [R1SLFMEM](#) R1SLFMEM: W1 SELF RATED MEMORY
- [R1PSTMEM](#) R1PSTMEM: W1 MEMORY COMPARED TO PAST
- [R1FIMRC](#) R1FIMRC: W1 IMPFLAG: IMMEDIATE WORD RECALL
- [R1FDLRC](#) R1FDLRC: W1 IMPFLAG: DELAYED WORD RECALL
- [R1FSLFMEM](#) R1FSLFMEM: W1 IMPFLAG: SELF RATED MEMORY
- [R1FPSTMEM](#) R1FPSTMEM: W1 IMPFLAG: MEMORY COMPARED TO PAST
- [R2STATUS](#) R2STATUS: W2 IMPUTATION ELIGIBILITY STATUS
- [R2FLAG](#) R2FLAG: 93 AHEAD OR 94 HRS
- [R2AIMRC10](#) R2AIMRC10: W2 IMMEDIATE WORD RECALL-AHD93
- [R2ADLRC10](#) R2ADLRC10: W2 DELAYED WORD RECALL-AHD93
- [R2ATR20](#) R2ATR20: W2 AHD WORD TOTAL RECALL SUMMARY SCORE
- [R2HIMRC20](#) R2HIMRC20: W2 IMMEDIATE WORD RECALL-HRS94
- [R2HDLRC20](#) R2HDLRC20: W2 DELAYED WORD RECALL-HRS94
- [R2HTR40](#) R2HTR40: W2 HRS WORD TOTAL RECALL SUMMARY SCORE
- [R2SER7](#) R2SER7: W2 SERIAL 7S
- [R2BWC20](#) R2BWC20: W2 BACKWARDS COUNT FROM 20
- [R2MO](#) R2MO: W2 DATE: MONTH
- [R2DY](#) R2DY: W2 DATE: DAY OF MONTH
- [R2YR](#) R2YR: W2 DATE: YEAR
- [R2DW](#) R2DW: W2 DATE: DAY OF WEEK
- [R2SCIS](#) R2SCIS: W2 SCISSORS
- [R2CACT](#) R2CACT: W2 CACTUS
- [R2PRES](#) R2PRES: W2 PRESIDENT
- [R2VP](#) R2VP: W2 VICE PRESIDENT
- [R2AMSTOT](#) R2AMSTOT: W2 AHD MENTAL STATUS SUMMARY SCORE
- [R2ACOGTOT](#) R2ACOGTOT: W2 AHD TOTAL COGNITION

|            |                                            |               |          |             |  |
|------------|--------------------------------------------|---------------|----------|-------------|--|
| R1SLFMEM   | R1SLFMEM: W1 SELF RATED MEMORY             |               |          |             |  |
| Section: A | Level: Respondent                          | Type: Numeric | Width: 1 | Decimals: 0 |  |
| .....      |                                            |               |          |             |  |
| 2297       | 1. Excellent                               |               |          |             |  |
| 4265       | 2. Very Good                               |               |          |             |  |
| 3505       | 3. Good                                    |               |          |             |  |
| 1474       | 4. Fair                                    |               |          |             |  |
| 342        | 5. Poor                                    |               |          |             |  |
| 24284      | Blank. Inap                                |               |          |             |  |
| =====      |                                            |               |          |             |  |
| R1PSTMEM   | R1PSTMEM: W1 MEMORY COMPARED TO PAST       |               |          |             |  |
| Section: A | Level: Respondent                          | Type: Numeric | Width: 1 | Decimals: 0 |  |
| .....      |                                            |               |          |             |  |
| 1064       | 1. Better                                  |               |          |             |  |
| 9314       | 2. Same                                    |               |          |             |  |
| 1505       | 3. Worse                                   |               |          |             |  |
| 24284      | Blank. Inap                                |               |          |             |  |
| =====      |                                            |               |          |             |  |
| R1FIMRC    | R1FIMRC: W1 IMPFLAG: IMMEDIATE WORD RECALL |               |          |             |  |
| Section: A | Level: Respondent                          | Type: Numeric | Width: 1 | Decimals: 0 |  |
| .....      |                                            |               |          |             |  |
| 11622      | 0. Not Imputed                             |               |          |             |  |
| 261        | 1. Imputed                                 |               |          |             |  |
| 24284      | Blank. Inap                                |               |          |             |  |
| =====      |                                            |               |          |             |  |
| R1FDLRC    | R1FDLRC: W1 IMPFLAG: DELAYED WORD RECALL   |               |          |             |  |
| Section: A | Level: Respondent                          | Type: Numeric | Width: 1 | Decimals: 0 |  |

Section B: Health

**Imputed Cognition: Number Series Score**

| Wave | Variable  | Label                                             | Type |
|------|-----------|---------------------------------------------------|------|
| 10   | R10NSSCRE | R10NSSCRE:W10 R Calculated number series score    | Cont |
| 10   | S10NSSCRE | S10NSSCRE:W10 S Calculated number series score    | Cont |
| 10   | R10NSSCSE | R10NSSCSE:W10 R Calculated number series score-SE | Cont |
| 10   | S10NSSCSE | S10NSSCSE:W10 S Calculated number series score-SE | Cont |

**Descriptive Statistics**

| Variable  | N     | Mean   | Std Dev | Minimum | Maximum |
|-----------|-------|--------|---------|---------|---------|
| R10NSSCRE | 19098 | 494.04 | 44.24   | 390.2   | 579.6   |
| S10NSSCRE | 11904 | 499.01 | 43.02   | 390.2   | 579.6   |
| R10NSSCSE | 19098 | 14.52  | 7.70    | 7.8     | 38.2    |
| S10NSSCSE | 11904 | 14.13  | 7.42    | 7.8     | 38.2    |

## RAND Data and Codebook

### How Constructed

From the HRS documentation: "Number Series measures quantitative reasoning, a specific type of fluid cognitive ability or fluid intelligence. Quantitative reasoning ability involves reasoning with concepts that depend upon mathematical relationships. The number series task requires the Respondent to look at a series of numbers with a number missing from the series. The Respondent must determine the numerical pattern, and then provide the missing number in the series.

The HRS Number Series task is a 6-item block-adaptive test. "Block-adaptive" refers to the skip pattern among the items during test administration. The Number Series is based on two lists of 15 items. The 15 items are grouped into five sets or "blocks" of three items, grouped by item difficulty level. Item difficulty level refers to the probability that a Respondent will answer the item correctly. All Respondents are asked the same first three items, which consist of an easier item, a moderately difficult item, and a more difficult item. Based on the number of items answered correctly in the first



# IMPUTATION OF COGNITION MEASURES (BY HRS)

Assumption that data are not missing at random

- Whether or not a respondent answers a question might be due to their cognitive functioning

Imputed data ONLY on missing values for cognitive tasks performed by self-respondents

- Data on proxy respondents not imputed

Used relevant demographics, health, and economic variables as well as prior and current wave cognitive variables to perform imputations

- Values imputed to replace missing values, refusals, and any not applicable response (i.e. those <65 years of age)
- Don't know responses not imputed

New cognition data added in later waves not included in imputation process

- includes numeracy, quantitative reasoning, verbal reasoning

# IMPUTATION OF COGNITION MEASURES

**Table 3. Percentage of Respondents by Age with at Least One Imputed Cognition Score**

|       | <u>HRS92</u> | <u>HRS94</u> | <u>AHD93</u> | <u>AHD95,<br/>HRS96</u> | <u>HRS98</u> | <u>HRS00</u> | <u>HRS02</u> | <u>HRS04</u> | <u>HRS06</u> | <u>HRS08</u> | <u>HRS10</u> | <u>HRS12</u> | <u>HRS14</u> |
|-------|--------------|--------------|--------------|-------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|       | W1           | W2           | W2           | W3                      | W4           | W5           | W6           | W7           | W8           | W9           | W10          | W11          | W12          |
| < 51  | 2.4%         | 4.5%         | 9.1%         | 3.0%                    | 3.7%         | 2.4%         | 5.3%         | 3.0%         | 1.7%         | 2.1%         | 2.4%         | 2.1%         | 2.9%         |
| 51-59 | 2.9%         | 5.2%         | 15.9%        | 4.0%                    | 3.1%         | 2.7%         | 5.3%         | 3.4%         | 3.3%         | 2.5%         | 2.8%         | 2.8%         | 2.5%         |
| 60-69 | 3.9%         | 6.5%         | 10.1%        | 5.4%                    | 4.3%         | 4.8%         | 6.7%         | 4.8%         | 3.6%         | 3.0%         | 3.9%         | 3.9%         | 3.2%         |
| 70-79 | 3.3%         | 6.1%         | 11.4%        | 8.3%                    | 5.3%         | 5.5%         | 8.7%         | 5.4%         | 4.9%         | 4.3%         | 5.6%         | 6.5%         | 5.0%         |
| 80-89 | -            | 22.2%        | 19.6%        | 14.1%                   | 8.6%         | 10.6%        | 11.1%        | 7.5%         | 7.6%         | 6.9%         | 7.9%         | 9.5%         | 7.8%         |
| 90+   | -            | -            | 34.7%        | 24.0%                   | 21.1%        | 20.3%        | 20.6%        | 14.6%        | 12.6%        | 11.6%        | 15.0%        | 15.4%        | 11.0%        |
| Total | 3.1%         | 5.6%         | 14.1%        | 6.9%                    | 4.9%         | 5.4%         | 7.8%         | 5.0%         | 4.6%         | 4.1%         | 4.5%         | 5.2%         | 4.3%         |