

National Health and Nutrition Examination Survey



Evolution of Data Release Documentation for Continuous NHANES (NHANES 99+)

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Centers for Disease
Control and Prevention
National Center for
Health Statistics



Presentation Objectives

- ▶ Briefly describe NHANES & history
- ▶ Discuss documentation milestones in continuous NHANES (NHANES 99+)
- ▶ Summarize NHANES documentation – then and now
- ▶ Present future directions



What is NHANES?

- ▶ The National Health and Nutrition Examination Survey (NHANES) is a program of studies designed to assess the health and nutritional status of adults and children in the United States
- ▶ The survey is uniquely comprehensive in that it combines interviews, physical examinations and laboratory tests



Sample of Data Collected in the 2011–12 NHANES

Examination

- Hearing, Taste and Smell
- Blood pressure
- Muscle strength/physical activity monitor
- Dietary recall
- Spirometry w/bronchodilator, ENO
- Oral health
- Anthropometry/Body Composition
- Blood draw
- Urine collection

Interview

- Chronic conditions
- Reproductive health
- Health care utilization
- Health insurance
- Prescription medications
- Sexual behavior
- Respiratory health
- Cognitive function
- Dietary supplements
- Alcohol use



History of NHANES

<i>Survey</i>	<i>Dates</i>	<i>Ages</i>
NHES I	1960-62	18-79 years
NHES II	1963-65	6-11 years
NHES III	1966-70	12-17 years
NHANES I	1971-75	1-74 years
NHANES II	1976-80	6 mo.-74 years
HHANES	1982-84	6 mo.-74 years
NHANES III	1988-94	2 mo. +
NHANES 99+	1999-	All ages



Documentation Milestone #1

2002



NHANES 99+
Codebook for Data Collection (1999-2000)
June 2002

Body Measures Examination (BMX)
Person level data -- use Examination Weights for analysis

SEQN	Version Info	Target
	Version 1.0	B(0 Yrs. - 150 Yrs.)
Hard Edits	SAS Label	
	Respondent sequence number	
English Text: Respondent sequence number.		
English Instructions: < blank >		
Codes:		

Manually Edited
Codebook

MILESTONE #1:

- Successfully published for the first time on the Internet
- Produced individual component-level datasets and documentation files

2002

NHANES 99+

1999-2000

Documentation Milestone #2

2003



NHANES 99+
Codebook for Data Collection (1999-2000)
June 2002

Body Measures Examination (BMX)
Person level data -- use Examination Weights for analysis

SEQN	Version Info	Target
	Version 1.0	B(0 Yrs. - 150 Yrs.)
Hard Edits	SAS Label	
	Respondent sequence number	
English Text: Respondent sequence number.		
English Instructions: < blank >		
Codes:		

Manually Edited
Codebook

CDC
National Center for
Health Statistics

of Contents

- BMXLEN: length of a MEC exam (sec)
- BMXSTS: Status of a MEC exam
- BMXACTY: Comment code for an exam
- BMXWT: Weight (kg)
- BMXWT: Weight Comment
- BMXRCMB: Recumbent Length (cm)
- BMXRCMB: Recumbent Length Comment
- BMXHEAD: Head Circumference (cm)
- BMXHEAD: Head Circumference Comment
- BMXHT: Standing Height (cm)

Manually Coded
Frequencies

MILESTONE #2:

- Added Formatted Item-Level Frequencies

Body Measuremen	MEC
Description	
Body measurements were recorded for	

2002

NHANES 99+
1999-2000

NHANES 99+
1999-2000

Documentation Milestone #3

2004



National Health and Nutrition Examination Survey
Codebook for Data Release (2001-2002)

MEC Examination
Body Measurements (BMX_B)
Person level data -- use Examination Weights for analysis

May 2004

SEQN	Target
	B(0 Yrs. to 150 Yrs.)
Hard Edits	SAS Label
	Respondent sequence number
English Text: Respondent sequence number.	
English Instructions:	
BMXWT	Target

Automated Codebook

NHANES 2001-2002 Data Release
May 2004
MEC Examination

MILESTONE #3:

- Developed Codebook App to store metadata
- Automated production of codebooks using metadata
- Automated production of frequencies using metadata

NHANES 2001-2002 Data Release
MEC Examination
Frequencies for Body Measurements (BMX_B)
May 2004

Group 04			
Weight	Frequency	Percent	Cumulative Percent
Missing	400	4.22	100
1-150 Yrs	900	95.78	100.00

Automated Frequencies

Body Measurement
MEC

Description

Body measurements were recorded for...

National Center for Health Statistics
National Health and Nutrition Examination Survey
Body Measures Exam
File Frequencies (BMX_XPT)

Table of Contents

- 1. Introduction
- 2. Description of the Data
- 3. Data File Structure
- 4. Data File Variables
- 5. Data File Examples
- 6. Data File Access
- 7. Data File Maintenance
- 8. Data File Security
- 9. Data File Backup
- 10. Data File Recovery
- 11. Data File Archiving
- 12. Data File Restoration
- 13. Data File Compression
- 14. Data File Decompression
- 15. Data File Encryption
- 16. Data File Decryption
- 17. Data File Signing
- 18. Data File Verification
- 19. Data File Validation
- 20. Data File Audit
- 21. Data File Reporting
- 22. Data File Archiving
- 23. Data File Restoration
- 24. Data File Compression
- 25. Data File Decompression
- 26. Data File Encryption
- 27. Data File Decryption
- 28. Data File Signing
- 29. Data File Verification
- 30. Data File Validation
- 31. Data File Audit
- 32. Data File Reporting

2002

NHANES 99+
1999-2000

NHANES 99+
1999-2000

NHANES 99+
2001-2002

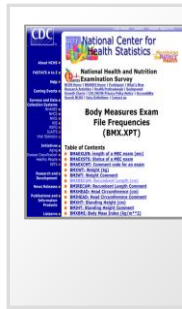
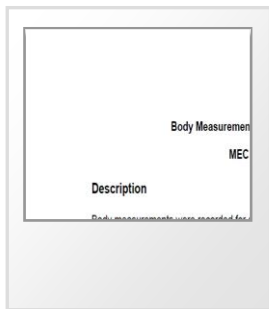
Documentation Milestone #4

2005



MILESTONE #4:

- Combined separate codebook, documentation file and frequency files into one document
- Integrated frequencies directly into codebooks



2002

NHANES 99+
1999-2000

NHANES 99+
1999-2000

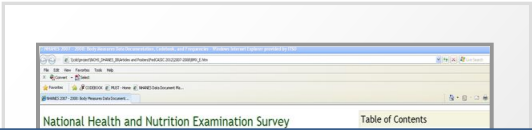
NHANES 99+
2001-2002

NHANES 99+
2003-2004,
2005-2006

Documentation Milestone #5

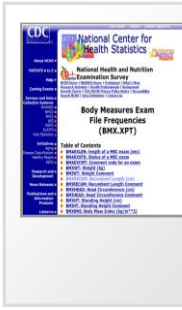
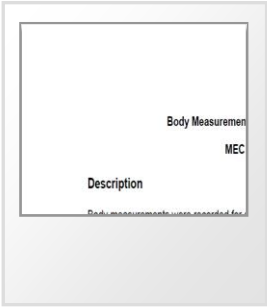
2009





MILESTONE #5:

- Developed Project X to store documentation
- Automated creation of entire documentation file
- Centralized storage into database instead of files
- Automated ADA/508 compliance using HTML



2002

NHANES 99+
1999-2000

NHANES 99+
1999-2000

NHANES 99+
2001-2002

NHANES 99+
2003-2004,
2005-2006

2009

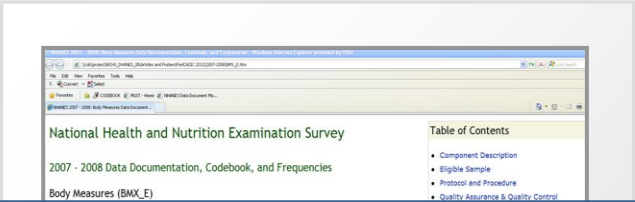
NHANES 99+
2007-2008,
2009-2010

Documentation Milestone #6

2010



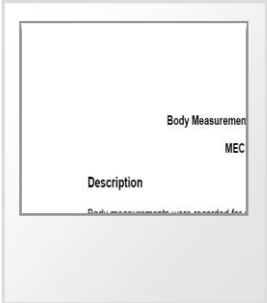
Retrofitted
ALL
Documentation
Back to 1999 !



MILESTONE #6:

- Made all documentation files from 1999 on...

CONSISTENT!



2002
NHANES 99+
1999-2000

NHANES 99+
1999-2000

NHANES 99+
2001-2002

NHANES 99+
2003-2004,
2005-2006

2009
NHANES 99+
2007-2008,
2009-2010

2010
NHANES 99+
ALL YEARS

NHANES 99+ Docs... Then & Now

2003	No frequencies	➡	Formatted item-level frequencies
2004	Lots of manual file editing	➡	Automated production using metadata
2005	Multiple documentation files	➡	Single documentation file
2009	File management issues	➡	Centralized database storage
2009	Manual tweaking required for ADA/508 compliance	➡	Automated ADA/508 compliance utilizing HTML
2010	Documentation files in different formats for different years	➡	All documentation files from 1999 forward made consistent

Word to the wise... put it in a **DATABASE!**



Future Developments

- ▶ Internally – train subject matter experts to create their own documentation within Project X application
- ▶ Externally – add NHANES content search function (XML?) on the NHANES website



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