

**National Health and Nutrition  
Examination Survey 2003-2004**

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**Documentation, Codebook,  
and Frequencies**

**MEC Exam Component: Blood  
Pressure Examination Data**

**Survey Years:  
2003 to 2004**

**SAS Export File:  
BPX\_C.XPT**



**December 2005**

# NHANES 2003–2004 Data Documentation

## Exam Component: Blood Pressure (BPX\_C)

Years of Coverage: 2003–2004

First Published: December 2005

Last Revised: N/A

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<b>Component Description</b>	Accurate measurement of blood pressure (BP) is a major public health concern; it is essential for hypertension screening, as well as for disease management. Hypertension is a powerful, consistent, and independent risk factor for cardiovascular disease and renal disease.
<b>Eligible Sample</b>	Heart rate is measured on all children 0-4 years of age; radial pulse is measured on examinees 5 years and older; and blood pressure (BP) is measured on all examinees 8 years and over. There are no exclusion criteria.
<b>Protocol and Procedure</b>	After resting quietly in a sitting position for 5 minutes and determining the maximum inflation level (MIL), three and sometimes 4 BP determinations (systolic and diastolic) are taken in the mobile examination center (MEC).

**Quality Assurance & Quality Control**

The BP examiners are certified for blood pressure measurement through a training program from *Shared Care Research and Education Consulting*. The program includes a didactic section, audio-video practice watching and listening to systolic and diastolic blood pressure sounds, and measuring blood pressures of volunteers concurrently with a certified, gold standard BP instructor. Certification is achieved when physician examiners meet all requirements of the training program. The initial training includes:

- didactic instruction about BP measurement and propensity for error;
- practice listening to systolic and diastolic BP sounds using a standardized audio-video tape presentation;
- audio-video tape test;
- written exam;
- examiner and gold standard instructor simultaneously listening to BP of a minimum of 20 volunteers of all ages through a Y-stethoscope to compare measures; and
- observation of protocol technique using a checklist.

Certification requires a score of 100 per cent on the audio-video tape test. Correct answers on the audio-video tape test require the examiner's answers and the standardized test answers to be within +/- 2mm mercury (Hg) on 92 per cent of 24 measures (12 systolic, 12 diastolic), and within +/- 4mm Hg on 100 percent of 24 measures (12 systolic, 12 diastolic). For more information on quality assurance and control, see Ostchega et al. (1).

For more details on the QA/QC process for this component, please refer to the Physician Section of the **MEC Operations Manual**.

**Data  
Processing  
and Editing**

The following are some hard edit specifications used in capturing the BP data:

- systolic blood pressure and maximum inflation level cannot be greater than 300 mmHg;
- systolic and diastolic blood pressure and maximum inflation level can be even numbers only;
- systolic blood pressure must be greater than diastolic blood pressure;
- if there is no systolic blood pressure, there can be no diastolic blood pressure;
- diastolic blood pressure can be zero.

**Analytic  
Notes**

Please refer to the Analytic Guidelines for further details on the use of sample weights and other analytic issues at

[http://www.cdc.gov/nchs/about/major/nhanes/nhanes2003-2004/analytical\\_guidelines.htm](http://www.cdc.gov/nchs/about/major/nhanes/nhanes2003-2004/analytical_guidelines.htm)

**References**

1. Ostchega Y, Prineas RJ, Paulose-Ram R, Grim CM, Willard C, Collins C. National Health and Nutrition Examination Survey (NHANES) 1999-2000: Effect of observer training and protocol standardization on reducing blood pressure measurement error. J Clinical Epidemiology. 2003 Aug; 56(8):768-774.

## Locator Record

**Title:** Blood Pressure

**Contact Number:** 1-866-441-NCHS

**Years of Content:** 2003–2004

**First Published:** December 2005

**Revised:** N/A

**Access Constraints:** None

**Use Constraints:** None

**Geographic Coverage:** National

**Subject:** Blood Pressure Measurement

**Record Source:** NHANES 2003–2004

**Survey Methodology:** NHANES 2003–2004 is a stratified multistage probability sample of the civilian non-institutionalized population of the U.S.

**Medium:** NHANES Web site; SAS transport files

**National Health and Nutrition Examination Survey  
Codebook for Data Production (2003-2004)**

**MEC Examination  
Blood Pressure Section of the Physician's Examination (BPX\_C)  
Person Level Data**

December 2005



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

<b>PEASCST1</b>	<b>Target</b>			
	B(0 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Pressure Status			
<b>English Text:</b> Blood Pressure Status				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Complete	9194	9194	
2	Partial	104	9298	
3	Not done	345	9643	
.	Missing	0	9643	



<b>PEASCTM1</b>	<b>Target</b>			
	B(0 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Pressure Time in Seconds			
<b>English Text:</b> Blood Pressure Time in Seconds				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0 to 1933	Range of Values	9337	9337	
.	Missing	306	9643	

<b>PEASCCT1</b>	<b>Target</b>			
	B(0 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Pressure Comment			
<b>English Text:</b> Blood Pressure Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	None	0	0	
1	Safety exclusion	2	2	
2	SP refusal	121	123	
3	No time	46	169	
4	Physical limitation	58	227	
5	Communication problem	1	228	
6	Equipment failure	0	228	
7	SP ill/emergency	8	236	
56	Came late/left early	0	236	
72	Error (technician/software/supply)	1	237	
84	SP with child	4	241	
99	Other, specify	208	449	
.	Missing	9194	9643	

<b>BPXCHR</b>	<b>Target</b>
	B(0 Yrs. to 7 Yrs.)
<b>Hard Edits</b>	<b>SAS Label</b>
	60 sec HR (30 sec HR * 2)
<b>English Text:</b> 60 sec HR (30 sec HR * 2)	
<b>English Instructions:</b>	

<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0 to 280	Range of Values	1938	1938	
.	Missing	7705	9643	

<b>BPQ150A</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Had food in the past 30 minutes?			
<b>English Text:</b> Have you had any of the following in the past 30 minutes?: Food				
<b>English Instructions:</b> Check each that applies				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Yes	2530	2530	
2	No	4873	7403	
.	Missing	2240	9643	

<b>BPQ150B</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Had alcohol in the past 30 minutes?			
<b>English Text:</b> Have you had any of the following in the past 30 minutes?: Alcohol				
<b>English Instructions:</b> Check each that applies				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Yes	2	2	
2	No	7401	7403	
.	Missing	2240	9643	

<b>BPQ150C</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Had coffee in the past 30 minutes?			
<b>English Text:</b> Have you had any of the following in the past 30 minutes?: Coffee				
<b>English Instructions:</b> Check each that applies				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Yes	16	16	
2	No	7387	7403	
.	Missing	2240	9643	

<b>BPQ150D</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Had cigarettes in the past 30 minutes?			
<b>English Text:</b> Have you had any of the following in the past 30 minutes?: Cigarettes				
<b>English Instructions:</b> Check each that applies				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Yes	67	67	
2	No	7336	7403	
.	Missing	2240	9643	

<b>BPAARM</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Arm selected:			
<b>English Text:</b> Arm selected:				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Right	7287	7287	
2	Left	35	7322	
8	Could not obtain	80	7402	
.	Missing	2241	9643	



<b>BPACSZ</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Coded cuff size			
<b>English Text:</b> Cuff size (cm) (width X length)				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Infant (6X12)	0	0	
2	Child (9X17)	394	394	
3	Adult (12X22)	2769	3163	
4	Large (15X32)	3347	6510	
5	Thigh (18X35)	781	7291	
.	Missing	2352	9643	

<b>BPXPLS</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	60 sec. pulse (30 sec. pulse * 2):			
<b>English Text:</b> 60 sec. pulse (30 sec. pulse * 2):				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
32 to 144	Range of Values	7361	7361	
.	Missing	2282	9643	

<b>BPXDB</b>	<b>Target</b>			
	B(12 Yrs. to 49 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	# of dropped beats in 30 seconds			
<b>English Text:</b> # of dropped beats in 30 seconds				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1 to 10	Range of Values	45	45	
.	Missing	9598	9643	

<b>BPXPULS</b>	<b>Target</b>
	B(0 Yrs. to 150 Yrs.)
<b>Hard Edits</b>	<b>SAS Label</b>
	Pulse regular or irregular?
<b>English Text:</b> Pulse regular or irregular?	
<b>English Instructions:</b>	

<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Regular	9013	9013	
2	Irregular	320	9333	
.	Missing	310	9643	

<b>BPXPTY</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Pulse type:			
<b>English Text:</b> Pulse type:				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Radial	7379	7379	
2	Brachial	13	7392	
8	Could not obtain	0	7392	
.	Missing	2251	9643	

<b>BPXML1</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
70.0000 to 300.0000	MIL: maximum inflation levels (mm Hg)			
<b>English Text:</b> MIL: maximum inflation levels (mm Hg)				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
110 to 290	Range of Values	7277	7277	
888	Could not obtain	0	7277	
.	Missing	2366	9643	

<b>BPXSY1</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Systolic: Blood pres (1st rdg) mm Hg			
<b>English Text:</b> Systolic: Blood pressure (first reading) mm Hg				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
72 to 240	Range of Values	6274	6274	
.	Missing	3369	9643	

<b>BPXDI1</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Diastolic: Blood pres (1st rdg) mm Hg			
<b>English Text:</b> Diastolic: Blood pressure (first reading) mm Hg				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0 to 120	Range of Values	6274	6274	
.	Missing	3369	9643	



<b>BPAEN1</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Enhancement used first reading			
<b>English Text:</b> Enhancement used first reading				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Yes	0	0	
2	No	7277	7277	
8	Could not obtain	0	7277	
.	Missing	2366	9643	

<b>BPXSY2</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Systolic: Blood pres (2nd rdg) mm Hg			
<b>English Text:</b> Systolic: Blood pressure (second reading) mm Hg				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
70 to 256	Range of Values	5762	5762	
.	Missing	3881	9643	

<b>BPXDI2</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Diastolic: Blood pres (2nd rdg) mm Hg			
<b>English Text:</b> Diastolic: Blood pressure (second reading) mm Hg				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0 to 116	Range of Values	5762	5762	
.	Missing	3881	9643	

<b>BPAEN2</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Enhancement used second reading			
<b>English Text:</b> Enhancement used second reading				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Yes	81	81	
2	No	7197	7278	
8	Could not obtain	0	7278	
.	Missing	2365	9643	

<b>BPXSY3</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Systolic: Blood pres (3rd rdg) mm Hg			
<b>English Text:</b> Systolic: Blood pressure (third reading) mm Hg				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
68 to 226	Range of Values	5658	5658	
.	Missing	3985	9643	

<b>BPXDI3</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Diastolic: Blood pres (3rd rdg) mm Hg			
<b>English Text:</b> Diastolic: Blood pressure (third reading) mm Hg				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0 to 114	Range of Values	5658	5658	
.	Missing	3985	9643	

<b>BPAEN3</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Enhancement used third reading			
<b>English Text:</b> Enhancement used third reading				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Yes	115	115	
2	No	7160	7275	
8	Could not obtain	0	7275	
.	Missing	2368	9643	

<b>BPXSY4</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Systolic: Blood pres (4th rdg) mm Hg			
<b>English Text:</b> Systolic: Blood pressure (fourth reading if necessary) mm Hg				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
80 to 248	Range of Values	1596	1596	
.	Missing	8047	9643	



<b>BPXDI4</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Diastolic: Blood pres (4th rdg) mm Hg			
<b>English Text:</b> Diastolic: Blood pressure (fourth reading if necessary) mm Hg				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0 to 108	Range of Values	1596	1596	
.	Missing	8047	9643	

<b>BPAEN4</b>	<b>Target</b>			
	B(8 Yrs. to 150 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Enhancement used fourth reading			
<b>English Text:</b> Enhancement used fourth reading				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
1	Yes	81	81	
2	No	2795	2876	
8	Could not obtain	0	2876	
.	Missing	6767	9643	