

# National Health and Nutrition Examination Survey

## 2015-2016 Data Documentation, Codebook, and Frequencies

### Blood Pressure (BPX\_I)

Data File: BPX\_I.xpt

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### Component Description

This section provides data for three consecutive blood pressure (BP) measurements and other methodological measurements to obtain an accurate BP. Heart rate or pulse, depending on age, are also reported.

### Eligible Sample

BP is measured on participants 8 years and older; radial (or brachial, if necessary) pulse is measured on participants 5 years and older; and heart rate is measured on children 0-4 years of age.

### Protocol and Procedure

After resting quietly in a seated position for 5 minutes and after the participant's maximum inflation level (MIL) has been determined, three consecutive BP readings are obtained. If a BP measurement is interrupted or incomplete, a fourth attempt may be made. All BP determinations (systolic and diastolic) are taken in the mobile examination center (MEC). Participants with any of the following on both arms were excluded from the exam: rashes, gauze dressings, casts, edema, paralysis, tubes, open sores or wounds, withered arms, a-v shunts, radical mastectomy. Participants were also excluded if the BP cuff does not fit on the arm. BP measurements are taken in the right arm unless specific conditions prohibit the use of the right arm, or, if participants report any reason that the BP measurements should not be taken in the right arm.

Prior to BP measurements, upper arm circumference is measured, which is done to guide selection of cuff size. Details on the protocol for obtaining upper arm circumference is described in the Physician Examination Procedures Manual (see link provided below). The following criteria were used to guide selection of cuff size:

Cuff size	Bladder width (cm)	Bladder length (cm)	Arm circumference
Child	9	17	17.0-21.9
Adult	12	22	22.0-29.9
Large adult	15	32	30.0-37.9
Adult thigh	18	35	38.0-47.9

### Quality Assurance & Quality Control

The BP examiners are certified for BP measurement through a training program from Shared Care Research and Education Consulting. 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;
- Listening to systolic and diastolic BP sounds using a standardized audio-video tape presentation;
- An audio-video tape test;
- A written exam; and
- Simultaneously listening to BP on a minimum of 20 volunteers, of all ages, through a Y- stethoscope to compare measures with a gold standard instructor who does the same.

Certification requires a score of 100% 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 of mercury (Hg) on 92% of 24 measures (12 systolic, 12 diastolic), and within +/- 4mmHg on 100% of 24 measures (12 systolic, 12 diastolic).

For more details on the procedures for measuring heart rate, pulse, and BP and for details related to quality assurance/quality control for this component, please refer to the [Physician Examination Procedures Manual](#) located on the NHANES website.

## Data Processing and Editing

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

- Systolic BP and maximum inflation level cannot be greater than 300 mmHg;
- Systolic and diastolic BP measurements and the maximum inflation level can be even numbers only;
- Systolic blood pressure must be greater than diastolic BP;
- If there is no systolic BP, there can be no diastolic BP. (There can be a systolic measurement without a diastolic measurement.); and
- Diastolic BP can be zero

The physicians attempting to obtain BP may enter comments related to reasons for incomplete data. This data is recorded in the BPX dataset as PEASCCT1. For this variable PEASCCT1=3, or "time constraints" was assigned if the recorded comment was either "no time" or "came late/left early." PEASCCT1=4, or "other", was assigned based on a variety of comments, including participant ill/emergency. There were no other recodes to this variable prior to data release.

## Analytic Notes

Changes Since 2015-2016:

**Discontinued Items:** PEASCST1, PEASCTM1

Exam sample weights should be used for analyses. Please refer to the [NHANES Analytic Guidelines](#) and the on-line [NHANES Tutorial](#) for further details on the use of sample weights and other analytic issues.

## Codebook and Frequencies

### SEQN - Respondent sequence number

<b>Variable Name:</b>	SEQN
<b>SAS Label:</b>	Respondent sequence number
<b>English Text:</b>	Respondent sequence number.
<b>Target:</b>	Both males and females 0 YEARS - 150 YEARS

## PEASCCT1 - Blood Pressure Comment

**Variable Name:** PEASCCT1  
**SAS Label:** Blood Pressure Comment  
**English Text:** Blood Pressure Comment  
**Target:** Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Safety exclusion	0	0	
2	SP refusal	12	12	
3	Time constraints	178	190	
4	Other	46	236	
.	Missing	9308	9544	

## BPXCHR - 60 sec HR (30 sec HR \* 2)

**Variable Name:** BPXCHR

**SAS Label:** 60 sec HR (30 sec HR \* 2)

**English Text:** 60 sec HR (30 sec HR \* 2)

**Target:** Both males and females 0 YEARS - 7 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
58 to 190	Range of Values	1938	1938	
.	Missing	7606	9544	

## BPAARM - Arm selected

**Variable Name:** BPAARM

**SAS Label:** Arm selected

**English Text:** Arm selected:

**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Right	7361	7361	
2	Left	36	7397	
8	Could not obtain	1	7398	
.	Missing	2146	9544	

## BPACSZ - Coded cuff size

**Variable Name:** BPACSZ  
**SAS Label:** Coded cuff size  
**English Text:** Cuff size (cm) (width X length)  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Infant (6X12)	1	1	
2	Child (9X17)	488	489	
3	Adult (12X22)	2461	2950	
4	Large (15X32)	3368	6318	
5	Thigh (18X35)	1068	7386	
.	Missing	2158	9544	

## BPXPLS - 60 sec. pulse (30 sec. pulse \* 2)

**Variable Name:** BPXPLS  
**SAS Label:** 60 sec. pulse (30 sec. pulse \* 2)  
**English Text:** 60 sec. pulse (30 sec. pulse \* 2)  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
36 to 142	Range of Values	7376	7376	
.	Missing	2168	9544	

## BPXPULS - Pulse regular or irregular?

**Variable Name:** BPXPULS  
**SAS Label:** Pulse regular or irregular?  
**English Text:** Pulse regular or irregular?  
**Target:** Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Regular	9113	9113	
2	Irregular	201	9314	
.	Missing	230	9544	



## BPXPTY - Pulse type

**Variable Name:** BPXPTY  
**SAS Label:** Pulse type  
**English Text:** Pulse type  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Radial	7348	7348	
2	Brachial	28	7376	
8	Could not obtain	0	7376	
.	Missing	2168	9544	

## BPXML1 - MIL: maximum inflation levels (mm Hg)

**Variable Name:** BPXML1  
**SAS Label:** MIL: maximum inflation levels (mm Hg)  
**English Text:** MIL: maximum inflation levels (mm Hg)  
**Target:** Both males and females 8 YEARS - 150 YEARS  
**Hard Edits:** 70.0000 to 300.0000

Code or Value	Value Description	Count	Cumulative	Skip to Item
110 to 260	Range of Values	7371	7371	
.	Missing	2173	9544	

## BPXSY1 - Systolic: Blood pres (1st rdg) mm Hg

**Variable Name:** BPXSY1  
**SAS Label:** Systolic: Blood pres (1st rdg) mm Hg  
**English Text:** Systolic: Blood pressure (first reading) mm Hg  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
72 to 236	Range of Values	7145	7145	
.	Missing	2399	9544	

## BPXDI1 - Diastolic: Blood pres (1st rdg) mm Hg

**Variable Name:** BPXDI1  
**SAS Label:** Diastolic: Blood pres (1st rdg) mm Hg  
**English Text:** Diastolic: Blood pressure (first reading) mm Hg  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 120	Range of Values	7145	7145	
.	Missing	2399	9544	

## BPAEN1 - Enhancement used first reading

**Variable Name:** BPAEN1  
**SAS Label:** Enhancement used first reading  
**English Text:** Enhancement used first reading  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Yes	3	3	
2	No	7142	7145	
8	Could not obtain	0	7145	
.	Missing	2399	9544	

## BPXSY2 - Systolic: Blood pres (2nd rdg) mm Hg

**Variable Name:** BPXSY2  
**SAS Label:** Systolic: Blood pres (2nd rdg) mm Hg  
**English Text:** Systolic: Blood pressure (second reading) mm Hg  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
76 to 238	Range of Values	7313	7313	
.	Missing	2231	9544	

## BPXDI2 - Diastolic: Blood pres (2nd rdg) mm Hg

**Variable Name:** BPXDI2  
**SAS Label:** Diastolic: Blood pres (2nd rdg) mm Hg  
**English Text:** Diastolic: Blood pressure (second reading) mm Hg  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 144	Range of Values	7313	7313	
.	Missing	2231	9544	

## BPAEN2 - Enhancement used second reading

**Variable Name:** BPAEN2  
**SAS Label:** Enhancement used second reading  
**English Text:** Enhancement used second reading  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Yes	183	183	
2	No	7130	7313	
8	Could not obtain	0	7313	
.	Missing	2231	9544	



## BPXSY3 - Systolic: Blood pres (3rd rdg) mm Hg

**Variable Name:** BPXSY3  
**SAS Label:** Systolic: Blood pres (3rd rdg) mm Hg  
**English Text:** Systolic: Blood pressure (third reading) mm Hg  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
76 to 226	Range of Values	7276	7276	
.	Missing	2268	9544	

## BPXDI3 - Diastolic: Blood pres (3rd rdg) mm Hg

**Variable Name:** BPXDI3  
**SAS Label:** Diastolic: Blood pres (3rd rdg) mm Hg  
**English Text:** Diastolic: Blood pressure (third reading) mm Hg  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 140	Range of Values	7276	7276	
.	Missing	2268	9544	

## BPAEN3 - Enhancement used third reading

**Variable Name:** BPAEN3  
**SAS Label:** Enhancement used third reading  
**English Text:** Enhancement used third reading  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Yes	206	206	
2	No	7070	7276	
8	Could not obtain	0	7276	
.	Missing	2268	9544	

## BPXSY4 - Systolic: Blood pres (4th rdg) mm Hg

**Variable Name:** BPXSY4

**SAS Label:** Systolic: Blood pres (4th rdg) mm Hg

**English Text:** Systolic: Blood pressure (fourth reading if necessary) mm Hg

**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
82 to 212	Range of Values	324	324	
.	Missing	9220	9544	

## BPXDI4 - Diastolic: Blood pres (4th rdg) mm Hg

**Variable Name:** BPXDI4

**SAS Label:** Diastolic: Blood pres (4th rdg) mm Hg

**English Text:** Diastolic: Blood pressure (fourth reading if necessary) mm Hg

**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0 to 132	Range of Values	324	324	
.	Missing	9220	9544	

## BPAEN4 - Enhancement used fourth reading

**Variable Name:** BPAEN4  
**SAS Label:** Enhancement used fourth reading  
**English Text:** Enhancement used fourth reading  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Yes	76	76	
2	No	248	324	
8	Could not obtain	0	324	
.	Missing	9220	9544	