

SUPPLEMENTARY TABLE 2. Adjusted prevalence of elevated blood pressure (BP) and hypertension by weight status in youths aged 12–19 years — National Health and Nutritional Examination Survey, United States 2001–2004 through 2013–2016

Guidelines/weight status*	NHANES 2001–2004 N = 4,169	NHANES 2005–2008 N = 3,076	NHANES 2009–2012 N = 2,319	NHANES 2013–2016 N = 2,440	P-Value for Trend†
Hypertension (New Guideline)§					
Overall	7.7 (6.5–9.2)	7.9 (6.2–9.9)	5.4 (4.4–6.5)	4.2 (3.3–5.3)	<0.001
Healthy	5.4 (4.1–7.0)	5.7 (4.1–8.0)	3.6 (2.7–4.6)	1.9 (1.2–3.0)	<0.001
Overweight	10.2 (7.7–13.5)	9.1 (5.8–14.1)	5.6 (3.3–9.2)	5.3 (3.2–8.6)	0.004
Obesity (all)	14.1 (10.6–18.4)	14.0 (10.6–18.2)	10.6 (7.5–14.7)	9.4 (6.7–13.0)	0.030
-Severe Obesity	18.8 (12.1–27.9)	16.0 (10.7–23.2)	11.8 (7.0–19.2)	13.8 (9.8–19.1)	0.185
Elevated BP (New Guideline)§					
Overall	11.0 (9.7–12.4)	11.6 (9.9–13.5)	11.2 (9.5–13.1)	10.4 (8.9–12.1)	0.532
Healthy	7.9 (6.8–9.3)	9.0 (7.2–11.1)	9.0 (7.3–11.1)	7.3 (5.9–9.1)	0.580
Overweight	11.0 (8.6–13.9)	15.0 (11.3–19.7)	15.2 (11.0–20.6)	11.3 (7.8–16.3)	0.881
Obesity (all)	21.9 (17.4–27.1)	17.3 (13.6–21.9)	14.8 (10.4–20.5)	18.1 (14.9–21.7)	0.146
-Severe Obesity	21.9 (16.3–28.7)	20.9 (15.7–27.4)	15.3 (8.9–25.2)	16.8 (13.2–21.2)	0.093
Combined Hypertension + Elevated BP (New Guideline)§					
Overall	18.7 (16.9–20.6)	19.5 (16.4–22.9)	16.5 (14.5–18.7)	14.6 (12.8–16.5)	<0.001
Healthy	13.3 (11.5–15.3)	14.7 (11.6–18.4)	12.6 (10.3–15.3)	9.2 (7.6–11.2)	0.002
Overweight	21.2 (17.5–25.3)	24.2 (19.1–30.1)	20.8 (15.5–27.3)	16.6 (12.3–22.2)	0.100
Obesity (all)	35.9 (30.2–42.0)	31.3 (26.0–37.2)	25.4 (21.4–29.9)	27.5 (23.4–31.9)	0.007
-Severe Obesity	40.6 (32.7–49.1)	36.9 (28.4–46.4)	27.1 (19.3–36.6)	30.6 (25.4–36.3)	0.015
Hypertension (Former Guideline)¶					
Overall	3.2 (2.4–4.1)	3.0 (2.1–4.2)	1.9 (1.3–2.8)	1.5 (1.0–2.2)	<0.001
Healthy	2.2 (1.5–3.3)	2.1 (1.1–3.9)	1.2 (0.7–2.1)	0.6 (0.3–1.2)	0.001
Overweight	3.3 (1.8–5.9)	3.0 (1.5–6.1)	2.5 (1.1–5.6)	1.9 (1.0–3.3)	0.176
Obesity (all)	6.4 (4.4–9.2)	5.7 (3.3–9.6)	3.6 (1.9–6.8)	3.7 (2.3–5.9)	0.035
-Severe Obesity	9.5 (5.2–16.7)	6.3 (3.5–11.0)	5.2** (2.2–12.0)	5.6 (3.6–8.6)	0.180
Elevated BP (Former Guideline)¶					
Overall	14.8 (13.3–16.5)	15.4 (13.0–18.1)	13.9 (12.0–16.0)	12.1 (10.5–13.9)	0.013
Healthy	10.5 (9.3–11.9)	11.6 (9.3–14.3)	10.8 (8.5–13.6)	7.8 (6.4–9.5)	0.015
Overweight	17.5 (13.9–21.9)	20.3 (15.9–25.6)	18.0 (13.3–23.7)	14.1 (10.1–19.3)	0.200
Obesity (all)	27.8 (23.0–33.3)	24.2 (19.1–30.0)	20.3 (16.3–25.0)	22.3 (18.7–26.3)	0.045
-Severe Obesity	29.9 (23.9–36.6)	29.1 (21.9–37.5)	21.8 (15.1–30.4)	24.3 (19.3–30.0)	0.080
Combined Hypertension + Elevated BP (Former Guideline)¶					
Overall	18.0 (16.3–19.8)	18.4 (15.5–21.7)	15.8 (13.9–18.0)	13.6 (12.0–15.4)	<0.001
Healthy	12.7 (11.0–14.6)	13.7 (10.8–17.1)	12.0 (9.7–14.8)	8.4 (6.9–10.1)	<0.001
Overweight	20.9 (17.3–25.0)	23.4 (18.3–29.2)	20.4 (15.1–27.0)	15.9 (11.8–21.1)	0.076
Obesity (all)	34.3 (29.3–39.6)	29.9 (24.5–35.9)	24.0 (19.9–28.7)	25.9 (21.8–30.5)	0.004
-Severe Obesity	39.4 (31.6–47.9)	35.4 (26.7–45.2)	27.0 (19.2–36.5)	29.8 (24.5–35.7)	0.023

Abbreviations: 95% CI = 95% confidence interval; NHANES = National Health and Nutritional Examination Survey.

* Body Mass Index (BMI) is compared with age- and sex-specific reference values from the 2000 CDC growth charts (http://www.cdc.gov/growthcharts/cdc_charts.htm). Healthy = BMI-for-age $\geq 5^{\text{th}}$ - $< 85^{\text{th}}$, overweight = BMI-for-age $\geq 85^{\text{th}}$ - $< 95^{\text{th}}$ percentile, obesity = BMI-for-age $\geq 95^{\text{th}}$ percentile. Severe obesity = BMI-for-age $\geq 120\%$ of 95th percentile. Persons classified as underweight (BMI-for-age $< 5^{\text{th}}$ percentile) are excluded.

† P-value for trends across the surveys using t-test with logistic regression model adjusted for age, sex, and race/ethnicity; all tests 2-tailed.

§ New Guideline: youths aged 12–17 years – elevated blood pressure (BP) = BP $\geq 90^{\text{th}}$ percentile to $< 95^{\text{th}}$ percentile or 120 mm Hg to $< 95^{\text{th}}$ percentile (whichever was lower); hypertension = BP $\geq 95^{\text{th}}$ percentile, or systolic blood pressure (SBP) ≥ 130 mm Hg, or diastolic blood pressure (DBP) ≥ 80 mm Hg, or taking anti-hypertensive medication (available for persons aged 16–19 years). Persons aged 18–19 years – elevated BP = mean SBP ≥ 120 to < 130 mm Hg and mean DBP < 80 mm Hg; hypertension = SBP ≥ 130 mm Hg, or DBP ≥ 80 mm Hg, or taking anti-hypertensive medication

¶ Former Guideline: youths aged 12–17 years – elevated BP (formerly “prehypertension”) = mean SBP or DBP $\geq 90^{\text{th}}$ to $< 95^{\text{th}}$ percentile or observed BP levels $\geq 120/80$ mmHg to $< 95^{\text{th}}$ percentile; hypertension = mean SBP or DBP $\geq 95^{\text{th}}$ percentile (using 2004 age, sex, and height percentile tables), or use of anti-hypertensive medication. Persons aged 18–19 years – elevated BP = mean SBP ≥ 120 to < 140 mm Hg or mean DBP ≥ 80 mm Hg and < 90 mm Hg; hypertension = SBP ≥ 140 mm Hg, or DBP ≥ 90 mm Hg, or use of anti-hypertensive medication.

** indicates relative standard error (RSE) $> 30\%$.

