



Original Contribution

Health Across the Life Span in the United States and England

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This study systematically compared health indicators in the United States and England from childhood through old age (ages 0–80 years). Data were from the 1999–2006 National Health and Nutrition Examination Survey for the United States ($n = 39,849$) and the 2003–2006 Health Survey for England ($n = 69,084$). Individuals in the United States have higher rates of most chronic diseases and markers of disease than their same-age counterparts in England. Differences at young ages are as large as those at older ages for most conditions, including obesity, low high-density lipoprotein cholesterol, high cholesterol ratio, high C-reactive protein, hypertension (for females), diabetes, asthma, heart attack or angina (for females), and stroke (for females). For males, heart attack or angina is higher in the United States only at younger ages, and hypertension is higher in England than in the United States at young ages. The patterns were similar when the sample was restricted to whites, the insured, nonobese, non-smoking nondrinkers, and specific income categories and when stratified by normal weight, overweight, and obese weight categories. The findings from this study indicate that US health disadvantages compared with England arise at early ages and that differences in the body weight distributions of the 2 countries do not play a clear role.

age groups; body mass index; cross-cultural comparison; health status; population characteristics

Abbreviations: HDL, high-density lipoprotein; HSE, Health Survey for England; NHANES, National Health and Nutrition Examination Survey.

Editor's note: An invited commentary on this article appears on page 866, and the authors' response appears on page 870.

Per capita spending on health care is higher in the United States than in any other country and double that in the United Kingdom (1). Despite the high rate of spending, adults aged 50 years or older in the United States have significantly worse health status (2–4) and lower life expectancy (1, 5) than those in England. Individuals in the United States also have higher mortality rates throughout the life course until at least age 75 years (based on 2007 mortality statistics) (6, 7). Why health status differs so dramatically in these 2 countries, which share much in terms of history and culture, is an unresolved puzzle.

Existing evidence suggests that differences in health status between the 2 countries cannot be explained by health insurance, health behaviors, obesity, socioeconomic status,

or racial/ethnic compositions (2–4). The main focus of previous research has been on older ages and mortality. A recent study compared infant health based on birth weight and found no differences between the United States and England (8). Very little attention has been paid in international comparative work to health differences at other age groups, and the potential role of body weight, which is much higher on average in the United States than in England, has not been fully explored.

This study uses data from 2 nationally representative surveys to compare the health of residents of the United States and England from 0 to 80 years, focusing on a number of chronic conditions and markers of disease. A systematic assessment of cross-country differences in health by age group and type of condition provides necessary context for learning about why older residents of England suffer fewer chronic health conditions than their US counterparts. Is it only older adults who are healthier, or do similar

Table 1. Sample Characteristics for the United States (1999–2006) and England (2003–2006)^a

	United States (n = 39,849)	England (n = 69,084)
Age group, years		
0–3	5.7	5.1
4–11	11.6	10.6
12–19	11.8	11.4
20–34	21.1	19.9
35–49	23.5	22.8
50–64	16.4	18.1
65–80	9.8	12.1
Race/ethnicity ^b		
Non-Hispanic white	67.4	85.3
Hispanic	14.8	N/A
Asian	N/A	8.1
Non-Hispanic black	12.2	4.9
Other	5.7	1.7
Cigarette smoking	23.3	25.5
Alcoholic drinks, ≥5 per week for ages ≥20 years	6.9	17.5
No health insurance	16.8	N/A

Abbreviation: N/A, not applicable.

^a All values are weighted percentages. Unless otherwise noted, all values pertain to individuals 0–80 years of age.

^b Hispanic ethnicity was not available for England (individuals who are Hispanic could have classified themselves in any of the racial groups). Asian race was not available for the United States (individuals who are Asian are included in the “other” race/ethnic category).

disparities exist at early ages? Do the observed patterns vary by type of health condition or marker of disease?

MATERIALS AND METHODS

Data

Data were obtained from the National Health and Nutrition Examination Survey (NHANES) for the United States and the Health Survey for England (HSE). Both are large, nationally representative health surveys that have comparable measures of health assessed through interviews and physical examinations.

The NHANES is a comprehensive survey conducted by the National Center for Health Statistics in the United States continuously since 1999 (9). For our analyses, data from all available years of the continuous survey were used. Respondents older than 80 years were not included because of a lack of comparability between the NHANES and HSE for this age group (NHANES includes age in 1-year increments for those over 80, while the over-80 age group is top coded in the HSE, making it impossible to know the age distribution of the over-80 age group in that survey). Of the 41,474 observations from 1999 to 2006, 1,625 were excluded because of the age restriction, leaving an analysis sample of 39,849 observations between the ages of 0 and 80

Table 2. Prevalence of Specific Health Conditions in the United States (1999–2006) and England (2003–2006) Presented as Weighted Percentages

	United States (n = 39,849)	England (n = 69,084)
Body mass index at age ≥4 years, kg/m ^{2a}		
Normal (18.5–24.9)	40.8	50.5 ^b
Overweight (25–29.9)	29.5	30.7
Obese (≥30)	28.8	17.9 ^b
Underweight (<18.5)	1.6	0.9 ^b
HDL cholesterol at age ≥12 years, mg/dL		
Low (<40)	19.2	10.1 ^b
Normal (40–59)	53.3	52.6
High (>59)	27.4	37.3 ^b
High cholesterol ratio (≥5:1) at age ≥12 years	21.7	16.0 ^b
Hypertension (blood pressure ≥140/90 or medicated for high blood pressure) at age ≥12 years	25.0	26.1
C-reactive protein at age ≥18 years, mg/L		
Low risk (<1)	31.1	37.1 ^b
Medium risk (1–3)	31.8	33.7 ^b
High risk (>3)	37.1	29.2 ^b
Diabetes at age ≥12 years	5.3	4.1 ^b
Asthma at all ages	13.3	6.5 ^b
Heart attack or angina at age ≥20 years	4.5	3.8 ^b
Stroke at age ≥20 years	2.3	1.5 ^b

Abbreviation: HDL, high-density lipoprotein.

^a The body mass index thresholds for children differ slightly as described in the text.

^b Statistically significant at $P < 0.05$.

years. Sample sizes vary across health measures because certain conditions were assessed only for certain age groups.

The HSE is an annual cross-sectional survey of private households in England conducted by the Joint Health Surveys Unit of the National Centre for Social Research (10–13). For our analyses, the 2003–2006 surveys were used because starting in 2003 appropriate weights are available to make the data nationally representative when multiple years are pooled together. The number of respondents in the 2003–2006 surveys was 71,717. Our primary analysis sample included 69,084 observations after 2,633 observations for those older than 80 years were dropped. However, some biologic measures were collected from representative subsamples of approximately half of all respondents.

Age groups

Age was categorized into broad groups that correspond to the Centers for Disease Control Stages of Life (14). The categories are infants (0–3 years), children (4–11 years), adolescents (12–19 years), young adults (20–34 years), middle-

Table 3. Prevalence of Specific Health Indicators and Risk Factors by Age Group in the United States (1999–2006) and England (2003–2006) Presented as Weighted Percentages and 95% Confidence Intervals, by Gender^a

	Females				Males			
	United States (n = 20,291)		England (n = 36,935)		United States (n = 19,558)		England (n = 32,149)	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Obesity by age group, years								
4–11	12.1	10.2, 13.9	7.3 ^b	5.4, 9.2	11.1	9.5, 12.6	7.1 ^b	5.3, 8.9
12–17	15.3	13.6, 17.1	9.3 ^b	6.7, 11.8	15.3	13.5, 17.0	6.0 ^b	4.1, 7.9
18–34	29.7	27.7, 31.7	12.9 ^b	11.4, 14.5	24.1	21.9, 26.2	12.8 ^b	11.1, 14.6
35–49	36.8	34.3, 39.3	21.5 ^b	19.8, 23.3	33.0	30.6, 35.3	22.4 ^b	20.3, 24.6
50–64	40.5	37.5, 43.4	25.7 ^b	23.7, 27.7	36.6	33.7, 39.4	26.2 ^b	23.9, 28.5
65–80	37.3	34.4, 40.2	22.6 ^b	20.5, 24.8	32.3	29.5, 35.0	21.5 ^b	19.0, 23.9
Low HDL cholesterol by age group, years								
12–19	11.0	9.9, 12.2	6.8 ^b	4.1, 9.5	23.0	21.1, 25.0	19.6	15.0, 24.1
20–34	11.7	10.0, 13.3	6.8 ^b	5.5, 8.1	29.0	26.4, 31.6	14.7 ^b	12.7, 16.7
35–49	10.8	9.5, 12.1	4.9 ^b	4.0, 5.8	31.8	29.6, 34.0	14.5 ^b	13.0, 16.0
50–64	8.9	7.4, 10.5	3.3 ^b	2.6, 4.0	28.3	25.4, 31.2	15.8 ^b	14.1, 17.6
65–80	7.9	6.5, 9.4	3.5 ^b	2.5, 4.4	26.5	23.8, 29.3	16.5 ^b	14.4, 18.6
High cholesterol ratio by age group, years								
12–19	4.6	3.6, 5.5	3.4	1.4, 5.3	9.3	8.1, 10.5	5.8	3.5, 8.1
20–34	10.8	9.1, 12.4	5.5 ^b	4.3, 6.7	27.3	24.9, 29.8	18.5 ^b	16.3, 20.6
35–49	15.8	13.8, 17.8	8.6 ^b	7.5, 9.7	39.6	37.3, 40.4	29.5 ^b	27.6, 31.5
50–64	18.0	15.6, 20.3	13.4 ^b	12.0, 14.8	37.4	34.3, 40.4	28.2 ^b	26.1, 30.3
65–80	16.0	14.5, 17.6	14.1	12.0, 16.1	25.9	23.2, 28.7	20.1 ^b	17.9, 22.2
High C-reactive protein by age group, years								
18–34	39.4	37.3, 41.5	31.2 ^b	29.0, 33.5	21.4	19.5, 23.3	16.1 ^b	14.1, 18.1
35–49	45.2	42.4, 48.1	28.4 ^b	26.6, 30.2	27.8	25.4, 30.3	21.3 ^b	19.5, 23.0
50–64	48.9	45.8, 52.0	35.7 ^b	33.6, 37.8	35.9	32.7, 39.0	30.8 ^b	28.6, 32.9
65–80	50.2	47.3, 53.1	43.2 ^b	40.5, 45.9	38.3	35.3, 41.2	38.2	35.4, 40.9
Hypertension by age group, years								
12–19	0.6	0.2, 1.0	0.8	0.4, 1.3	1.5	1.0, 2.0	2.8 ^b	1.8, 3.7
20–34	2.6	1.8, 3.4	3.5	2.8, 4.2	8.8	6.8, 10.7	12.5 ^b	10.9, 14.1
35–49	19.5	17.5, 21.4	14.2 ^b	12.8, 15.5	22.5	20.3, 24.6	22.5	20.9, 24.2
50–64	47.5	44.5, 50.4	37.6 ^b	35.7, 39.5	43.4	40.1, 46.7	45.8	43.7, 47.9
65–80	74.6	72.2, 77.0	66.5 ^b	64.4, 68.7	63.0	59.8, 66.2	63.6	61.3, 65.8

Table continues

age adults (35–49 and 50–64 years), and old-age adults (65–80 years). For 2 measures (obesity and C-reactive protein), the adolescent group was categorized as 12–17 years and the young adult group as 18–34 years because obesity was measured differently under age 18 than for adults and because C-reactive protein was assessed only for those at least 18 years of age.

Measures of health

Health measures based on physical examinations and/or laboratory reports included the following risk factors

or conditions: obesity, hypertension, diabetes, low high-density lipoprotein (HDL) cholesterol, high cholesterol ratio, and high C-reactive protein. These are the same measures that were used in recent analyses by Banks et al. (2, 3) that compared the health of older adults in the 2 countries. The NHANES and HSE survey documentation guidelines, which provide detail on the procedures by which each assessment was conducted, indicate that identical or very similar protocols were used in the 2 countries (9–13). Obesity was calculated for respondents between 4 and 80 years of age, C-reactive protein was measured for respondents between 18 and 80 years of age, and the other conditions were

Table 3. Continued

	Females				Males			
	United States (n = 20,291)		England (n = 36,935)		United States (n = 19,558)		England (n = 32,149)	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Diabetes by age group, years								
12–19	0.4	0.1, 0.8	0.0	0.0, 0.0	0.5	0.3, 0.8	1.1	0.0, 2.4
20–34	1.5	0.8, 2.1	1.0	0.5, 1.5	1.2	0.7, 1.8	0.5 ^b	0.1, 0.8
35–49	3.3	2.6, 4.1	1.8 ^b	1.3, 2.3	5.1	4.0, 6.2	3.1 ^b	2.4, 3.9
50–64	9.4	8.1, 10.7	4.7 ^b	3.8, 5.6	11.5	9.7, 13.3	7.4 ^b	6.2, 8.6
65–80	12.8	10.8, 14.7	10.2 ^b	8.5, 11.8	14.1	12.0, 16.2	13.9	12.0, 15.9
Asthma by age group, years								
0–3	7.5	6.1, 8.9	1.8 ^b	0.7, 2.8	10.8	8.8, 12.8	5.5 ^b	3.1, 7.9
4–11	10.7	9.3, 12.1	6.4 ^b	4.7, 8.2	18.2	15.9, 20.5	10.6 ^b	8.6, 12.6
12–19	17.8	16.6, 18.9	6.9 ^b	5.2, 8.6	17.4	15.6, 19.1	9.0 ^b	7.0, 11.0
20–34	15.4	13.5, 17.3	6.3 ^b	5.1, 7.6	12.8	11.1, 14.5	5.8 ^b	4.4, 7.2
35–49	15.1	13.5, 16.7	6.9 ^b	5.8, 7.9	10.0	8.4, 11.5	5.2 ^b	4.1, 6.3
50–64	13.4	11.7, 15.1	7.3 ^b	6.1, 8.5	10.9	9.1, 12.7	5.4 ^b	4.1, 6.6
65–80	12.7	11.0, 14.3	7.3 ^b	5.9, 8.7	7.9	6.2, 9.6	5.3 ^b	3.9, 6.6
Heart attack or angina by age group, years								
20–34	0.5	0.1, 0.8	0.2	0.0, 0.3	0.4	0.1, 0.7	0.1	0.0, 0.2
35–49	1.5	1.0, 2.1	0.6 ^b	0.4, 0.9	2.3	1.5, 3.1	0.9 ^b	0.6, 1.2
50–64	5.2	4.0, 6.3	3.8 ^b	3.2, 4.4	8.5	6.6, 10.4	9.0	8.0, 10.0
65–80	12.5	10.5, 14.5	12.2	10.8, 13.6	19.5	17.1, 22.0	22.5	20.6, 24.5
Stroke by age group, years								
20–34	0.4	0.1, 0.7	0.2	0.0, 0.3	0.4	0.1, 0.6	0.2	0.0, 0.3
35–49	1.5	0.9, 2.1	0.6 ^b	0.4, 0.9	0.8	0.4, 1.1	0.6	0.3, 0.8
50–64	3.4	2.5, 4.3	1.8 ^b	1.4, 2.2	2.3	1.6, 3.0	2.2	1.7, 2.7
65–80	7.6	6.2, 8.9	6.5	5.5, 7.6	8.3	7.1, 9.5	8.9	7.6, 10.3

Abbreviations: CI, confidence interval; HDL, high-density lipoprotein.

^a All estimates are weighted on the basis of the complex sampling designs in the National Health and Nutrition Examination Survey and the Health Survey for England.

^b The difference between England and the United States is statistically significant at $P < 0.05$.

measured for individuals at least 12 years of age. The high degree of comparability of the biologic measures of risk is an advantage of using the NHANES and HSE, as such measures are less susceptible to measurement error than are self-reported survey measures (2, 3). An additional advantage is that these measures can capture health risk among individuals who are young and for whom morbidity is relatively rare.

We consider obesity as a health risk. For adults, the body mass index (weight (kg)/height (m)²) categories are based on the World Health Organization's standard (15). The categories are normal (18.5–24.9 kg/m²), overweight (25–29.9 kg/m²), obese (≥ 30 kg/m²), and underweight (< 18.5 kg/m²). For children (through age 17 years), age- and gender-specific thresholds were determined by using the International Obesity Taskforce definition of body mass index categories (normal, overweight, and obese); these are based on body mass

index curves in 6 countries including the United States and Great Britain (16).

Hypertension was defined as mean systolic blood pressure of ≥ 140 mm Hg, mean diastolic blood pressure of ≥ 90 mm Hg, or reports of current treatment for hypertension with prescription medication (17). Diabetes was assessed from glycosylated hemoglobin tests (hemoglobin A1c, $> 6.5\%$) (18). HDL cholesterol was categorized as low (< 40 mg/dL), normal (40–59 mg/dL), or high (> 59 mg/dL), as well as with a binary measure of low as compared with normal or high (19). In the absence of a low-density lipoprotein cholesterol measure, the total cholesterol:HDL cholesterol ratio was used (20). A high cholesterol ratio was defined as a total cholesterol:HDL cholesterol ratio of 5:1 or above, although results were not sensitive to the ratio cutoff used. High sensitivity C-reactive protein, a biomarker for inflammation that is increasingly being used

Table 4. Prevalence of Health Conditions in the United States (1999–2006) and England (2003–2006) for Full and Body Mass Index Subsamples,^a Presented as Weighted Percentages^b for Females

	United States						England									
	All ^c (n = 17,671)		Normal (n = 7,418)		Overweight (n = 4,183)		Obese (n = 5,838)		All ^c (n = 33,806)		Normal (n = 18,315)		Overweight (n = 8,938)		Obese (n = 6,203)	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Low HDL cholesterol	8.6	7.9, 9.3	4.3	3.3, 5.3	10.4	9.0, 11.8	15.1	13.3, 16.8	4.7 ^d	4.2, 5.2	1.4 ^d	0.7, 2.2	4.4 ^d	3.6, 5.2	7.7 ^d	6.3, 9.0
High cholesterol ratio	15.8	14.7, 17.0	7.1	6.0, 8.2	16.7	15.2, 18.2	23.8	21.1, 26.6	10.6 ^d	9.9, 11.3	4.7 ^d	3.9, 5.5	11.0 ^d	9.8, 12.1	18.1 ^d	16.0, 20.2
High C-reactive protein	46.9	45.3, 48.4	24.1	22.3, 26.0	45.1	42.6, 47.6	66.5	64.2, 68.8	35.0 ^d	33.9, 36.1	19.0 ^d	17.4, 20.7	32.2 ^d	30.3, 34.1	57.9 ^d	55.4, 60.4
Hypertension	36.4	35.2, 37.6	26.0	24.3, 27.7	35.1	33.1, 37.0	42.9	41.2, 44.6	31.3 ^d	30.5, 32.1	22.9 ^d	21.7, 24.2	30.2 ^d	28.9, 31.6	40.6 ^d	38.8, 42.4
Diabetes	7.1	6.6, 7.6	3.4	2.6, 4.2	6.2	5.2, 7.3	9.4	8.4, 10.3	4.6 ^d	4.2, 5.1	2.0 ^d	1.5, 2.6	3.9 ^d	3.2, 4.6	6.5 ^d	5.3, 7.6
Asthma	13.1	12.4, 13.9	10.5	9.1, 11.8	12.2	10.7, 13.7	16.0	14.4, 17.5	6.4 ^d	5.9, 7.0	5.0 ^d	4.1, 6.0	5.8 ^d	4.8, 6.8	10.5 ^d	8.9, 12.0
Heart attack or angina	5.2	4.6, 5.7	3.7	2.9, 4.5	5.0	4.1, 5.8	6.0	4.8, 7.1	4.4 ^d	4.0, 4.8	2.9	2.4, 3.5	4.5	3.6, 5.4	4.2 ^d	3.6, 4.9
Stroke	3.2	2.8, 3.7	2.0	1.5, 2.5	3.4	2.5, 4.2	3.6	2.8, 4.5	2.2 ^d	1.9, 2.4	1.6	1.2, 1.9	1.4 ^d	1.1, 1.7	2.7 ^d	1.9, 3.4

Abbreviations: CI, confidence interval; HDL, high-density lipoprotein.

^a Adjusted by body mass index and age within the weight groups.^b All estimates are weighted on the basis of the complex sampling designs in the National Health and Nutrition Examination Survey and the Health Survey for England.^c The results for the full sample are adjusted only by age.^d Statistically different from the United States at $P < 0.05$.

as an indicator of risk for cardiovascular disease (21) and a number of other age-related diseases (22), was used to classify individuals as low risk (<1 mg/L), medium risk (1–3 mg/L), and high risk (>3 mg/L) and to create a binary measure of high versus low or medium health risk (23).

The self-reported health conditions were based on subjects' responses to standard survey questions and were chosen because of comparability between the 2 data sets and for consistency with the study by Banks et al. (2). The conditions included whether the individual was ever told by a doctor that he or she had a heart attack or angina, was ever told by a doctor that he or she had a stroke, and was ever told by a doctor that he, she, or child had asthma (United States) or reported directly that he, she, or child has asthma (England). Except asthma, all of these measures were available for individuals at least 20 years of age. Information on asthma was available for all ages. We were not able to investigate self-reported cancer as did Banks et al., because the HSE did not ask about the type of cancer, and this lack of detail could potentially lead to distorted comparisons. Perhaps most notably, self-reported cancer could include skin cancer, particularly nonmelanoma skin cancer, which is diagnosed much more frequently in the United States than England.

Statistical methods

STATA statistical software, version 10.0 SE, was used to conduct all analyses (24). The SVY commands were used to adjust for sampling design effects in both studies (9–13), and all analyses were weighted to produce nationally representative results. Weighted percentages and 95% confidence intervals were calculated for each health condition, separately for males and females, in each age group. Supplementary analyses further restrict the samples of males and females to whites and other subgroups and assess the sensitivity of the findings to alternative definitions of certain of the health indicators.

RESULTS

The populations of the United States and England are very similar in terms of age distribution but differ in terms of other risk factors for poor health (Table 1). Within specific age groups, cross-country differences in mean age were never greater than 1 year and were never statistically significant (not shown). The United States has a higher percentage of racial and ethnic minorities, a lower percentage of cigarette smokers, and a lower percentage of heavy alcohol drinkers. Given that respondents tend to underreport substance use in surveys and reporting could vary by country, the rates of smoking and heavy drinking should be interpreted with caution.

Overall, the United States has higher rates of chronic conditions and markers of disease than England (Table 2). Differences between the 2 countries are statistically significant for every condition except hypertension. The results were not sensitive to alternative definitions of hypertension and are consistent with previous findings of lower rates of

Table 5. Prevalence of Health Conditions in the United States (1999–2006) and England (2003–2006) for Full and Body Mass Index Subsamples,^a Presented as Weighted Percentages^b for Males

	United States						England									
	All ^c (n = 16,709)		Normal (n = 7,115)		Overweight (n = 4,853)		Obese (n = 4,585)		All ^c (n = 29,001)		Normal (n = 14,085)		Overweight (n = 9,763)		Obese (n = 4,969)	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Low HDL cholesterol	26.9	25.6, 28.3	14.5	12.2, 16.8	28.7	26.7, 30.6	41.4	38.5, 44.3	15.2 ^d	14.3, 16.1	9.1 ^d	7.6, 10.6	14.8 ^d	13.5, 16.1	25.4 ^d	23.0, 27.8
High cholesterol ratio	32.8	31.3, 34.3	14.3	12.6, 15.9	36.3	34.4, 38.3	46.9	44.0, 49.8	24.4 ^d	23.4, 25.4	11.8 ^d	10.3, 13.3	26.9 ^d	25.3, 28.5	37.5 ^d	34.9, 40.1
High C-reactive protein	31.1	29.5, 32.6	17.1	15.0, 19.2	26.9	25.1, 28.7	44.7	42.0, 47.5	26.4 ^d	25.3, 27.4	17.1	14.9, 19.3	24.1 ^d	22.6, 25.7	39.3 ^d	36.8, 41.9
Hypertension	36.8	35.2, 38.4	26.5	24.6, 28.5	34.3	31.9, 36.7	46.2	43.8, 48.6	37.4	36.5, 38.2	27.4	25.8, 29.0	35.9	34.5, 37.3	48.9 ^d	46.9, 51.0
Diabetes	8.2	7.5, 8.9	4.4	3.5, 5.4	5.9	5.1, 6.7	12.9	11.5, 14.3	6.2 ^d	5.6, 6.7	2.8 ^d	2.1, 3.5	5.4	4.6, 6.2	10.4 ^d	9.0, 11.9
Asthma	11.4	10.7, 12.2	11.2	9.7, 12.6	9.6	8.4, 10.8	12.5	11.0, 14.0	6.2 ^d	5.6, 6.8	6.8 ^d	5.6, 7.9	6.0 ^d	5.0, 7.0	5.3 ^d	4.1, 6.5
Heart attack or angina	7.1	6.3, 7.9	5.7	4.7, 6.8	6.6	5.4, 7.8	8.5	7.3, 9.6	7.1	6.4, 7.7	5.0	3.8, 6.2	7.2	6.1, 8.4	8.5	7.0, 10.0
Stroke	2.8	2.4, 3.1	2.1	1.6, 2.7	1.9	1.5, 2.4	3.6	2.8, 4.3	2.3 ^d	2.0, 2.6	1.9	1.4, 2.3	1.9	1.3, 2.4	2.4 ^d	1.9, 2.9

Abbreviations: CI, confidence interval; HDL, high-density lipoprotein.
^a Adjusted by body mass index and age within the weight groups.
^b All estimates are weighted on the basis of the complex sampling design in the National Health and Nutrition Examination Survey and the Health Survey for England.
^c The results for the full sample are adjusted only by age.
^d Statistically different from the United States at $P < 0.05$.

hypertension in the United States than in England (25). The results were also insensitive to alternative cholesterol and diabetes measures. The disease prevalence for the self-reported conditions is largely consistent with country reports and previous studies (2–4, 26, 27).

Our comparisons by age group indicate that most cross-country differences in health conditions and markers of disease at young ages are as large as those at older ages (Table 3). This is the case for obesity, low HDL cholesterol, high cholesterol ratio, high C-reactive protein, hypertension (for females), diabetes, asthma, heart attack or angina (for females), and stroke (for females). For males, heart attack or angina is higher in the United States only at younger ages, and hypertension is higher in England than in the United States at young ages. We indicate next to the age-range labels when cross-country differences are significant at the $P < 0.05$ level. In no case for which the United States compares unfavorably with England is there a clear age gradient in prevalence risk.

In supplementary analyses (available upon request), we restricted the sample to 1) whites only; 2) individuals who had health insurance; 3) individuals who reported that they drank alcohol less than 5 days per week and who did not currently smoke cigarettes (for adults) or that they were not exposed to household smoke (for individuals under 18 years); 4) individuals who were not obese; and 5) specific income tertiles. For all subsamples, health measures, and age groups, the cross-country differences were consistent with those shown in Table 3.

We conducted supplementary analyses that adjusted for body mass index and found that, although differences between the United States and England diminished slightly for certain conditions for certain age and gender groups, overall the significant health differentials between the United States and England were not attenuated (available upon request).

In analyses stratified by body mass index category (normal weight, overweight, and obese) with adjustment for both body mass index and age within each category, we observed no overall pattern of reduction in country differences (Tables 4 and 5). Additional analyses that stratified by both body mass index category and age, with adjustment for body mass index, also revealed no reduction in country differences (available upon request). These findings suggest that cross-country differences in weight distributions are not the driving force behind the observed health differences between the United States and England.

DISCUSSION

We found that Americans experience higher rates of chronic disease and markers of disease than their English counterparts even at young ages and that the cross-country differences in most health measures are of similar magnitude across all age groups. Banks et al. (2) speculated that differences in health conditions between the United States and England for individuals aged 55 years or over may reflect differential burdens of disease at young ages. Our findings of cross-country differences even at young ages are consistent with this perspective and suggest that the

US health disadvantages compared with England arise early in the life course.

It is noteworthy that the cross-country differences are more pronounced for females than for males for C-reactive protein, as well as for hypertension, heart attack or angina, and stroke. Prior studies, which pooled genders or focused exclusively on males (2–4), have not observed this pattern.

Like Banks et al., we found that the observed cross-country differences in health measures do not appear to be due to differences in sociodemographic characteristics, health insurance, or behavioral risk factors. In light of recent studies debating the long-term health effects of overweight and obesity (28, 29), our findings suggest that body weight is not the driving force behind the observed health differentials between the United States and England and that, if weight plays a role, it is a complicated one.

We can only speculate about other factors that may explain the poorer observed health status in the United States than in England at all ages. The observed health differences across countries may partially stem from differences in the use of health-care technology. We noted earlier that the United States spends much more on health care than the United Kingdom. Twice as many coronary bypass procedures and 4 times as many angioplasties are performed per capita in the United States as in the United Kingdom (1). Fewer Americans than United Kingdom residents die (per capita) from myocardial infarction or cerebrovascular disease each year (1), which may partially explain some of the differences in cardiovascular disease and stroke prevalence in the 2 countries. However, Americans are much more likely than United Kingdom residents to die from diabetes. Because asthma, heart attack or angina, and stroke are self-reported, differences in these conditions across countries could also reflect differential patterns of screening, diagnosis, disease labeling, or reporting.

Higher rates of screening for some conditions, the greater use of certain health-care procedures, and higher survival rates for cerebrovascular disease in the United States may represent partial explanations. However, given that the United States has higher age-specific mortality for every age group (except for those 75 years or older) (6), these differences cannot fully account for the observed cross-country differences in health conditions and markers of disease. The allocation of health-care resources may play a role. Despite the greater use of health-care technology in the United States, Americans receive less preventive health care than their English counterparts. They have fewer physician consultations per year (1). Acute hospital visits are also shorter in the United States (1), potentially resulting in missed opportunities for follow-up. It is also possible that the cross-country differences in social or physical environmental conditions or lifestyle play a role.

Given our finding of health differences between the United States and England at young ages, a promising focus for future research—one that could help to elucidate the causes of poor health across the life course—is on health differences between countries at the earliest ages (0–11 years). In this study, we were able to include only 1 health indicator for individuals under 4 years of age (maternal reports of asthma) and only 2 health conditions for children

4–11 years of age (asthma and obesity). In addition, prospective longitudinal studies are needed to confirm that the age patterns in health indicators that we found using cross-sectional data are not due to differences in health status across cohorts.

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