

## Dietary Intake of Ten Key Nutrients for Public Health, United States: 1999–2000

Jacqueline D. Wright, M.P.H., Chia-Yih Wang, Ph.D., Jocelyn Kennedy-Stephenson, M.S., and R. Bethene Ervin, Ph.D., Division of Health Examination Statistics

### Abstract

This report presents dietary intake estimates of 10 nutrients for the U.S. population by sex and age groups. Nutrient intakes are estimated from one 24-hour dietary recall interview conducted in the National Health and Nutrition Examination Survey, 1999–2000. Population means, medians, and standard errors of the mean are weighted to produce national estimates. Assessment of dietary intakes is an important part of monitoring the nutritional status of the U.S. population.

**Keywords:** Nutrient intake • 24-hour dietary recall • National Health and Nutrition Examination Survey (NHANES) • nutritional status

### Introduction

The National Health and Nutrition Examination Survey (NHANES) provides information on the health and nutritional status of the civilian, noninstitutionalized population of the United States residing in the 50 States and the District of Columbia. In 1999, the NHANES design shifted from periodic to continuous data collection. Each annual sample is nationally representative, but the 2-year samples are used to provide adequate sample sizes for subgroup analyses. NHANES 1999–2000 is the first of the 2-year data releases planned for the survey.

### Methods

#### Data source

The sample covered all ages. The following subgroups were oversampled to allow for more precise estimates for these groups: adolescents 12–19 years of age, persons 60 years of age and over, Mexican Americans, black or African American persons, low income persons, and pregnant women. More information on the NHANES 1999–2000 survey design and data collection methods, as well as public use microdata files, can be found at the NHANES Web site, [www.cdc.gov/nchs/nhanes](http://www.cdc.gov/nchs/nhanes).

Of the 12,160 persons eligible for the survey in 1999–2000, 76 percent

participated in a physical examination at the mobile exam center. Of those who were eligible for the survey, 71 percent had complete and reliable dietary recall data (n=8,604) and were included in the analyses for these tables. Approximately 20 percent of this sample had recall interviews conducted by telephone as part of a methodologic study to consider the operational feasibility of conducting the 24-hour recall interview by telephone. Although the means for the in-person recalls tended to be higher than the means for the telephone recalls for the nutrients in these tables, the impact on estimates for the full 1999–2000 sample was slight. Therefore the estimates in these tables are computed for the full NHANES 1999–2000 sample. The estimates are based on one 24-hour dietary recall. The 24-hour recall interview was conducted using an automated data collection system that was developed by the survey contractor, Westat, Inc., for use in NHANES 1999–2001. The intake information was coded to USDA's Survey Nutrient Database (versions 1994–96 and 1998) to produce the nutrient intake values.

### Statistical Analysis

Population means, medians, and standard errors of the mean are weighted to produce national estimates.



The sample weights incorporate the differential probabilities of selection and include adjustments for oversampling of certain populations, noncoverage, and nonresponse. Standard errors were estimated using SUDAAN by means of the “delete 1 jackknife (JK1) method” in contrast to the Taylor Series Linearization method that was used to estimate standard errors in previous NHANES (1,2). The age categories are those that are recommended in NHANES 1999–2000 Analytic Guidelines and are based on the survey sample domains (1). The relative standard error (RSE) is the statistical criterion used to determine the reliability of the estimates. It can be computed as

the ratio of the standard error of the mean to the mean multiplied by 100. The larger the RSE, the less reliable the estimates are. An RSE greater than 25 percent has been recommended to define estimates that are not reliable (3). In [table 1](#), all of the RSEs are less than 10 percent. Therefore, all of the estimates are considered to be statistically reliable.

## References

1. U.S. Department of Health and Human Services. NHANES 1999–2000 Addendum to the NHANES III Analytic Guidelines. 2002. Available at [www.cdc.gov/nchs/data/nhanes/guidelines1.pdf](http://www.cdc.gov/nchs/data/nhanes/guidelines1.pdf).
2. Wolter KM. Introduction to variance estimation. New York: Springer-Verlag. 1990.
3. U.S. Department of Health and Human Services. Analytic and reporting guidelines: The Third National Health and Nutrition Examination Survey, NHANES III (1988–94). In: NHANES III reference manuals and reports (CD-ROM). Hyattsville, MD: Centers for Disease Control and Prevention. 1996. Available at [www.cdc.gov/nchs/data/nhanes/nhanes3/nh3gui.pdf](http://www.cdc.gov/nchs/data/nhanes/nhanes3/nh3gui.pdf).

**Table 1. Dietary intake of ten key nutrients for public health by sex and age: United States, 1999–2000**

Nutrient and age	Both sexes				Male				Female			
	Sample size	Mean	Standard error of the mean	Median	Sample size	Mean	Standard error of the mean	Median	Sample size	Mean	Standard error of the mean	Median
<b>Energy (kcal):</b>												
All ages <sup>1</sup>	8,604	2,146	16.4	1,964	4,206	2,475	26.3	2,281	4,398	1,833	19.4	1,711
Less than 6 years <sup>1</sup>	1,195	1,480	28.2	1,411	628	1,559	40.2	1,522	567	1,393	37.2	1,333
6–11 years	962	2,025	54.2	1,881	494	2,151	97.2	1,962	468	1,889	43.7	1,757
12–19 years	2,208	2,342	33.7	2,129	1,105	2,686	56.4	2,475	1,103	1,993	45.7	1,881
20–39 years	1,484	2,419	34.7	2,227	635	2,825	58.9	2,642	849	2,028	40.8	1,854
40–59 years	1,218	2,196	31.8	2,073	577	2,590	55.8	2,475	641	1,828	35.4	1,695
60 years and over	1,537	1,772	26.8	1,658	767	2,069	57.1	2,017	770	1,534	35.6	1,485
<b>Percent of calories from protein:<sup>2</sup></b>												
All ages <sup>1</sup>	8,600	14.7	0.10	14.1	4,203	14.9	0.09	14.1	4,397	14.6	0.15	14.0
Less than 6 years <sup>1</sup>	1,195	13.2	0.20	12.9	628	13.2	0.27	13.1	567	13.1	0.22	12.5
6–11 years	961	13.2	0.21	12.7	493	13.0	0.30	12.7	468	13.4	0.25	12.8
12–19 years	2,207	13.7	0.19	13.1	1,104	13.9	0.26	13.4	1,103	13.4	0.25	12.8
20–39 years	1,483	14.7	0.18	13.9	634	14.9	0.21	14.0	849	14.6	0.26	13.8
40–59 years	1,218	15.5	0.20	14.9	577	15.8	0.22	15.1	641	15.2	0.28	14.7
60 years and over	1,536	16.0	0.14	15.6	767	16.1	0.21	15.6	769	16.0	0.21	15.4
<b>Percent of calories from carbohydrate:<sup>2</sup></b>												
All ages <sup>1</sup>	8,600	51.9	0.27	52.2	4,203	50.9	0.33	50.9	4,397	52.8	0.31	53.4
Less than 6 years <sup>1</sup>	1,195	55.4	0.51	55.4	628	55.2	0.56	55.2	567	55.5	0.61	56.2
6–11 years	961	55.2	0.47	55.4	493	55.2	0.67	55.2	468	55.1	0.56	55.4
12–19 years	2,207	54.8	0.41	54.9	1,104	54.2	0.49	54.3	1,103	55.5	0.60	55.6
20–39 years	1,483	51.3	0.42	51.1	634	50.0	0.57	49.6	849	52.6	0.59	53.1
40–59 years	1,218	49.2	0.50	48.8	577	47.5	0.62	47.5	641	50.9	0.61	51.0
60 years and over	1,536	51.1	0.47	51.3	767	50.1	0.50	50.5	769	52.0	0.57	52.2
<b>Percent of calories from total fat:<sup>2</sup></b>												
All ages <sup>1</sup>	8,600	32.7	0.28	32.7	4,203	32.7	0.33	32.8	4,397	32.6	0.29	32.6
Less than 6 years <sup>1</sup>	1,195	32.9	0.41	33.0	628	32.9	0.47	33.3	567	32.8	0.53	32.8
6–11 years	961	32.9	0.41	32.8	493	33.0	0.54	32.6	468	32.8	0.54	33.2
12–19 years	2,207	32.0	0.39	32.1	1,104	32.0	0.42	32.1	1,103	32.1	0.61	32.1
20–39 years	1,483	32.2	0.41	32.2	634	32.1	0.50	32.3	849	32.3	0.47	32.1
40–59 years	1,218	33.3	0.51	33.3	577	33.4	0.62	33.3	641	33.1	0.63	33.2
60 years and over	1,536	32.8	0.37	32.9	767	32.9	0.40	33.0	769	32.8	0.48	32.8

See footnotes at end of table.

Table 1. Dietary intake of ten key nutrients for public health by sex and age: United States, 1999–2000—Con.

Nutrient and age	Both sexes				Male				Female			
	Sample size	Mean	Standard error of the mean	Median	Sample size	Mean	Standard error of the mean	Median	Sample size	Mean	Standard error of the mean	Median
Percent of calories from saturated fat: <sup>2</sup>												
All ages <sup>1</sup>	8,600	11.2	0.11	11.0	4,203	11.2	0.12	11.1	4,397	11.1	0.12	10.9
Less than 6 years <sup>1</sup>	1,195	12.7	0.19	12.5	628	12.8	0.22	12.8	567	12.6	0.25	12.3
6–11 years	961	11.7	0.21	11.6	493	11.6	0.26	11.5	468	11.8	0.32	11.6
12–19 years	2,207	11.3	0.17	11.3	1,104	11.5	0.18	11.5	1,103	11.0	0.24	10.9
20–39 years	1,483	10.9	0.16	10.8	634	10.8	0.22	10.9	849	10.9	0.18	10.8
40–59 years	1,218	11.1	0.18	10.8	577	11.1	0.23	10.8	641	11.1	0.25	10.8
60 years and over	1,536	10.7	0.16	10.4	767	10.8	0.18	10.6	769	10.6	0.19	10.3
Cholesterol (mg):												
All ages <sup>1</sup>	8,604	265	3.9	201	4,206	307	6.2	233	4,398	225	4.5	170
Less than 6 years <sup>1</sup>	1,195	162	5.8	127	628	174	8.0	136	567	149	7.7	118
6–11 years	962	212	6.9	180	494	218	9.7	182	468	205	8.6	179
12–19 years	2,208	250	7.9	192	1,105	296	12.4	225	1,103	203	9.1	162
20–39 years	1,484	294	6.7	228	635	350	13.1	269	849	241	7.7	185
40–59 years	1,218	295	9.4	229	577	353	14.7	278	641	241	10.5	182
60 years and over	1,537	253	8.5	185	767	282	11.9	210	770	229	11.1	164
Calcium (mg):												
All ages <sup>1</sup>	8,604	863	12.0	735	4,206	966	15.7	832	4,398	765	16.7	657
Less than 6 years <sup>1</sup>	1,195	853	25.6	768	628	916	35.3	809	567	785	27.5	708
6–11 years	962	889	31.2	821	494	915	45.5	843	468	860	41.5	812
12–19 years	2,208	938	24.9	787	1,105	1,081	31.9	956	1,103	793	26.5	661
20–39 years	1,484	909	19.8	762	635	1,025	36.7	856	849	797	32.4	684
40–59 years	1,218	853	24.8	720	577	969	36.5	834	641	744	28.7	621
60 years and over	1,537	721	18.4	619	767	797	27.0	716	770	660	21.3	563
Folate (mcg):												
All ages <sup>1</sup>	8,604	361	6.9	314	4,206	405	8.2	356	4,398	319	7.7	280
Less than 6 years <sup>1</sup>	1,195	255	6.1	231	628	267	8.8	242	567	243	9.3	219
6–11 years	962	339	12.1	304	494	364	19.7	324	468	312	10.3	284
12–19 years	2,208	372	10.2	323	1,105	421	15.0	363	1,103	323	10.3	285
20–39 years	1,484	380	9.5	329	635	435	12.0	378	849	327	12.6	291
40–59 years	1,218	381	10.7	338	577	431	13.1	394	641	335	13.8	291
60 years and over	1,537	346	7.8	309	767	387	13.2	351	770	312	8.5	275
Iron (mg):												
All ages <sup>1</sup>	8,604	15.2	0.25	13.0	4,206	17.2	0.30	15.1	4,398	13.4	0.28	11.4
Less than 6 years <sup>1</sup>	1,195	12.9	0.37	11.0	628	13.6	0.62	12.2	567	12.1	0.41	10.7
6–11 years	962	14.4	0.44	12.5	494	15.3	0.66	13.1	468	13.3	0.50	11.5
12–19 years	2,208	15.9	0.48	13.7	1,105	18.3	0.65	16.4	1,103	13.4	0.44	11.7
20–39 years	1,484	15.8	0.32	13.4	635	17.9	0.45	15.7	849	13.7	0.47	11.7
40–59 years	1,218	15.5	0.45	13.7	577	17.6	0.59	15.9	641	13.6	0.50	11.6
60 years and over	1,537	14.8	0.34	12.2	767	17.3	0.66	14.3	770	12.8	0.41	10.8
Zinc (mg):												
All ages <sup>1</sup>	8,604	11.4	0.16	9.7	4,206	13.3	0.21	11.5	4,398	9.7	0.21	8.2
Less than 6 years <sup>1</sup>	1,195	8.1	0.19	7.3	628	8.4	0.28	7.6	567	7.7	0.26	7.0
6–11 years	962	10.6	0.34	9.1	494	11.0	0.50	9.5	468	10.0	0.45	8.8
12–19 years	2,208	11.9	0.33	10.3	1,105	14.3	0.50	12.3	1,103	9.6	0.29	8.4
20–39 years	1,484	12.4	0.27	10.4	635	14.8	0.49	12.7	849	10.1	0.34	8.5
40–59 years	1,218	11.9	0.28	10.5	577	13.9	0.39	12.8	641	10.1	0.39	8.4
60 years and over	1,537	10.6	0.36	8.6	767	12.2	0.37	10.6	770	9.3	0.59	7.4
Sodium (mg):												
All ages <sup>1</sup>	8,604	3,375	37.4	3,017	4,206	3,877	60.5	3,510	4,398	2,896	39.9	2,644
Less than 6 years <sup>1</sup>	1,195	2,114	55.3	2,045	628	2,223	71.9	2,206	567	1,995	71.6	1,944
6–11 years	962	3,255	125.3	2,971	494	3,500	217.1	3,141	468	2,993	98.7	2,783
12–19 years	2,208	3,586	76.7	3,120	1,105	4,124	125.8	3,645	1,103	3,041	90.1	2,737
20–39 years	1,484	3,735	63.2	3,385	635	4,329	102.7	4,028	849	3,161	74.8	2,871
40–59 years	1,218	3,535	69.1	3,268	577	4,132	112.0	3,706	641	2,978	86.5	2,809
60 years and over	1,537	2,940	57.7	2,660	767	3,447	97.0	3,250	770	2,532	67.1	2,333

<sup>1</sup>Excludes nursing infants and children.<sup>2</sup>Although four persons were fasting, their data were included in all computations except percent of calories from protein, carbohydrate, total fat, and saturated fat.

---

**Suggested citation**

Wright JD, Wang CY, Kennedy-Stephenson J, Ervin RB. Dietary intake of ten key nutrients for public health, United States: 1999–2000. Advance data from vital and health statistics; no. 334. Hyattsville, Maryland: National Center for Health Statistics. 2003.

---

**Copyright information**

All material appearing in this report is in the public domain and may be reproduced or copied without permission; citation as to source, however, is appreciated.

---

**National Center for Health Statistics**

Director  
Edward J. Sondik, Ph.D.

Deputy Director  
Jack R. Anderson

---

U.S. DEPARTMENT OF  
HEALTH & HUMAN SERVICES

Centers for Disease Control and Prevention  
National Center for Health Statistics  
3311 Toledo Road  
Hyattsville, Maryland 20782

FIRST CLASS POSTAGE & FEES PAID CDC/NCHS PERMIT NO. G-284
--

---

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

---

To receive this publication regularly, contact  
the National Center for Health Statistics by  
calling 301-458-4636  
E-mail: [nchsquery@cdc.gov](mailto:nchsquery@cdc.gov)  
Internet: [www.cdc.gov/nchs](http://www.cdc.gov/nchs)

---

DHHS Publication No. (PHS) 2003-1250  
03-0248 (4/03)