Vital and Health Statistics

Advance Data From Vital and Health Statistics: Numbers 251–260

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Data in this report from health and demographic surveys present statistics by age and other variables on alcohol- and drug-related visits to hospital emergency departments; hospitalizations for injury and poisoning; health insurance and cancer screening among women; energy and macronutrient intakes; overviews of home health and hospice patients and agencies; dietary intake of vitamins, minerals, and fiber; and contraceptive use. Estimates are based on the civilian noninstitutionalized population of the United States. These reports were originally published in 1994.

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Advance Data

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROLAND PREVENTION/National Center for Health Statistics

Alcohol- and Drug-Related Visits to Hospital Emergency Departments: 1992 National Hospital Ambulatory Medical Care Survey

by Cheryl R. Nelson and Barbara J. Stussman, Division of Health Care Statistics

Introduction

During the 12-month period from January through December 1992, an estimated 89.9 million visits were made to emergency departments of non-Federal, short-stay and general hospitals in the United States, about 357 visits per 1,000 persons. An estimated 4.1 million of these emergency department visits (4.5 percent) were alcohol related and/or drug related, about 16 visits per 1,000 persons.

The information presented in this report is based on emergency department (ED) data obtained from the 1992 National Hospital Ambulatory Medical Care Survey (NHAMCS), a national probability survey conducted by the Division of Health Care Statistics of the National Center for Health Statistics, Centers for Disease Control and Prevention. The first NHAMCS was for 1992 and will be done annually. A report on general findings from the 1992 NHAMCS emergency departments has been published (1).

The Emergency Department Patient Record form, the survey instrument utilized by participating hospitals to record information about patient visits, is shown in figure 1. For this report the 4.1 million alcohol-related and/or drug-related (ADR) ED visits (table 1) are defined by identifying and combining: (a) 3,782,000 visits that indicated alcohol and/or drug problems (item 14. 2–4 in the Patient Record form), and (b) 340,000 visits that indicated specific ADR diagnoses (item 12: Physicians' diagnoses).

Data highlights

- Half of all ADR ED visits are made by patients 25–44 years old.
- Males have higher rates of ADR ED visits and the highest rates are for black males 25–44 years old.
- An injury is three times as likely to be classified as "homicide and injury purposely inflicted" in an ADR ED visit in comparison with all other ED visits.
- Seventy-six percent of ED visits for suicide and self-inflicted injuries were alcohol and drug related.
- A quarter of the ADR ED visits were for reasons of symptoms referable to psychological/mental disorders (i.e., depression and neurotic disorders).
- The treatment and detoxification of patients exposed to alcohol or poison were accomplished with several procedures and/or agents. The most frequently used were gastric lavage, metabolic and nutrient agents to correct complications such as prolonged malnutrition (e.g., thiamine), and adsorption of the toxin on activated charcoal.

Patient characteristics

ADR ED visits by patient's age, sex, race, and ethnicity are shown in tables 2 and 3. Males accounted for 60.5 percent of these visits and their visit rate (20 visits per 1,000 persons) was higher than that for visits by females (13 visits per 1,000 persons). The percent distribution of these ED visits was also higher for young adults. Seventeen percent of all ED visits by persons 25–44 years of age were ADR visits (figure 2). More than half of the ADR ED visits were by patients 25–44 years of age, with a corresponding visit rate of 27 visits per 1,000 persons. This differs significantly from all other visits to emergency departments in which persons 75 years and older had the highest visit rate. The ADR ED visits by females 25–44 years of age (18.6 percent) and males 25–44 years of age (34.4 percent) also had higher

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NATIONAL HOSPITAL AMBULATORY MEDICAL CARE SURVEY
EMERGENCY DEPARTMENT
PATIENT RECORD

1. PATIENT NAME

2. PATIENT RECORD NO.

3. DATE OF VISIT
Month Day Year

4. DATE OF BIRTH
Month Day Year

5. SEX
1 ☐ Female
2 ☐ Male

6. RACE
1 ☐ White
2 ☐ Black
3 ☐ Asian/Pacific Islander
4 ☐ American Indian/ Eskimo/ Aleut

7. ETHNICITY
1 ☐ Hispanic
2 ☐ Not Hispanic

8. EXPECTED SOURCE(S) OF PAYMENT *(Check all that apply)*
1 ☐ Medicare
2 ☐ Medicaid
3 ☐ Other government
4 ☐ Private/ Commercial
5 ☐ HMO/Other prepaid
6 ☐ Patient paid
7 ☐ No charge
8 ☐ Other

9. MAJOR REASON FOR THIS VISIT *(Check one)*
1 ☐ Injury, first visit
2 ☐ Injury, follow-up
3 ☐ Illness, first visit
4 ☐ Illness, follow-up
5 ☐ Other reason

10. CAUSE OF INJURY *(Complete if injury is marked in 9. Describe cause and place of injury.)*

11. PATIENT'S COMPLAINT(S), SYMPTOM(S), OR OTHER REASON(S) FOR THIS VISIT *(In patient's own words)*
a. Most important:
b. Other:
c. Other:

12. PHYSICIAN'S DIAGNOSES
a. Principal diagnosis/ problem associated with item 11a.
b. Other:
c. Other:

13. URGENCY OF THIS VISIT *(Check only one)*
1 ☐ Urgent/Emergent
2 ☐ Non-urgent

14. IS PROBLEM ALCOHOL- OR DRUG-RELATED?
1 ☐ Neither
2 ☐ Alcohol-related
3 ☐ Drug-related
4 ☐ Both

15. DIAGNOSTIC/SCREENING SERVICES *(Check all ordered or provided.)*
1 ☐ None
2 ☐ Blood pressure check
3 ☐ Urinalysis
4 ☐ HIV serology
5 ☐ Other blood test
6 ☐ EKG
7 ☐ Mental status exam
7 ☐ Chest x-ray
9 ☐ Extremity x-ray
10 ☐ CT scan/MRI
11 ☐ Other diagnostic imaging
12 ☐ Other *(Specify)*

16. PROCEDURES *(Check all provided on this visit)*
1 ☐ None
2 ☐ Endotracheal intubation
3 ☐ CPR
4 ☐ IV fluids
5 ☐ NG tube/ gastric lavage
6 ☐ Wound care
7 ☐ Eye/ENT care
8 ☐ Orthopedic care
9 ☐ Bladder catheter
10 ☐ Lumbar puncture
11 ☐ Other(s) *(Specify)*

17. MEDICATION
(Record all new or continued medication ordered, administered, or provided at this visit. Use the same brand name or generic name entered on any Rx or medical record. Include immunizations and desensitizing agents.)
☐ None
1.
2.
3.
4.
5.

18. DISPOSITION THIS VISIT *(Check all that apply)*
1 ☐ Return to ED PRN
2 ☐ Return to ED - appointment
3 ☐ Return to referring physician
4 ☐ Refer to other physician/clinic
5 ☐ Admit to hospital
6 ☐ Transfer to other facility
7 ☐ DOA/died in ED
8 ☐ Left AMA
9 ☐ No follow-up planned
10 ☐ Other *(Specify)*

19. PROVIDERS SEEN THIS VISIT *(Check all that apply)*
1 ☐ Resident/Intern
2 ☐ Staff physician
3 ☐ Other physician
4 ☐ Physician assistant
5 ☐ Nurse practitioner
6 ☐ Registered nurse
7 ☐ Licensed practical nurse
8 ☐ Nurse's aide

Figure 1. Patient record.

Table 1. Number, percent distribution, and corresponding standard errors of alcohol- and drug-related visits to hospital emergency departments: United States, 1992

Visit characteristic	Number of visits in thousands	Standard error in thousands	Percent distribution	Standard error of percent
All ED visits[1]	89,796	3,202	100.0	. . .
All ADR visits[2]	4,122	276	4.6	0.2
Alcohol problem visits	2,459	196	2.7	0.2
Drug problem visits	996	91	1.1	0.1
Alcohol and drug problem visits	327	44	0.4	0.0
ADR diagnoses[3]	340	38	0.4	0.0
All other visits	85,674	3,017	95.4	0.2

[1]ED is emergency department.
[2]ADR is alcohol related and/or drug related.
[3]Includes visits recorded as "neither" an alcohol- nor a drug-related problem (Patient Record form item no. 14.1), but have alcohol- and/or drug-related diagnoses as defined in the Technical Notes.

Table 2. Number, percent distribution, corresponding standard errors, and annual rate of visits to hospital emergency departments by selected patient characteristics: United States, 1992

Selected patient characteristics	Number of visits in thousands	Standard error in thousands	ADR ED visits[1,2] Percent distribution	ADR ED visits[1,2] Standard error of percent	ADR ED visits[1,2] Number of visits per 1,000 persons per year[3]	All other ED visits[2] Percent distribution	All other ED visits[2] Standard error of percent	All other ED visits[2] Number of visits per 1,000 persons per year[3]
ADR ED visits[1,2]	4,122	276	100.0	. . .	16	100.0	. . .	341
Age								
Under 15 years	306	40	7.4	1.0	5	25.9	1.4	394
15–24 years	677	74	16.4	1.4	20	16.5	0.4	412
25–44 years	2,184	158	53.0	1.6	27	29.2	0.7	308
45–64 years	722	77	17.5	1.3	15	13.8	0.4	243
65–74 years	153	23	3.7	0.6	8	6.6	0.2	306
75 years and over	81	16	2.0	0.4	7	7.9	0.3	551
Sex and age								
Female	1,627	126	39.5	1.8	13	52.5	0.5	348
Under 15 years	149	25	3.6	0.7	5	11.7	0.6	365
15–24 years	299	39	7.3	0.9	17	9.0	0.3	448
25–44 years	766	71	18.6	1.4	19	15.5	0.4	321
45–64 years	316	57	7.7	1.2	13	7.4	0.3	251
65–74 years	59	14	1.4	0.4	6	3.8	0.2	323
75 years and over	*38	12	*0.9	0.3	*5	5.0	0.2	559
Male	2,495	185	60.5	1.8	20	47.5	0.5	333
Under 15 years	157	29	3.8	0.7	5	14.2	0.8	421
15–24 years	378	60	9.2	1.3	22	7.5	0.2	375
25–44 years	1,418	115	34.4	1.6	35	13.7	0.4	294
45–64 years	406	45	9.8	0.9	17	6.4	0.2	235
65–74 years	93	19	2.3	0.5	11	2.8	0.1	286
75 years and over	43	11	1.0	0.3	9	2.9	0.1	538
Race and age								
White	3,060	219	74.2	2.3	15	78.7	1.3	322
Under 15 years	252	38	6.1	0.9	6	19.4	0.8	370
15–24 years	557	70	13.5	1.4	20	12.9	0.4	402
25–44 years	1,517	124	36.8	2.2	22	22.2	0.6	281
45–64 years	533	66	12.9	1.2	13	11.2	0.4	230
65–74 years	125	21	3.0	0.5	8	5.7	0.2	299
75 years and over	76	15	1.8	0.4	7	7.2	0.3	556
Black	933	112	22.6	2.3	30	18.9	1.2	515
Under 15 years	*39	13	*0.9	0.3	*4	5.9	0.9	569
15–24 years	97	20	2.4	0.5	19	3.2	0.2	545
25–44 years	591	75	14.3	1.6	60	6.1	0.5	536
45–64 years	173	31	4.2	0.7	35	2.3	0.2	388
65–74 years	*28	11	*0.7	0.3	*17	0.8	0.1	399
75 years and over	*5	3	*0.1	0.1	*5	0.6	0.1	511
All other races	130	37	3.1	0.9	12	2.4	0.5	194
Asian, Pacific Islander	*52	21	*1.3	0.5	. . .	1.6	0.3	. . .
American Indian, Eskimo, Aleut	*78	30	*1.9	0.7	. . .	0.8	0.3	. . .
Ethnicity								
Hispanic	521	99	12.6	2.3	. . .	10.5	1.0	. . .
Not Hispanic	3,601	245	87.4	2.3	. . .	89.5	1.0	. . .

[1]ADR is alcohol related and/or drug related.
[2]ED is emergency department.
[3]Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1992.

Table 3. Number, percent distribution, corresponding standard errors, and annual rate of visits to hospital emergency departments by patient's race, sex, and age: United States, 1992

Selected patient characteristics	Number of visits in thousands	Standard errors in thousands	ADR ED visits[1,2] Percent distribution	ADR ED visits[1,2] Standard error of percent	ADR ED visits[1,2] Number of visits per 1,000 persons per year[2]	All other ED visits[2] Percent distribution	All other ED visits[2] Standard error of percent	All other ED visits[2] Number of visits per 1,000 persons per year[3]
ADR ED visits[1,2]	4,122	276	100.0	. . .	16	100.0	. . .	341
Race, sex, and age								
White	3,060	219	74.2	2.3	15	78.7	1.3	322
Female	1,280	116	31.1	2.0	12	41.1	0.8	329
Under 15 years	123	24	3.0	0.6	6	8.8	0.4	343
15–24 years	241	35	5.9	0.8	18	6.9	0.3	430
25–44 years	586	65	14.2	1.3	17	11.6	0.4	293
45–64 years	252	55	6.1	1.2	12	5.9	0.2	237
65–74 years	46	12	1.1	0.3	5	3.3	0.1	316
75 years and over	*33	11	*0.8	0.3	*5	4.6	0.2	563
Male	1,780	133	43.2	1.8	17	37.6	0.7	314
Under 15 years	129	27	3.1	0.7	6	10.6	0.5	395
15–24 years	316	59	7.7	1.3	23	6.0	0.2	373
25–44 years	932	82	22.6	1.6	28	10.6	0.4	270
45–64 years	281	35	6.8	0.8	14	5.3	0.2	222
65–74 years	79	17	1.9	0.4	11	2.4	0.1	277
75 years and over	43	11	1.0	0.3	10	2.7	0.1	544
Black	932	112	22.6	2.3	30	18.9	1.2	515
Female	304	45	7.4	1.1	18	10.1	0.7	519
Under 15 years	*22	8	*0.5	0.2	*5	2.7	0.4	522
15–24 years	*48	16	*1.2	0.4	*18	2.0	0.2	631
25–44 years	162	26	3.9	0.6	30	3.4	0.3	540
45–64 years	53	13	1.3	0.3	19	1.3	0.1	400
65–74 years	*14	7	*0.3	0.2	*15	0.4	0.1	411
75 years and over	*5	3	*0.1	0.1	*8	0.4	0.1	525
Male	628	82	15.2	1.7	43	8.8	0.6	512
Under 15 years	*17	8	*0.4	0.2	*4	3.3	0.5	614
15–24 years	49	11	1.2	0.3	20	1.3	0.1	452
25–44 years	429	62	10.4	1.3	97	2.7	0.2	531
45–64 years	119	24	2.9	0.6	53	1.0	0.1	375
65–74 years	*14	8	*0.3	0.2	*20	0.3	0.0	384
75 years and over	*0	0	*0.0	0.0	*1	0.2	0.0	488

[1]ADR is alcohol related and/or drug related.
[2]ED is emergency department.
[3]Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1992.

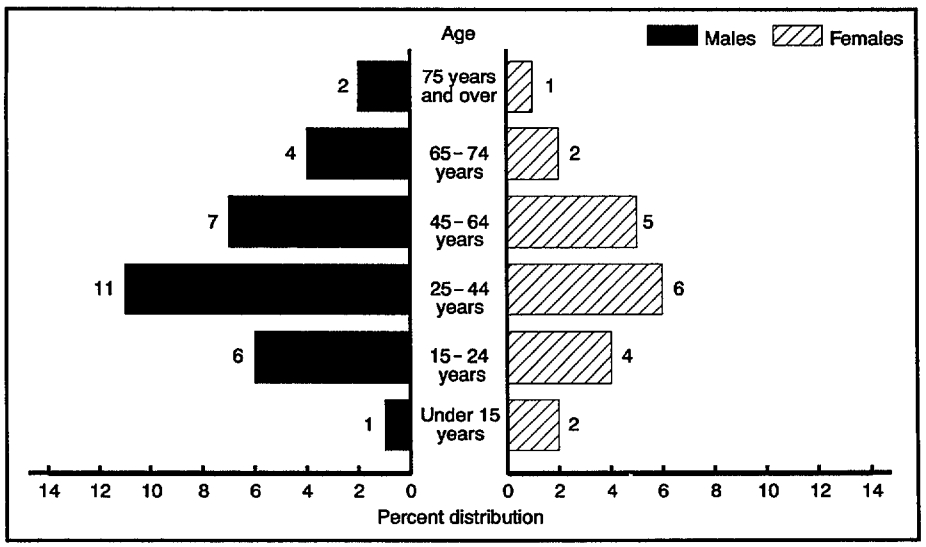

Figure 2. Percent of emergency department visits that are alcohol or drug related: United States, 1992

percent distributions than their sex-age counterparts of all other ED visits (15.5 percent and 13.7 percent respectively). For ADR ED visits there was also a significant sex difference within the 25–44 years age group; the percent distribution and the visit rate for males were 34.4 percent with 35 visits per 1,000 and for females were 18.6 percent with 19 visits per 1,000.

White patients represented approximately 75 percent of the ADR ED visits with a visit rate of 15 visits per 1,000 persons. Black patients represented approximately 23 percent of the ADR ED visits, but the visit rate (30 visits per 1,000 persons) was twice that of white patients. Other races accounted for about 3 percent of the ADR ED

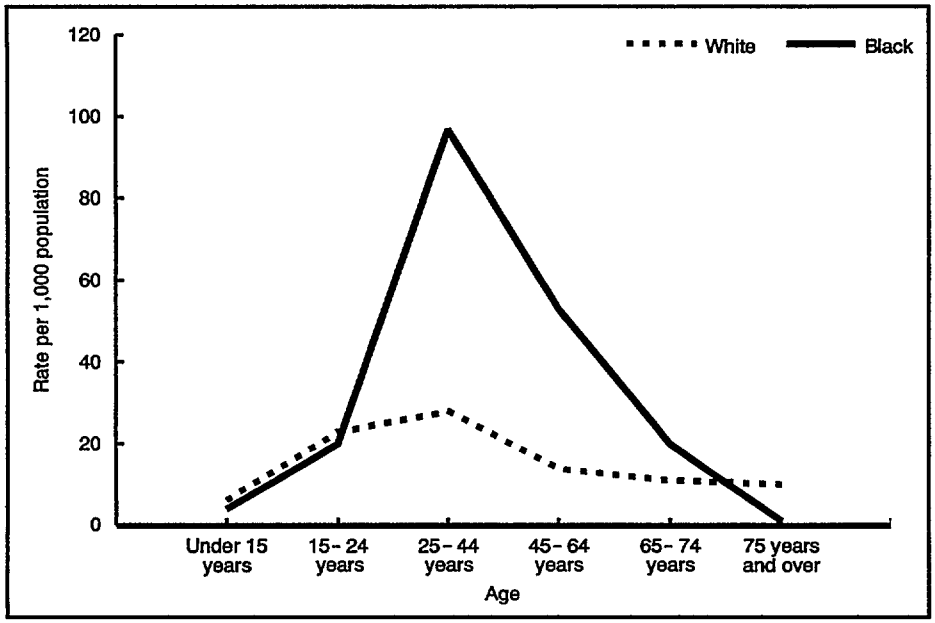

Figure 3. Rates for emergency department visits related to alcohol or drugs for males: United States, 1992

visits. When these data were analyzed in terms of race, sex, and age, the rate for black males 25–44 years of age was 97 visits per 1,000 persons (figure 3).

The ADR ED visits by white patients 25–44 years of age (36.8 percent) and black patients 25–44 years of age (14.3 percent) also had higher percent distributions than their race-age counterparts for all other ED visits (22.2 percent and 6.1 percent respectively).

Visit status

Over half of the ADR ED visits were due to illness and another third were due to injury (table 4). These proportions were consistent with all other ED visits. As expected, this table also shows that 80 percent of all ADR ED visits were a first visit, significantly more than the 5.8 percent for a followup visit.

"Illness, first visit," was the most frequently reported type of visit, accounting for nearly half of all the ADR ED visits. The second most reported type was "injury, first visit," accounting for almost a third of the visits. Nearly 14 percent of responses fell into the "other" category and was significantly greater than "other" for all other ED visits.

Significantly more ADR ED visits were reported as being urgent or emergent (58.8 percent) compared with all other ED visits. Forty-two percent of the ADR ED visits were reported as nonurgent. Urgent/emergent visits are defined as visits in which the patient requires attention for an acute illness or injury that threatens life or function and

Table 4. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by visit status: United States, 1992

Visit status	Number of visits in thousands	Standard error in thousands	ADR ED visits[1,2] Percent distribution	ADR ED visits[1,2] Standard error of percent	All other ED visits[2] Percent distribution	All other ED visits[2] Standard error of percent
ADR ED visits[1,2]	4,122	276	100.0	. . .	100.0	. . .
Type of visit						
Illness visit	2,203	164	53.4	1.9	58.7	0.9
First visit	2,053	155	49.8	2.0	55.6	0.9
Follow-up	150	31	3.6	0.8	3.1	0.2
Injury visit	1,351	115	32.8	1.9	35.3	0.8
First visit	1,261	109	30.6	1.9	31.7	0.7
Follow-up	90	20	2.2	0.5	3.6	0.2
First visit	3,314	227	80.4	1.8	87.3	0.7
Follow-up visit	240	37	5.8	0.8	6.7	0.4
Other[3]	568	84	13.8	1.8	6.0	0.6
Urgency of visit						
Urgent/emergent	2,425	158	58.8	2.3	44.0	1.4
Non-urgent	1,697	168	41.2	2.3	56.0	1.4

[1]ADR is alcohol related and/or drug related.
[2]ED is emergency department.
[3]Includes visits for other reasons and blank or invalid responses.

Table 5. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by selected cause of injury: United States, 1992

Cause of injury and E code[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3] Percent distribution	ADR ED visits[2,3] Standard error of percent	All other ED visits[3] Percent distribution	All other ED visits[3] Standard error of percent
ADR ED visits with an E code entered[1,2,3]	1,842	142	100.0	. . .	100.0	. . .
Motor vehicle accidents, traffic and nontraffic .E810–E825	289	47	15.7	2.2	14.0	0.5
Motor vehicle traffic accident of unspecified nature .E819	184	42	10.0	2.1	9.1	0.5
Accidental poisoning by drugs, medicinal and biological substances .E850–E858	224	37	12.1	2.0	0.4	0.1
Accidental poisoning by analgesic, antipyretics, and antirheumatics .E850	74	20	4.0	1.1	*0.1	0.0
Accidental poisoning by other drugs .E858	105	28	5.7	1.6	0.2	0.1
Accidental falls .E880–E888	208	28	11.3	1.5	27.1	0.8
Other and unspecified fall .E888	102	18	5.5	1.1	15.0	0.7
Other accidents .E916–E928	246	37	13.3	1.9	36.6	0.7
Striking against or struck accidentally by objects or persons. .E917	117	25	6.4	1.4	10.5	0.4
Accidents caused by cutting and piercing instruments or objects .E920	86	23	4.7	1.3	10.8	0.5
Adverse effects of drugs and medicinal and biological substances in therapeutic use .E930–E949	264	40	14.3	2.3	0.4	0.1
Other and unspecified drugs and medicinal substances .E947	91	20	4.9	1.2	*0.1	0.0
Suicide and self-inflicted injury .E950–E959	121	36	6.6	1.8	0.1	0.0
Suicide and self-inflicted poisoning by solid or liquid substances .E950	*80	26	4.4	1.3	*0.0	0.0
Homicide and injury purposely inflicted by other persons .E960–E969	332	50	18.0	2.6	4.4	0.3
Fight, brawl, rape .E960	122	20	6.6	1.2	1.7	0.2
Assault by other and unspecified means .E968	182	40	9.9	2.1	2.0	0.2
Other[4]	159	35	8.6	1.7	17.0	0.6

[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM).
[2]ADR is alcohol related and/or drug related.
[3]ED is emergency department.
[4]Includes railway accidents (E800–807); other vehicle road accidents (E826–E829); water transport accidents (E830–E838); air and space transport accidents (E840–E845); vehicle accidents not elsewhere classifiable (E846–E848); accidental poisoning by other solid and liquid substances, gases, and vapors (E860–E869); misadventure to patients during surgical and medical care (E870–E876); surgical and medicinal procedures as the cause of abnormal reaction of or later complication without mentions of misadventure at the time of procedure (E878–E879); accidents caused by fire and flames (E890–E899); accidents due to natural and environmental factors (E900–E909); accidents caused by submersion, suffocation, and foreign bodies (E910–E915); late effects of accidental injury (E929); injury undetermined whether accidental or purposely inflicted (E980–E989); and injury resulting from operations of war (E990–E999).

where delay would be harmful to the patient.

Cause of injury

The causes of injury for ADR ED visits are shown in table 5. Up to three external causes of injury are coded and classified according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (2). The three cause-of-injury classifications most often mentioned were "homicide and injury purposely inflicted," "motor vehicle accidents," and "adverse effects of drugs, medicinal and biological substances." It is interesting to note that although "homicide and injury purposely inflicted" was the leading cause of injury for ADR ED visits, it represented the fifth leading cause of injury classification for all other ED visits (4.4 percent). "Homicide and injury purposely inflicted" was also significantly higher than the corresponding category of all other ED visits. "Assault" and "fight, brawl, rape" and "striking" accounted for most of the homicide and purposely inflicted injuries.

"Accidental poisoning by drugs, medicinal and biological substances" accounted for about 12 percent of the ADR ED visits. Seventy-six percent of all "suicide and self-inflicted injuries" and 71 percent of visits for "adverse effects of drugs, medicinal and biological substances" were alcohol and drug related (figure 4). The likelihood of having injuries caused by "assaults," "fight, brawl, rape," "accidental poisoning," or "suicide" was greater for ADR ED visits than for all other ED visits.

Reason for visit

The patient's principal reason for visit is coded and classified according to *A Reason for Visit Classification for Ambulatory Care* (RVC) (3). The RVC is divided into eight modules or groups of reasons as shown in table 6. Up to three reasons for visit are coded in item 11 of the Patient Record form. The patient's complaint(s), symptom(s), or other reason(s) for *this* visit is recorded in the "patient's own words."

The symptom module accounted for more than half of the visits with "general symptoms." "Symptoms referable to psychological/mental disorders," "symptoms referable to the digestive system," and "symptoms referable to the nervous system" each accounted for 8–10 percent of the ED visits. There were significantly more ADR ED visits classified as "symptom referable to psychological/mental disorders" (9.1 percent) than those classified under "all other" ED visits (1.2 percent). The treatment module accounted for 4 percent of the ADR ED visits and was also significantly higher than treatment for all other ED visits.

Thirty-four percent of ADR ED visits were classified in the injuries

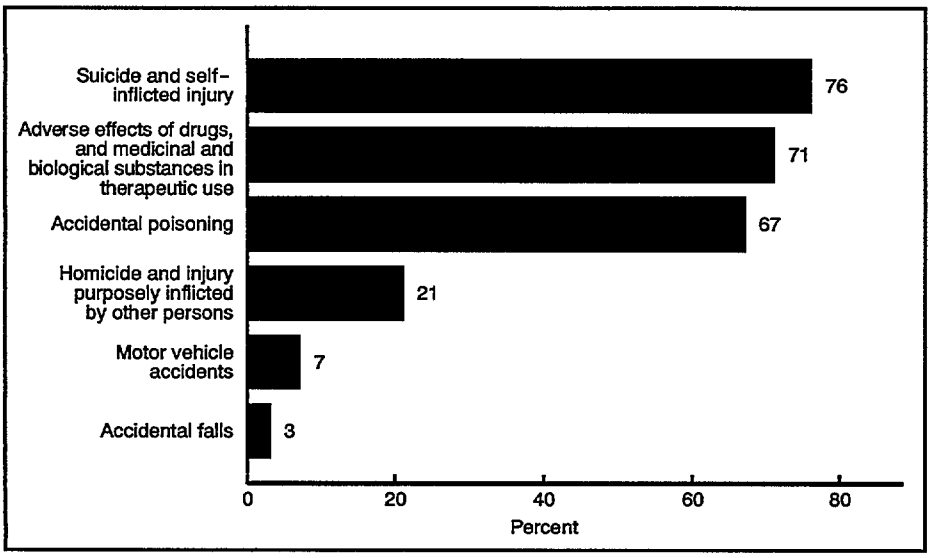

Figure 4. Percent of alcohol- or drug-related emergency department visits by external cause of injury: United States, 1992

and adverse effects module and the majority of these were subclassified as injury by type and/or location. ADR ED visits for "poisoning and adverse effects" (11.0 percent) were higher than all other ED visits (0.4 percent).

The 15 most frequently mentioned principal reasons for visit are presented in table 7. The most frequently reported reason for visit was "adverse effect of drug abuse" (6.4 percent) and these visits were significantly more than those classified under all other ED visits (0.1 percent). "Abdominal pain," "chest pain," and "violence" were also prominent reasons for visit, each making up about 3 percent of the ADR ED visits. The percent of ADR ED visits with a reported reason of "violence" was more than seven times that for all other ED visits. The percent of ADR ED visits classified under "other symptoms or problems relating to psychological and mental disorders" (2.2 percent) was five times greater than for all other ED visits.

Principal diagnosis

The principal diagnosis or problem associated with the patient's most important reason for visit and any other significant current diagnoses are rendered by the provider and recorded in item 12 of the Patient Record form. Up to three diagnoses are coded and classified according to the ICD–9–CM (2).

Table 8 shows the ADR ED visits using the major disease categories specified by the ICD–9–CM. Injury and poisoning accounted for the majority (42.6 percent) of the visits, which is significantly higher than the same category in all other ED visits (32.3 percent). Mental disorders were reported in about a fourth of visits, which is much greater than all other ED visits (1.7 percent). Symptoms, signs, and ill-defined conditions comprised 10.1 percent of ADR ED visits.

Table 9 shows the 15 principal diagnoses most frequently rendered by providers. Nondependent abuse of drugs was the most common diagnosis,

Table 6. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by the patient's principal reason for visit: United States, 1992

Principal reason for visit and RVC code[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3] Percent distribution	ADR ED visits[2,3] Standard error of percent	All other ED visits[3] Percent distribution	All other ED visits[3] Standard error of percent
ADR ED visits[2,3]	4,122	276	100.0	. . .	100.0	. . .
Symptom module .S001–S999	2,190	174	53.1	2.0	72.2	0.6
General symptoms. S001–S099	408	54	9.9	1.1	15.4	0.3
Symptoms referable to psychological/mental disorders. S100–S199	375	66	9.1	1.3	1.2	0.1
Symptoms referable to the nervous system (excluding sense organs) S200–S259	320	45	7.8	1.0	5.9	0.2
Symptoms referable to the digestive system S500–S639	370	50	9.0	1.1	11.7	0.3
Symptoms referable to the musculoskeletal system. S900–S999	338	41	8.2	1.0	15.2	0.4
Disease module .D001–D999	143	33	3.5	0.8	3.1	0.2
Diagnostic/screening and preventive module. .X100–599	60	14	1.5	0.4	0.8	0.1
Treatment module .T100–T899	165	25	4.0	0.7	2.6	0.1
Injuries and adverse effects module J001–J999	1,436	121	34.8	1.7	19.6	0.6
Injury by type and/or location .J001–J799	607	68	14.7	1.4	16.8	0.5
Injury, NOS .J800–J899	375	51	9.1	1.1	2.5	0.2
Poisoning and adverse effects .J900–J999	455	51	11.0	1.0	0.4	0.1
Test results module .R100–R700	*10	8	*0.2	0.2	0.2	0.0
Administrative module .A100–A140	*25	11	*0.6	0.3	0.1	0.0
Other[4] U990–U999	94	23	2.3	0.6	1.3	0.2

[1]Based on *A Reason for Visit Classification for Ambulatory Care* (RVC), Vital Health Stat 2(78). 1979.
[2]ADR is alcohol related or drug related.
[3]ED is emergency department.
[4]Includes problems and complaints not elsewhere classified, entries of "none," blanks, and illegible entries.

Table 7. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by the 15 principal reasons for visit most frequently mentioned by patients: United States, 1992

Principal reason for visit and RVC code[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3] Percent distribution	ADR ED visits[2,3] Standard error of percent	All other ED visits[3] Percent distribution	All other ED visits[3] Standard error of percent
ADR ED visits[2,3]	4,122	276	100.0	. . .	100.0	. . .
Adverse effect of drug abuse .J910	262	37	6.4	0.8	*0.1	0.0
Abdominal pain, cramps, spasms, NOS .S545	150	27	3.6	0.7	5.6	0.2
Chest pain and related symptoms (not referable to a specific body system) .S050	150	26	3.6	0.6	5.2	0.2
Violence, NOS .J815	123	30	3.0	0.7	0.4	0.0
Convulsions .S205	110	29	2.7	0.7	0.8	0.1
Unconscious on arrival .J840	102	24	2.5	0.6	0.6	0.1
Accidental poisoning .J900	101	19	2.4	0.5	0.2	0.0
Depression .S110	*98	49	*2.4	1.2	0.4	0.0
Lacerations and cuts: facial area .J210	96	21	2.3	0.5	1.6	0.1
Head, neck, and face injury; type unspecified .J505	94	18	2.3	0.4	1.1	0.1
Other symptoms or problems relating to psychological and mental disorders, NEC .S165	89	21	2.2	0.5	0.4	0.0
Headache .S210	83	19	2.0	0.5	2.9	0.2
Vomiting .S530	80	23	2.0	0.5	2.1	0.2
Skin rash .S860	76	16	1.8	0.4	1.4	0.1
Vertigo–dizziness .S225	75	18	1.8	0.5	1.2	0.1

[1]Based on *A Reason for Visit Classification for Ambulatory Care* (RVC), Vital Health Stat 2(78). 1979.
[2]ADR is alcohol related and/or drug related.
[3]ED is emergency department.

Table 8. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by the principal diagnoses recorded by hospital staff: United States, 1992

Principal diagnosis and ICD–9–CM code[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3] Percent distribution	ADR ED visits[2,3] Standard error of percent	All other ED visits[3] Percent distribution	All other ED visits[3] Standard error of percent
ADR ED visits[2,3]	4,122	276	100.0	. . .	100.0	. . .
Infectious and parasitic disease .001–139	*44	19	*1.1	0.5	3.6	0.2
Mental disorders .290–319	952	102	23.1	1.6	1.7	0.1
Diseases of the nervous system and sense organs .320–389	81	24	2.0	0.6	6.9	0.3
Diseases of the circulatory system .390–459	90	18	2.2	0.4	4.4	0.2
Diseases of the respiratory system .460–519	108	22	2.6	0.5	12.6	0.5
Diseases of the digestive system .520–579	206	36	5.0	0.8	6.1	0.2
Diseases of the genitourinary system .580–629	34	10	0.8	0.2	4.4	0.2
Diseases of the skin and subcutaneous tissue .680–709	56	14	1.3	0.4	3.0	0.2
Diseases of the musculoskeletal system and connective tissue .710–739	87	23	2.1	0.6	4.3	0.2
Symptoms, signs, and ill-defined conditions .780–799	418	46	10.1	1.0	11.7	0.3
Injury and poisoning .800–999	1,757	132	42.6	2.1	32.3	0.7
Supplementary classification .V01–V82	106	17	2.6	0.4	3.4	0.2
All other diagnoses[4]	68	19	1.6	0.5	2.9	0.1
Unknown[5]	115	21	2.8	0.5	2.5	0.2

[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM).
[2]ADR is alcohol related and/or drug related.
[3]ED is emergency department.
[4]Includes neoplasms (140–239); endocrine, nutritional and metabolic diseases and immunity disorders (240–279); diseases of the blood and blood-forming organs (280–289); complications of pregnancy, childbirth, and the puerperium (630–676); congenital anomalies (740–759); and certain conditions originating in the perinatal period (760–779).
[5]Includes blank diagnoses, uncodable diagnoses, and illegible diagnoses.

accounting for 8.2 percent of principal diagnoses. Other frequently mentioned diagnoses included certain adverse effects, poisoning, alcohol dependence syndrome, other open wound of head, and general symptoms. Neurotic disorders were represented in significantly more ADR ED visits than in all other ED visits.

Diagnostic and screening services

Diagnostic and screening services ordered or provided by hospital staff for ADR ED visits are shown in table 10. At least one diagnostic/screening service was reported in 94.6 percent of the visits.

Blood pressure was the most frequently reported diagnostic and/or screening service, followed by other blood tests. EKG, urinalysis, chest x ray and mental status exam were each mentioned in about 20 percent of the ADR visits. Except for x rays of the extremities, patients for ADR ED visits

Table 9. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by the 15 principal diagnoses most frequently recorded by hospital staff: United States, 1992

Principal diagnosis and ICD–9–CM code[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3] Percent distribution	ADR ED visits[2,3] Standard error of percent	All other ED visits[3] Percent distribution	All other ED visits[3] Standard error of percent
ADR ED visits[2,3]	4,122	276	100.0	. . .	100.0	. . .
Nondependent abuse of drugs . . . 305	339	47	8.2	1.0	*0.0	0.0
Certain adverse effects NEC. . . . 995	225	32	5.5	0.9	0.6	0.1
Poisoning by other and unspecific drugs and medicinal substances . . . 977	208	40	5.0	0.9	*0.1	0.0
Alcohol dependence syndrome . . . 303	191	26	4.6	0.6	–	–
Other open wound of head. . . . 873	155	28	3.8	0.6	2.8	0.1
General symptoms. . . . 780	138	31	3.3	0.7	2.6	0.1
Contusion of lower limb and of other and unspecified sites 924	*99	38	*2.4	0.9	2.0	0.1
Symptoms involving respiratory abnormalities . . . 786	96	24	2.3	0.6	3.0	0.2
Depressive disorder NEC. . . . 311	*95	48	*2.3	1.2	0.2	0.0
Intercranial injury of other and unspecified nature. . . . 854	95	19	2.3	0.5	0.6	0.1
Poisoning by analgesic, antipyretics, and antirheumatics. . . . 965	95	22	2.3	0.5	*0.0	0.0
Neurotic disorder. . . . 300	74	16	1.8	0.4	0.6	0.1
Other symptoms involving abdomen and pelvis . . . 789	59	16	1.4	0.4	2.7	0.1
Gastritis and duodenitis. . . . 535	56	14	1.4	0.4	0.5	0.1
Open wound of other and unspecified sites, except limbs 879	54	15	1.3	0.4	1.4	0.1

[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM).
[2]ADR is alcohol related and/or drug related.
[3]ED is emergency department.

Table 10. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by diagnostic and screening services ordered or provided: United States, 1992

Diagnostic and screening and services[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3] Percent distribution	ADR ED visits[2,3] Standard error of percent	All other ED visits[3] Percent distribution	All other ED visits[3] Standard error of percent
ADR ED visits[2,3]	4,122	276	100.0	. . .	100.0	. . .
None	221	29	5.4	0.8	12.4	0.7
Blood pressure	3,468	266	84.1	1.7	73.2	1.3
Other blood test	2,018	168	49.0	2.1	27.8	0.6
EKG[4]	879	78	21.3	1.6	12.8	0.4
Urinalysis	854	80	20.7	1.4	14.9	0.4
Chest x ray	811	83	19.7	1.4	16.7	0.4
Mental status exam	772	103	18.7	2.0	5.3	0.9
Other diagnostic imaging	565	64	13.7	1.4	10.3	0.4
Extremity x ray	562	66	13.6	1.2	15.1	0.4
CT scan/MRI[5]	236	40	5.7	0.9	2.2	0.2
HIV serology[6]	*41	14	*1.0	0.3	0.3	0.1
Other	822	109	19.9	2.3	19.7	1.3

[1]Numbers may not add to totals because more than one service may be reported per visit.
[2]ADR is alcohol related and/or drug related.
[3]ED is emergency department.
[4]EKG is electrocardiogram.
[5]CT is computerized tomography and MRI is magnetic resonance imaging.
[6]HIV is human immunodeficiency virus.

were more likely to receive any of these diagnostic services or tests than were patients for all other ED visits. This was especially true for other blood tests and mental status exams. As expected, "other blood test" was performed at twice the rate for ADR visits compared with all other ED visits. However, patients from ADR ED visits were three times more likely to receive mental status exams than were patients for all other ED visits.

Procedures

More than half of the ADR ED visits were administered at least one procedure (table 11). The most frequently reported procedures were intravenous fluids, wound care, other, and nasogastric tube/gastric lavage. In comparison with all other ED visits, ADR ED visits had a greater likelihood of having nasogastric tube/gastric lavage administered. Compared with all other ED visits, ADR ED visits were also more likely to include intravenous

Table 11. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by procedures provided: United States, 1992

Procedures[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3]		All other ED visits[3]	
			Percent distribution	Standard error of percent	Percent distribution	Standard error of percent
ADR ED visits[2,3]	4,122	276	100.0	. . .	100.0	. . .
None	1,954	149	47.4	1.8	58.2	0.8
Intravenous fluids	1,145	91	27.8	1.7	13.8	0.4
Wound care	721	89	17.5	1.8	12.6	0.4
Nasogastric tube/gastric lavage	320	45	7.8	1.1	0.7	0.1
Bladder catheter	186	36	4.5	0.8	2.5	0.1
Orthopedic care	177	28	4.3	0.7	8.0	0.3
Eye/ENT care[4]	83	21	2.0	0.5	2.8	0.2
Endotracheal intubation	*31	12	*0.8	0.3	0.4	0.0
Other[5]	347	59	8.4	0.0	8.0	0.0

[1]Numbers may not add to totals because more than one procedure may be reported per visit.
[2]ADR is alcohol related and/or drug related.
[3]ED is emergency department.
[4]ENT is ear, nose, and throat.
[5]Includes CPR (cardiopulmonary resuscitation), lumbar puncture, and other.

Table 12. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by medication therapy and number of medications prescribed or provided: United States, 1992

Medication therapy[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3]		All other ED visits[3]	
			Percent distribution	Standard error of percent	Percent distribution	Standard error of percent
ADR ED visits[2,3]	4,122	276	100.0	. . .	100.0	. . .
Drug visits[4]	2,627	177	63.7	2.5	69.4	0.8
Visits without mention of medication	1,495	159	36.3	2.5	30.6	0.8
Number of medications prescribed or provided						
One	1,109	88	26.9	1.7	32.9	0.5
Two	755	72	18.3	1.5	21.1	0.5
Three	351	51	8.5	1.1	9.0	0.3
Four	212	32	5.1	0.7	3.5	0.2
Five	200	29	4.8	0.7	2.9	0.2

[1]Includes prescription drugs, over-the-counter preparations, immunizing agents, and desensitizing agents.
[2]ADR is alcohol related and/or drug related.
[3]ED is emergency department.
[4]Visits at which one or more drugs were provided or prescribed by the health care provider.

fluids, wound care, and/or bladder catheter procedures.

Drug mentions

The majority of ADR ED visits included medication therapy. One medication was administered during 26.9 percent of the visits and two medications were administered during 18.3 percent of the visits (table 12). In about 10 percent of the ADR ED visits, four or five medications were administered to patients, which was higher than what was administered in all other ED visits.

Because there may be multiple medications per visit, the total number of drug mentions may exceed the total number of visits. "Drug mentions" refer to the total number of medications listed in item 17 of the Patient Record form. There were 5.5 million drug mentions for ADR ED visits. This averages to 2.1 drug mentions per drug visit. "Drug visit" refers to visits with at least one drug prescribed or provided.

The number of drug mentions by therapeutic classification is shown in table 13. The classification system used was adapted from the therapeutic categories in the *National Drug Code Directory* (NDC) (4). The largest percent of mentions for ADR ED visits were drugs used for relief of pain. Metabolic and nutrient agents were administered more often in ADR ED visits than in all other ED visits. Seventy-five percent of all antidotes were administered during ADR ED visits, representing 4.7 percent of these visits and significantly more than all other ED visits (0.1 percent). Metabolic and nutrient agents were also administered for ADR ED visits more often than to all other ED visits.

The 15 most frequently used generic substances in drugs mentioned for ADR ED visits are shown in table 14. The most frequently

Table 13. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by therapeutic classification of drug mentions: United States, 1992

Therapeutic classification[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3] Percent distribution	ADR ED visits[2,3] Standard error of percent	All other ED visits[3] Percent distribution	All other ED visits[3] Standard error of percent
ADR ED mentions[2,3]	5,518	406	100.0	. . .	100.0	. . .
Drugs used for relief of pain	1,111	115	20.1	1.7	30.3	0.5
Gastrointestinal agents	557	74	10.1	1.1	4.5	0.2
Antimicrobial agents	545	57	9.9	0.9	17.0	0.4
Psychopharmacological drugs	518	59	9.4	0.9	4.8	0.2
Metabolic and nutrient agents	466	53	8.4	0.9	1.7	0.1
Respiratory tract drugs	432	60	7.8	0.9	11.5	0.4
Neurologic drugs	268	38	4.9	0.7	2.2	0.1
Cardiovascular-renal drugs	268	46	4.9	0.8	6.5	0.3
Antidotes	261	44	4.7	0.8	0.1	0.0
Immunologic agents	237	40	4.3	0.7	3.1	0.2
Anesthetics	130	30	2.4	0.5	2.3	0.1
Skin/mucous membrane	122	24	2.2	0.4	3.5	0.2
Hormones and related agents	105	21	1.9	0.4	3.1	0.2
Hematologic agents	102	22	1.9	0.4	1.0	0.1
Other and unclassified[4]	394	48	7.1	0.7	8.4	0.3

[1]Based on the standard drug classification used in the *National Drug Code Directory*, 1985 edition.
[2]ADR is alcohol related and/or drug related.
[3]ED is emergency department.
[4]Includes radiopharmaceuticals/contrast media, oncolytics, otologics, antiparasitics, ophthalmics, and unclassified/miscellaneous drugs.

Table 14. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments of drug mentions for the 15 most frequently used generic substances: United States, 1992

Generic substance[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3] Percent distribution	ADR ED visits[2,3] Standard error of percent	All other ED visits[3] Percent distribution	All other ED visits[3] Standard error of percent
ADR ED mentions[2,3]	5,518	406	100.0	. . .	100.0	. . .
Acetaminophen	258	38	4.7	0.6	7.4	0.4
Thiamine	242	32	4.4	0.6	0.1	0.0
Ibuprofen	209	37	3.8	0.7	5.8	0.2
Diphenhydramine	185	30	3.4	0.5	1.5	0.1
Ketorolac	152	25	2.8	0.5	2.5	0.2
Charcoal	138	26	2.5	0.5	*0.0	0.0
Meperidine	127	26	2.3	0.5	2.4	0.1
Phenytoin	114	25	2.1	0.5	0.4	0.0
Magnesium cathartics	109	20	2.0	0.4	0.1	0.0
Lidocaine	88	23	1.6	0.4	1.5	0.1
Tetanus toxoid	83	21	1.5	0.4	0.8	0.1
Oxygen	82	22	1.5	0.4	1.4	0.1
Hydroxyzine	80	20	1.4	0.4	1.6	0.1
Naloxone	79	18	1.4	0.3	0.0	0.0
Cephalexin	77	23	*1.4	0.4	1.4	0.1

[1]Frequency of mention combines single-ingredient agents with mentions of the agent as an ingredient in a combination drug.
[2]ADR is alcohol related and/or drug related.
[3]ED is emergency department.

mentioned generic substances listed as an ingredient were acetaminophen, thiamine, ibuprofen, and diphenhydramine.

The 15 most frequently mentioned medications according to the entry name of the drug (the actual name written on the Patient Record form by the health care provider), whether brand name, generic name, or therapeutic effect, are shown in table 15. Tylenol, thiamine, and Benadryl were the three drugs most frequently provided or prescribed during ADR ED visits. However, thiamine, charcoal, Dilantin, and charcoal activated with sorbitol are more likely administered for ADR ED visits than for all other ED visits. Medications not shown in table 15—like Ipecac, Valium, magnesium sulfate, and Ancef—were also more likely to be administered for ADR ED visits.

Disposition

The most frequent dispositions of ADR ED visits are displayed in table 16. Thirty-five percent of the ADR ED visits were "referred to other physicians or clinic," followed by "return to ED PRN." "Transfer to other facility" was the disposition for 5.9 percent of the ADR ED visits, which was significantly higher than those for

Table 15. Number, percent distribution, and corresponding standard errors of alcohol and drug-related visits to hospital emergency departments of drug mentions for the 15 drugs most frequently provided or prescribed: United States, 1992

Entry name of drug[1]	Number of drug mentions in thousands	Standard error in thousands	Percent distribution	Standard error of percent	Therapeutic classification[2]	Percent distribution	Standard error of percent
ADR ED mentions[3]	5,518	406	100.0	. . .		100.0	. . .
Tylenol	247	37	4.5	0.6	Analgesic	7.2	0.3
Thiamine	238	32	4.3	0.6	Vitamin/mineral	*0.1	0.0
Benadryl	185	30	3.4	0.5	Antihistamine	1.5	0.1
Toradol	152	25	2.8	0.5	Antiarthritic agent	2.5	0.2
Motrin	139	33	2.5	0.6	Antiarthritic agent	3.1	0.2
Charcoal	128	26	2.3	0.5	Gastrointestinal agent	*0.0	0.0
Demerol	126	26	2.3	0.5	Analgesic	2.4	0.1
Dilantin	113	25	2.1	0.5	Anticonvulsant agent	0.4	0.0
Charcoal, activated with sorbitol	106	29	1.9	0.5	Antidote	*0.0	0.0
Tylenol no. 3	94	25	1.7	0.5	Analgesic	2.1	0.2
Tetanus toxoid	83	21	1.5	0.4	Vaccine/antiserum	0.8	0.1
Diphtheria tetanus toxoids	82	21	1.5	0.4	Vaccine/antiserum	1.1	0.1
Oxygen	82	22	1.5	0.4	Adjunct to anesthesia and analeptic	1.4	0.1
Narcan	79	18	1.4	0.3	Antidote	0.0	0.0
Phenergan	75	21	1.4	0.4	Nasal decongestant	2.5	0.2

[1]The entry made by the health care provider on the prescription or other medical records. This may be a trade name, generic name, or desired therapeutic effect.
[2]Based on the *National Drug Code Directory*, 1985 edition (NDC). In cases where a drug had more than one therapeutic use, it was listed under the NDC primary classification.
[3]ADR is alcohol related and/or drug related and ED is emergency department.

Table 16. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by disposition: United States, 1992

Disposition[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3] Percent distribution	ADR ED visits[2,3] Standard error of percent	All other ED visits[3] Percent distribution	All other ED visits[3] Standard error of percent
ADR ED visits[2,3]	4,122	276	100.0	. . .	100.0	. . .
Refer to other physician/clinic	1,436	115	34.8	2.2	37.1	1.4
Return to ED PRN[4]	823	94	20.0	2.2	25.2	1.4
Admit to hospital	806	116	19.6	2.3	13.2	0.4
Return to referring physician	599	77	14.5	1.7	21.5	1.4
Other	384	78	9.3	1.7	4.9	0.6
Transfer to other facility	241	40	5.9	0.9	1.0	0.1
Return to ED-appointment	206	45	5.0	1.1	4.8	0.4
No follow-up planned	156	23	3.8	0.6	6.1	0.6
Left AMA[5]	149	30	3.6	0.7	1.0	0.1
DOA/died in ED[6]	*3	3	*0.1	0.1	0.3	0.0

[1]Numbers may not add to totals because more than one disposition may be reported per visit.
[2]ADR is alcohol related and/or drug related.
[3]ED is emergency department.
[4]PRN is as needed.
[5]AMA is against medical advice.
[6]DOA is dead on arrival.

all other ED visits (1.0 percent). It should be noted that "transfer to other facility" includes not only other medical facilities but also to other institutions such as jails. The percent of visits resulting in a disposition of "admit to hospital" was 19.6 percent for ADR ED visits, compared with 13.2 percent for all other ED visits. Dispositions of "other" and "left against medical advice" were significantly more for ADR ED visits compared with all other ED visits.

Expected source of payment

The expected sources of payment most often mentioned were "patient paid," "private/commercial" insurance, and Medicaid (table 17). "Patient paid" was considerably higher for ADR ED visits than for all other ED visits. "Other" forms of payment were also higher for ADR ED visits compared with all other ED visits. Medicare was recorded as the source of payment in 10 percent of the ADR ED visits and "other government" insurance and "HMO/other prepaid" were each mentioned about 4 percent of the time.

Readers should note that 1) providers were asked to check all of the applicable payment categories for item 8 on the Patient Record form, resulting in

Table 17. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by patient's expected sources of payment: United States, 1992

Expected sources of payment[1]	Number of visits in thousands	Standard error in thousands	ADR ED visits[2,3] Percent distribution	ADR ED visits[2,3] Standard error of percent	All other ED visits[3] Percent distribution	All other ED visits[3] Standard error of percent
ADR ED visits[2,3]	4,122	276	100.0	. . .	100.0	. . .
Patient paid	1,078	118	26.1	2.2	13.2	0.6
Private/commercial	1,024	97	24.8	2.0	36.5	1.1
Medicaid	933	98	22.6	1.6	22.7	1.1
Other	413	60	10.0	1.4	6.7	0.5
Medicare	412	44	10.0	1.1	15.4	0.5
HMO/other prepaid	200	48	4.8	1.2	7.4	0.8
Other government	181	31	4.4	0.8	4.5	0.5
Unknown	78	17	1.9	0.4	1.7	0.3
No charge	*55	26	*1.3	0.7	*0.8	0.4

[1]Numbers may not add to totals because more than one expected source of payment may be reported per visit.
[2]ADR is alcohol and drug related.
[3]ED is emergency department.

Table 18. Number, percent distribution, and corresponding standard errors of visits to hospital emergency departments by type of health care provider and region: United States, 1992

Health care provider and region	Number of visits in thousands	Standard error in thousands	ADR ED visits[1,2] Percent distribution	ADR ED visits[1,2] Standard error of percent	All other ED visits[2] Percent distribution	All other ED visits[2] Standard error of percent
ADR ED visits[1,2]	4,122	276	100.0	. . .	100.0	. . .
Health care providers seen[3]						
Registered nurse	3,609	267	87.6	1.9	82.9	1.5
Staff physician	3,492	242	84.7	2.1	82.4	1.6
Resident/intern	740	120	17.9	2.8	13.5	1.5
Nurse's aide	429	82	10.4	2.0	9.4	1.3
Other physician	424	63	10.3	1.6	11.8	1.4
Licensed practical nurse	265	76	6.4	1.9	6.5	1.0
Nurse practitioner	*79	33	*1.9	0.8	1.9	0.5
Physician assistant	*78	27	*1.9	0.7	2.0	0.4
Geographic region						
Midwest	1,217	187	29.5	3.7	28.7	1.9
South	1,080	134	26.2	3.0	33.2	1.8
West	1,036	133	25.1	3.0	19.2	1.5
Northeast	789	84	19.1	2.2	18.9	1.2

[1]ADR is alcohol related and/or drug related.
[2]ED is emergency department.
[3]Numbers may not add to totals because more than one provider may be seen and reported per visit.

multiple payment sources for each visit, and 2) the "patient paid" category includes the patient's contribution toward "co-payments" and "deductibles."

Health providers

The distribution of ADR ED visits by the health care provider seen by the patient is presented in table 18. Registered nurses and staff physicians accounted for the majority of these health care providers. Residents and interns were seen in 17.9 percent of the visits. Physician assistants and nurse practitioners were seen the least with fewer than 2 percent of the visits each.

Geographic region

ADR ED visits differ by geographic region (table 18). Visits in the Midwest were significantly higher than visits in the Northeast. The percent distribution of ADR ED visits for the South (26.2 percent) was less than its percent distribution of non-ADR ED visits (33.2 percent). For all other regions, there was no significant difference between percent distributions of ADR ED visits and all other ED visits.

Additional reports that utilize 1992 NHAMCS data will be published. Survey data will also be available on computer tape at a nominal cost from the National Technical Information Service in the summer of 1994. Questions regarding this report, future reports, or the NHAMCS, may be directed to the Ambulatory Care Statistics Branch by calling (301) 436–7132.

References

1. McCaig LF, National Hospital Ambulatory Medical Care Survey, 1992 emergency department summary. Advance data from vital and health statistics; no 245. Hyattsville, Maryland: National Center for Health Statistics. 1994.
2. Public Health Service and Health Care Financing Administration. International Classification of Diseases, 9th Revision, clinical modification. Washington: Public Health Service. 1980.
3. Schneider D, Appleton L, McLemore T. A reason for visit classification ambulatory care. Vital Health Stat 2; no 78. Hyattsville, Maryland: National Center for Health Statistics. 1979.
4. Food and Drug Administration. National Drug Code directory, 1985 ed. Washington: Public Health Service. 1985.
5. Shah BV, Barnwell BG, Hunt PN, La Vange LM. SUDAAN user's manual, release 5.50. Research Triangle Park, North Carolina: Research Triangle Institute. 1991.

Symbols

- - -	Data not available
. . .	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision
#	Figure suppressed to comply with confidentiality requirements

Technical notes

Source of data and sample design

The information presented in this report is based on data collected in the National Hospital Ambulatory Medical Care Survey (NHAMCS) from December 2, 1991 through December 27, 1992. The target universe of NHAMCS includes visits made in the United States by patients to emergency departments (ED's) and outpatient departments (OPD's) of non-Federal, short-stay or general hospitals. Telephone contacts are excluded. The data were adjusted to produce annual estimates.

NHAMCS utilizes a multistage probability sample design that involves samples of primary sampling units (PSU's), hospitals with ED's and/or OPD's within PSU's, ED's within hospitals and/or clinics within OPD's, and patient visits within ED's and/or clinics. For 1992, a sample of 524 non-Federal, short-stay and general hospitals was selected from the SMG Hospital Market Database. Of this group, 474 hospitals were in scope, or eligible to participate in the survey; and 437 of these sample hospitals had ED's. The hospital response rate for the 1992 NHAMCS was 93 percent. Hospital staff were asked to complete Patient Record forms (figure 1) for a systematic random sample of patient visits occurring during a randomly assigned 4-week reporting period. Responding ED's completed 36,271 Patient Record forms.

Characteristics of the hospital, such as ownership and expected number of ED visits, were obtained from the hospital administrator during an induction interview. The U.S. Bureau of the Census, Housing Surveys Branch, was responsible for the survey's data collection. Data processing operations and medical coding were performed by the National Center for Health Statistics, Health Care Surveys Section, Research Triangle Park, North Carolina.

Sampling errors

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The standard error also reflects part of the measurement error, but does not measure any systematic biases in the data. The chances are 95 out of 100 that an estimate from the sample differs by less than twice the standard error from the value that would be obtained from a complete census.

The standard errors used in this report were approximated using SUDAAN software. SUDAAN computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (5). Exact standard error estimates were used in tests of significance in this report. Standard errors for all estimates are presented in each table. Standard errors for rates can be calculated using the relative standard errors (RSE) for the number of visits (i.e., multiply the rate by the RSE for the estimate of interest).

Adjustments for hospital nonresponse

Estimates from NHAMCS data were adjusted to account for sample hospitals that were in scope but did not participate in the study. This adjustment was calculated to minimize the impact of nonresponse on final estimates by imputing to nonresponding hospitals data from visits to similar hospitals. For this purpose, hospitals were judged similar if they were in the same region, ownership control group, and metropolitan statistical area control group.

Adjustments for ED and/or clinic nonresponse

Estimates from NHAMCS data were adjusted to account for ED's and sample clinics that were in scope but did not participate in the study. This adjustment was calculated to minimize the impact of nonresponse on final estimates by imputing to nonresponding ED's or clinics' data from visits to similar ED's or clinics. For this purpose, ED's or clinics were judged similar if they were in the same ED or clinic group.

Test of significance and rounding

The determination of statistical inference is based on a two-sided *t*-test. The Bonferroni inequality was used to establish the critical value for statistically significant differences (0.05 level of confidence). Terms relating to differences such as "higher than" indicate that the differences are statistically significant. A lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found to be not significant.

In the tables, estimates of ED visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals. Rates and percents were calculated from original unrounded figures and do not necessarily agree with percents calculated from rounded data.

Definition of terms

ADR diagnosis—An alcohol-related and/or drug-related visit is defined by one or more of the following diagnoses: pellagra (ICD 265.2), alcoholic psychoses (ICD 291), drug withdrawal syndrome (ICD 292.0), acute alcoholic intoxication (ICD 303.0), other and unspecified alcoholic dependence (ICD 303.9), unspecified drug dependence (ICD 304.0), alcohol abuse (ICD 305.0), tobacco use disorder (ICD 305.1), alcoholic cardiomyopathy (ICD 425.5), acute alcoholic hepatitis (ICD 571.1), alcoholic cirrhosis of liver (ICD 571.2), other current conditions in the mother classifiable elsewhere, but complicating pregnancy, childbirth, or the puerperium: drug dependence (ICD 648.3) and mental disorders (ICD 648.4), suspected damage to fetus from drugs (ICD 655.5), fetal alcohol syndrome (ICD 760.71), drug withdrawal syndrome in newborn (ICD 779.5), poisoning by opiates and related narcotics (ICD 965.0), poisoning by barbiturates (ICD 967.0), toxic effects of alcohol, unspecified (ICD 980.9), unspecified adverse effect of drug, medicinal, and biological substances (ICD 995.2), alcoholism (ICD V011.3), renal dialysis status (ICD V045.1), other unspecified

dependence on machines (ICD V046), and radiotherapy (ICD V058.1).

Drug mention—A drug mention is the physician's entry on the Patient Record form of a pharmaceutical agent—by any route of administration—for prevention, diagnosis, or treatment. Generic as well as brand-name drugs are included, as are nonprescription and prescription drugs. Along with all new drugs, the physician also records continued medications if the patient was specifically instructed during the visit to continue the medication. Physicians may report up to five medications per visit.

Drug visit—A drug visit is a visit at which medication was prescribed or provided by the physician.

Emergency department—An emergency department is a hospital facility that provides unscheduled outpatient services to patients whose conditions require immediate care and is staffed 24 hours a day. If an ED provides emergency services in different areas of the hospital, all these areas were selected with certainty into the sample. Off-site emergency departments that are open less than 24 hours are included if staffed by the hospital's emergency department.

Hospital—All hospitals with an average length of stay for all patients of less than 30 days (short-stay) or hospitals whose specialty is general (medical or surgical) or children's general, are included. Federal hospitals, hospital units of institutions, and hospitals with fewer than six beds staffed for patient use are excluded.

Nonurgent—A visit is nonurgent if the patient does not require attention immediately or within a few hours.

Outpatient department—An outpatient department is a hospital facility that provides nonurgent ambulatory medical care under the supervision of a physician.

Patient—A patient is an individual, not currently admitted to any health care institution on the premises, who is seeking personal health services.

Urgent/emergent—A visit is urgent/emergent if the patient requires immediate attention for an acute illness or injury that threatens life or function and where delay would be harmful to the patient.

Visit—A visit is a direct, personal exchange between a patient and a physician or other health care provider working under the physician's supervision, for the purpose of seeking care and receiving personal health services.

Trade name disclaimer

The use of trade names is for identification only and does not imply endorsement by the Public Health Service, U.S. Department of Health and Human Services.

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Hospitalizations for Injury and Poisoning in the United States, 1991

by Margaret Jean Hall, Ph.D., and Maria F. Owings, Ph.D., Division of Health Care Statistics

Introduction

In 1991, approximately 2.8 million Americans were hospitalized due to injury or poisoning diagnoses (1), and close to 150,000 persons died from injuries (2). Apart from women giving birth, injury was the leading cause of hospital admissions for people younger than 45 years of age (1) and the leading cause of death in this same age group (2). It has been estimated that one in four Americans are injured annually, and that injuries cost the United States more than $100 billion per year due to lost productivity and medical care (3).

Information on fatal injuries is generally recorded on death certificates. However, a nationwide system for reporting information on nonfatal injuries does not exist. Hospital discharge data are valuable sources of information on the injuries that require hospitalization. Although these injuries comprise only a small portion of injuries as a whole, they are important to track because they are the most costly in terms of human suffering as well as health care resource consumption.

A serious problem with hospital data is the lack of complete information on the causes of injury. Accurate and reliable information regarding the external causes of injury (E–codes) is critical for planning, implementing, and evaluating injury-control programs (4). Such information also is required to assess our country's progress toward achievement of the national health objectives for the year 2000 that relate to the reduction of injury morbidity and injury control interventions (5,6).

Using information from the National Hospital Discharge Survey (NHDS), this paper describes the characteristics of patients hospitalized due to an injury or poisoning and reports on the completeness of the E–code information in the NHDS. Persons treated in hospital emergency rooms, outpatient departments, or ambulatory care clinics who were not admitted as inpatients are not included in this paper.

The NHDS is a continuous voluntary survey conducted by the National Center for Health Statistics since 1965. This survey is one of the principal sources of information on patients discharged from non-Federal, short-stay hospitals in the United States. In 1991, data for the survey were abstracted from medical records of approximately 274,000 sampled patients discharged from a sample of 484 hospitals.

A three-stage, stratified sample design has been used in the NHDS since 1988. A brief description of this design, data collection procedures, and the estimation process are in the Technical notes of this report.

Up to seven diagnoses and four procedures were coded for each discharge in the survey. Coding of diagnoses and procedures was performed according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (7).

For this paper injury and poisoning diagnoses include all of the codes in Chapter 17 of the ICD–9–CM, namely codes 800–994, which have been termed "true injuries" including trauma and poisoning, and codes 995–999, which have been termed "medical injuries"

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including adverse effects and complications of medical care (8). This paper will focus primarily on "true injuries" although data for all categories will be included in the tables. Discharges with a first-listed injury or poisoning diagnosis are the focus of this report.

To interpret data and compare them with available data from other sources on short-stay hospital use, one must become familiar with the definitions used in NHDS. Definitions of the terms in this report are in the Technical notes.

NHDS data indicate that, in 1991, 2.8 million patients were hospitalized due to an injury or poisoning diagnosis. These patients comprised 9 percent of all hospital discharges in 1991 and were in the hospital for a total of 19.1 million days, which was 10 percent of all patient days (table 1). These patients had an average of 1.6 injury and poisoning diagnoses. Sixty-seven percent had only one injury and poisoning diagnosis, 19 percent had two, and 14 percent had three or more such diagnoses (figure 1). On average, patients with a first-listed diagnosis of injury and poisoning spent 6.9 days in the hospital; the average length of stay for patients with other diagnoses was 6.4 days.

In addition to the 2.8 million persons hospitalized primarily due to their injury or poisoning, there were an additional 1.5 million patients who had at least one injury or poisoning diagnosis, but were hospitalized primarily for other conditions. Over one-half of these patients had first-listed diagnoses of diseases of the circulatory, digestive, or musculoskeletal systems, or neoplasms. These patients will not be covered in this report since their injuries were not the primary reason for their hospitalization. According to Smith, Langlois, and Buechner (8), who studied hospital discharge data in Rhode Island, these other injuries are usually minor, are often associated with another condition (for example, cancer), or even may have occurred while the person was in the hospital (for example, a fall resulting in a hip fracture).

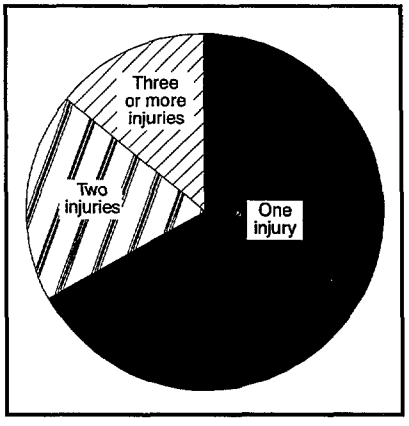

Figure 1. Discharges with first-listed injury and poisoning diagnoses

Table 1. Selected measures of hospital utilization for patients discharged from short-stay hospitals: United States, 1991

[Discharges from non-Federal hospitals. Excludes newborn infants]

Measure of hospital utilization	All patients	Injury and poisoning patients	Patients with other diagnoses
Number of discharges in thousands	31,098	2,768	28,330
Number of days of care in thousands	199,099	19,138	179,961
Average length of stay in days	6.4	6.9	6.4

Highlights

- The overall hospitalization rate for injury and poisoning diagnoses was 110.5 per 10,000 population, but it ranged from 51.9 per 10,000 for children under 15 to 279.6 per 10,000 for persons 65 years of age or older.
- The most common injury and poisoning diagnosis was fractures (37 percent).
- More than one-half of the group 65 years of age and over with injury and poisoning diagnoses had fractures—with most of these being hip fractures.
- Males had higher hospital discharge rates than females for intracranial injuries, lacerations and open wounds, dislocations, burns, and internal injuries. Females had higher rates in the poisoning and toxic effects category.
- White and black persons had similar overall hospital discharge rates for injury and poisoning. But white persons had higher rates of fractures than black persons, and black persons had higher rates of lacerations and open wounds, burns, poisonings, and internal injuries than white persons.
- Of the 15–44-year-olds, 18 percent were in the self-pay category.
- Only 56 percent of the elderly were discharged home. For the younger age groups 86–93 percent went home.
- Recording of the external causes of injuries (E–codes) continues to be incomplete. Only 44 percent of the persons hospitalized for injury or poisoning had one or more E–codes.
- Average lengths of stay for injury and poisoning patients ranged from 3.2 days for poisoning patients to 12.3 days for burn patients.

Sex and race

Of the patients with first-listed injury and poisoning diagnosis, 52 percent were male and 48 percent female. Females used 53 percent of the days of care in this category compared with 47 percent for the males. The average length of stay for males was 6.3 and for females it was 7.6 days. These results are not surprising in view of the fact that 44 percent of the female discharges were over 65 compared with 21 percent of the male discharges.

The overall rate of injury and poisoning for males and females did not differ significantly (table 2). The rate of fractures, the largest of the specific categories of injury analyzed in this study, also did not differ. There were significant differences in some of the smaller specific categories of injuries. The rate for intracranial injuries was significantly higher for males than for females. For most age groups the rates of intracranial injuries for males and females were not significantly different, but for 15–24-year-old males the rate was significantly higher. The overall rate for males was also significantly higher than for females in the laceration and

Table 2. Number, rate, and percent distribution of patients discharged from short-stay hospitals, by category of first-listed injury and poisoning diagnoses, sex, and race: United States, 1991

[Discharges from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code number inclusions are based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)]

Category of first-listed diagnosis and ICD-9-CM code	Total	Sex		Race[1]			
		Male	Female	White	Black	All other	Not stated
	Number of patients discharged in thousands						
All injury and poisoning .800–999	2,768	1,437	1,331	1,834	324	85	525
Fractures .800–829	1,034	481	553	726	86	28	195
Dislocation .830–839	64	41	23	44	*7	*	11
Sprains and strains .840–848	171	91	80	119	14	*5	32
Intracranial injuries (excluding those with skull fracture) .850–854	180	106	74	108	17	*6	49
Internal injury of chest, abdomen, and pelvis .860–869	83	64	19	45	18	*	15
Lacerations, open wounds, injuries to blood vessels .870–904	193	137	56	102	48	*6	37
Late effects of injuries and poisoning .905–909	*8	*	*	*7	*	*	*
Superficial injuries and contusions .910–924	88	40	47	63	*8	*	15
Burns .940–949	52	36	16	29	11	*	9
Other injury .855–859,926–939,950–959	72	46	25	45	12	*	12
Poisoning and toxic effects .960–989	205	82	122	128	32	*8	36
Other effects of environmental causes .990–994	18	14	*	11	*	*	*
Certain adverse effects not elsewhere specified .995	33	13	21	19	*	*	9
Miscellaneous complications of surgical and medical care .996–999	567	281	286	388	62	16	102
	Rate of patients discharged per 10,000 population						
All injury and poisoning .800–999	110.5	118.2	103.2	87.5	105.0	84.2	...
Fractures .800–829	41.3	39.6	42.9	34.6	28.0	27.5	...
Dislocation .830–839	2.6	3.4	1.8	2.1	*2.1	*	...
Sprains and strains .840–848	6.8	7.5	6.2	5.7	4.5	*5.3	...
Intracranial injuries (excluding those with skull fracture) .850–854	7.2	8.7	5.7	5.1	5.5	*5.9	...
Internal injury of chest, abdomen, and pelvis .860–869	3.3	5.3	1.5	2.2	5.8	*	...
Lacerations, open wounds, injuries to blood vessels .870–904	7.7	11.3	4.4	4.9	15.6	*6.2	...
Late effects of injury and poisoning .905–909	*0.3	*	*	*0.3	*	*	...
Superficial injuries and contusions .910–924	3.5	3.3	3.6	3.0	*2.6	*	...
Burns .940–949	2.1	3.0	1.2	1.4	3.5	*	...
Other injury .855–859,926–939,950–959	2.9	3.8	2.0	2.2	3.8	*	...
Poisoning and toxic effects .960–989	8.2	6.7	9.5	6.1	10.5	*7.8	...
Other effects of environmental causes .990–994	0.7	1.1	*	0.5	*	*	...
Certain adverse effects not elsewhere specified .995	1.3	1.0	1.6	0.9	*	*	...
Miscellaneous complications of surgical and medical care .996–999	22.6	23.1	22.2	18.5	20.0	15.6	...
	Percent distribution						
All injury and poisoning .800–999	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Fractures .800–829	37.4	33.5	41.6	39.6	26.7	32.7	37.1
Dislocation .830–839	2.3	2.9	1.7	2.4	*2.0	*	2.1
Sprains and strains .840–848	6.2	6.4	6.0	6.5	4.3	*6.3	6.2
Intracranial injuries (excluding those with skull fracture) .850–854	6.5	7.4	5.5	5.9	5.2	*7.0	9.3
Internal injury of chest, abdomen, and pelvis .860–869	3.0	4.4	1.4	2.5	5.6	*	2.8
Lacerations, open wounds, injuries to blood vessels .870–904	7.0	9.5	4.2	5.6	14.8	*7.4	7.1
Late effects of injury and poisoning .905–909	*0.3	*	*	*0.4	*	*	*
Superficial injuries and contusions .910–924	3.2	2.8	3.5	3.4	*2.4	*	2.8
Burns .940–949	1.9	2.5	1.2	1.6	3.3	*	1.8
Other injury .855–859,926–939,950–959	2.6	3.2	1.9	2.5	3.6	*	2.3
Poisoning and toxic effects .960–989	7.4	5.7	9.2	7.0	10.0	*9.2	6.9
Other effects of environmental causes .990–994	0.7	1.0	*	0.6	*	*	*
Certain adverse effects not elsewhere specified .995	1.2	0.9	1.6	1.0	*	*	1.7
Miscellaneous complications of surgical and medical care .996–999	20.5	19.5	21.5	21.1	19.0	18.5	19.4

[1]NOTE: Rates for race categories may be underestimated because race was not reported for all discharged patients

open wound category. In three age groups the differences were significant by sex—the 15–24, 25–34, and the 35–44 age groups. Males also had significantly higher rates than females for dislocations, burns, internal injuries, and other injury.

These results are consistent with data that show the leading causes of death for males in the young adult age groups. Accidents, including motor vehicle accidents, are a major cause of death in these age groups, particularly for males (2). In addition, Fingerhut (9) reports high male rates of firearm deaths for the 15–34-year-olds for each of the years she studied (1985–90). Runyan and Gerken (10) discuss several possible reasons for these higher male rates, including more driving by males, more participation in high-risk sports (such as football), and a greater tendency by males to acquire weapons.

The only category in which females had a significantly higher rate than males was the poisoning and toxic effects category. Females had higher

rates in this category in the 15–24, the 35–44, and the 45–64 age groups. The poisoning and toxic effects category includes overdoses and "wrong substances given or taken in error" (7). It does not include drug dependence or nondependent abuse of drugs. Most of the poisonings for males and females were caused by analgesics, antipyretics, and antirheumatics (including aspirin and acetaminophen)—ICD–9–CM code 965—and psychotropic drugs (primarily antidepressants and tranquilizers)—ICD–9–CM code 969.

The overall rates of first-listed injury and poisoning diagnoses were similar for white and black hospital discharges. But there were some differences between the two groups' rates for various types of injuries and poisoning. White persons had a higher rate of fractures than black persons. This is not surprising since previous research (11–13) has found that bone density is greater in black than in white subjects, and, consequently, the prevalence of osteoporosis and the incidence of fractures is lower in black persons than in white persons. Black persons had higher rates of lacerations and open wounds, burns, poisonings, internal injuries, and other trauma. These findings are consistent with cause of death statistics which show that, in 1991, the homicide and legal intervention rate among black persons was 41.9 per 100,000 deaths compared with 6.2 per 100,000 deaths for white persons (2).

Age and diagnoses

Of the 2.8 million patients hospitalized for injury and poisoning diagnoses, the largest proportion had fractures—over 37 percent (table 3). Fractures were the most common diagnoses for patients in each of the six age groups examined in this report, but the percentage of fractures ranged from 28 percent of the injury and poisoning discharges in the 35–44-year-age group to 51 percent of the 65 and over age group. Over one-half of the fractures in the age group under 15 were of the bones of the skull (17 percent) and the arm (45 percent). For the 15–44-year-olds these two categories totaled 38 percent and ankle fractures accounted for another 17 percent. For the 45–64-year-olds most of the fractures were of the arm (22 percent), ankle (18 percent), and hip (17 percent). Over 57 percent of the elderly's fractures were hip fractures and only 9 percent were of an upper limb.

In the younger age groups, other frequent injury and poisoning diagnoses included lacerations and open wounds, intracranial injuries, poisoning and toxic effects, and (with the exception of the 15–24-year-olds) miscellaneous complications of surgical and medical care. In the elderly, fractures and miscellaneous complications of surgical and medical care made up over 75 percent of those hospitalized for an injury or poisoning diagnosis.

Miscellaneous complications of surgical and medical care represented 21 percent of the injury and poisoning diagnoses. The percent of cases hospitalized due to these conditions ranged from 5 percent of the 15–24-year-olds to 27 percent of the elderly. About one-half of the diagnoses in this category involved complications of an internal prosthetic device, implant, or graft. Also included in this category were postoperative infections and postoperative shock. It is important to note that these diagnoses cannot be used as an indicator of substandard medical care. Many of these conditions would be expected considering the complexity of the procedures undertaken, the often fragile condition of the patient at the time of surgery (particularly of the elderly), and the variability of patient response to invasive procedures.

Injury and poisoning rates

The overall rate of hospitalization for injury and poisoning diagnoses was 110.5 per 10,000 population, but it ranged from 51.9 for children under 15 years of age, to 279.6 for the elderly 65 or over. The elderly's rate was more than twice the rate for the 15–24, the 25–34, and the 45–64-year-old age groups, more than three times the rate for the 35–44-year-old age group, and more than five times the rate for children under 15.

The fracture rate was also lowest for the under 15 age group (18.9 per 10,000) and highest for the elderly (142.4 per 10,000). The elderly's fracture rate was more than four times the rate for the second highest age group (45–64-year-olds) and was more than seven times the rate for children. Other research has noted that advanced age substantially increases the risk of hospitalization for minor fractures (14).

The 15–24 and the 25–34-year-old age groups had the highest rates of lacerations and open wounds and of internal injuries. As noted previously, this is consistent with high young adult (particularly male) death rates from firearms and motor vehicle accidents (1,9).

The 15–24-year-old age group also had the highest poisoning rate, but one of the lowest rates of sprains and strains. Beginning with the 25–34-year-old age group, the rate for miscellaneous complications of surgical and medical care increased significantly for each successive age group.

Source of payment

As shown in table 4, private health insurance was the expected source of payment for over one-half of the patients hospitalized due to injury and poisoning diagnoses in the under 15 years of age group and the 45–64-year-old age group, and for close to one-half (47 percent) of the patients in the 15–44-year-old age group. The vast majority (87 percent) of the 65 and over age group hospitalized due to injury or poisoning diagnoses expected their hospital care to be paid for by Medicare. Only 5 percent of the elderly cited private insurance as their expected principal source of payment, and only 2 percent of this age group were in the self-pay category.

Medicaid was expected to pay for the care of 23 percent of the discharges under 15 years old. Another 10 percent of the patients in this age group were in the self-pay category—an indication of no or inadequate health insurance.

Of the 15–44-year-olds, 18 percent were in the self-pay category. In this age group, over one-quarter of the patients with diagnoses of lacerations and open

Table 3. Number, rate, and percent distribution of patients discharged from short-stay hospitals, by category of first-listed injury and poisoning diagnoses and age: United States, 1991

[Discharges from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code number inclusions are based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)]

Category of first-listed diagnosis and ICD-9-CM code	All ages	Under 15 years	15–24 years	25–34 years	35–44 years	45–64 years	65 years and over
				Number of patients discharged in thousands			
All injury and poisoning. . . . 800–999	2,768	286	367	400	336	492	888
Fractures 800–829	1,034	104	110	115	95	158	452
Dislocation 830–839	64	*	18	15	9	10	9
Sprains and strains 840–848	171	*	19	32	35	48	34
Intracranial injuries (excluding those with skull fracture) 850–854	180	30	37	34	24	20	34
Internal injury of chest, abdomen, and pelvis 860–869	83	*7	21	23	13	12	*7
Lacerations, open wounds, injuries to blood vessels 870–904	193	25	53	50	25	24	16
Late effects of injuries and poisoning 905–909	*8	*	*	*	*	*	*
Superficial injuries and contusions 910–924	88	*8	13	11	14	13	30
Burns. . . . 940–949	52	16	*7	*6	*6	*9	*7
Other injury 855–859,926–939,950–959	72	14	12	17	*6	11	11
Poisoning and toxic effects 960–989	205	32	52	43	31	23	23
Other effects of environmental causes 990–994	18	*	*	*	*	*	*
Certain adverse effects not elsewhere classified 995	33	*	*	*	*	10	13
Miscellaneous complications of surgical and medical care 996–999	567	36	19	48	72	148	243
				Rate of patients discharged per 10,000 population			
All injury and poisoning. . . . 800–999	110.5	51.9	102.7	94.8	86.0	105.3	279.5
Fractures 800–829	41.3	18.9	30.8	27.2	24.5	33.8	142.4
Dislocation 830–839	2.6	*	5.1	3.5	2.4	2.2	2.9
Sprains and strains 840–848	6.8	*	5.3	7.6	8.9	10.3	10.8
Intracranial injuries (excluding those with skull fracture) 850–854	7.2	5.5	10.3	8.1	6.3	4.3	10.8
Internal injury of chest, abdomen, and pelvis 860–869	3.3	*1.2	5.8	5.5	3.2	2.6	*2.3
Lacerations, open wounds, injuries to blood vessels 870–904	7.7	4.5	14.8	11.9	6.5	5.2	5.0
Late effects of injuries and poisoning 905–909	*0.3	*	*	*	*	*	*
Superficial injuries and contusions 910–924	3.5	*1.5	3.5	2.5	3.6	2.8	9.4
Burns. . . . 940–949	2.1	2.9	*2.0	*1.5	*1.6	*1.9	*2.3
Other injury 855–859,926–939,950–959	2.9	2.6	3.5	4.1	*1.5	2.3	3.5
Poisoning and toxic effects 960–989	8.2	5.8	14.7	10.3	8.0	4.9	7.1
Other effects of environmental causes 990–994	0.7	*	*	*	*	*	*
Certain adverse effects not elsewhere classified 995	1.3	*	*	*	*	2.1	4.2
Miscellaneous complications of surgical and medical care 996–999	22.6	6.6	5.3	11.4	18.4	31.7	76.6
				Percent distribution			
All injury and poisoning. . . . 800–999	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Fractures 800–829	37.4	36.4	30.1	28.7	28.4	32.1	50.9
Dislocation 830–839	2.3	*	5.0	3.7	2.8	2.1	1.0
Sprains and strains 840–848	6.2	*	5.2	8.0	10.3	9.8	3.9
Intracranial injuries (excluding those with skull fracture) 850–854	6.5	10.5	10.1	8.5	7.3	4.0	3.8
Internal injury of chest, abdomen, and pelvis 860–869	3.0	*2.3	5.6	5.8	3.8	2.4	*0.8
Lacerations, open wounds, injuries to blood vessels 870–904	7.0	8.7	14.4	12.6	7.6	4.9	1.8
Late effects of injuries and poisoning 905–909	*0.3	*	*	*	*	*	*
Superficial injuries and contusions 910–924	3.2	*2.6	3.4	2.7	4.2	2.6	3.4
Burns. . . . 940–949	1.9	5.5	*2.0	*1.6	*1.8	*1.8	*0.8
Other injury 855–859,926–939,950–959	2.6	5.0	3.4	4.3	*1.7	2.2	1.3
Poisoning and toxic effects 960–989	7.4	11.2	14.3	10.8	9.3	4.7	2.6
Other effects of environmental causes 990–994	0.7	*	*	*	*	*	*
Certain adverse effects not elsewhere classified 995	1.2	*	*	*	*	2.0	1.5
Miscellaneous complications of surgical and medical care 996–999	20.5	12.6	5.2	12.0	21.4	30.1	27.4

wounds and internal injuries of the chest, abdomen, and pelvis; over one-fifth of the patients with intracranial injuries and poisonings and toxic effects; and 19 percent of the patients with fractures were in the self-pay category. It is probable that many of these patients required emergency care that hospitals provided regardless of their lack of insurance.

Overall, 4 percent of persons hospitalized in 1991 due to injury and poisoning diagnoses expected workers' compensation to cover the cost of their hospital care. Of the 119,000 discharges expecting this source of payment, 69 percent were in the 15–44-year-old age group. In this age group 31 percent of the burns, 15 percent of the dislocations, and 16 percent of the sprains and strains were expected to be paid for by workers' compensation. Another 25 percent of the discharges expecting their hospitalization to be paid for by workers' compensation were in the 45–64-year-old age group. In this age group 16 percent of the sprains and strains and 15 percent of the burns had workers' compensation indicated as the anticipated payment source.

Disposition

The dispositions of injury and poisoning patients are shown in table 5. Over three-quarters of the patients hospitalized due to an injury or poisoning diagnosis were discharged home, but the percentage ranged from

Table 4. Number and percent distribution of patients with injury and poisoning diagnoses discharged from short-stay hospitals, by age and expected principal source of payment: United States, 1991

[Discharges from non-Federal hospitals. Excludes newborn infants]

Source of payment	All ages	Under 15 years	15–44 years	45–64 years	65 years and over
	Number of discharges in thousands				
All sources	2,768	286	1,102	492	888
Private insurance	983	150	520	265	48
Medicare	893	*	45	69	775
Medicaid	213	67	101	34	11
Workers' compensation	119	*	82	30	*8
Other Government payments	71	*9	50	10	*
Self-pay	275	28	193	40	13
Other sources	99	17	53	22	*7
Not stated	115	11	58	22	24
	Percent distribution				
All sources	100.0	100.0	100.0	100.0	100.0
Private insurance	35.5	52.3	47.2	53.9	5.4
Medicare	32.3	*	4.1	14.1	87.3
Medicaid	7.7	23.3	9.2	6.9	1.2
Workers' compensation	4.3	*	7.4	6.1	*1.0
Other Government payments	2.6	3.0	4.6	2.0	*
Self-pay	9.9	9.9	17.5	8.2	1.5
Other sources	3.6	6.0	4.8	4.4	*1.0
Not stated	4.2	4.0	5.3	4.4	2.7

Table 5. Number and percent distribution of patients with first-listed injury and poisoning diagnoses discharged from short-stay hospitals, by age and disposition: United States, 1991

[Discharges from non-Federal hospitals. Excludes newborn infants]

Disposition	All ages	Under 15 years	15–44 years	45–64 years	65 years and over
	Number of discharges in thousands				
All dispositions	2,768	286	1,102	492	888
Routine discharge	2,147	267	963	425	492
Transfer to another short-term hospital	137	*7	47	16	67
Transfer to long-term care institution	246	*	23	14	206
Other live discharges	156	*	47	23	81
Dead	41	*	*9	*	27
Not stated	40	*	13	10	15
	Percent distribution				
All dispositions	100.0	100.0	100.0	100.0	100.0
Routine discharge	77.6	93.4	87.3	86.4	55.5
Transfer to another short-term hospital	5.0	*2.4	4.3	3.2	7.6
Transfer to long-term care institution	8.9	*	2.1	2.9	23.2
Other live discharges	5.6	*	4.3	4.7	9.1
Dead	1.5	*	*1.0	*	3.0
Not stated	1.5	*	1.2	2.0	1.7

68 percent of fractures to 95 percent of dislocations. Fourteen percent discharged to other facilities–5 percent to short-term hospitals and 9 percent to long-term care institutions. Of hospital discharges with first-listed diagnoses other than injury and poisoning, 83 percent were discharged home.

As is shown in table 5, of all discharges with first-listed injury and poisoning diagnoses, the elderly were the least likely to be discharged home (56 percent) and the most likely to be discharged to other facilities (31 percent). For elderly patients with diagnoses other than injury and poisoning, 69 percent were discharged home and 17 percent were discharged to other facilities. Of the 273,000 elderly with injury and poisoning diagnoses discharged to other facilities, three-fourths went to long-term care institutions and the remainder went to other short-term hospitals. One-half of these elderly discharged to long-term care institutions had hip fractures and another 21 percent had other fractures.

Two percent (41,000) of the discharges hospitalized for injury and poisoning were discharged dead. Of the patients with injury or poisoning diagnoses who died in the hospital, 66 percent were 65 years of age and older. Twenty-two percent of those who died in the hospital had a diagnosis of hip fracture. Patients hospitalized due to an injury or poisoning diagnosis made up 9 percent of hospital patients; they represented 5 percent of all of the deaths in the hospital in 1991.

E–codes

In instances where patients are hospitalized because of an injury or poisoning, information concerning the cause of the injury should be recorded in the medical record. This information allows the use of E-codes (codes E800–E999), which describe "environmental events, circumstances, and conditions as the cause of injury, poisoning, and other adverse effects" (7). These codes provide additional information about other diagnoses and hence should be recorded only as a supplementary diagnosis category.

Hospital discharge data systems are seen by some experts as an appropriate vehicle for gathering E–code information for the more serious injuries. According to Sniezek, Finklea, and Graitcer (15) "E–coded hospital discharge data systems are potentially one of the most effective and feasible means available to collect data needed to prevent and control injuries." There is not a national requirement for hospitals to record E–codes, except in those cases where drugs or medicinal and biological substances caused an adverse effect in therapeutic use (16). Consequently, data on external cause of injury from discharge data systems are incomplete.

E–codes were coded in the NHDS when the necessary information was present on the face sheet or discharge summary of the medical record or was included in the automated data provided by abstract services or State systems. Table 6 shows the percentage of patients with first-listed injury and poisoning diagnoses by sex, age, race, region,

specific diagnoses, number of diagnoses, hospital ownership and bedsize with one or more E–codes.

In 1991 1.2 million patients, or 44 percent of patients hospitalized due to an injury or poisoning diagnosis, had at least one E–code diagnosis recorded.

Table 6. Percent of patients by selected patient and hospital characteristics with first-listed injury and poisoning diagnoses discharged from short-stay hospitals with one or more external cause of injury and poisoning codes: United States, 1991

[Discharges from non-Federal hospitals. Excludes newborn infants. Data are for discharges with first-listed diagnoses of 800–999 from the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM), with one or more external cause of injury codes]

Characteristic	Percent with E-code[1]
All injury and poisoning discharges	44.3
Sex	
Male	46.2
Female	42.2
Age	
Under 5 years	56.8
5–14 years	45.4
15–24 years	49.1
25–34 years	49.0
35–44 years	47.2
45–64 years	44.2
65–74 years	42.6
75 years and over	34.1
Race	
White	43.9
Black	57.5
All other	34.5
Not stated	39.1
Region	
Northeast	44.2
Midwest	42.9
South	42.8
West	49.1
First-listed diagnosis and ICD-9-CM codes	
Fractures .800–829	34.2
Dislocation .830–839	25.9
Sprains and strains .840–848	20.0
Intracranial injuries (excluding those with skull fracture) .850–854	43.9
Internal injury of chest, abdomen, and pelvis .860–869	46.2
Lacerations, open wounds, injuries to blood vessels .870–904	50.2
Late effects of injury and poisoning .905–909	23.0
Superficial injuries and contusions .910–924	34.1
Burns .940–949	44.4
Other injury .855–859,926-939,950–959	38.8
Poisoning and toxic effects .960–989	78.7
Other effects of environmental causes .990–994	60.1
Certain adverse effects not elsewhere classified .995	63.6
Miscellaneous complications of surgical and medical care .996–999	58.4
Number of diagnoses	
Seven diagnoses	45.7
Six diagnoses	60.0
Five diagnoses	51.3
Four diagnoses	56.0
Three diagnoses	54.2
Two diagnoses	46.4
Hospital ownership	
Church/nonprofit	42.0
Proprietary	44.2
Government	55.9
Hospital bedsize	
6–99	40.4
100–299	42.7
300–499	42.4
500 or more	55.8

[1]E-code is external cause of injury and poisoning code.

More males (46 percent) had an E–code reported than females (42 percent). Children under 5 had the highest (57 percent) E–code completion; discharges 75 years of age and over had the lowest (34 percent) proportion completed. For black persons, the percent with E–codes was significantly higher (58 percent) than the percent for white persons (44 percent). The percentage of E–codes recorded in the West was significantly higher than for every other region (49 percent)—probably reflecting the fact that both California and Washington required E-coding. There was considerable variation among the diagnostic groups in completion of E–codes. Only 20 percent of sprains and strains had an E–code compared with 79 percent of those with poisoning and toxic effects. The latter category would be expected to be more complete than others because it includes those diagnoses in which E–codes are mandatory. Two other categories with over 50 percent E–code completion were miscellaneous complications of surgical and medical care and lacerations and open wounds.

A study of E–codes in Maryland conducted by Marganitt et al. (17) found that there was systematic underreporting of E–codes in the elderly, the severely injured, and patients with long lengths of stay. This was primarily due to the fact that these groups were more likely to have multiple chronic conditions prior to the injury and/or more complications during the hospital stay. In these situations, the data fields available for recording diagnoses are likely to be filled, thereby leaving no room for the E–code. E–codes may be considered of lesser importance to hospitals since they do not influence reimbursement. Hence, in cases where all of the applicable codes would not fit on the abstract forms, E–codes would be the least likely to be coded.

The percentage of first-listed injury and poisoning diagnoses with at least one E–code in 1988 was 40; in 1990 and 1991, 44 percent of these records had E–codes. In 1991, five States (California, New York, Washington, Rhode Island, and Vermont) had mandated E-coding of hospital records.

Since that time, an additional nine States have instituted such a requirement. As the number of States mandating the use of E–codes rises, the percentage recording them on NHDS abstract forms is expected to increase.

Data on E-codes collected in the National Hospital Discharge Survey are not included in this report because the evidence cited above indicates that these data would likely be biased and unrepresentative of all E-codes. Since all of the other data on injuries included in this report, as well as information generally reported from this survey, are nationally representative, it was felt that it would be misleading to report the incomplete E-code information.

Days of care

Information about days of care is included in table 7. The average length of stay for the different diagnostic categories ranged from 3.2 days for patients with poisoning and toxic effects to 12.3 for burns. In addition to burns, long lengths of stay occurred for patients with fractures, internal injuries, late effects of injury and poisoning, and miscellaneous complications of surgical and medical care. Dislocations, sprains and strains, and poisoning and toxic effects had short lengths of stay.

Of the days of care for injury and poisoning patients, 46 percent were for fracture patients. This is compared with the 37 percent of the discharges having fractures as their first-listed diagnosis. Of the days of care, 80 percent were for patients with fractures, miscellaneous complications of surgical and medical care, intracranial injuries, and lacerations and open wounds. Patients in these four categories made up 71 percent of the discharges in the injury and poisoning category.

Summary

In 1991, 2.8 million patients were hospitalized because of an injury or poisoning; and 1 in every 10 hospital days were devoted to caring for these patients. The average length of stay for these patients was 6.9, but this ranged from 3.2 days for patients with poisonings to 12.3 days for burn patients.

The overall hospitalization rate for injury and poisoning for males and females did not differ significantly, but there were significant differences in some of the specific categories of injuries. Males had higher rates than females for intracranial injuries, lacerations and open wounds, dislocations, burns, and internal injuries. Females had a higher rate than males in the poisoning and toxic effects category. White persons had higher rates than black persons for fractures, but black persons had higher rates of lacerations and open wounds, burns, poisoning and toxic effects, and internal injuries.

The elderly's rate of hospitalization for injury or poisoning was more than twice the rate for the 15–34 and the 45–64-year-old age groups, more than three times the rate for the 35–44-year-olds, and more than five times the rate for children. The 15–34-year-olds had the highest rates of lacerations and open wounds and internal injuries.

Fractures were the most common injury and poisoning diagnoses for all of the age groups, but the rate ranged from 18.9 per 10,000 for children under 15, to 142.4 per 10,000 for the elderly. Most of the elderly's fractures were hip fractures, while the most frequent fractures for children under 15 were bones of the skull and arm.

The percentage of self-pay patients with injury and poisoning diagnoses was high, particularly in the 15–44-year-old age group. Most of the injury and poisoning patients were discharged home, but a smaller portion of the elderly were discharged home relative to the other age groups. Of the elderly, 31 percent were discharged to other institutions. Over three-quarters of these went to long-term care institutions and most of these had hip fractures.

Only 44 percent of the first-listed injury and poisoning patients had one or more external cause of injury codes (E–codes). As the number of States mandating E–codes increases, this percentage can be expected to increase.

Table 7. Number and percent distribution of patients discharged from short-stay hospitals and average length of stay, by first-listed injury and poisoning diagnoses: United States, 1991

[Discharges from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code numbers are based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)]

First-listed diagnosis and ICD-9-CM codes		Days of care		Average length of stay in days
		Number in thousands	Percent distribution	
All injury and poisoning	800–999	19,138	100.0	6.9
Fractures	800–829	8,733	45.6	8.4
Dislocation	830–839	219	1.1	3.4
Sprains and strains	840–848	629	3.3	3.7
Intracranial Injuries (excluding those with skull fracture)	850–854	1,041	5.5	5.8
Internal injury of chest, abdomen, and pelvis	860–869	712	3.7	8.6
Lacerations, open wounds, injuries to blood vessels	870–904	940	4.9	4.9
Late effects of injury and poisoning	905–909	*76	*0.4	*9.1
Superficial injuries and contusions	910–924	395	2.1	4.5
Burns	940–949	639	3.3	12.3
Other injury	855–859,926–939,950–959	342	1.8	4.8
Poisoning and toxic effects	960–989	644	3.4	3.2
Other effects of environmental causes	990–994	103	0.5	5.6
Certain adverse effects not elsewhere classified	995	144	0.8	4.3
Miscellaneous complications of surgical and medical care	996–999	4,521	23.6	8.0

References

1. Graves EJ. 1991 Summary: National Hospital Discharge Survey. Advance data from vital and health statistics; no 227. Hyattsville, Maryland: National Center for Health Statistics. 1993.
2. National Center for Health Statistics. Advance report of final mortality statistics, 1991. Monthly vital statistics report; vol 42 no 2, suppl. Hyattsville, Maryland: Public Health Service. 1993.

3. Rice DP, MacKenzie EJ, et al. Cost of injury in the United States: A report to Congress. University of California, San Francisco, and the Injury Prevention Center, The Johns Hopkins University. 1989.
4. Committee to Review the Status and Progress of the Injury Control Program at the CDC. Injury control: A review of the status and progress of the injury control program at the CDC. Washington: National Academy Press. 1988.
5. U.S. Department of Health and Human Services. Healthy People 2000. National health promotion and disease prevention objectives. Washington: Public Health Service. 1990.
6. Centers for Disease Control. External cause-of-injury coding in hospital discharge: United States, 1992. MMWR 41(15):249–51. 1992.
7. Public Health Service and Health Care Financing Adminstration. International Classification of Diseases, 9th Revision, Clinical Modification. Washington: Public Health Service. 1989.
8. Smith GS, Langlois JA, Buechner JS. Methodological issues in using hospital discharge data to determine the incidence of hospitalized injuries. Am J Epidemiol 134(10):1146–58. 1991.
9. Fingerhut LA. Firearm mortality among children, youth, and young adults 1–34 years of age, trends and current status: United States, 1985–90. Advance data from vital and health statistics; no 231. Hyattsville, Maryland: National Center for Health Statistics. 1993.
10. Runyan CW, Gerken EA. Epidemiology and prevention of adolescent injury: A review and research agenda. JAMA 269(16):2273–9. 1989.
11. Pollitzer WS, Anderson JJ. Ethnic and genetic differences in bone mass: A review with a hereditary vs environmental perspective. Am J Clin Nutr 50:1244–59. 1989.
12. Gilsanz V, Roe TF, Mora S, et al. Changes in vertebral bone density in black girls and white girls during childhood and puberty. New Engl J Med 325(23):1597–1600. 1991.
13. Cummings SR, Kelsey JL, Nevitt NC, et al. Epidemiology of osteoporosis and osteoporotic fractures. Epidemiol Rev 7:178–208. 1985.
14. Baker SP, O'Neill B, Ginsburg MJ, Li G. The injury fact book. 2d ed. New York and Oxford: Oxford University Press. 1992.
15. Sniezek JE, Finklea JF, Graitcer PL. Injury coding and hospital discharge data. JAMA 262(16):2270–2. 1989.
16. Public Health Service and Health Care Financing Adminstration. Official ICD–9–CM Guidelines for Coding and Reporting. Washington: Department of Health and Human Services. 1991.
17. Marganitt B, MacKenzie EJ, Smith GS, Damiano AM. Coding external causes of injury (E–codes) in Maryland hospital discharges 1979–88: A statewide study to explore the uncoded population. Am J of Public Health 10(12):1463–6.
18. Simmons WR, Schnack GA. Development of the design of the NCHS Hospital Discharge Survey. National Center for Health Statistics. Vital Health Stat 2(39). 1977.
19. Haupt BJ, Kozak LJ. Estimates from two survey designs: National Hospital Discharge Survey. National Center for Health Statistics. Vital Health Stat 13(111). 1992.
20. Shah, BV. SESUDAAN: Standard Errors Program for Computing of Standardized Rates from Sample Survey Data. Research Triangle Park, North Carolina: Research Triangle Institute. 1981.

Symbols

- - -	Data not available
. . .	Category not applicable
—	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision

Technical notes

Survey methodology

Source of data

The National Hospital Discharge Survey (NHDS) covers discharges from noninstitutional hospitals, except Federal, military, and Veterans Administration hospitals, that are located in the 50 States and the District of Columbia. Only short-stay hospitals (hospitals with an average length of stay for all patients of less than 30 days) or those whose specialty is general (medical or surgical) or children's general are included in the survey. These hospitals must also have six beds or more staffed for patient use.

For 1991, the sample consisted of 528 hospitals. Of these hospitals, seven were found to be out of scope (ineligible) because they went out of business or otherwise failed to meet the criteria for the NHDS universe. Of the 521 in-scope (eligible) hospitals, 484 responded to the survey.

Sample design and data collection

The National Center for Health Statistics (NCHS) has conducted the NHDS continuously since 1965. A report on the development of the original NHDS was published (18).

Beginning in 1988, the NHDS sample includes with certainty all hospitals with 1,000 beds or more or 40,000 discharges or more annually. The remaining sample of hospitals is based on a stratified three-stage design. The first stage consists of a selection of 112 primary sampling units (PSU's) that comprise a probability subsample of PSU's to be used in the 1985–94 National Health Interview Survey. The second stage consists of a selection of noncertainty hospitals from the sample PSU's. At the third stage, a sample of discharges was selected by a systematic random-sampling technique. A detailed description of the old and new survey designs has been published (19).

Two data collection procedures were used for the survey. One was a manual system of sample selection and data abstraction. The second, an automated method used for

approximately 33 percent of the respondent hospitals in 1991, involved the purchase of data tapes from abstracting services, State data systems, or hospitals.

In the manual system, the sample selection and transcription of information from hospital records to abstract forms were performed at the hospitals. The completed forms, along with the sample selection control sheets, were forwarded to NCHS for coding, editing, and weighting. A few of the hospitals have submitted their data via computer printout or tape in recent years. In about two-thirds of the hospitals using this manual system in 1991, the work was performed by their own medical records staff. In the remaining hospitals using the manual system, the U.S. Bureau of the Census personnel did the work on behalf of NCHS.

For the automated system, NCHS purchased tapes containing machine-readable medical record data that were systematically sampled by NCHS.

The data collected for the survey included items relating to the patient's personal characteristics, including birth date, sex, race, and marital status (but not the patient's name and address); administrative information, including admission and discharge dates, discharge status, and medical record number; and medical information, including diagnoses and surgical and nonsurgical operations or procedures. Beginning in 1977, data pertaining to patient ZIP Code, expected source of payment, and dates of surgery were also collected. (The medical record number and patient ZIP Code are confidential information and are not available to the public.)

Presentation of estimates

The relative standard error (RSE) of the estimate and the number of sample records that the estimate was based on are used to identify estimates with relatively low reliability. Because of the complex sample design of the NHDS, estimates of less than 5,000 are not presented; only an asterisk (*) appears in the tables. Generally, these estimates have an RSE of more than 30 percent or are based on a sample of less than 30 cases. Estimates of 5,000 to 9,000 are preceded by an asterisk (*) to indicate they should not be assumed reliable. These estimates are usually based on fewer than 60 cases.

Sampling errors and rounding of numbers

The standard error is primarily a measure of sampling variability that occurs by chance because only a sample rather than the entire universe is surveyed. The RSE of the estimate is obtained by dividing the standard error by the estimate itself. The resulting value is multiplied by 100, so the RSE is expressed as a percent of the estimate.

Estimates of sampling variability for 1991 data were calculated with SESUDAAN software, which computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (20). The constants for RSE curves for the 1991 NHDS estimates are presented in table I. The RSE of an estimate (X) can be estimated from the formula:

$$\mathrm{RSE}(X) = 100\sqrt{a + b/X}$$

where X, a, and b are as defined in table I.

Estimates have been rounded to the nearest thousand. For this reason, figures within tables do not always add to the totals.

Tests of significance

In this report, the determination of statistical inference is based on the two-sided t-test with a critical value of 1.96 (0.05 level of significance). Terms such as "higher" and "less" indicate that differences are statistically significant. Terms such as "similar" and "no difference" mean that no statistically significant difference exists between the estimates being compared. A lack of comment on the difference between any two estimates does not mean that the difference was tested and found insignificant.

Definition of terms

Age—Patient's age at birthday prior to admission to the hospital.

Average length of stay—The number of days of care accumulated by patients discharged during the year divided by the number of patients.

Days of care—The number of patient days accumulated by a patient at time of discharge. A stay of less than 1 day (patient admission and discharge on the same day) is counted as 1 day in the summation of total days of care. For patients admitted and discharged on different days, the number of days of care is computed by counting all days from (and including) the date of admission to (but not including) the date of discharge. The terms days of care, patient days, and hospital days are synonymous.

Diagnosis—A disease or injury (or other factor that influences health status and contact with health services) listed on the medical record of a patient.

- *Principal diagnosis*—The condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care.
- *First-listed diagnosis*—The coded diagnosis identified as the principal diagnosis or listed first on the face sheet or discharge summary of the medical record if the principal diagnosis cannot be identified. The number of first-listed diagnoses is equal to the number of discharges.

Discharge—The formal release of a patient by a hospital, that is, the termination of a period of hospitalization by death or disposition to place of residence, nursing home, another hospital, or other location. The terms discharge, patient, and inpatient are synonymous.

Discharge rate—The ratio of the number of hospital discharges during a year to the number of persons in the civilian population on July 1 of that year.

Disposition—The disposition of a patient on termination of hospitalization is classified in one of six categories in this report:

- *Routine discharge*—Patients who returned to their previous place of residence after discharge.

Table I. Estimated parameters for relative standard error equations for National Hospital Discharge Survey statistics, by selected characteristics: United States, 1991

Characteristic	Number of discharges or first-listed diagnoses		Number of days of care	
	a	b	a	b
Total	0.00101	546.321	0.00173	2,343.213
Sex				
Male	0.00447	213.042	0.00518	5,120.963
Female	0.00099	442.186	0.00194	1,634.957
Age				
Under 15 years	0.01786	65.842	0.07618	737.582
15–44 years	0.00956	111.147	0.02384	475.352
45–64 years	0.01292	44.094	0.02949	92.219
65 years and over	0.01149	25.788	0.01849	25.558
Region				
Northeast	0.00293	243.156	0.00451	1,967.234
Midwest	0.00603	331.780	0.01037	608.558
South	0.00247	547.686	0.00400	1,435.185
West	0.00513	403.340	0.00891	871.769
Source of payment				
Workers' compensation	0.00250	588.807	0.00393	12,444.000
Medicare	0.00548	883.428	0.00456	6,548.842
Medicaid	0.00348	1,979.378	0.00136	18,545.000
Other Government	0.08079	177.390	0.04261	988.154
Private	0.00148	780.110	0.00169	12,606.000
Self	0.00244	662.998	0.00399	5,923.664
No charge or other	0.02235	407.608	0.02240	2,779.271
Not stated	0.04490	639.387	0.05367	3,639.382
Race				
White	0.00234	927.094	0.00360	2,087.655
Black	0.00569	273.368	0.00926	1,034.092
All other	0.02889	280.075	0.04980	253.439
Not stated	0.01666	427.619	0.02339	966.802

NOTE: The relative standard error (RSE) for an estimate (X), expressed as a percent of X, can be determined from the equation $RSE(X) = 100\sqrt{a + b/X}$

- *Transfer to another short-term hospital*—Patients who were transferred to another short-term hospital at discharge.
- *Transfer to long-term care institution*—Patients who entered a nursing home or other long-term care institution upon discharge from the hospital.
- *Other live discharges*—Patients who left the hospital against medical advice, patients discharged alive with dispositions other than routine discharge or transfer, and patients discharged alive whose dispositions were not stated.
- *Dead*—Patients who died during an inpatient stay.
- *Not stated*—Patients whose discharge status, that is, alive or dead, was not reported at discharge.

External cause of injury codes (E–codes)—This refers to the *International Classification of Diseases, 9th Revision, Clinical Modification* section entitled "Supplementary Classification of External Causes of Injury or Poisoning" and includes codes E800–E999. These codes describe environmental events, circumstances, and conditions as the cause of injury, poisoning, and other adverse effects.

Expected principal source of payment—The expected principal source of payment is reported by the patient or the patient's representative at the time of admission and may differ somewhat from the actual source of payment as determined after discharge. In this report, payment sources are grouped as follows:

- *Private insurance*—Insurance provided by nongovernmental sources, including Blue Cross and other insurance companies, private industry, and philanthropic organizations.
- *Medicare*—A nationwide program providing health insurance protection to people 65 years of age and over, people eligible for Social Security disability payments for more than 2 years, and people with end-stage renal disease.
- *Medicaid*—A joint Federal-State program that provides benefits for people who meet their State's definition of "low income."
- *Workers' compensation*—A program in all States under which employees injured on the job receive financial compensation without regard to fault.
- *Other Government payments*—Government payments other than those through the Medicare or Medicaid programs, such as payments made under the Title V Program, and the Civilian Health and Medical Program for the Uniformed Services (CHAMPUS), which provides coverage for civilian medical care for family members of active-duty uniformed service personnel and for retired uniformed service personnel and their families.
- *Self-pay*—Patients who expect the costs of hospitalization to be paid for primarily by themselves, spouses, parents, or next of kin.
- *Other sources*—Includes other nonprofit sources of payment, such as church welfare; hospitalizations for which there was no charge; and sources that could not be assigned to any other category.
- *Not stated*—Patients for whom no source of payment was indicated.

Geographic region—Hospitals are classified by location in one of the four geographic regions of the United States that correspond to those used by the U.S. Bureau of the Census.

Region	*States included*
Northeast	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania

Midwest	Michigan, Ohio, Illinois, Indiana, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas
South	Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas
West	Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Hawaii, and Alaska

Hospital—Hospitals with an average length of stay of less than 30 days for all patients as well as hospitals whose specialty was general (medical or surgical) or children's general, even if the average length of stay of all patients was 30 days or more. Federal hospitals, hospital units of institutions, and hospitals with less than six beds staffed for patients' use were not included.

Injury and poisoning—In this report, injury and poisoning diagnoses includes codes 800–999 of the *International Classification of Diseases, 9th Revision, Clinical Modification.*

Newborn—A patient admitted by birth to a hospital.

Patient—A person formally admitted to the inpatient service of a short-stay hospital for observation, care, diagnosis, or treatment. Newborn infants, defined as those admitted by birth to the hospital, are excluded from this report. The terms patient, inpatient, and discharge are synonymous.

Population—The U.S. resident population, excluding members of the Armed Forces.

Procedure—Surgical or nonsurgical operations, diagnostic procedures, or special treatments reported on the medical record of a patient. In the NHDS, a maximum of four procedures are coded.

Race—Patients are classified into three groups, "white," "black," and "all other," with all other including all categories other than white or black. In addition, 21.6 percent of the patients had no race stated on the face sheet of the medical record.

Suggested citation

Hall MJ, Owings MF. Hospitalizations for injury and poisoning in the United States, 1991. Advance data from vital and health statistics; no 252. Hyattsville, Maryland: National Center for Health Statistics. 1994.

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

National Ambulatory Medical Care Survey: 1992 Summary

by Susan M. Schappert, M.A., Division of Health Care Statistics

Introduction

During the 12-month period from January 1992 through December 1992, an estimated 762.0 million visits were made to nonfederally employed, office-based physicians in the United States—about three visits per person. This rate is not significantly different from office visit rates observed since 1985 (1–4).

This report presents data highlights from the 1992 National Ambulatory Medical Care Survey (NAMCS), a national probability sample survey conducted by the Division of Health Care Statistics of the National Center for Health Statistics, Centers for Disease Control and Prevention. Statistics are presented on physician, patient, and visit characteristics.

Because the estimates presented in this report are based on a sample rather than on the entire universe of office visits, they are subject to sampling variability. The Technical notes found at the end of this report include an overview of the sample design used in the 1992 NAMCS, an explanation of sampling errors, and guidelines for judging the precision of the estimates.

The Patient Record form is used by physicians participating in the NAMCS to record information about their patients' office visits. This form is reproduced in figure 1 and is intended to serve as a reference for readers as they review the survey findings presented in this document.

The physician sample for the NAMCS was selected with the cooperation of the American Medical Association and the American Osteopathic Association. Their contribution to this effort is gratefully acknowledged.

Physician characteristics

The distribution of office visits according to physician specialty for the 13 most visited specialties is presented in table 1. The largest share of visits was made to physicians specializing in general and family practice (28.8 percent). Compared with 1991 data, increases were noted in the proportion of visits made to general and family practitioners and pediatricians. Conversely, the proportions of visits made to internists and dermatologists were significantly lower than in 1991. No significant differences were found in the distribution of visits made to obstetricians and gynecologists, ophthalmologists, orthopedic surgeons, general surgeons, otolaryngologists, psychiatrists, urologists, cardiovascular disease specialists, or neurologists. Visit rates to each of the 13 physician specialties were not found to differ significantly from 1991 visit rates (4).

Doctors of osteopathy received 45.0 million visits during 1992, or 5.9 percent of all office visits. Visits to this specialty occurred at a rate of 17.9 per 100 persons, which was not significantly different from the 1991 visit rate.

Visits according to geographic characteristics of the physician's practice are also displayed in table 1. Visit rates by region—Northeast, Midwest, South, and West—were not statistically different from each other in 1992. Neither had they changed from the previous year's rates with the exception of the South, where the rate was slightly higher in 1992 than in 1991. However, it is suspected that this is due largely to sampling variability and changes in the NAMCS survey methodology for 1992 rather than to an actual increase in the number of office visits. A discussion of these changes and the impact they may have had on the survey results is included in the Technical notes.

Patient characteristics

Office visits by patient's age, sex, and race are shown in table 2. Females

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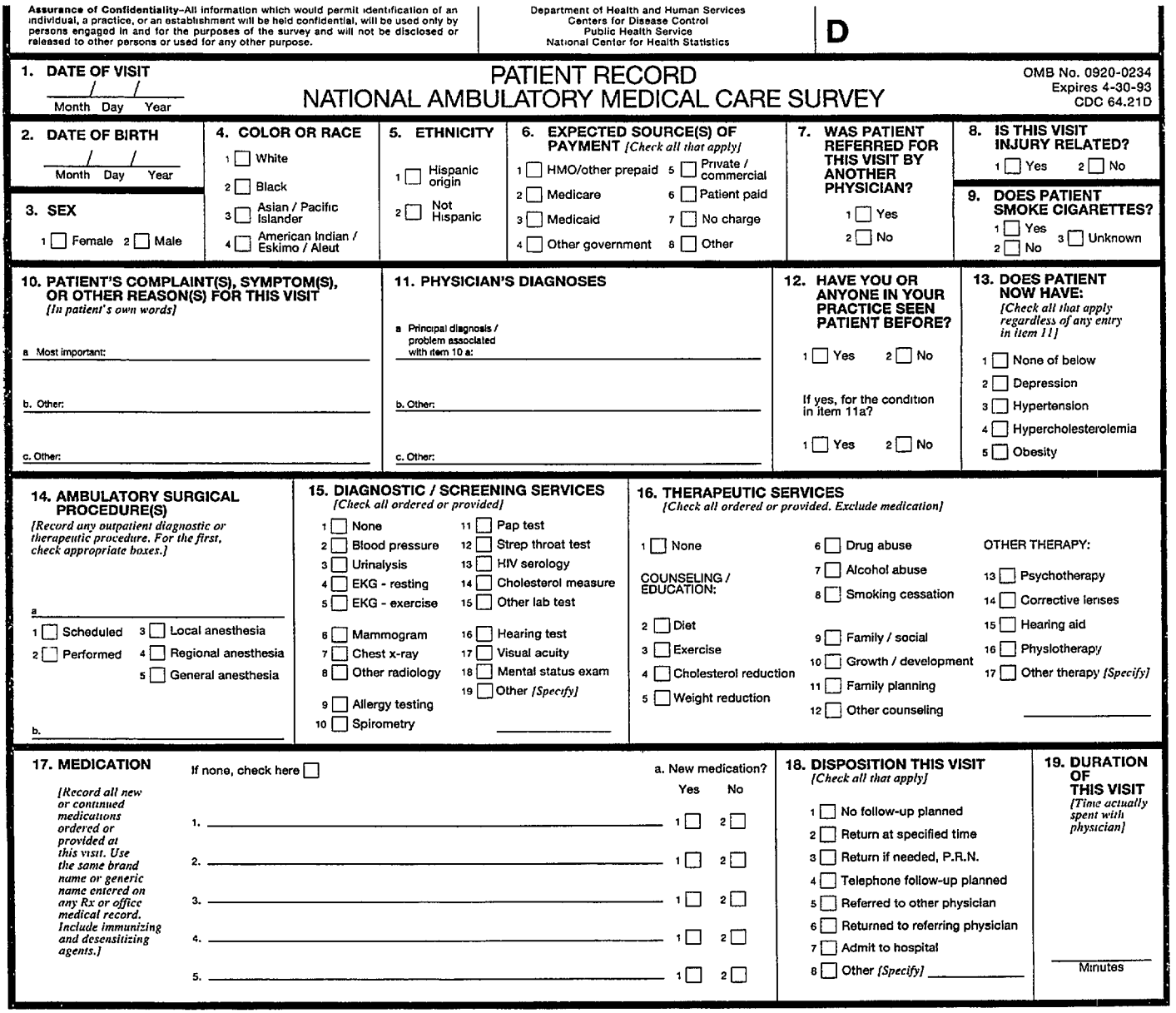

Assurance of Confidentiality–All information which would permit identification of an individual, a practice, or an establishment will be held confidential, will be used only by persons engaged in and for the purposes of the survey and will not be disclosed or released to other persons or used for any other purpose.

Department of Health and Human Services
Centers for Disease Control
Public Health Service
National Center for Health Statistics

D

PATIENT RECORD
NATIONAL AMBULATORY MEDICAL CARE SURVEY

OMB No. 0920-0234
Expires 4-30-93
CDC 64.21D

1. DATE OF VISIT — Month Day Year
2. DATE OF BIRTH — Month Day Year
3. SEX — 1 Female 2 Male
4. COLOR OR RACE — 1 White 2 Black 3 Asian / Pacific Islander 4 American Indian / Eskimo / Aleut
5. ETHNICITY — 1 Hispanic origin 2 Not Hispanic
6. EXPECTED SOURCE(S) OF PAYMENT [Check all that apply] — 1 HMO/other prepaid 2 Medicare 3 Medicaid 4 Other government 5 Private / commercial 6 Patient paid 7 No charge 8 Other
7. WAS PATIENT REFERRED FOR THIS VISIT BY ANOTHER PHYSICIAN? — 1 Yes 2 No
8. IS THIS VISIT INJURY RELATED? — 1 Yes 2 No
9. DOES PATIENT SMOKE CIGARETTES? — 1 Yes 2 No 3 Unknown
10. PATIENT'S COMPLAINT(S), SYMPTOM(S), OR OTHER REASON(S) FOR THIS VISIT [In patient's own words] — a. Most important: b. Other: c. Other:
11. PHYSICIAN'S DIAGNOSES — a. Principal diagnosis / problem associated with item 10 a: b. Other: c. Other:
12. HAVE YOU OR ANYONE IN YOUR PRACTICE SEEN PATIENT BEFORE? — 1 Yes 2 No. If yes, for the condition in item 11a? 1 Yes 2 No
13. DOES PATIENT NOW HAVE: [Check all that apply regardless of any entry in item 11] — 1 None of below 2 Depression 3 Hypertension 4 Hypercholesterolemia 5 Obesity
14. AMBULATORY SURGICAL PROCEDURE(S) [Record any outpatient diagnostic or therapeutic procedure. For the first, check appropriate boxes.] — a. 1 Scheduled 2 Performed 3 Local anesthesia 4 Regional anesthesia 5 General anesthesia. b.
15. DIAGNOSTIC / SCREENING SERVICES [Check all ordered or provided] — 1 None 2 Blood pressure 3 Urinalysis 4 EKG - resting 5 EKG - exercise 6 Mammogram 7 Chest x-ray 8 Other radiology 9 Allergy testing 10 Spirometry 11 Pap test 12 Strep throat test 13 HIV serology 14 Cholesterol measure 15 Other lab test 16 Hearing test 17 Visual acuity 18 Mental status exam 19 Other [Specify]
16. THERAPEUTIC SERVICES [Check all ordered or provided. Exclude medication] — 1 None. COUNSELING / EDUCATION: 2 Diet 3 Exercise 4 Cholesterol reduction 5 Weight reduction 6 Drug abuse 7 Alcohol abuse 8 Smoking cessation 9 Family / social 10 Growth / development 11 Family planning 12 Other counseling. OTHER THERAPY: 13 Psychotherapy 14 Corrective lenses 15 Hearing aid 16 Physiotherapy 17 Other therapy [Specify]
17. MEDICATION — [Record all new or continued medications ordered or provided at this visit. Use the same brand name or generic name entered on any Rx or office medical record. Include immunizing and desensitizing agents.] If none, check here. a. New medication? Yes No. 1. 2. 3. 4. 5.
18. DISPOSITION THIS VISIT [Check all that apply] — 1 No follow-up planned 2 Return at specified time 3 Return if needed, P.R.N. 4 Telephone follow-up planned 5 Referred to other physician 6 Returned to referring physician 7 Admit to hospital 8 Other [Specify]
19. DURATION OF THIS VISIT [Time actually spent with physician] — Minutes

Figure 1. Patient Record form

made 60.0 percent of all office visits during 1992 and accounted for a higher percent of visits than males in all age categories except the youngest (under 15 years). Females also had significantly higher visit rates than males in each age category with the exception of the youngest group (under 15 years) and the two oldest groups (65–74 years and 75 years and over). These patterns were also observed in the 1990 and 1991 NAMCS.

Visit rates were found to increase with age after the age of 24. Persons 75 years of age and over had the highest visit rate of the six age categories analyzed, at 6.3 visits per person. The pattern, however, was found to be slightly different for males and females. Among males, rates increased with each age group after the age of 44, with males 75 years of age and over having the highest rate of 6.4 visits per person.

Females, despite a general trend toward increasing visit rates with age after the age of 24, showed no statistical difference in the rates for females 25–44 years of age compared with those 45–64 years of age, or in the rates for females 65–74 years of age compared with those 75 years of age and over.

The visit rate for the white population was significantly higher (3.1 visits per person) than the rate for the black population (2.6 visits per person) in 1992. White persons made 85.8 percent of all office visits, with black persons and Asians/Pacific Islanders accounting for 10.8 percent and 3.0 percent, respectively.

Visit rates for four of six age groups were not statistically different from those observed in 1991, nor were visit rates by sex found to be significantly different from the previous year's rates. Small but significant increases were noted in the rate of office visits made by persons in the age groups under 15 years and 15–24 years. Within the under 15 category, corresponding increases were noted for males and

Table 1. Number, percent distribution, and annual rate of office visits by selected physician practice characteristics: United States, 1992

Physician practice characteristic	Number of visits in thousands	Percent distribution	Number of visits per 100 persons per year[1]
All visits	762,045	100.0	303.1
Physician specialty			
General and family practice	219,245	28.8	87.2
Internal medicine	100,273	13.2	39.9
Pediatrics	96,129	12.6	38.2
Obstetrics and gynecology	68,367	9.0	[2]27.2
Ophthalmology	46,560	6.1	18.5
Orthopedic surgery	37,983	5.0	15.1
Dermatology	28,699	3.8	11.4
General surgery	24,309	3.2	9.7
Otolaryngology	22,912	3.0	9.1
Psychiatry	19,818	2.6	7.9
Urological surgery	14,955	2.0	5.9
Cardiovascular diseases	14,664	1.9	5.8
Neurology	7,708	1.0	3.1
All other specialties	60,422	7.9	24.0
Professional identity			
Doctor of medicine	717,049	94.1	285.2
Doctor of osteopathy	44,996	5.9	17.9
Geographic region			
Northeast	165,315	21.7	330.6
Midwest	184,275	24.2	299.8
South	236,800	31.1	280.5
West	175,654	23.1	316.2

[1]Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1992.
[2]The visit rate is 52.9 per 100 females.

females, as well as for white persons and black persons. In the 15–24 year category, increases were noted for both males and females. The rate was higher for black persons, but no significant difference was noted in the rate for white persons in this age group between 1991 and 1992.

The visit rate for the white population was not significantly different from the 1991 rate, but the rate for the black population was higher in 1992 than in 1991. In addition, the percent of visits made by black persons was higher in 1992, but it is suspected that these findings may be largely a result of changes in the 1992 sampling methodology (see Technical notes).

Visit characteristics

Referral status and prior-visit status

In general, 6.3 percent of office visits in 1992 were made as the result of a referral from another physician, not significantly different from the 6.2 percent noted in 1991. The majority of office visits (85.3 percent) were made by patients who had seen the physician on a previous occasion, and more than half (62.2 percent) of all visits were made by persons who were returning to the physician for care of a previously treated problem (table 3). Only 14.7 percent of the visits were made by new patients.

The proportion of visits made by new patients was statistically lower in 1992 compared with 1991 data, while a corresponding increase was found in the proportion of visits made by patients who were not new to the physician but who were seeking care of a new problem. No difference was noted in the percent of return visits made for the care of previously treated problems between 1991 and 1992.

Expected sources of payment

Data on expected sources of payment are shown in table 4.

Physicians were asked to check all of the applicable payment categories for this survey item, with the result that multiple payment sources could be coded for each visit. The patient-paid category includes the patient's contribution toward "co-payments" and "deductibles."

Expected sources of payment were most often private/commercial insurance (32.9 percent of visits), Medicare (19.9 percent of visits), HMO/other prepaid (19.2 percent), and patient-paid (19.1 percent). Significant decreases were noted in the proportion of visits that listed private/commercial insurance, Medicare, and patient-paid as expected pay sources between 1991 and 1992. Conversely, a higher proportion of visits showed "HMO/other prepaid" and Medicaid as expected sources of payment in 1992 as compared with 1991.

Injury-related visits

Injury-related office visits are presented in terms of patient's age, sex, and race in table 5. There were an estimated 65.6 million injury-related office visits in 1992, representing 8.6 percent of all office visits. More than half of these (56.7 percent) were made by males, and 39.7 percent were made by persons 25–44 years old.

Males had a higher injury-visit rate than females did overall (30.4 visits per 100 males compared with 22.0 visits per 100 females), but these differences were noted only in the age groups 15–24 years and 25–44 years. Injury-visit rates for males and females in the under 15, 45–64, 65–74, and 75 years and over age groups were not found to differ statistically.

Among females, injury-visit rates showed little variation between six age groups. The only statistical difference noted was between females under 15 years compared with those 25–44 years; the injury-visit rate was significantly lower for the former group as compared with the latter. For males, the injury-visit rate was higher for persons 25–44 years than for those in three other age categories: under 15 years, 65–74 years, and 75 years and over. Males in the age group 45–64 years had an injury-visit

Table 2. Number, percent distribution, and annual rate of office visits by patient's age, sex, and race: United States, 1992

Age, sex, and race	Number of visits in thousands	Percent distribution	Number of visits per person per year[1]
All visits	762,045	100.0	3.0
Age			
Under 15 years	155,168	20.4	2.7
15–24 years	72,016	9.5	2.1
25–44 years	211,897	27.8	2.6
45–64 years	154,997	20.3	3.2
65–74 years	90,625	11.9	4.9
75 years and over	77,341	10.1	6.3
Sex and age			
Female	457,369	60.0	3.5
Under 15 years	74,417	9.8	2.7
15–24 years	46,629	6.1	2.7
25–44 years	143,410	18.8	3.5
45–64 years	93,353	12.3	3.7
65–74 years	51,771	6.8	5.1
75 years and over	47,790	6.3	6.2
Male	304,676	40.0	2.5
Under 15 years	80,752	10.6	2.8
15–24 years	25,387	3.3	1.5
25–44 years	68,487	9.0	1.7
45–64 years	61,644	8.1	2.6
65–74 years	38,854	5.1	4.5
75 years and over	29,552	3.9	6.4
Race and age			
White	653,851	85.8	3.1
Under 15 years	124,631	10.8	2.8
15–24 years	60,758	8.0	2.2
25–44 years	182,245	23.9	2.7
45–64 years	135,756	17.8	3.3
65–74 years	80,673	10.6	4.9
75 years and over	69,787	9.2	6.3
Black	82,599	10.8	2.6
Under 15 years	23,207	3.0	2.6
15–24 years	9,345	1.2	1.8
25–44 years	22,487	3.0	2.3
45–64 years	13,949	1.8	2.8
65–74 years	7,352	1.0	4.5
75 years and over	6,260	0.8	6.4
All other races			
Asian/Pacific Islander	22,967	3.0	– – –
American Indian/Eskimo/Aleut	2,329	0.3	– – –

[1]Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1992.

rate that was higher than those 65–74 years of age and 75 years and over. No significant differences were noted in the rates for males under 15 years and 15–24 years.

The injury-visit rate for black persons (25.7 visits per 100) was not significantly different than the injury-visit rate for white persons (26.3 visits per 100) in 1992. The injury-visit rate was found to be significantly higher for white males compared with white females. This was not the case with rates for black males and black females, which showed no statistical difference (data not shown).

Patient's cigarette-smoking status

Results from the 1992 survey showed that 78.6 million office visits, or 10.3 percent of the total, were made by patients who smoke cigarettes. However, the patient's smoking status was not reported for 26.0 percent of office visits. Data on visits according to patient's cigarette smoking status are presented in tables 6 and 7.

Patient's principal reason for visit

Item 10 of the Patient Record form asks the physician to record the patient's (or patient surrogate's) "complaint(s), symptom(s), or other reason(s) for this visit in the patient's own words." Up to three reasons for visit are classified and coded from the survey according to the *Reason for Visit Classification for Ambulatory Care* (RVC) (5). The principal reason for visit is the problem, complaint, or reason listed in item 10a.

The RVC is divided into the eight modules or groups of reasons displayed in table 8. More than half of all visits were made for reasons classified as symptoms (57.9 percent). Respiratory symptoms accounted for 12.4 percent of all visits, and musculoskeletal symptoms accounted for 10.8 percent.

The 20 most frequently mentioned principal reasons for visit, representing 40.7 percent of all visits, are shown in table 9. General medical examination was the most frequently mentioned reason for visit overall (4.5 percent of the total), while cough was the most frequently mentioned reason having to do with illness or injury (4.0 percent). Of the top 20 reasons for office visits in 1992, 19 were also listed among the 20 most frequently mentioned reasons in 1991, albeit in slightly different order. It is important to note that the rank ordering presented in this and other tables in this report may not always be reliable because near estimates may not differ from each other due to sampling variability.

Diagnostic and screening services

Statistics on diagnostic and screening services ordered or provided by the physician during the office visit are displayed in table 10. The list of diagnostic and screening services appearing on the Patient Record form is changed periodically to reflect the changing needs of data users, recommendations of advisors, and anticipated future health data needs. The most recent revision to this item was in

Table 3. Number and percent distribution of office visits by patient's referral status and prior-visit status: United States, 1992

Visit characteristic	Number of visits in thousands	Percent distribution
All visits	762,045	100.0
Referral status		
Referred by another physician	47,976	6.3
Not referred by another physician	714,069	93.7
Prior-visit status		
New patient	112,381	14.7
Old patient	649,664	85.3
New problem	175,370	23.0
Old problem	474,294	62.2

Table 4. Number and percent distribution of office visits by patient's expected source(s) of payment: United States, 1992

Expected source(s) of payment[1]	Number of visits in thousands	Percent distribution
All visits	762,045	100.0
Private/commercial insurance	250,870	32.9
Medicare	151,656	19.9
HMO/other prepaid	146,338	19.2
Patient-paid	145,459	19.1
Medicaid	84,098	11.0
Other government	15,622	2.1
No charge	12,454	1.6
Other	30,327	4.0
Unknown	17,773	2.3

[1]Numbers may not add to totals because more than one expected source of payment may be reported per visit.

the 1991 NAMCS, when a number of categories were added that either had never appeared on the Patient Record form, or had not been included for several years. These modifications are discussed in two previous publications (4,6); all were retained in the 1992 NAMCS.

More than half (64.5 percent) of all office visits included one or more diagnostic or screening service. The most frequently mentioned service was blood pressure check, recorded at 43.5 percent of visits. This percent was not significantly different from that recorded in 1991. Blood pressure checks were ordered or provided at a significantly higher proportion of visits by females (48.2 percent) than at visits by males (36.5 percent).

Other frequently mentioned diagnostic or screening services were "other" lab test (16.7 percent of visits), urinalysis (13.9 percent), visual acuity (5.5 percent), and radiology (excluding chest x ray) (5.4 percent). Cholesterol measures were reported at 3.1 percent of office visits.

Pap tests and mammograms were reported at 6.6 percent and 3.0 percent of visits by females, respectively. A statistically higher proportion of visits by males included resting EKG's and chest x rays than did visits by females. Significant differences by sex were also noted in the percent of visits with exercise EKG's, radiology other than chest x ray, hearing tests, and visual acuity examinations, all of which were reported more frequently at visits by males. Visits by females were more likely to include urinalysis and "other" lab tests than were visits by males.

Ambulatory surgical procedures

In item 14 of the NAMCS Patient Record form, physicians were asked to record up to two outpatient diagnostic or therapeutic procedures either scheduled or performed at the current visit. This item first appeared in the 1991 NAMCS.

There were 50.0 million ambulatory surgical procedures reported at 6.1 percent of all office visits during 1992. This is not significantly different from the 1991 figure of 6.2 percent. Tables 11 and 12 show visits with ambulatory surgery scheduled or performed by patient's age, sex, and type of physician seen. The proportion of ambulatory surgery visits was not significantly different for persons in the age groups 45–64, 65–74, and 75 years and over. However, each of these groups was more likely to have an ambulatory surgery visit than were those in each of the three age groups under 45 years. No statistical difference was noted by patient's sex in the percent of visits with ambulatory surgery scheduled or performed. Visits to specialists in urological surgery, orthopedic surgery, general surgery, otolaryngology, ophthalmology, and dermatology represented 23.0 percent of all office visits, but accounted for more than half (52.7 percent) of all ambulatory surgery visits. Procedures are classified by type of operation in table 13; the 10 procedures most frequently mentioned by physicians on the Patient Record form are shown in table 14.

Physician's principal diagnosis

Item 11 of the Patient Record form asks the physician to record the principal diagnosis or problem associated with the patient's most important reason for the current visit as well as any other significant current diagnoses. Up to three diagnoses are coded and classified according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (7). Displayed in table 15 are office visits by principal diagnosis using the major disease categories specified by the ICD–9–CM. The supplementary classification, used for diagnoses that are not classifiable to injury or illness (for example, general medical examination, routine prenatal examination, and health supervision of an infant or child), accounted for 15.4 percent of all office visits. Diseases of the respiratory system (14.8 percent)

Table 5. Number, percent distribution, and annual rate of injury-related office visits by patient's age, sex, and race: United States, 1992

Age, sex, and race	Number of visits in thousands	Percent distribution	Number of visits per 100 persons per year[1]
All injury-related visits	65,555	100.0	26.1
Age			
Under 15 years	10,568	16.1	18.7
15–24 years	8,763	13.4	25.5
25–44 years	26,044	39.7	32.0
45–64 years	13,585	20.7	28.0
65–74 years	3,622	5.5	19.6
75 years and over	2,974	4.5	24.1
Sex and age			
Female	28,416	43.3	22.0
Under 15 years	4,251	6.5	15.4
15–24 years	3,164	4.8	18.3
25–44 years	10,388	15.8	25.1
45–64 years	6,169	9.4	24.5
65–74 years	2,196	3.4	21.5
75 years and over	2,257	3.4	29.3
Male	37,139	56.7	30.4
Under 15 years	6,317	9.6	21.9
15–24 years	5,599	8.5	32.7
25–44 years	15,665	23.9	39.2
45–64 years	7,416	11.3	31.8
65–74 years	1,426	2.2	17.2
75 years and over	717	1.1	15.5
Race			
White	55,192	84.2	26.3
Black	8,094	12.3	25.7
Asian/Pacific Islander	1,965	3.0	– – –
American Indian/Eskimo/Aleut	*303	*0.5	– – –

[1]Based on U.S. Bureau of the Census estimates of the civilian, noninstitutionalized population of the United States as of July 1, 1992.

Table 6. Number and percent distribution of office visits made by patients who smoke cigarettes, according to patient's age, sex, and race: United States, 1992

Age, sex, and race	Number of visits in thousands	Percent distribution
All visits by patients who smoke cigarettes	78,618	100.0
Age		
Under 15 years	*557	*0.7
15–24 years	7,681	9.8
25–44 years	35,962	45.7
45–64 years	23,488	29.9
65–74 years	7,767	9.9
75 years and over	3,162	4.0
Sex		
Female	46,300	58.9
Male	32,318	41.1
Race		
White	67,946	86.4
Black	8,149	10.4
Asian/Pacific Islander	2,115	2.7
American Indian/Eskimo/Aleut	*408	*0.5

and diseases of the nervous system and sense organs (11.2 percent) were also prominent on the list.

The 20 most frequently reported principal diagnoses for 1992 are shown in table 16. These are categorized at the three-digit coding level of the ICD–9–CM, and account for 36.4 percent of all office visits made during the year. The most frequent diagnosis rendered by physicians at office visits in 1992 was essential hypertension, occurring at 3.9 percent of all visits. Essential hypertension has been the most frequently reported morbidity-related diagnosis in every survey year since the NAMCS began in 1973. (Morbidity-related diagnoses are those classifiable to illness or injury. Nonmorbidity related diagnoses include routine prenatal examination, health supervision of an infant or child, and general medical examination, among others.) Of the 20 diagnoses shown in table 16, 18 also appeared on the list of the 20 most frequent diagnoses for 1991.

Physician's checklist of medical conditions

In addition to the diagnostic data reported in item 11 of the Patient Record form, selected information on the patient's current health status was collected in item 13, which appeared for the first time in the 1991 NAMCS. Physicians were given a list of four common conditions—depression, hypertension, hypercholesterolemia, and obesity—and asked to record whether the patient now has any of them, regardless of what was recorded as the current diagnosis in item 11 of the survey form. Results from item 13 are shown in table 17.

One-quarter (24.9 percent) of the visits were made by patients who were reported to have one or more of the four conditions listed on the survey form. Hypertension was checked most frequently, at 13.5 percent of the total, or 103.1 million office visits. As was previously noted in the 1991 NAMCS data, this figure is substantially higher than the number of visits in which a first, second, or third diagnosis of

Table 7. Number and percent distribution of office visits by physician specialty, according to patient's cigarette-smoking status: United States, 1992

Physician specialty	Number of visits in thousands	Does patient smoke cigarettes?			
		Total	Yes	No	Unknown[1]
		Percent distribution			
All visits	762,045	100.0	10.3	63.7	26.0
General and family practice	219,245	100.0	14.3	63.8	21.8
Internal medicine	100,273	100.0	12.4	65.1	22.6
Pediatrics	96,129	100.0	0.6	95.9	3.5
Obstetrics and gynecology	68,367	100.0	10.0	70.0	20.0
Ophthalmology	46,560	100.0	4.3	38.3	57.4
Orthopedic surgery	37,983	100.0	12.0	40.0	48.0
Dermatology	28,699	100.0	5.7	45.5	48.7
General surgery	24,309	100.0	12.0	48.4	39.5
Otolaryngology	22,912	100.0	8.1	63.0	28.9
Psychiatry	19,818	100.0	20.0	59.3	20.8
Urological surgery	14,955	100.0	8.2	49.0	42.9
Cardiovascular diseases	14,664	100.0	10.4	64.4	25.2
Neurology	7,708	100.0	15.8	61.7	22.5
All other specialties	60,422	100.0	10.8	56.5	32.8

[1]Includes entries of "unknown" and blank entries.

Table 8. Number and percent distribution of office visits by patient's principal reason for visit: United States, 1992

Principal reason for visit and RVC code[1]		Number of visits in thousands	Percent distribution
All visits		762,045	100.0
Symptom module	.S001–S999	441,037	57.9
General symptoms	.S001–S099	49,099	6.4
Symptoms referable to psychological/mental disorders	.S100–S199	21,599	2.8
Symptoms referable to the nervous system (excluding sense organs)	.S200–S259	23,360	3.1
Symptoms referable to the cardiovascular/lymphatic system	.S260–S299	4,529	0.6
Symptoms referable to the eyes and ears	.S300–S399	53,750	7.1
Symptoms referable to the respiratory system	.S400–S499	94,637	12.4
Symptoms referable to the digestive system	.S500–S639	35,027	4.6
Symptoms referable to the genitourinary system	.S640–S829	34,143	4.5
Symptoms referable to the skin, hair, and nails	.S830–S899	42,235	5.5
Symptoms referable to the musculoskeletal system	.S900–S999	82,659	10.8
Disease module	.D001–D999	66,528	8.7
Diagnostic, screening, and preventive module	.X100–X599	113,857	14.9
Treatment module	.T100–T899	74,160	9.7
Injuries and adverse effects module	.J001–J999	23,782	3.1
Test results module	.R100–R700	7,318	1.0
Administrative module	.A100–A140	9,186	1.2
Other[2]	.U990–U999	26,177	3.4

[1]Based on *A Reason for Visit Classification for Ambulatory Care* (RVC) (5).
[2]Includes problems and complaints not elsewhere classified, entries of "none," blanks, and illegible entries.

hypertension was reported in item 11 of the Patient Record form and suggests that physicians tend to underreport chronic conditions in item 11.

It should be noted that in item 11, physicians are instructed to record up to two additional current diagnoses if any, in addition to the principal diagnosis, whether or not they are of direct concern to the current visit.

Therapeutic services

Data on therapeutic services collected in items 16 and 17 of the Patient Record form encompass both medication therapy and nonmedication therapy.

Medication therapy—In item 17, physicians were instructed to record all new or continued medications ordered or provided at the visit, including prescription and nonprescription preparations, and immunizing and desensitizing agents. As used in the NAMCS, the term "drug" is interchangeable with the term "medication," and the term "prescribing" is used broadly to mean ordering or providing any medication, whether prescription or over-the-counter. Visits with one or more drug mentions are termed "drug visits" in the NAMCS. As many as five medications, or drug mentions, could be coded per drug visit.

Data on medication therapy are shown in tables 18–22. Medication therapy was the most commonly mentioned therapeutic service in 1992, reported at 486.0 million office visits or 63.8 percent of the total (table 18).

There were 922.6 million drug mentions at visits to office-based physicians during 1992. This yields an average of 1.2 drug mentions per office visit, or 1.9 drug mentions per drug visit.

Data on number of drug visits and drug mentions by physician specialty are shown in table 19. The highest proportion of drug visits was found among visits to cardiovascular disease specialists; 85.6 percent of the visits made to this specialty included at least one drug mention.

Drug mentions are displayed by therapeutic class in table 20. This classification is based on the therapeutic categories used in the *National Drug Code Directory*, 1985 edition (NDC) (8). It should be noted that some drugs have more than one therapeutic application. In cases of this type, the drug was listed under the NDC classification that occurred with the greatest frequency.

Cardiovascular-renal drugs and antimicrobial agents accounted for nearly one-third of all drug mentions (15.8 percent each). Other prominent categories included drugs used for relief of pain (11.0 percent) and respiratory tract drugs (10.4 percent).

Table 9. Number and percent distribution of office visits by the 20 principal reasons for visit most frequently mentioned by patients and patient's sex: United States, 1992

Principal reason for visit and RVC code[1]	Number of visits in thousands	Total	Patient's sex	
			Female	Male
		Percent distribution		
All visits	762,045	100.0	100.0	100.0
General medical examination .X100	33,973	4.5	4.7	4.1
Cough .S440	30,226	4.0	3.7	4.3
Routine prenatal examination .X205	28,036	3.7	6.1	...
Progress visit, not otherwise specified .T800	25,771	3.4	3.4	3.4
Symptoms referable to throat .S455	20,839	2.7	2.9	2.6
Postoperative visit .T205	20,060	2.6	2.6	2.7
Earache or ear infection .S355	15,292	2.0	1.9	2.1
Back symptoms .S905	13,899	1.8	1.6	2.1
Vision dysfunctions .S305	13,414	1.8	1.7	1.8
Skin rash .S860	13,379	1.8	1.5	2.1
Fever .S010	12,790	1.7	1.4	2.1
Stomach pain, cramps, and spasms .S545	11,985	1.6	1.9	1.1
Head cold, upper respiratory infection (coryza) .S445	10,986	1.4	1.3	1.6
Headache, pain in head .S210	10,854	1.4	1.7	1.1
Well-baby examination .X105	10,799	1.4	1.2	1.8
Knee symptoms .S925	10,630	1.4	1.3	1.6
Nasal congestion .S400	10,538	1.4	1.3	1.5
Hypertension .D510	8,716	1.1	1.2	1.1
Depression .S110	8,344	1.1	1.2	1.0
All other reasons	451,513	59.3	57.4	61.9

[1]Based on *A Reason for Visit Classification for Ambulatory Care* (RVC) (5).

Table 10. Number and percent distribution of office visits by diagnostic and screening services ordered or provided: United States, 1992

Visit characteristic	Number of visits in thousands	Total	Patient's sex	
			Female	Male
		Percent distribution		
All visits	762,045	100.0	100.0	100.0
Number of diagnostic and screening services ordered or provided				
None	270,271	35.5	31.7	41.2
One	272,739	35.8	35.6	36.1
Two	127,349	16.7	18.9	13.4
Three or more	91,686	12.0	13.9	9.3
Diagnostic and screening services[1]				
None	270,271	35.5	31.7	41.2
Blood pressure	331,792	43.5	48.2	36.5
Urinalysis	106,196	13.9	15.3	10.3
EKG—resting	23,990	3.1	2.6	3.9
EKG—exercise	3,525	0.5	0.3	0.7
Mammogram	13,617	1.8	3.0	0.0
Chest x ray	20,592	2.7	2.4	3.1
Other radiology	40,972	5.4	4.9	6.1
Allergy testing	1,711	0.2	0.2	0.2
Spirometry	2,813	0.4	0.3	0.5
Pap test	30,373	4.0	6.6	0.0
Strep throat test	16,380	2.1	2.0	2.4
HIV serology	2,556	0.3	0.3	0.5
Cholesterol measure	23,872	3.1	3.2	3.1
Other lab test	127,642	16.7	18.0	14.9
Hearing test	11,110	1.5	1.0	2.1
Visual acuity	42,133	5.5	5.1	6.2
Mental status exam	8,816	1.2	1.1	1.2
Other	55,255	7.3	8.1	6.0

[1]Numbers may not add to totals because more than one service may be reported per visit.

The 20 most frequently used generic substances for 1992 are shown in table 21. Drug products containing more than one ingredient (combination products) are included in the data for each ingredient. For example, acetaminophen with codeine is included in both the count for acetaminophen and the count for codeine. Amoxicillin was the generic ingredient most frequently used in drugs ordered or provided by the physician at office visits in 1992 (as well as in 1990 and 1991), occurring in 4.7 percent of drug mentions. Of the 20 most used generic ingredients for 1992, 17 were also on the list of the top 20 for 1991.

Table 22 presents the 20 medications most frequently mentioned by physicians in the NAMCS, according to the entry name of drug. Entry name refers to the actual designation used by the physician on the Patient Record form and may be a trade name, generic name, or simply a desired therapeutic effect. Amoxicillin was the medication most frequently reported by physicians, with 20.6 million mentions (2.2 percent of the total). It was followed by Amoxil (1.9 percent), Lasix (1.5 percent), and Ceclor (1.0 percent). Of the top 20 preparations, 18 appeared on the list for 1991, although in different order.

The NAMCS drug data base permits classification by a wide range of variables, including specific product name, generic class, entry form chosen by the physician (that is, brand name, generic name, or the desired therapeutic effect), prescription status (that is, whether the product is prescription or nonprescription), federally controlled substance status, composition status (that is, single or multiple ingredient product), and therapeutic category. A report describing the method and instruments used to collect and process drug information for the NAMCS is available (9).

Nonmedication therapy—In item 16 of the Patient Record form, the physician is asked to report all nonmedication therapies ordered or provided to the patient at the current visit. This item had been substantially revised for the 1991 NAMCS to permit physicians greater specificity in reporting the various types of therapy offered. These changes, all of which

Table 11. Number and percent distribution of office visits by diagnostic and therapeutic ambulatory surgical procedures scheduled or performed and standard error of visits with one or more procedures scheduled or performed, according to patient's age and sex: United States, 1992

Age and sex	Diagnostic and therapeutic procedures scheduled or performed			Standard error of visits with one or more procedures in thousands[1]
	All visits	No procedures	One or more procedures	
	Number of visits in thousands			
All visits	762,045	715,866	46,179	2,773
Age				
Under 15 years	155,168	151,671	3,497	446
15–24 years	72,016	68,657	3,359	409
25–44 years	211,897	199,767	12,130	915
45–64 years	154,997	142,832	12,165	915
65–74 years	90,625	82,661	7,964	723
75 years and over	77,341	70,278	7,064	690
Sex				
Female	457,369	430,959	26,410	1,737
Male	304,676	284,907	19,769	1,358
	Percent distribution			
All visits	100.0	93.9	6.1	0.4
Age				
Under 15 years	100.0	97.7	2.3	0.3
15–24 years	100.0	95.3	4.7	0.6
25–44 years	100.0	94.3	5.7	0.4
45–64 years	100.0	92.2	7.8	0.6
65–74 years	100.0	91.2	8.8	0.8
75 years and over	100.0	90.9	9.1	0.9
Sex				
Female	100.0	94.2	5.8	0.4
Male	100.0	93.5	6.5	0.4

[1]See Technical notes for a discussion of standard errors and precision of NAMCS estimates.

were retained in the 1992 NAMCS, are discussed in two earlier publications (4,6).

Nonmedication therapy was ordered or provided at 30.9 percent of all office visits during 1992 (table 23). Diet education or counseling was mentioned most frequently by physicians, at 11.8 percent of the total, or 89.6 million visits. Other prominent categories included exercise (7.3 percent), weight reduction (4.0 percent), and cholesterol reduction (2.9 percent). The percent of visits where smoking cessation services were either ordered or provided increased significantly between 1991 and 1992, from 1.9 percent (13.0 million visits) to 2.4 percent (18.3 million visits).

Disposition of visit

The majority of office visits (64.4 percent) included a scheduled followup visit or telephone call in 1992, but this percent was significantly lower than that noted in 1991 (66.7 percent). Another 24.2 percent of office visits included instructions to return if needed, which represents a statistically significant increase over the 1991 proportion (21.6 percent). Less than 1 percent of visits resulted in a hospital admission in both 1991 and 1992. Table 24 displays data on disposition of office visits.

Duration of visit

Data on the duration of office visits is presented in table 25. Duration of visit refers to the amount of time spent in face-to-face contact between the physician and the patient. This time is estimated and recorded by the physician and does not include time spent waiting to see the physician, time spent receiving care from someone other than the physician without the presence of the physician, or time spent by the physician in reviewing patient records and/or test results. In cases where the patient received care from a member of the physician's staff but did not actually see the physician during the visit, duration was recorded as "zero" minutes.

About two-thirds (66.6 percent) of physicians' office visits had a duration of 15 minutes or less in 1992. The mean duration time for all visits was 17.6 minutes. Corresponding numbers for 1991 were 69.3 percent and 16.7 minutes, respectively.

Additional reports that utilize 1992 NAMCS data are forthcoming in the Advance Data from Vital and Health Statistics series. Data from the 1992 NAMCS will be available on computer tape from the National Technical Information Service at a nominal cost beginning about August 1994. CD/ROM

Table 12. Number and percent distribution of office visits by diagnostic and therapeutic ambulatory surgical procedures scheduled or performed and standard error of visits with one or more procedures scheduled or performed, according to physician specialty: United States, 1992

Physician specialty	Diagnostic and therapeutic procedures scheduled or performed			Standard error of visits with one or more procedures in thousands[1]
	All visits	No procedures	One or more procedures	
	Number of visits in thousands			
All visits	762,045	715,866	46,179	2,773
General and family practice	219,245	213,838	5,407	915
Internal medicine	100,273	97,679	2,594	492
Pediatrics	96,129	95,117	1,012	277
Obstetrics and gynecology	68,367	63,663	4,704	888
Ophthalmology	46,560	40,781	5,779	1,269
Orthopedic surgery	37,983	31,766	6,217	1,195
Dermatology	28,699	25,796	2,903	565
General surgery	24,309	20,709	3,600	303
Otolaryngology	22,912	19,616	3,296	605
Psychiatry	19,818	19,729	*89	65
Urological surgery	14,955	12,422	2,534	447
Cardiovascular diseases	14,664	14,394	269	64
Neurology	7,708	7,614	*94	29
Other	60,422	52,742	7,680	1,313
	Percent distribution			
All visits	100.0	93.9	6.1	0.4
General and family practice	100.0	97.5	2.5	0.4
Internal medicine	100.0	97.4	2.6	0.5
Pediatrics	100.0	98.9	1.1	0.3
Obstetrics and gynecology	100.0	93.1	6.9	1.0
Ophthalmology	100.0	87.6	12.4	2.1
Orthopedic surgery	100.0	83.6	16.4	2.2
Dermatology	100.0	89.9	10.1	1.6
General surgery	100.0	85.2	14.8	1.4
Otolaryngology	100.0	85.6	14.4	1.9
Psychiatry	100.0	99.6	*0.4	0.3
Urological surgery	100.0	83.1	16.9	1.5
Cardiovascular diseases	100.0	98.2	1.8	0.4
Neurology	100.0	98.8	*1.2	0.4
Other	100.0	87.3	12.7	2.0

[1]See Technical notes for a discussion of standard errors and precision of NAMCS estimates.

and diskette versions of the 1992 NAMCS data should be available in late 1994. Questions regarding this report, future reports, or the NAMCS may be directed to the Ambulatory Care Statistics Branch by calling (301) 436–7132.

References

1. Nelson C, McLemore T. The National Ambulatory Medical Care Survey. United States, 1975–81 and 1985 trends. National Center for Health Statistics. Vital Health Stat 13(93). 1988.
2. Schappert SM. National Ambulatory Medical Care Survey: 1989 Summary. National Center for Health Statistics. Vital and Health Stat 13(110). 1992.
3. Schappert SM. National Ambulatory Medical Care Survey: 1990 Summary. Advance data from vital and health statistics; no 213. Hyattsville, Maryland: National Center for Health Statistics. 1992.
4. Schappert SM. National Ambulatory Medical Care Survey: 1991 Summary. National Center for Health Statistics. Vital and Health Stat 13(116). 1994.
5. Schneider D, Appleton L, McLemore T. A reason for visit classification for ambulatory care. National Center for Health Statistics. Vital and Health Stat 2(78). 1979.
6. Schappert SM. National Ambulatory Medical Care Survey: 1991 Summary. Advance data from vital and health statistics; no 230. Hyattsville, Maryland: National Center for Health Statistics. 1993.
7. Public Health Service and Health Care Financing Administration. International Classification of Diseases, 9th Revision, clinical modification. Washington: Public Health Service. 1980.
8. Food and Drug Administration. National Drug Code Directory, 1982 Edition. Washington: Public Health Service. 1982.
9. Koch H, Campbell W. The collection and processing of drug information. National Ambulatory Medical Care Survey, 1980. National Center for Health Statistics. Vital Health Stat 2(90). 1982.
10. Shah BV, Barnwell BG, Hunt PN, LaVange LM. SUDAAN User's Manual, Release 5.50. Research Triangle Institute. Research Triangle Park, NC. 1991.

Table 13. Number and percent distribution of office visits with corresponding standard errors by diagnostic and therapeutic ambulatory procedures scheduled or performed: United States, 1992

Diagnostic or therapeutic procedure scheduled or performed and ICD–9–CM code[1,2]	*Number of visits in thousands*	*Standard error in thousands*[3]	*Percent distribution*	*Standard error of percent*[3]
All visits	762,045	31,679	100.0	. . .
Visits with procedures	46,179	2,773	6.1	0.4
Operations on the nervous system .01–05	778	212	0.1	0.0
Operations on the eye .08–16	6,928	1,453	0.9	0.2
Operations on the ear .18–20	1,607	292	0.2	0.0
Operations on the nose, mouth, and pharynx .21–29	3,297	756	0.4	0.1
Operations on the cardiovascular system .35–39	*1,187	415	*0.2	0.1
Operations on the digestive system .42–54	7,755	1,091	1.0	0.2
Operations on the urinary system .55–59	2,092	361	0.3	0.0
Operations on the male genital organs .60–64	868	178	0.1	0.0
Operations on the female genital organs .65–71	4,464	938	0.6	0.1
Operations on the musculoskeletal system .76–84	6,983	1,052	0.9	0.2
Operations on the integumentary system .85–86	6,717	673	0.9	0.1
Miscellaneous diagnostic and therapeutic procedures .87–99	5,972	661	0.8	0.1
Other procedures[4]	1,310	306	0.2	0.0
Visits without procedures	715,866	30,507	93.9	0.4

NOTE: The figure "0.0" indicates a quantity greater than zero but less than 0.05.
[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (7).
[2]Numbers may not add to totals because up to two procedures could be reported per visit. There were an estimated 50.0 million procedures scheduled or performed in all.
[3]See Technical notes for a discussion of standard errors and precision of NAMCS estimates.
[4]Includes operations on the endocrine system (ICD–9–CM codes 06–07), operations on the respiratory system (ICD–9–CM codes 30–34), operations on the hemic and lymphatic system (ICD–9–CM codes 40–41), and obstetrical procedures (ICD–9–CM codes 72–75).

Table 14. Number, standard error, percent distribution, and standard error of percent of office visits by the 10 diagnostic and therapeutic ambulatory surgical procedures scheduled or performed most frequently: United States, 1992

Diagnostic or therapeutic procedure scheduled or performed and ICD–9–CM code[1,2]	*Number of visits in thousands*	*Standard error in thousands*[3]	*Percent distribution*	*Standard error of percent*[3]
All visits	762,045	31,679	100.0	. . .
Visits with procedures	46,179	2,773	6.1	0.4
Injection of therapeutic substance into joint or ligament .81.92	2,153	498	0.3	0.1
Irrigation of ear .96.52	2,055	402	0.3	0.1
Other intracapsular extraction of lens .13.19	1,945	519	0.3	0.1
Biopsy of skin and subcutaneous tissue .86.11	1,883	352	0.2	0.0
Other cystoscopy .57.32	1,704	310	0.2	0.0
Colonoscopy .45.23	1,676	394	0.2	0.1
Flexible sigmoidoscopy .45.24	1,310	262	0.2	0.0
Application of other cast .93.53	1,292	264	0.2	0.0
Application of splint .93.54	1,123	264	0.1	0.0
Arthroscopy, knee .80.26	1,097	282	0.1	0.0
All other procedures	33,719	2,301	4.4	0.3
Visits without procedures	715,866	30,507	93.9	0.4

NOTE: The figure "0.0" indicates a quantity greater than zero but less than 0.05.
[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (7).
[2]Numbers may not add to totals because up to two procedures could be reported per visit. There were an estimated 50.0 million procedures scheduled or performed in all.
[3]See Technical notes for a discussion of standard errors and precision of NAMCS estimates.

Table 15. Number and percent distribution of office visits by physician's principal diagnosis: United States, 1992

Principal diagnosis and ICD–9–CM code[1]		Number of visits in thousands	Percent distribution
All visits		762,045	100.0
Infectious and parasitic diseases	001–139	26,738	3.5
Neoplasms	140–239	23,619	3.1
Endocrine, nutritional and metabolic diseases, and immunity disorders	240–279	27,605	3.6
Mental disorders	290–319	32,191	4.2
Diseases of the nervous system and sense organs	320–389	85,196	11.2
Diseases of the circulatory system	390–459	58,676	7.7
Diseases of the respiratory system	460–519	112,420	14.8
Diseases of the digestive system	520–579	32,808	4.3
Diseases of the genitourinary system	580–629	43,803	5.7
Diseases of the skin and subcutaneous tissue	680–709	41,926	5.5
Diseases of the musculoskeletal system and connective tissue	710–739	52,254	6.9
Symptoms, signs, and ill-defined conditions	780–799	29,599	3.9
Injury and poisoning	800–999	57,402	7.5
Supplementary classification	V01–V82	117,521	15.4
All other diagnoses[2]		9,997	1.3
Unknown[3]		10,289	1.4

[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (7).
[2]Includes diseases of the blood and blood-forming organs (280–289); complications of pregnancy, childbirth, and the puerperium (630–676); congenital anomalies (740–759); and certain conditions originating in the perinatal period (760–779).
[3]Includes blank diagnoses, uncodable diagnoses, and illegible diagnoses.

Table 16. Number and percent distribution of office visits by the 20 principal diagnoses most frequently rendered by physicians and patient's sex: United States, 1992

Principal diagnosis and ICD–9–CM code[1]		Number of visits in thousands	Patient's sex		
			Total	Female	Male
			Percent distribution		
All visits		762,045	100.0	100.0	100.0
Essential hypertension	401	29,844	3.9	3.8	4.0
Normal pregnancy	V22	29,358	3.9	6.4	. . .
Acute upper respiratory infections of multiple or unspecified sites	465	22,444	2.9	2.6	3.4
Suppurative and unspecified otitis media	382	21,814	2.9	2.4	3.6
General medical examination	V70	21,116	2.8	2.8	2.8
Health supervision of infant or child	V20	17,749	2.3	1.9	3.0
Chronic sinusitis	473	14,547	1.9	2.3	1.4
Diabetes mellitus	250	14,254	1.9	1.8	2.0
Acute pharyngitis	462	13,671	1.8	1.7	2.0
Bronchitis, not specified as acute or chronic	490	12,257	1.6	1.7	1.5
Asthma	493	9,740	1.3	1.2	1.4
Diseases of sebaceous glands	706	8,913	1.2	1.1	1.2
Contact dermatitis and other eczema	692	8,408	1.1	0.9	1.4
Neurotic disorders	300	7,943	1.0	1.1	0.9
Sprains and strains of other and unspecified parts of back	847	7,769	1.0	0.9	1.2
Special investigations and examinations	V72	7,752	1.0	1.3	0.5
Allergic rhinitis	477	7,621	1.0	0.9	1.1
Osteoarthrosis and allied disorders	715	7,521	1.0	1.1	0.8
Cataract	366	7,469	1.0	1.0	1.0
Other noninfectious gastroenteritis and colitis	558	7,068	0.9	0.9	1.0
All other diagnoses		484,789	63.6	62.2	65.8

[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (7).

Table 17. Number and percent distribution of office visits by selected medical conditions, according to patient's age and sex: United States, 1992

Medical condition[1]	All ages, both sexes	Patient's age						Patient's sex	
		Under 15 years	15–24 years	25–44 years	45–64 years	65–74 years	75 years and over	Female	Male
	Number in thousands								
All visits	762,045	155,168	72,016	211,897	154,997	90,625	77,341	457,369	304,676
Hypertension	103,135	*516	861	13,928	34,853	27,935	25,042	63,402	39,733
Obesity	65,549	2,052	3,585	20,305	23,185	10,780	5,642	46,001	19,548
Depression	44,841	*620	1,836	17,132	13,162	6,286	5,805	31,717	13,124
Hypercholesterolemia	42,135	*152	*592	5,639	16,678	11,161	7,913	25,560	16,575
None of the above	572,463	152,070	65,939	165,807	93,606	51,035	44,007	335,429	237,035
	Percent distribution								
All visits	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hypertension	13.5	*0.3	1.2	6.6	22.5	30.8	32.4	13.9	13.0
Obesity	8.6	1.3	5.0	9.6	15.0	11.9	7.3	10.1	6.4
Depression	5.9	*0.4	2.5	8.1	8.5	6.9	7.5	6.9	4.3
Hypercholesterolemia	5.5	*0.1	*0.8	2.7	10.8	12.3	10.2	5.6	5.4
None of the above	75.1	98.0	91.6	78.2	60.4	56.3	56.9	73.3	77.8

[1]Numbers may not add to totals because more than one condition may be reported per visit.

Table 18. Number and percent distribution of office visits by medication therapy and number of medications provided or prescribed: United States, 1992

Visit characteristic	Number of visits in thousands	Total	Patient's sex	
			Female	Male
		Percent distribution		
All visits	762,045	100.0	100.0	100.0
Medication therapy[1]				
Drug visits[2]	486,047	63.8	64.4	62.9
Visits without mention of medication	275,998	36.2	35.6	37.1
Number of medications provided or prescribed by physician				
None	275,998	36.2	35.6	37.1
One	246,790	32.4	32.4	32.4
Two	126,345	16.6	16.7	16.3
Three	57,503	7.5	7.8	7.2
Four	26,449	3.5	3.5	3.5
Five or more	28,959	3.8	4.0	3.5

[1]Includes prescription drugs, over-the-counter preparations, immunizing agents, and desensitizing agents.
[2]Visits at which one or more drugs was provided or prescribed by the physician.

Table 19. Number and percent distribution of drug visits and drug mentions by physician specialty: United States, 1992

Physician specialty	Number of drug visits in thousands[1]	Percent distribution	Number of drug mentions in thousands	Percent distribution	Percent drug visits[2]
All specialties	486,047	100.0	922,584	100.0	63.8
General and family practice	165,526	34.1	315,046	34.1	75.5
Internal medicine	79,500	16.4	181,604	19.7	79.3
Pediatrics	66,275	13.6	104,258	11.3	68.9
Obstetrics and gynecology	32,386	6.7	40,563	4.4	47.4
Ophthalmology	19,081	3.9	35,530	3.9	41.0
Dermatology	16,939	3.5	28,429	3.1	59.0
Cardiovascular diseases	12,574	2.6	40,631	4.4	85.6
Orthopedic surgery	12,016	2.5	15,714	1.7	31.6
Otolaryngology	11,468	2.4	16,634	1.8	50.1
Psychiatry	11,435	2.4	20,715	2.2	57.7
General surgery	8,386	1.7	14,594	1.6	34.5
Urological surgery	6,058	1.2	9,024	1.0	40.5
Neurology	5,038	1.0	9,662	1.0	65.4
All other specialties	39,366	8.1	90,179	9.8	65.2

[1]Visits at which one or more drugs was provided or prescribed by the physician.
[2]Number of drug visits divided by number of office visits multiplied by 100.

Table 20. Number and percent distribution of drug mentions by therapeutic classification: United States, 1992

Therapeutic classification[1]	*Number of drug mentions in thousands*	*Percent distribution*
All drug mentions	922,584	100.0
Cardiovascular-renal drugs	145,659	15.8
Antimicrobial agents	145,656	15.8
Drugs used for relief of pain	101,433	11.0
Respiratory tract drugs	96,026	10.4
Hormones and agents affecting hormonal mechanisms	77,726	8.4
Psychopharmacological drugs	56,348	6.1
Skin/mucous membrane	44,963	4.9
Metabolic and nutrient agents	39,644	4.3
Gastrointestinal agents	38,422	4.2
Immunologic agents	29,744	3.2
Ophthalmic drugs	26,367	2.9
Neurologic drugs	17,135	1.9
Hematologic agents	11,972	1.3
Other and unclassified[2]	91,489	9.9

[1]Based on the standard drug classification used in the *National Drug Code Directory*, 1985 edition (NDC) (8).
[2]Includes anesthestics, antidotes, radiopharmaceuticals/contrast media, oncolytics, otologics, antiparasitics, and unclassified/ miscellaneous drugs.

Table 21. Number and percent distribution of drug mentions for the 20 most frequently used generic substances: United States, 1992

Generic substance	*Number of drug mentions in thousands*[1]	*Percent distribution*	*Therapeutic classification*[2]
All drug mentions	922,584	100.0	. . .
Amoxicillin	43,216	4.7	Penicillins
Acetaminophen	29,822	3.2	General analgesics
Erythromycin	19,386	2.1	Erythromycins and lincosamides
Hydrochlorothiazide	17,570	1.9	Diuretics
Albuterol	15,813	1.7	Bronchodilators, antiasthmatics
Aspirin	15,769	1.7	General analgesics
Guaifenesin	15,034	1.6	Antitussives, expectorants, mucolytics
Furosemide	14,515	1.6	Diuretics
Ibuprofen	13,575	1.5	Antiarthritics
Phenylpropanolamine	13,294	1.4	Nasal decongestants
Phenylephrine	12,562	1.4	Nasal decongestants
Naproxen	11,843	1.3	Antiarthritics
Codeine	11,729	1.3	General analgesics
Vitamin A	11,131	1.2	Vitamins, minerals
Digoxin	10,963	1.2	Cardiac glycosides
Pseudoephedrine	10,907	1.2	Nasal decongestants
Ergocalciferol	10,328	1.1	Vitamins, minerals
Cefaclor	9,818	1.1	Cephalosporins
Enalapril	9,415	1.0	Antihypertensive agents
Prednisone	9,197	1.0	Adrenal corticosteroids
All other mentions	616,697	66.8	. . .

[1]Frequency of mention combines single-ingredient agents with mentions of the agent as an ingredient in a combination drug.
[2]Based on the *National Drug Code Directory*, 1985 edition (NDC) (8). In cases where a generic substance had more than one therapeutic use, it was listed under the NDC classification that occurred with the highest frequency.

Table 22. Number, percent distribution, and therapeutic classification for the 20 drugs most frequently prescribed at office visits, by entry name of drug: United States, 1992

Entry name of drug[1]	Number of drug mentions in thousands	Percent distribution	Therapeutic classification[2]
All drug mentions	922,584	100.0	. . .
Amoxicillin	20,554	2.2	Penicillins
Amoxil	17,492	1.9	Penicillins
Lasix	13,543	1.5	Diuretics
Ceclor	9,607	1.0	Cephalosporins
Zantac	9,037	1.0	Agents used in disorders of upper GI tract
Vasotec	9,022	1.0	Antihypertensive agents
Premarin	8,814	1.0	Estrogens and progestins
Prednisone	8,808	1.0	Adrenal corticosteroids
Naprosyn	8,541	0.9	Antiarthritics
Synthroid	8,278	0.9	Agents used to treat thyroid disease
Tylenol	8,226	0.9	General analgesics
Seldane	7,771	0.8	Antihistamines
Cardizem	7,604	0.8	Antianginal agents
Lanoxin	7,593	0.8	Cardiac glycosides
Ventolin	7,490	0.8	Bronchodilators, antiasthmatics
Motrin	6,918	0.7	Antiarthritics
Proventil	6,735	0.7	Bronchodilators, antiasthmatics
Allergy relief or shots	6,183	0.7	Diagnostics, nonradioactive and radiopaque
Diptheria Tetanus Toxoids Pertussis	6,176	0.7	Vaccines and antiserums
Xanax	6,027	0.7	Antianxiety agents
All other	738,165	80.0	. . .

[1]The entry made by the physician on the prescription or other medical records. This may be a trade name, generic name, or desired therapeutic effect.
[2]Based on the *National Drug Code Directory*, 1985 edition (NDC) (8). In cases where a drug had more than one therapeutic use, it was listed under the NDC category that occurred with the highest frequency.

Table 23. Number and percent distribution of office visits by nonmedication therapy ordered or provided: United States, 1992

Nonmedication therapy	Number of visits in thousands	Total	Patient's sex	
			Female	Male
		Percent distribution		
All visits	762,045	100.0	60.0	40.0
Counseling, education, and other therapy[1]				
None	526,292	69.1	68.4	70.1
Diet	89,560	11.8	12.3	10.9
Exercise	55,261	7.3	7.3	7.2
Weight reduction	30,133	4.0	4.2	3.6
Cholesterol reduction	22,462	2.9	2.9	3.0
Smoking cessation	18,327	2.4	2.3	2.5
Family/social	14,966	2.0	2.3	1.5
Growth/development	13,890	1.8	1.9	1.7
Family planning	14,966	2.0	1.5	0.1
Alcohol abuse	3,161	0.4	0.3	0.6
Drug abuse	2,079	0.3	0.2	0.3
Other counseling	61,484	8.1	8.6	7.3
Psychotherapy	20,477	2.7	2.7	2.7
Corrective lenses	7,592	1.0	1.0	1.1
Hearing aid	*424	*0.1	*0.0	*0.1
Physiotherapy	13,824	1.8	1.6	2.1
Other therapy	19,446	2.6	2.1	3.2

[1]Numbers may not add to totals because more than one type of nonmedication therapy may be reported per visit.

Table 24. Number and percent distribution of office visits by disposition of visit: United States, 1992

Disposition[1]	*Number of visits in thousands*	*Percent distribution*
All visits	762,045	100.0
Return at specified time	469,155	61.6
Return if needed	184,144	24.2
No followup planned	72,881	9.6
Telephone followup planned	21,202	2.8
Referred to other physician	22,445	2.9
Admit to hospital	5,385	0.7
Returned to referring physician	8,097	1.1
Other	6,408	0.8

[1]Numbers may not add to totals because more than one disposition may be reported per visit.

Table 25. Number and percent distribution of office visits by duration of visit: United States, 1992

Duration	*Number of visits in thousands*	*Percent distribution*
All visits	762,045	100.0
0 minutes[1]	8,552	1.1
1–5 minutes	56,055	7.4
6–10 minutes	196,233	25.8
11–15 minutes	245,954	32.3
16–30 minutes	199,762	26.2
31 minutes and over	55,488	7.3

[1]Visits in which there was no face-to-face contact between patient and physician.

Technical notes

Source of data and sample design

The information presented in this report is based on data collected by means of the National Ambulatory Medical Care Survey (NAMCS) from January 1992 through December 1992. The target universe of NAMCS includes office visits made in the United States by ambulatory patients to nonfederally employed physicians who are principally engaged in office practice, but not in the specialties of anesthesiology, pathology, or radiology. Telephone contacts and nonoffice visits are excluded.

A multistage probability sample design is used in NAMCS, involving samples of primary sampling units (PSU's), physician practices within PSU's, and patient visits within physician practices. The PSU's are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships (for some PSU's in New England). For 1992, a sample of 3,000 nonfederal, office-based physicians was selected from master files maintained by the American Medical Association and American Osteopathic Association. Physicians were screened at the time of the survey to ensure that they were eligible for survey participation. Of those screened, 858 physicians were ruled ineligible (out of scope) due to reasons of being retired; employed primarily in teaching, research, or administration; or other reasons. The remaining 2,142 physicians were in scope or eligible to participate in the survey. The physician response rate for the 1992 NAMCS was 71.4 percent.

Sample physicians were asked to complete Patient Record forms (figure 1) for a systematic random sample of office visits occurring during a randomly assigned 1-week reporting period. Responding physicians completed 34,606 Patient Record forms.

Characteristics of the physician's practice, such as primary specialty and type of practice, were obtained from the physicians during an induction interview. The U.S. Bureau of the Census, Housing Surveys Branch, was responsible for the survey's data collection. Processing operations and medical coding were performed by the National Center for Health Statistics, Health Care Survey Section, Research Triangle Park, North Carolina.

For 1992 several changes were made in the sample design of the NAMCS, which should be considered in the interpretation of the survey results. In an effort to even the precision of estimates across each of the physician specialty strata in the sample design, the decision was made to increase the proportion in the sample of specialists in general surgery, psychiatry, otolaryngology, and neurology. Although this would result in a corresponding decrease in the sample of the larger physician specialties, most notably general and family practice, internal medicine, and pediatrics, the precision of these estimates tended to be much higher relative to the smaller specialties, and it was expected that the end result would be an acceptable balance of precision levels across all strata.

However, the reduced numbers of general practitioners, internists, and pediatricians sampled in 1992, coupled with the high percents of sampled physicians in these specialties who were determined to be ineligible (out of scope) for survey participation, resulted in low numbers of survey respondents in these categories and a lowering of the precision of these estimates relative to other survey years, especially when disaggregated by other variables such as race. Because visits made by black patients were often found to be clustered among the sampled physicians and were more likely to be made to general and family practitioners, which were undersampled in 1992, it is recommended that caution be exercised when interpreting differences in race data and individual physician specialties.

Sampling errors

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The relative standard error of an estimate is obtained by dividing the standard error by the estimate itself; the result is then expressed as a percent of the estimate.

Relative standard errors (RSE's) for estimated numbers of office visits in 1992 are shown in table I, relative standard errors for estimated numbers of drug mentions are presented in table II. Standard errors for estimated percents of visits and drug mentions are displayed in tables III and IV.

Table I. Approximate relative standard errors for estimated numbers of office visits: National Ambulatory Medical Care Survey, 1992

Estimated number of office visits in thousands	*Relative standard error in percent*
100	77.2
200	54.7
500	34.8
676	30.0
1,000	24.8
2,000	17.8
5,000	11.8
10,000	9.0
20,000	7.2
50,000	5.8
100,000	5.3
200,000	5.0
500,000	4.8
1,000,000	4.7

NOTES: The smallest reliable estimate for visits to aggregated specialties is 676,000 visits. Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.

Example of use of table: An aggregate estimate of 50 million visits has a relative standard error of 5.8 percent or a standard error of 2,900,000 visits (5.8 percent of 50 million).

Table II. Approximate relative standard errors for estimated numbers of drug mentions: National Ambulatory Medical Care Survey, 1992

Estimated number of drug mentions in thousands	*Relative standard error in percent*
100	94.6
200	67.1
500	42.7
1,000	30.5
1,039	30.0
2,000	22.1
5,000	14.8
10,000	11.4
20,000	9.3
50,000	7.7
100,000	7.1
200,000	6.7
500,000	6.5
1,000,000	6.5

NOTES: The smallest reliable estimate of drug mentions for aggregated specialties is 1,039,000 mentions. Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.

Example of use of table: An aggregate estimate of 50 million drug mentions has a relative standard error of 7.7 percent or a standard error of 3,850,000 mentions (7.7 percent of 50 million).

Table III. Approximate standard errors of percents of estimated numbers of office visits: National Ambulatory Medical Care Survey: 1992

Base of percent (visits in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
100	7.7	16.8	23.1	30.8	35.3	37.7	38.5
200	5.4	11.9	16.3	21.8	25.0	26.7	27.2
500	3.4	7.5	10.3	13.8	15.8	16.9	17.2
1,000	2.4	5.3	7.3	9.7	11.2	11.9	12.2
2,000	1.7	3.8	5.2	6.9	7.9	8.4	8.6
5,000	1.1	2.4	3.3	4.4	5.0	5.3	5.5
10,000	0.8	1.7	2.3	3.1	3.5	3.8	3.9
20,000	0.5	1.2	1.6	2.2	2.5	2.7	2.7
50,000	0.4	0.8	1.0	1.4	1.6	1.7	1.7
100,000	0.2	0.5	0.7	1.0	1.1	1.2	1.2
200,000	0.2	0.4	0.5	0.7	0.8	0.8	0.9
500,000	0.1	0.2	0.3	0.4	0.5	0.5	0.6
1,000,000	0.1	0.2	0.2	0.3	0.4	0.4	0.4

NOTE: Example of use of table: An estimate of 30 percent based on an aggregate estimate of 10 million visits has a standard error of 3.5 percent or a relative standard error of 11.7 percent (3.5 percent divided by 30 percent).

Table IV. Approximate standard errors of percents of estimated numbers of drug mentions: National Ambulatory Medical Care Survey: 1992

Base of percent (drug mentions in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
100	9.4	20.6	28.3	37.8	43.3	46.3	47.2
200	6.6	14.6	20.0	26.7	30.6	32.7	33.4
500	4.2	9.2	12.7	16.9	19.4	20.7	21.1
1,000	3.0	6.5	9.0	11.9	13.7	14.6	14.9
2,000	2.1	4.6	6.3	8.5	9.7	10.3	10.6
5,000	1.3	2.9	4.0	5.3	6.1	6.5	6.7
10,000	0.9	2.1	2.8	3.8	4.3	4.6	4.7
20,000	0.7	1.5	2.0	2.7	3.1	3.3	3.3
50,000	0.4	0.9	1.3	1.7	1.9	2.1	2.1
100,000	0.3	0.7	0.9	1.2	1.4	1.5	1.5
200,000	0.2	0.5	0.6	0.9	1.0	1.0	1.1
500,000	0.1	0.3	0.4	0.5	0.6	0.7	0.7
1,000,000	0.1	0.2	0.3	0.4	0.4	0.5	0.5

NOTE: Example of use of table: An estimate of 30 percent based on an aggregate estimate of 100 million drug mentions has a standard error of 1.4 percent or a relative standard error of 4.7 percent (1.4 percent divided by 30 percent).

Alternatively, relative standard errors for aggregate estimates may be calculated using the following general formula, where x is the aggregate of interest in thousands, and A and B are the appropriate coefficients from table V.

$$\mathrm{RSE}(x) = \sqrt{A + \frac{B}{x}} \cdot 100$$

Similarly, relative standard errors for percents may be calculated using the following general formula, where p is the percent of interest and x is the denominator of the percent in thousands, using the appropriate coefficient from table V.

$$\mathrm{RSE}(p) = \sqrt{\frac{B \cdot (1-p)}{p \cdot x}} \cdot 100$$

Estimates and percents relating to ambulatory surgical procedures have been presented in tables in this report with specific standard errors calculated using SUDAAN software (10), rather than using the generalized variance curves that approximate relative standard errors for most NAMCS estimates. The decision to provide specific standard errors for these estimates and percents was made following a statistical analysis of the data that resulted from the ambulatory surgery survey item. The analysis suggested that a generalized variance curve would be of limited utility, given the nature of the data in question.

Adjustments for nonresponse

Estimates from NAMCS data were adjusted to account for sample physicians who were in scope but did not participate in the study. This adjustment was calculated to minimize the impact of response on final estimates by imputing to nonresponding physicians data from visits to similar physicians. For this purpose, physicians were judged similar if they had the same specialty designation and practiced in the same PSU.

Test of significance and rounding

In this report, the determination of statistical inference is based on the t-test. The Bonferroni inequality was used to establish the critical value for statistically significant differences (0.05 level of confidence). Terms relating to differences such as "greater than" or "less than" indicate that the difference is statistically significant. A lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found to be not significant.

In the tables, estimates of office visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals. Rates and percents were calculated from original unrounded figures and do not necessarily agree with percents calculated from rounded data.

Definition of terms

Ambulatory patient—An ambulatory patient is an individual seeking personal health services who is not currently admitted to any health care institution on the premises.

Drug mention—A drug mention is the physician's entry on the Patient Record form of a pharmaceutical agent (by any route of administration) for prevention, diagnosis, or treatment. Generic as well as brand-name drugs are included, as are nonprescription and prescription drugs. Along with all new drugs, the physician also records continued medications if the patient was

Table V. Coefficients appropriate for determining relative standard errors by type of estimate and physician specialty: National Ambulatory Medical Care Survey, 1992

Type of estimate and physician specialty	Coefficient for use with estimates in thousands	
	A	B
Visits		
Overall total	0.002166736	59.31728791
General and family practice	0.01528225	67.30624004
Osteopathy	0.02187347	15.93954564
Internal medicine	0.01430119	52.12533278
Pediatrics	0.01242304	37.48754366
General surgery	0.01131364	5.33548403
Obstetrics and gynecology	0.01261294	28.04987362
Orthopedic surgery	0.01290139	24.41126789
Cardiovascular diseases	0.02326084	12.05944272
Dermatology	0.02754591	12.69389556
Urological surgery	0.01745979	9.38525852
Psychiatry	0.01081403	10.77898407
Neurology	0.01482385	3.63971125
Ophthalmology	0.01669678	22.9295663
Otolaryngology	0.01636667	7.22439527
All other specialties	0.0133434	31.25167177
Drug mentions		
Overall total	0.004106571	89.17495556
General and family practice	0.01823822	122.9599
Osteopathy	0.02749416	21.87363466
Internal medicine	0.02284806	90.21863157
Pediatrics	0.0199687	39.77076275
General surgery	0.04818038	5.63703534
Obstetrics and gynecology	0.0203148	41.18898323
Orthopedic surgery	0.02740476	24.31222595
Cardiovascular diseases	0.02675668	25.74429136
Dermatology	0.02140189	18.82787934
Urological surgery	0.03806206	5.36142571
Psychiatry	0.01648031	14.04494475
Neurology	0.03038956	4.78471796
Ophthalmology	0.04965684	23.06889268
Otolaryngology	0.0168309	10.94330617
All other specialties	0.02539558	47.16170733

Symbols

- - - Data not available
- . . . Category not applicable
- – Quantity zero
- 0.0 Quantity more than zero but less than 0.05
- Z Quantity more than zero but less than 500 where numbers are rounded to thousands
- * Figure does not meet standard of reliability or precision

specifically instructed during the visit to continue the medication. Physicians may report up to five medications per visit.

Drug visit—A drug visit is a visit in which medication was prescribed or provided by the physician.

Office—An office is the space identified by a physician as a location for his or her ambulatory practice. Offices customarily include consultation, examination, or treatment spaces that patients associate with the particular physician.

Physician—A physician is a duly licensed doctor of medicine (MD) or doctor of osteopathy (DO) who is currently in office-based practice and who spends some time caring for ambulatory patients. Excluded from the NAMCS are physicians who are hospital based; who specialize in anesthesiology, pathology, or radiology; who are federally employed; who treat only institutionalized patients; or who are employed full time by an institution and spend no time seeing ambulatory patients.

Visit—A visit is a direct personal exchange between an ambulatory patient and a physician, or a staff member working under the physician's supervision, for the purpose of seeking care and rendering personal health services. Excluded from the NAMCS are visits where medical care was not provided, such as visits made to drop off specimens, pay bills, make appointments, and walk-outs.

Trade name disclaimer

The use of trade names is for identification only and does not imply endorsement by the Public Health Service, U.S. Department of Health and Human Services.

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Health Insurance and Cancer Screening Among Women

by Diane M. Makuc, Dr.P.H. and Virginia M. Freid, M.S., Division of Health and Utilization Analysis;
P. Ellen Parsons, Ph.D., M.P.H., Division of Health Interview Statistics

Introduction

Health insurance coverage is an important factor associated with use of preventive health care services. Uninsured persons use less preventive health care than do those with insurance, and among persons with insurance, use of preventive care varies with the type of coverage. The Rand Health Insurance Experiment (HIE), in which persons were randomly assigned to insurance plans, showed that those enrolled in Health Maintenance Organizations (HMOs) received more preventive health care than did those with fee-for-service coverage, and that use of preventive care was inversely related to the level of out-of-pocket spending (1). Results from the HIE also showed that poor women with free fee-for-service coverage were more likely to receive Pap tests than those with cost-sharing plans (2). In contrast, among nonpoor women, there was no difference in Pap test usage between women with free and cost-sharing plans (2). An analysis of data from the 1987 National Health Interview Survey (NHIS) found that cancer screening rates were greater for women who reported an HMO as their usual source of care than for those who reported some other place as their usual source of care (3).

The purpose of this report is to provide national data on the relationship between type of health insurance coverage and recent use of mammography, clinical breast examinations (CBEs), and Pap tests by women 40 years of age and over. Objectives are to compare use of screening between women enrolled in HMOs and fee-for-service plans; between women with private coverage, public coverage, and the uninsured; and between women with different types of health insurance coverage after controlling for educational attainment.

The data presented in this report extend previous studies by providing recent national data on the use of preventive care by women enrolled in a broad range of HMOs compared with many studies that are based on one or two specific HMOs. In addition, the NHIS is sufficiently large to allow results to be presented for subgroups of women based on age and socioeconomic status. Of particular interest is whether the effect of HMO enrollment on use of preventive measures differs by socioeconomic status. The 1992 NHIS also provided more detailed information concerning HMO enrollment than did earlier years of the survey.

During the 1980's there were substantial changes in health insurance coverage as well as use of preventive health care in the United States. Between 1980 and 1992 the age-adjusted percent of the U.S. population under 65 years of age who were uninsured increased from 12.5 to 17.2 percent (4). Over this period, enrollment in HMOs rose from 4 to 14 percent of persons in the United States (4). HMOs have become increasingly complex in structure with group, network, independent practice associations (IPAs), and preferred provider organizations (PPOs) making up a rising proportion of the market (5). HMO enrollment by Medicare and Medicaid beneficiaries has increased in recent years. In 1992, 6 percent of HMO enrollees were Medicare beneficiaries and another 5 percent were enrolled through Medicaid (4).

The effectiveness of Pap tests in reducing cervical cancer mortality for women of all ages has been clearly demonstrated (6), as has the effectiveness of mammography screening in reducing breast cancer mortality for women over 50 years of age (7–9). However, cancer screening guidelines differ across organizations, primarily for women 40–49 years of age (see Technical notes for background information on breast and cervical cancer).

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Healthy People 2000, a national prevention initiative, has set 300 objectives for the Nation for the year 2000, including objectives for breast and cervical cancer screening (10). Between 1987 and 1992 substantial progress was made toward the *Healthy People 2000* objectives for breast cancer screening (11). The percent of women 50 years of age and over who had both a CBE and a mammogram within the preceding 1 to 2 years doubled, from 25 to 51 percent. The percent of women 18 years and over with a Pap test within the preceding 3 years remained fairly stable over this period, about 75 percent. Use of mammography and other screening services has been shown to be inversely associated with income and educational attainment (12,13).

Methods

This report uses data from the 1992 National Health Interview Survey, a continuing household survey of the civilian noninstitutionalized population conducted by the National Center for Health Statistics (NCHS) (14) (see Technical notes). The NHIS questionnaire consists of two major sections—the basic health and sociodemographic section, which remains constant from year to year, and a special topics section, which changes each year. The 1992 NHIS included a special topics section on Cancer Epidemiology and Cancer Control, a collaborative effort of NCHS and the National Cancer Institute. The Cancer Control section of the questionnaire was administered to one-quarter of the NHIS sample households (15). Questions on cancer screening included length of time since the last Pap test, mammogram, and CBE.

In 1992 information on health insurance coverage was collected from a household respondent concerning plans held at the time of the interview for all household members. The health insurance questionnaire was administered in all of the NHIS sample households (16). Information from the health insurance questions include the following data on any public coverage and up to four private health insurance plans: the type of health care coverage (Medicare, Medicaid, military/CHAMPUS/CHAMP-VA, other public assistance, or private insurance); the plan name of each private insurance plan and whether each private insurance plan was an HMO; and the coverage status for each individual in the household. During data processing, the plan names were matched to a precoded list of plans that provided information on whether a particular plan was an HMO. Thus, information on whether a particular plan was an HMO was available from a precoded list of plan names as well as from the respondent. In this analysis, individuals were classified as having HMO coverage if both sources of information agreed that the plan was an HMO. This approach resulted in an estimate of 16 percent of the civilian noninstitutionalized U.S. population having HMO coverage in 1992, a level similar to the 14 percent of the U.S. population estimated by InterStudy's annual national census of HMOs (4). Of all HMO enrollees identified in the 1992 NHIS, only 1 percent were Medicaid beneficiaries and 7 percent were Medicare beneficiaries. The 1992 NHIS included a question about HMO enrollment only for respondents reporting private insurance coverage. Thus, it is not surprising that the percent of HMO enrollees who were Medicaid beneficiaries was lower in the 1992 NHIS than the 5 percent reported by InterStudy (4).

In this report women were classified into the following health insurance categories: private coverage, specific types of public coverage, and uninsured. Women with private coverage were subdivided into two groups—those with HMO coverage and those with fee-for-service coverage. The HMO category includes all women who reported HMO coverage, regardless of other coverage reported. Among women with public coverage, the Medicaid category includes all women who reported Medicaid and did not report HMO coverage, regardless of other coverage reported. Uninsured individuals were defined as those who did not report private insurance, Medicare, Medicaid, military/CHAMPUS/CHAMP-VA, or public assistance coverage. Screening results for women under 65 years of age who reported only Medicare, military, or public assistance coverage are not shown because of small numbers. Screening results for uninsured women 65 years of age and over who were uninsured or who reported military or public assistance coverage are not shown due to small numbers.

The relationship between health insurance coverage and use of screening was examined for women in subgroups based on age (40–49, 50–64, and 65 years and over) and educational attainment (12 years or less and more than 12 years) because both characteristics are among those associated with use of screening and type of health insurance coverage. Results are reported separately for women aged 40–49 and 50–64 years because screening recommendations differ for these two groups. Results for women 65 years and over are reported separately because almost all women in this age group have Medicare coverage and also because screening levels are substantially lower for older women. Screening in the past 12 months, rather than a longer interval, was used for the analysis because health insurance coverage can change over time. However, because annual mammography is not generally recommended for women aged 40–49 years (see Technical notes) the mammography results should be interpreted with caution. Women with hysterectomies have been included in analyses of Pap testing because the Pap test may be used in the detection of vaginal cancer as well as cervical cancer (17).

Percents and standard errors were calculated using SUDAAN, a statistical program for survey data analysis that incorporates the NHIS sample weights and complex survey design into its estimates (18). Contingency table analysis was carried out using SUDAAN and weighted least squares linear modeling to test hypotheses regarding associations between health insurance, educational attainment, and use of screening (18,19). Differences discussed in the text were statistically significant at the 0.05 level.

Of the 3,863 women aged 40 years and over who were asked about

screening in the 1992 NHIS, data on time since the last mammogram, CBE, or Pap test were missing for 4 to 5 percent of women; private health insurance coverage was missing for 2 percent; and educational attainment was missing for less than 1 percent. Persons with missing data have been excluded from analyses involving the missing variable.

Results

Health insurance coverage (table 1)

In 1992, 80 percent of women 40–64 years of age had private insurance, including 19 percent who were enrolled in an HMO. Among women aged 40–64 years, about 12 percent were uninsured, 5 percent had Medicaid coverage, and the remaining 3 percent had military/CHAMPUS, Medicare, or public assistance coverage. Health insurance coverage for women aged 40–64 years varied substantially with educational attainment. Women with 12 years of education or less were nearly three times as likely to be uninsured, almost five times as likely to have Medicaid coverage, and one-third less likely to be enrolled in HMOs as women with more education.

In 1992 almost all women aged 65 years and over in the non-institutionalized population had Medicare coverage, and 75 percent also had private coverage, including 11 percent who were enrolled in an HMO. Women aged 65 years and over with 12 years of education or less were about one-third less likely to be enrolled in an HMO, 77 percent more likely to have only Medicare coverage, and almost six times as likely to have Medicaid coverage as women with more education.

Table 1. Percent distribution of health insurance coverage among women 40 years and over, according to age and educational attainment: United States, 1992

Age and health insurance coverage	Total	Educational attainment: 0–12 years	Educational attainment: 13 years or more
	Percent distribution and standard error		
40–64 years			
Total	100.0	100.0	100.0
Private coverage	80.4 (0.9)	73.6 (1.4)	90.8 (1.1)
HMO	19.0 (1.0)	15.9 (1.4)	23.8 (1.6)
Fee-for-service	61.4 (1.2)	57.7 (1.6)	67.0 (1.8)
Medicaid	5.4 (0.5)	7.8 (0.8)	1.7 (0.5)
Other	2.5 (0.4)	3.1 (0.5)	1.7 (0.4)
Uninsured	11.6 (0.7)	15.5 (1.1)	5.8 (0.9)
40–49 years			
Total	100.0	100.0	100.0
Private coverage	81.1 (1.3)	72.7 (2.1)	89.8 (1.4)
HMO	21.4 (1.5)	17.9 (2.1)	25.0 (1.9)
Fee-for-service	59.7 (1.7)	54.8 (2.6)	64.8 (2.3)
Medicaid	5.4 (0.6)	8.6 (1.1)	2.2 (0.6)
Other	1.6 (0.3)	1.8 (0.5)	1.4 (0.4)
Uninsured	11.9 (1.1)	17.0 (1.8)	6.6 (1.2)
50–64 years			
Total	100.0	100.0	100.0
Private coverage	79.8 (1.3)	74.2 (1.8)	92.4 (1.4)
HMO	16.7 (1.3)	14.4 (1.7)	21.9 (2.4)
Fee-for-service	63.1 (1.7)	59.9 (2.1)	70.5 (2.7)
Medicaid	5.4 (0.7)	7.3 (1.0)	1.0 (0.5)
Other	3.4 (0.6)	4.0 (0.8)	2.1 (0.8)
Uninsured	11.4 (1.2)	14.5 (1.7)	4.5 (1.1)
65 years and over			
Total	100.0	100.0	100.0
Medicare and private coverage[1]	74.6 (1.3)	71.1 (1.5)	87.4 (2.1)
Medicare and HMO[1]	10.7 (1.0)	9.6 (1.0)	14.7 (2.9)
Medicare and fee-for-service[1]	63.9 (1.5)	61.5 (1.7)	72.7 (3.0)
Medicare and Medicaid[1]	7.6 (0.7)	9.3 (0.8)	1.6 (0.6)
Medicare only	16.8 (1.1)	18.6 (1.2)	10.5 (2.0)
Other	0.7 (0.2)	0.7 (0.3)	0.4 (0.3)
Uninsured	0.2 (0.1)	0.3 (0.1)	–

[1]Includes a small number of persons who did not have Medicare coverage. Of all women 65 years and over, 3 percent did not have Medicare coverage.

NOTES: Based on the one-fourth of the NHIS sample that received the Cancer Control questions. HMO includes all persons who reported HMO coverage, regardless of other coverage reported. Persons with Medicaid who did not report HMO coverage are classified as Medicaid. The category "other" includes military/CHAMPUS, public assistance, or Medicare (for women under 65 years of age). Uninsured persons are those who did not report private, Medicare, Medicaid, military/CHAMPUS, or public assistance coverage.

Screening for women 50–64 years (table 2)

In 1992, 50 percent of women aged 50–64 years reported a mammogram within the past year, 53 percent reported a Pap test, and 61 percent reported CBE. Health insurance coverage and educational attainment were strongly associated with use of each of these procedures for women aged 50–64 years.

The percent of women reporting each of the three procedures was lowest for uninsured women and highest for women enrolled in HMOs. Only 19 percent of uninsured women aged 50–64 years reported recent mammography, 32 percent reported Pap testing, and 38 percent reported CBE. In contrast, 62 percent of women aged 50–64 years enrolled in HMOs reported recent mammography, 65 percent reported Pap testing, and 71 percent reported CBE.

Among women aged 50–64 years with 12 years of education or less, HMO enrollees reported greater use of each of these procedures than did women with fee-for-service coverage. However, among women with more than 12 years of education, HMO enrollees and women with fee-for-service coverage reported similar screening

levels. For example, among women aged 50–64 years with 12 years of education or less, 63 percent of HMO enrollees and 48 percent of women with fee-for-service private coverage reported recent mammography. However, among women with more than 12 years of education, similar levels of screening were reported (61–64 percent). About three of five women aged 50–64 years who were enrolled in HMOs reported recent use of mammography, regardless of educational level. In contrast, among women with fee-for-service coverage, mammography was more likely to be reported by those with more than 12 years of education than by women with less education.

Women 65 years and over (table 3)

In 1992, overall 36 percent of women aged 65 years and over reported a recent Pap test, 39 percent reported recent mammography, and 50 percent reported a recent CBE. Screening levels for these three procedures were 11–18 percentage points lower for women 65 years and over than for women 50–64 years, despite the higher risk of disease among older women. Health insurance coverage and educational attainment were both strongly associated with use of each of the screening procedures. Screening levels for each of the procedures were highest (63 percent) for women enrolled in HMOs who had more than 12 years of education.

Women aged 65 years and over with only Medicare coverage were substantially less likely to report any of the three screening techniques than women with Medicare and private insurance. Reports of recent mammography were more than twice as likely for women with private insurance as for those with only Medicare coverage (40 percent compared with 19 percent among women with 12 years of education or less). Use of CBE and Pap testing was about 50 percent greater for women with 12 years of education or less and private insurance than for those with only Medicare coverage.

Women 65 years and over who were enrolled in HMOs were more likely to report recent mammography and Pap testing than women with fee-for-service insurance. Use of each of these two procedures was 13 percentage points greater for HMO enrollees than for women with fee-for-service coverage. However, recent use of a CBE did not differ for women in HMOs and those with fee-for-service coverage.

Table 2. Percent of women 50–64 years who received cancer screening within the past year, by type of procedure, health insurance coverage, and educational attainment: United States, 1992

Type of procedure and health insurance coverage	Sample size	Educational attainment		
		Total	0–12 years	13 years or more
		Percent and standard error		
Mammogram				
Total	1,171	49.6 (1.8)	44.8 (2.1)	60.6 (3.1)
Private coverage	910	55.4 (2.0)	51.0 (2.5)	63.3 (3.2)
HMO	190	62.1 (4.0)	62.8 (5.6)	61.0 (6.8)
Fee-for-service	720	53.6 (2.3)	48.1 (2.8)	64.0 (3.6)
Medicaid	90	38.3 (6.9)	38.0 (7.1)	*
Uninsured	130	19.3 (4.1)	19.2 (4.2)	*
Clinical breast examination (CBE)				
Total	1,168	60.8 (1.8)	57.4 (2.2)	68.4 (2.6)
Private coverage	906	65.2 (2.0)	62.2 (2.6)	70.7 (2.6)
HMO	188	70.5 (3.7)	71.8 (5.7)	68.7 (5.5)
Fee-for-service	718	63.8 (2.1)	60.0 (2.7)	71.3 (2.9)
Medicaid	90	52.0 (7.5)	52.1 (7.8)	*
Uninsured	132	38.2 (5.9)	37.7 (6.4)	*
Pap test				
Total	1,171	53.4 (1.7)	49.5 (2.1)	62.2 (2.9)
Private coverage	909	57.9 (1.9)	54.4 (2.4)	64.2 (3.0)
HMO	192	64.7 (3.5)	63.8 (5.0)	66.1 (5.8)
Fee-for-service	717	56.0 (2.2)	52.1 (2.6)	63.5 (3.3)
Medicaid	92	41.0 (7.0)	40.1 (7.2)	*
Uninsured	129	32.0 (5.9)	31.5 (6.2)	*

NOTES: Based on the one-fourth of the NHIS sample that received the Cancer Control questions. HMO includes all persons who reported HMO coverage, regardless of other coverage reported. Persons with Medicaid who did not report HMO coverage are classified as Medicaid. Uninsured persons are those who did not report private, Medicare, Medicaid, military/CHAMPUS, or public assistance coverage.

Women 40–49 years (table 4)

Overall, in 1992, 41 percent of women age 40–49 years reported a recent mammogram, 60 percent reported a Pap test, and 62 percent reported a CBE. Compared with women 50–64 years of age, women 40–49 years had a similar level of CBE; mammography was 8 percentage points lower; and Pap testing was 6 percentage points higher.

Health insurance coverage and educational attainment were both strongly associated with use of all three procedures for women 40–49 years of age. Only 18 percent of uninsured women reported recent mammography, 30 percent reported Pap testing, and 37 percent reported CBE. Among women with private insurance, 45 percent reported mammography, 64 percent reported Pap testing, and 66 percent reported CBE.

Among women with 12 years of education or less, those with private coverage were about twice as likely to report each of the three screening procedures as uninsured women. Among women with private health insurance coverage, those with more than 12 years of education reported levels of each of the three procedures that were about 10 percentage points higher than for those with less education.

For women 40–49 years of age, recent use of mammography, CBE, and Pap testing did not differ significantly

between HMO enrollees and those with fee-for-service coverage.

Discussion

Despite substantial increases in mammography use, in 1992 only half of the women aged 50–64 years and 39 percent of women aged 65 years and over reported a recent mammogram. Use of screening for breast and cervical cancer was greater for women with more education, except among women aged 50–64 years who were enrolled in HMOs, providing some evidence that HMO enrollment may improve access to preventive services for less educated middle-aged women. Among women 50–64 years of age with 12 years of education or less and among older women of all educational levels, HMO enrollees reported higher levels of mammography and Pap testing than did those with fee-for-service coverage.

Among uninsured women aged 50–64, only 19 percent reported recent mammography, about one-third the level of HMO enrollees. Although levels for all three breast and cervical cancer screening procedures were extremely low for uninsured women, the uninsured were about twice as likely to report a recent CBE as recent mammography (38 and 19 percent, respectively, for women aged 50–64 years). Among women 65 years of age and over a similarly low level of recent mammography was reported for those with only Medicare coverage (19 percent). Mammography levels may be even more affected by insurance coverage than CBE because mammography usually requires an additional visit, whereas CBE may be carried out as part of a routine physical examination.

This analysis documents variability in use of preventive services among women with different types of health insurance coverage. However, it is important to remember there may be wide ranges of coverage within the defined health insurance categories. For example, the HMO category contains a variety of model types (see Technical notes), and the fee-for-service category may be a mix of adequately insured and underinsured persons. Further, the proportion of women who are underinsured may be higher among women with 12 or fewer years of education than among more educated women. A 1992 study by the National Opinion Research Center (NORC) highlighted the increasing problem of underinsured persons who are at high financial risk due to severely limited insurance coverage, or high deductibles and copayments. In the NORC study, 19 percent of all persons reported difficulty in paying medical bills in the past year, and 75 percent of persons who reported difficulties had health insurance (20).

The cost of preventive care is generally covered in HMOs. However, some fee-for-service health insurance plans may exclude coverage for preventive health services. Recent legislation has sought to improve health care coverage for cancer screening as well as increase the use and quality of screening. The Omnibus Budget Resolution Act of 1990 (PL 101–508) established Medicare coverage for biennial mammography screening, effective January 1, 1991. By 1992, 42 states had adopted legislation requiring third-party payors to offer some form of coverage for mammography in their health insurance plans (21). However, the extent of the coverage that was legislated varies significantly among States (22). The Breast and Cervical Cancer Mortality Prevention Act (PL 101–135) of 1990 established model breast and cervical cancer control programs at the State level. The programs are administered by the Centers for Disease Control and Prevention and target low-income, elderly, and minority women (23). The Mammography Quality Standards Act of

Table 3. Percent of women 65 years and over who received cancer screening within the past year, by type of procedure, health insurance coverage, and educational attainment: United States, 1992

Type of procedure and health insurance coverage	Sample size	Educational attainment		
		Total	0–12 years	13 years or more
		Percent and standard error		
Mammogram				
Total	1,360	38.5 (1.6)	34.6 (1.8)	52.4 (3.3)
Medicare and private coverage[1]	988	43.9 (1.9)	39.7 (2.2)	56.0 (3.5)
Medicare and HMO[1]	129	55.4 (5.2)	52.1 (6.2)	63.2 (8.5)
Medicare and fee-for-service[1]	859	42.0 (2.0)	37.8 (2.2)	54.5 (3.9)
Medicare and Medicaid[1]	137	24.7 (4.2)	22.7 (4.1)	*
Medicare only	222	19.0 (3.2)	19.0 (3.4)	*
Clinical breast examination (CBE)				
Total	1,352	49.9 (1.5)	47.5 (1.7)	58.6 (3.3)
Medicare and private coverage[1]	981	54.7 (1.8)	52.3 (2.1)	61.9 (3.2)
Medicare and HMO[1]	129	55.3 (5.7)	51.7 (6.7)	63.4 (7.9)
Medicare and fee-for-service[1]	852	54.7 (1.9)	52.4 (2.2)	61.5 (3.5)
Medicare and Medicaid[1]	139	35.1 (4.5)	33.5 (4.5)	*
Medicare only	219	34.2 (3.9)	34.8 (4.2)	*
Pap test				
Total	1,356	35.5 (1.5)	33.4 (1.6)	42.9 (3.6)
Medicare and private coverage[1]	985	38.8 (1.8)	36.3 (2.0)	46.0 (3.8)
Medicare and HMO[1]	130	49.8 (4.9)	44.2 (5.7)	62.8 (8.7)
Medicare and fee-for-service[1]	855	37.0 (1.9)	35.1 (2.1)	42.6 (4.3)
Medicare and Medicaid[1]	137	28.5 (4.8)	27.1 (4.7)	*
Medicare only	221	22.4 (3.4)	23.5 (3.9)	*

[1]Includes a small number of persons who did not have Medicare coverage. Of all women 65 years and over, 3 percent did not have Medicare coverage.

NOTES: Based on the one-fourth of the NHIS sample that received the Cancer Control questions. HMO includes all persons who reported HMO coverage, regardless of other coverage reported. Persons with Medicaid who did not report HMO coverage are classified as Medicaid.

Table 4. Percent of women 40–49 years who received cancer screening within the past year, by type of procedure, health insurance coverage, and educational attainment: United States, 1992

Type of procedure and health insurance coverage	Sample size	Educational attainment		
		Total	0–12 years	13 years or more
		Percent and standard error		
Mammogram				
Total	1,110	41.2 (1.8)	34.5 (2.4)	48.2 (2.6)
Private coverage	851	44.9 (2.1)	38.2 (3.0)	50.4 (2.7)
HMO	236	50.1 (3.9)	42.9 (6.1)	55.6 (4.7)
Fee-for-service	615	43.0 (2.3)	36.6 (3.4)	48.5 (3.1)
Medicaid	88	34.2 (5.5)	27.4 (5.5)	*
Uninsured	147	17.9 (3.3)	19.8 (4.1)	*
Clinical breast examination (CBE)				
Total	1,101	61.6 (1.9)	55.8 (2.5)	67.6 (2.5)
Private coverage	845	66.1 (1.9)	60.9 (2.8)	70.3 (2.6)
HMO	234	67.2 (3.9)	64.3 (6.0)	69.4 (4.8)
Fee-for-service	611	65.7 (2.2)	59.7 (3.4)	70.7 (2.7)
Medicaid	86	52.8 (7.6)	55.5 (8.2)	*
Uninsured	146	36.6 (4.4)	34.0 (5.0)	*
Pap test				
Total	1,103	59.5 (1.8)	50.5 (2.5)	68.8 (2.5)
Private coverage	851	63.8 (1.9)	56.0 (3.0)	70.2 (2.6)
HMO	235	62.7 (3.9)	52.8 (5.7)	70.2 (4.5)
Fee-for-service	616	64.1 (2.1)	57.0 (3.5)	70.2 (2.7)
Medicaid	83	57.4 (6.9)	54.4 (8.0)	*
Uninsured	145	30.0 (4.3)	24.8 (4.7)	*

NOTES: Based on the one-fourth of the NHIS sample that received the Cancer Control questions. HMO includes all persons who reported HMO coverage, regardless of other coverage reported. Persons with Medicaid who did not report HMO coverage are classified as Medicaid. Uninsured persons are those who did not report private, Medicare, Medicaid, military/CHAMPUS, or public assistance coverage.

1992 requires establishment of Federal inspection of mammography facilities and standards for equipment, personnel, and practices.

The greater use of preventive care among women aged 50 years and over with HMO coverage compared with fee-for-service coverage is consistent with other reports (1,24–26). There are several possible mechanisms for the greater use of preventive care among HMO enrollees than among women with fee-for-service coverage. Luft postulated that the greater use of preventive care by HMO enrollees was the result of lower out-of-pocket payments in HMOs (25). Physicians may be more likely to recommend mammography for women with HMO coverage than fee-for-service coverage. Women enrolled in HMOs may be more likely to follow their physicians' recommendations for mammography because of lower out-of-pocket costs and greater ease in obtaining mammography. A greater emphasis on preventive medicine in HMOs may also partially explain the higher levels of mammography in HMOs.

In addition to insurance coverage, several other factors have been identified as correlates of cancer screening. Numerous studies have documented that lack of a physician's referral and lack of knowledge about the need for screening are key deterrents to obtaining screening (12,27,28). Screening utilization has been found to be greater for patients of obstetricians and gynecologists than of family practitioners or internists (29) and for patients of female physicians, especially if the physician is an internist or family practitioner (30).

In summary, data from the 1992 NHIS show that having some type of health insurance coverage was strongly associated with use of recent preventive services for women, and that, for women 50 years and over, HMO enrollees were more likely to receive recent preventive care than those with fee-for-service coverage. Continued efforts are clearly needed to attain the goal of regularly scheduled periodic screening for all women.

References

1. Manning WG, Leibowitz A, Goldberg GA, et al. A controlled trial of the effect of a prepaid group practice on use of services. N Engl J Med 310(23):1505–10. 1984.
2. Lohr KN, Brook CJ, Kamberg GA, et al. Use of medical care in the Rand Health Insurance Experiment: Diagnosis and service-specific analyses in a randomized controlled trial. Medical Care 24(9) suppl. 1986.
3. Bernstein AB, Thompson GB, Harlan LC. Differences in rates of cancer screening by usual source of medical care. Medical Care 29(3):196–209. 1991.
4. National Center for Health Statistics. Health, United States, 1993. Hyattsville, Maryland: Public Health Service. 1994.
5. Health Insurance Association of America. Source book of health insurance data, 1992. Washington, DC: Health Insurance Association of America. 1992.
6. Laara E, Day NE, Hakama M. Trends in mortality from cervical cancer in the Nordic countries: Association with organized screening programmes. Lancet 1:1247–9. 1987.
7. Shapiro S, Venet W, Strax P, Venet L. Ten- to fourteen-year effect of screening on breast cancer mortality. J Natl Cancer Inst 69:349–55. 1982.
8. Tabar L, Fagerberg CJG, Gad A, et al. Reduction in mortality from breast cancer after mass screening with mammography. Lancet 1:829–32. 1985.
9. Andersson I, Aspegren LJ, Landberg T, et al. Mammographic screening and mortality from breast cancer: The Malmo mammographic screening trial. British Medical Journal 297:943–8. 1988.
10. U.S. Department of Health and Human Services. Healthy people 2000: National health promotion and disease prevention objectives.

Washington, DC: Public Health Service. 1991.
11. National Center for Health Statistics. Healthy people 2000 review, 1993. Hyattsville, Maryland: Public Health Service. 1994.
12. Breen N, Kessler L. Changes in use of screening mammography: Evidence from the 1987 and 1990 National Health Interview Surveys. Am J Public Health 84(1):62–7. 1994.
13. Calle EE, Flanders D, Thun MJ, et al. Demographic predictors of mammography and pap smear screening in U.S. women. Am J Public Health 83(1):53–60. 1993.
14. Benson V, Marano MA. Current estimates from the National Health Interview Survey. National Center for Health Statistics. Vital Health Stat 10(189). 1994.
15. National Center for Health Statistics. Public use file documentation, National Health Interview Survey of topics related to cancer control, 1992. Hyattsville, Maryland: National Center for Health Statistics, 1993.
16. National Center for Health Statistics. Public use file documentation, National Health Interview Survey of health insurance, 1992. Hyattsville, Maryland: National Center for Health Statistics, 1994.
17. Hall KL, Dewar MA, Perchalski J. Screening for gynecologic cancer. Primary Care 19(3):607–20. 1992.
18. Shah BV, Barnwell BG, Hunt PN, LaVange LM. SUDAAN user's manual release 5.50 with addendum for SUDAAN changes from 5.50 to 6.30. Research Triangle Park, North Carolina: Research Triangle Institute. 1992.
19. Koch GG, Freeman DH, Freeman JL. Strategies in the multivariate analysis of data from complex surveys. International Statistical Review 43(1):59–78. 1975.
20. Blendon RJ, Donelan K, Hill CA, et al. Paying medical bills in the United States. J Am Med Assoc 271(12):949–51. 1994.
21. Calder K. Access to screening mammography: Patient concerns about insurance. Women's Health Issues 2(4):189–95. 1992.
22. McKinney MM, Marconi, KM. Legislative interventions to increase access to screening mammography. J Community Health 17(6):333–49. 1992.
23. Centers for Disease Control and Prevention. The national breast and cervical cancer early detection program: At-a-glance 1993–1994. Atlanta, Georgia: Centers for Disease Control and Prevention, 1994.
24. Udvarhelyi IS, Jennison K, Phillips RS. Comparison of the quality of ambulatory care for fee-for-service and prepaid patients. Ann Intern Med 115(5):394–400. 1991.
25. Luft, HS. Why do HMOs seem to provide more health maintenance services? Milbank Memorial Fund 56(2):140–68. 1978.
26. Callahan EJ, Bertakis KD. A comparison of physician-patient interaction at fee-for-service and HMO sites. Fam Pract Res J 13(2):171–8. 1993.
27. Rimer BK, King E. Why aren't older women getting mammograms and clinical breast exams? Women's Health Issues 2(2):94–101. 1992.
28. Urban N, Anderson GL, Peacock S. Mammography screening: How important is cost as a barrier to use? Am J Public Health 84(1):50–5. 1994.
29. Sutton SM, Donner LD. Insights into the physician's role in mammography utilization among older women. Women's Health Issues 2:175–9. 1992.
30. Lurie NL, Slater J, McGovern P, et al. Preventive care for women: Does the sex of the physician matter? N Engl J Med 329(7):478–82. 1993.
31. American Cancer Society. Cancer facts and figures, 1993. Atlanta, Georgia: American Cancer Society. 1993.
32. Feuer EJ, Wun LM. How much of the recent use in breast cancer incidence can be explained by increases in mammography utilization? A dynamic population model approach. Am J Epid 136(12):1423–36. 1992.
33. Miller BA, Ries LAG, Hankey BF, et al, eds. SEER Cancer Statistics Review, 1973–1990. National Cancer Institute. Bethesda, Maryland: National Institutes of Health. 1993.
34. Mettlin C. Breast cancer risk factors. Cancer 69:1904–10. 1992.
35. American Cancer Society. Guidelines for preventive screening. Atlanta, Georgia: American Cancer Society. 1994.
36. Woolf SH. United States preventive services task force recommendations on breast cancer screening. Cancer 69:1913–18. 1992.
37. National Cancer Institute. Cancer facts: Breast cancer screening, December 12, 1992. National Cancer Institute. Bethesda, Maryland: National Institutes of Health. 1993.

Technical notes

Source of data

Data in this report are based on the 1992 National Health Interview Survey (NHIS), a continuing national household survey of the civilian noninstitutionalized population (14). Data are obtained on the personal, sociodemographic, and health characteristics of the family members and unrelated individuals living in these households. The 1992 NHIS included a special topics section on Cancer Epidemiology and Cancer Control, a collaborative effort of the National Center for Health Statistics (NCHS) and the National Cancer Institute (NCI).

The NHIS is a multistage probability sample design that permits a continuous sampling of the civilian noninstitutionalized population residing in the United States. Since 1985, the survey has been designed to yield a sample of about 49,000 households and 127,000 persons. Excluded from the sample are persons residing in nursing homes or other institutionalized settings, members of the Armed Forces, and U.S. nationals living abroad. The Cancer Control section of the questionnaire was administered to one-fourth of the NHIS sample households. Field operations, including the in-person household interviews, were conducted by the U.S. Bureau of the Census. Data were transmitted to NCHS for preparation, processing, and analysis.

Questions on cancer screening

In 1992 respondents aged 40 years or older were informed that "a mammogram is an x ray taken only of the breasts by a machine that presses the breast against a plate." They were then asked, "Have you ever heard of a mammogram?" and "When did you have your most recent mammogram?" Clinical breast examinations (CBE) data were collected by informing the respondent "A breast physical exam is when the breast is felt for lumps by a doctor or medical assistant." and "When did you have your most recent breast physical exam?" Pap smear information was obtained by asking, "When did you have your most recent Pap smear test?" (14).

Terms relating to insurance status

For the purposes of this report, a woman was considered to have Health Maintenance Organization (HMO) coverage if the respondent provided the name of the HMO plan to the interviewer, the plan name was included on an NCHS-derived list of HMOs, and if a positive report was provided to the interview question, "Is this (plan name) plan a Health Maintenance Organization or HMO?" If necessary, the respondent could be informed that "Health Maintenance Organizations or HMOs, sometimes called Individual Practice Associations or IPAs, are plans whose members are required to use only those health care providers who work for the HMO or the IPA. Also, members do not have to submit claims for costs of medical care services." The NCHS list of HMOs was compiled from information provided by the Group Health Association of America, InterStudy, the Federal listing of "qualified" HMOs, Blue Cross/Blue Shield, Best, and other sources.

Definitions of the HMO model types that were included in the HMO analytic category are as follows:

Staff—An HMO that delivers health services through a physician group that is controlled by the HMO unit.

Group—An HMO that contracts with one independent group practice to provide health services.

Individual Practice Association (IPA)—An HMO that contracts directly with physicians in independent practices, and/or contracts with one or more associations of physicians in an independent practice, and/or contracts with one or more multispecialty group practices (but the plan is predominantly organized around solo or single practices).

Network—An HMO that contracts with two or more independent group practices, possibly including a staff group, to provide health services. Although a network may contain a few solo practices, it is predominantly organized around groups.

Mixed—Any HMO combining a group, staff, or network model and an IPA model. The HMO includes both group and solo practices.

Preferred Provider Organization (PPO)—an HMO that contracts with networks or panels of providers. Enrollees experience a financial penalty if they choose to get care from a nonaffiliated provider, but the option is available.

Fee-for-service coverage was defined as private coverage other than that in one of the six types of HMOs.

Background information on breast cancer

Breast cancer is the most common site of a new cancer among women and the second to lung cancer as a leading cause of cancer deaths among women (31). In 1993 approximately 182,000 new cases of invasive breast cancer were diagnosed and 46,000 deaths from breast cancer were expected. Breast cancer incidence increased during the early to mid-1980's, partially due to increases in early detection through use of mammography screening (32,33). The age-adjusted death rate for breast cancer in 1991 was the same as in 1980 (4). In 1983–90 the 5-year relative survival rate for breast cancer was 80 percent, up from 76 percent in 1980–82 (4).

Risk factors for breast cancer include advancing age, family history of breast cancer in a first-degree relative, high socioeconomic status, Caucasian race, early menarche, late menopause, nulliparity, and the absence of breast feeding (34). The majority of currently identified risk factors are not easily amenable to changes in a woman's personal health habits. Thus, the main medical focus for breast cancer management has been on early detection through screening and effective treatment of diagnosed cases.

The American Cancer Society (ACS) recommends an annual CBE for women over 40 years of age, a yearly mammogram for women aged 50 years and over, and a mammogram every 1 to 2 years for women aged 40–49 years (35). The United States Preventive Services Task Force (USPSTF) recommends mammography every 1 to

2 years from age 50 to 75 unless pathology is detected. Early screening is recommended for women at increased risk of breast cancer (36). In December 1993 the NCI recommended routine screening every 1 to 2 years, with mammography and CBE for women 50 years of age and over. They also indicated that "randomized clinical trials have not shown a statistically significant reduction in mortality for women under the age of 50" associated with the use of routine mammography screening (37).

Background information on cervical cancer

In 1993 an estimated 13,500 cases of invasive cervical cancer were diagnosed and 4,400 deaths were expected (31). Between 1973 and 1990 the age-adjusted incidence rate and mortality rate for invasive cervical cancer declined by about 3 percent per year. Five-year relative survival rates have remained stable at 67–69 percent since the mid-1970's (33).

Risk factors for cervical cancer include low socioeconomic status, early age at first intercourse, multiple sex partners, cigarette smoking, and certain sexually transmitted diseases (31,33).

Pap testing guidelines from the ACS and the NCI recommend annual Pap testing. After a woman has had three or more consecutive satisfactory normal annual examinations, the Pap test may be performed less frequently at the discretion of the provider (35).

Symbols	
- - -	Data not available
. . .	Category not applicable
–	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision

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Advance Data

From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Energy and Macronutrient Intakes of Persons Ages 2 Months and Over in the United States: Third National Health and Nutrition Examination Survey, Phase 1, 1988–91

by Margaret A. McDowell, M.P.H., R.D., Ronette R. Briefel, Dr.P.H., R.D., Katherine Alaimo, Ann M. Bischof, R.D., Clifford R. Caughman, M.S., Margaret D. Carroll, M.S.P.H., Catherine M. Loria, M.S., M.A., and Clifford L. Johnson, M.S.P.H., Division of Health Examination Statistics

Introduction

Dietary recommendations and long-term health objectives, including the *Dietary Guidelines for Americans* and the Year 2000 Health Objectives for the Nation, call for Americans to reduce intake of total fat, saturated fat, cholesterol, and sodium; increase intake of fruits, vegetables, grain products, and foods rich in calcium; and moderate intake of sugars, salt, and alcohol (1–3). Developing nutrition policy, monitoring progress toward achieving dietary recommendations, and designing nutrition intervention programs to achieve health objectives require information about the diet of Americans. Information about the population's dietary intake is collected in the National Health and Nutrition Examination Survey (NHANES), one of the major national surveys in the National Nutrition Monitoring and Related Research Program (4–7).

The National Center for Health Statistics (NCHS) Health and Nutrition Examination Surveys (HANES) are a major source of periodic information on the dietary, nutritional, and health status of the U.S. population (4–8). HANES data play a unique role in nutrition monitoring and epidemiologic research, combining personal dietary interviews with standardized health examinations (7–9). NCHS completed three HANES surveys between 1971 and 1984 (5,6,8). The third National Health and Nutrition Examination Survey, NHANES III, was conducted by NCHS during 1988–94 (5,10).

The NHANES III dietary assessment component was designed with input from experts in the fields of nutrition, public health, biostatistics, and epidemiology, to meet the survey's nutrition monitoring and nutrition research objectives (9–12). The 24-hour recall method was selected for use in NHANES III to estimate detailed quantitative nutrient intake for the population and various subgroups and to study diet-health relationships (7–9,11,12). Prior to NHANES III, 24-hour recalls were recorded on hard copy forms and manually coded by dietary interviewers. In 1988, NCHS contracted with the University of Minnesota's Nutrition Coordinating Center (NCC) to develop an automated, interactive dietary interview and coding system called the NHANES III Dietary Data Collection (DDC) system (13–15). NCHS, the National Heart, Lung and Blood Institute, and the Food and Drug Administration funded the development

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of the DDC system. The DDC system features include: a standardized interview format and automated probes to obtain detailed information about foods— including brand names, food preparation methods, and ingredients used in food preparation, particularly ingredients that contribute fat and sodium.

This report provides data for the U.S. population's intake of macronutrients (the primary contributors to energy intake, which include total carbohydrate, total fat, protein, and alcohol) based on dietary data collected in Phase 1 of NHANES III (1988–91). National reference estimates of total energy intake, macronutrients contributing to total energy intake, fatty acids (saturated fat, monounsaturated fat, and polyunsaturated fat), and cholesterol are reported for persons 2 months of age and older. Phase 1 data on selected vitamin, mineral, and fiber intakes will be reported in a subsequent *Advance Data*.

Daily dietary estimates are reported by age and gender for the total population and for three race/ethnicity groups: non-Hispanic whites, non-Hispanic blacks, and Mexican Americans.

Highlights

NHANES III, Phase 1 (1988–91) provides comprehensive health and nutrition data on the U.S. population. NHANES data are obtained by means of interview and examination methods. The dietary assessment component included a 24-hour dietary recall interview. The U.S. population's intake of macronutrients—the primary contributors to energy intake (total carbohydrate, total fat, protein, and alcohol), fatty acids (saturated fat, monounsaturated fat, and polyunsaturated fat), and cholesterol are reported for persons 2 months of age and older.

- Mean daily intake of energy was 2,095 kilocalories (kcal) for persons 2 months of age and older.
- The overall dietary pattern for the U.S. population ages 2 months and older was 50 percent of energy from carbohydrate, 15 percent of energy from protein, 34 percent of energy from fat, and 2 percent of energy from alcohol. Fatty acid contributions to energy were: 12 percent saturated fat, 12.5 percent monounsaturated fat, and 7 percent polyunsaturated fat, and the mean cholesterol intake was 270 milligrams.
- Energy intake patterns were similar among the race/ethnicity groups examined, although there were some differences by race/ethnicity within age-gender groups.

Dietary intake findings

NHANES III, Phase 1 mean, standard error of the mean (SEM), and median values for energy, total carbohydrate, protein, and alcohol and the percent of total energy (measured as kcal) from carbohydrate, protein, and alcohol are shown by age, gender, and race/ethnicity in tables 1–4 and 10–12. Intakes of total fat, saturated fat, monounsaturated fat, polyunsaturated fat, and cholesterol and the percent of total energy from fat and fatty acids are shown by age, gender, and race/ethnicity in tables 5–9 and 13–16.

The mean daily intake of energy was 2,095 kcal for persons 2 months and older (table 1). Males had consistently higher intakes of energy and macronutrients than females in all age and race/ethnicity groups.

Energy intakes peaked during late adolescence and young adulthood and declined thereafter. Energy intake patterns by age and gender were similar among non-Hispanic whites, non-Hispanic blacks, and Mexican Americans, although there were some differences by race/ethnicity within age-gender groups. Mean energy intakes were higher in non-Hispanic white males compared with non-Hispanic black and Mexican American males ages 12 years and over. Mean energy intake was highest in non-Hispanic black females ages 3–29 years and varied by race/ethnicity for females 30 years and over.

Mean total carbohydrate intake was highest in non-Hispanic white males (305 grams) compared with non-Hispanic black males (278 grams) and Mexican American males (280 grams). Mean total carbohydrate levels for females were similar among race/ethnicity groups, ranging from 216–218 grams. Carbohydrate intake was highest in males ages 16–19 years (381 grams) and in females ages 16–19 years (254 grams). Total carbohydrates accounted for about 50 percent of total energy intake in the overall population.

Mean protein intakes were similar among race/ethnicity groups (88–92 grams in males and 63–66 grams in females) (table 3). In males, protein intake increased with age and was highest in adolescents and young adults and declined thereafter. Protein intakes in females were generally lower than males of the same age and showed a similar pattern with age (table 3). Protein accounted for about 10–12 percent of total energy intake for non-nursing infants and about 14–16 percent of total energy intake for persons ages 1 year and older (table 11).

Mean alcohol intakes were highest in non-Hispanic whites, intermediate in non-Hispanic blacks, and lowest in Mexican Americans, for both males and females (table 4). Mean alcohol intake was highest in the age group 20–29 years for both males (23 grams) and females (9 grams), accounting for 5 percent and 3 percent of total energy, respectively (table 12). Alcohol accounted for about 2.6 percent of total energy in males ages 16–19 years and 0.6 percent of total energy in females ages 16–19 years. Alcohol intake estimates were very skewed. The mean and standard error of the mean for alcohol should be used and interpreted with extreme caution.

Mean total fat intake ranged from 87 grams in Mexican American males to 95 grams in non-Hispanic black males and 98 grams in non-Hispanic white males (table 5). Mean total fat intake for females was highest in non-Hispanic blacks (72 grams) and similar in non-Hispanic whites (67 grams) and Mexican Americans (66 grams). However, non-Hispanic black persons had the highest percent of energy from fat, approximately 35 percent compared with 34 percent in non-Hispanic white persons and 33 percent in Mexican American persons (table 13). Total fat,

saturated fatty acid, and monounsaturated fatty acid intakes increased with age and were highest in males and females between the ages of 16 and 29 years (tables 5–7). Polyunsaturated fatty acid intakes were highest in the age group 16–39 years. Males had higher mean levels of total fat and fatty acid intakes compared with females of the same age and race/ethnicity (tables 5–8).

Mean dietary cholesterol for the population was 270 milligrams and higher in males compared with females. Dietary cholesterol increased with age and was highest in males ages 16–39 years (ranging from 372–395 milligrams) and females ages 20–49 years (ranging from 235–249 milligrams) and declined thereafter (table 9). Mean cholesterol intakes were lower in non-Hispanic white adults compared with non-Hispanic black adults and Mexican American adults.

The overall dietary pattern for the U.S. population ages 2 months and older was 50 percent of energy from carbohydrate, 15 percent of energy from protein, 34 percent of energy from fat, and 2 percent of energy from alcohol (tables 10–13). Fatty acid contributions to energy were: 12 percent saturated fat, 12.5 percent monounsaturated fat, and 7 percent polyunsaturated fat, (tables 14–16) and the mean cholesterol intake was 270 milligrams (table 9).

Discussion

The NHANES III, Phase 1 data updates previous HANES health and nutrition data that were last collected in 1980. Baseline estimates for infants 2–5 months of age and adults 75 years of age and older—two groups that were excluded from previous HANES— are reported in addition to other age groups.

Given the defined age groups used in NHANES III (1988–91), mean energy intakes peaked during adolescence and early adulthood and declined thereafter. This pattern was similar for both males and females, with males reporting higher intakes than females at all ages. In general, mean energy intake and intake patterns by age and gender were similar among the race/ethnicity groups studied.

Mean energy intakes in NHANES III are similar to those reported in NHANES II for children under 12 years of age (16,17). However, mean energy intakes are approximately 100–300 kcal higher in NHANES III (1988–91) compared with NHANES II (1976–80) for adolescents and adults (16–18). Increases in energy intake between NHANES II and NHANES III ranged from 1–13 percent in males 12 years and older and 14–17 percent in females 16 years and over across various age groups.

Changes in food consumption patterns, dietary survey methodologies, and survey food coding and nutrient composition databases that occurred between NHANES II and NHANES III must be considered when comparing energy and nutrient intake estimates between surveys. During NHANES III, a higher percentage of the dietary recalls were collected for weekend days. The NHANES II 24-hour recalls were collected on hard copy forms and manually coded by the dietary interviewers, whereas the NHANES III utilized an automated dietary interview and coding system, which provided a standardized interview format. The NHANES III interviewers systematically probed for detailed information about all foods consumed as well as items added at the table. Dietary interviewer training methods and quality control monitoring reinforced the dietary protocol and the importance of recording detailed information about all foods consumed. A list of frequently omitted food items was reviewed with all NHANES III respondents as a final check for completeness.

The food coding and nutrient composition databases used in NHANES II and NHANES III were also different. For example, many brand-specific food codes were added to the USDA Survey Nutrient Data Base (SNDB) used for NHANES III, Phase 1 analysis (19). Hundreds of new foods with reduced fat, sodium, and sugar content were added to the SNDB for Phase 1 data analysis. A large number of ethnic foods, particularly Mexican American foods, were added to the SNDB since NHANES II. Finally, significant food composition data changes occurred since NHANES II. For example, in 1989, the cholesterol content of whole eggs was reduced by 22 percent due to updated nutrient composition data for eggs (20). The revised cholesterol data were incorporated in the SNDB for NHANES III.

Previous studies have documented that food consumption is underreported by as much as 25 percent and occurs more often in women, overweight persons, and weight-conscious persons (21,22). To address underreporting in NHANES III, ratios of energy intake (EI) to basal metabolic rate (BMR) were calculated for adults based on previously published formulas (22). These results suggest a more complete reporting of intake in NHANES III compared with NHANES II, however, underreporting in some groups, particularly females and overweight adults, must be considered in interpreting dietary survey data.

Comparison of current intake to dietary recommendations

Mean intakes of energy and protein in NHANES III were compared with the Recommended Dietary Allowances (RDAs) established in 1989 (23). Mean energy intakes in NHANES III were comparable or higher than the RDA for energy for infants, children, young adolescents, and adult males under 60 years of age. Mean energy intakes for females ages 16 years and over and males ages 60 years and over, were lower than the RDA, and may be affected by underreporting. Mean protein intake in NHANES III exceeded the RDA in all age and gender groups.

Mean alcohol intakes must be interpreted cautiously considering that most of the population reported no alcohol on the day of the 24-hour recall, and that alcohol intakes tend to be underreported in dietary surveys (22). Alcohol intake accounted for 2.6 percent of the energy intake in adolescent males ages 16–19 years and rose to 4–5 percent of energy intake in the diets of males ages 20–49 years. Alcohol intake was lower in females than males, although it accounted for 3 percent of energy in females ages 20–29 years.

Total fat contributed a lower percentage of total energy during

NHANES III—34 percent overall for Phase 1 respondents 2 years of age and older compared with 36 percent during NHANES II (16–18). Although the percent of energy from fat has declined since the 1970's and 1980's, mean values for the population are still above the Year 2000 goal of 30 percent of energy or less from total fat and less than 10 percent from saturated fat (1,2,18,24). A shift in the types of fat has also occurred over time; polyunsaturated fat has increased to about 7 percent of energy and saturated fat has decreased to about 12 percent of energy in the population. Mean cholesterol intakes decreased in adults since NHANES II (16,17); however, the mean cholesterol intake in NHANES III for adult males was still above the recommended level of 300 milligrams or less per day (24). Additional progress is needed to meet population targets set for reducing mean intakes of total fat, saturated fat, and dietary cholesterol.

Summary

Among persons ages 2 months–19 years, contributors to daily mean energy intake (1,941± 25 kcal) were: 14.2 percent protein, 34.0 percent fat, 53.1 percent carbohydrate (figure 1), and 0.3 percent alcohol. Among adults ages 20 years and older, protein contributed 15.5 percent, fat 34.0 percent, carbohydrate 49.0 percent, and alcohol 3.1 percent of total energy. Alcohol contributed about 4 percent and 2 percent of energy in male and female adults, respectively (figure 1).

Research is planned to compare food sources of energy and nutrients consumed by different population groups to similar results from earlier national surveys. The NHANES III, Phase 2 (1991–94) recalls were collected using the same methods as those for Phase 1. Future reports will compare the dietary estimates obtained from both phases of NHANES III.

References

1. U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary guidelines for Americans. 3d ed. Washington: U.S. Government Printing Office. 1990.
2. U.S. Department of Health and Human Services. Healthy people 2000: National health promotion and disease prevention objectives. Washington: Public Health Service. 1988.
3. U.S. Department of Health and Human Services. The 1990 health objectives for the Nation: A midcourse review. Public Health Service. 1988.
4. Woteki CE. Dietary survey data: Sources and limits to interpretation. Nutr Rev S:204–12. 1986.
5. Interagency Board for Nutrition Monitoring and Related Research. Nutrition monitoring in the United States: The Directory of Federal and State Nutrition Monitoring Activities. Wright JD, ed. Hyattsville, Maryland: Public Health Service. 1992.
6. U.S. Department of Health and Human Services and U.S. Department of Agriculture. Ten-year comprehensive plan for the National nutrition monitoring and related research program. Federal Register 58:32751–806. 1993.
7. Briefel RR. Assessment of the U.S. diet in national nutrition surveys: National collaborative efforts and NHANES. Am J Clin Nutr 59(suppl):164S–7S. 1994.
8. Woteki CE, Briefel RR, Kuczmarski R. Contributions of the National Center for Health Statistics. Am J Clin Nutr 47:320–8. 1988.
9. Woteki CE, Briefel RR, Hitchcock D, Ezzati T, Maurer K. Selection of nutrition status indicators for field surveys: The NHANES III design. J Nutr 120:1440–5. 1990.
10. Plan and operation of the third National Health and Nutrition Examination Survey, 1988–94. National Center for Health Statistics. Vital Health Stat 1(32). 1994.
11. Briefel RR, Sempos CT, eds. Dietary methodology workshop for the third National Health and Nutrition Examination Survey. National Center for Health Statistics. Vital Health Stat 4(27). 1992.
12. Sempos CT, Briefel RR, Flegal KM, Johnson CL, Murphy RS, Woteki CE. Factors involved in selecting a dietary survey methodology for national nutrition surveys. Aust J Nutr Diet 49:22–7 and 29–30 (reply). 1992.
13. McDowell M, Briefel RR, Warren RA, Buzzard IM, Feskanich D, Gardner SN. The dietary data collection system. An automated interview and coding system for NHANES III. Proceedings of the 14th National Nutrient Databank Conference. Ithaca, New York: CBORD Group, Inc. 1990.
14. Feskanich D, Buzzard IM, Welch BT, et al. Comparison of a computerized and a manual method of food coding for nutrient intake studies. J Am Diet Assoc 88:1263–7. 1988.
15. Feskanich D, Sielaff BH, Chong K, and Buzzard IM. Computerized collection and analysis of dietary intake information. Computer Methods and Programs in Biomedicine 30:47–57. 1989.

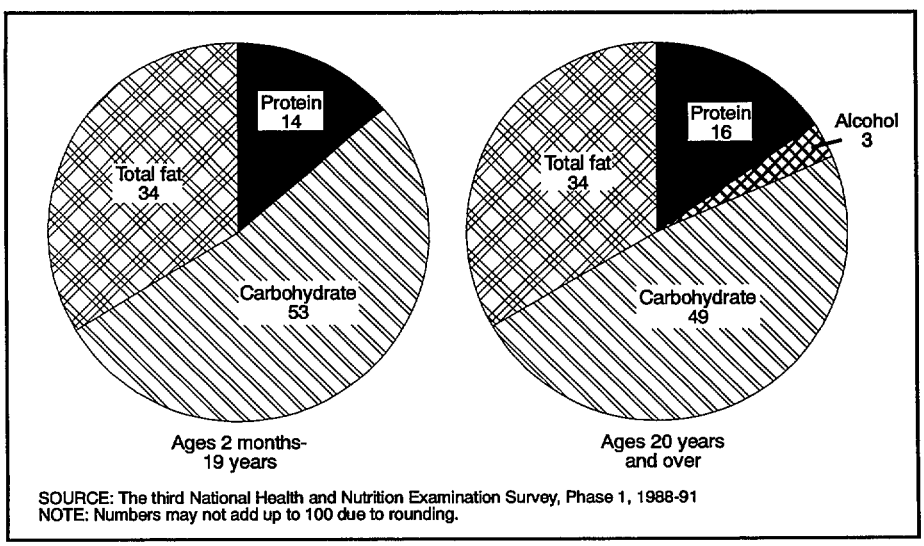

Figure 1. Sources of food energy: United States, 1988–91

16. Life Sciences Research Office, Federation of American Societies for Experimental Biology. Nutrition monitoring in the United States—an update report on nutrition monitoring in the United States. Washington: Public Health Service. 1989.
17. Carroll MD, Abraham S, Dresser CM. Dietary intake source data: United States, 1976–80. National Center for Health Statistics. Vital Health Stat 11(231). 1983.
18. Daily dietary fat and total food-energy intakes—third National Health and Nutrition Examination Survey, Phase 1, 1988–91. MMWR 43(7):116–7, 123–5. 1994.
19. Human Nutrition Information Service, U.S. Department of Agriculture. Survey Nutrient Data Base for NHANES III, Phase 1. Hyattsville, Maryland: Human Nutrition Information Service. 1993.
20. Human Nutrition Information Service. Fact sheet. New nutrient composition data for eggs. Washington: U.S. Department of Agriculture. 1989.
21. Schoeller DA. How accurate is self-reported dietary energy intake? Nutr Rev 48:373–9. 1990.
22. Bingham SA. The dietary assessment of individuals; methods, accuracy, new techniques and recommendations. Nutrition Abstracts and Reviews 57(10):705–42. 1987.
23. National Research Council. Recommended dietary allowances. 10th ed. Washington: National Academy Press. 1989.
24. National Cholesterol Education Program. Second Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Bethesda, MD: National Heart, Lung, and Blood Institute. 1993.
25. Ezzati TM, Massey JT, Waksberg J, Chu A, Maurer KR. Sample design: Third National Health and Nutrition Examination Survey. National Center for Health Statistics. Vital Health Stat 2(113). 1992.
26. Shah BV, Barnwell BG, Hunt PN, Nileen P, Lavange LM. SUDAAN User's Manual, release 5.50. Research Triangle Park, North Carolina: Research Triangle Institute. 1991.
27. Westat, Inc. NHANES III dietary interviewer's manual. Prepared for the National Center for Health Statistics, Hyattsville, Maryland. 1992.
28. Briefel RR, Johnson CL. Methodologic issues and quality control for the dietary component in NHANES III. Abstract. A-373. Federation of the American Societies for Experimental Biology. Washington. 1990.
29. Merrill AL and Watt BK. Energy value of foods—basis and derivation U.S. Department of Agriculture Handbook No. 74, 105 pp. 1973.
30. National Center for Health Statistics. Editing guidelines for the 24–hr dietary recall component of NHANES III, Phase 1, 1988–91. Hyattsville, Maryland. 1993.

Symbols

- - -	Data not available
. . .	Category not applicable
–	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision

Table 1. Energy intake in kilocalories by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	2,095	18	1,886	5,780	2,110	21	1,893	3,883	2,053	23	1,836	4,598	2,014	24	1,841
2–11 months[2]	871	877	14	841	473	878	14	840	162	882	28	851	163	878	25	849
1–2 years[2]	1,231	1,289	18	1,249	424	1,286	22	1,248	355	1,350	32	1,300	402	1,269	29	1,203
3–5 years	1,547	1,591	20	1,508	425	1,573	28	1,488	454	1,702	34	1,607	609	1,567	29	1,472
6–11 years	1,745	1,897	23	1,799	511	1,895	31	1,793	452	1,905	36	1,819	727	1,860	31	1,767
12–15 years	711	2,218	55	2,095	221	2,203	72	2,103	191	2,231	89	2,030	269	2,081	76	1,895
16–19 years	765	2,533	66	2,269	245	2,561	88	2,270	217	2,564	100	2,338	270	2,245	78	2,037
20–29 years	1,682	2,484	43	2,270	460	2,516	62	2,289	499	2,510	76	2,263	666	2,307	50	2,114
30–39 years	1,526	2,372	42	2,200	550	2,413	53	2,224	454	2,235	66	2,027	472	2,263	56	2,106
40–49 years	1,228	2,146	38	2,014	467	2,183	46	2,054	338	2,048	64	1,882	366	2,154	56	2,074
50–59 years	929	1,967	41	1,854	472	1,993	44	1,884	230	1,767	56	1,669	196	1,870	64	1,828
60–69 years	1,106	1,822	37	1,681	493	1,844	41	1,719	289	1,608	53	1,478	305	1,598	51	1,498
70–79 years	851	1,624	33	1,531	538	1,639	31	1,539	186	1,488	59	1,334	111	1,456	81	1,268
80 years and over	609	1,484	36	1,394	501	1,497	29	1,400	56	1,363	99	1,250	42	*1,325	*	*1,287
Male																
All ages[2]	7,322	2,478	29	2,269	2,887	2,522	34	2,309	1,903	2,371	40	2,156	2,250	2,301	38	2,150
2–11 months[2]	439	903	21	858	241	905	21	851	78	902	39	879	89	923	34	932
1–2 years[2]	601	1,339	27	1,291	202	1,336	32	1,283	182	1,402	47	1,385	186	1,306	43	1,253
3–5 years	744	1,663	29	1,568	219	1,659	38	1,550	210	1,748	50	1,616	281	1,652	45	1,552
6–11 years	868	2,036	33	1,913	252	2,058	45	1,909	239	1,975	50	1,948	344	1,951	46	1,839
12–15 years	338	2,578	87	2,486	98	2,608	115	2,549	95	2,380	146	2,307	129	2,379	122	2,107
16–19 years	368	3,097	96	2,918	112	3,208	127	3,188	103	3,045	168	2,679	139	2,573	115	2,477
20–29 years	844	3,025	66	2,799	216	3,125	95	2,935	245	3,070	135	2,788	349	2,673	70	2,490
30–39 years	735	2,872	64	2,736	271	2,941	77	2,806	213	2,697	113	2,456	225	2,644	86	2,519
40–49 years	626	2,545	56	2,349	243	2,574	64	2,396	178	2,513	106	2,397	181	2,533	76	2,458
50–59 years	473	2,341	61	2,221	251	2,410	63	2,267	105	1,926	94	1,842	96	2,125	94	2,061
60–69 years	546	2,110	55	1,926	247	2,118	59	1,932	141	1,882	94	1,630	152	1,963	79	1,805
70–79 years	444	1,887	49	1,797	285	1,924	45	1,813	93	1,532	84	1,346	60	1,660	111	1,480
80 years and over	296	1,776	56	1,692	250	1,802	45	1,725	21	*1,562	*	*1,394	19	*1,460	*	*1,464
Female																
All ages[2]	7,479	1,732	18	1,632	2,893	1,722	21	1,628	1,980	1,776	23	1,648	2,348	1,712	27	1,609
2–11 months[2]	432	850	16	818	232	847	17	823	84	864	37	818	74	827	36	788
1–2 years[2]	630	1,236	21	1,191	222	1,235	27	1,199	173	1,290	40	1,206	216	1,228	38	1,163
3–5 years	803	1,516	23	1,451	206	1,484	35	1,421	244	1,655	41	1,583	328	1,483	36	1,425
6–11 years	877	1,753	26	1,685	259	1,731	36	1,669	213	1,833	45	1,734	383	1,769	42	1,664
12–15 years	373	1,838	46	1,799	123	1,783	58	1,730	96	2,079	91	1,927	140	1,805	82	1,723
16–19 years	397	1,958	57	1,795	133	1,885	74	1,622	114	2,107	83	1,961	131	1,874	90	1,779
20–29 years	838	1,957	34	1,838	244	1,953	50	1,836	254	2,034	58	1,945	317	1,862	57	1,729
30–39 years	791	1,883	35	1,798	279	1,894	48	1,805	241	1,849	59	1,699	247	1,861	58	1,751
40–49 years	602	1,764	34	1,673	224	1,786	46	1,687	160	1,658	49	1,545	185	1,764	66	1,598
50–59 years	456	1,629	38	1,545	221	1,617	42	1,544	125	1,647	58	1,537	100	1,635	76	1,697
60–69 years	560	1,578	37	1,493	246	1,602	45	1,510	148	1,402	47	1,405	153	1,297	47	1,306
70–79 years	407	1,435	32	1,382	253	1,431	32	1,380	93	1,457	76	1,326	51	1,280	110	1,057
80 years and over	313	1,329	35	1,285	251	1,335	31	1,294	35	1,272	91	1,199	23	*1,251	*	*1,264

[1] Includes data for race/ethnicithy groups not shown separately.
[2] Excludes nursing infants and children.

Table 2. Carbohydrate intake in grams by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	257	2.6	233	5,780	259	3.2	234	3,883	246	2.7	222	4,598	249	4.7	233
2–11 months[2]	871	115	2.3	111	473	117	2.3	112	162	114	4.1	110	163	110	4.1	102
1–2 years[2]	1,231	170	2.7	164	424	171	3.3	166	355	170	4.4	165	402	160	4.5	149
3–5 years	1,547	215	2.9	206	425	215	4.0	207	454	220	4.8	207	609	208	4.6	194
6–11 years	1,745	251	3.6	234	511	253	4.8	235	452	242	5.0	232	727	241	5.1	228
12–15 years	711	296	8.5	272	221	301	11.6	272	191	281	12.5	263	269	261	10.8	251
16–19 years	765	318	9.2	282	245	320	11.9	282	217	317	12.9	289	270	275	10.9	260
20–29 years	1,682	296	5.6	271	460	300	8.0	272	499	287	8.8	265	666	282	6.6	265
30–39 years	1,526	281	5.6	258	550	286	7.0	263	454	258	8.1	233	472	272	7.3	256
40–49 years	1,228	254	5.4	234	467	258	6.5	238	338	232	7.5	209	366	258	7.7	242
50–59 years	929	231	5.3	213	472	232	5.5	213	230	213	7.7	201	196	231	10.1	218
60–69 years	1,106	224	5.1	202	493	226	5.6	204	289	195	6.5	185	305	202	7.6	187
70–79 years	851	204	4.5	197	538	206	4.2	199	186	180	7.9	164	111	191	11.8	177
80 years and over	609	195	5.2	182	501	196	4.2	185	56	*184	*	*160	42	*169	*	143
Male																
All ages[2]	7,322	299	4.2	274	2,887	305	5.1	277	1,903	278	4.6	250	2,250	280	7.3	265
2–11 months[2]	439	119	3.4	112	241	122	3.5	113	78	114	5.4	105	89	116	5.4	115
1–2 years[2]	601	176	3.9	173	202	178	4.8	176	182	178	6.3	177	186	164	6.2	155
3–5 years	744	225	4.3	214	219	227	5.6	217	210	228	7.2	207	281	223	6.8	207
6–11 years	868	272	5.3	258	252	278	7.4	262	239	250	6.9	236	344	253	7.2	241
12–15 years	338	346	14.2	325	98	357	20.1	341	95	309	20.2	292	129	295	16.6	272
16–19 years	368	381	13.7	348	112	395	18.3	370	103	370	20.8	334	139	312	15.6	294
20–29 years	844	353	8.6	330	216	364	12.8	338	245	341	14.8	316	349	323	8.8	310
30–39 years	735	335	8.8	312	271	345	10.8	323	213	304	13.6	262	225	305	10.9	299
40–49 years	626	298	8.4	273	243	302	9.9	278	178	272	12.1	250	181	292	10.3	285
50–59 years	473	266	7.9	246	251	272	8.2	254	105	227	12.2	212	96	258	14.7	231
60–69 years	546	253	7.6	237	247	254	8.3	239	141	217	10.6	196	152	242	11.7	227
70–79 years	444	231	7.0	217	285	235	6.5	223	93	187	11.5	173	60	212	15.3	190
80 years and over	296	225	8.2	209	250	228	6.6	211	21	*193	*	*147	19	*181	*	*136
Female																
All ages[2]	7,479	217	2.7	203	2,893	216	3.1	202	1,980	218	2.8	203	2,348	217	5.4	208
2–11 months[2]	432	112	2.5	107	232	112	2.6	107	84	115	5.5	111	74	103	5.4	97
1–2 years[2]	630	163	3.1	158	222	165	3.9	161	173	162	5.6	159	216	156	5.8	145
3–5 years	803	204	3.2	196	206	202	4.8	196	244	213	5.9	206	328	193	5.2	179
6–11 years	877	229	3.6	219	259	227	5.0	218	213	235	6.5	227	383	228	6.2	215
12–15 years	373	243	6.1	236	123	243	8.0	228	96	252	12.1	238	140	230	11.2	225
16–19 years	397	254	8.2	233	133	242	9.5	231	114	267	12.1	244	131	234	11.6	223
20–29 years	838	241	4.6	237	244	241	6.6	238	254	241	7.8	230	317	233	7.3	218
30–39 years	791	228	4.5	213	279	228	6.1	212	241	220	7.4	204	247	236	7.7	230
40–49 years	602	213	4.7	194	224	213	6.1	196	160	198	6.9	185	185	222	9.0	209
50–59 years	456	199	5.1	187	221	197	5.4	186	125	203	8.7	195	100	207	11.5	204
60–69 years	560	199	5.3	185	246	202	6.5	185	148	178	6.8	180	153	169	7.1	165
70–79 years	407	185	4.5	179	253	186	4.3	180	93	175	9.9	154	51	172	15.5	148
80 years and over	313	179	5.2	173	251	180	4.5	173	35	179	14.5	161	23	*163	*	*140

[1]Includes data for race/ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Table 3. Protein intake in grams by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	78	0.6	69	5,780	77	0.7	69	3,883	76	1.1	66	4,598	78	0.9	69
2–11 months[2]	871	26	0.7	22	473	26	0.7	22	162	23	1.2	19	163	27	1.3	23
1–2 years[2]	1,231	48	0.8	45	424	47	0.9	45	355	50	1.4	47	402	49	1.3	45
3–5 years	1,547	57	0.8	53	425	55	1.2	51	454	60	1.4	57	609	57	1.2	54
6–11 years	1,745	67	0.9	64	511	66	1.3	63	452	68	1.6	65	727	70	1.3	63
12–15 years	711	76	2.0	68	221	74	2.7	68	191	76	3.4	68	269	79	3.1	71
16–19 years	765	89	2.5	77	245	90	3.6	76	217	88	3.6	81	270	86	3.4	78
20–29 years	1,682	89	1.7	77	460	88	2.5	76	499	93	3.3	81	666	91	2.2	82
30–39 years	1,526	88	1.6	80	550	89	2.1	81	454	82	2.8	71	472	87	2.4	79
40–49 years	1,228	81	1.6	75	467	81	1.9	75	338	80	3.1	70	366	83	2.5	78
50–59 years	929	78	1.8	72	472	79	2.0	73	230	67	2.3	62	196	77	2.8	72
60–69 years	1,106	73	1.5	67	493	74	1.8	68	289	65	2.7	57	305	66	2.1	60
70–79 years	851	65	1.4	60	538	65	1.4	61	186	62	2.6	58	111	61	3.7	57
80 years and over	609	58	1.6	54	501	58	1.3	54	56	56	5.0	49	42	50	3.8	46
Male																
All ages[2]	7,322	92	0.9	82	2,887	92	1.2	83	1,903	88	1.9	77	2,250	89	1.3	82
2–11 months[2]	439	27	0.9	23	241	27	0.9	23	78	25	1.9	21	89	29	1.6	26
1–2 years[2]	601	50	1.1	47	202	49	1.4	47	182	52	1.9	49	186	50	1.7	45
3–5 years	744	59	1.2	54	219	59	1.7	53	210	60	1.9	57	281	60	1.6	57
6–11 years	868	71	1.3	67	252	69	1.7	67	239	72	2.2	66	344	74	1.8	69
12–15 years	338	89	3.0	82	98	88	4.1	83	95	79	5.0	72	129	93	4.5	84
16–19 years	368	111	3.8	100	112	114	5.4	102	103	105	5.5	96	139	98	4.6	92
20–29 years	844	110	2.7	96	216	109	4.0	94	245	117	5.7	103	349	106	2.8	100
30–39 years	735	106	2.4	97	271	108	3.1	99	213	99	4.6	86	225	104	3.3	98
40–49 years	626	96	2.3	90	243	95	2.7	91	178	99	5.2	84	181	98	3.2	93
50–59 years	473	93	2.8	88	251	95	3.0	90	105	74	3.8	65	96	85	3.5	78
60–69 years	546	84	2.4	78	247	85	2.7	79	141	78	4.7	67	152	78	2.8	74
70–79 years	444	74	2.2	70	285	75	2.1	70	93	63	3.4	60	60	73	5.2	64
80 years and over	296	69	2.5	64	250	69	1.9	65	21	*70	*	*56	19	*62	*	*60
Female																
All ages[2]	7,479	64	0.6	60	2,893	63	0.7	59	1,980	65	1.1	60	2,348	66	1.0	59
2–11 months[2]	432	25	0.9	20	232	25	1.0	21	84	22	1.4	18	74	24	1.7	18
1–2 years[2]	630	45	0.9	43	222	45	1.2	42	173	48	1.7	44	216	48	1.6	45
3–5 years	803	54	1.0	50	206	52	1.6	47	244	59	1.7	57	328	55	1.5	52
6–11 years	877	63	1.1	60	259	62	1.7	59	213	65	2.0	63	383	66	1.7	60
12–15 years	373	62	2.0	58	123	59	2.6	57	96	73	4.1	63	140	66	3.1	62
16–19 years	397	67	2.2	62	133	66	3.1	61	114	72	3.4	66	131	72	4.0	66
20–29 years	838	69	1.5	66	244	68	2.1	67	254	74	2.4	66	317	72	2.4	64
30–39 years	791	70	1.6	66	279	70	2.1	66	241	67	2.5	62	247	70	2.4	63
40–49 years	602	67	1.5	64	224	66	1.9	64	160	64	2.4	60	185	68	2.9	59
50–59 years	456	64	1.7	59	221	64	2.1	59	125	62	2.2	60	100	69	3.5	62
60–69 years	560	64	1.6	60	246	64	2.0	60	148	56	2.3	51	153	56	2.4	53
70–79 years	407	58	1.6	55	253	57	1.5	55	93	62	3.5	57	51	50	3.9	45
80 years and over	313	52	1.7	49	251	52	1.6	49	35	50	4.5	45	23	*43	*	*41

[1]Includes data for race/ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Table 4. Alcohol intake in grams by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]			Non-Hispanic white			Non-Hispanic black			Mexican American		
	Sample size	Mean[2]	Standard error of the mean	Sample size	Mean[2]	Standard error of the mean	Sample size	Mean[2]	Standard error of the mean	Sample size	Mean[2]	Standard error of the mean
Both sexes												
All ages[3]	14,801	8	0.5	5,780	9	0.6	3,883	7	0.5	4,598	6	0.4
2–11 months[3]	871	0	0.0	473	0	0.0	162	0	0.0	163	0	0.0
1–2 years[3]	1,231	0	0.0	424	0	0.0	355	0	0.0	402	0	0.0
3–5 years	1,547	0	0.0	425	0	0.0	454	0	0.0	609	0	0.0
6–11 years	1,745	0	0.0	511	0	0.0	452	0	0.0	727	0	0.0
12–15 years	711	0	0.1	221	0	0.2	191	0	0.1	269	0	0.0
16–19 years	765	7	1.4	245	9	2.3	217	3	1.0	270	5	1.7
20–29 years	1,682	16	1.4	460	18	2.5	499	11	1.4	666	8	1.1
30–39 years	1,526	13	1.1	550	13	1.5	454	14	1.7	472	12	1.6
40–49 years	1,228	11	1.1	467	12	1.5	338	12	1.8	366	14	1.8
50–59 years	929	9	1.0	472	9	1.2	230	8	1.5	196	7	1.4
60–69 years	1,106	7	0.8	493	7	1.0	289	5	1.2	305	4	0.8
70–79 years	851	4	0.6	538	4	0.7	186	2	0.8	111	1	0.4
80 years and over	609	2	0.5	501	2	0.5	56	0	0.0	42	0	0.0
Male												
All ages[3]	7,322	12	0.9	2,887	13	1.1	1,903	11	1.0	2,250	10	0.7
2–11 months[3]	439	0	0.0	241	0	0.0	78	0	0.0	89	0	0.0
1–2 years[3]	601	0	0.0	202	0	0.0	182	0	0.0	186	0	0.0
3–5 years	744	0	0.0	219	0	0.0	210	0	0.0	281	0	0.0
6–11 years	868	0	0.0	252	0	0.0	239	0	0.0	344	0	0.0
12–15 years	338	0	0.0	98	0	0.0	95	0	0.2	129	0	0.0
16–19 years	368	13	2.4	112	16	4.3	103	5	2.1	139	8	3.3
20–29 years	844	23	2.2	216	26	4.3	245	20	2.6	349	13	1.8
30–39 years	735	18	1.6	271	18	2.3	213	22	3.0	225	20	2.8
40–49 years	626	18	1.7	243	17	2.3	178	21	3.4	181	23	3.3
50–59 years	473	12	1.6	251	12	2.0	105	12	2.5	96	11	2.5
60–69 years	546	11	1.4	247	10	1.7	141	10	2.5	152	8	1.6
70–79 years	444	7	1.0	285	7	1.2	93	3	1.5	60	1	0.6
80 years and over	296	4	0.9	250	5	0.9	21	0	0.0	19	0	0.0
Female												
All ages[3]	7,479	5	0.5	2,893	5	0.6	1,980	3	0.4	2,348	2	0.3
2–11 months[3]	432	0	0.0	232	0	0.0	84	0	0.0	74	0	0.0
1–2 years[3]	630	0	0.0	222	0	0.0	173	0	0.0	216	0	0.0
3–5 years	803	0	0.0	206	0	0.0	244	0	0.0	328	0	0.0
6–11 years	877	0	0.0	259	0	0.0	213	0	0.0	383	0	0.0
12–15 years	373	0	0.2	123	0	0.3	96	0	0.0	140	0	0.1
16–19 years	397	2	0.6	133	2	1.0	114	1	0.4	131	1	0.5
20–29 years	838	9	1.3	244	11	2.2	254	4	0.8	317	2	1.0
30–39 years	791	8	1.1	279	7	1.5	241	8	1.7	247	5	1.5
40–49 years	602	5	1.1	224	6	1.6	160	4	1.0	185	4	1.1
50–59 years	456	5	1.0	221	6	1.2	125	4	1.8	100	4	1.3
60–69 years	560	4	0.7	246	5	0.9	148	1	0.7	153	1	0.3
70–79 years	407	2	0.6	253	2	0.7	93	1	0.5	51	1	0.4
80 years and over	313	1	0.5	251	1	0.5	35	0	0.0	23	0	0.0

[1]Includes data for race/ethhnicity groups not shown separately.
[2]Estimates of alcohol intake are very skewed; the mean and standard error of the mean should be used and interpreted with extreme caution. Median values for all age, sex, race/ethnicity groups are zero.
[3]Excludes nursing infants and children.

Table 5. Total fat intake in grams by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	81	0.9	71	5,780	82	1.0	72	3,883	83	1.2	72	4,598	77	0.8	67
2–11 months[2]	871	36	0.6	34	473	35	0.6	33	162	38	1.3	36	163	38	1.2	37
1–2 years[2]	1,231	49	0.9	45	424	49	1.1	45	355	54	1.6	51	402	50	1.5	46
3–5 years	1,547	59	1.0	54	425	58	1.4	53	454	67	1.6	63	609	59	1.4	55
6–11 years	1,745	73	1.1	67	511	73	1.5	67	452	76	1.9	71	727	72	1.5	65
12–15 years	711	85	2.5	76	221	82	3.2	76	191	93	4.3	81	269	83	3.7	71
16–19 years	765	99	2.9	88	245	99	3.8	89	217	106	4.9	92	270	88	3.7	80
20–29 years	1,682	96	2.0	86	460	97	2.7	86	499	104	3.7	90	666	87	2.5	77
30–39 years	1,526	94	2.0	84	550	96	2.5	86	454	89	3.2	78	472	86	2.9	74
40–49 years	1,228	84	1.8	75	467	87	2.2	79	338	82	3.1	73	366	80	2.7	73
50–59 years	929	78	2.1	71	472	80	2.3	72	230	68	2.7	63	196	68	3.0	64
60–69 years	1,106	69	1.7	60	493	70	1.9	61	289	62	2.8	52	305	58	2.4	51
70–79 years	851	61	1.7	55	538	62	1.6	56	186	59	3.1	50	111	52	4.1	41
80 years and over	609	54	1.7	50	501	55	1.4	51	56	47	4.4	45	42	*52	*	*49
Male																
All ages[2]	7,322	96	1.4	85	2,887	98	1.6	87	1,903	95	2.0	82	2,250	87	1.2	77
2–11 months[2]	439	37	0.9	35	241	36	0.9	34	78	40	1.9	39	89	39	1.8	37
1–2 years[2]	601	51	1.2	49	202	50	1.6	48	182	56	2.3	54	186	52	2.3	48
3–5 years	744	62	1.4	57	219	61	1.9	55	210	69	2.5	66	281	61	2.3	57
6–11 years	868	78	1.5	73	252	78	2.1	74	239	79	2.8	77	344	75	2.3	66
12–15 years	338	97	3.8	86	98	97	5.0	87	95	95	6.9	84	129	96	6.0	78
16–19 years	368	120	4.1	112	112	123	5.3	114	103	127	8.8	110	139	101	5.6	90
20–29 years	844	116	3.0	106	216	121	4.2	110	245	124	7.0	109	349	99	3.7	90
30–39 years	735	113	3.0	106	271	116	3.6	110	213	106	5.9	93	225	100	4.7	89
40–49 years	626	98	2.7	87	243	100	3.2	90	178	100	5.5	87	181	93	4.0	86
50–59 years	473	95	3.1	90	251	99	3.2	96	105	73	4.7	64	96	78	4.6	76
60–69 years	546	80	2.6	71	247	81	2.8	71	141	73	5.2	59	152	73	4.0	62
70–79 years	444	73	2.5	64	285	74	2.3	66	93	59	4.4	50	60	59	6.1	52
80 years and over	296	67	2.7	62	250	69	2.2	64	21	*58	*	*50	19	*56	*	*52
Female																
All ages[2]	7,479	67	0.9	60	2,893	67	1.0	60	1,980	72	1.2	65	2,348	66	0.8	58
2–11 months[2]	432	35	0.8	33	232	34	0.8	33	84	36	1.6	34	74	36	1.6	36
1–2 years[2]	630	47	1.2	43	222	47	1.5	43	173	52	2.0	46	216	48	1.9	44
3–5 years	803	57	1.2	53	206	55	1.9	51	244	66	2.0	62	328	57	1.7	52
6–11 years	877	68	1.4	63	259	67	2.1	62	213	73	2.4	68	383	69	1.9	63
12–15 years	373	72	2.6	66	123	67	3.3	64	96	90	5.0	73	140	72	3.9	64
16–19 years	397	77	3.1	65	133	74	4.2	60	114	86	4.0	82	131	74	4.0	67
20–29 years	838	75	1.8	70	244	74	2.5	70	254	86	2.9	81	317	72	2.8	65
30–39 years	791	75	1.9	68	279	76	2.6	70	241	74	2.8	69	247	70	2.8	62
40–49 years	602	70	2.0	64	224	72	2.7	65	160	67	2.7	62	185	66	3.0	59
50–59 years	456	63	2.1	59	221	63	2.4	59	125	64	3.0	63	100	58	3.4	54
60–69 years	560	59	2.0	54	246	60	2.3	55	148	53	2.7	45	153	46	2.1	44
70–79 years	407	53	1.9	49	253	53	1.9	50	93	58	4.0	50	51	45	5.0	32
80 years and over	313	47	1.7	44	251	47	1.5	44	35	42	3.4	42	23	*50	*	*48

[1]Includes data for race/ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Table 6. Saturated fat intake in grams by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	28	0.4	25	5,780	29	0.4	25	3,883	28	0.4	25	4,598	27	0.3	23
2–11 months[2]	871	15	0.3	15	473	15	0.3	15	162	15	0.6	15	163	16	0.6	15
1–2 years[2]	1,231	20	0.4	18	424	20	0.5	18	355	21	0.6	19	402	20	0.7	19
3–5 years	1,547	23	0.4	21	425	22	0.6	21	454	25	0.6	23	609	22	0.6	21
6–11 years	1,745	27	0.4	25	511	27	0.6	25	452	27	0.7	25	727	27	0.6	24
12–15 years	711	31	0.9	28	221	30	1.2	28	191	33	1.6	28	269	31	1.5	27
16–19 years	765	36	1.1	31	245	36	1.4	33	217	37	1.8	32	270	31	1.5	27
20–29 years	1,682	34	0.7	30	460	34	1.0	31	499	35	1.3	31	666	30	1.0	26
30–39 years	1,526	32	0.7	28	550	34	0.9	29	454	29	1.1	25	472	30	1.1	25
40–49 years	1,228	28	0.7	25	467	29	0.8	26	338	27	1.1	23	366	27	1.1	24
50–59 years	929	26	0.7	24	472	26	0.8	24	230	23	1.0	21	196	23	1.3	20
60–69 years	1,106	23	0.7	20	493	24	0.7	20	289	20	0.9	16	305	20	1.0	16
70–79 years	851	21	0.6	18	538	21	0.6	18	186	19	1.0	16	111	17	1.5	13
80 years and over	609	19	0.6	17	501	19	0.5	17	56	16	1.6	15	42	*19	*	*16
Male																
All ages[2]	7,322	34	0.6	29	2,887	35	0.6	31	1,903	32	0.7	28	2,250	31	0.5	26
2–11 months[2]	439	16	0.4	15	241	15	0.4	15	78	16	0.9	16	89	17	0.8	16
1–2 years[2]	601	21	0.5	20	202	21	0.6	20	182	21	0.9	20	186	21	0.9	19
3–5 years	744	24	0.5	22	219	24	0.8	22	210	26	0.9	25	281	23	0.9	22
6–11 years	868	29	0.6	27	252	30	0.9	28	239	29	1.1	27	344	28	0.9	25
12–15 years	338	36	1.3	32	98	36	1.7	33	95	33	2.5	30	129	36	2.4	29
16–19 years	368	44	1.5	39	112	45	2.0	40	103	44	3.1	36	139	36	2.2	30
20–29 years	844	41	1.1	37	216	43	1.5	41	245	41	2.4	35	349	34	1.5	31
30–39 years	735	39	1.1	36	271	41	1.4	38	213	34	1.9	29	225	35	1.7	31
40–49 years	626	33	0.9	29	243	33	1.1	30	178	33	1.8	28	181	31	1.5	28
50–59 years	473	31	1.0	29	251	33	1.1	30	105	23	1.5	21	96	26	1.9	22
60–69 years	546	27	1.0	23	247	28	1.1	24	141	24	1.7	20	152	25	1.6	19
70–79 years	444	25	0.9	22	285	26	0.9	23	93	20	1.5	18	60	20	2.1	16
80 years and over	296	23	0.9	20	250	24	0.7	22	21	*20	*	*17	19	*20	*	*19
Female																
All ages[2]	7,479	23	0.4	21	2,893	23	0.4	21	1,980	24	0.4	22	2,348	23	0.4	21
2–11 months[2]	432	15	0.4	14	232	15	0.4	14	84	15	0.7	14	74	15	0.8	14
1–2 years[2]	630	19	0.5	17	222	19	0.6	17	173	20	0.8	18	216	19	0.9	17
3–5 years	803	22	0.5	20	206	21	0.7	20	244	24	0.8	22	328	22	0.7	19
6–11 years	877	25	0.5	23	259	25	0.8	23	213	26	0.8	25	383	26	0.8	23
12–15 years	373	26	1.0	24	123	24	1.3	24	96	31	1.8	26	140	27	1.6	24
16–19 years	397	27	1.3	23	133	26	1.4	22	114	31	1.6	28	131	27	1.6	24
20–29 years	838	26	0.7	24	244	26	0.9	24	254	29	1.0	26	317	25	1.1	22
30–39 years	791	26	0.7	24	279	27	0.9	24	241	24	1.0	21	247	25	1.1	21
40–49 years	602	24	0.7	21	224	25	1.0	22	160	22	0.9	20	185	22	1.2	19
50–59 years	456	21	0.7	19	221	21	0.8	18	125	23	1.2	21	100	20	1.4	19
60–69 years	560	20	0.7	18	246	20	0.9	18	148	17	0.8	14	153	16	0.9	13
70–79 years	407	18	0.7	16	253	18	0.7	16	93	19	1.3	15	51	15	1.8	11
80 years and over	313	16	0.7	15	251	16	0.6	15	35	14	1.3	13	23	*18	*	*14

[1]Includes data for race/ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Table 7. Mean monounsaturated fat intake in grams by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	30	0.4	26	5,780	30	0.4	26	3,883	31	0.5	27	4,598	28	0.3	24
2–11 months[2]	871	9	0.3	7	473	9	0.3	7	162	9	0.5	8	163	10	0.5	8
1–2 years[2]	1,231	18	0.4	16	424	18	0.4	17	355	20	0.6	18	402	17	0.6	16
3–5 years	1,547	22	0.4	20	425	22	0.6	20	454	25	0.6	24	609	21	0.5	20
6–11 years	1,745	27	0.5	25	511	27	0.6	25	452	29	0.8	26	727	27	0.6	23
12–15 years	711	32	1.0	29	221	31	1.3	29	191	35	1.7	30	269	31	1.4	27
16–19 years	765	37	1.2	33	245	37	1.5	33	217	40	2.0	35	270	32	1.4	30
20–29 years	1,682	36	0.8	31	460	36	1.1	31	499	39	1.5	34	666	32	0.9	29
30–39 years	1,526	35	0.8	31	550	36	1.0	32	454	34	1.3	29	472	31	1.1	27
40–49 years	1,228	31	0.8	28	467	32	0.9	29	338	31	1.3	27	366	30	1.0	27
50–59 years	929	29	0.9	26	472	30	0.9	26	230	26	1.1	24	196	25	1.2	22
60–69 years	1,106	26	0.7	22	493	26	0.8	23	289	24	1.2	20	305	21	0.9	18
70–79 years	851	23	0.7	20	538	23	0.6	21	186	22	1.3	19	111	19	1.6	15
80 years and over	609	20	0.7	18	501	21	0.6	18	56	18	1.7	18	42	*20	*	*18
Male																
All ages[2]	7,322	36	0.6	32	2,887	37	0.7	33	1,903	36	0.8	31	2,250	32	0.5	28
2–11 months[2]	439	9	0.4	8	241	9	0.3	7	78	10	0.8	7	89	10	0.7	9
1–2 years[2]	601	18	0.5	17	202	18	0.6	18	182	21	0.9	20	186	18	0.8	17
3–5 years	744	23	0.6	21	219	23	0.8	20	210	26	1.0	24	281	22	0.8	20
6–11 years	868	29	0.6	26	252	29	0.8	26	239	30	1.2	28	344	28	0.9	24
12–15 years	338	37	1.5	34	98	36	2.0	34	95	36	2.7	32	129	36	2.4	29
16–19 years	368	45	1.6	42	112	46	2.1	42	103	49	3.4	43	139	37	2.0	33
20–29 years	844	44	1.2	39	216	45	1.7	42	245	48	2.9	40	349	36	1.3	33
30–39 years	735	43	1.3	40	271	44	1.5	41	213	41	2.5	35	225	37	1.7	33
40–49 years	626	37	1.2	32	243	38	1.4	33	178	38	2.3	33	181	35	1.5	33
50–59 years	473	36	1.3	33	251	37	1.3	34	105	29	2.0	26	96	30	1.9	27
60–69 years	546	30	1.1	25	247	30	1.2	26	141	28	2.1	22	152	27	1.5	23
70–79 years	444	27	1.0	24	285	28	1.0	25	93	23	1.8	19	60	22	2.5	19
80 years and over	296	26	1.1	23	250	26	0.9	24	21	*22	*	*18	19	*22	*	*20
Female																
All ages[2]	7,479	25	0.4	22	2,893	24	0.4	22	1,980	27	0.5	24	2,348	24	0.3	21
2–11 months[2]	432	9	0.3	7	232	9	0.3	7	84	9	0.5	7	74	9	0.7	7
1–2 years[2]	630	17	0.5	15	222	17	0.6	16	173	19	0.8	17	216	16	0.7	15
3–5 years	803	21	0.5	19	206	21	0.8	18	244	24	0.8	23	328	21	0.6	19
6–11 years	877	25	0.6	23	259	25	0.8	23	213	28	0.9	25	383	25	0.7	23
12–15 years	373	27	1.0	25	123	25	1.3	24	96	33	1.9	28	140	27	1.5	24
16–19 years	397	28	1.2	24	133	28	1.7	22	114	32	1.5	30	131	27	1.4	23
20–29 years	838	28	0.7	26	244	27	1.0	25	254	32	1.1	29	317	26	1.0	24
30–39 years	791	27	0.8	25	279	28	1.0	25	241	28	1.1	25	247	25	1.0	22
40–49 years	602	26	0.8	23	224	27	1.0	24	160	25	1.1	23	185	24	1.2	21
50–59 years	456	23	0.8	21	221	23	0.9	20	125	24	1.1	24	100	21	1.3	19
60–69 years	560	22	0.8	20	246	22	0.9	20	148	21	1.1	17	153	17	0.8	15
70–79 years	407	19	0.8	17	253	19	0.7	17	93	22	1.7	17	51	16	1.9	11
80 years and over	313	17	0.7	17	251	17	0.6	17	35	16	1.4	17	23	*19	*	*17

[1]Includes data for race/ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Table 8. Polyunsaturated fat intake in grams by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	16	0.2	13	5,780	17	0.2	13	3,883	17	0.3	13	4,598	15	0.3	12
2–11 months[2]	871	8	0.2	8	473	8	0.2	8	162	10	0.4	9	163	9	0.4	8
1–2 years[2]	1,231	8	0.2	7	424	8	0.2	7	355	9	0.3	9	402	9	0.3	7
3–5 years	1,547	10	0.2	9	425	10	0.3	9	454	13	0.4	11	609	11	0.3	9
6–11 years	1,745	13	0.3	12	511	13	0.4	11	452	15	0.6	13	727	13	0.4	11
12–15 years	711	16	0.6	12	221	15	0.9	12	191	18	1.0	16	269	14	0.7	12
16–19 years	765	19	0.7	16	245	19	0.9	16	217	21	1.0	17	270	18	1.0	14
20–29 years	1,682	19	0.5	16	460	19	0.7	16	499	22	0.8	17	666	18	0.6	16
30–39 years	1,526	19	0.5	16	550	19	0.6	16	454	19	0.7	16	472	18	0.8	14
40–49 years	1,228	18	0.5	15	467	19	0.6	15	338	18	0.7	15	366	17	0.7	15
50–59 years	929	17	0.5	14	472	18	0.6	14	230	14	0.6	11	196	14	0.7	13
60–69 years	1,106	14	0.4	12	493	15	0.5	12	289	13	0.7	10	305	12	0.6	10
70–79 years	851	13	0.4	11	538	13	0.4	11	186	12	0.8	10	111	11	1.0	9
80 years and over	609	11	0.4	9	501	11	0.4	9	56	9	1.1	7	42	9	0.8	8
Male																
All ages[2]	7,322	19	0.3	15	2,887	19	0.3	16	1,903	19	0.4	15	2,250	17	0.5	14
2–11 months[2]	439	8	0.3	8	241	8	0.3	8	78	10	0.6	10	89	9	0.7	8
1–2 years[2]	601	8	0.3	7	202	8	0.4	7	182	10	0.5	9	186	9	0.6	7
3–5 years	744	11	0.3	9	219	11	0.4	9	210	13	0.6	12	281	11	0.6	9
6–11 years	868	14	0.4	12	252	14	0.5	12	239	15	0.6	14	344	13	0.6	11
12–15 years	338	18	1.0	14	98	17	1.5	13	95	18	1.3	17	129	16	1.3	13
16–19 years	368	22	1.1	20	112	23	1.4	21	103	24	1.9	22	139	20	1.8	16
20–29 years	844	23	0.7	19	216	23	1.1	19	245	26	1.4	22	349	21	0.9	18
30–39 years	735	23	0.8	19	271	23	1.0	19	213	22	1.2	19	225	21	1.6	17
40–49 years	626	21	0.8	17	243	22	1.0	18	178	21	1.3	18	181	20	1.2	18
50–59 years	473	20	0.9	17	251	21	0.9	18	105	15	1.1	12	96	16	1.2	15
60–69 years	546	16	0.7	14	247	16	0.8	14	141	15	1.3	11	152	16	1.1	12
70–79 years	444	15	0.7	12	285	15	0.7	12	93	12	1.1	10	60	13	1.6	10
80 years and over	296	13	0.8	11	250	14	0.6	11	21	*12	*	*8	19	*9	*	*8
Female																
All ages[2]	7,479	14	0.2	12	2,893	14	0.2	11	1,980	15	0.3	12	2,348	13	0.3	11
2–11 months[2]	432	8	0.3	8	232	8	0.3	8	84	10	0.6	9	74	9	0.5	9
1–2 years[2]	630	8	0.3	6	222	8	0.3	6	173	9	0.4	8	216	8	0.4	7
3–5 years	803	10	0.3	9	206	10	0.4	9	244	12	0.5	11	328	10	0.4	8
6–11 years	877	13	0.4	11	259	13	0.6	11	213	15	1.0	12	383	13	0.5	10
12–15 years	373	14	0.7	12	123	13	0.9	11	96	18	1.6	15	140	13	0.7	11
16–19 years	397	16	0.8	14	133	15	1.1	13	114	17	1.1	15	131	15	1.0	12
20–29 years	838	16	0.5	14	244	16	0.7	14	254	19	0.9	15	317	15	0.7	12
30–39 years	791	16	0.5	13	279	16	0.7	13	241	17	0.8	13	247	14	0.7	11
40–49 years	602	15	0.5	13	224	16	0.7	13	160	15	0.8	13	185	14	0.7	13
50–59 years	456	14	0.6	12	221	14	0.7	12	125	13	0.7	11	100	13	0.8	11
60–69 years	560	13	0.5	11	246	13	0.7	11	148	12	0.8	9	153	9	0.5	8
70–79 years	407	12	0.5	10	253	12	0.5	10	93	13	1.1	10	51	10	1.3	7
80 years and over	313	10	0.5	9	251	10	0.4	9	35	8	0.9	7	23	*9	*	*8

[1]Includes data for race/ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Table 9. Cholesterol intake in milligrams by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	270	4.0	206	5,780	261	4.8	200	3,883	301	6.1	224	4,598	324	4.8	243
2–11 months[2]	871	79	4.3	54	473	74	3.9	53	162	80	8.5	52	163	114	12.6	62
1–2 years[2]	1,231	180	5.7	135	424	168	7.0	127	355	205	8.7	165	402	249	11.3	211
3–5 years	1,547	194	5.4	150	425	175	7.2	132	454	221	7.9	170	609	269	10.7	206
6–11 years	1,745	225	6.1	180	511	208	7.7	172	452	256	10.5	198	727	273	10.7	206
12–15 years	711	249	11.0	189	221	222	12.1	183	191	301	20.8	209	269	288	19.2	214
16–19 years	765	292	12.3	221	245	284	16.3	217	217	318	19.1	246	270	332	19.4	262
20–29 years	1,682	319	9.7	237	460	301	13.2	223	499	379	17.5	278	666	386	16.2	281
30–39 years	1,526	311	9.7	238	550	307	12.0	236	454	334	15.8	241	472	360	18.0	262
40–49 years	1,228	285	9.1	226	467	281	10.7	224	338	321	18.8	225	366	354	17.4	299
50–59 years	929	270	9.3	215	472	266	9.7	210	230	272	15.4	219	196	321	22.7	247
60–69 years	1,106	257	9.5	193	493	252	10.5	188	289	268	16.3	199	305	284	16.1	230
70–79 years	851	224	8.0	178	538	219	7.5	176	186	259	14.7	221	111	274	27.1	227
80 years and over	609	203	9.7	154	501	200	7.9	154	56	247	32.8	145	42	*240	*	*209
Male																
All ages[2]	7,322	322	6.6	244	2,887	312	7.9	237	1,903	358	10.4	264	2,250	378	7.8	289
2–11 months[2]	439	79	5.1	57	241	73	4.7	55	78	82	10.8	57	89	122	15.2	73
1–2 years[2]	601	186	7.5	137	202	173	9.3	129	182	210	11.4	171	186	252	17.0	209
3–5 years	744	196	6.8	153	219	179	8.7	138	210	220	10.6	172	281	273	14.9	205
6–11 years	868	234	7.7	192	252	211	9.2	181	239	277	13.5	216	344	299	16.7	225
12–15 years	338	293	16.4	224	98	262	18.1	208	95	327	28.9	240	129	343	31.5	252
16–19 years	368	372	18.4	287	112	362	24.6	281	103	409	30.7	310	139	371	27.4	308
20–29 years	844	395	14.8	291	216	378	20.9	275	245	474	30.0	344	349	461	23.9	369
30–39 years	735	375	14.9	289	271	372	18.2	290	213	417	26.5	300	225	434	28.8	322
40–49 years	626	338	13.5	271	243	329	15.2	256	178	409	31.7	311	181	421	25.6	348
50–59 years	473	322	13.1	270	251	320	13.3	271	105	299	24.1	233	96	383	35.6	297
60–69 years	546	312	14.4	237	247	306	15.8	232	141	340	24.3	280	152	354	23.8	296
70–79 years	444	267	11.6	219	285	264	10.5	217	93	278	21.9	225	60	310	36.8	244
80 years and over	296	257	15.7	191	250	253	12.4	190	21	*338	*	*276	19	*292	*	*235
Female																
All ages[2]	7,479	221	4.3	173	2,893	213	5.2	168	1,980	250	6.4	195	2,348	267	5.3	205
2–11 months[2]	432	78	5.7	50	232	75	5.5	50	84	78	12.1	47	74	104	16.5	53
1–2 years[2]	630	174	6.9	131	222	162	8.9	123	173	200	12.5	158	216	245	11.8	219
3–5 years	803	192	6.9	145	206	171	10.2	121	244	222	10.9	167	328	264	12.4	206
6–11 years	877	215	7.7	169	259	205	10.7	163	213	234	15.1	179	383	247	10.5	191
12–15 years	373	202	10.8	162	123	181	12.3	160	96	275	27.4	169	140	238	16.2	187
16–19 years	397	210	10.6	161	133	204	14.4	154	114	232	17.1	200	131	287	20.9	219
20–29 years	838	244	8.4	194	244	230	11.3	177	254	298	15.3	241	317	295	14.7	225
30–39 years	791	249	8.8	198	279	242	11.2	194	241	264	15.0	199	247	283	15.0	201
40–49 years	602	235	8.8	183	224	232	11.5	182	160	248	15.5	191	185	284	16.7	223
50–59 years	456	222	9.9	176	221	217	10.9	173	125	252	18.3	206	100	264	20.4	214
60–69 years	560	210	9.2	164	246	204	10.3	162	148	214	19.0	151	153	227	15.7	178
70–79 years	407	193	8.6	157	253	187	8.5	154	93	246	18.4	215	51	243	31.3	220
80 years and over	313	174	9.6	134	251	172	8.5	134	35	205	31.7	125	23	*211	*	*196

[1]Includes data for race/ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Table 10. Percent of calories from carbohydrate by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]			Non-Hispanic white			Non-Hispanic black			Mexican American		
	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean
Both sexes												
All ages[2]	14,801	50.1	0.2	5,780	50.1	0.3	3,883	49.0	0.3	4,598	50.6	0.4
2–11 months[2]	871	52.5	0.5	473	53.2	0.5	162	51.8	0.8	163	50.3	1.0
1–2 years[2]	1,231	53.1	0.4	424	53.9	0.6	355	50.8	0.6	402	51.0	0.8
3–5 years	1,547	54.6	0.4	425	55.3	0.5	454	52.2	0.5	609	53.6	0.6
6–11 years	1,745	53.2	0.3	511	53.7	0.5	452	51.3	0.5	727	52.0	0.6
12–15 years	711	54.2	0.6	221	55.4	0.9	191	51.0	0.9	269	51.1	0.9
16–19 years	765	51.0	0.6	245	50.9	0.8	217	50.1	0.7	270	50.0	0.9
20–29 years	1,682	48.8	0.4	460	48.7	0.6	499	47.0	0.6	666	50.2	0.6
30–39 years	1,526	48.5	0.4	550	48.5	0.6	454	47.6	0.7	472	49.4	0.8
40–49 years	1,228	47.9	0.5	467	47.7	0.6	338	46.6	0.8	366	49.3	0.9
50–59 years	929	48.1	0.6	472	47.9	0.6	230	48.6	0.9	196	49.9	1.2
60–69 years	1,106	50.0	0.6	493	50.0	0.6	289	49.4	0.9	305	51.2	1.1
70–79 years	851	51.1	0.6	538	51.2	0.6	186	49.4	1.1	111	53.3	1.6
80 years and over	609	53.4	0.6	501	53.2	0.5	56	54.7	1.9	42	*51.4	*
Male												
All ages[2]	7,322	49.2	0.3	2,887	49.2	0.4	1,903	48.0	0.5	2,250	49.7	0.6
2–11 months[2]	439	52.7	0.6	241	53.8	0.6	78	50.5	1.2	89	50.5	1.3
1–2 years[2]	601	53.2	0.6	202	54.0	0.8	182	51.1	0.9	186	50.9	1.0
3–5 years	744	54.8	0.5	219	55.3	0.7	210	52.5	0.8	281	54.7	0.8
6–11 years	868	53.5	0.5	252	54.2	0.6	239	50.9	0.8	344	52.1	0.8
12–15 years	338	54.0	0.8	98	54.8	1.1	95	52.5	1.3	129	50.2	1.1
16–19 years	368	49.6	0.7	112	49.4	1.0	103	48.8	1.0	139	49.3	1.2
20–29 years	844	47.6	0.5	216	47.3	0.8	245	45.7	0.9	349	49.6	0.7
30–39 years	735	47.4	0.6	271	47.5	0.7	213	46.0	1.0	225	47.3	1.1
40–49 years	626	46.9	0.7	243	47.0	0.8	178	44.3	1.2	181	47.3	1.2
50–59 years	473	46.3	0.8	251	46.0	0.8	105	47.0	1.4	96	48.9	1.5
60–69 years	546	48.7	0.7	247	48.7	0.8	141	47.0	1.4	152	49.9	1.3
70–79 years	444	49.4	0.8	285	49.3	0.7	93	48.8	1.7	60	52.0	1.9
80 years and over	296	51.2	0.9	250	51.1	0.7	21	*49.6	*	19	*49.7	*
Female												
All ages[2]	7,479	51.1	0.3	2,893	51.1	0.4	1,980	49.9	0.4	2,348	51.5	0.6
2–11 months[2]	432	52.4	0.6	232	52.6	0.7	84	53.0	1.0	74	50.0	1.1
1–2 years[2]	630	53.0	0.5	222	53.7	0.7	173	50.5	0.8	216	51.2	1.0
3–5 years	803	54.4	0.5	206	55.3	0.7	244	51.9	0.6	328	52.4	0.6
6–11 years	877	52.9	0.5	259	53.1	0.7	213	51.7	0.7	383	51.8	0.6
12–15 years	373	54.4	0.8	123	56.0	1.2	96	49.4	1.1	140	51.9	1.0
16–19 years	397	52.4	0.9	133	52.5	1.2	114	51.4	0.9	131	50.7	1.1
20–29 years	838	50.0	0.6	244	49.9	0.8	254	48.1	0.7	317	50.9	0.7
30–39 years	791	49.7	0.6	279	49.5	0.8	241	48.9	0.8	247	51.6	0.8
40–49 years	602	49.0	0.7	224	48.4	0.9	160	48.5	0.9	185	51.4	1.0
50–59 years	456	49.8	0.7	221	49.6	0.8	125	49.9	1.1	100	50.8	1.4
60–69 yearsd	560	51.1	0.7	246	51.1	0.9	148	51.2	1.1	153	52.2	1.2
70–79 years	407	52.4	0.8	253	52.6	0.8	93	49.9	1.3	51	54.5	1.8
80 years and over	313	54.5	0.8	251	54.4	0.7	35	57.0	1.9	23	*52.3	*

[1]Includes data for race/ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Table 11. Percent of calories from protein by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]			Non-Hispanic white			Non-Hispanic black			Mexican American		
	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean
Both sexes												
All ages[2]	14,801	15.1	0.1	5,780	15.0	0.1	3,883	15.0	0.1	4,598	15.6	0.1
2–11 months[2]	871	11.5	0.2	473	11.8	0.2	162	10.2	0.3	163	11.8	0.4
1–2 years[2]	1,231	14.9	0.1	424	14.7	0.2	355	14.9	0.2	402	15.7	0.3
3–5 years	1,547	14.3	0.1	425	14.1	0.2	454	14.1	0.2	609	14.8	0.2
6–11 years	1,745	14.4	0.1	511	14.1	0.2	452	14.4	0.2	727	15.2	0.2
12–15 years	711	13.8	0.2	221	13.5	0.3	191	14.0	0.4	269	15.3	0.3
16–19 years	765	14.3	0.2	245	14.2	0.3	217	14.1	0.3	270	15.2	0.4
20–29 years	1,682	14.6	0.2	460	14.2	0.2	499	14.8	0.2	666	16.0	0.2
30–39 years	1,526	15.2	0.2	550	15.2	0.2	454	14.9	0.3	472	15.6	0.3
40–49 years	1,228	15.7	0.2	467	15.3	0.2	338	16.1	0.4	366	15.7	0.3
50–59 years	929	16.1	0.2	472	16.1	0.2	230	15.7	0.4	196	16.8	0.4
60–69 years	1,106	16.5	0.2	493	16.4	0.2	289	16.7	0.4	305	17.0	0.3
70–79 years	851	16.3	0.2	538	16.2	0.2	186	17.2	0.5	111	17.0	0.5
80 years and over	609	15.9	0.3	501	15.8	0.2	56	16.5	1.0	42	*15.2	*
Male												
All ages[2]	7,322	15.1	0.1	2,887	14.8	0.1	1,903	15.2	0.1	2,250	15.6	0.1
2–11 months[2]	439	11.8	0.3	241	11.9	0.3	78	10.8	0.4	89	12.4	0.6
1–2 years[2]	601	15.0	0.2	202	14.8	0.3	182	14.8	0.3	186	15.3	0.3
3–5 years	744	14.3	0.2	219	14.2	0.3	210	13.8	0.2	281	14.6	0.2
6–11 years	868	14.2	0.2	252	13.7	0.3	239	14.7	0.3	344	15.3	0.2
12–15 years	338	14.2	0.3	98	13.9	0.5	95	13.8	0.5	129	15.8	0.4
16–19 years	368	14.4	0.3	112	14.2	0.4	103	14.5	0.5	139	15.1	0.5
20–29 years	844	14.6	0.2	216	14.0	0.3	245	15.2	0.3	349	16.0	0.3
30–39 years	735	15.1	0.2	271	15.0	0.3	213	15.0	0.4	225	15.8	0.4
40–49 years	626	15.6	0.3	243	15.1	0.3	178	16.4	0.7	181	15.6	0.4
50–59 years	473	16.1	0.3	251	16.0	0.3	105	16.1	0.7	96	16.3	0.5
60–69 years	546	16.4	0.3	247	16.3	0.3	141	17.2	0.6	152	16.5	0.4
70–79 years	444	16.0	0.3	285	15.9	0.3	93	17.1	0.7	60	17.8	0.7
80 years and over	296	16.0	0.4	250	15.7	0.3	21	*18.9	*	19	*17.6	*
Female												
All ages[2]	7,479	15.2	0.1	2,893	15.1	0.1	1,980	14.8	0.1	2,348	15.6	0.1
2–11 months[2]	432	11.2	0.2	232	11.6	0.3	84	9.8	0.3	74	11.1	0.5
1–2 years[2]	630	14.9	0.2	222	14.6	0.2	173	14.9	0.3	216	16.1	0.4
3–5 years	803	14.3	0.2	206	14.1	0.2	244	14.3	0.2	328	14.9	0.2
6–11 years	877	14.5	0.2	259	14.4	0.3	213	14.2	0.3	383	15.0	0.2
12–15 years	373	13.5	0.3	123	13.1	0.4	96	14.1	0.5	140	14.7	0.4
16–19 years	397	14.1	0.3	133	14.2	0.4	114	13.7	0.4	131	15.3	0.5
20–29 years	838	14.5	0.2	244	14.3	0.3	254	14.5	0.3	317	15.9	0.3
30–39 years	791	15.3	0.3	279	15.4	0.3	241	14.8	0.3	247	15.4	0.4
40–49 years	602	15.8	0.3	224	15.4	0.4	160	15.7	0.5	185	15.8	0.4
50–59 years	456	16.1	0.3	221	16.1	0.3	125	15.4	0.4	100	17.3	0.6
60–69 years	560	16.6	0.3	246	16.4	0.3	148	16.2	0.5	153	17.5	0.5
70–79 years	407	16.6	0.3	253	16.4	0.3	93	17.3	0.6	51	16.4	0.7
80 years and over	313	15.9	0.4	251	15.9	0.3	35	15.5	0.9	23	*13.9	*

[1]Includes data for race/ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Table 12. Percent of calories from alcohol by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]			Non-Hispanic white			Non-Hispanic black			Mexican American		
	Sample size	Mean[2]	Standard error of the mean	Sample size	Mean[2]	Standard error of the mean	Sample size	Mean[2]	Standard error of the mean	Sample size	Mean[2]	Standard error of the mean
Both sexes												
All ages[3]	14,801	2.3	0.1	5,780	2.4	0.2	3,883	1.9	0.1	4,598	1.6	0.1
2–11 months[3]	871	0.0	0.0	473	0.0	0.0	162	0.0	0.0	163	0.0	0.0
1–2 years[3]	1,231	0.0	0.0	424	0.0	0.0	355	0.0	0.0	402	0.0	0.0
3–5 years	1,547	0.0	0.0	425	0.0	0.0	454	0.0	0.0	609	0.0	0.0
6–11 years	1,745	0.0	0.0	511	0.0	0.0	452	0.0	0.0	727	0.0	0.0
12–15 years	711	0.0	0.0	221	0.0	0.0	191	0.0	0.0	269	0.0	0.0
16–19 years	765	1.6	0.3	245	2.0	0.5	217	0.6	0.2	270	1.2	0.3
20–29 years	1,682	3.9	0.3	460	4.5	0.5	499	2.7	0.3	666	2.2	0.2
30–39 years	1,526	3.3	0.3	550	3.2	0.4	454	4.1	0.5	472	3.3	0.4
40–49 years	1,228	3.3	0.3	467	3.5	0.4	338	3.4	0.5	366	3.5	0.4
50–59 years	929	2.7	0.3	472	2.8	0.4	230	2.8	0.5	196	2.3	0.4
60–69 years	1,106	2.3	0.3	493	2.4	0.3	269	1.8	0.4	305	1.2	0.2
70–79 years	851	1.7	0.3	538	1.8	0.3	186	0.7	0.4	111	0.3	0.2
80 years and over	609	0.9	0.2	501	1.0	0.2	56	0.0	0.0	42	0.0	0.0
Male												
All ages[3]	7,322	3.1	0.2	2,887	3.2	0.3	1,903	2.9	0.3	2,250	2.5	0.2
2–11 months[3]	439	0.0	0.0	241	0.0	0.0	78	0.0	0.0	89	0.0	0.0
1–2 years[3]	601	0.0	0.0	202	0.0	0.0	182	0.0	0.0	186	0.0	0.0
3–5 years	744	0.0	0.0	219	0.0	0.0	210	0.0	0.0	281	0.0	0.0
6–11 years	868	0.0	0.0	252	0.0	0.0	239	0.0	0.0	344	0.0	0.0
12–15 years	338	0.0	0.0	98	0.0	0.0	95	0.0	0.0	129	0.0	0.0
16–19 years	368	2.6	0.5	112	3.2	0.8	103	0.9	0.4	139	1.8	0.6
20–29 years	844	4.9	0.4	216	5.4	0.7	245	4.4	0.5	349	3.3	0.4
30–39 years	735	4.3	0.4	271	4.0	0.5	213	5.8	0.8	225	4.9	0.6
40–49 years	626	4.9	0.5	243	4.8	0.6	178	5.5	0.8	181	5.8	0.8
50–59 years	473	3.4	0.5	251	3.3	0.5	105	4.6	1.0	96	3.1	0.7
60–69 years	546	3.2	0.4	247	3.2	0.5	141	3.4	0.8	152	2.1	0.4
70–79 years	444	2.7	0.5	285	2.9	0.5	93	1.4	0.8	60	0.4	0.3
80 years and over	296	1.5	0.3	250	1.6	0.3	21	0.0	0.0	19	0.0	0.0
Female												
All ages[3]	7,479	1.6	0.2	2,893	1.8	0.2	1,980	1.0	0.1	2,348	0.7	0.1
2–11 months[3]	432	0.0	0.0	232	0.0	0.0	84	0.0	0.0	74	0.0	0.0
1–2 years[3]	630	0.0	0.0	222	0.0	0.0	173	0.0	0.0	216	0.0	0.0
3–5 years	803	0.0	0.0	206	0.0	0.0	244	0.0	0.0	328	0.0	0.0
6–11 years	877	0.0	0.0	259	0.0	0.0	213	0.0	0.0	383	0.0	0.0
12–15 years	373	0.0	0.0	123	0.1	0.1	96	0.0	0.0	140	0.1	0.1
16–19 years	397	0.6	0.2	133	0.8	0.4	114	0.2	0.1	131	0.4	0.2
20–29 years	838	3.0	0.4	244	3.6	0.7	254	1.3	0.3	317	0.9	0.3
30–39 years	791	2.4	0.3	279	2.3	0.4	241	2.6	0.5	247	1.6	0.4
40–49 years	602	1.8	0.3	224	2.1	0.5	160	1.6	0.5	185	1.0	0.3
50–59 years	456	2.1	0.4	221	2.3	0.5	125	1.4	0.6	100	1.6	0.5
60–69 years	560	1.5	0.3	246	1.7	0.3	148	0.5	0.3	153	0.4	0.2
70–79 years	407	0.9	0.3	253	1.0	0.3	93	0.2	0.2	51	0.2	0.1
80 years and over	313	0.6	0.2	251	0.6	0.2	35	0.0	0.0	23	0.0	0.0

[1]Includes data for race/ethnicity groups not shown separately.
[2]Estimates of percent of calories from alcohol are very skewed; the mean and standard error of the mean should be used and interpreted with extreme caution.
[3]Excludes nursing infants and children.

Table 13. Percent of calories from total fat by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]			Non-Hispanic white			Non-Hispanic black			Mexican American		
	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean
Both sexes												
All ages[2]	14,801	34.0	0.2	5,780	34.1	0.2	3,883	35.3	0.3	4,598	33.5	0.3
2–11 months[2]	871	37.2	0.4	473	36.4	0.4	162	39.0	0.7	163	38.8	0.9
1–2 years[2]	1,231	33.7	0.3	424	33.5	0.4	355	35.6	0.5	402	34.8	0.6
3–5 years	1,547	32.9	0.3	425	32.7	0.4	454	35.2	0.4	609	33.2	0.5
6–11 years	1,745	34.0	0.3	511	34.0	0.4	452	35.6	0.4	727	34.4	0.4
12–15 years	711	33.4	0.5	221	32.6	0.6	191	36.4	0.7	269	35.0	0.7
16–19 years	765	34.5	0.5	245	34.3	0.6	217	36.5	0.6	270	34.9	0.7
20–29 years	1,682	34.0	0.3	460	34.0	0.5	499	36.4	0.5	666	32.9	0.5
30–39 years	1,526	34.4	0.4	550	34.7	0.4	454	34.5	0.5	472	33.1	0.6
40–49 years	1,228	34.4	0.4	467	35.1	0.5	338	35.0	0.6	366	32.7	0.7
50–59 years	929	34.7	0.5	472	35.0	0.5	230	33.9	0.7	196	32.2	0.9
60–69 years	1,106	33.0	0.5	493	33.2	0.5	289	33.5	0.8	305	32.0	0.8
70–79 years	851	32.9	0.5	538	32.9	0.4	186	34.1	0.9	111	30.8	1.2
80 years and over	609	32.0	0.5	501	32.2	0.4	56	30.3	1.3	42	*34.6	*
Male												
All ages[2]	7,322	34.1	0.3	2,887	34.4	0.3	1,903	34.9	0.4	2,250	33.3	0.4
2–11 months[2]	439	36.9	0.6	241	35.8	0.6	78	39.8	1.0	89	38.0	1.2
1–2 years[2]	601	33.5	0.5	202	33.1	0.6	182	35.2	0.7	186	35.3	0.8
3–5 years	744	32.8	0.4	219	32.7	0.5	210	35.2	0.6	281	32.2	0.6
6–11 years	868	33.9	0.4	252	33.8	0.5	239	35.6	0.6	344	34.1	0.6
12–15 years	338	33.1	0.6	98	32.7	0.9	95	34.9	1.0	129	35.2	0.9
16–19 years	368	34.6	0.6	112	34.4	0.8	103	36.8	0.8	139	34.8	0.9
20–29 years	844	34.0	0.4	216	34.4	0.6	245	35.5	0.7	349	32.2	0.6
30–39 years	735	34.6	0.5	271	34.9	0.6	213	34.1	0.8	225	33.2	0.9
40–49 years	626	33.9	0.5	243	34.6	0.6	178	34.6	0.9	181	32.5	0.9
50–59 years	473	35.7	0.6	251	36.2	0.6	105	33.2	1.2	96	32.6	1.2
60–69 years	546	33.3	0.6	247	33.4	0.6	141	33.4	1.1	152	32.7	1.0
70–79 years	444	33.8	0.6	285	33.9	0.6	93	34.1	1.4	60	31.1	1.5
80 years and over	296	33.3	0.7	250	33.7	0.6	21	*32.4	*	19	*33.7	*
Female												
All ages[2]	7,479	33.9	0.3	2,893	33.8	0.3	1,980	35.5	0.4	2,348	33.7	0.4
2–11 months[2]	432	37.6	0.6	232	37.1	0.6	84	38.2	0.9	74	39.8	1.0
1–2 years[2]	630	34.0	0.4	222	33.8	0.5	173	36.0	0.7	216	34.2	0.7
3–5 years	803	33.1	0.4	206	32.7	0.6	244	35.2	0.5	328	34.3	0.5
6–11 years	877	34.2	0.4	259	34.2	0.6	213	35.5	0.6	383	34.7	0.5
12–15 years	373	33.7	0.7	123	32.5	0.9	96	37.9	1.0	140	34.8	0.8
16–19 years	397	34.4	0.7	133	34.1	1.0	114	36.2	0.8	131	35.0	0.8
20–29 years	838	34.0	0.5	244	33.7	0.6	254	37.2	0.6	317	33.7	0.6
30–39 years	791	34.2	0.5	279	34.5	0.6	241	34.8	0.7	247	33.0	0.7
40–49 years	602	34.9	0.6	224	35.6	0.7	160	35.4	0.8	185	33.0	0.8
50–59 years	456	33.8	0.7	221	33.9	0.7	125	34.5	0.9	100	31.8	1.1
60–69 years	560	32.8	0.6	246	33.0	0.7	148	33.5	1.0	153	31.5	0.9
70–79 years	407	32.3	0.7	253	32.3	0.7	93	34.2	1.2	51	30.6	1.4
80 years and over	313	31.3	0.7	251	31.4	0.6	35	29.4	1.5	23	*35.1	*

[1] Includes data for race/ethnicity groups not shown separately.
[2] Excludes nursing infants and children.

Table 14. Percent of calories from saturated fat by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]			Non-Hispanic white			Non-Hispanic black			Mexican American		
	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean
Both sexes												
All ages[2]	14,801	12.0	0.1	5,780	12.1	0.1	3,883	12.0	0.1	4,598	12.0	0.1
2–11 months[2]	871	15.8	0.2	473	15.7	0.2	162	15.9	0.4	163	16.5	0.4
1–2 years[2]	1,231	13.9	0.2	424	13.8	0.2	355	13.7	0.2	402	14.2	0.3
3–5 years	1,547	12.6	0.1	425	12.5	0.2	454	12.9	0.2	609	12.7	0.2
6–11 years	1,745	12.7	0.1	511	12.9	0.2	452	12.6	0.2	727	12.9	0.2
12–15 years	711	12.2	0.2	221	12.0	0.3	191	12.7	0.3	269	13.2	0.4
16–19 years	765	12.5	0.2	245	12.5	0.3	217	12.8	0.3	270	12.4	0.4
20–29 years	1,682	12.0	0.1	460	12.1	0.2	499	12.2	0.2	666	11.3	0.2
30–39 years	1,526	11.9	0.2	550	12.2	0.2	454	11.2	0.2	472	11.5	0.3
40–49 years	1,228	11.6	0.2	467	11.9	0.2	338	11.5	0.2	366	10.9	0.3
50–59 years	929	11.6	0.2	472	11.7	0.2	230	11.5	0.3	196	10.7	0.4
60–69 years	1,106	11.2	0.2	493	11.3	0.2	289	10.9	0.3	305	10.9	0.4
70–79 years	851	11.2	0.2	538	11.1	0.2	186	11.3	0.4	111	10.3	0.5
80 years and over	609	11.0	0.2	501	11.1	0.2	56	10.2	0.5	42	*12.4	*
Male												
All ages[2]	7,322	12.1	0.1	2,887	12.2	0.1	1,903	11.9	0.1	2,250	11.8	0.2
2–11 months[2]	439	15.8	0.3	241	15.6	0.3	78	15.9	0.6	89	16.6	0.6
1–2 years[2]	601	13.8	0.2	202	13.7	0.3	182	13.6	0.3	186	14.4	0.4
3–5 years	744	12.6	0.2	219	12.7	0.3	210	13.0	0.3	281	12.2	0.3
6–11 years	868	12.8	0.2	252	12.9	0.2	239	12.8	0.3	344	12.8	0.3
12–15 years	338	12.4	0.3	98	12.4	0.3	95	12.2	0.4	129	13.2	0.4
16–19 years	368	12.6	0.3	112	12.8	0.3	103	12.8	0.3	139	12.3	0.5
20–29 years	844	12.0	0.2	216	12.4	0.3	245	11.8	0.3	349	10.9	0.3
30–39 years	735	11.9	0.2	271	12.2	0.2	213	11.1	0.3	225	11.5	0.4
40–49 years	626	11.4	0.2	243	11.6	0.2	178	11.5	0.4	181	10.7	0.4
50–59 years	473	11.8	0.2	251	12.1	0.2	105	10.6	0.4	96	10.8	0.6
60–69 years	546	11.3	0.3	247	11.5	0.3	141	11.1	0.4	152	11.0	0.5
70–79 years	444	11.6	0.3	285	11.7	0.3	93	11.5	0.5	60	10.4	0.7
80 years and over	296	11.4	0.3	250	11.6	0.2	21	*11.0	*	19	*11.8	*
Female												
All ages[2]	7,479	11.9	0.1	2,893	11.9	0.1	1,980	12.1	0.1	2,348	12.1	0.2
2–11 months[2]	432	15.9	0.3	232	15.9	0.3	84	15.8	0.5	74	16.4	0.5
1–2 years[2]	630	13.9	0.2	222	13.9	0.3	173	13.9	0.3	216	14.0	0.4
3–5 years	803	12.6	0.2	206	12.4	0.2	244	12.7	0.2	328	13.1	0.3
6–11 years	877	12.7	0.2	259	12.8	0.2	213	12.5	0.2	383	13.0	0.2
12–15 years	373	12.0	0.3	123	11.6	0.4	96	13.3	0.4	140	13.1	0.4
16–19 years	397	12.3	0.4	133	12.2	0.4	114	12.7	0.4	131	12.5	0.5
20–29 years	838	11.9	0.2	244	11.9	0.3	254	12.6	0.3	317	11.7	0.3
30–39 years	791	11.9	0.2	279	12.2	0.3	241	11.3	0.3	247	11.6	0.3
40–49 years	602	11.8	0.2	224	12.2	0.3	160	11.5	0.3	185	11.1	0.4
50–59 years	456	11.4	0.3	221	11.3	0.3	125	12.1	0.4	100	10.7	0.5
60–69 years	560	11.0	0.3	246	11.1	0.3	148	10.7	0.4	153	10.9	0.5
70–79 years	407	10.8	0.3	253	10.7	0.3	93	11.2	0.5	51	10.2	0.7
80 years and over	313	10.8	0.3	251	10.8	0.2	35	*9.8	*	23	*12.7	*

[1]Includes data for race/ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Table 15. Percent of calories from monounsaturated fat by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]			Non-Hispanic white			Non-Hispanic black			Mexican American		
	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean
Both sexes												
All ages[2]	14,801	12.5	0.1	5,780	12.6	0.1	3,883	13.2	0.1	4,598	12.2	0.2
2–11 months[2]	871	9.2	0.2	473	9.1	0.2	162	9.2	0.3	163	9.8	0.5
1–2 years[2]	1,231	12.1	0.2	424	12.1	0.2	355	13.1	0.2	402	12.1	0.3
3–5 years	1,547	12.1	0.1	425	12.1	0.2	454	13.1	0.2	609	12.0	0.2
6–11 years	1,745	12.6	0.1	511	12.6	0.2	452	13.4	0.2	727	12.7	0.2
12–15 years	711	12.5	0.2	221	12.3	0.3	191	13.7	0.3	269	13.0	0.3
16–19 years	765	12.8	0.2	245	12.8	0.3	217	13.8	0.3	270	12.8	0.3
20–29 years	1,682	12.5	0.1	460	12.6	0.2	499	13.7	0.2	666	12.0	0.2
30–39 years	1,526	12.8	0.2	550	12.9	0.2	454	13.0	0.2	472	12.0	0.3
40–49 years	1,228	12.7	0.2	467	12.9	0.2	338	13.3	0.3	366	12.1	0.3
50–59 years	929	12.9	0.2	472	13.0	0.2	230	12.9	0.3	196	11.9	0.4
60–69 years	1,106	12.3	0.2	493	12.3	0.2	289	12.9	0.4	305	11.6	0.4
70–79 years	851	12.1	0.2	538	12.2	0.2	186	12.9	0.4	111	11.1	0.6
80 years and over	609	11.9	0.2	501	12.0	0.2	56	11.6	0.6	42	*13.1	*
Male												
All ages[2]	7,322	12.7	0.1	2,887	12.8	0.1	1,903	13.2	0.2	2,250	12.2	0.2
2–11 months[2]	439	9.2	0.3	241	9.0	0.3	78	9.6	0.5	89	9.9	0.5
1–2 years[2]	601	12.1	0.2	202	12.0	0.3	182	12.9	0.3	186	12.5	0.3
3–5 years	744	12.1	0.2	219	12.1	0.3	210	13.1	0.3	281	11.6	0.3
6–11 years	868	12.6	0.2	252	12.6	0.2	239	13.4	0.3	344	12.6	0.2
12–15 years	338	12.5	0.3	98	12.3	0.4	95	13.3	0.4	129	13.2	0.4
16–19 years	368	13.1	0.3	112	12.9	0.3	103	14.3	0.4	139	12.9	0.4
20–29 years	844	12.7	0.2	216	12.9	0.3	245	13.5	0.3	349	11.8	0.3
30–39 years	735	13.1	0.2	271	13.2	0.3	213	13.2	0.4	225	12.1	0.4
40–49 years	626	12.6	0.2	243	12.8	0.3	178	13.2	0.4	181	12.1	0.4
50–59 years	473	13.4	0.3	251	13.6	0.3	105	13.0	0.5	96	12.4	0.6
60–69 years	546	12.5	0.3	247	12.6	0.3	141	13.0	0.5	152	11.9	0.4
70–79 years	444	12.7	0.3	285	12.7	0.3	93	13.1	0.6	60	11.4	0.7
80 years and over	296	12.7	0.3	250	12.9	0.3	21	*12.3	*	19	*13.0	*
Female												
All ages[2]	7,479	12.4	0.1	2,893	12.4	0.1	1,980	13.2	0.2	2,348	12.2	0.2
2–11 months[2]	432	9.2	0.3	232	9.2	0.3	84	9.0	0.4	74	9.7	0.6
1–2 years[2]	630	12.2	0.2	222	12.2	0.2	173	13.2	0.3	216	11.7	0.3
3–5 years	803	12.2	0.2	206	12.1	0.2	244	13.1	0.2	328	12.5	0.2
6–11 years	877	12.6	0.2	259	12.6	0.2	213	13.4	0.2	383	12.7	0.2
12–15 years	373	12.6	0.3	123	12.2	0.4	96	14.1	0.4	140	12.9	0.4
16–19 years	397	12.6	0.3	133	12.6	0.4	114	13.4	0.3	131	12.7	0.4
20–29 years	838	12.4	0.2	244	12.3	0.3	254	13.8	0.3	317	12.3	0.3
30–39 years	791	12.5	0.2	279	12.6	0.3	241	12.9	0.3	247	11.9	0.3
40–49 years	602	12.8	0.3	224	13.0	0.3	160	13.4	0.3	185	12.1	0.4
50–59 years	456	12.4	0.3	221	12.3	0.3	125	12.7	0.4	100	11.4	0.5
60–69 years	560	12.1	0.3	246	12.1	0.3	148	12.8	0.5	153	11.4	0.4
70–79 years	407	11.7	0.3	253	11.7	0.3	93	12.8	0.5	51	10.8	0.7
80 years and over	313	11.5	0.3	251	11.5	0.3	35	*11.2	*	23	*13.2	*

[1]Includes data for race/ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Table 16. Percent of calories from polyunsaturated fat by age, sex, and race/ethnicity: United States, 1988–91

Sex and age	Total population[1]			Non-Hispanic white			Non-Hispanic black			Mexican American		
	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean	Sample size	Mean	Standard error of the mean
Both sexes												
All ages[2]	14,801	6.9	0.1	5,780	6.9	0.1	3,883	7.3	0.1	4,598	6.7	0.1
2–11 months[2]	871	9.0	0.2	473	8.5	0.2	162	10.5	0.4	163	9.2	0.4
1–2 years[2]	1,231	5.3	0.1	424	5.1	0.1	355	6.1	0.1	402	5.8	0.1
3–5 years	1,547	5.8	0.1	425	5.7	0.1	454	6.5	0.1	609	5.9	0.1
6–11 years	1,745	6.2	0.1	511	6.1	0.1	452	6.9	0.2	727	6.2	0.1
12–15 years	711	6.2	0.2	221	6.0	0.2	191	7.2	0.3	269	6.1	0.2
16–19 years	765	6.6	0.2	245	6.5	0.2	217	7.2	0.2	270	7.0	0.3
20–29 years	1,682	6.9	0.1	460	6.8	0.2	499	7.7	0.2	666	6.9	0.1
30–39 years	1,526	7.1	0.1	550	7.0	0.2	454	7.5	0.2	472	6.9	0.2
40–49 years	1,228	7.5	0.2	467	7.6	0.2	338	7.5	0.2	366	7.0	0.2
50–59 years	929	7.5	0.2	472	7.7	0.2	230	6.8	0.2	196	6.9	0.2
60–69 years	1,106	6.9	0.1	493	7.0	0.2	289	7.0	0.2	305	6.7	0.2
70–79 years	851	7.0	0.2	538	7.1	0.2	186	7.1	0.3	111	6.7	0.3
80 years and over	609	6.6	0.2	501	6.7	0.2	56	5.9	0.3	42	6.3	0.4
Male												
All ages[2]	7,322	6.7	0.1	2,887	6.7	0.1	1,903	7.0	0.1	2,250	6.6	0.1
2–11 months[2]	439	8.8	0.3	241	8.2	0.3	78	10.9	0.6	89	8.4	0.6
1–2 years[2]	601	5.2	0.1	202	5.0	0.2	182	6.0	0.2	186	5.8	0.2
3–5 years	744	5.7	0.1	219	5.6	0.2	210	6.5	0.2	281	5.9	0.2
6–11 years	868	6.0	0.1	252	5.8	0.2	239	6.8	0.2	344	6.0	0.2
12–15 years	338	5.8	0.2	98	5.6	0.4	95	6.8	0.3	129	6.1	0.3
16–19 years	368	6.3	0.2	112	6.2	0.3	103	6.9	0.3	139	6.9	0.4
20–29 years	844	6.6	0.2	216	6.6	0.3	245	7.4	0.2	349	6.8	0.2
30–39 years	735	7.0	0.2	271	6.9	0.2	213	7.1	0.2	225	6.9	0.3
40–49 years	626	7.3	0.2	243	7.5	0.3	178	7.2	0.3	181	6.9	0.3
50–59 years	473	7.7	0.2	251	7.7	0.3	105	6.8	0.3	96	6.8	0.3
60–69 years	546	6.7	0.2	247	6.8	0.2	141	6.6	0.3	152	7.0	0.3
70–79 years	444	6.8	0.2	285	6.8	0.2	93	6.6	0.4	60	6.5	0.5
80 years and over	296	6.5	0.2	250	6.6	0.2	21	*6.1	*	19	*59	*
Female												
All ages[2]	7,479	7.1	0.1	2,893	7.0	0.1	1,980	7.5	0.1	2,348	6.7	0.1
2–11 months[2]	432	9.3	0.3	232	8.9	0.3	84	10.2	0.5	74	10.2	0.5
1–2 years[2]	630	5.4	0.1	222	5.3	0.1	173	6.3	0.2	216	5.8	0.2
3–5 years	803	5.8	0.1	206	5.8	0.2	244	6.6	0.2	328	6.0	0.1
6–11 years	877	6.4	0.2	259	6.4	0.2	213	7.0	0.3	383	6.3	0.2
12–15 years	373	6.6	0.3	123	6.3	0.3	96	7.7	0.5	140	6.2	0.2
16–19 years	397	7.0	0.2	133	6.8	0.3	114	7.4	0.4	131	7.1	0.3
20–29 years	838	7.2	0.2	244	7.1	0.2	254	8.0	0.3	317	7.0	0.2
30–39 years	791	7.2	0.2	279	7.1	0.2	241	7.9	0.3	247	6.8	0.2
40–49 years	602	7.6	0.2	224	7.7	0.3	160	7.8	0.3	185	7.1	0.2
50–59 years	456	7.4	0.2	221	7.6	0.3	125	6.9	0.3	100	7.0	0.3
60–69 years	560	7.1	0.2	246	7.2	0.2	148	7.2	0.3	153	6.4	0.3
70–79 years	407	7.2	0.2	253	7.2	0.3	93	7.5	0.4	51	6.9	0.5
80 years and over	313	6.6	0.2	251	6.7	0.2	35	5.8	0.4	23	*6.6	*

[1]Includes data for race ethnicity groups not shown separately.
[2]Excludes nursing infants and children.

Technical notes

Source of data and survey design

The third National Health and Nutrition Examination Survey (NHANES III) is a 6-year survey comprised of two 3-year phases, 1988–91 and 1991–94. Each phase is a random sample of the U.S. civilian noninstitutionalized population ages 2 months and older living in households (10). Mexican Americans, black persons, children 5 years of age and younger, and persons 60 years of age and over were oversampled to provide reliable estimates for these population groups (25).

Phase 1 data collection occurred between October 1988 and October 1991. Table I indicates the response rates for the dietary component. A total of 20,277 sample persons were identified for the NHANES III, Phase 1 sample; 17,464 sample persons (86 percent) were interviewed, and 15,630 were examined (77 percent). Dietary interviews were completed on 15,409 examinees (99 percent). Reliable 24-hour recalls were obtained from 15,280 examinees. Respondents with incomplete recalls (n=338) and breastfeeding infants and children (n=141) were excluded from all analyses; 221 persons were not interviewed due to 42 refusals, 21 communication problems, and 158 survey operation reasons such as lack of time. No attempt was made to impute missing data. The Phase 1 analytic sample comprises 14,801 respondents who had complete and reliable recalls—95 percent of the examined sample (14,801/15,630) or 73 percent of Phase 1 sample persons (14,801/20,277).

Statistical methodology

The complex survey design was taken into account by using appropriate survey sampling weights and appropriate statistical analysis to produce national estimates. Population means, medians, and standard errors of the mean (SEMs) for nutrient intakes based on 1-day 24-hour dietary recall data are presented in this report. Standard errors of the mean were computed using SUDAAN, a program that takes into account the sampling weights and complex sample design for calculating variance estimates (26). Because of the relatively small numbers of degrees of freedom in Phase I of NHANES III, an average design effect method (10) was used to stabilize the standard error estimates in this report. Estimates that are less reliable based on statistical criteria of sample size and coefficient of variation are designated by an asterisk in the tables. Some nutrient estimates are by their nature very skewed (for example, alcohol intake). The mean and standard error of the mean for such variables (which assume normality) should be used and interpreted with extreme caution.

Dietary data collection methodology

Respondents reported all foods and beverages consumed, except plain drinking water, over the previous 24-hour time period (midnight to midnight). Foods and beverages were quantified using food specific units, for example, a large-size egg or medium-size apple. Abstract food models, shape charts, and measurement aids such as a ruler and household measuring cups and spoons were also used to quantify foods and beverages. During Phase 1, approximately 69 percent of all dietary interviews were completed by the respondent, 28 percent by a proxy respondent, and 3 percent by the respondent and a proxy. Proxy respondents were utilized for infants and children 2 months–5 years and for other respondents who were unable to report on their own. Children 6–11 years of age were permitted to report their own food intake (54 percent), although 22 percent were completed by proxy and 24 percent were completed with both the child and a proxy. Data retrieval with day care providers and schools was conducted as necessary to obtain complete intakes for infants and children.

All 24-hour recall interviews were conducted in the mobile examination centers (MECs); the examination schedules included all days of the week. The distribution of recalls by day of the week during Phase 1 was:

Sunday	8 percent
Monday	10 percent
Tuesday	11 percent
Wednesday	19 percent
Thursday	17 percent
Friday	26 percent
Saturday	9 percent

The higher proportion of Friday recalls was due to operational procedures that allowed for a high frequency of Saturday examinations to improve response rates.

Dietary interviews were conducted in English (86 percent), Spanish (12 percent), and English/Spanish or other languages (2 percent). The NHANES III Dietary Interviewer's Manual provides details for all aspects of the 24-hour recall protocol (27). Dietary interviewers were required to have a college degree in foods and nutrition. A majority of the interviewers were bilingual in English and Spanish.

Table I. Survey response rates for the 24-hour dietary recall component: NHANES III, Phase 1, 1988–91

Response category	Number	Response rate	
		Component	Survey
Total number of sample persons	20,277	...	100
Interviewed sample persons	17,464	...	86
Examined sample persons	15,630	100	77
24-hour dietary recall			
Total interviewed	15,409	99	76
Reliable	15,280	99	75
Complete	14,801	95	73
Nursing infant/child	141	1	...
Incomplete	338	2	...
Unreliable	100	(1)	...
Computer malfunction	29	(1)	...
Total not interviewed	221	1	...

[1]Less than 1 percent.

The dietary interviewers completed a comprehensive 2-week training course taught by an experienced bilingual trainer. The training course emphasized standardized data collection and adherence to the dietary interview protocol, proper interviewing technique, and efficient use of the DDC system during the dietary interview. Interviewer retention was excellent.

Dietary interviewer performance was monitored using several techniques including field monitoring of interviews in progress and reviews of taped dietary interviews by NCHS and Westat, Inc. (10,27,28). Throughout the survey, the dietary interviewers performed a 10 percent cross-check of printed 24-hour recall reports. Interviewer retraining sessions were conducted regularly. Field memoranda and newsletters were prepared by NCHS and Westat Inc. staff to inform the interviewers of DDC updates and issues concerning the dietary interview protocol. Updated versions of the DDC system were installed in the MECs approximately twice per year.

Dietary terms and calculation procedures

Energy and nutrient intakes for individuals were calculated using the gram amounts of food consumed and the USDA Survey Nutrient Data Base (SNDB) nutrient values for the food expressed per 100 grams of food (19). The percentage contributions of protein, fat (including fatty acid components), carbohydrate, and alcohol were calculated.

Macronutrients—Carbohydrates, fat, protein, and alcohol are the macronutrients of the diet and the principal dietary sources of energy.

Total energy intake—Total food energy intake (measured in kilocalories or kcal) was calculated from grams of daily intake of protein, carbohydrate, fat, and alcohol. The energy conversion factors used were 4 kcal per gram for protein and carbohydrate, 9 kcal per gram for total fat and fatty acids, and 7 kcal per gram for alcohol (29).

Percentages of energy intake—The total kcal from each energy source was divided by the individual's total energy intake and multiplied by 100 to give the percentage contributions. Figures may not add to 100 due to rounding.

Total carbohydrate—Total carbohydrate includes sugars and complex carbohydrates. Sugars include monosaccaharides such as glucose and fructose and disaccharides such as sucrose, maltose, and lactose. Complex carbohydrates (polysaccharides) comprise starches and dietary fibers.

Total fat—Total fat includes saturated, polyunsaturated, and monounsaturated fatty acids, non-fatty acid components of fat such as glycerol, phosphoric acid aminobases of phospholipids, sterols (including cholesterol), and fat-soluble vitamins.

Data editing and statistical analysis

NCHS staff reviewed and edited the Phase 1 data files. Editing guidelines were developed by NCHS staff in consultation with USDA and NCC staff, and other knowledgeable sources. Meetings and workshops were conducted to discuss foods, database updates, coding procedures, and editing decisions.

NCHS staff performed all data review and editing tasks. NCHS prepared guidelines to document data editing decisions (30). Dietary interviewers coded the quality of all 24-hour recall interviews as "reliable," "unreliable," "refusal," or "not interviewed" (27). NCHS reviewed all notes recorded by the dietary interviewers, which provided information about the interview setting and the interviewer's assessment of the respondent's abilities and willingness to comply with instructions—that is, was the respondent capable of completing the 24-hour recall? If the respondent made a reasonable effort to complete the 24-hour recall, the recall was considered to be reliable. On the other hand, if the respondent was very confused or had extraordinary difficulty recalling foods and beverages consumed the day before, the recall was coded "unreliable." After the 24-hour recall files were edited, they were merged with the SNDB nutrient and food weight files for analysis (10).

Demographic terms

Age—Age was defined as age in months or years at the time of the household interview.

Race/Ethnicity—Race and ethnicity classification was based on self-reported information. Persons were classified as non-Hispanic white, non-Hispanic black, Mexican American, or "other." The "other" category is included in the total sample counts, but is not presented separately.

Suggested citation

McDowell MA, Briefel RR, Alaimo K, et al. Energy and macronutrient intakes of persons ages 2 months and over in the United States: Third National Health and Nutrition Examination Survey, Phase 1, 1988–91. Advance data from vital and health statistics; No 255. Hyattsville, Maryland: National Center for Health Statistics. 1994.

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An Overview of Home Health and Hospice Care Patients:

Preliminary data From the 1993 National Home and Hospice Care Survey

by Genevieve W. Strahan, Division of Health Care Statistics

Introduction

This report presents preliminary statistics on an estimated 1.5 million current patients and 3.9 million discharges from about 8,400 home and hospice care agencies in the United States. These estimates are results from the 1993 National Home and Hospice Care Survey (NHHCS). The 1993 NHHCS, a segment of the long-term care component of the National Health Care Survey (1), is the second in a series of annual surveys of home health agencies and hospices and their current patients and discharges. The National Center for Health Statistics instituted this nationwide sample survey in 1992, in response to the rapid growth in the number of these agencies throughout the United States. This growth resulted in the need to access the availability and utilization of these services.

The efforts to control health care cost can be seen as one reason for the massive growth in the health care industry. The average cost of a home care visit is considerably less than a day in a hospital or a day in a skilled long-term care facility. The steady increase in the elderly Medicare population, about 1.9 percent per year over the past decade, plays a part in this growth (2). Elderly patients tend to prefer to recover from illnesses at home rather than in a hospital or nursing home.

The data included in this report are preliminary because further editing of the data may produce estimates that are slightly different from the ones shown here. The 1,500 agencies included in the 1992 survey were selected from a universe of 8,036 agencies classified by the 1991 National Health Provider Inventory (NHPI) as agencies providing home health and hospice care. Also included in the universe was a sample of potentially new agencies identified between the time the 1991 NHPI was conducted and June 1992. These same places were revisited during the 1993 Survey. Excluded in the 1993 survey were 42 agencies that had merged with other agencies, that were determined to be duplicate of other agencies, or were out of scope for the survey.

Data collection for the 1993 NHHCS was conducted between September and December 1993. Detailed information on sample design, data collection procedures, and sampling errors is included in the Technical notes and in a forthcoming report (3).

Home health care agencies and hospices are usually defined in terms of the type of care they provide. Home health care is provided to individuals and families in their place of residence for promoting, maintaining, or restoring health; or for maximizing the level of independence while minimizing the effects of disability and illness, including terminal illness. These agencies are often referred to today as "hospitals without walls," because advances in technology allow dozens of complex illnesses once treated almost exclusively in the hospital to be treated at home. Hospice care is defined as a program of palliative and supportive care services providing physical, psychological, social, and spiritual care for dying persons, their families and other loved ones. Hospice services are available in both the home and inpatient settings.

The focus of this report is on characteristics of patients receiving care from agencies that provide home health care and hospice services. For these two types of agencies, estimates are presented for current patients who were on the rolls of the agency as of midnight on the day immediately before the date of the survey, and for

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Table 1. Number, percent, and percent distribution of home health care agencies and hospices by type of agency, according to ownership, certification, and geographic region: United States, 1993

Characteristic	Total	Type of agency	
		Home health care	Hospice
		Number	
All agencies	8,400	7,400	1,000
		Percent distribution	
Total	100.0	100.0	100.0
Ownership			
Proprietary	33.1	37.1	3.6
Voluntary nonprofit	48.5	42.5	93.9
Government and other	18.4	20.5	2.4
Region			
Northeast	21.8	22.4	17.0
Midwest	28.3	28.1	29.8
South	35.7	36.0	33.3
West	14.3	13.5	19.9
Certification		Percent	
Certified by Medicare	82.0	83.5	70.6
Certified by Medicaid	80.7	83.0	63.2

discharged patients who had been removed from the rolls of the agency (including those whose episode of care ended because of death) during a designated month that was randomly selected for that agency. These estimates are presented by agency, demographic, and diagnostic characteristics.

Agency characteristics

The 1993 preliminary estimate of 8,400 home care agencies (home health and hospice) represents a 5-percent increase in the number of agencies since 1992 (4). This continuing growth was sparked in 1965 by enactment of the Medicare law, which paid for certain home health services, thereby making them more available to the elderly. The growth was further enhanced when, in 1973, certain disabled younger Americans also qualified as Medicaid recipients of care from this industry.

According to the preliminary estimates from the 1993 survey, about 84 percent of the estimated 7,400 home health care agencies were Medicare and 83 percent were Medicaid certified. Medicare added hospice benefits in 1983 to their coverage, and in 10 years the number of hospices increased by several hundred percent (5). In 1993 about 71 percent of the estimated 1,000 hospices were Medicare certified and 63 percent were Medicaid certified. This marks an increase in the number of hospices certified since 1992 (4).

About the same percent of home health care agencies were privately owned (37 percent) as were owned by nonprofit organizations (43 percent). Estimates from the survey show that almost all (94 percent) of the hospices were owned by voluntary nonprofit organizations. About 4 percent of the hospices were privately owned. The remaining 20 percent of the home health care agencies and 2 percent of the hospices were owned by government agencies.

Almost two-thirds of all hospices and home health care agencies are located in the South and the Midwest. There were 36 percent of home health care agencies and 33 percent of hospices in the Southern States. Fewer home health care agencies were located in the West than in the other three regions and fewer hospices were located in the Northeast and the West than in the Midwest or the South (table 1).

Patients by agency characteristics

Table 2 shows that the number of current patients receiving home care is greater in the South and the Northeast than in the West and Midwest. According to the 1993 survey, 68 percent of the 1.5 million current home health care and hospice patients were located in the Southern and Northeastern States.

Most current patients and discharges received home and hospice care from voluntary nonprofit agencies. In 1993 nonprofit agencies provided care for about 59 percent of all home health care patients and 91 percent of all hospice patients. Nonprofit home health care agencies provided care to 66 percent of all discharged home health care patients, while nonprofit agencies provided care to 91 percent of all discharged hospice patients. At least 90 percent of all current and discharged patients receiving home health care received that care from home health care agencies that were certified by Medicare and/or Medicaid. The increase in the percent of hospices certified by Medicare and Medicaid is reflected in the number of

Table 2. Number, percent, and percent distribution of current patients receiving home health and hospice care by type of agency, according to ownership, certification, and geographic region: United States, 1993

Characteristic	Total	Type of agency	
		Home health care	Hospice
		Number	
Total	1,498,900	1,448,800	50,100
Ownership			
Proprietary	396,800	392,600	4,200
Voluntary nonprofit	901,500	856,100	45,400
Government and other	200,600	200,100	500
Region			
Northeast	517,500	505,700	11,800
Midwest	281,200	268,400	12,800
South	499,000	482,100	17,000
West	201,200	192,700	8,500
Certification			
Certified by Medicare	1,350,100	1,302,500	47,600
Certified by Medicaid	1,359,800	1,313,900	45,900
		Percent distribution	
Total	100.0	100.0	100.0
Ownership			
Proprietary	26.5	27.1	8.3
Voluntary nonprofit	60.1	59.1	90.7
Government and other	13.4	13.8	0.9
Region			
Northeast	34.5	34.9	23.7
Midwest	18.8	18.5	25.6
South	33.3	33.3	33.9
West	13.4	13.3	16.9
		Percent	
Certification			
Certified by Medicare	90.1	89.9	95.0
Certified by Medicaid	90.7	90.7	91.6

NOTE: Figures may not add to totals because of rounding.

patients receiving certified care. At least 90 percent of the current and discharged hospice patients received their care from hospices certified by Medicare and/or Medicaid (tables 2 and 3).

Patients by demographic characteristics

As in 1992, the 1993 preliminary estimates show that the 1.4 million current patients receiving home health care were elderly, female, white, and married or widowed. The likelihood of using home health services increases with age because usually functional status declines with age (6). In 1993 about 75 percent of all current home health care patients were 65 years or older. More women (66 percent) were receiving home health care services than were their male (34 percent) counter parts, partly because women outlive males. Married and widowed patients receiving home health care accounted for 67 percent of all patients, about 22 percent were divorced, separated, single, or never married, and the marital status of the remaining 11 percent was unknown (table 4). The distribution of 3.7 million discharges shown in table 5 by age, sex, race, and marital status was similar to the distribution of current patients, except for marital status.

At the time of the 1993 survey, 1,000 hospices were serving 50,100 patients. Like home health care patients, hospice patients currently receiving care were elderly; more than 71 percent were 65 years of age or older. Unlike home health patients, however, hospice patients were nearly as likely to be male as female. Most current hospice patients were white and married. The 256,900 hospice patients who had been discharged from care (usually because they died) had demographic characteristics similar to current patients (table 5).

Patients by diagnoses

Information on the primary and other diagnoses at the time of admission

Table 3. Number, percent, and percent distribution of discharged patients who received home health and hospice care by type of agency, according to ownership, certification, and geographic region: United States, 1993

Characteristic	Total	Type of agency: Home health care	Type of agency: Hospice
		Number	
Total	3,929,600	3,672,700	256,900
Ownership			
Proprietary	923,600	904,100	19,500
Voluntary nonprofit	2,653,200	2,419,100	234,100
Government and other	352,800	349,500	3,300
Region			
Northeast	1,316,200	1,251,800	64,400
Midwest	788,800	721,900	66,900
South	1,045,900	964,500	81,400
West	778,600	734,400	44,100
Certification			
Certified by Medicare	3,774,000	3,535,000	239,000
Certified by Medicaid	3,669,300	3,438,300	231,000
		Percent distribution	
Total	100.0	100.0	100.0
Ownership			
Proprietary	23.5	24.6	7.6
Voluntary nonprofit	67.5	65.9	91.1
Government and other	9.0	9.5	1.3
Region			
Northeast	33.5	34.1	25.1
Midwest	20.1	19.7	26.0
South	26.6	26.3	31.7
West	19.8	20.0	17.2
		Percent	
Certification			
Certified by Medicare	96.0	96.3	93.0
Certified by Medicaid	93.4	93.6	89.9

NOTE: Figures may not add to totals because of rounding.

was collected from the medical records for each home health care and hospice patient in the 1993 survey. Diagnoses were coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (7). The first-listed diagnosis at admission for home health care and hospice patients who are currently receiving care is shown in table 6, grouped by ICD–9–CM chapter.

About 26 percent of the 1.4 million home health care patients had conditions that are in the ICD–9–CM chapter, "Diseases of the circulatory system" (390–459). Persons with heart disease, including congestive heart failure, made up 49 percent of all conditions in this group. Stroke, diabetes, and hypertension were also frequent admission diagnoses for current home health care patients.

Most hospice patients (71 percent) had a first-listed diagnosis of neoplasms (140–239). Cancer of the lungs, breast, colon, and prostate accounted for nearly 60 percent of all neoplasms. The second largest group—diseases of the circulatory system with congestive heart failure—accounted for about 9 percent of the admission diagnoses for this group. Hospice patients with human immunodeficiency virus (HIV) diagnoses were the total of the ICD–9–CM chapter on infectious and parasitic diseases. Because hospice care is provided to patients who are in the terminal stage of their illness, it is not unexpected that these patients would have a first-listed admission diagnosis of a serious illness.

Table 4. Number and percent distribution of current patients receiving home health and hospice care by type of care received, according to age, sex, race, and marital status at admission: United States, 1993

Characteristic	Total	Type of care received: Home health care	Type of care received: Hospice
		Number	
Total	1,498,900	1,448,800	50,100
Age			
Under 45 years	187,300	183,000	4,300
45–54 years	61,000	57,800	3,200
55–64 years	124,400	118,300	6,200
65 years and over	1,114,700	1,078,900	35,800
65–69 years	144,800	139,400	5,400
70–74 years	217,200	208,100	9,100
75–79 years	233,500	227,100	6,400
80–84 years	240,500	233,000	7,500
85 years and over	278,600	271,300	7,300
Unknown	11,500	10,800	*
Sex			
Male	513,500	492,900	20,600
Female	985,400	955,800	29,500
Race			
White	1,026,300	986,100	40,200
Black	203,100	198,600	4,600
Other or unknown	269,500	264,100	5,300
Marital status			
Married	449,400	425,600	23,800
Widowed	560,600	544,800	15,700
Divorced or separated	76,800	74,100	2,700
Never married	256,300	251,100	5,200
Unknown	155,800	153,100	2,700
		Percent distribution	
Total	100.0	100.0	100.0
Age			
Under 45 years	12.5	12.6	8.5
45–54 years	4.1	4.0	6.4
55–64 years	8.3	8.2	12.3
65 years and over	74.4	74.5	71.5
65–69 years	9.7	9.6	10.8
70–74 years	14.5	14.4	18.2
75–79 years	15.6	15.7	12.9
80–84 years	16.0	16.1	15.0
85 years and over	18.6	18.7	14.6
Unknown	0.8	0.7	*
Sex			
Male	34.3	34.0	41.1
Female	65.7	66.0	58.9
Race			
White	68.5	68.1	80.2
Black	13.6	13.7	9.1
Other or unknown	18.0	18.2	10.7
Marital status			
Married	30.0	29.4	47.5
Widowed	37.4	37.6	31.4
Divorced or separated	5.1	5.1	5.4
Never married	17.1	17.3	10.4
Unknown	10.4	10.6	5.3

NOTE: Figures may not add to totals because of rounding.

Table 5. Number and percent distribution of discharges by type of care received, according to age, sex, and marital status at admission: United States, 1993

Characteristic	Total	Type of care received: Home health care	Type of care received: Hospice
		Number	
Total	3,929,600	3,672,700	256,900
Age			
Under 45 years	552,600	530,900	21,700
45–54 years	185,800	169,900	15,900
55–64 years	370,500	335,300	35,200
65 years and over	2,794,400	2,611,200	183,300
65–69 years	402,700	361,500	41,200
70–74 years	586,400	538,400	48,000
75–79 years	607,900	571,800	36,100
80–84 years	572,800	546,500	26,300
85 years and over	624,600	592,900	31,700
Unknown	26,300	25,400	*
Sex			
Male	1,463,900	1,339,700	124,200
Female	2,465,700	2,333,000	132,700
Race			
White	2,681,400	2,479,900	201,500
Black	383,100	357,500	25,600
Other or unknown	865,100	835,300	29,800
Marital status			
Married	1,515,500	1,371,700	143,700
Widowed	1,238,700	1,179,900	58,800
Divorced or separated	182,600	164,700	17,900
Never married	575,800	546,400	29,400
Unknown	417,000	409,900	7,000
		Percent distribution	
Total	100.00	100.00	100.00
Age			
Under 45 years	14.1	14.5	8.4
45–54 years	4.7	4.6	6.2
55–64 years	9.4	9.1	13.7
65 years and over	71.1	71.1	71.3
65–69 years	10.2	9.8	16.0
70–74 years	14.9	14.7	18.7
75–79 years	15.5	15.6	14.0
80–84 years	14.6	14.9	10.2
85 years and over	15.9	16.1	12.3
Unknown	0.7	0.7	*
Sex			
Male	37.3	36.5	48.4
Female	62.7	63.5	51.6
Race			
White	68.2	67.5	78.4
Black	9.7	9.7	10.0
Other or unknown	22.0	22.7	11.6
Marital status			
Married	38.6	37.3	55.9
Widowed	31.5	32.1	22.9
Divorced or separated	4.6	4.5	7.0
Never married	14.7	14.9	11.5
Unknown	10.6	11.2	2.7

NOTE: Figures may not add to totals because of rounding.

Table 6. Number of current home health care and hospice patients by first-listed diagnoses at admission: United States, 1993

ICD–9–CM procedure category and code		*Home health care patients*	*Hospice patients*
Total		1,448,800	50,100
Infectious and parasitic diseases	001–139	17,500	1,400
Neoplasms	140–239	94,900	35,600
Endocrine, nutritional and metabolic, and immunity disorders	240–279	126,800	*
Diseases of the blood and blood-forming organs	280–289	36,700	*
Mental disorders	290–319	48,800	*
Diseases of the nervous system and sense organs	320–389	93,600	2,100
Diseases of the circulatory system	390–459	381,400	4,700
Diseases of the respiratory system	460–519	87,100	3,100
Diseases of the digestive system	520–579	50,800	*
Diseases of the genitourinary system	580–629	35,100	*
Diseases of the skin and subcutaneous tissue	680–709	44,200	–
Diseases of the musculoskeletal system and connective tissue	710–739	122,200	*
Congenital anomalies	740–759	9,900	*
Certain conditions originating in the perinatal period	760–779	12,700	*
Symptoms, signs, and ill-defined conditions	780–799	102,100	*
Injury and poisoning	800–999	132,200	*
All other or unknown		53,800	*

NOTE: Figures may not add to totals because of rounding.

References

1. Institute of Medicine. Toward a national health care survey, a data system for the 21st century. Washington: National Academy Press. 1992.
2. Bishop C, Skwara KC. Recent growth of Medicare home health. Health Aff 95–110. 1993.
3. Haupt B. Development of the National Home and Hospice Care Survey. National Center for Health Statistics. Vital Health Stat (in preparation). 1993.
4. Strahan GW. Overview of home health and hospice care patients: Preliminary data from the 1992 National Home and Hospice Care Survey. Advance data from vital and health statistics; no 235. Hyattsville, Maryland: National Center for Health Statistics. 1992.
5. National Association for Home Care. Basic statistics about home care. Information sheet. 1992.
6. Hing E, Bloom B. Long-term care for the functionally dependent elderly. National Center for Health Statistics. Vital Health Stat 13(104). 1990.
7. Public Health Service and Health Care Financing Administration. International Classification of Diseases, 9th Revision, Clinical Modification. Washington: Public Health Service. 1980.
8. National Center for Health Statistics: Development and maintenance of a national inventory of hospitals and institutions. Vital Health Stat 1(3). 1965.
9. Bureau of the Census. Summary report for the 1991 National Health Provider Inventory. Unpublished memo prepared by the Health Surveys Branch. 1992.
10. Massey JT, Moore TF, Parsons VL, Tadros W. Design and estimation for the National Health Interview Survey, 1985–94. National Center for Health Statistics. Vital Health Stat 2(110). 1989.
11. Hoffman K. Specifications for selecting NHHCS sample home health agencies and hospices. Unpublished memo. 1992.
12. Shah BV, Barnwell BG, Hunt PN, LaVange LM. SUDAAN user's manual, release 5.50. Research Triangle Park, North Carolina: Research Triangle Institute. 1991.

Symbols

- - -	Data not available
. . .	Category not applicable
–	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision

Technical notes

Source of data

The sample for the 1993 National Home and Hospice Care Survey (NHHCS) was the same basic sample used in the 1992 survey with few exceptions. The 1993 sample contained 1,458 agencies. About 40 agencies were removed from the 1992 sample because they had merged with other agencies in the sample, they were determined to be duplicates of other agencies in the sample, or they were considered out of scope for the survey. The original sample was taken from a frame that consisted of all home health care agencies and hospices identified in the 1991 National Health Provider Inventory (NHPI) and all agencies opened for business between 1991 and June 30, 1992, as identified through the Agency Reporting System (8). The NHPI is a comprehensive census of nursing and related care homes, residential care homes, home health care agencies, and hospices conducted periodically by the National Center for Health Statistics (9).

Sample design

The sample design for the 1993 NHHCS is a stratified three-stage probability design. Primary Sampling Units (PSUs) are selected at the first stage, agencies are selected at the second stage, and current residents and discharges are selected at the third stage.

The first stage utilized the selection procedures that obtained the 198 PSUs used for the National Health Interview Survey (NHIS), a survey of the civilian noninstitutionalized population of the United States (10). The PSUs are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships (for some PSUs in New England). Home health agencies and hospices were selected within the same PSUs included in the NHIS to minimize data collection costs and to establish linkage between the two surveys, allowing future research on availability and use of services (9).

The second stage involved the selection of agencies within six primary strata of agencies. These strata were formed in the 1992 sampling frame on the basis of type of agency (hospices versus home health care agencies and mixed agencies—providing both types of care or unknown) and type of PSU (self-representing (SR) versus nonself-representing (NSR), and within nonself-representing PSUs—Metropolitan Statistical Area (MSA) versus non-MSA). MSA is a metropolitan statistical area defined by the U.S. Office of Management and Budget on the basis of the 1990 Census. Within these sampling stratum, agencies were arrayed by four regions, five types of ownership, two types of certification status, and finally by the number of the patients currently being served by the agency. The number of agencies selected from each sampling stratum was based primarily on results of research into the optimum sample design for the 1992 NHHCS. Hospices in the nonself-representing PSUs and home health care agencies and mixed agencies in the non-MSA, nonself-representing PSUs were selected with certainty. Hospices in the self-representing PSUs and home health care agencies and mixed agencies in the MSA, nonself-representing PSUs and the self-representing PSUs were selected with probability proportional to the current patient size (as reported in the NHPI sampling frame). A total sample of 1,500 agencies was selected; 384 were hospices, and the balance was home health care agencies or mixed agencies (11). In 1993 there were 1,458 agencies in the sample.

The final stage is a systematic random selection of six patients being currently served by the agency and six patients discharged from care during a designated month from October 1992 to September 1993. The designated month was randomly selected for each agency. Therefore the coverage for discharges was the 12-month period from October 1992 to September 1993.

Data collection procedures

Data collection for the 1993 NHHCS began with a letter sent to all 1,458 sampled agencies, informing the administrator of the authorizing legislation the purpose and content of the survey. Within a week to 10 days after the letter was mailed, the interviewer assigned to conduct the survey for a particular agency made telephone contact to discuss the survey and to arrange an appointment with the administrator or person designated by the administrator.

Three questionnaires and two sampling lists were used to collect the data. The Agency Questionnaire was

Table I. Standard errors for number , percent , and percent distribution of home health care agencies and hospices by type of agency, according to ownership, certification, and geographic region: United States, 1993

Characteristic	Total	Type of agency	
		Home health care	Hospice
		Number	
All agencies	254	227	113
Ownership		Percent[1]	
Proprietary	1.9	2.1	0.7
Voluntary nonprofit	1.9	1.9	1.1
Government and other	1.8	0.2	0.6
Certification			
Certified by Medicare	1.7	1.6	7.0
Certified by Medicaid	2.1	2.1	6.6
Region			
Northeast	0.9	0.1	2.4
Midwest	1.3	1.4	4.2
South	1.6	1.7	4.6
West	1.4	0.1	7.2

[1]Standard errors for percents are based on an approximation by a multinomial distribution.

Table II. Standard errors for number, percent, and percent distribution of current patients receiving home health and hospice care by type of agency, according to ownership, certification, and geographic region: United States, 1993

Characteristic	Total	Percent[1]	Home health care		Hospice care	
			Total	Percent[1]	Total	Percent[1]
Total	52,376	...	52,129	...	3,612	...
Ownership						
Proprietary	26,266	1.9	26,203	2.0	919	1.8
Voluntary nonprofit	48,737	2.3	48,375	2.4	3,536	1.9
Government and others	25,593	1.8	25,592	1.8	114	0.2
Certification						
Certified by Medicare	52,382	1.3	52,099	1.4	3,619	1.5
Certified by Medicaid	53,005	1.2	52,731	1.2	3,647	1.8
Census region						
Northeast	41,434	2.2	41,312	2.2	2,091	3.6
Midwest	15,626	1.2	15,633	1.2	1,362	2.6
South	24,513	1.7	24,357	1.7	2,219	3.6
West	13,469	1.0	13,159	1.0	1,378	2.6

[1]Standard errors for percents are based on an approximation by a multinomial distribution.

Table III. Standard errors for number, percent, and percent distribution of discharged patients who received home health and hospice care by type of agency, according to ownership, certification, and geographic region: United States, 1993

Characteristic	Total	Percent[1]	Home health care		Hospice care	
			Total	Percent[1]	Total	Percent[1]
Total	128,678	...	126,841	...	19,945	...
Ownership						
Proprietary	65,620	1.7	65,380	1.9	3,828	1.5
Voluntary nonprofit	120,358	2.0	117,723	2.1	19,719	1.6
Government and others	44,592	1.2	44,491	1.3	1,040	0.4
Certification						
Certified by Medicare	129,466	0.7	127,663	0.7	18,925	2.6
Certified by Medicaid	129,625	0.9	127,792	0.9	18,990	2.6
Census region						
Northeast	90,609	1.9	90,167	2.0	11,723	3.9
Midwest	52,258	1.3	51,958	1.4	6,611	2.6
South	60,811	1.5	58,704	1.6	11,907	3.8
West	43,810	1.2	42,578	1.2	8,657	3.1

[1]Standard errors for percents are based on an approximation by a multinomial distribution.

completed with the administrator or designee. The interviewer would next complete the Current Patient Sampling List (CPSL) and Discharged Patient Sampling List (DPSL). The interviewer used the CPSL to list all patients on the register of the agency on the evening before the day of the survey. The DPSL was used to list all discharges from the agency for their designated month. Sampling of current patients and discharged patients within agencies was accomplished by using tables showing sets of sample line numbers for each possible count of current patient and discharged patient in the agency. The interviewer drew a sample of up to six current patients and up to six discharges.

After the samples had been selected, the Current Patient Questionnaire and Discharged Patient Questionnaire were completed for each sampled person by interviewing the staff member most familiar with the care provided to the patient. The respondent was requested to refer to the medical or other records whenever necessary.

Sampling errors

Because the statistics presented in this report are based on a sample, they will differ somewhat from figures that would have been obtained if a complete census had been taken using the same schedules, instructions, and procedures. The standard error is primarily a measure of the variability that occurs by chance because only a sample, rather than the entire universe, is surveyed. The standard error also reflects part of

Table IV. Standard errors for number and percent distribution of current patients receiving home health and hospice care by type of care received, according to age, sex, race, and marital status at admission: United States, 1993

Characteristic	Total	Percent[1]	Home health care		Hospice care	
			Total	Percent[1]	Total	Percent[1]
Total	52,376	...	52,129	100.0	50,100	100.0
Age						
Under 45 years	13,500	0.8	13,470	0.8	720	1.4
45–54 years	5,210	0.4	5,160	0.4	758	1.4
55–64 years	10,345	0.6	10,285	0.6	978	1.9
65 years and over	39,695	1.0	39,506	1.1	3,016	2.6
65–69 years	8,823	0.6	8,788	0.7	799	1.5
70–74 years	20,776	1.4	20,723	1.2	1,539	2.5
75–79 years	12,100	0.8	12,048	0.8	750	1.4
80–84 years	12,412	0.6	12,344	0.6	1,300	2.2
85 years and over	13,200	0.9	13,367	1.0	1,100	2.1
Unknown	3,275	0.2	3,238	0.2	*	*
Sex						
Male	22,900	1.0	23,000	1.0	1,845	2.5
Female	36,300	1.0	36,000	1.0	2,567	2.5
Race						
White	34,200	1.7	33,900	1.8	3,200	2.5
Black	19,300	1.1	19,200	1.2	940	1.7
Other or unknown	22,100	1.3	22,000	1.3	1,100	2.1
Marital status						
Married	17,800	1.3	17,500	1.3	2,300	2.7
Widowed	27,600	1.1	27,600	1.2	1,800	2.6
Divorced or separated	8,700	0.5	8,700	0.6	500	0.9
Never married	14,700	0.9	14,700	0.9	860	1.7
Unknown	13,400	0.8	13,400	0.8	700	1.4

[1]Standard errors for percents are based on an approximation by a multinomial distribution.

the measurement error, but it does not measure any systematic biases in the data. The chances are 95 of 100 that an estimate from the sample differs from the value that would be obtained from a complete census by less than twice the standard error.

The standard errors used in this report were approximated using SUDAAN software. SUDAAN computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (12). Exact standard error estimates were used in tests of significance in this report. Standard errors for all estimates presented in this report are presented in tables I–VI. The Z-test, with a 0.05 level of significance, was used to test all comparisons mentioned in this report. Not all observed differences were tested, so lack of comment in the text does not mean that the difference was not statistically significant.

Table V. Standard errors for number and percent distribution of discharges by type of care received, according by age, sex, race, and marital status at admission: United States, 1993

Characteristic	Total	Percent[1]	Home health care		Hospice care	
			Total	Percent[1]	Total	Percent[1]
Total	128,700	...	126,800	...	20,000	100.0
Age						
Under 45 years	37,000	0.9	37,000	0.9	4,000	1.5
45–54 years	14,800	0.4	14,700	0.4	2,600	1.1
55–64 years	22,900	0.6	22,300	0.6	5,400	1.6
65 years and over	101,400	1.0	99,900	1.1	15,700	2.1
65–69 years	24,300	0.6	23,100	0.6	6,800	2.2
70–74 years	36,600	0.8	35,600	0.9	6,100	2.0
75–79 years	31,700	0.7	31,300	0.8	4,800	1.6
80–84 years	33,700	0.7	33,400	0.8	4,700	1.5
85 years and over	35,300	0.7	34,800	0.8	5,000	1.8
Unknown	5,100	0.1	5,100	0.2	*	*
Sex						
Male	58,200	1.0	57,000	1.1	10,800	2.5
Female	91,900	1.0	90,700	1.1	12,800	2.5
Race						
White	97,200	1.5	94,800	1.5	16,700	2.4
Black	30,700	0.8	30,000	0.8	5,300	1.8
Other or unknown	59,900	1.4	59,700	1.5	4,900	1.8
Marital status						
Married	65,900	1.1	64,800	1.1	12,900	3.0
Widowed	53,200	1.0	52,700	1.1	6,500	2.3
Divorced or separated	16,200	0.4	15,600	0.4	3,300	1.2
Never married	35,300	0.9	34,200	0.9	7,800	2.7
Unknown	35,400	0.9	35,400	1.0	2,000	0.8

[1]Standard errors for percents are based on an approximation by a multinomial distribution.

Table VI. Standard errors of number of current home health care and hospice patients by first-listed diagnoses at admission: United States, 1993

ICD–9–CM procedure category and code		Home health patients	Hospice patients
Total		52,129	3,612
Infectious and parasitic diseases	001–139	2,612	304
Neoplasms	140–239	9,858	3,077
Endocrine, nutritional and metabolic, and immunity disorders	240–279	7,881	*
Diseases of the blood and blood-forming organs	280–289	4,261	*
Mental disorders	290–319	5,107	*
Diseases of the nervous system and sense organs	320–389	7,567	530
Diseases of the circulatory system	390–459	18,842	656
Diseases of the respiratory system	460–519	5,945	651
Diseases of the digestive system	520–579	4,597	*
Diseases of the genitourinary system	580–629	3,629	*
Diseases of the skin and subcutaneous tissue	680–709	4,220	*
Diseases of the musculoskeletal system and connective tissue	710–739	8,896	*
Congenital anomalies	740–759	2,042	*
Certain conditions originating in the perinatal period	760–779	2,456	*
Symptoms, signs, and ill-defined conditions	780–799	9,909	*
Injury and poisoning	800–999	14,731	*
All other or unknown		6,271	*

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Hospices and Home Health Agencies: Data From the 1991 National Health Provider Inventory

by Adrienne L. Jones, Division of Health Care Statistics

Hospices and home health agencies

This report presents information on the characteristics of hospices and home health agencies in the United States. The data are from the 1991 National Health Provider Inventory (NHPI). The NHPI was a mail survey of nursing homes, board and care homes, home health agencies, and hospices. However, the discussions in this report are limited to home health agencies and hospices.

The NHPI was formerly called the National Master Facility Inventory (NMFI) and the Inventory of Long-Term Care Places (ILTCP) (1). Before the inclusion of hospices and home health agencies, the inventory had been limited to inpatient facilities. Because of its recent expansion to include hospices and home health agencies the name was changed to NHPI.

The U.S. Bureau of the Census conducted the 1991 NHPI under an interagency agreement with the National Center for Health Statistics (NCHS). The primary purposes of the NHPI were to provide a sampling frame for selected sample surveys and to provide national

Table 1. Number and percent distribution of home health agencies and hospices by type of ownership, certification, and geographic region: United States, 1991

Agency characteristic	Total		Type of agency			
			Home health agency		Hospice	
	Number	Percent	Number	Percent	Number	Percent
All agencies	7,804	100.0	6,853	100.0	951	100.0
Type of ownership						
Proprietary	2,827	36.2	2,779	40.6	48	5.0
Nonprofit	3,353	43.0	2,515	36.7	838	88.1
Government and other	1,624	20.0	1,559	22.7	64	6.7
Certification						
Medicare certified	6,242	80.0	5,609	81.8	633	66.6
Medicaid certified	6,193	79.4	5,655	82.5	538	56.6
Geographic region						
Northeast	1,428	18.3	1,271	18.5	157	16.5
Midwest	2,257	28.9	1,964	28.7	293	30.8
South	3,002	38.5	2,691	39.3	311	32.7
West	1,117	14.3	927	13.5	190	20.0

NOTE: Percents may not add to totals because of rounding.

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data on the number, type, and geographic distribution of providers of long-term care.

Although the mailing list of home health agencies and hospices used for the NHPI contained over 14,000 records, the number of in-scope places were found to be 7,804. The data in this report will be limited to those agencies. Source of data, survey methods, and definitions are given in the technical notes at the end of the report.

Agency characteristics

In 1991 there were 7,804 hospices and home health agencies in the United States (table 1). The majority (88 percent) were home health agencies. Of the 6,853 home health agencies, 2,779 (41 percent) were proprietary, 2,515 (37 percent) were nonprofit, and 1,559 (23 percent) were government and some other type of ownership. On the other hand, only 5 percent of the 951 hospices were proprietary owned, 88 percent were nonprofit, and the type of ownership for 7 percent was government or other.

Most of the hospices and home health agencies were certified by Medicare and Medicaid; 6,242 were Medicare certified and 6,193 were Medicaid certified. Of the 6,853 home health agencies, about 82 percent were Medicare and Medicaid certified. Substantially fewer of the 951 hospices were certified; 67 percent were certified for Medicare and 57 percent were certified for Medicaid.

The majority of agencies were located in the South and Midwest regions; 39 percent were in the South and 29 percent were in the Midwest, compared with 18 percent in the Northeast and 14 percent in the West. A greater percent of home health agencies (39 percent) than of hospices (31 percent) were in the South; relatively more hospices (20 percent) than home health agencies (14 percent) were in the West. The percent of home health agencies and percent of hospices in the other two regions were close; 19 percent of home health agencies and 17 percent of hospices were in the Northeast, and 29 percent of home health agencies and 31 percent of hospices were in the Midwest.

About a third (34 percent) of the home health agencies were located in California, Florida, Illinois, New York, Pennsylvania, and Texas (table 2). Texas had the most home health agencies (557) followed by New York (410), Florida (413), Pennsylvania (317), California (333), and Illinois (309). Of the remaining States, Ohio and Tennessee each had more than 250 home health agencies. Eleven States and the District of Columbia each had fewer than 50 home health agencies.

About a third (33 percent) of the hospices were also located in six States: California, Illinois, Michigan, North Carolina, Ohio, and Texas. California had the greatest number of hospices

Table 2. Number of home health agencies and hospices by State: United States, 1991

States	All agencies	Home health agencies	Hospices
		Number	
All States	7,804	6,853	951
Alabama	146	127	19
Alaska	15	10	5
Arizona	80	71	9
Arkansas	144	133	11
California	416	333	83
Colorado	120	101	19
Connecticut	119	110	9
Delaware	22	19	3
District of Columbia	21	18	3
Florida	447	413	34
Georgia	88	70	18
Hawaii	26	18	8
Idaho	40	26	14
Illinois	358	309	49
Indiana	163	150	13
Iowa	180	155	25
Kansas	176	153	22
Kentucky	131	112	19
Louisiana	191	180	11
Maine	50	35	15
Maryland	121	96	25
Massachusetts	192	166	26
Michigan	253	196	57
Minnesota	229	196	33
Mississippi	117	116	1
Missouri	188	173	15
Montana	61	49	12
Nebraska	81	75	6
Nevada	30	28	2
New Hampshire	73	60	13
New Jersey	130	111	19
New Mexico	48	45	3
New York	445	410	35
North Carolina	203	155	48
North Dakota	72	70	2
Ohio	291	252	39
Oklahoma	88	75	13
Oregon	85	71	14
Pennsylvania	345	317	28
Rhode Island	48	43	5
South Carolina	114	101	13
South Dakota	87	80	7
Tennessee	273	262	11
Texas	599	557	41
Utah	57	53	42
Vermont	26	19	7
Virginia	221	193	28
Washington	92	81	11
West Virginia	76	64	12
Wisconsin	179	155	24
Wyoming	47	41	6

Table 3. Number and percent distribution of home health care and hospice care clients by type of care received according to type of ownership, certification, and geographic region: United States, 1991

Agency characteristic	Number	Percent	Type of care received					
			Home health care		Hospice care		Health and hospice care	
			Number	Percent distribution	Number	Percent distribution	Number	Percent distribution
All agencies	1,263,704	100.0	1,189,464	100.0	43,487	100.0	30,753	100.0
Type of ownership								
Proprietary	349,863	27.7	333,480	28.0	7,003	16.1	9,380	30.5
Nonprofit	708,871	56.1	657,881	55.3	33,739	77.6	17,251	56.1
Government and other	204,970	16.2	198,103	16.7	2,745	6.3	4,122	13.4
Certification								
Medicare certified	1,126,565	89.1	1,062,458	89.3	37,708	86.7	26,399	85.8
Medicaid certified	1,125,522	89.1	1,063,225	89.4	35,738	82.2	26,559	86.4
Geographic region								
Northeast	402,077	31.8	380,907	32.0	9,746	22.4	11,424	37.1
Midwest	276,120	21.9	261,940	22.0	8,514	19.6	5,666	18.4
South	443,664	35.1	416,001	35.0	17,135	39.4	10,528	34.2
West	141,843	11.2	130,616	11.0	8,092	18.6	3,135	10.2

NOTE: Percents may not add to totals because of rounding.

(83), followed by Michigan (57), Illinois (49), North Carolina (48), Texas (42), and Ohio (39). Florida, Minnesota, and New York each had more than 30 hospices. Fifteen States and the District of Columbia each had fewer than 10 hospices.

Hospice and home health clients

More than one million clients were provided home health and hospice care in the United States in 1991 (table 3). Three types of clients are included in this report: clients who received only home health services (home health clients); clients who received only hospice services (hospice clients); and clients who received home health care as well as hospice care services. Of the 1,263,704 home health and hospice care clients, 1,189,464 (94.1 percent) received only home health care, 43,487 (3.4 percent) clients received only hospice care, and 30,753 (2.4 percent) received both types of care.

Most of the clients who received only home health care were served by nonprofit agencies; proprietary agencies provided care to 28 percent of these clients and 17 percent were served by government agencies and agencies with other types of ownership. In contrast, 78 percent of hospice clients were provided care by nonprofit agencies, 16 percent were served by proprietary agencies, and 6 percent were served by government and other agencies. Of the 30,753 clients that received home health and hospice care 17,252 or 56 percent were served by nonprofit agencies and 31 percent were cared for by proprietary agencies.

Medicare certified agencies provided care to 1,126,565 clients, and Medicaid certified agencies accounted for nearly the same number of clients, 1,125,522. Eighty-nine percent of all home health clients were served by Medicare- and/or Medicaid-certified agencies. The comparable percents for hospice clients are 87 and 82 percent. Similarly, 86 percent of clients who received both types of care were served by certified agencies.

Over 400,000 hospice and home health clients were located in the Northeast (402,077) or South (443,664) regions. The Midwest and West regions combined account for 417,963 clients. A comparison of clients by region according to type of care received show some interesting differences. There was only a 3-percent difference in the percent of clients who received home health care in the Northeast and South regions (32 and 35 percent), but clients who received hospice care in these two regions differed by 17 percent (22 percent in the Northeast compared with 39 percent in the South). The opposite pattern occurred for clients in the Midwest and West regions. In these regions, there was an 11-percent difference in clients who received home health care but only a 1-percent difference in hospice care clients.

The number of clients provided home health and hospice care in the United States during 1991 by type of care provided for each State are shown in table 4. As expected, most of the clients in every State were home health clients. The remaining clients received either hospice care only or home health and hospice care. The number of clients that received both types of care was greater than the number that received only hospice care in 11 States (Arkansas, Connecticut, Illinois, Louisiana, Massachusetts, Missouri, New Jersey, North Dakota, Tennessee, Texas, and Virginia).

The number of clients by type of care received for the 10 States with the largest numbers of total clients are shown in table 5. These 10 States also served the largest number of home health clients. Fifty-four percent of all clients as well as 54 percent of home health clients were provided care by these 10 States. Fourteen percent of all home health and hospice clients (181,454) were served in New York

Table 4. Number of active home health and hospice clients by type of care received and State: United States, 1991

State	All clients	Type of care		
		Home health	Hospice	Home health and hospice
All States	1,263,704	1,189,464	43,487	30,753
Alabama	26,578	25,328	844	406
Alaska	764	727	34	3
Arizona	10,392	9,790	532	70
Arkansas	11,052	10,336	308	408
California	76,175	68,902	4,641	2,632
Colorado	9,277	8,881	378	18
Connecticut	29,716	28,123	393	1,200
Delaware	5,730	5,590	139	1
District of Columbia	4,631	4,563	68	0
Florida	67,277	60,908	5,376	993
Georgia	27,500	26,571	529	400
Hawaii	1,051	908	127	16
Idaho	2,338	2,111	210	17
Illinois	52,303	48,927	1,500	1,876
Indiana	21,839	20,656	597	586
Iowa	20,685	19,847	676	162
Kansas	8,518	7,528	562	428
Kentucky	26,486	24,747	1,238	501
Louisiana	26,037	24,383	750	904
Maine	11,662	11,141	513	8
Maryland	15,963	14,110	1,328	525
Massachusetts	52,622	47,850	1,808	2,964
Michigan	41,696	40,325	1,348	23
Minnesota	29,365	28,442	733	190
Mississippi	24,532	24,444	88	0
Missouri	22,858	20,720	930	1,208
Montana	6,382	6,121	157	104
Nebraska	7,398	7,056	232	110
Nevada	2,167	1,978	184	5
New Hampshire	9,294	8,894	366	34
New Jersey	34,574	29,093	1,360	4,121
New Mexico	2,981	2,759	217	5
New York	181,454	177,547	2,346	1,561
North Carolina	36,038	34,443	1,325	270
North Dakota	7,521	7,360	59	102
Ohio	42,673	40,481	1,307	885
Oklahoma	7,883	7,681	154	48
Oregon	9,512	8,644	714	154
Pennsylvania	62,190	58,766	2,220	1,204
Rhode Island	14,971	14,075	564	332
South Carolina	19,570	18,739	491	340
South Dakota	3,097	3,026	69	2
Tennessee	43,961	42,612	483	866
Texas	65,131	59,258	2,354	3,519
Utah	4,852	4,701	136	15
Vermont	5,594	5,418	176	0
Virginia	27,058	24,429	1,286	1,343
Washington	14,638	13,842	712	84
West Virginia	8,237	7,859	374	4
Wisconsin	18,167	17,572	501	94
Wyoming	1,314	1,252	50	12

State alone. Referring to table 2, it can be seen that these clients were served in the 445 hospices and home health agencies that were located in New York; these agencies made up 6 percent of all the hospices and home health agencies in the United States in 1991. California reported the second highest number of clients receiving home care (76,175 or 6 percent of all clients in the United States). These clients were served in 5 percent (416) of the Nation's hospices and home health agencies. Texas, the State with the largest number of agencies (599, or 8 percent of all agencies), served 65,131 (5 percent) of all clients.

Most States provided care to fewer than 1,000 hospice clients (table 4). The number of hospice clients by State ranged from 34 in Alaska to 5,376 in Florida. Seven States provided care to 47 percent of the hospice clients (Florida, California, Texas, New York, Pennsylvania, Massachusetts, and

Table 5. Number of home health and hospice care clients by type of care for the 10 States with the largest number of clients: United States, 1991

States	Total clients	Type of care		
		Home health	Hospice	Home health and hospice
New York	181,454	177,547	2,346	1,561
California	76,175	68,902	4,641	2,632
Florida	67,277	60,908	5,376	993
Texas	65,131	59,258	2,324	3,519
Pennsylvania	62,190	58,766	2,220	1,204
Massachusetts	52,622	47,850	1,808	2,964
Illinois	52,303	48,927	1,500	1,876
Tennessee	43,961	42,612	483	866
Ohio	42,673	40,481	1,307	885
Michigan	41,696	40,325	1,348	23

Illinois). These States are all included in table 5. Of the remaining 7 States that served more than 1,000 hospice clients in 1991, only one (Ohio) is included in table 5. These 7 States are New Jersey (1,360), Michigan (1,348), Maryland (1,328), North Carolina (1,325), Ohio (1,307), Virginia (1,286), and Kentucky (1,238). Alaska, the District of Columbia, Mississippi, North Dakota, South Dakota, and Wyoming served fewer than 100 hospice clients each.

Average number of clients per agency

The number of home care agencies, the number of home care clients, and the average number of clients per agency for all agencies are shown in table 6. The average number of clients per agency ranged from a low of 28 in Wyoming to a high of 408 in New York. As mentioned in a previous section, most agencies and/or clients were in California, Texas, Florida, Illinois, Pennsylvania, New York, and Massachusetts. Among these seven States, only two averaged more than 200 clients per agency. New York reported that 445 agencies provided care to 181,454 clients, an average of 408 clients per agency, and Massachusetts reported that 192 agencies provided care to 52,622 clients, an average of 274 clients per agency. Texas, which had the most agencies overall (599), had an average of 109 clients per agency.

States that averaged more than 200 clients per agency were New York, Connecticut, Delaware, Rhode Island, Georgia, Massachusetts, New Jersey, Mississippi, the District of Columbia, Kentucky, Maine, and Vermont. Although some of these States had a relatively low number of agencies; home health care and hospice care services were in demand. For example, Rhode Island and Georgia each had fewer than 100 agencies, but provided care to 14,971 and 27,500 clients, an average of 312 and 313 clients per agency. Delaware, Vermont, and the District of Columbia each had fewer than 30 agencies overall, but their average number of clients are 260, 215, and 221.

In comparison, Massachusetts and Illinois provided care to nearly the same number of clients; however, Massachusetts averaged 274 clients per agency while Illinois averaged 146. Illinois had 166 more home care agencies than Massachusetts.

With the exception of New York, all the States that averaged more than 200 clients also had fewer than 200 agencies overall.

References

1. Sirrocco A. Nursing home characteristics: 1986 Inventory of Long-Term Care Places. National Center for Health Statistics. Vital Health Stat 14(33). 1989.
2. Eklund D. The agency reporting system for maintaining the national inventory of hospitals and institutions. National Center for Health Statistics. Vital Health Stat 1(6). 1968.

Table 6. Number of home care agencies and home care clients and average number of clients by State: United States, 1991

States	Home care agencies	Home care clients	Average number of clients
All States	7,804	1,263,704	162
Alabama	146	26,578	182
Alaska	15	764	51
Arizona	80	10,392	130
Arkansas	144	11,052	77
California	416	76,175	183
Colorado	120	9,277	77
Connecticut	119	29,716	250
Delaware	22	5,730	260
District of Columbia	21	4,631	221
Florida	447	67,277	151
Georgia	88	27,500	313
Hawaii	26	1,051	40
Idaho	40	2,338	58
Illinois	358	52,303	146
Indiana	163	21,839	134
Iowa	180	20,685	115
Kansas	176	8,518	48
Kentucky	131	26,486	202
Louisiana	191	26,037	136
Maine	50	11,662	233
Maryland	121	15,963	132
Massachusetts	192	52,622	274
Michigan	253	41,696	165
Minnesota	229	29,365	128
Mississippi	117	24,532	210
Missouri	188	22,858	122
Montana	61	6,382	105
Nebraska	81	7,398	91
Nevada	30	2,167	72
New Hampshire	73	9,294	127
New Jersey	130	34,574	266
New Mexico	48	2,981	62
New York	445	181,454	408
North Carolina	203	36,038	178
North Dakota	72	7,521	104
Ohio	291	42,673	147
Oklahoma	88	7,883	90
Oregon	85	9,512	112
Pennsylvania	345	62,190	180
Rhode Island	48	14,971	312
South Carolina	114	19,570	172
South Dakota	87	3,097	36
Tennessee	273	43,961	161
Texas	599	65,131	109
Utah	57	4,852	85
Vermont	26	5,594	215
Virginia	221	27,058	122
Washington	92	14,638	159
West Virginia	76	8,237	108
Wisconsin	179	18,167	101
Wyoming	47	1,314	28

Technical notes

Source of data

This report is based on information collected in the 1991 National Health Provider Inventory (NHPI). All agencies providing home health and hospice care were included in the survey without regard to licensure or to certification status under Medicare and/or Medicaid. The universe for the 1991 NHPI consisted of approximately 87,000 health care providers: approximately 14,000 home and hospice care agencies, and 73,000 nursing and board and care homes.

The U.S. Bureau of the Census, under an interagency agreement with the National Center for Health Statistics (NCHS) was responsible for conducting a mail survey with a telephone follow up of nonrespondents. Data collection began in April 1991.

Survey methods

The Agency Reporting System (ARS) (2), an ongoing system designed to update constantly the NHPI listings, was used to construct a mailing file of names and addresses for 14,000 home and hospice care agencies. The mailing file of the NHPI was created by the Long-Term Care Statistics Branch (LTCSB) of NCHS.

All home health agencies and hospices were mailed a questionnaire, and about a week later, a reminder postcard. Six weeks after the initial mailing, all providers who had not returned a completed questionnaire were mailed the questionnaire a second time. After a second 6-week period, providers still remaining as nonrespondents were mailed a third questionnaire. At the end of the mailing cycle, each nonresponding provider was contacted by telephone. A minimum number of questionnaire items were sought through the telephone interviews either until the information was collected or the interviewer received a firm refusal. Only 116 of the home health agencies and hospices refused to provide any information.

The mailing file of home health agencies and hospices contained over 14,000 records. After refusals, the out-of- business, temporarily closed, and otherwise out-of-scope places were eliminated; the total number of places was 7,804.

Definition of terms

Terms relating to agencies

Home health—Health services are provided to individuals in their places of residence for the purpose of (a) promoting, maintaining, or restoring health, or (b) maximizing the level of independence, while minimizing the effects of disability and illness (including terminal illness).

Hospice—Hospices are specialized services for terminally ill people and their families including medical services, social and emotional support for patients and families, volunteer support, and bereavement services for families following the death of the patient.

Ownership—Ownership designates the type of organization by which the agency operates. Proprietary agency indicates control by an individual, partnership, or corporation. Nonprofit agency includes ownership by a religious group or by a nonprofit organization.

Certification—Facility certification by Medicare and/or Medicaid.

Medicare—The medical assistance provided in title XVII of the Social Security Act. Medicare is a health insurance program administered by the Social Security Administration for persons 65 years of age and over and for disabled persons who are eligible for benefits.

Medicaid—The medical assistance provided in title XIX of the Social Security Act. Medicaid is a State administered program for the medically indigent.

Geographic regions—Agencies are classified by geographic area by grouping the States into regions. These regions correspond to those used by the U.S. Bureau of the Census.

Region	*States included*
Northeast	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island,Vermont, New Jersey, New York, Pennsylvania, Illinois, and Indiana
Midwest	Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota
South	Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, and Texas
West	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming, Alaska, California, Hawaii, Oregon, and Washington

Term relating to clients

Active clients—Active clients are clients on the agency's roll at the time of the survey.

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Dietary Intake of Vitamins, Minerals, and Fiber of Persons Ages 2 Months and Over in the United States: Third National Health and Nutrition Examination Survey, Phase 1, 1988–91

by Katherine Alaimo, Margaret A. McDowell, M.P.H., R.D., Ronette R. Briefel, Dr.P.H., R.D., Ann M. Bischof, R.D., Clifford R. Caughman, M.S., Catherine M. Loria, M.S., M.A., and Clifford L. Johnson, M.S.P.H., Division of Health Examination Statistics

Introduction

Dietary guidance, food fortification, nutrition intervention programs, and nutrition policy aimed at improving the American diet depend on knowledge of what Americans eat. The concrete link between food and health has been well documented by numerous studies and reports describing the impact of dietary intake on disease prevention and health promotion (1–3). This report on the micronutrient consumption of Americans, including minerals, vitamins, and dietary fiber, is based on information collected in the third National Health and Nutrition Examination Survey (NHANES III), conducted by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC).

As a major component of the National Nutrition Monitoring and Related Research Program, the Health and Nutrition Examination Surveys (HANES) are an important source of periodic information on the dietary, nutritional, and health status of the U.S. population (4–8). HANES data play a unique role in nutrition monitoring and epidemiologic research, combining personal dietary interviews with standardized health examinations (7–9). NCHS completed three HANES surveys between 1971 and 1984 (5,6,8). NHANES III was conducted in two 3-year nationally representative phases covering 1988–94 (5,10). Data for the first phase, 1988–91, are presented here.

The NHANES III dietary assessment component was designed to meet the survey's nutrition monitoring and nutrition research objectives (9,10). The 24-hour recall method was selected for use in NHANES III to estimate nutrient intake for the population and various subgroups and to study diet-health relationships (7–9,11–13). Prior to NHANES III, 24-hour recalls were recorded on hard-copy forms and manually coded by dietary interviewers. In 1988, NCHS contracted with the University of Minnesota's Nutrition Coordinating Center to develop an automated, interactive dietary interview and coding system called the NHANES III Dietary Data Collection (DDC) system (14–16). NCHS, the National Heart, Lung and Blood Institute, and the Food and Drug Administration funded the development of the DDC system. Features of the DDC system have been previously described (10,11,14–16) and are summarized in the Technical notes.

This report provides national reference estimates of minerals, vitamins, and dietary fiber for persons 2 months of age and over. Daily dietary estimates are reported by age and

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gender for the total population and for three race-ethnic groups: non-Hispanic whites, non-Hispanic blacks, and Mexican Americans. Intakes of macronutrients were previously reported (11).

Selected dietary intake findings

NHANES III, 1988–91 values for means, standard errors of the means (SEM), and medians are shown by age, sex, and race-ethnicity for minerals (tables 1–8), vitamins (tables 9–19), and dietary fiber (table 20). Findings for selected nutrients and fiber are discussed in the following text.

Interpretation of the NHANES III nutrient data requires some qualifications. Because data are not age-adjusted, race-ethnic comparisons used only age-specific estimates. In addition, sample sizes of non-Hispanic blacks and Mexican Americans are small for some older age categories and estimates may not be stable. These estimates are marked in tables 1–20 with an asterisk (*). Some nutrient estimates are by their nature very skewed (for example, copper, iron, zinc, vitamin A, carotenes, vitamin B_{12}, and vitamin E). This is because food and nutrient intake varies from day to day. Consumption of certain nutrients may be very high or very low for some individuals on a specific day, influencing population distributions. For non-normally distributed variables, the means and standard errors of the means, which assume normality, should be used and interpreted with caution.

Mean iron intakes averaged 15.5 milligrams in non-breastfed infants, were lower among children ages 1–2 years, increased again through adolescence and young adulthood, and leveled off until the oldest age group (table 3). Non-Hispanic black non-breastfed infants had slightly higher intakes (18 milligrams) than non-Hispanic white (15 milligrams) and Mexican American infants (14 milligrams). Mean iron intakes in adolescents and adults were consistently higher in males than in females, coinciding with a similar pattern observed in mean total energy intakes (11). Among males ages 6 years and over, mean iron intakes were slightly higher in non-Hispanic whites than in non-Hispanic blacks and Mexican Americans. Age-specific mean iron intakes in females were generally similar in all three race-ethnic groups.

Comparison of national nutrient intakes to the Recommended Dietary Allowances (RDAs), standards developed by the Food and Nutrition Board of the National Research Council, is a practical screen to identify potential public health concerns (17). When used in conjunction with information about dietary and health behavior, nutritional biochemistries, and anthropometry, determination of the nutritional status of the population can be made (16,17). Age-specific mean and median iron intakes met or exceeded the RDA for infants and children ages 3–11 years of all race-ethnic groups, but not for children ages 1–2 years. While all adolescent and adult males' mean and median intakes met the RDA, this was not true for most of the female groups.

Some studies have shown that calcium intake plays a role in colon cancer, high blood pressure (hypertension), and kidney stones, and is instrumental in the prevention of osteoporosis (18,19). Recent literature has identified the importance of consuming adequate calcium while bones are still forming to maintain peak bone mass and throughout life (20,21). The RDA for calcium is 1,200 milligrams for adolescents and adults up to age 25 and 800 milligrams for children and adults over age 25 (17). Both mean and median intakes of calcium were higher for males compared with females (table 1). Osteoporosis is more prevalent in women; mean and median calcium intakes were lower than the RDA for almost all female race-ethnic groups above 12 years of age. Age- and sex-specific intakes were generally similar for non-Hispanic whites and Mexican Americans and were lower in non-Hispanic blacks. In males, calcium intakes were highest during adolescence (16–19 years of age) and lower in subsequent age groups, whereas in females, the highest intakes were observed during childhood (6–11 years of age) and began to decline during adolescence.

Mean sodium intakes from food sources were higher in males compared with females at all ages and highest in adolescence and early adulthood, corresponding to a similar pattern in mean energy intakes (table 7) (11). For males, mean sodium intakes were about 600 milligrams during infancy, increased to about 4,800 milligrams in late adolescence and early adulthood, and declined to about 2,900 milligrams in the oldest age group. For females, mean intakes were about 500 milligrams during infancy, increased to about 3,100 milligrams in late adolescence and early adulthood, and then dropped to about 2,200 milligrams in the oldest age group. Overall, adult mean sodium intakes were similar among non-Hispanic whites, non-Hispanic blacks, and Mexican Americans. Mean sodium intakes in the population exceeded the minimum requirements of healthy persons, and the recommended intake of 2,400 milligrams set for adults in 1989 by the National Research Council (17).

The NHANES III data for children show a trend toward slightly higher mean sodium intakes for non-Hispanic black children compared with non-Hispanic white children and Mexican American children in all age groups. The mean sodium intake is consistently higher for non-Hispanic black children in each age group; 300 milligrams higher in children 1–2 years of age, 400 milligrams higher in children 3–5 years of age, 300 milligrams higher in children 6–11 years of age, and 200 milligrams higher in adolescents 12–15 years of age. This trend continued with adolescents 16–19 years of age but not with adults.

Dietary guidance, including the Dietary Guidelines for Americans, have recommended increasing the amount of fruits, vegetables, grains, and legumes in the diet (1,22). These plant foods contain dietary fiber and several nutrients such as carotenes, vitamin C, and folate, which are thought to be protective against many diseases (1,2).

The mean intake of dietary fiber was 17 grams for males and 13 grams for females (table 20). Corresponding median intakes were 15 grams and 11 grams, respectively. Intakes were higher for males compared with females for all

race-ethnic groups. In adults less than 70 years of age, intakes were highest in Mexican Americans, followed by non-Hispanic whites and non-Hispanic blacks. Mean intakes were generally higher for adults compared with children and adolescents. The National Cancer Institute (NCI) has recommended that adults consume 20–30 grams of fiber daily (23). The only groups whose mean intakes reached the NCI goal were Mexican American males ages 16–69 years (ranging from 20–26 grams) and non-Hispanic white males ages 30 –39 years (20 grams). The median intakes of dietary fiber for adults were 12–14 grams, indicating that a large portion of the U.S. population did not meet the NCI goal for dietary fiber intake on the day prior to their examination.

Age-specific mean and median intakes of carotenes were also higher in males than in females and differed among the race-ethnic groups studied (table 11). Adults generally had higher mean intakes of carotenes than children and adolescents. Mean vitamin C intakes were also higher in males (115 milligrams) than females (95 milligrams) but were similar among all three race-ethnic groups (table 18).

The mean intake of folate was 275 milligrams for persons 2 months of age and over (table 16). Males had consistently higher intakes of folate than females in all age and race-ethnic groups. Age-specific mean folate intakes were generally higher in non-Hispanic whites and Mexican Americans and lowest in non-Hispanic blacks for both sexes. The highest folate intakes occurred during late adolescence and young adulthood and declined thereafter.

Recent studies have demonstrated that supplementation of folic acid by women reduces their risk of having children with spina bifida or other neural tube defects (24,25). CDC has recommended that women of childbearing age consume 0.4 milligrams of folic acid per day (26). Mean and median intakes from food for women of childbearing age were below this recommendation.

Summary

Intervention strategies aimed at reducing the prevalence of nutrition-related diseases, including designing nutrition policies and nutrition education and assistance programs, require effective monitoring of what Americans are eating. Nutrient reference data from the third National Health and Nutrition Examination Survey provide essential information to achieve these goals.

Mean and median iron intakes were adequate in males of all race-ethnic groups but were generally low in females and young children. Mean and median calcium intakes were also higher in males than in females and were lower than recommendations in adolescents and in women of all ages. Mean sodium intakes for all age, sex, and race-ethnic groups exceeded the minimum requirements of healthy persons and were higher in non-Hispanic black children and adolescents than in non-Hispanic white and Mexican American children and adolescents. Mean fiber intakes also did not meet recommendations in most subgroups and were higher in Mexican American adults followed by non-Hispanic white adults and non-Hispanic black adults.

Further research is planned to compare the food sources of energy and nutrients consumed by different population groups in NHANES III to similar results from earlier national surveys. NHANES III, Phase 2 (1991–94) recalls were collected using the same dietary method as those collected in Phase 1 (1988–91), and other analyses will compare findings from both phases of NHANES III.

References

1. Committee on Diet and Health, Food and Nutrition Board, Commission on Life Sciences, National Research Council. Diet and health: Implications for reducing chronic disease risk. Washington: National Academy Press. 1989.
2. U.S. Department of Health and Human Services. The Surgeon General's report on nutrition and health. Washington: U.S. Government Printing Office. 1988.
3. Life Sciences Research Office, Federation of American Societies for Experimental Biology. Nutrition monitoring in the United States; an update report on nutrition monitoring in the United States. Washington: Public Health Service. 1989.
4. Woteki CE. Dietary survey data: Sources and limits to interpretation. Nutr Rev S:204–12. 1986.
5. Interagency Board for Nutrition Monitoring and Related Research. Nutrition monitoring in the United States: The Directory of Federal and State Nutrition Monitoring Activities. Wright JD, ed. Hyattsville, Maryland: Public Health Service. 1992.
6. U.S. Department of Health and Human Services and U.S. Department of Agriculture. Ten-year comprehensive plan for the National Nutrition Monitoring and Related Research Program. Federal Register 58:32751–806. 1993.
7. Briefel RR. Assessment of the U.S. diet in national nutrition surveys: National collaborative efforts and NHANES. Am J Clin Nutr 59(suppl):164S–7S. 1994.
8. Woteki CE, Briefel RR, Kuczmarski R. Contributions of the National Center for Health Statistics. Am J Clin Nutr 47:320–8. 1988.
9. Woteki CE, Briefel RR, Hitchcock D, et al. Selection of nutrition status indicators for field surveys: The NHANES III design. J Nutr 120:1440–5. 1990.
10. Plan and operation of the third National Health and Nutrition Examination Survey, 1988–94. National Center for Health Statistics. Vital Health Stat 1(32). 1994.
11. McDowell MA, Briefel RR, Alaimo K, et al. Energy and macronutrient intakes of persons ages 2 months and over in the United States: Third National Health and Nutrition Examination Survey, Phase 1, 1988–91. Advance data from vital and health statistics; No 255. Hyattsville, Maryland: National Center for Health Statistics. 1994.
12. Briefel RR, Sempos CT, eds. Dietary methodology workshop for the third National Health and Nutrition Examination Survey. National Center for Health Statistics. Vital Health Stat 4(27). 1992.
13. Sempos CT, Briefel RR, Flegal KM, Johnson CL, Murphy RS, Woteki CE. Factors involved in selecting a dietary survey methodology for national nutrition surveys. Aust J Nutr Diet 49:22–7 and 29–30 (reply). 1992.
14. McDowell M, Briefel RR, Warren RA, Buzzard IM, Feskanich D,

Gardner SN. The dietary data collection system. An automated interview and coding system for NHANES III. Proceedings of the 14th National Nutrient Databank Conference. Ithaca, New York: CBORD Group, Inc. 1990.
15. Feskanich D, Buzzard IM, Welch BT, et al. Comparison of a computerized and a manual method of food coding for nutrient intake studies. J Am Diet Assoc 88:1263–7. 1988.
16. Feskanich D, Sielaff BH, Chong K, and Buzzard IM. Computerized collection and analysis of dietary intake information. Computer Methods and Programs in Biomedicine 30:47–57. 1989.
17. National Research Council. Recommended dietary allowances. 10th ed. Washington: National Academy Press. 1989.
18. Office of Medical Applications of Research and the National Institute of Arthritis and Musculoskeletal and Skin Diseases, National Institutes of Health. NIH Consensus Development Conference on Optimal Calcium Intake. June 6–8, 1994.
19. Johnson CC, Miller JZ, Slemenda CW, et al. Calcium supplementation and increases in bone mineral density in children. N Engl J Med 327:82–7. 1992.
20. Sandler RB, Slemenda C, La Porte R, et al. Postmenopausal bone density and milk consumption in childhood and adolescence. Am J Clin Nutr 42:270–4. 1985.
21. Arnaud CD, Sanchez SD. The role of calcium in osteoporosis. Annu Rev Nutr 10:397–414. 1990.
22. U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary guidelines for Americans. 3rd ed. Washington: U.S. Government Printing Office. 1990.
23. Diet, Nutrition, and Cancer prevention: A guide to food choices. National Cancer Institute. NIH Pub. No. 85–2711. Public Health Service. Bethesda, Maryland. 1987.
24. MRC Vitamin Study Research Group. Prevention of neural tube defects: Results of the Medical Research Council Vitamin Study. Lancet 338(8760). 1991.
25. Milunsky A, Jick H, Jick SS, et al. Multivitamin/folic acid supplementation in early pregnancy reduces the prevalence of neural tube defects. JAMA 262(20). 1989.
26. Centers for Disease Control and Prevention. Recommendations for the use of folic acid to reduce the number of cases of spina bifida and other neural tube defects. MMWR 41(14). 1992.
27. Ezzati TM, Massey JT, Waksberg J, et al. Sample design: Third National Health and Nutrition Examination Survey. National Center for Health Statistics. Vital Health Stat 2(113). 1992.
28. Shah BV, Barnwell BG, Hunt PN, Nileen P, Lavange LM. SUDAAN User's Manual, release 5.50. Research Triangle Park, North Carolina: Research Triangle Institute. 1991.
29. Westat, Inc. NHANES III dietary interviewer's manual. Prepared for the National Center for Health Statistics, Hyattsville, Maryland. 1992.
30. Briefel RR, Johnson CL. Methodologic issues and quality control for the dietary component in NHANES III. Abstract. A-373. Federation of the American Societies for Experimental Biology. Washington. 1990.
31. Human Nutrition Information Service, U.S. Department of Agriculture. Survey Nutrient Data Base for NHANES III, Phase 1. Hyattsville, Maryland: Human Nutrition Information Service. 1993.
32. National Center for Health Statistics. Editing guidelines for the 24-hr dietary recall component of NHANES III, Phase 1, 1988–91. Hyattsville, Maryland. 1993.

Symbols

- - -	Data not available
. . .	Category not applicable
–	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Estimate is less reliable based on statistical criteria of sample size and coefficient of variation

Table 1. Calcium intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	857	11	742	5,780	886	11	774	3,883	696	10	584	4,598	890	27	776
2–11 months[2]	871	759	18	665	473	789	18	696	162	665	27	604	163	754	47	655
1–2 years[2]	1,231	835	17	800	424	852	20	817	355	717	24	656	402	853	35	778
3–5 years	1,547	855	16	798	425	878	22	822	454	742	21	670	609	862	30	778
6–11 years	1,745	938	16	878	511	960	22	891	452	794	22	719	727	998	31	930
12–15 years	711	971	31	899	221	994	42	923	191	804	41	662	269	999	62	910
16–19 years	765	1,050	38	871	245	1,125	51	980	217	896	49	752	270	982	68	809
20–29 years	1,682	924	21	788	460	968	30	859	499	756	28	619	666	905	38	778
30–39 years	1,526	899	24	758	550	953	30	813	454	646	24	516	472	923	47	750
40–49 years	1,228	758	20	649	467	785	24	698	338	609	24	513	366	797	42	674
50–59 years	929	747	23	631	472	775	24	663	230	550	26	452	196	724	53	586
60–69 years	1,106	787	23	673	493	814	26	701	289	534	25	423	305	710	42	591
70–79 years	851	708	22	605	538	728	21	630	186	574	32	465	111	630	54	533
80 years and over	609	659	23	561	501	671	18	578	56	493	51	413	42	*606	*	*472
Male																
All ages[2]	7,322	976	17	856	2,887	1,016	18	901	1,903	776	16	654	2,250	977	41	856
2–11 months[2]	439	784	26	699	241	810	27	743	78	682	41	623	89	791	54	683
1–2 years[2]	601	852	24	799	202	860	29	809	182	732	32	720	186	872	45	807
3–5 years	744	894	23	834	219	928	31	849	210	757	28	713	281	894	36	830
6–11 years	868	1,007	22	965	252	1,041	30	994	239	834	29	761	344	1,037	36	986
12–15 years	338	1,138	46	1,053	98	1,179	63	1,078	95	870	56	717	129	1,135	82	1,020
16–19 years	368	1,274	61	1,102	112	1,373	83	1,234	103	1,076	74	907	139	1,128	86	953
20–29 years	844	1,075	32	942	216	1,142	46	999	245	875	44	712	349	1,028	48	870
30–39 years	735	1,049	39	915	271	1,122	49	994	213	733	39	554	225	995	59	854
40–49 years	626	834	31	728	243	851	35	756	178	703	38	592	181	890	50	774
50–59 years	473	854	36	720	251	902	37	785	105	533	38	418	96	749	65	614
60–69 years	546	875	34	722	247	895	37	734	141	609	42	480	152	837	53	810
70–79 years	444	808	34	671	285	832	31	688	93	608	47	516	60	673	65	558
80 years and over	296	721	31	634	250	742	25	671	21	*512	*	*467	19	*626	*	*476
Female																
All ages[2]	7,479	744	12	652	2,893	764	13	669	1,980	626	12	536	2,348	799	34	694
2–11 months[2]	432	732	20	629	232	765	23	652	84	650	32	592	74	712	55	590
1–2 years[2]	630	817	20	800	222	843	26	819	173	699	33	631	216	832	36	762
3–5 years	803	815	18	756	206	827	27	773	244	727	29	629	328	829	34	724
6–11 years	877	867	20	814	259	879	28	822	213	755	30	688	383	958	37	890
12–15 years	373	796	33	685	123	801	45	744	96	737	54	613	140	872	58	790
16–19 years	397	822	34	745	133	866	46	797	114	725	51	620	131	816	63	676
20–29 years	838	778	22	640	244	806	33	647	254	656	30	582	317	754	36	653
30–39 years	791	753	22	649	279	788	29	678	241	574	25	492	247	847	50	667
40–49 years	602	685	22	575	224	717	29	614	160	530	25	442	185	701	46	567
50–59 years	456	651	23	557	221	660	26	559	125	564	31	502	100	701	58	575
60–69 years	560	711	26	625	246	743	32	660	148	477	26	399	153	606	42	494
70–79 years	407	636	24	571	253	651	24	586	93	549	40	436	51	*593	*	*511
80 years and over	313	626	28	531	251	633	24	544	35	484	63	347	23	*595	*	*436

[1]Includes data for race-ethnic groups not shown separately.
[2]Excludes nursing infants and children.

Table 2. Copper intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	1.26	0.01	1.09	5,780	1.27	0.02	1.10	3,883	1.16	0.02	0.97	4,598	1.24	0.03	1.07
2–11 months[2]	871	0.77	0.02	0.73	473	0.76	0.02	0.72	162	0.79	0.03	0.77	163	0.78	0.03	0.76
1–2 years[2]	1,231	0.69	0.01	0.65	424	0.68	0.01	0.64	355	0.72	0.02	0.68	402	0.73	0.03	0.67
3–5 years	1,547	0.87	0.01	0.80	425	0.86	0.02	0.79	454	0.92	0.02	0.84	609	0.89	0.02	0.80
6–11 years	1,745	1.03	0.02	0.94	511	1.02	0.03	0.92	452	1.07	0.04	0.96	727	1.04	0.02	0.95
12–15 years	711	1.18	0.04	1.03	221	1.17	0.05	1.02	191	1.20	0.06	1.06	269	1.18	0.06	0.96
16–19 years	765	1.34	0.06	1.13	245	1.32	0.05	1.11	217	1.34	0.11	1.11	270	1.42	0.19	1.15
20–29 years	1,682	1.38	0.03	1.20	460	1.36	0.04	1.20	499	1.39	0.07	1.12	666	1.40	0.04	1.25
30–39 years	1,526	1.45	0.03	1.25	550	1.49	0.04	1.28	454	1.23	0.05	1.03	472	1.45	0.07	1.25
40–49 years	1,228	1.35	0.03	1.18	467	1.37	0.04	1.21	338	1.15	0.05	0.96	366	1.36	0.05	1.18
50–59 years	929	1.31	0.04	1.12	472	1.34	0.05	1.15	230	1.10	0.06	0.89	196	1.23	0.05	1.15
60–69 years	1,106	1.26	0.03	1.10	493	1.29	0.04	1.13	289	0.99	0.04	0.87	305	1.11	0.05	1.00
70–79 years	851	1.15	0.03	1.03	538	1.16	0.03	1.04	186	0.99	0.05	0.86	111	1.11	0.10	0.92
80 years and over	609	1.01	0.03	0.93	501	1.03	0.03	0.94	56	0.92	0.12	0.74	42	*0.84	*	*0.76
Male																
All ages[2]	7,322	1.45	0.02	1.27	2,887	1.48	0.03	1.29	1,903	1.31	0.04	1.09	2,250	1.43	0.05	1.25
2–11 months[2]	439	0.78	0.03	0.74	241	0.79	0.03	0.74	78	0.79	0.04	0.78	89	0.77	0.04	0.76
1–2 years[2]	601	0.73	0.02	0.68	202	0.72	0.02	0.68	182	0.76	0.03	0.71	186	0.76	0.04	0.68
3–5 years	744	0.91	0.02	0.83	219	0.90	0.03	0.83	210	0.95	0.03	0.87	281	0.94	0.03	0.83
6–11 years	868	1.08	0.02	1.01	252	1.08	0.03	1.01	239	1.09	0.04	0.99	344	1.10	0.03	1.01
12–15 years	338	1.33	0.05	1.19	98	1.34	0.07	1.21	95	1.27	0.07	1.14	129	1.40	0.09	1.18
16–19 years	368	1.56	0.10	1.38	112	1.56	0.08	1.39	103	1.57	0.19	1.30	139	1.72	0.31	1.32
20–29 years	844	1.63	0.05	1.46	216	1.63	0.06	1.49	245	1.69	0.11	1.40	349	1.62	0.05	1.48
30–39 years	735	1.74	0.05	1.55	271	1.80	0.07	1.63	213	1.47	0.08	1.27	225	1.70	0.11	1.51
40–49 years	626	1.58	0.05	1.45	243	1.62	0.06	1.52	178	1.35	0.08	1.11	181	1.60	0.06	1.43
50–59 years	473	1.52	0.06	1.29	251	1.57	0.07	1.30	105	1.19	0.07	1.02	96	1.39	0.07	1.29
60–69 years	546	1.45	0.06	1.24	247	1.47	0.07	1.26	141	1.05	0.06	0.90	152	1.36	0.08	1.32
70–79 years	444	1.30	0.05	1.16	285	1.32	0.05	1.17	93	1.08	0.08	0.94	60	1.20	0.10	1.16
80 years and over	296	1.18	0.05	1.10	250	1.21	0.04	1.13	21	*0.79	*	*0.68	19	*1.01	*	*0.84
Female																
All ages[2]	7,479	1.07	0.02	0.96	2,893	1.07	0.02	0.97	1,980	1.03	0.02	0.88	2,348	1.04	0.02	0.92
2–11 months[2]	432	0.75	0.02	0.73	232	0.73	0.02	0.71	84	0.79	0.04	0.76	74	0.78	0.05	0.76
1–2 years[2]	630	0.65	0.01	0.62	222	0.65	0.02	0.62	173	0.67	0.03	0.65	216	0.69	0.03	0.62
3–5 years	803	0.83	0.02	0.74	206	0.81	0.03	0.73	244	0.89	0.03	0.83	328	0.84	0.03	0.77
6–11 years	877	0.99	0.03	0.87	259	0.97	0.05	0.86	213	1.05	0.06	0.92	383	0.98	0.03	0.88
12–15 years	373	1.03	0.05	0.88	123	0.99	0.07	0.85	96	1.13	0.08	0.93	140	0.98	0.05	0.89
16–19 years	397	1.12	0.05	0.96	133	1.07	0.06	0.94	114	1.12	0.07	0.99	131	1.08	0.07	1.00
20–29 years	838	1.13	0.03	0.99	244	1.11	0.04	1.00	254	1.13	0.07	0.92	317	1.14	0.04	1.02
30–39 years	791	1.17	0.03	1.06	279	1.19	0.04	1.09	241	1.04	0.05	0.91	247	1.18	0.06	1.06
40–49 years	602	1.13	0.03	1.05	224	1.13	0.04	1.07	160	0.98	0.05	0.86	185	1.10	0.05	0.96
50–59 years	456	1.11	0.04	0.98	221	1.12	0.05	1.03	125	1.04	0.08	0.83	100	1.09	0.06	1.00
60–69 years	560	1.11	0.03	1.00	246	1.14	0.04	1.03	148	0.95	0.05	0.84	153	0.91	0.04	0.87
70–79 years	407	1.04	0.03	0.93	253	1.04	0.03	0.94	93	0.92	0.06	0.83	51	1.03	0.17	0.81
80 years and over	313	0.92	0.03	0.87	251	0.92	0.03	0.87	35	*0.98	*	*0.75	23	*0.74	*	*0.63

[1]Includes data for race-ethnic groups not shown separately. [2]Excludes nursing infants and children.

NOTE: Estimates of copper intake are very skewed; means and standard errors of the means should be used and interpreted with caution.

Table 3. Iron intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	14.70	0.19	12.25	5,780	14.94	0.23	12.43	3,883	13.33	0.19	11.36	4,598	14.06	0.30	12.05
2–11 months[2]	871	15.50	0.50	14.40	473	15.17	0.50	14.11	162	18.16	0.91	16.34	163	14.43	0.92	14.07
1–2 years[2]	1,231	9.53	0.24	8.46	424	9.54	0.27	8.50	355	9.79	0.36	8.73	402	9.46	0.44	7.92
3–5 years	1,547	11.86	0.26	10.31	425	11.90	0.38	10.12	454	12.26	0.35	10.89	609	11.60	0.36	9.96
6–11 years	1,745	13.76	0.30	11.88	511	13.96	0.42	12.14	452	12.86	0.33	11.54	727	13.55	0.40	11.60
12–15 years	711	15.98	1.17	13.03	221	16.39	1.81	13.08	191	13.68	0.70	11.76	269	14.68	0.85	12.05
16–19 years	765	15.61	0.57	13.04	245	15.64	0.75	12.99	217	15.23	0.83	12.76	270	15.16	0.91	12.37
20–29 years	1,682	15.12	0.33	13.01	460	15.04	0.48	12.60	499	14.83	0.50	12.86	666	15.30	0.43	13.11
30–39 years	1,526	15.91	0.43	13.46	550	16.39	0.55	13.99	454	13.50	0.51	11.51	472	15.17	0.55	13.25
40–49 years	1,228	15.05	0.39	12.69	467	15.42	0.49	12.81	338	13.09	0.53	10.87	366	13.89	0.44	12.47
50–59 years	929	14.41	0.47	12.04	472	14.80	0.51	12.12	230	11.74	0.50	9.86	196	13.53	0.66	12.02
60–69 years	1,106	14.64	0.44	12.06	493	14.93	0.49	12.26	289	11.76	0.53	9.86	305	12.41	0.58	10.33
70–79 years	851	14.06	0.46	11.33	538	14.25	0.42	11.37	186	12.37	0.87	9.87	111	12.67	1.27	9.58
80 years and over	609	13.31	0.57	10.55	501	13.48	0.47	10.74	56	12.03	1.27	9.04	42	*10.07	*	*8.14
Male																
All ages[2]	7,322	17.17	0.31	14.66	2,887	17.59	0.39	15.00	1,903	15.28	0.32	13.00	2,250	15.93	0.47	13.84
2–11 months[2]	439	15.89	0.73	15.01	241	15.86	0.78	15.13	78	17.88	1.13	16.03	89	14.13	0.90	15.11
1–2 years[2]	601	9.74	0.35	8.61	202	9.56	0.36	8.76	182	10.58	0.50	9.46	186	9.50	0.59	7.75
3–5 years	744	12.47	0.37	10.45	219	12.48	0.52	10.33	210	12.40	0.50	10.58	281	12.88	0.54	10.79
6–11 years	868	14.54	0.41	13.02	252	14.84	0.60	13.16	239	13.81	0.47	12.18	344	14.59	0.59	12.50
12–15 years	338	19.51	2.21	14.93	98	20.50	3.64	15.30	95	14.55	0.90	13.23	129	17.44	1.25	14.25
16–19 years	368	18.64	0.86	16.75	112	19.22	1.19	17.47	103	17.68	1.24	14.27	139	17.61	1.33	13.64
20–29 years	844	17.87	0.49	16.08	216	17.86	0.73	15.89	245	18.02	0.80	15.16	349	17.45	0.56	15.70
30–39 years	735	19.16	0.72	16.17	271	19.83	0.95	16.84	213	16.50	0.84	13.97	225	17.19	0.73	15.28
40–49 years	626	18.18	0.63	16.14	243	18.64	0.79	16.28	178	15.89	0.84	13.71	181	15.92	0.58	14.59
50–59 years	473	17.25	0.78	13.98	251	17.94	0.84	14.40	105	12.94	0.81	11.21	96	15.50	0.92	13.95
60–69 years	546	16.59	0.62	14.31	247	16.84	0.69	14.71	141	13.24	0.82	10.59	152	14.65	0.81	13.50
70–79 years	444	15.84	0.68	13.09	285	16.10	0.60	13.24	93	13.49	1.60	9.78	60	14.31	1.58	11.52
80 years and over	296	16.22	0.96	13.22	250	16.65	0.80	13.27	21	*10.48	*	*8.66	19	*12.69	*	*11.69
Female																
All ages[2]	7,479	12.37	0.19	10.63	2,893	12.45	0.22	10.72	1,980	11.63	0.21	10.04	2,348	12.09	0.35	10.46
2–11 months[2]	432	15.10	0.60	14.08	232	14.39	0.61	13.44	84	18.41	1.31	16.65	74	14.78	1.56	12.08
1–2 years[2]	630	9.29	0.30	8.22	222	9.51	0.39	8.30	173	8.87	0.45	7.70	216	9.40	0.57	8.02
3–5 years	803	11.23	0.32	9.98	206	11.29	0.54	9.83	244	12.13	0.45	10.99	328	10.31	0.37	9.09
6–11 years	877	12.96	0.38	10.70	259	13.08	0.57	10.66	213	11.89	0.42	10.69	383	12.50	0.44	10.53
12–15 years	373	12.26	0.54	10.17	123	12.13	0.72	10.06	96	12.79	0.98	9.76	140	12.14	0.89	10.15
16–19 years	397	12.52	0.60	10.28	133	11.90	0.78	9.50	114	12.89	0.95	10.39	131	12.38	0.84	10.23
20–29 years	838	12.43	0.36	11.11	244	12.43	0.55	11.11	254	12.12	0.46	10.87	317	12.68	0.50	10.80
30–39 years	791	12.73	0.36	10.86	279	13.01	0.48	11.07	241	11.00	0.46	9.69	247	13.03	0.66	11.09
40–49 years	602	12.05	0.34	11.06	224	12.15	0.45	11.23	160	10.74	0.50	9.72	185	11.80	0.50	10.67
50–59 years	456	11.84	0.40	10.59	221	11.95	0.46	10.74	125	10.83	0.54	9.53	100	11.72	0.74	10.65
60–69 years	560	12.97	0.54	10.41	246	13.23	0.67	10.68	148	10.64	0.60	9.29	153	10.56	0.66	8.66
70–79 years	407	12.77	0.54	10.26	253	12.90	0.56	10.26	93	11.55	0.69	9.89	51	11.26	1.73	8.32
80 years and over	313	11.76	0.62	9.55	251	11.80	0.55	9.57	35	*12.73	*	*9.15	23	*8.62	*	*6.78

[1]Includes data for race-ethnic groups not shown separately. [2]Excludes nursing infants and children.

NOTE: Estimates of iron intake are very skewed; means and standard errors of the means should be used and interpreted with caution.

Table 4. Magnesium intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	279	2.7	249	5,780	286	3.0	257	3,883	234	4.1	204	4,598	275	6.0	247
2–11 months[2]	871	120	3.1	106	473	124	3.2	111	162	108	4.9	97	163	116	6.3	106
1–2 years[2]	1,231	182	3.1	174	424	183	3.8	176	355	174	5.0	166	402	188	5.8	174
3–5 years	1,547	208	3.5	195	425	208	5.0	194	454	204	5.0	196	609	214	5.1	199
6–11 years	1,745	231	3.7	214	511	231	5.1	215	452	216	5.6	201	727	246	5.4	229
12–15 years	711	250	7.8	231	221	251	11.2	227	191	232	10.5	204	269	251	10.7	227
16–19 years	765	286	9.1	245	245	291	12.2	246	217	257	11.9	222	270	282	13.3	246
20–29 years	1,682	295	5.9	262	460	298	8.4	265	499	262	9.2	223	666	314	8.5	277
30–39 years	1,526	317	6.9	282	550	329	8.8	296	454	251	8.1	221	472	316	10.3	281
40–49 years	1,228	299	6.3	271	467	311	7.7	280	338	240	9.4	209	366	298	9.5	286
50–59 years	929	296	7.4	271	472	306	8.0	278	230	224	9.2	191	196	284	12.4	275
60–69 years	1,106	290	7.1	265	493	297	8.1	269	289	224	9.2	195	305	254	9.9	227
70–79 years	851	267	6.6	241	538	272	6.2	246	186	220	11.3	195	111	235	14.8	205
80 years and over	609	239	7.0	223	501	242	5.7	228	56	200	18.0	175	42	*209	*	*173
Male																
All ages[2]	7,322	321	4.3	290	2,887	332	4.7	300	1,903	265	6.7	232	2,250	313	9.5	287
2–11 months[2]	439	125	4.3	112	241	129	4.4	119	78	110	6.8	97	89	123	7.4	110
1–2 years[2]	601	189	4.5	180	202	190	5.3	182	182	182	6.7	177	186	193	8.7	173
3–5 years	744	219	4.9	206	219	221	6.7	204	210	207	6.8	197	281	225	7.2	218
6–11 years	868	243	4.9	229	252	245	6.6	233	239	221	7.0	203	344	257	6.9	244
12–15 years	338	291	11.7	275	98	299	17.1	279	95	252	15.4	229	129	285	15.0	261
16–19 years	368	340	13.0	305	112	353	17.9	313	103	303	18.1	273	139	323	17.7	282
20–29 years	844	351	8.5	315	216	358	12.3	326	245	320	14.3	280	349	366	11.1	341
30–39 years	735	375	10.5	336	271	391	13.1	359	213	297	12.5	272	225	364	14.8	343
40–49 years	626	349	9.0	323	243	361	10.4	333	178	286	15.3	246	181	348	12.2	332
50–59 years	473	343	11.2	313	251	358	11.5	327	105	242	14.4	209	96	312	15.6	307
60–69 years	546	328	11.1	299	247	333	12.1	306	141	246	14.0	205	152	299	13.3	273
70–79 years	444	300	9.8	272	285	308	8.9	282	93	222	15.5	198	60	274	17.6	244
80 years and over	296	276	10.7	256	250	282	8.6	263	*21	*	*20.5	173	19	*269	*	*216
Female																
All ages[2]	7,479	238	3.0	219	2,893	243	3.2	224	1,980	207	4.7	187	2,348	236	6.7	218
2–11 months[2]	432	114	3.7	102	232	118	4.0	104	84	107	6.1	94	74	108	8.4	86
1–2 years[2]	630	174	3.6	169	222	176	4.6	172	173	165	6.3	150	216	182	5.6	175
3–5 years	803	197	4.1	184	206	195	6.5	179	244	200	6.4	193	328	203	5.5	186
6–11 years	877	218	4.6	198	259	217	6.6	196	213	211	7.7	198	383	235	6.7	218
12–15 years	373	206	7.6	183	123	201	10.5	179	96	211	11.9	195	140	219	11.2	208
16–19 years	397	230	9.2	188	133	227	11.5	186	114	213	11.8	175	131	235	13.9	197
20–29 years	838	240	5.8	220	244	243	8.3	223	254	213	9.0	180	317	250	8.4	229
30–39 years	791	261	6.3	241	279	268	8.3	248	241	213	8.2	196	247	266	9.4	251
40–49 years	602	251	6.3	233	224	259	8.3	242	160	201	8.0	180	185	247	9.8	226
50–59 years	456	253	7.0	229	221	259	8.0	239	125	211	10.3	186	100	257	14.9	256
60–69 years	560	257	7.1	236	246	265	8.6	245	148	208	10.5	189	153	216	10.3	200
70–79 years	407	244	7.3	224	253	247	7.2	226	93	219	14.4	193	51	201	17.8	169
80 years and over	313	220	7.5	210	251	221	6.5	211	35	205	22.8	174	23	*176	*	*154

[1]Includes data for race-ethnic groups not shown separately.
[2]Excludes nursing infants and children.

Table 5. Phosphorus intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	1,268	10	1,149	5,780	1,287	11	1,162	3,883	1,132	17	1,012	4,598	1,322	27	1,198
2–11 months[2]	871	631	15	541	473	655	16	555	162	552	26	476	163	638	37	531
1–2 years[2]	1,231	941	15	900	424	952	19	908	355	868	25	829	402	970	28	906
3–5 years	1,547	1,054	16	986	425	1,062	23	983	454	999	24	969	609	1,071	26	1,006
6–11 years	1,745	1,204	17	1,148	511	1,206	22	1,152	452	1,127	30	1,057	727	1,276	28	1,203
12–15 years	711	1,303	34	1,199	221	1,298	45	1,193	191	1,193	53	1,034	269	1,345	59	1,257
16–19 years	765	1,492	43	1,311	245	1,544	59	1,360	217	1,378	60	1,193	270	1,446	68	1,290
20–29 years	1,682	1,421	26	1,275	460	1,434	37	1,283	499	1,326	47	1,171	666	1,504	41	1,331
30–39 years	1,526	1,395	26	1,268	550	1,437	34	1,313	454	1,176	38	1,033	472	1,456	46	1,302
40–49 years	1,228	1,255	23	1,169	467	1,273	27	1,198	338	1,113	40	1,010	366	1,337	43	1,256
50–59 years	929	1,208	28	1,112	472	1,236	30	1,134	230	976	35	891	196	1,223	52	1,192
60–69 years	1,106	1,200	26	1,093	493	1,224	30	1,134	289	952	38	857	305	1,090	41	1,025
70–79 years	851	1,071	24	976	538	1,088	23	990	186	925	42	803	111	982	56	924
80 years and over	609	978	26	897	501	989	21	914	56	829	75	785	42	*885	*	*804
Male																
All ages[2]	7,322	1,479	16	1,346	2,887	1,512	17	1,379	1,903	1,290	29	1,149	2,250	1,501	41	1,382
2–11 months[2]	439	658	21	563	241	677	22	575	78	573	37	513	89	687	44	601
1–2 years[2]	601	975	21	943	202	987	27	960	182	895	33	876	186	987	39	916
3–5 years	744	1,112	23	1,034	219	1,138	32	1,031	210	1,016	32	978	281	1,115	34	1,069
6–11 years	868	1,274	22	1,234	252	1,282	30	1,230	239	1,163	35	1,104	344	1,347	35	1,294
12–15 years	338	1,517	49	1,416	98	1,529	68	1,416	95	1,275	77	1,159	129	1,551	82	1,370
16–19 years	368	1,825	65	1,641	112	1,916	92	1,691	103	1,633	93	1,506	139	1,660	89	1,462
20–29 years	844	1,712	39	1,571	216	1,751	56	1,590	245	1,613	79	1,431	349	1,748	52	1,662
30–39 years	735	1,666	41	1,533	271	1,728	52	1,597	213	1,390	61	1,231	225	1,678	61	1,615
40–49 years	626	1,452	33	1,374	243	1,462	38	1,397	178	1,333	65	1,166	181	1,549	53	1,514
50–59 years	473	1,418	43	1,336	251	1,471	45	1,366	105	1,028	54	902	96	1,338	67	1,278
60–69 years	546	1,378	41	1,259	247	1,395	45	1,283	141	1,111	65	1,005	152	1,298	52	1,193
70–79 years	444	1,230	35	1,146	285	1,259	33	1,158	93	948	57	825	60	1,126	68	1,018
80 years and over	296	1,147	38	1,063	250	1,167	31	1,092	21	*904	*	*898	19	*1,047	*	*871
Female																
All ages[2]	7,479	1,069	10	994	2,893	1,076	11	1,006	1,980	995	19	908	2,348	1,135	31	1,042
2–11 months[2]	432	604	19	519	232	631	21	538	84	534	30	464	74	582	45	475
1–2 years[2]	630	904	18	870	222	917	24	884	173	836	31	781	216	951	29	898
3–5 years	803	993	18	942	206	984	28	922	244	983	30	945	328	1,026	30	951
6–11 years	877	1,132	22	1,072	259	1,130	31	1,076	213	1,091	41	1,021	383	1,204	33	1,137
12–15 years	373	1,079	35	1,024	123	1,058	48	1,044	96	1,108	60	970	140	1,155	58	1,126
16–19 years	397	1,152	38	1,062	133	1,154	52	1,057	114	1,134	56	1,041	131	1,203	68	1,080
20–29 years	838	1,137	24	1,046	244	1,141	35	1,053	254	1,082	37	969	317	1,207	40	1,060
30–39 years	791	1,130	24	1,068	279	1,151	33	1,106	241	997	35	918	247	1,222	46	1,113
40–49 years	602	1,067	23	1,012	224	1,081	31	1,026	160	928	32	857	185	1,118	46	993
50–59 years	456	1,018	27	963	221	1,025	31	974	125	936	38	880	100	1,117	59	1,099
60–69 years	560	1,048	28	983	246	1,074	35	998	148	832	33	772	153	919	43	876
70–79 years	407	957	27	887	253	962	27	900	93	908	53	785	51	859	64	818
80 years and over	313	888	30	812	251	895	27	831	35	795	87	727	23	*796	*	*731

[1]Includes data for race-ethnic groups not shown separately.
[2]Excludes nursing infants and children.

Table 6. Potassium intake in milligrams by age, sex, race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	2,652	25	2,414	5,780	2,729	28	2,482	3,883	2,251	35	2,028	4,598	2,540	47	2,316
2–11 months[2]	871	1,313	30	1,195	473	1,356	31	1,224	162	1,165	48	1,059	163	1,319	62	1,200
1–2 years[2]	1,231	1,900	32	1,834	424	1,893	39	1,835	355	1,859	54	1,815	402	1,947	51	1,834
3–5 years	1,547	2,040	33	1,934	425	2,030	47	1,916	454	2,031	53	1,934	609	2,117	50	1,997
6–11 years	1,745	2,223	34	2,102	511	2,212	47	2,076	452	2,138	53	2,040	727	2,348	50	2,188
12–15 years	711	2,397	72	2,192	221	2,394	102	2,152	191	2,298	102	2,133	269	2,389	107	2,148
16–19 years	765	2,713	86	2,371	245	2,738	113	2,397	217	2,586	124	2,196	270	2,570	118	2,346
20–29 years	1,682	2,764	54	2,522	460	2,800	78	2,554	499	2,517	86	2,234	666	2,844	75	2,563
30–39 years	1,526	2,960	60	2,646	550	3,100	79	2,791	454	2,304	73	2,037	472	2,799	83	2,566
40–49 years	1,228	2,816	56	2,566	467	2,929	70	2,708	338	2,245	81	1,965	366	2,674	84	2,561
50–59 years	929	2,823	66	2,622	472	2,934	72	2,709	230	2,119	77	1,956	196	2,622	111	2,533
60–69 years	1,106	2,805	63	2,613	493	2,872	71	2,692	289	2,100	78	1,955	305	2,362	86	2,214
70–79 years	851	2,594	60	2,409	538	2,651	57	2,470	186	2,119	98	1,867	111	2,250	136	2,237
80 years and over	609	2,351	61	2,257	501	2,382	50	2,312	56	2,013	171	1,690	42	*1,968	*	*1,944
Male																
All ages[2]	7,322	3,029	39	2,754	2,887	3,136	43	2,860	1,903	2,547	57	2,295	2,250	2,841	72	2,651
2–11 months[2]	439	1,366	41	1,232	241	1,413	42	1,288	78	1,182	68	1,084	89	1,404	73	1,291
1–2 years[2]	601	1,962	44	1,922	202	1,943	52	1,922	182	1,924	72	1,908	186	1,975	70	1,846
3–5 years	744	2,110	46	1,998	219	2,111	62	1,970	210	2,074	69	1,979	281	2,181	68	2,092
6–11 years	868	2,361	46	2,225	252	2,367	63	2,231	239	2,219	71	2,049	344	2,471	61	2,288
12–15 years	338	2,791	105	2,627	98	2,879	153	2,643	95	2,429	144	2,192	129	2,726	150	2,448
16–19 years	368	3,208	125	2,978	112	3,289	171	3,175	103	3,061	192	2,872	139	2,871	145	2,579
20–29 years	844	3,280	79	3,038	216	3,353	117	3,097	245	3,105	140	2,665	349	3,263	92	3,021
30–39 years	735	3,451	89	3,133	271	3,627	113	3,344	213	2,710	116	2,444	225	3,153	108	3,049
40–49 years	626	3,263	81	3,083	243	3,386	98	3,209	178	2,654	128	2,394	181	3,075	100	3,019
50–59 years	473	3,240	97	2,992	251	3,397	101	3,064	105	2,247	117	2,103	96	2,841	141	2,824
60–69 years	546	3,107	92	2,861	247	3,145	98	2,924	141	2,280	126	2,093	152	2,747	107	2,629
70–79 years	444	2,899	86	2,704	285	2,978	79	2,760	93	2,209	143	1,961	60	2,591	156	2,406
80 years and over	296	2,595	86	2,456	250	2,635	69	2,505	21	*2,093	*	*1,766	19	*2,285	*	*2,073
Female																
All ages[2]	7,479	2,296	28	2,145	2,893	2,348	31	2,208	1,980	1,992	38	1,828	2,348	2,225	56	2,041
2–11 months[2]	432	1,258	35	1,149	232	1,292	40	1,174	84	1,151	55	1,041	74	1,220	83	1,044
1–2 years[2]	630	1,832	37	1,746	222	1,841	50	1,754	173	1,784	66	1,734	216	1,917	60	1,824
3–5 years	803	1,968	39	1,860	206	1,946	60	1,859	244	1,989	66	1,827	328	2,053	61	1,941
6–11 years	877	2,080	40	1,947	259	2,056	59	1,901	213	2,055	64	1,972	383	2,224	67	2,079
12–15 years	373	1,984	70	1,745	123	1,891	93	1,662	96	2,163	118	1,841	140	2,078	110	1,945
16–19 years	397	2,208	87	1,965	133	2,162	101	1,935	114	2,133	114	1,882	131	2,227	146	1,944
20–29 years	838	2,260	49	2,104	244	2,289	71	2,134	254	2,019	68	1,858	317	2,333	87	2,052
30–39 years	791	2,480	57	2,269	279	2,582	80	2,356	241	1,965	67	1,756	247	2,424	96	2,223
40–49 years	602	2,388	55	2,246	224	2,465	72	2,368	160	1,903	71	1,755	185	2,262	102	2,013
50–59 years	456	2,446	65	2,287	221	2,515	76	2,342	125	2,023	84	1,892	100	2,421	138	2,369
60–69 years	560	2,547	69	2,422	246	2,630	86	2,495	148	1,964	78	1,850	153	2,046	104	1,888
70–79 years	407	2,375	66	2,204	253	2,412	67	2,221	93	2,052	113	1,777	51	1,957	178	1,607
80 years and over	313	2,221	71	2,129	251	2,247	63	2,146	35	1,976	187	1,585	23	*1,794	*	*1,678

[1]Includes data for race-ethnic groups not shown separately.
[2]Excludes nursing infants and children.

Table 7. Sodium intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	3,289	33	2,899	5,780	3,286	40	2,921	3,883	3,265	39	2,834	4,598	3,062	41	2,725
2–11 months[2]	871	575	26	337	473	560	25	346	162	519	53	290	163	685	62	379
1–2 years[2]	1,231	1,938	38	1,853	424	1,912	45	1,870	355	2,210	74	2,018	402	2,001	62	1,779
3–5 years	1,547	2,531	43	2,288	425	2,460	59	2,252	454	2,864	75	2,609	609	2,475	61	2,214
6–11 years	1,745	2,998	45	2,750	511	2,945	62	2,661	452	3,222	82	2,988	727	2,922	62	2,677
12–15 years	711	3,487	101	3,203	221	3,393	127	3,213	191	3,561	166	3,179	269	3,288	158	2,839
16–19 years	765	3,948	124	3,430	245	3,980	170	3,414	217	4,107	191	3,629	270	3,369	148	2,998
20–29 years	1,682	3,821	79	3,290	460	3,853	114	3,295	499	3,976	144	3,468	666	3,446	93	3,032
30–39 years	1,526	3,703	77	3,297	550	3,744	96	3,385	454	3,470	124	3,005	472	3,320	99	3,009
40–49 years	1,228	3,429	79	3,052	467	3,388	87	3,070	338	3,295	123	2,825	366	3,220	111	2,969
50–59 years	929	3,082	77	2,828	472	3,104	82	2,853	230	2,768	117	2,422	196	3,069	148	2,750
60–69 years	1,106	2,960	70	2,736	493	3,008	77	2,782	289	2,504	115	2,263	305	2,555	102	2,272
70–79 years	851	2,717	69	2,457	538	2,722	65	2,482	186	2,370	126	1,986	111	2,514	185	2,114
80 years and over	609	2,461	71	2,266	501	2,496	60	2,316	56	2,033	179	1,800	42	*2,260	*	*2,056
Male																
All ages[2]	7,322	3,853	52	3,395	2,887	3,888	64	3,460	1,903	3,744	65	3,250	2,250	3,454	64	3,105
2–11 months[2]	439	624	37	359	241	589	32	364	78	588	88	306	89	804	87	524
1–2 years[2]	601	2,031	53	1,956	202	2,013	60	1,989	182	2,350	105	2,270	186	2,048	92	1,767
3–5 years	744	2,675	63	2,398	219	2,616	82	2,276	210	2,922	108	2,605	281	2,632	95	2,359
6–11 years	868	3,138	59	2,891	252	3,093	77	2,830	239	3,320	111	3,091	344	3,059	85	2,790
12–15 years	338	4,018	150	3,654	98	3,974	183	3,690	95	3,569	226	3,287	129	3,853	262	3,204
16–19 years	368	4,783	180	4,451	112	4,949	241	4,670	103	4,933	300	4,300	139	3,750	207	3,225
20–29 years	844	4,659	120	4,126	216	4,780	170	4,287	245	4,801	257	4,151	349	3,924	133	3,429
30–39 years	735	4,445	115	3,983	271	4,520	135	4,104	213	4,145	210	3,540	225	3,792	146	3,485
40–49 years	626	3,960	106	3,732	243	3,933	119	3,764	178	4,039	200	3,625	181	3,673	156	3,366
50–59 years	473	3,640	114	3,278	251	3,713	114	3,355	105	3,041	204	2,674	96	3,465	209	3,221
60–69 years	546	3,409	102	3,140	247	3,429	104	3,205	141	2,879	200	2,490	152	3,138	144	2,828
70–79 years	444	3,142	98	2,973	285	3,192	89	2,987	93	2,604	188	2,422	60	3,098	254	2,712
80 years and over	296	2,861	114	2,728	250	2,912	90	2,767	21	*2,087	*	*1,739	19	*2,639	*	*2,429
Female																
All ages[2]	7,479	2,756	36	2,488	2,893	2,721	42	2,484	1,980	2,847	41	2,558	2,348	2,652	48	2,387
2–11 months[2]	432	524	31	312	232	527	32	317	84	458	52	267	74	547	73	304
1–2 years[2]	630	1,838	45	1,757	222	1,810	56	1,758	173	2,050	85	1,779	216	1,950	75	1,825
3–5 years	803	2,383	48	2,230	206	2,299	67	2,147	244	2,807	87	2,616	328	2,318	67	2,132
6–11 years	877	2,852	58	2,608	259	2,795	81	2,562	213	3,123	101	2,872	383	2,783	80	2,522
12–15 years	373	2,927	100	2,615	123	2,790	123	2,582	96	3,553	203	2,964	140	2,765	138	2,549
16–19 years	397	3,097	120	2,563	133	2,967	156	2,465	114	3,320	171	3,069	131	2,937	179	2,533
20–29 years	838	3,002	66	2,759	244	2,996	94	2,772	254	3,277	103	2,956	317	2,863	102	2,497
30–39 years	791	2,977	72	2,657	279	2,980	91	2,657	241	2,907	106	2,671	247	2,820	109	2,629
40–49 years	602	2,919	91	2,640	224	2,835	89	2,672	160	2,672	99	2,540	185	2,755	132	2,475
50–59 years	456	2,575	76	2,382	221	2,553	79	2,378	125	2,563	107	2,368	100	2,704	179	2,470
60–69 years	560	2,578	74	2,379	246	2,634	88	2,427	148	2,221	102	2,090	153	2,076	112	1,801
70–79 years	407	2,411	79	2,233	253	2,379	71	2,246	93	2,200	139	1,894	51	2,013	212	1,812
80 years and over	313	2,248	75	2,172	251	2,274	65	2,182	35	2,008	181	1,854	23	*2,051	*	*2,008

[1]Includes data for race-ethnic groups not shown separately.
[2]Excludes nursing infants and children.

Table 8. Zinc intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	11.39	0.14	9.36	5,780	11.53	0.17	9.50	3,883	10.56	0.18	8.65	4,598	11.46	0.27	9.18
2–11 months[2]	871	6.02	0.11	5.72	473	5.90	0.11	5.57	162	6.15	0.21	6.08	163	6.37	0.21	5.99
1–2 years[2]	1,231	6.67	0.12	6.04	424	6.58	0.14	6.10	355	7.03	0.23	6.30	402	7.05	0.30	5.75
3–5 years	1,547	8.04	0.15	7.20	425	7.84	0.22	6.89	454	8.62	0.23	7.76	609	8.19	0.21	7.42
6–11 years	1,745	9.98	0.32	8.59	511	9.97	0.54	8.28	452	9.73	0.27	8.66	727	9.93	0.24	8.67
12–15 years	711	12.26	0.90	9.76	221	12.70	1.49	10.03	191	10.39	0.53	8.66	269	11.40	0.58	9.29
16–19 years	765	12.95	0.90	10.76	245	12.69	0.56	10.90	217	13.65	2.08	10.45	270	15.62	3.42	10.54
20–29 years	1,682	12.40	0.27	10.68	460	12.20	0.39	10.63	499	12.78	0.49	10.68	666	13.00	0.37	11.10
30–39 years	1,526	12.77	0.36	10.69	550	13.15	0.49	10.92	454	11.05	0.54	8.87	472	12.75	0.44	10.25
40–49 years	1,228	11.58	0.27	10.04	467	11.74	0.35	10.43	338	10.39	0.43	8.52	366	11.99	0.47	9.98
50–59 years	929	11.84	0.65	9.50	472	12.33	0.79	9.72	230	9.25	0.42	7.68	196	10.42	0.56	8.82
60–69 years	1,106	11.24	0.36	9.28	493	11.52	0.44	9.40	289	8.98	0.40	7.59	305	9.40	0.37	7.61
70–79 years	851	10.11	0.40	8.50	538	10.24	0.40	8.67	186	9.19	0.70	6.88	111	8.86	0.69	7.14
80 years and over	609	8.82	0.32	7.58	501	8.89	0.28	7.65	56	8.01	0.91	6.63	42	6.94	0.60	6.28
Male																
All ages[2]	7,322	13.63	0.23	11.42	2,887	13.94	0.28	11.66	1,903	12.39	0.35	9.83	2,250	13.34	0.51	10.86
2–11 months[2]	439	6.16	0.15	5.87	241	6.04	0.16	5.59	78	6.33	0.31	6.28	89	6.56	0.31	6.32
1–2 years[2]	601	6.96	0.16	6.57	202	6.86	0.18	6.67	182	7.47	0.34	6.74	186	7.16	0.41	5.81
3–5 years	744	8.43	0.20	7.53	219	8.32	0.31	7.28	210	8.62	0.30	8.13	281	8.72	0.33	7.80
6–11 years	868	10.40	0.24	9.25	252	10.32	0.36	9.02	239	10.40	0.40	9.17	344	10.55	0.35	9.27
12–15 years	338	14.86	1.57	11.42	98	16.03	2.78	11.62	95	10.47	0.71	8.91	129	13.13	0.88	10.48
16–19 years	368	16.24	1.60	13.22	112	15.79	0.77	13.43	103	17.47	4.32	12.28	139	*20.35	*	*12.04
20–29 years	844	15.19	0.38	13.12	216	15.22	0.59	13.14	245	15.76	0.81	12.90	349	14.99	0.50	13.27
30–39 years	735	15.96	0.59	13.32	271	16.63	0.81	13.88	213	13.73	1.07	10.77	225	14.82	0.62	13.19
40–49 years	626	13.84	0.39	12.21	243	13.95	0.50	12.25	178	12.91	0.73	10.55	181	14.65	0.73	12.35
50–59 years	473	14.45	0.96	11.55	251	15.27	1.15	12.27	105	10.10	0.70	8.40	96	11.87	0.82	9.73
60–69 years	546	13.09	0.52	11.26	247	13.38	0.65	11.52	141	10.45	0.67	8.77	152	10.64	0.54	8.71
70–79 years	444	12.05	0.66	10.03	285	12.24	0.68	10.34	93	10.73	1.29	7.84	60	9.99	0.95	8.13
80 years and over	296	10.72	0.49	8.87	250	10.89	0.43	9.06	21	*8.09	*	*7.04	19	*8.81	*	*7.74
Female																
All ages[2]	7,479	9.26	0.14	7.91	2,893	9.27	0.18	7.93	1,980	8.96	0.14	7.66	2,348	9.49	0.15	7.88
2–11 months[2]	432	5.87	0.13	5.68	232	5.75	0.13	5.55	84	5.99	0.26	5.80	74	6.15	0.25	5.89
1–2 years[2]	630	6.37	0.16	5.71	222	6.31	0.20	5.65	173	6.52	0.27	5.69	216	6.93	0.40	5.72
3–5 years	803	7.64	0.18	6.76	206	7.34	0.29	6.48	244	8.62	0.32	7.47	328	7.66	0.24	6.79
6–11 years	877	9.54	0.57	7.86	259	9.61	0.99	7.70	213	9.05	0.33	8.12	383	9.32	0.29	8.07
12–15 years	373	9.52	0.52	8.16	123	9.24	0.77	8.07	96	10.32	0.74	8.53	140	9.80	0.66	8.65
16–19 years	397	9.59	0.43	8.47	133	9.44	0.63	8.38	114	10.01	0.56	9.37	131	10.24	0.65	8.62
20–29 years	838	9.67	0.28	8.45	244	9.41	0.37	8.41	254	10.24	0.49	8.86	317	10.58	0.46	8.80
30–39 years	791	9.64	0.26	8.62	279	9.74	0.35	8.78	241	8.81	0.36	7.55	247	10.56	0.54	8.39
40–49 years	602	9.42	0.28	8.35	224	9.51	0.37	8.55	160	8.27	0.39	7.16	185	9.25	0.42	7.80
50–59 years	456	9.49	0.73	7.87	221	9.67	0.93	7.94	125	8.61	0.47	7.01	100	9.09	0.67	8.13
60–69 years	560	9.66	0.40	7.70	246	9.88	0.52	7.71	148	7.87	0.42	6.93	153	8.38	0.47	6.80
70–79 years	407	8.72	0.36	7.18	253	8.79	0.37	7.18	93	8.07	0.63	6.37	51	7.90	0.91	6.42
80 years and over	313	7.82	0.37	6.58	251	7.83	0.33	6.59	35	7.97	1.17	5.92	23	*5.91	*	*5.26

[1]Includes data for race-ethnic groups not shown separately. [2]Excludes nursing infants and children.

NOTE: Estimates of zinc intake are very skewed; means and standard errors of the means should be used and interpreted with caution.

Table 9. Vitamin A intake in international units (IU) by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	6,143	131	3,590	5,780	6,289	174	3,742	3,883	5,166	159	2,767	4,598	5,672	213	3,370
2–11 months[2]	871	5,112	258	3,204	473	5,399	285	3,275	162	4,050	331	3,057	163	4,710	447	2,960
1–2 years[2]	1,231	3,702	164	2,698	424	3,791	222	2,728	355	3,442	202	2,575	402	3,722	304	2,659
3–5 years	1,547	4,275	174	3,090	425	4,385	277	3,143	454	3,864	193	2,801	609	4,504	237	3,102
6–11 years	1,745	4,645	196	3,300	511	4,595	283	3,318	452	4,309	272	3,013	727	4,722	242	3,237
12–15 years	711	5,068	469	3,201	221	4,938	666	3,223	191	4,435	515	2,787	269	5,508	699	3,151
16–19 years	765	5,070	432	3,203	245	5,438	671	3,338	217	3,933	312	2,764	270	4,850	422	3,341
20–29 years	1,682	5,613	288	3,349	460	5,527	390	3,365	499	5,458	594	2,692	666	6,079	346	3,486
30–39 years	1,526	6,903	397	3,949	550	7,102	539	4,123	454	4,964	416	2,404	472	6,888	589	4,061
40–49 years	1,228	6,668	401	3,502	467	6,749	520	3,587	338	5,637	504	2,987	366	6,164	488	3,642
50–59 years	929	6,526	414	3,792	472	6,648	452	3,934	230	6,843	754	2,920	196	5,736	697	3,396
60–69 years	1,106	7,868	456	4,517	493	7,846	473	4,753	289	6,395	784	2,742	305	5,753	507	3,167
70–79 years	851	7,919	474	4,825	538	7,982	469	4,907	186	7,516	721	4,163	111	8,080	1,495	4,036
80 years and over	609	7,199	593	4,311	501	7,237	508	4,377	56	6,577	1,721	2,547	42	*5,190	*	*2,950
Male																
All ages[2]	7,322	6,736	203	3,942	2,887	6,949	272	4,144	1,903	5,466	240	2,981	2,250	6,085	301	3,780
2–11 months[2]	439	5,362	365	3,338	241	5,933	414	3,650	78	3,774	484	2,806	89	4,949	594	3,348
1–2 years[2]	601	3,820	239	2,740	202	3,883	346	2,714	182	3,716	252	2,745	186	3,691	367	2,553
3–5 years	744	4,524	273	3,193	219	4,654	433	3,301	210	3,810	256	2,833	281	4,796	317	3,513
6–11 years	868	4,844	239	3,568	252	4,890	352	3,603	239	4,520	311	3,142	344	5,092	322	3,452
12–15 years	338	6,069	781	3,804	98	6,402	1,261	4,033	95	4,608	640	2,813	129	6,413	1,145	3,717
16–19 years	368	4,962	381	3,501	112	4,928	487	3,622	103	4,419	476	3,132	139	5,394	567	3,900
20–29 years	844	6,623	464	3,973	216	6,598	671	4,131	245	6,986	970	3,154	349	6,592	462	3,924
30–39 years	735	7,782	630	4,345	271	8,055	856	4,466	213	5,412	660	2,618	225	6,876	658	4,380
40–49 years	626	7,788	635	4,241	243	7,949	834	4,376	178	6,498	778	3,353	181	6,595	565	4,591
50–59 years	473	7,047	505	4,250	251	7,443	551	4,363	105	5,800	820	3,013	96	6,234	912	3,730
60–69 years	546	8,306	687	4,685	247	8,108	703	4,794	141	5,751	795	2,767	152	7,025	836	3,684
70–79 years	444	8,104	723	4,508	285	8,206	722	4,581	93	7,156	998	3,439	60	8,293	1,840	4,017
80 years and over	296	7,331	859	4,312	250	7,363	750	4,417	21	*4,268	*	*2,434	19	*6,631	*	*3,232
Female																
All ages[2]	7,479	5,582	166	3,269	2,893	5,670	218	3,376	1,980	4,905	212	2,559	2,348	5,241	301	3,093
2–11 months[2]	432	4,850	327	3,069	232	4,797	344	2,957	84	4,290	417	3,216	74	4,434	551	2,733
1–2 years[2]	630	3,575	200	2,621	222	3,698	252	2,730	173	3,126	296	2,272	216	3,756	418	2,788
3–5 years	803	4,017	191	2,903	206	4,106	301	2,950	244	3,918	269	2,748	328	4,211	298	2,794
6–11 years	877	4,439	284	3,094	259	4,298	406	3,068	213	4,094	430	2,812	383	4,351	303	3,134
12–15 years	373	4,014	442	2,679	123	3,418	395	2,376	96	4,257	760	2,766	140	4,670	625	2,783
16–19 years	397	5,179	713	2,717	133	5,972	1,136	2,789	114	3,471	363	2,397	131	4,232	513	2,503
20–29 years	838	4,626	291	2,968	244	4,537	362	2,974	254	4,161	615	2,097	317	5,454	422	3,250
30–39 years	791	6,044	431	3,360	279	6,166	583	3,627	241	4,591	473	2,203	247	6,901	852	3,657
40–49 years	602	5,594	423	3,080	224	5,534	520	3,087	160	4,915	570	2,506	185	5,722	691	2,908
50–59 years	456	6,055	598	3,510	221	5,930	657	3,607	125	7,630	1,138	2,863	100	5,278	891	3,127
60–69 years	560	7,495	545	4,430	246	7,613	576	4,684	148	6,882	1,239	2,674	153	4,705	440	2,803
70–79 years	407	7,786	568	4,928	253	7,819	558	5,077	93	7,779	969	4,432	51	7,898	2,038	3,859
80 years and over	313	7,129	756	4,233	251	7,170	645	4,366	35	*7,634	*	*2,556	23	*4,394	*	*2,601

[1]Includes data for race-ethnic groups not shown separately. [2]Excludes nursing infants and children.

NOTE: Estimates of vitamin A are very skewed; means and standard errors of the means should be used and interpreted with caution.

Table 10. Vitamin A intake in retinol equivalents (RE) by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	997	20	680	5,780	1,031	28	715	3,883	870	30	515	4,598	870	31	591
2–11 months[2]	871	922	27	789	473	945	30	801	162	834	38	742	163	893	50	776
1–2 years[2]	1,231	687	22	576	424	710	28	594	355	626	30	506	402	700	53	542
3–5 years	1,547	802	24	643	425	837	38	672	454	718	35	553	609	791	30	633
6–11 years	1,745	878	26	707	511	899	38	734	452	785	48	623	727	846	33	639
12–15 years	711	991	102	638	221	1,019	161	659	191	816	119	526	269	955	130	591
16–19 years	765	888	51	632	245	959	78	706	217	705	57	521	270	810	69	547
20–29 years	1,682	905	45	616	460	892	48	632	499	984	134	494	666	857	49	575
30–39 years	1,526	1,075	58	675	550	1,123	79	720	454	830	85	423	472	984	95	597
40–49 years	1,228	1,026	68	649	467	1,064	93	688	338	897	106	502	366	817	67	546
50–59 years	929	1,006	58	677	472	1,038	65	714	230	980	121	473	196	781	75	544
60–69 years	1,106	1,193	55	815	493	1,203	61	867	289	940	104	471	305	920	93	523
70–79 years	851	1,225	66	882	538	1,241	65	914	186	1,128	113	658	111	1,321	331	598
80 years and over	609	1,126	76	768	501	1,130	63	779	56	1,162	343	455	42	*675	*	*480
Male																
All ages[2]	7,322	1,115	34	747	2,887	1,167	48	784	1,903	947	46	563	2,250	936	46	650
2–11 months[2]	439	950	38	810	241	1,007	45	897	78	801	54	705	89	922	67	794
1–2 years[2]	601	700	32	573	202	710	42	578	182	675	42	516	186	743	88	543
3–5 years	744	860	36	679	219	907	58	707	210	728	48	565	281	850	41	725
6–11 years	868	931	37	747	252	962	53	782	239	879	74	693	344	926	47	697
12–15 years	338	1,231	180	736	98	1,349	315	846	95	839	106	552	129	1,147	233	698
16–19 years	368	959	61	742	112	992	85	774	103	833	96	553	139	931	101	666
20–29 years	844	1,026	65	712	216	1,031	77	740	245	1,175	195	558	349	924	70	617
30–39 years	735	1,245	97	745	271	1,313	136	780	213	960	143	489	225	959	115	645
40–49 years	626	1,231	118	753	243	1,285	164	771	178	1,059	181	605	181	871	86	605
50–59 years	473	1,085	63	738	251	1,151	69	797	105	866	139	449	96	856	107	587
60–69 years	546	1,306	83	880	247	1,301	94	914	141	914	114	551	152	1,171	161	613
70–79 years	444	1,322	101	892	285	1,348	104	916	93	1,166	176	543	60	1,167	315	583
80 years and over	296	1,207	114	837	250	1,237	106	851	21	*693	*	*455	19	*787	*	*395
Female																
All ages[2]	7,479	884	23	612	2,893	903	29	643	1,980	803	38	479	2,348	802	40	538
2–11 months[2]	432	892	33	781	232	875	36	767	84	862	51	783	74	859	66	728
1–2 years[2]	630	674	25	581	222	711	35	602	173	570	38	486	216	652	47	535
3–5 years	803	742	26	606	206	764	42	626	244	708	48	536	328	731	39	578
6–11 years	877	823	33	664	259	835	50	693	213	690	51	548	383	766	40	610
12–15 years	373	738	73	518	123	676	68	501	96	793	215	512	140	778	83	470
16–19 years	397	816	74	518	133	925	121	587	114	583	52	477	131	672	76	434
20–29 years	838	786	54	550	244	765	55	566	254	823	173	429	317	775	55	509
30–39 years	791	909	52	600	279	936	68	626	241	722	90	362	247	1,010	140	565
40–49 years	602	829	48	567	224	841	60	592	160	761	91	444	185	761	91	462
50–59 years	456	934	89	610	221	936	104	636	125	1,066	187	509	100	712	90	441
60–69 years	560	1,097	65	778	246	1,116	72	816	148	959	165	431	153	714	72	435
70–79 years	407	1,155	77	881	253	1,163	75	903	93	1,101	137	710	51	*1,453	*	*577
80 years and over	313	1,083	93	734	251	1,073	72	754	35	*1,376	*	*451	23	*613	*	*480

[1]Includes data for race-ethnic groups not shown separately. [2]Excludes nursing infants and children.

NOTE: Estimates of vitamin A are very skewed; means and standard errors of the means should be used and interpreted with caution.

Table 11. Carotenes intake in retinol equivalents (RE) by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14801	452	12	173	5780	448	15	174	3883	359	14	140	4598	582	38	191
2–11 months[2]	871	348	27	126	473	383	30	155	162	217	35	55	163	286	48	62
1–2 years[2]	1231	222	16	96	424	225	22	94	355	210	19	114	402	220	26	114
3–5 years	1547	258	17	114	425	253	26	110	454	236	19	129	609	345	31	136
6–11 years	1745	279	19	121	511	258	27	116	452	267	24	130	727	363	30	145
12–15 years	711	290	32	130	221	251	38	121	191	270	35	126	269	460	77	152
16–19 years	765	353	46	136	245	358	67	134	217	285	50	134	270	529	83	168
20–29 years	1682	430	28	164	460	404	37	162	499	359	44	150	666	701	66	233
30–39 years	1526	532	38	232	550	526	50	237	454	340	33	121	472	795	94	274
40–49 years	1228	522	36	203	467	507	45	188	338	420	41	162	366	786	86	305
50–59 years	929	495	38	229	472	493	42	232	230	545	65	184	196	583	96	203
60–69 years	1106	606	44	249	493	597	45	262	289	500	77	150	305	501	60	229
70–79 years	851	593	44	278	538	590	44	277	186	568	67	222	111	624	126	265
80 years and over	609	534	56	216	501	535	50	219	56	405	108	125	42	*638	*	*151
Male																
All ages[2]	7322	487	19	189	2887	483	23	193	1903	368	21	150	2250	638	59	212
2–11 months[2]	439	375	37	154	241	438	43	202	78	192	48	47	89	306	61	91
1–2 years[2]	601	234	22	104	202	241	35	95	182	227	22	137	186	190	21	105
3–5 years	744	270	26	117	219	263	42	113	210	230	27	131	281	360	39	148
6–11 years	868	283	22	132	252	272	32	127	239	252	19	139	344	380	41	157
12–15 years	338	323	46	151	98	310	65	145	95	286	55	109	129	517	114	172
16–19 years	368	307	39	147	112	272	42	141	103	274	39	152	139	582	105	193
20–29 years	844	534	47	204	216	500	65	188	245	501	78	185	349	793	97	253
30–39 years	735	584	57	249	271	582	76	256	213	342	47	128	225	819	120	304
40–49 years	626	595	52	225	243	582	66	216	178	487	57	185	181	871	123	434
50–59 years	473	534	47	250	251	553	52	256	105	454	67	250	96	661	135	208
60–69 years	546	622	65	243	247	592	66	245	141	421	76	109	152	634	102	243
70–79 years	444	566	65	218	285	570	66	217	93	495	80	199	60	686	159	310
80 years and over	296	513	80	198	250	500	70	203	21	*297	*	*96	19	*841	*	*170
Female																
All ages[2]	7479	419	16	160	2893	415	20	162	1980	350	20	132	2348	523	47	171
2–11 months[2]	432	319	34	104	232	320	36	118	84	239	43	71	74	262	63	39
1–2 years[2]	630	209	19	89	222	209	24	89	173	191	29	86	216	252	43	129
3–5 years	803	245	19	109	206	242	27	106	244	242	23	124	328	330	40	119
6–11 years	877	275	29	105	259	244	40	100	213	283	42	120	383	346	37	130
12–15 years	373	255	40	119	123	191	34	99	96	254	34	148	140	408	84	142
16–19 years	397	400	77	126	133	448	113	128	114	296	82	120	131	470	109	140
20–29 years	838	328	25	151	244	314	32	153	254	238	26	100	317	590	61	215
30–39 years	791	481	45	193	279	471	58	184	241	338	38	114	247	769	121	258
40–49 years	602	452	42	180	224	431	51	173	160	363	49	159	185	698	95	210
50–59 years	456	459	55	204	221	439	60	209	125	614	95	163	100	511	110	193
60–69 years	560	592	53	261	246	601	55	275	148	560	117	190	153	391	43	224
70–79 years	407	613	55	311	253	605	53	312	93	621	92	255	51	572	165	198
80 years and over	313	546	72	224	251	554	64	226	35	*454	*	*129	23	*526	*	*146

[1]Includes data for race-ethnic groups not shown separately. [2]Excludes nursing infants and children.

NOTE: Estimates of carotenes intake are very skewed; means and standard errors of the means should be used and interpreted with caution.

Table 12. Thiamin intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	1.63	0.02	1.43	5,780	1.63	0.02	1.43	3,883	1.56	0.02	1.37	4,598	1.56	0.03	1.37
2–11 months[2]	871	1.19	0.03	1.06	473	1.15	0.03	1.04	162	1.35	0.06	1.20	163	1.17	0.07	1.05
1–2 years[2]	1,231	1.08	0.02	1.02	424	1.06	0.02	1.02	355	1.19	0.03	1.11	402	1.08	0.04	0.96
3–5 years	1,547	1.38	0.02	1.26	425	1.36	0.03	1.24	454	1.45	0.03	1.37	609	1.34	0.03	1.19
6–11 years	1,745	1.56	0.03	1.44	511	1.55	0.04	1.43	452	1.58	0.04	1.45	727	1.57	0.04	1.42
12–15 years	711	1.82	0.11	1.55	221	1.83	0.17	1.54	191	1.64	0.07	1.49	269	1.72	0.10	1.46
16–19 years	765	1.87	0.07	1.56	245	1.87	0.09	1.52	217	1.88	0.10	1.53	270	1.64	0.08	1.47
20–29 years	1,682	1.76	0.04	1.55	460	1.74	0.06	1.54	499	1.78	0.06	1.53	666	1.69	0.05	1.47
30–39 years	1,526	1.71	0.04	1.53	550	1.73	0.05	1.57	454	1.55	0.05	1.37	472	1.67	0.06	1.41
40–49 years	1,228	1.61	0.04	1.46	467	1.61	0.05	1.47	338	1.47	0.05	1.31	366	1.55	0.05	1.39
50–59 years	929	1.55	0.04	1.37	472	1.56	0.05	1.35	230	1.38	0.05	1.26	196	1.51	0.07	1.34
60–69 years	1,106	1.60	0.04	1.39	493	1.63	0.05	1.41	289	1.33	0.05	1.15	305	1.30	0.05	1.15
70–79 years	851	1.47	0.04	1.33	538	1.48	0.04	1.36	186	1.32	0.08	1.06	111	1.29	0.09	1.00
80 years and over	609	1.42	0.05	1.27	501	1.43	0.04	1.27	56	1.34	0.12	1.15	42	*1.12	*	*0.97
Male																
All ages[2]	7,322	1.91	0.03	1.68	2,887	1.93	0.04	1.70	1,903	1.78	0.03	1.54	2,250	1.77	0.05	1.55
2–11 months[2]	439	1.20	0.05	1.05	241	1.18	0.05	1.04	78	1.33	0.08	1.20	89	1.11	0.07	1.01
1–2 years[2]	601	1.12	0.03	1.08	202	1.08	0.03	1.06	182	1.27	0.05	1.21	186	1.09	0.05	0.95
3–5 years	744	1.45	0.04	1.28	219	1.44	0.05	1.26	210	1.47	0.05	1.37	281	1.47	0.05	1.38
6–11 years	868	1.67	0.04	1.59	252	1.67	0.05	1.59	239	1.67	0.05	1.51	344	1.68	0.05	1.54
12–15 years	338	2.31	0.20	1.90	98	2.40	0.32	1.90	95	1.74	0.10	1.58	129	2.10	0.16	1.74
16–19 years	368	2.28	0.10	2.08	112	2.35	0.14	2.22	103	2.21	0.16	1.80	139	1.84	0.11	1.64
20–29 years	844	2.11	0.06	1.85	216	2.11	0.09	1.88	245	2.13	0.11	1.85	349	1.93	0.07	1.72
30–39 years	735	2.06	0.06	1.80	271	2.10	0.07	1.85	213	1.89	0.09	1.68	225	1.89	0.09	1.68
40–49 years	626	1.91	0.06	1.69	243	1.90	0.07	1.68	178	1.79	0.09	1.52	181	1.76	0.07	1.56
50–59 years	473	1.84	0.07	1.66	251	1.89	0.07	1.68	105	1.52	0.09	1.41	96	1.74	0.11	1.46
60–69 years	546	1.81	0.06	1.62	247	1.83	0.07	1.66	141	1.52	0.09	1.30	152	1.55	0.08	1.45
70–79 years	444	1.69	0.06	1.58	285	1.72	0.05	1.61	93	1.43	0.14	1.19	60	1.51	0.14	1.33
80 years and over	296	1.65	0.07	1.48	250	1.67	0.06	1.50	21	*1.41	*	*1.10	19	*1.39	*	*1.35
Female																
All ages[2]	7,479	1.36	0.02	1.22	2,893	1.35	0.02	1.22	1,980	1.36	0.02	1.23	2,348	1.35	0.04	1.19
2–11 months[2]	432	1.17	0.04	1.08	232	1.12	0.04	1.04	84	1.36	0.09	1.20	74	1.24	0.11	1.17
1–2 years[2]	630	1.05	0.02	0.96	222	1.05	0.03	0.94	173	1.10	0.04	0.98	216	1.06	0.05	0.98
3–5 years	803	1.31	0.02	1.23	206	1.28	0.04	1.23	244	1.43	0.05	1.36	328	1.21	0.04	1.08
6–11 years	877	1.45	0.03	1.34	259	1.43	0.04	1.30	213	1.50	0.05	1.42	383	1.46	0.04	1.29
12–15 years	373	1.31	0.05	1.21	123	1.24	0.06	1.19	96	1.55	0.10	1.32	140	1.37	0.09	1.18
16–19 years	397	1.46	0.06	1.20	133	1.37	0.08	1.16	114	1.57	0.09	1.30	131	1.41	0.09	1.18
20–29 years	838	1.43	0.04	1.29	244	1.40	0.05	1.28	254	1.48	0.05	1.34	317	1.39	0.05	1.24
30–39 years	791	1.37	0.04	1.23	279	1.37	0.05	1.23	241	1.27	0.05	1.16	247	1.45	0.07	1.25
40–49 years	602	1.33	0.04	1.22	224	1.32	0.05	1.21	160	1.20	0.04	1.15	185	1.33	0.07	1.12
50–59 years	456	1.28	0.04	1.18	221	1.27	0.05	1.15	125	1.28	0.05	1.22	100	1.30	0.07	1.24
60–69 years	560	1.42	0.05	1.22	246	1.46	0.07	1.26	148	1.18	0.05	1.06	153	1.10	0.06	0.95
70–79 years	407	1.31	0.04	1.18	253	1.31	0.04	1.19	93	1.24	0.07	1.03	51	1.11	0.11	0.93
80 years and over	313	1.30	0.05	1.15	251	1.30	0.05	1.15	35	1.31	0.15	1.16	23	*0.96	*	*0.90

[1]Includes data for race-ethnic groups not shown separately.
[2]Excludes nursing infants and children.

Table 13. Riboflavin intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	1.97	0.02	1.75	5,780	2.03	0.03	1.81	3,883	1.75	0.02	1.53	4,598	1.93	0.04	1.72
2–11 months[2]	871	1.68	0.04	1.61	473	1.68	0.03	1.61	162	1.70	0.06	1.61	163	1.73	0.08	1.67
1–2 years[2]	1,231	1.62	0.03	1.55	424	1.63	0.03	1.56	355	1.55	0.04	1.51	402	1.71	0.06	1.52
3–5 years	1,547	1.81	0.03	1.70	425	1.83	0.04	1.67	454	1.73	0.04	1.67	609	1.86	0.05	1.72
6–11 years	1,745	2.03	0.03	1.92	511	2.07	0.04	1.95	452	1.85	0.05	1.73	727	2.08	0.05	1.94
12–15 years	711	2.24	0.13	1.92	221	2.32	0.19	2.01	191	1.88	0.08	1.61	269	2.17	0.13	1.87
16–19 years	765	2.25	0.08	1.91	245	2.36	0.10	2.01	217	2.12	0.11	1.75	270	2.02	0.11	1.77
20–29 years	1,682	2.07	0.04	1.82	460	2.12	0.06	1.86	499	1.94	0.07	1.66	666	1.98	0.06	1.72
30–39 years	1,526	2.05	0.05	1.83	550	2.14	0.06	1.90	454	1.70	0.06	1.45	472	1.99	0.08	1.72
40–49 years	1,228	1.87	0.04	1.69	467	1.94	0.05	1.75	338	1.62	0.06	1.46	366	1.82	0.06	1.62
50–59 years	929	1.84	0.05	1.66	472	1.90	0.05	1.73	230	1.47	0.06	1.27	196	1.72	0.08	1.58
60–69 years	1,106	1.94	0.05	1.70	493	2.00	0.06	1.76	289	1.48	0.06	1.27	305	1.62	0.07	1.48
70–79 years	851	1.78	0.05	1.60	538	1.82	0.04	1.64	186	1.56	0.09	1.34	111	1.55	0.11	1.34
80 years and over	609	1.71	0.06	1.52	501	1.74	0.05	1.55	56	1.55	0.15	1.26	42	*1.37	*	*1.30
Male																
All ages[2]	7,322	2.30	0.04	2.05	2,887	2.38	0.04	2.13	1,903	2.01	0.03	1.74	2,250	2.17	0.06	1.97
2–11 months[2]	439	1.71	0.05	1.64	241	1.73	0.05	1.65	78	1.69	0.09	1.61	89	1.75	0.09	1.70
1–2 years[2]	601	1.66	0.04	1.60	202	1.65	0.05	1.60	182	1.60	0.06	1.60	186	1.75	0.07	1.53
3–5 years	744	1.91	0.05	1.76	219	1.96	0.07	1.77	210	1.76	0.05	1.70	281	1.98	0.07	1.88
6–11 years	868	2.16	0.05	2.03	252	2.22	0.06	2.07	239	1.97	0.06	1.85	344	2.22	0.07	2.10
12–15 years	338	2.77	0.24	2.45	98	2.95	0.38	2.53	95	2.04	0.11	1.80	129	2.62	0.21	2.21
16–19 years	368	2.77	0.12	2.46	112	2.94	0.16	2.67	103	2.50	0.16	2.17	139	2.35	0.15	2.12
20–29 years	844	2.45	0.06	2.23	216	2.56	0.09	2.31	245	2.33	0.10	2.08	349	2.25	0.08	2.02
30–39 years	735	2.47	0.08	2.21	271	2.60	0.10	2.35	213	2.05	0.09	1.67	225	2.22	0.10	2.08
40–49 years	626	2.17	0.06	1.98	243	2.23	0.08	2.03	178	1.98	0.09	1.77	181	2.09	0.08	1.96
50–59 years	473	2.17	0.08	1.95	251	2.28	0.08	2.02	105	1.55	0.09	1.30	96	1.94	0.12	1.74
60–69 years	546	2.21	0.08	1.99	247	2.26	0.09	2.04	141	1.74	0.08	1.54	152	1.90	0.10	1.68
70–79 years	444	2.06	0.07	1.86	285	2.11	0.07	1.90	93	1.73	0.15	1.42	60	1.67	0.13	1.53
80 years and over	296	1.95	0.09	1.77	250	1.99	0.07	1.78	21	*1.63	*	*1.46	19	*1.51	*	*1.48
Female																
All ages[2]	7,479	1.67	0.02	1.51	2,893	1.69	0.03	1.55	1,980	1.53	0.03	1.36	2,348	1.68	0.05	1.49
2–11 months[2]	432	1.64	0.04	1.57	232	1.62	0.04	1.57	84	1.71	0.09	1.61	74	1.71	0.13	1.65
1–2 years[2]	630	1.58	0.03	1.48	222	1.61	0.04	1.49	173	1.49	0.06	1.41	216	1.67	0.07	1.49
3–5 years	803	1.71	0.03	1.62	206	1.70	0.05	1.58	244	1.70	0.05	1.60	328	1.73	0.06	1.62
6–11 years	877	1.89	0.04	1.76	259	1.91	0.06	1.83	213	1.73	0.06	1.59	383	1.95	0.06	1.80
12–15 years	373	1.68	0.06	1.47	123	1.67	0.08	1.45	96	1.71	0.11	1.45	140	1.76	0.12	1.65
16–19 years	397	1.73	0.07	1.53	133	1.74	0.09	1.55	114	1.75	0.13	1.51	131	1.65	0.12	1.45
20–29 years	838	1.71	0.04	1.53	244	1.72	0.06	1.54	254	1.61	0.07	1.44	317	1.64	0.07	1.48
30–39 years	791	1.64	0.04	1.50	279	1.70	0.05	1.59	241	1.40	0.05	1.23	247	1.74	0.10	1.44
40–49 years	602	1.59	0.04	1.47	224	1.64	0.05	1.50	160	1.32	0.05	1.27	185	1.54	0.08	1.35
50–59 years	456	1.54	0.05	1.42	221	1.56	0.05	1.46	125	1.41	0.07	1.26	100	1.51	0.10	1.36
60–69 years	560	1.71	0.06	1.51	246	1.77	0.07	1.57	148	1.28	0.07	1.12	153	1.40	0.09	1.17
70–79 years	407	1.58	0.05	1.40	253	1.61	0.05	1.41	93	1.43	0.08	1.32	51	*1.45	*	*1.27
80 years and over	313	1.59	0.06	1.40	251	1.60	0.05	1.41	35	1.52	0.20	1.19	23	*1.29	*	*1.22

[1]Includes data for race-ethnic groups not shown separately.
[2]Excludes nursing infants and children.

Table 14. Niacin intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	22.24	0.19	19.38	5,780	22.60	0.23	19.66	3,883	20.96	0.29	18.11	4,598	19.47	0.34	16.60
2–11 months[2]	871	12.21	0.34	11.19	473	12.20	0.36	11.20	162	12.96	0.60	11.23	163	11.05	0.57	10.37
1–2 years[2]	1,231	12.08	0.27	11.08	424	11.95	0.32	11.13	355	13.49	0.43	12.03	402	11.61	0.48	10.31
3–5 years	1,547	16.00	0.29	14.49	425	15.96	0.42	14.36	454	17.23	0.45	15.35	609	14.86	0.41	13.69
6–11 years	1,745	19.15	0.33	17.37	511	19.20	0.47	17.33	452	19.06	0.46	17.71	727	17.77	0.47	15.97
12–15 years	711	22.48	1.34	18.63	221	22.88	2.11	18.61	191	20.46	0.95	17.73	269	20.54	1.08	16.68
16–19 years	765	24.37	0.85	20.03	245	24.81	1.19	19.31	217	24.76	1.27	21.15	270	20.37	1.04	17.29
20–29 years	1,682	24.96	0.53	21.63	460	25.06	0.77	21.79	499	25.47	0.90	21.47	666	21.47	0.62	19.07
30–39 years	1,526	24.38	0.53	21.69	550	24.89	0.68	21.99	454	22.64	0.74	19.88	472	22.48	0.83	19.24
40–49 years	1,228	23.69	0.51	21.56	467	24.07	0.61	21.87	338	21.68	0.81	18.08	366	20.82	0.75	18.17
50–59 years	929	22.86	0.62	20.51	472	23.54	0.68	20.99	230	18.49	0.71	16.54	196	20.01	0.94	18.21
60–69 years	1,106	21.94	0.56	19.36	493	22.51	0.65	19.94	289	17.40	0.73	15.28	305	16.66	0.75	14.05
70–79 years	851	19.75	0.55	17.87	538	20.04	0.52	18.19	186	17.42	1.02	15.10	111	15.74	1.23	12.69
80 years and over	609	18.51	0.64	16.05	501	18.67	0.54	16.20	56	17.34	1.68	14.50	42	*12.17	*	*12.00
Male																
All ages[2]	7,322	26.35	0.31	23.23	2,887	27.00	0.38	23.78	1,903	24.63	0.50	21.03	2,250	22.30	0.53	19.55
2–11 months[2]	439	12.57	0.52	11.43	241	12.72	0.56	11.83	78	12.90	0.76	11.35	89	10.97	0.63	10.80
1–2 years[2]	601	12.43	0.38	11.29	202	12.17	0.44	11.35	182	14.28	0.59	13.00	186	11.76	0.65	10.52
3–5 years	744	16.89	0.44	14.99	219	16.99	0.62	14.88	210	17.35	0.57	15.33	281	16.25	0.58	15.61
6–11 years	868	20.42	0.48	18.79	252	20.56	0.68	18.97	239	20.37	0.62	18.43	344	19.00	0.69	16.68
12–15 years	338	27.61	2.48	22.91	98	29.00	4.11	23.78	95	21.44	1.23	19.49	129	24.19	1.55	20.34
16–19 years	368	30.29	1.31	26.09	112	31.49	1.84	26.96	103	29.81	1.96	24.37	139	23.22	1.47	19.11
20–29 years	844	30.40	0.83	27.41	216	31.12	1.24	28.64	245	32.36	1.42	26.64	349	24.98	0.84	22.61
30–39 years	735	29.71	0.81	27.36	271	30.40	1.03	28.16	213	28.08	1.12	26.59	225	26.32	1.19	23.59
40–49 years	626	28.31	0.75	25.22	243	28.65	0.89	25.81	178	26.52	1.23	23.38	181	24.50	1.02	23.09
50–59 years	473	27.47	0.94	23.91	251	28.62	1.00	24.69	105	21.10	1.16	18.43	96	22.41	1.32	21.11
60–69 years	546	25.16	0.84	22.92	247	25.59	0.94	23.61	141	20.55	1.12	17.94	152	19.05	1.02	16.54
70–79 years	444	22.47	0.83	19.81	285	22.88	0.76	20.12	93	18.69	1.65	15.62	60	18.20	1.55	15.13
80 years and over	296	21.43	1.03	18.93	250	21.54	0.85	19.35	21	*20.44	*	*15.43	19	*14.14	*	*13.24
Female																
All ages[2]	7,479	18.35	0.19	16.52	2,893	18.47	0.23	16.65	1,980	17.75	0.30	16.08	2,348	16.50	0.38	14.33
2–11 months[2]	432	11.83	0.36	10.60	232	11.60	0.39	10.47	84	13.01	0.81	10.96	74	11.14	0.92	9.34
1–2 years[2]	630	11.70	0.31	10.72	222	11.72	0.41	10.74	173	12.58	0.53	11.19	216	11.44	0.65	10.29
3–5 years	803	15.07	0.31	13.75	206	14.90	0.47	13.62	244	17.11	0.61	15.39	328	13.47	0.49	12.25
6–11 years	877	17.84	0.37	16.11	259	17.84	0.55	16.03	213	17.74	0.58	17.30	383	16.54	0.54	15.33
12–15 years	373	17.08	0.64	15.23	123	16.53	0.86	14.52	96	19.46	1.26	17.29	140	17.16	1.25	14.96
16–19 years	397	18.34	0.72	16.30	133	17.82	1.03	15.01	114	19.96	1.19	16.85	131	17.13	1.16	14.46
20–29 years	838	19.64	0.46	17.64	244	19.47	0.65	17.65	254	19.63	0.74	17.14	317	17.18	0.67	15.25
30–39 years	791	19.18	0.46	16.88	279	19.48	0.64	17.37	241	18.10	0.70	16.84	247	18.42	0.93	15.82
40–49 years	602	19.25	0.46	17.83	224	19.41	0.59	18.05	160	17.62	0.74	16.13	185	17.03	0.87	14.33
50–59 years	456	18.69	0.57	17.14	221	18.95	0.68	17.20	125	16.53	0.70	15.80	100	17.79	1.12	16.66
60–69 years	560	19.20	0.60	17.25	246	19.78	0.76	17.52	148	15.01	0.76	13.98	153	14.70	0.96	12.57
70–79 years	407	17.80	0.58	16.52	253	17.97	0.61	16.57	93	16.49	1.05	14.69	51	13.63	1.70	10.80
80 years and over	313	16.96	0.67	14.66	251	17.14	0.61	14.78	35	15.92	1.83	12.96	23	*11.09	*	*9.98

[1] Includes data for race-ethnic groups not shown separately.
[2] Excludes nursing infants and children.

Table 15. Vitamin B_6 intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	1.77	0.02	1.52	5,780	1.79	0.02	1.53	3,883	1.60	0.03	1.38	4,598	1.71	0.05	1.48
2–11 months[2]	871	0.78	0.02	0.71	473	0.79	0.02	0.70	162	0.76	0.03	0.68	163	0.79	0.04	0.72
1–2 years[2]	1,231	1.21	0.03	1.08	424	1.20	0.03	1.09	355	1.26	0.04	1.21	402	1.27	0.06	1.11
3–5 years	1,547	1.42	0.03	1.28	425	1.41	0.04	1.25	454	1.47	0.04	1.38	609	1.50	0.05	1.37
6–11 years	1,745	1.58	0.03	1.43	511	1.58	0.04	1.42	452	1.55	0.04	1.35	727	1.60	0.05	1.44
12–15 years	711	1.84	0.13	1.56	221	1.89	0.20	1.59	191	1.56	0.08	1.39	269	1.65	0.11	1.42
16–19 years	765	1.91	0.07	1.59	245	1.92	0.10	1.56	217	1.89	0.10	1.58	270	1.74	0.10	1.52
20–29 years	1,682	1.89	0.04	1.66	460	1.86	0.06	1.66	499	1.87	0.07	1.58	666	1.98	0.07	1.70
30–39 years	1,526	1.88	0.05	1.63	550	1.92	0.06	1.66	454	1.67	0.06	1.47	472	1.89	0.09	1.56
40–49 years	1,228	1.79	0.04	1.56	467	1.82	0.05	1.59	338	1.54	0.06	1.34	366	1.72	0.07	1.59
50–59 years	929	1.79	0.06	1.51	472	1.85	0.06	1.54	230	1.38	0.06	1.21	196	1.71	0.10	1.56
60–69 years	1,106	1.82	0.05	1.57	493	1.87	0.06	1.60	289	1.39	0.06	1.21	305	1.47	0.08	1.25
70–79 years	851	1.73	0.05	1.51	538	1.76	0.05	1.58	186	1.50	0.10	1.22	111	1.46	0.15	1.20
80 years and over	609	1.68	0.07	1.47	501	1.70	0.05	1.50	56	1.52	0.15	1.17	42	*1.07	*	*0.97
Male																
All ages[2]	7,322	2.07	0.03	1.80	2,887	2.12	0.04	1.84	1,903	1.87	0.04	1.60	2,250	1.95	0.08	1.74
2–11 months[2]	439	0.81	0.03	0.72	241	0.82	0.03	0.73	78	0.76	0.04	0.66	89	0.84	0.05	0.75
1–2 years[2]	601	1.22	0.04	1.10	202	1.19	0.05	1.09	182	1.31	0.05	1.24	186	1.29	0.07	1.13
3–5 years	744	1.49	0.04	1.30	219	1.49	0.06	1.26	210	1.49	0.05	1.38	281	1.61	0.06	1.48
6–11 years	868	1.69	0.05	1.55	252	1.71	0.07	1.56	239	1.65	0.06	1.45	344	1.72	0.07	1.58
12–15 years	338	2.29	0.26	1.84	98	2.44	0.41	1.88	95	1.65	0.10	1.56	129	1.91	0.13	1.62
16–19 years	368	2.36	0.12	2.06	112	2.43	0.16	2.08	103	2.25	0.16	1.86	139	1.95	0.12	1.66
20–29 years	844	2.29	0.06	2.04	216	2.30	0.09	2.06	245	2.38	0.10	2.08	349	2.30	0.08	2.01
30–39 years	735	2.27	0.07	1.99	271	2.32	0.09	2.07	213	2.06	0.09	1.87	225	2.16	0.10	1.94
40–49 years	626	2.16	0.07	1.92	243	2.20	0.08	1.96	178	1.92	0.09	1.60	181	2.06	0.08	1.97
50–59 years	473	2.12	0.09	1.84	251	2.22	0.10	1.91	105	1.54	0.09	1.43	96	1.92	0.13	1.79
60–69 years	546	2.05	0.08	1.76	247	2.09	0.09	1.83	141	1.52	0.08	1.33	152	1.68	0.09	1.47
70–79 years	444	1.92	0.08	1.67	285	1.96	0.07	1.71	93	1.65	0.18	1.20	60	1.67	0.17	1.28
80 years and over	296	1.91	0.10	1.71	250	1.93	0.08	1.75	21	*1.72	*	*1.38	19	*1.24	*	*1.14
Female																
All ages[2]	7,479	1.47	0.02	1.30	2,893	1.48	0.02	1.31	1,980	1.37	0.03	1.20	2,348	1.47	0.06	1.26
2–11 months[2]	432	0.76	0.02	0.70	232	0.74	0.02	0.67	84	0.75	0.04	0.70	74	0.73	0.04	0.65
1–2 years[2]	630	1.20	0.03	1.06	222	1.21	0.04	1.08	173	1.20	0.05	1.11	216	1.25	0.08	1.06
3–5 years	803	1.35	0.03	1.26	206	1.32	0.05	1.23	244	1.46	0.05	1.36	328	1.39	0.06	1.27
6–11 years	877	1.47	0.03	1.35	259	1.46	0.05	1.35	213	1.45	0.06	1.30	383	1.49	0.05	1.31
12–15 years	373	1.36	0.06	1.11	123	1.31	0.07	1.10	96	1.47	0.10	1.35	140	1.41	0.11	1.16
16–19 years	397	1.45	0.07	1.14	133	1.40	0.09	1.12	114	1.54	0.10	1.24	131	1.51	0.12	1.31
20–29 years	838	1.50	0.04	1.32	244	1.47	0.06	1.32	254	1.45	0.06	1.20	317	1.58	0.07	1.34
30–39 years	791	1.50	0.04	1.36	279	1.52	0.06	1.39	241	1.34	0.05	1.19	247	1.61	0.10	1.34
40–49 years	602	1.43	0.04	1.29	224	1.44	0.05	1.30	160	1.23	0.05	1.14	185	1.37	0.08	1.16
50–59 years	456	1.48	0.06	1.25	221	1.52	0.07	1.25	125	1.26	0.06	1.10	100	1.52	0.10	1.35
60–69 years	560	1.63	0.06	1.39	246	1.67	0.07	1.44	148	1.29	0.07	1.16	153	1.30	0.09	1.13
70–79 years	407	1.59	0.06	1.35	253	1.62	0.06	1.38	93	1.38	0.08	1.23	51	*1.27	*	*0.98
80 years and over	313	1.55	0.07	1.32	251	1.57	0.06	1.37	35	1.43	0.18	0.98	23	*0.98	*	*0.91

[1]Includes data for race-ethnic groups not shown separately.
[2]Excludes nursing infants and children.

Table 16. Folate intake in micrograms by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	275	4.2	226	5,780	282	5.1	234	3,883	238	3.8	186	4,598	280	8.4	229
2–11 months[2]	871	160	4.1	143	473	154	4.2	136	162	170	6.9	157	163	178	9.1	164
1–2 years[2]	1,231	182	4.5	164	424	182	5.1	169	355	188	7.3	163	402	197	10.6	161
3–5 years	1,547	227	5.2	203	425	226	7.1	207	454	235	8.5	204	609	253	8.9	217
6–11 years	1,745	257	5.9	229	511	260	8.1	236	452	244	9.4	198	727	275	9.4	235
12–15 years	711	303	26.7	241	221	319	42.4	252	191	227	13.3	189	269	268	17.5	219
16–19 years	765	284	12.3	217	245	289	16.2	229	217	263	18.9	187	270	293	19.5	229
20–29 years	1,682	276	7.1	226	460	273	9.9	222	499	252	11.0	198	666	318	11.5	261
30–39 years	1,526	297	9.2	243	550	309	12.1	254	454	236	11.1	182	472	299	14.2	240
40–49 years	1,228	268	7.9	224	467	276	9.8	232	338	224	12.5	173	366	267	11.9	229
50–59 years	929	277	9.3	231	472	285	10.0	242	230	229	13.6	165	196	274	19.2	220
60–69 years	1,106	303	9.9	249	493	309	11.2	256	289	248	15.2	186	305	261	15.3	214
70–79 years	851	285	9.8	243	538	289	9.1	247	186	244	19.1	187	111	227	19.9	179
80 years and over	609	272	11.9	219	501	275	10.0	224	56	243	28.0	173	42	*204	*	*176
Male																
All ages[2]	7,322	317	7.0	266	2,887	327	8.6	274	1,903	271	6.4	213	2,250	318	13.0	265
2–11 months[2]	439	160	6.0	142	241	157	6.4	138	78	167	9.2	155	89	176	12.3	146
1–2 years[2]	601	183	6.0	164	202	179	6.8	169	182	203	10.7	168	186	194	12.1	160
3–5 years	744	238	8.1	206	219	239	11.0	208	210	234	11.6	203	281	275	12.4	231
6–11 years	868	278	8.7	244	252	284	12.2	253	239	265	13.3	218	344	296	13.0	256
12–15 years	338	382	50.2	299	98	417	84.3	305	95	246	16.8	199	129	313	23.7	254
16–19 years	368	333	19.0	264	112	345	25.9	281	103	309	30.9	212	139	340	25.9	263
20–29 years	844	323	10.6	274	216	322	15.5	277	245	309	18.0	247	349	368	14.9	304
30–39 years	735	359	14.8	307	271	377	19.2	315	213	287	18.8	213	225	333	18.0	299
40–49 years	626	317	12.4	265	243	327	15.1	278	178	274	21.4	211	181	315	15.7	276
50–59 years	473	318	14.7	270	251	330	15.7	274	105	246	21.2	212	96	311	26.4	250
60–69 years	546	331	14.0	295	247	335	16.0	302	141	259	18.8	218	152	327	21.2	268
70–79 years	444	303	14.4	261	285	310	13.1	268	93	257	33.1	187	60	244	21.4	197
80 years and over	296	304	18.9	249	250	310	15.9	261	21	*205	*	*170	19	*261	*	*234
Female																
All ages[2]	7,479	236	4.4	195	2,893	239	5.2	200	1,980	209	4.4	163	2,348	240	10.2	201
2–11 months[2]	432	160	4.9	143	232	151	5.2	133	84	174	9.5	157	74	179	9.3	182
1–2 years[2]	630	182	5.9	164	222	186	7.4	168	173	171	8.6	155	216	200	14.2	162
3–5 years	803	214	5.8	200	206	212	8.2	205	244	236	11.4	204	328	230	9.3	201
6–11 years	877	235	6.9	206	259	236	10.0	210	213	224	11.9	181	383	253	10.0	216
12–15 years	373	220	11.8	181	123	217	15.6	180	96	208	19.0	176	140	227	18.9	182
16–19 years	397	234	12.9	186	133	230	17.1	183	114	219	18.9	150	131	239	20.2	190
20–29 years	838	230	7.8	186	244	227	11.2	183	254	204	10.8	148	317	258	12.0	214
30–39 years	791	237	9.0	188	279	242	12.5	194	241	192	10.3	155	247	262	16.9	208
40–49 years	602	220	7.6	185	224	224	10.2	188	160	182	10.1	154	185	218	12.3	201
50–59 years	456	239	9.5	207	221	244	11.0	216	125	216	16.2	152	100	239	20.3	204
60–69 years	560	279	12.4	225	246	285	15.0	229	148	240	22.0	174	153	207	15.0	173
70–79 years	407	272	12.1	233	253	274	12.2	236	93	234	19.0	185	51	212	27.8	147
80 years and over	313	255	13.9	204	251	256	12.4	205	35	*260	*	*174	23	*173	*	*150

[1]Includes data for race-ethnic groups not shown separately.
[2]Excludes nursing infants and children.

Table 17. Vitamin B_{12} intake in micrograms by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	5.07	0.10	3.59	5,780	5.11	0.12	3.66	3,883	4.86	0.18	3.25	4,598	4.80	0.15	3.56
2–11 months[2]	871	3.03	0.07	2.89	473	2.99	0.07	2.88	162	2.98	0.14	2.73	163	3.33	0.14	3.19
1–2 years[2]	1,231	3.18	0.08	2.87	424	3.12	0.08	2.87	355	3.17	0.12	2.79	402	3.65	0.25	2.92
3–5 years	1,547	3.70	0.12	3.08	425	3.59	0.13	3.08	454	3.55	0.15	3.00	609	3.61	0.12	3.11
6–11 years	1,745	4.32	0.11	3.51	511	4.36	0.17	3.46	452	4.05	0.21	3.36	727	4.25	0.13	3.55
12–15 years	711	5.46	0.45	3.85	221	5.68	0.68	3.95	191	4.66	0.61	3.30	269	5.14	0.62	3.78
16–19 years	765	5.38	0.31	4.15	245	5.41	0.30	4.24	217	5.60	0.77	3.87	270	5.76	0.82	3.95
20–29 years	1,682	5.31	0.28	3.85	460	5.19	0.41	3.77	499	6.16	0.60	3.96	666	5.34	0.30	3.92
30–39 years	1,526	5.99	0.30	3.87	550	6.19	0.41	4.11	454	5.24	0.44	3.25	472	5.32	0.42	3.72
40–49 years	1,228	5.28	0.34	3.60	467	5.30	0.44	3.73	338	4.97	0.51	3.18	366	4.59	0.30	3.71
50–59 years	929	5.01	0.28	3.55	472	5.17	0.32	3.70	230	4.15	0.51	2.71	196	3.89	0.29	2.94
60–69 years	1,106	5.08	0.24	3.68	493	5.10	0.28	3.74	289	4.41	0.39	2.84	305	4.65	0.43	3.02
70–79 years	851	4.30	0.26	3.04	538	4.29	0.25	3.07	186	4.43	0.48	2.82	111	5.73	1.65	2.33
80 years and over	609	4.30	0.36	2.99	501	4.27	0.30	3.07	56	*4.90	*	*2.19	42	2.74	0.30	2.19
Male																
All ages[2]	7,322	6.15	0.16	4.39	2,887	6.32	0.21	4.51	1,903	5.59	0.26	3.80	2,250	5.55	0.24	4.11
2–11 months[2]	439	3.09	0.09	2.88	241	3.05	0.10	2.86	78	3.06	0.20	2.79	89	3.44	0.19	3.19
1–2 years[2]	601	3.32	0.12	2.97	202	3.22	0.12	2.95	182	3.44	0.19	2.99	186	3.95	0.43	3.08
3–5 years	744	4.02	0.20	3.22	219	3.89	0.19	3.27	210	3.56	0.20	2.98	281	3.62	0.15	3.12
6–11 years	868	4.37	0.14	3.62	252	4.27	0.17	3.50	239	4.68	0.35	3.58	344	4.58	0.20	3.90
12–15 years	338	6.77	0.74	4.72	98	7.24	1.27	4.84	95	4.57	0.51	3.77	129	6.41	1.15	4.23
16–19 years	368	6.80	0.42	5.15	112	6.95	0.46	5.16	103	6.27	0.80	4.96	139	7.25	1.41	4.89
20–29 years	844	6.69	0.45	4.97	216	6.77	0.77	5.04	245	7.16	0.79	4.84	349	6.30	0.42	4.76
30–39 years	735	7.34	0.44	4.99	271	7.74	0.61	5.30	213	6.78	0.74	4.13	225	5.90	0.53	4.46
40–49 years	626	6.83	0.58	4.49	243	6.88	0.77	4.68	178	6.21	0.87	4.08	181	5.56	0.43	4.53
50–59 years	473	5.81	0.32	4.39	251	6.07	0.36	4.77	105	4.45	0.65	3.08	96	4.43	0.41	3.16
60–69 years	546	6.13	0.35	4.48	247	6.25	0.44	4.51	141	5.18	0.50	3.43	152	6.12	0.75	3.57
70–79 years	444	5.29	0.39	3.95	285	5.36	0.40	4.00	93	4.89	0.69	3.30	60	*4.83	*	*2.49
80 years and over	296	5.88	0.66	3.74	250	6.12	0.62	3.89	21	*2.89	*	*2.50	19	*3.26	*	*2.47
Female																
All ages[2]	7,479	4.04	0.10	3.00	2,893	3.98	0.11	3.05	1,980	4.21	0.24	2.85	2,348	4.00	0.16	3.07
2–11 months[2]	432	2.96	0.09	2.93	232	2.93	0.10	2.91	84	2.90	0.20	2.65	74	3.20	0.19	3.17
1–2 years[2]	630	3.02	0.08	2.73	222	3.01	0.11	2.68	173	2.87	0.15	2.62	216	3.32	0.20	2.71
3–5 years	803	3.36	0.11	2.99	206	3.29	0.17	2.94	244	3.55	0.24	2.98	328	3.60	0.17	3.09
6–11 years	877	4.26	0.16	3.38	259	4.45	0.30	3.40	213	3.41	0.17	2.91	383	3.92	0.15	3.35
12–15 years	373	4.09	0.34	3.19	123	4.06	0.38	3.38	96	4.76	1.15	2.90	140	3.97	0.33	3.41
16–19 years	397	3.93	0.37	3.11	133	3.79	0.31	3.41	114	4.96	1.33	3.08	131	4.07	0.40	2.97
20–29 years	838	3.97	0.24	3.10	244	3.72	0.21	3.05	254	5.30	0.90	3.30	317	4.17	0.37	3.31
30–39 years	791	4.67	0.34	3.06	279	4.67	0.50	3.27	241	3.96	0.47	2.82	247	4.70	0.66	2.96
40–49 years	602	3.79	0.21	2.92	224	3.71	0.25	3.07	160	3.92	0.47	2.55	185	3.59	0.39	2.84
50–59 years	456	4.28	0.40	2.85	221	4.36	0.52	3.00	125	3.92	0.77	2.54	100	3.38	0.38	2.78
60–69 years	560	4.19	0.27	2.96	246	4.08	0.33	3.01	148	3.82	0.60	2.19	153	3.44	0.35	2.37
70–79 years	407	3.59	0.29	2.61	253	3.50	0.28	2.64	93	4.10	0.67	2.55	51	*6.50	*	*2.23
80 years and over	313	3.45	0.30	2.56	251	3.29	0.19	2.60	35	*5.82	*	*2.12	23	*2.46	*	*1.63

[1]Includes data for race-ethnic groups not shown separately. [2]Excludes nursing infants and children.

NOTE: Estimates of vitamin B_{12} are very skewed; means and standard errors of the means should be used and interpreted with caution.

Table 18. Vitamin C intake in milligrams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	105	2.4	78	5,780	102	2.8	77	3,883	113	2.5	83	4,598	113	3.6	81
2–11 months[2]	871	137	4.6	126	473	133	4.8	119	162	156	8.2	149	163	136	7.5	131
1–2 years[2]	1,231	88	3.3	69	424	85	3.8	67	355	108	5.5	87	402	85	4.2	69
3–5 years	1,547	102	3.1	85	425	97	3.8	82	454	121	5.2	99	609	111	4.7	85
6–11 years	1,745	101	3.1	79	511	95	4.2	74	452	116	4.6	98	727	104	4.1	85
12–15 years	711	111	6.0	83	221	105	8.0	77	191	120	8.2	96	269	111	7.7	80
16–19 years	765	109	6.9	71	245	94	6.6	63	217	143	12.0	96	270	120	9.7	81
20–29 years	1,682	104	4.4	70	460	95	5.9	64	499	127	6.7	90	666	131	6.5	84
30–39 years	1,526	110	4.3	80	550	111	5.4	81	454	104	5.9	69	472	114	6.3	84
40–49 years	1,228	102	4.5	75	467	102	5.6	75	338	98	6.4	66	366	113	7.9	75
50–59 years	929	103	5.0	78	472	106	5.4	79	230	87	5.8	62	196	95	7.7	67
60–69 years	1,106	109	4.5	87	493	109	5.0	87	289	97	5.9	73	305	96	6.8	74
70–79 years	851	100	4.3	81	538	99	3.9	82	186	98	7.0	76	111	105	14.4	66
80 years and over	609	102	5.0	84	501	103	4.2	85	56	91	10.9	71	42	*62	*	*39
Male																
All ages[2]	7,322	115	3.8	84	2,887	112	4.4	83	1,903	127	4.0	93	2,250	121	5.5	87
2–11 months[2]	439	136	5.8	122	241	136	6.3	121	78	143	10.8	128	89	138	11.0	125
1–2 years[2]	601	90	3.9	72	202	85	4.8	70	182	109	6.7	89	186	84	5.6	69
3–5 years	744	104	4.1	86	219	97	4.8	81	210	124	7.7	105	281	115	6.7	89
6–11 years	868	110	4.5	80	252	107	6.4	74	239	120	6.9	96	344	108	6.4	82
12–15 years	338	129	8.4	98	98	129	12.1	97	95	131	13.4	102	129	125	12.0	90
16–19 years	368	116	8.9	80	112	99	8.5	67	103	170	20.7	113	139	126	14.5	82
20–29 years	844	121	6.5	78	216	109	9.4	70	245	155	10.9	109	349	143	9.2	92
30–39 years	735	123	5.6	93	271	125	7.2	96	213	124	9.7	86	225	115	8.1	89
40–49 years	626	115	6.6	83	243	116	8.2	83	178	119	10.7	82	181	129	12.3	88
50–59 years	473	114	6.9	84	251	118	7.5	89	105	97	10.4	59	96	100	10.6	79
60–69 years	546	107	5.3	81	247	106	5.8	82	141	87	8.1	58	152	111	11.3	79
70–79 years	444	102	5.4	85	285	102	5.0	86	93	96	11.2	72	60	127	24.6	67
80 years and over	296	97	5.6	82	250	98	4.6	82	21	*86	*	*83	19	*43	*	*31
Female																
All ages[2]	7,479	95	2.9	73	2,893	93	3.4	71	1,980	100	3.0	73	2,348	104	4.6	73
2–11 months[2]	432	138	5.7	130	232	130	5.6	116	84	167	11.2	159	74	135	8.2	135
1–2 years[2]	630	87	4.3	65	222	84	4.9	65	173	106	8.1	79	216	86	5.3	64
3–5 years	803	100	3.8	84	206	97	4.8	84	244	118	6.6	96	328	106	5.7	77
6–11 years	877	91	3.1	78	259	84	3.9	73	213	112	5.6	98	383	100	4.2	87
12–15 years	373	91	6.2	66	123	79	7.3	53	96	109	8.8	90	140	98	8.1	72
16–19 years	397	101	8.4	65	133	90	8.0	61	114	117	11.6	84	131	114	10.4	76
20–29 years	838	87	4.3	61	244	81	5.2	58	254	103	7.2	69	317	116	7.4	70
30–39 years	791	99	5.1	71	279	97	6.2	72	241	88	6.4	50	247	112	8.3	65
40–49 years	602	88	4.5	66	224	88	5.4	68	160	81	6.3	56	185	96	8.1	60
50–59 years	456	93	5.4	72	221	94	6.0	71	125	80	5.9	65	100	90	9.5	60
60–69 years	560	111	5.9	89	246	112	6.7	89	148	105	7.8	86	153	84	6.3	64
70–79 years	407	98	5.5	77	253	97	4.9	78	93	100	8.1	76	51	86	11.5	58
80 years and over	313	105	6.7	86	251	106	5.6	87	35	94	13.4	60	23	*72	*	*50

[1]Includes data for race-ethnic groups not shown separately.
[2]Excludes nursing infants and children.

Table 19. Vitamin E intake in milligrams alpha-tocopherol equivalents by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	8.75	0.22	6.59	5,780	8.98	0.27	6.77	3,883	8.01	0.16	6.23	4,598	8.52	0.38	6.35
2–11 months[2]	871	11.08	0.31	11.62	473	10.59	0.32	11.43	162	12.52	0.48	12.39	163	11.65	0.67	12.16
1–2 years[2]	1,231	4.75	0.17	3.77	424	4.56	0.17	3.74	355	5.16	0.26	4.33	402	6.31	0.56	4.12
3–5 years	1,547	5.89	0.20	4.97	425	5.87	0.28	4.93	454	6.32	0.27	5.48	609	6.53	0.35	5.07
6–11 years	1,745	6.90	0.24	5.71	511	6.72	0.27	5.80	452	7.81	0.57	5.92	727	7.47	0.45	5.48
12–15 years	711	10.94	2.34	6.33	221	*11.51	*	*6.18	191	8.60	0.57	7.07	269	8.76	0.95	5.49
16–19 years	765	9.19	0.44	7.57	245	9.24	0.62	7.60	217	9.23	0.61	7.55	270	8.90	0.61	7.02
20–29 years	1,682	8.87	0.25	7.16	460	8.88	0.34	7.25	499	9.19	0.43	7.20	666	9.45	0.50	7.34
30–39 years	1,526	9.87	0.37	7.64	550	10.25	0.49	7.94	454	8.26	0.34	6.76	472	10.23	0.76	7.13
40–49 years	1,228	8.75	0.28	7.17	467	9.13	0.36	7.62	338	7.85	0.41	6.31	366	8.15	0.41	7.00
50–59 years	929	9.32	0.54	6.95	472	9.78	0.62	7.20	230	7.02	0.46	5.54	196	7.46	0.66	6.14
60–69 years	1,106	8.99	0.45	6.57	493	9.37	0.54	6.82	289	6.40	0.38	4.84	305	6.71	0.54	5.41
70–79 years	851	8.16	0.46	5.94	538	8.28	0.42	6.09	186	7.65	1.12	4.94	111	6.50	0.78	4.58
80 years and over	609	8.06	0.58	5.65	501	8.28	0.48	5.78	56	5.22	1.12	3.92	42	*5.11	*	*4.78
Male																
All ages[2]	7,322	10.00	0.40	7.53	2,887	10.38	0.51	7.75	1,903	8.80	0.25	6.79	2,250	9.29	0.54	7.17
2–11 months[2]	439	11.01	0.43	11.75	241	10.62	0.46	11.13	78	12.52	0.71	12.23	89	11.44	0.90	12.86
1–2 years[2]	601	4.83	0.22	3.88	202	4.56	0.22	3.76	182	5.46	0.36	4.72	186	6.16	0.69	4.15
3–5 years	744	6.03	0.26	5.17	219	6.08	0.39	5.12	210	5.97	0.28	5.50	281	6.98	0.53	5.42
6–11 years	868	7.03	0.28	5.92	252	6.94	0.37	5.98	239	7.34	0.40	5.88	344	8.24	0.74	5.64
12–15 years	338	14.74	4.30	6.99	98	*16.40	*	*6.81	95	8.49	0.62	7.45	129	9.79	1.34	6.69
16–19 years	368	10.12	0.45	9.07	112	10.30	0.62	9.27	103	10.46	0.82	9.16	139	9.64	0.72	7.74
20–29 years	844	10.08	0.35	8.41	216	10.19	0.46	8.72	245	10.97	0.82	8.64	349	10.51	0.65	8.32
30–39 years	735	11.60	0.56	9.16	271	12.24	0.76	9.70	213	9.32	0.58	7.70	225	10.28	0.65	8.03
40–49 years	626	10.04	0.41	8.15	243	10.43	0.51	8.66	178	9.20	0.74	7.10	181	9.46	0.58	7.93
50–59 years	473	11.32	0.90	8.57	251	11.99	1.01	8.87	105	7.77	0.88	5.57	96	8.71	1.12	6.77
60–69 years	546	9.77	0.56	7.33	247	10.08	0.66	7.49	141	6.88	0.57	5.43	152	7.61	0.64	6.60
70–79 years	444	8.91	0.65	6.47	285	8.91	0.54	6.50	93	9.28	2.36	4.86	60	6.85	0.74	5.30
80 years and over	296	9.21	0.90	6.30	250	9.45	0.75	6.49	21	*4.82	*	*3.77	19	*4.95	*	*4.60
Female																
All ages[2]	7,479	7.57	0.18	5.90	2,893	7.67	0.20	5.99	1,980	7.31	0.21	5.78	2,348	7.72	0.53	5.51
2–11 months[2]	432	11.16	0.37	11.50	232	10.54	0.41	11.45	84	12.52	0.64	12.38	74	11.89	0.78	11.89
1–2 years[2]	630	4.66	0.22	3.66	222	4.56	0.24	3.62	173	4.81	0.37	3.91	216	6.47	0.74	4.09
3–5 years	803	5.75	0.25	4.78	206	5.64	0.39	4.76	244	6.67	0.44	5.40	328	6.08	0.37	4.85
6–11 years	877	6.76	0.35	5.54	259	6.49	0.39	5.46	213	8.29	1.05	5.92	383	6.70	0.37	5.25
12–15 years	373	6.93	0.41	5.87	123	6.44	0.42	5.64	96	8.72	0.92	6.77	140	7.81	1.09	5.02
16–19 years	397	8.24	0.67	5.91	133	8.12	1.03	5.76	114	8.06	0.86	6.26	131	8.07	0.83	6.10
20–29 years	838	7.70	0.30	6.34	244	7.66	0.45	6.41	254	7.68	0.35	6.15	317	8.16	0.59	5.75
30–39 years	791	8.19	0.37	6.38	279	8.29	0.49	6.52	241	7.37	0.38	6.16	247	10.19	1.21	6.43
40–49 years	602	7.50	0.31	6.00	224	7.82	0.44	6.21	160	6.72	0.36	5.93	185	6.81	0.42	6.10
50–59 years	456	7.51	0.42	5.87	221	7.79	0.54	6.02	125	6.46	0.44	5.48	100	6.31	0.42	5.50
60–69 years	560	8.32	0.61	5.97	246	8.74	0.81	6.31	148	6.03	0.50	4.48	153	5.97	0.73	4.21
70–79 years	407	7.62	0.56	5.59	253	7.81	0.62	5.74	93	6.47	0.61	5.02	51	6.20	1.22	4.09
80 years and over	313	7.44	0.65	5.18	251	7.66	0.61	5.43	35	5.40	1.57	3.79	23	*5.19	*	*4.71

[1]Includes data for race-ethnic groups not shown separately. [2]Excludes nursing infants and children.

NOTE: Estimates of vitamin E intake are very skewed; means and standard errors of the means should be used and interpreted with caution.

Table 20. Fiber intake in grams by age, sex, and race-ethnicity: United States, 1988–91

Sex and age	Total population[1]				Non-Hispanic white				Non-Hispanic black				Mexican American			
	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	Sample size	Mean	Standard error of the mean	Median
Both sexes																
All ages[2]	14,801	14.82	0.17	12.63	5,780	14.94	0.20	12.88	3,883	13.00	0.23	10.92	4,598	17.82	0.53	14.31
2–11 months[2]	871	4.42	0.18	3.82	473	4.82	0.20	4.29	162	3.52	0.33	2.87	163	4.10	0.36	3.14
1–2 years[2]	1,231	8.52	0.21	7.69	424	8.61	0.27	7.71	355	8.55	0.30	7.94	402	9.32	0.39	7.92
3–5 years	1,547	10.72	0.22	9.78	425	10.50	0.31	9.77	454	11.45	0.34	10.43	609	12.57	0.40	10.57
6–11 years	1,745	12.49	0.24	11.06	511	12.29	0.33	10.97	452	12.36	0.36	11.21	727	14.92	0.44	12.78
12–15 years	711	13.32	0.44	11.32	221	12.98	0.60	11.29	191	13.14	0.65	11.06	269	15.21	0.79	13.16
16–19 years	765	15.03	0.51	12.63	245	14.73	0.67	12.35	217	14.05	0.74	11.51	270	18.30	1.11	13.91
20–29 years	1,682	15.59	0.37	13.10	460	15.15	0.52	12.96	499	14.21	0.54	11.49	666	21.95	0.76	17.59
30–39 years	1,526	16.72	0.39	14.32	550	16.95	0.51	14.50	454	13.86	0.52	11.57	472	20.48	0.83	16.54
40–49 years	1,228	15.35	0.39	13.77	467	15.60	0.49	13.97	338	12.86	0.52	10.99	366	19.66	0.84	16.83
50–59 years	929	15.89	0.46	14.14	472	16.06	0.51	14.26	230	13.61	0.72	11.44	196	19.61	1.11	16.68
60–69 years	1,106	16.06	0.45	13.70	493	16.39	0.54	13.86	289	13.18	0.64	11.34	305	16.91	0.86	14.06
70–79 years	851	15.69	0.48	13.33	538	15.95	0.48	13.68	186	13.08	0.79	10.68	111	15.31	1.24	12.83
80 years and over	609	13.99	0.48	12.45	501	14.30	0.42	12.81	56	10.95	1.05	8.46	42	*13.69	*	*9.79
Male																
All ages[2]	7,322	17.01	0.27	14.73	2,887	17.24	0.32	15.12	1,903	14.68	0.38	12.34	2,250	20.56	0.85	16.70
2–11 months[2]	439	4.73	0.26	4.15	241	5.26	0.28	4.74	78	3.31	0.43	2.50	89	4.43	0.48	3.58
1–2 years[2]	601	9.01	0.31	7.92	202	9.16	0.40	7.93	182	9.17	0.45	8.81	186	9.05	0.53	7.77
3–5 years	744	11.18	0.30	10.35	219	11.02	0.40	10.32	210	11.60	0.50	10.66	281	13.39	0.59	10.95
6–11 years	868	13.14	0.33	12.00	252	13.09	0.46	12.22	239	12.75	0.51	11.23	344	15.66	0.61	13.55
12–15 years	338	15.09	0.66	13.60	98	15.08	0.96	13.60	95	14.23	0.96	12.31	129	17.44	1.21	14.83
16–19 years	368	17.44	0.78	15.81	112	17.38	1.05	16.16	103	16.13	1.14	13.50	139	21.16	1.60	15.96
20–29 years	844	18.74	0.59	15.98	216	18.22	0.84	15.80	245	18.09	0.92	14.63	349	26.28	1.09	21.49
30–39 years	735	19.97	0.62	17.82	271	20.29	0.79	18.69	213	16.40	0.82	14.05	225	23.73	1.21	20.79
40–49 years	626	18.01	0.60	16.70	243	18.36	0.75	17.30	178	14.96	0.80	12.36	181	22.81	1.21	18.89
50–59 years	473	18.29	0.72	16.35	251	18.73	0.78	16.49	105	14.46	1.07	12.48	96	21.77	1.45	19.10
60–69 years	546	17.60	0.69	15.27	247	17.77	0.81	15.31	141	13.89	0.98	12.25	152	20.86	1.31	18.15
70–79 years	444	17.17	0.75	14.41	285	17.65	0.75	14.73	93	12.93	0.99	10.31	60	17.99	1.62	16.84
80 years and over	296	16.55	0.83	14.56	250	17.08	0.71	15.07	21	*9.00	*	*6.73	19	*19.75	*	*13.12
Female																
All ages[2]	7,479	12.75	0.19	11.24	2,893	12.78	0.23	11.43	1,980	11.54	0.28	9.98	2,348	14.94	0.58	12.36
2–11 months[2]	432	4.10	0.23	3.54	232	4.33	0.25	3.96	84	3.71	0.46	3.19	74	3.72	0.49	2.77
1–2 years[2]	630	8.00	0.24	7.13	222	8.06	0.32	7.33	173	7.84	0.35	7.05	216	9.62	0.52	8.22
3–5 years	803	10.24	0.27	9.40	206	9.97	0.43	9.20	244	11.30	0.42	10.09	328	11.75	0.48	9.48
6–11 years	877	11.81	0.30	10.28	259	11.47	0.44	9.70	213	11.96	0.46	10.89	383	14.17	0.57	12.04
12–15 years	373	11.45	0.49	10.04	123	10.81	0.64	9.98	96	12.02	0.77	10.08	140	13.14	0.85	10.45
16–19 years	397	12.57	0.56	9.99	133	11.96	0.69	9.69	114	12.08	0.81	9.48	131	15.06	1.24	11.34
20–29 years	838	12.51	0.35	10.93	244	12.31	0.51	10.71	254	10.91	0.43	9.66	317	16.68	0.74	13.61
30–39 years	791	13.53	0.38	12.45	279	13.66	0.51	12.59	241	11.73	0.56	9.94	247	17.05	0.92	14.40
40–49 years	602	12.81	0.40	11.90	224	12.81	0.51	12.27	160	11.10	0.55	9.49	185	16.41	0.94	14.85
50–59 years	456	13.71	0.48	12.45	221	13.66	0.54	12.47	125	12.96	0.88	10.56	100	17.62	1.50	14.75
60–69 years	560	14.74	0.52	12.79	246	15.17	0.65	13.44	148	12.64	0.76	11.04	153	13.66	0.88	11.72
70–79 years	407	14.63	0.55	12.53	253	14.72	0.55	12.92	93	13.19	1.10	11.02	51	13.01	1.64	11.22
80 years and over	313	12.64	0.50	11.43	251	12.81	0.46	11.70	35	11.84	1.18	9.96	23	*10.34	*	*6.91

[1]Includes data for race-ethnic groups not shown separately.
[2]Excludes nursing infants and children.

Technical notes

Source of data and survey design

The third National Health and Nutrition Examination Survey (NHANES III) is a 6-year survey comprised of two 3-year phases, 1988–91 and 1991–94. Each phase is a representative sample of the U.S. civilian noninstitutionalized population ages 2 months and over living in households (10). Mexican Americans, blacks, children 5 years of age and younger, and persons 60 years of age and over were oversampled to provide more reliable estimates for these population groups (27).

Phase 1 data collection occurred between October 1988 and October 1991. Table I indicates the response rates for the dietary component. A total of 20,277 sample persons were identified for the NHANES III, Phase 1 sample; 17,464 sample persons (86 percent) were interviewed, and 15,630 were examined (77 percent). Dietary interviews were completed on 15,409 examinees (99 percent). Reliable 24-hour recalls were obtained from 15,280 examinees. Respondents with incomplete recalls (n=338) and breastfeeding infants and children (n=141) were excluded from all analyses; 221 persons were not interviewed because they refused (42), had communication problems (21), or for survey operation reasons such as lack of time (158). No attempt was made to impute missing data. The Phase 1 analytic sample is made up of 14,801 respondents who had complete and reliable recalls–95 percent of the examined sample (14,801/15,630) or 73 percent of the total sample (14,801/20,277).

Statistical methodology

The complex survey design was taken into account by using appropriate survey sampling weights and statistical methods to produce national estimates. Population means, medians, and standard errors of the mean (SEMs) for nutrient intakes based on 1-day, 24-hour dietary recall data are presented in this report. Standard errors of the mean were computed using SUDAAN, a program that takes into account the sampling weights and complex sample design for calculating variance estimates (28). Because of the relatively small numbers of degrees of freedom in Phase 1 of NHANES III, an average design effect method (10) was used to stabilize standard error estimates shown in this report. Estimates that are less reliable based on statistical criteria of sample size and coefficient of variation are designated by an asterisk in the tables. Some nutrient estimates are by their nature very skewed (for example, copper, iron, zinc, vitamin A, carotenes, vitamin B_{12}, and vitamin E). This is because food and nutrient intakes varies from day to day. Consumption of certain nutrients may be very high or very low for some individuals on a specific day, infuencing population distributions. For non-normally distributed variables, the means and standard errors of the means for such variables, which assume normality, should be used and interpreted with caution.

Dietary data collection methodology

Respondents reported all foods and beverages consumed, except plain drinking water, over the previous 24-hour time period (midnight to midnight). Foods and beverages were quantified using food specific units, for example, a large-size egg or medium-size apple. Abstract food models, shape charts, and measurement aids such as rulers and household measuring cups and spoons were also used to quantify foods and beverages. During Phase 1, approximately 69 percent of all dietary interviews were completed by the respondent, 28 percent by a proxy respondent, and 3 percent by the respondent and a proxy. Proxy respondents were utilized for infants and children 2 months–5 years and for other respondents who were unable to report on their own. Children 6–11 years of age were permitted to report their own intake (54 percent), although 22 percent were completed by proxy and 24 percent were completed with both the child and a proxy. Data retrieval with day care providers and schools was conducted as necessary to obtain complete intakes for infants and children.

All 24-hour recall interviews were conducted in the mobile examination centers (MECs); the examination schedules included all days of the week. The distribution of recalls by day of the week during Phase 1 was:

Sunday	8 percent
Monday	10 percent
Tuesday	11 percent
Wednesday	19 percent
Thursday	17 percent
Friday	26 percent
Saturday	9 percent

The higher proportion of Friday recalls was due to operational procedures that allowed for a high frequency of Saturday examinations to improve response rates.

Table I. Survey response rates for the 24-hour dietary recall component: NHANES III, Phase 1, 1988–91

Response category	Number	Response rate in percent	
		Component	Survey
Total number of sample persons	20,277	...	100
Interviewed sample persons	17,464	...	86
Examined sample persons	15,630	100	77
24-hour dietary recall			
Total interviewed	15,409	99	76
Reliable	15,280	99	75
Complete	14,801	95	73
Nursing infant/child	141	1	...
Incomplete	338	2	...
Unreliable	100	(1)	...
Computer malfunction	29	(1)	...
Total not interviewed	221	1	...

[1]Less than 1 percent.

Dietary interviews were conducted in English (86 percent), Spanish (12 percent), and English/Spanish or other languages (2 percent). The NHANES III Dietary Interviewer's Manual provides details for all aspects of the 24-hour recall protocol (29). Dietary interviewers were required to have a college degree in foods and nutrition. A majority of the interviewers were bilingual in English and Spanish. The dietary interviewers completed a comprehensive 2-week training course taught by an experienced bilingual trainer. The training course emphasized standardized data collection and adherence to the dietary interview protocol, proper interviewing technique, and efficient use of the Dietary Data Collection system (DDC) system during the dietary interview. Interviewer retention was excellent.

Dietary interviewer performance was monitored using several techniques including field monitoring of interviews in progress and reviews of taped dietary interviews by NCHS and Westat, Inc. (10,29,30). Throughout the survey, the dietary interviewers performed a 10-percent cross-check of printed 24-hour recall reports. Interviewer retraining sessions were conducted regularly. Field memoranda and newsletters were prepared by NCHS and Westat, Inc., staff to inform the interviewers of DDC updates and issues concerning the dietary interview protocol. Updated versions of the DDC system were installed in the MECs approximately twice per year.

Dietary terms and calculation procedures

Nutrient and dietary fiber intakes for individuals were calculated using the gram amounts of food consumed and the USDA Survey Nutrient Data Base (SNDB) nutrient values for the food expressed per 100 grams of food (31).

Micronutrients–Carotenes—Represents vitamin A activity derived from beta-carotene and other provitamin A carotenoids expressed as micrograms of retinol equivalents (RE).

Dietary fiber—Represents total dietary fiber—including both the insoluble fraction (cellulose, hemicellulose, and lignin) and the soluble fraction (for example, gums in cereal grains and pectin in fruits and vegetables).

Folate—Represents total folate activity.

Niacin—Represents nicotinic acid and nicotinamide present in foods. Does not include potential niacin that could be converted from dietary tryptophan, a niacin precursor, in the body.

Macronutrients—Carbohydrates, fats, and protein are the macronutrients of the diet and principal sources of energy.

Sodium—Includes naturally occurring sodium, sodium contributed by compounds used in food processing, and a calculated amount of sodium used for food preparation. Excludes sodium from salt added at the table.

Total energy intake—Total food energy intake (measured in kilocalories or kcal) was calculated from grams of daily intake of protein, carbohydrate, fat, and alcohol. The energy conversion factors used were 4 kcal per gram for protein and carbohydrate, 9 kcal per gram for total fat and fatty acids, and 7 kcal per gram for alcohol.

Vitamin E —Represents vitamin E activity derived from alpha-, beta-, and gamma-tocopherol and alpha-tocopherol expressed as milligrams alpha-tocopherol equivalents (alpha-TE). One alpha-tocopherol equivalent equals
1 milligram of alpha-tocopherol,
2 milligrams of beta-tocopherol,
10 milligrams of gamma-tocopherol, or
3.3 milligrams of alpha-tocotrienol.

Data editing and statistical analysis

NCHS staff reviewed and edited the Phase 1 data files. Editing guidelines were developed by NCHS staff in consultation with U.S. Department of Agriculture (USDA) and Nutrition Coordinating Center (NCC) staff, and other knowledgeable sources. NCHS staff performed all data review and editing tasks. Meetings and workshops were conducted to discuss foods, database updates, coding procedures, and editing decisions. NCHS prepared guidelines to document data editing decisions (32). Dietary interviewers coded the quality of all 24-hour recall interviews as "reliable," "unreliable," "refusal," or "not interviewed" (29). NCHS reviewed all notes recorded by the dietary interviewers; the notes provided information about the interview setting, the interviewer's assessment of the respondent's abilities and willingness to comply with instructions; that is, Was the respondent capable of completing the 24-hour recall? If the respondent made a reasonable effort to complete the 24-hour recall, the recall was considered to be reliable. On the other hand, if the respondent was very confused or had extraordinary difficulty recalling foods and beverages consumed the day before, the recall was coded "unreliable."

A "reliable" recall may result in unusually high or low intakes for various nutrients. For example, a 12–15-year-old non-Hispanic white male consumed a large quantity of a highly fortified cereal resulting in an extremely high intake value for vitamin E and some other nutrients. Data for this person are included in the reference tables shown in this report because the recall data were determined to be correct and "reliable." There may be situations where it would be appropriate to exclude this or other outliers because of the effect it would have on the overall analysis and conclusions, especially when sample sizes are small.

Demographic terms

Age—Age was defined as age in months or years at the time of the household interview. Infants are under 1 year of age.

Race-ethnicity—Race and ethnicity classification was based on self-reported information. Persons were classified as non-Hispanic white, non-Hispanic black, Mexican American, or "other." The "other" category is included in the total sample counts but is not presented separately.

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Advance Data

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Characteristics of Elderly Men and Women Discharged From Home Health Care Services: United States, 1991–92

by Achintya N. Dey, M.A., Division of Health Care Statistics

Introduction

Today's modern medical technology allows health care professionals to deliver quality health care services at a much lower cost in the patient's home than in institutional settings. Services such as physical therapy, intravenous infusion of medications, speech therapy, and other "high-tech" services such as around-the-clock intravenous antibiotic therapy for difficult infections were mostly confined to hospitals. These services and others like them are now available at home through home health care agencies. Today, these agencies are referred to as "hospitals without walls." The enactment of the Medicare law in 1965 authorized payment for certain home health care services, thereby making them more available to the elderly. This has resulted in a rapid increase in the number of home health care agencies (1). Government programs such as Medicare, as well as private insurance plans, recognize that it is less expensive to provide care at home, especially post-hospitalization care, than in an institution. The average home health care visit cost about $66 in 1993, compared with about $1,500 in Medicare charges for an average day in the hospital (2). Today, these agencies are the fastest growing segment of the U.S. health care system (3). Currently, there are an estimated 7,000 home health care agencies in the United States (1).

The changing age structure of the population, that is, the increasing number of elderly members in the total population, also influences the need for home health care service. Recent statistics indicate that 3 of every 4 home health care patients were 65 years and over (1). Older patients generally prefer recovering from an illness at home instead of in a hospital or a nursing home (4).

This report presents findings on service utilization, primary diagnosis at admission, types of aids used at the time of discharge or immediately prior to discharge, and disposition status of elderly men and women home health care discharges. The advantage of using discharge data is that it will enable health care researchers to review the complete episode of care, that is, from admission to discharge. A discharge may be due to either an improvement or stabilization or a worsening of a condition that leads to admission to a hospital or nursing home or to death. Service utilization is discussed in terms of (a) services received to perform activities of daily living and instrumental activities of daily living at the time of discharge or immediately prior to discharge, (b) types of service received during the last billing period, and (c) the length of service in days from admission to discharge. Activities of daily living include bathing, dressing, eating, transferring from a bed or chair, walking, and using the toilet room. Instrumental activities of daily living include doing light housework, managing money, shopping for groceries or clothes, using the telephone, preparing meals, and taking medications.

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Center for Health Statistics

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

The data in this report are from the 1992 National Home and Hospice Care Survey (NHHCS), a segment of the Long-Term Care Component of the National Health Care Survey (5). The 1992 NHHCS is the first annual survey of home health care agencies and hospices, their current patients, and discharges. The National Center for Health Statistics (NCHS) began this nationwide sample survey in response to the rapid growth in the number of these agencies in the United States (6). The 1,500 agencies included in the survey were selected from a universe of 8,859 agencies classified by the 1991 National Health Provider Inventory (NHPI) (7) as agencies providing home health or hospice care. Also included in the universe was a sample of potentially new agencies identified between November 1991 (when the 1991 NHPI was completed) and June 1992. Detailed information on sample design, selection methods, data collection procedures, and sampling errors is included in the Technical notes.

Estimates in this report are based on the discharged patient sample. Discharges are defined as patients who were removed from the rolls of the agency during a 12-month period ending on the last day of the month prior to the month of the survey. Discharges also include patients whose episode of care ended because of death. Discharges represent discharge events, not discharged patients. The same patient could be included more than once if that person had more than one episode of care that ended during the year. The extent of multiple episodes of care by a single person in the discharge sample is unknown.

Data were collected by interviewing the staff person most familiar with the medical records for the sample discharges. Although the survey included patients of all ages from hospices and home health care agencies, data presented in this report are limited to home health care patients aged 65 years and over. The estimates are based on responses for 3,654 discharges.

Demographic characteristics

During 1991–92 there were an estimated 3.1 million discharges from an estimated 7,000 home health care agencies in the United States (8). Of these discharges, about 2,278,300 or 74 percent were 65 years of age and over. The characteristics of these elderly home health care discharges, by sex, are shown in table 1. Elderly discharges 75–84 years comprised the largest group (46 percent), followed by those 65–74 years (34 percent) and 85 years and over (21 percent). There were more women discharges than men discharges. Women constituted 66 percent of all elderly discharges and, on an average, were 2 years older than elderly men (79 years vs. 77 years). Elderly white people constituted 71 percent of all discharges, elderly black people constituted 8 percent, and other and unknown races constituted the remaining 21 percent. (Other was 1 percent and Unknown was 20 percent.)

In 1991–92, there were 71 patients discharged from home health care out of every 1,000 civilian noninstitutionalized persons 65 years and older (table 2). The ratio of number of discharges from home health care services for elderly women was 78 per 1,000 population and for elderly men, 60 per 1,000. For both sexes, the use of services dramatically increased with advancing age. Among elderly men, the use of services increased from 36 per 1,000 of those aged 65–74 years to 146 per 1,000 of those 85 years and over—an increase of 306 percent. Among elderly women, the use of services increased from 45 per 1,000 of those aged 65–74 years to 144 per 1,000 of those 85 years and over—an increase of 220 percent.

Half of the elderly women discharges were widowed and only one-fourth were married at the time of discharge (table 1). For every 100 married women, there were 122 married men. However, there were only 20 widowers for every 100 widows. Moreover, elderly men were more likely to be living with their family than their female counterparts. In 1992, 72 percent of all discharged men lived with their family compared with 51 percent of women. The percent of elderly women living alone was almost double that of elderly men (41 percent vs. 22 percent). There is a similar distribution in the general population of elderly women living alone compared with elderly men (9). In the 75–84 years age group, the percent of women who lived alone was more than two times higher than men and, in the 85 and over age group, the percent of women who lived alone was nearly three times higher than men (figure 1).

Use of services

Help with functional activities

A functional orientation to the health of elderly people is an important dimension of their health status. Any impairment of functional status reduces their ability to maintain an independent existence and affects their quality of life. Moreover, the inability to perform activities of daily living are also associated with a shortened life expectancy (10).

In this report, the ADL's, which reflect an individual's capacity for self care, refer to six sociobiological functions: bathing, dressing, eating, transferring, walking, and toileting. The IADL's, which involve more complex tasks that enable an individual to live independently in the community, are doing light housework, managing money, shopping for groceries or clothes, using the telephone, preparing meals, and taking medications. This report focuses on the ADL's and IADL's where the help was provided by home health care agencies. It does not include ADL's and IADL's where help was provided by other sources.

Table 3 shows the percent, by sex, of elderly home health care discharges who received help and the number of ADL's and IADL's for which help was received. A significantly greater percent of elderly women than elderly men were reported as receiving assistance in bathing or showering (49 percent and 40 percent, respectively). Of all elderly women discharges, 44 percent were reported as receiving help in dressing, and 40 percent reported as receiving help in walking. One-third of elderly women were reported as receiving help in transferring in or out of beds or chairs. Fifty-eight percent of elderly women were reported as receiving help in at least one ADL. Twenty-eight

Table 1. Number and percent distribution of elderly discharges 65 years and over from home health care agencies by demographic characteristics, according to sex: United States, 1991–92

Demographic characteristic	Both sexes		Female		Male	
	Number	Percent distribution	Number	Percent distribution	Number	Percent distribution
Total	2,278,300	100.0	1,509,600	100.0	768,700	100.0
Age						
65–74 years	762,900	33.5	468,700	31.0	294,200	38.3
75–84 years	1,043,600	45.8	701,800	46.5	341,800	44.5
85 years and over	471,800	20.7	339,100	22.5	132,600	17.3
Race						
White	1,616,300	70.9	1,065,000	70.6	551,300	71.7
Black and other	202,600	8.9	125,800	8.3	76,800	10.0
Black	175,200	7.7	112,900	7.5	62,300	8.1
Unknown	459,400	20.2	318,700	21.1	140,700	18.3
Marital status at discharge						
Married	857,100	37.6	385,900	25.6	471,300	61.3
Widowed	909,000	39.9	757,700	50.2	151,300	19.7
Divorced or separated	82,400	3.6	60,500	4.0	21,800	2.8
Never married	83,600	3.7	51,000	3.4	32,700	4.3
Unknown	346,200	15.2	254,600	16.9	91,600	11.9
Living arrangement						
Family members	1,319,600	57.9	768,000	50.9	551,600	71.7
Nonfamily members	136,300	6.0	99,800	6.6	36,500	4.8
Both family and nonfamily members	*	*	*	*	*	*
Alone	783,700	34.4	618,000	40.9	165,700	21.6
Unknown	33,000	1.4	22,200	1.5	*	*

Table 2. Number of civilian noninstitutionalized people age 65 years and over and number of discharged home health care patients per 1,000 population 65 years of age and over by sex and age: United States, 1992

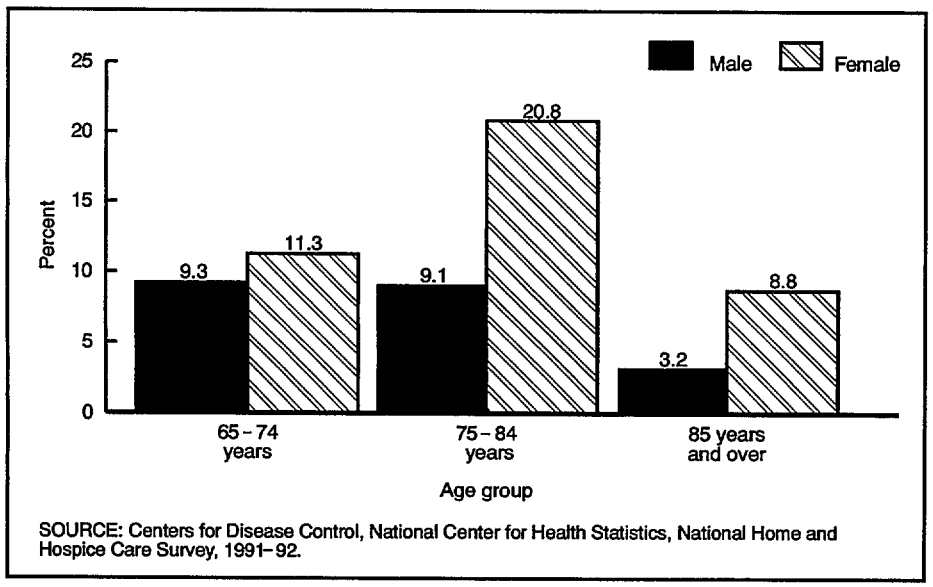
Sex and age	1992 civilian noninstitutionalized population in thousands[1]	Number of 1992 home health care discharged patients per 1,000 population
Total 65 years and over	32,283	70.6
Both sexes		
65–74 years	18,460	41.3
75–84 years	10,565	98.8
85 years and over	3,258	144.8
Male		
65–74 years	8,126	36.2
75–84 years	4,010	85.2
85 years and over	910	145.7
Female		
65–74 years	10,336	45.3
75–84 years	6,555	107.1
85 years and over	2,349	144.4

[1]Source: U.S. Bureau of the Census, Current Population Reports, P25–1095 and P25–1104; and unpublished data.

percent of elderly women were reported as receiving help in 1–3 ADL's and 30 percent were reported as receiving help in 4 or more ADL's.

The most frequent help received by elderly men in ADL's were bathing or showering (40 percent), walking (37 percent), dressing (36 percent), transferring in or out of bed or chair (35 percent), using toilet room (24 percent), and eating (12 percent). Fifty-one percent of elderly men were reported as receiving help in at least one ADL. One-fourth of elderly men were reported as receiving help in 1–3 ADL's and 26 percent received help in 4 or more ADL's (table 3).

A significantly greater percent of elderly women than men were receiving help doing light housework (38 percent vs. 30 percent). However, these differences may be the result of differences in social roles. Typically men perform fewer household chores than women do and therefore may have needed less frequent help. Of all elderly women, 30 percent were reported to have received help in taking medications, 29 percent received help in preparing meals, and 20 percent received help with shopping for groceries or clothes. Over one-fourth of elderly men received help in taking medications and less than one-fourth were reported as having received help in preparing meals. Every 1 of 5 elderly men was reported as having received help in shopping for groceries or clothes. Half of the elderly men and women did not receive help in IADL's. Thirty-five percent of elderly women received help in 1–3 IADL's and 15 percent received help in 4 or



SOURCE: Centers for Disease Control, National Center for Health Statistics, National Home and Hospice Care Survey, 1991–92.

Figure 1. Percent of elderly men and women home health care discharges who live alone: United States, 1991–92

Table 3. Number and percent of elderly home health care discharges by activities of daily living and instrumental activities of daily living and percent distribution by number of functional activities for which help was received, according to sex: United States, 1991–92

Help with ADL's and IADL's	*Both*	*Female*	*Male*
Total	2,278,300	1,509,600	768,700
Received personal help with the following ADL		Percent	
Bathing or showering	45.9	48.8	40.0
Dressing[1]	41.4	44.3	35.7
Eating[1]	13.5	14.3	12.1
Transferring in or out of beds or chairs[1]	35.0	34.8	35.4
Walking	39.0	39.8	37.3
Using toilet room[1]	26.8	27.9	24.5
Received personal help with the number of ADL		Percent distribution	
All dependencies	100.0	100.0	100.0
None	44.4	42.2	48.7
One	5.6	6.0	4.8
Two	12.6	12.5	12.8
Three	9.1	9.8	7.6
Four	7.5	8.0	6.5
Five	11.3	11.2	11.4
Six	9.5	10.3	8.1
Received personal help with the following IADL		Percent	
Doing light house work	35.4	38.0	30.2
Managing money	8.7	9.1	7.8
Shopping for groceries or clothes	20.1	20.3	19.9
Using telephone	7.1	7.9	5.6
Preparing meals	27.6	29.4	24.1
Taking medications	28.7	30.0	28.3
Received personal help with the number of IADL		Percent distribution	
All dependencies	100.0	100.0	100.0
None	51.1	50.0	53.3
One	17.4	16.6	18.9
Two	8.9	9.8	7.2
Three	8.7	8.5	9.2
Four	6.6	7.5	5.0
Five	3.7	4.0	3.2
Six	3.5	3.7	3.2

[1]Includes "unable to do/didn't do."

NOTE: ADL is activities of daily living. IADL is instrumental activities of daily living.

more IADL's. For elderly men, 35 percent received help in 1–3 IADL's and 11 percent received help in 4 or more IADL's (table 3).

Table 4 shows the percent of elderly men and women home health care discharges using aids regularly at the time of discharge or immediately prior to discharge. The aids most frequently used by elderly men and women, other than eyeglasses, were walkers (36 percent of men and 41 percent of women) and canes (21 percent of men and 24 percent of women). Even with aids, one-fourth of elderly men and women were reported as having difficulty in seeing, and one of five elderly men and women reportedly had difficulty in hearing.

Types of service

In 1992, the most frequent home health care services used by elderly discharges (during the last billing period) were skilled nursing services. Eighty-five percent of women and 88 percent of men used this service (table 5). Personal care (41 percent of women and 35 percent of men), physical therapy (27 percent of women and 25 percent of men), and social services (12 percent for both sexes) were the next most frequently used services by elderly discharges. All other services, such as administering medications, homemaker and/or companion services, and occupational and/or vocational therapy, were less frequently used. There is a potential inconsistency between the percent of elderly men and women reported using personal care services and the percent receiving help with ADL's. A smaller percent of elderly people were reported to have used personal care services than received help in ADL's. The cause of this inconsistency is not known and should be investigated.

Length of service

The length of service received by elderly men and women may reflect the severity of illness and the length of time needed to recover from these illnesses. Table 6 indicates that for episodes of care of 4 weeks or more, there were significantly more women than men

Table 4. Number and percent of elderly discharges 65 years and over from home health care agencies by functional status and sex: United States, 1991–92

Functional status[1]	Female	Male
	Number	
Total	1,509,600	768,700
	Percent	
No aids used	6.5	7.9
Eyeglasses (including contact lenses)	92.8	91.8
Wheelchair	14.9	17.3
Cane	23.5	21.1
Walker	41.1	36.0
Crutches	1.2	3.0
Brace (any type)	1.4	*
Oxygen	5.6	6.9
Hospital bed	8.3	12.2
Commode	15.0	11.2
Other aids or devices	12.6	16.7
Difficulty in seeing	24.5	23.8
Difficulty in hearing	19.3	23.2

[1]Type of aids used at time of discharge or immediately prior to discharge.

Table 5. Number and percent of elderly discharges 65 years and over from home health care agencies by services received during the last billing period and sex: United States, 1991–92

Service received	Female	Male
	Number	
Total	1,509,600	768,700
	Percent	
Skilled nursing services	85.1	87.8
Personal care	41.2	35.2
Social services	11.9	12.4
Counseling	3.7	3.9
Medications	6.7	5.5
Physical therapy	27.2	24.8
Homemaker/companion services	5.5	2.6
Respite care	*	*
Referral services	1.8	2.4
Dietary and nutritional services	1.8	2.0
Physician services	1.6	2.6
High tech care	*	*
Occupational therapy/vocational therapy	4.4	6.9
Speech therapy/audiology	2.1	2.6
Transportation	*	*
Enterostomal therapy	*	*
Meals on wheels	*	*
Other services	1.4	*

Table 6. Number and percent of elderly discharges 65 years and over from home health care agencies by length of stay, according to sex and standard error: United States, 1991–92

Length of stay	Female	(standard error)	Male	(standard error)
Total	1,509,600		768,700	
Average length of stay (days)	102	(6.6)	81	(5.8)
Percent distribution	100.0		100.0	
0–2 weeks	17.4	(1.2)	18.9	(1.6)
2–4 weeks	15.6	(1.0)	20.0	(1.8)
4–6 weeks	16.6	(1.3)	15.8	(1.5)
6–8 weeks	13.0	(1.9)	10.5	(1.3)
8 weeks and more	37.4	(1.8)	34.9	(1.9)

(67 percent vs. 61 percent). The average length of service for men was 81 days and for women it was 102, indicating that men generally had 3 weeks of shorter episodes of care than women. However, these shorter episodes of care for older men may be the consequences of their marital status or living arrangement. As shown earlier, a higher percent of older men were married or lived with others. Therefore, they may have received help from their spouses or from others and thus needed less help from the home health care agency.

Primary diagnosis at admission

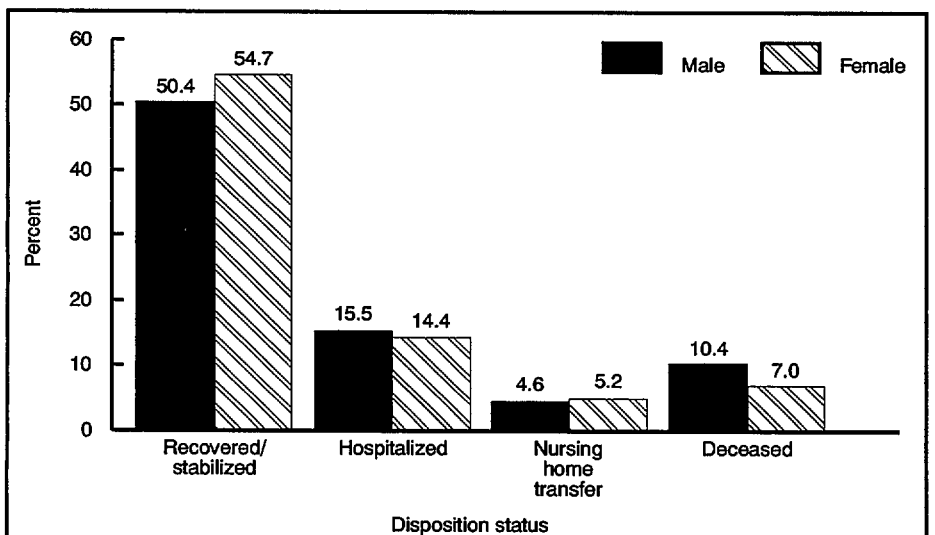
There were differences between elderly discharged men and women in the ranking of primary diagnosis at admission. Table 7 presents the six most frequent primary diagnoses at admission. For discharged women, they were diseases of the circulatory system (33 percent); injury and poisonings (14 percent); diseases of the musculoskeletal system and connective tissue (11 percent); malignant neoplasms (8 percent); endocrine, nutritional, and metabolic diseases and immunity disorders (8 percent); and diseases of the respiratory system (7 percent). For discharged men, they were diseases of the circulatory system (30 percent); diseases of the respiratory system (12 percent); malignant neoplasms (10 percent); injury and poisonings (10 percent); endocrine, nutritional, and metabolic diseases and immunity disorders (10 percent); and diseases of the musculoskeletal system and connective tissue (8 percent). A significantly higher percent of elderly men than women were diagnosed as having diseases of the respiratory system as the primary diagnosis at admission (12 percent vs. 7 percent).

Disposition status

In 1991–92, 93 percent of older women and 90 percent of older men were alive at the time of discharge. Fifty-five percent of the older women and 50 percent of the older men were discharged because they recovered and/or stabilized. Twenty percent of the elderly discharges were transferred to hospital or nursing homes because of deterioration of their health status. The fatality rate among older men discharges was 3 percent higher than older women discharges (figure 2).

Table 7. Number and percent distribution of elderly discharges 65 years and over from home health care agencies by primary diagnosis at admission, according to sex: United States, 1991–92

ICD–9–CM procedure category and code	*Female*	*Male*
Total	1,509,600	768,700
Percent distribution	100.0	100.0
Infectious and parasitic diseases .001–139	*	*
Neoplasms .140–239	8.0	10.6
Malignant neoplasms .140–208, 230–234	7.8	10.2
Endocrine, nutritional, and metabolic diseases and immunity disorders .240–279	7.8	9.5
Diabetes mellitus .250	5.7	6.6
Diseases of the blood and blood-forming organs .280–289	*	*
Mental disorders .290–319	1.9	*
Diseases of the nervous system and sense organs .320–389	1.9	4.1
Diseases of the circulatory system .390–459	33.3	29.5
Essential hypertension .401	4.6	2.0
Heart disease .391–392.0, 393–398, 402, 404, 410–416, 420–429	18.2	17.2
Cerebrovascular disease .430–438	7.4	5.1
Diseases of the respiratory system .460–519	6.9	12.2
Chronic obstructive pulmonary disease .490–496	3.5	6.4
Diseases of the digestive system .520–579	5.6	3.5
Diseases of the genitourinary system .580–629	2.9	3.7
Diseases of the skin and subcutaneous tissue .680–709	2.6	3.0
Diseases of the musculoskeletal system and connective tissue .710–739	11.1	8.4
Congenital anomalies .740–759	*	*
Symptoms, signs, and ill-defined conditions .780–799	2.1	*
Injury and poisonings .800–999	13.5	10.1
Supplementary classification or unknown	*	*



SOURCE: Centers for Disease Control, National Center for Health Statistics, National Home and Hospice Care Survey, 1991–92.

Figure 2. Disposition of elderly men and women home health care discharges: United States, 1991–92

Conclusion

The overall results suggest that although there are more women discharges than men discharges in each group, the utilization rate for both sexes was about the same, particularly in the 85 years and over age group. In 1992, the average length of service for elderly women was significantly higher than for their male counterparts. These longer episodes of care for elderly women may be partly related to their living arrangements. Because older women are more likely than older men to live alone, they may depend more on home health care agencies to provide services for a longer period of time following an illness. Consistent with previous research, this report also found that men receive fewer services involving ADL and IADL activities. For example, fewer elderly men than women received help with bathing or showering from home health care agencies. However, this apparent advantage of elderly men may not be the result of true functional differences between gender; it may be the consequences of the type of living arrangements. Because more men were married, they may have received help from their spouses. Therefore, sex differences for discharges from home health care must always be evaluated in relation to other factors such as living arrangement and marital status.

References

1. Strahan GW. Overview of home health and hospice care patients: preliminary data from the 1992 National Home and Hospice Care Survey. Advance data from vital and health statistics; no 235. Hyattsville, Maryland: National Center for Health Statistics. 1993.
2. Braus P. When mom needs help. American Demographics 16(3):38–47. 1994.
3. Esther H. Characteristics of elderly home health patients: preliminary data from the 1992 National Home and Hospice Care Survey. Advance

data from vital and health statistics; no 247. Hyattsville, Maryland: National Center for Health Statistics. 1994.
4. Strahan GW. An overview of home health and hospice care patients: preliminary data from the 1993 National Home and Hospice Care Survey. Advance data from vital and health statistics; no 256. Hyattsville, Maryland: National Center for Health Statistics. 1994.
5. Institute of Medicine. Toward a national health care survey, a data system for the 21st century. Washington, D.C.: National Academy Press. 1992.
6. National Association for Home Care. Basic statistics about home care. Information sheet. 1992.
7. Sirrocco A. Nursing homes and board and care homes: data from the 1991 National Health Provider Inventory. Advance data from vital and health statistics; no 244. Hyattsville, Maryland: National Center for Health Statistics. 1994.
8. Haupt BJ, Hing E, and Strahan GW. The National Home and Hospice Care Survey: 1992 summary. National Center for Health Statistics. Vital Health Stat 13(117). 1994.
9. U.S. Bureau of the Census. Statistical abstract of the United States: 1993 (113th edition). Washington, D.C. 1993.
10. Guralnik JM, LaCroix AZ, Branch LG, Kasl SV, and Wallace RB. Morbidity and disability in older persons in the years prior to death. Am J Public Health 81(4):443–447. 1991.
11. Eklund D. The agency reporting system for maintaining the national inventory of hospitals and institutions. National Center for Health Statistics. Vital Health Stat 1(6). 1968.
12. Massey JT, Moore TF, Parsons VL, Tadros W. Design and estimation for the National Health Interview Survey, 1985–94. National Center for Health Statistics. Vital Health Stat 2(110). 1989.
13. Hoffman K. Specifications for selecting NHHCS sample home health agencies and hospices. Unpublished memo. 1992.

Technical notes

Source of data

The sampling frame consisted of 8,859 home health care agencies and hospices that were identified in the 1991 National Health Provider Inventory (NHPI) and the agency reporting system (ARS). Those agencies that opened for business before 1991 were identified through the NHPI and those agencies that opened for business after the 1991 NHPI survey and before June 30, 1992, were identified through the ARS (11). The 1991 NHPI is a comprehensive census of nursing and related care homes, residential care homes, home health care agencies, and hospices conducted periodically by the National Center for Health Statistics (7).

The sample consisted of 1,500 home health and hospice care agencies. Of these agencies, 141 refused to participate, 3 could not be located, 68 were considered out of scope because they were not providing hospice or home health care services to patients at the time of the survey, and 42 were either duplicates of other sampled agencies or had merged with another hospice or home health care agency at the time of the survey. A total of 1,246 home health and hospice care agencies participated in the survey.

The sample design for the 1992 NHHCS is a stratified three-stage probability design. Primary sampling units (PSU's) are selected at the first stage, agencies are selected at the second stage, and current patients and discharges are selected at the third stage.

The first stage consists of the 198 PSU's that were used in the 1985–94 National Health Interview Survey (NHIS), a survey of the civilian noninstitutionalized population of the United States (12). The PSU's are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships (for some PSU's in New England).

The second stage involved the selection of agencies within six primary strata of agencies. These strata were formed in the 1992 sampling frame on the basis of type of agency (hospices versus home health care agencies and mixed agencies (providing both types of care or unknown)), and type of PSU (self-representing (SR) versus nonself-representing (NSR), and within NSR PSU's: metropolitan statistical area (MSA) versus non-MSA). (MSA is a metropolitan statistical area defined by the U.S. Office of Management and Budget on the basis of the 1990 Census.) Within these sampling strata, agencies were arrayed by four regions, five types of ownership, two types of certification status, and the size of the patient population currently being served by the agency. The number of agencies selected from each sampling stratum was based primarily on results of research into the optimum sample design for the 1992 NHHCS. Hospices in the NSR PSU's and home health care agencies and mixed agencies in the NSR PSU's were selected with certainty. Hospices in the self-representing PSU's and home health care agencies and mixed agencies in the MSA, nonself-representing PSU's and the self-representing PSU's were selected with probability proportional to the current patient population size (as reported in the NHPI sampling frame). A total sample of 1,500 agencies was selected—384 were hospices and the balance were home health care agencies or mixed agencies (13).

The final stage is a systematic random selection of six patients currently served by the agency and six patients discharged from care during the last complete 12-month period.

Data collection procedures

The data collection for the NHHCS began with a letter sent to all 1,500 sampled agencies informing the administrator of the authorizing legislation, purpose, and content of the survey. Within a week to 10 days after the letter was mailed, the interviewer assigned to conduct the survey for a particular agency made telephone contact to discuss the survey and to arrange an appointment with the administrator or person designated by the administrator.

Three questionnaires and two sampling lists were used to collect the data. First, the Agency Questionnaire was completed with the administrator or designee. Then, the interviewer completed the Current Patient Sampling List (CPSL) and Discharged Patient Sampling List (DPSL). With the CPSL,

the interviewer listed all patients on the register of the agency on the evening prior to the day of the survey. The DPSL was used to list all discharges from the agency during the 12 full months prior to the month of the survey. Sampling of current patients and discharges within agencies was done by using tables showing sets of sample line numbers for each possible count of current patients and discharges in the agency. The interviewer drew a sample of up to six current patients and up to six discharges.

After the samples had been selected, the Current Patient and Discharged Patient Questionnaires were completed for each sampled person by interviewing the staff member most familiar with the care provided to the patient. The respondent was requested to refer to the medical or other records whenever necessary. No patient was interviewed directly.

Sampling variability

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The relative standard error of an estimate is obtained by dividing thestandard error by the estimate itself. The result is expressed as a percent of the estimate. Relative standard errors for estimated length of service used are shown in table 6. Relative standard errors for other aggregate estimates may be calculated using the following general formula, where X is the aggregate of interest in thousands, and A and B are the appropriate coefficients from table I:

$$\mathrm{RSE}(X) = A + \frac{B}{X}$$

Similarly, relative standard errors for percents $100p$ $(0 < p < 1)$ may be calculated using the following general formula, where $100p$ is the percent of interest, X is the denominator of the percent, and B is the parameter B in the formula for approximating the RSE(X). The values for B are given in table I.

$$\mathrm{RSE}(p) = \frac{B\,(1-p)}{pX}$$

The tests of significance are based on the Bonferroni multiple comparisons using the Z-test with an overall 0.05 level of significance to test all comparisons mentioned in this report. The critical value of the Z for each test was determined by the number of variables being compared. Not all observed differences were tested, so lack of comment in the text does not mean the difference was not statistically significant.

Table I. Parameters used to compute relative standard errors by type of estimate

Type of estimate	Parameters A	Parameters B
Home health care agencies		
Discharge	0.001190	1310.00

Symbols

- - -	Data not available
. . .	Category not applicable
–	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision

Suggested citation

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Contraceptive Use in the United States: 1982–90

by Linda S. Peterson, M.A., Division of Vital Statistics

Highlights

In the period from 1988 to 1990, the proportion of women 15–44 years of age in the United States whose partners were using the condom for their current method of birth control increased (from 9 to 11 percent), continuing the trend observed between 1982 and 1988. The proportion that used the pill declined slightly from 1988 to 1990 (from 19 to 17 percent). These trends occurred disproportionately among young women, the never-married, and black women. For example, among never-married contraceptors, the proportion using the condom increased from 20 to 30 percent and the proportion using the pill declined from 59 to 51 percent.

Among women 15–19 years of age, 32 percent were using contraception in both 1988 and 1990. However, among sexually experienced teens, current contraceptive use declined slightly, from 61 to 58 percent. Also, the proportion of sexually experienced teens who were sexually active in the past month without using contraception increased dramatically (from 8 to 22 percent), while the proportion that was *not* sexually active in the past month declined dramatically (from 23 to 10 percent). Among U.S. women 15–44 years of age, in general, there was an apparent increase in such risk-taking from 1988 to 1990: the noncontraceptors as a proportion of women at risk of an unintended pregnancy increased from 7 to 12 percent, a trend that occurred mainly among relatively young women, never-married women, and white women.

Data

The findings in this report are based on the 1982 and 1988 National Survey of Family Growth (NSFG) and the 1990 NSFG Telephone Reinterview. The NSFG is conducted by the National Center for Health Statistics. The interview obtains information on a number of topics related to childbearing, family planning, and related aspects of maternal and child health for women 15–44 years of age. For the 1990 NSFG Telephone Reinterview, 5,686 women in the noninstitutional population of the United States were interviewed by telephone between July 23 and November 5, 1990. Of these, 5,359 were previously interviewed in 1988. The remaining 327 women were interviewed for the first time in 1990 because they had turned 15 since March 15, 1988. The design of the 1990 survey and estimates of sampling variability are discussed in the Technical notes and in the report by Goksel, Judkins, and Mosher (1). The methodology for the NSFG Cycles III (1982) and IV (1988), which used cross sectional samples is described in detail in separate reports (2,3).

Trends in contraceptive status and in method choice for U.S. women are important because methods vary in effectiveness. It is useful to know the proportion of women who attempt to prevent pregnancy with both reliable and less reliable methods. For example, the average annual failure rate for the pill is 8 percent, for the condom, 15 percent, and for periodic abstinence, 26 percent (4). In the NSFG, if a woman is using more than one method, she is classified as using the one that is most effective for preventing pregnancy. The priority order for classification is: female sterilization, male sterilization, pill, IUD, diaphragm, condom, foam, periodic abstinence, withdrawal, douche, and other.

In this report, three different denominators are used to calculate percents:

1. *Percent of all women 15–44 years of age*—Estimates of current contraceptive status are based on denominators that include all women 15–44 years of age, including those who have never had sexual intercourse and those who have never used a contraceptive method. It is useful to compare these percentages with similar percentages from other sources.

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2. *Percent of women at risk of unintended pregnancy*—This group includes women 15–44 years of age who are using contraception, as well as women who are *not* using contraception who have had intercourse recently and are not pregnant, post partum, seeking pregnancy, or sterile for noncontraceptive reasons. It is helpful to track the percentage of "at risk" women who are not using a method, since the confounding effects of changes or differences in other percentages are removed (for example, proportions of women who are pregnant or post partum, seeking pregnancy, sexually inexperienced, sexually inactive, or noncontraceptively sterile).
3. *Percent of contraceptors*—The denominator includes only women who are currently using a contraceptive method. This type of percentage is useful for analyzing trends in method choice, without the confounding effects of different percentages of women pregnant or postpartum, seeking pregnancy, sexually inexperienced, sexually inactive, or noncontraceptively sterile. The percentages of contracepting women using each type of method vary dramatically by demographic characteristics such as age, parity, and marital status, as women's priorities change over the life course. For example, young women are much more likely to use the pill than older women.

The reported use of contraceptives does not imply that the methods were used correctly or consistently. Women who reported using a method of contraception were coded as using, regardless of how consistently they used it.

Data in this report are shown by race and Hispanic origin in some of the tables. Differences between white women and black and Hispanic women are often due to lower income and educational levels of minority women, their limited access to health care and health insurance, the neighborhoods in which they live, and other factors. The causes of these differences merit further investigation in future research.

For ease of writing, the phrase "women used condoms" is sometimes used in the following text, although it is clear that their male partners were using the condoms.

Findings

In 1990, 59 percent of U.S. women 15–44 years of age were using contraception. The increase in the percent using contraception that occurred from 1982 to 1988 (from 56 to 60 percent of women) did not continue through 1990. The estimated number of U.S. women currently using contraception in the United States also stayed about the same from 1988 to 1990, 34.9 million and 34.5 million, respectively (table 1) (5). The number or percent of women "using contraception" is obtained by adding the "contraceptively sterile" and the "nonsurgical contraceptors" in table 1.

Use of the condom continued to increase between 1988 and 1990 (from 9 to 11 percent), while overall use of male and female sterilization did not change significantly and use of the pill declined (from 19 to 17 percent) (table 1). In 1990, the leading methods of contraception among U.S. women remained female sterilization (18 percent), the pill (17 percent), and the condom (11 percent) (table 1). Information on the use of three new methods—NORPLANT, the vaginal pouch (female condom), and Depo-Provera—is not available, since the survey was conducted before they were introduced in the United States.

About 41 percent of women were *not* currently using contraception in 1990. Nonusers include women who were pregnant or who had been pregnant less than 2 months before the interview (pregnant or postpartum, 5 percent), those seeking pregnancy (4 percent), those who were sterile for noncontraceptive reasons (7 percent), and those who were not using contraception for other reasons (other nonusers, 24 percent). The category "other nonusers" includes:

- women who have never had sexual intercourse (9 percent)
- sexually experienced women who had *not* had intercourse in the *1 month* prior to the interview (7 percent)
- women who had had sexual intercourse in the *1 month* prior to the interview while not using a method (8 percent).

During the period from 1988 to 1990, the proportion of women 15–44 years of age who had never had sexual intercourse continued to decline (from 12 to 9 percent). The proportion that were nonusers of contraception while sexually active in the month before the interview increased from 5 to 8 percent, mainly due to increases among young women, the never-married, and white women (tables 1–3).

Among current users of contraception, there was a small increase in condom use between 1988 and 1990 (from 15 to 18 percent), continuing the increase from 1982 to 1988 (table 4). The increase during 1988–90 was steepest for black women (from 10 to 19 percent). Small increases among contracepting white and Hispanic women were not statistically significant at the 0.05 confidence level. Moreover, the increase in condom use occurred mainly among women 15–24 years of age (for example, from 33 to 44 percent among contraceptors 15–19 years of age), and it occurred mostly among women who had never been married (from 20 to 30 percent of never-married contraceptors) (table 4). Thus, continuing a 1982–88 trend (5), between 1988 and 1990 the use of the condom for protection against unintended pregnancy increased most among groups most at risk of contracting sexually transmitted diseases, that is, among young women, black women, and never-married women (6).

In addition, among users of contraception, condom use increased only within the lowest socioeconomic group during 1988–90. Among contracepting women living below 150 percent of the poverty level, the proportion using the condom increased from 10 percent in 1988 to 15 percent in 1990 (table 5). Condom use also increased mainly among less educated women and among childless women (table 5). Overall, however, the choice

Table 1. Number of women 15–44 years of age and percent distribution by current contraceptive status and method, according to race and origin: United States, 1982, 1988, and 1990

[Statistics are based on samples of the female population of the United States. See Technical notes for estimates of sampling variability and definitions of terms]

Contraceptive status and method	All races and origins[1]			Hispanic			Non-Hispanic white			Non-Hispanic black		
	1990[2]	1988	1982	1990	1988	1982	1990	1988	1982	1990	1988	1982
	Number in thousands											
All women	58,381	57,900	54,099	5,500	5,557	4,393	42,968	42,575	41,279	7,510	7,408	6,825
	Percent distribution											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sterile	32.1	29.6	27.1	27.5	23.2	20.5	32.9	31.3	28.4	34.0	29.4	23.9
Surgically sterile	30.2	28.3	25.6	23.9	21.7	18.4	31.2	29.9	26.9	31.4	27.6	22.3
Contraceptively sterile	25.0	23.6	19.0	20.7	18.2	14.0	25.8	25.1	20.0	24.9	21.9	16.3
Female	17.5	16.6	12.9	17.3	16.0	11.7	16.5	16.1	12.6	24.1	21.4	15.5
Male	7.5	7.0	6.1	3.4	2.2	*2.3	9.3	9.0	7.4	*0.8	*0.5	*0.8
Noncontraceptively sterile	5.2	4.7	6.6	3.2	3.5	*4.4	5.4	4.8	6.9	6.5	5.7	6.0
Female	5.2	4.7	6.3	3.2	3.5	*4.4	5.4	4.8	6.5	6.4	5.7	6.0
Male	0.0	0.0	*0.3	0.0	0.0	0.0	0.0	0.0	*0.4	*0.1	0.0	0.0
Nonsurgically sterile	1.9	1.3	1.5	3.6	*1.5	*2.1	1.7	1.4	1.5	2.6	1.8	1.6
Pregnant or post partum	5.4	4.8	5.0	7.7	5.7	7.3	5.2	4.6	4.6	5.5	5.2	5.6
Seeking pregnancy	4.0	3.8	4.2	5.1	4.6	6.4	3.7	3.5	3.8	4.7	3.9	5.5
Other nonuser	24.2	25.1	26.9	28.3	34.3	29.2	23.6	22.7	25.9	22.1	26.7	29.8
Never had intercourse	9.4	11.5	13.6	16.4	15.0	14.7	8.7	10.6	13.8	7.0	9.7	10.4
No intercourse in last 1 month[3]	7.0	9.1	8.3	5.1	12.5	7.7	7.2	8.7	8.2	7.5	8.9	8.7
Had intercourse in last 1 month[3]	7.8	4.5	5.0	6.8	6.8	6.8	7.7	3.4	3.9	7.6	8.1	10.7
Nonsurgical contraceptors	34.3	36.6	36.7	31.7	32.2	36.7	34.6	37.8	37.2	33.8	34.9	35.4
Pill	16.9	18.5	15.6	16.4	16.8	15.3	17.3	18.6	15.1	16.7	21.7	19.5
IUD	0.8	1.2	4.0	*1.0	2.5	9.7	0.8	1.0	3.3	*0.8	1.8	4.8
Diaphragm	1.7	3.5	4.5	*0.8	*1.2	*2.4	1.8	4.1	5.3	*1.0	1.1	1.7
Condom	10.5	8.8	6.7	8.9	6.9	*3.5	10.3	9.5	7.5	11.4	5.8	3.3
Periodic abstinence[4]	1.6	1.4	2.1	*1.9	*1.2	*2.0	1.6	1.4	2.2	*0.7	1.2	1.6
Natural family planning	*0.2	0.4	*0.3	0.0	*0.3	0.0	*0.2	0.4	*0.4	0.0	*0.1	*0.1
Withdrawal	0.6	1.3	1.1	*0.4	2.3	*1.3	0.6	1.3	1.2	*0.4	0.8	*0.7
Other methods	2.3	1.9	2.7	*2.3	*1.3	*2.5	2.2	1.9	2.6	2.8	2.5	3.8

[1] Includes other races not shown separately.
[2] For 0.3 percent of the female population in 1990, contraceptive status was not ascertained and imputation was not performed. This group was proportionately distributed across all categories.
[3] The 3-month classification could not be used in this analysis because the necessary questions were not asked in the 1990 survey.
[4] Includes natural family planning and other types of periodic abstinence.

of the condom in 1990, as in 1988, was strongly associated with higher levels of education and income (table 5).

In 1990, female sterilization and the pill were the most frequently chosen methods among contracepting women. And they were about equally favored, with 30 percent using female sterilization and 29 percent using the pill (table 4). In 1990, approximately 10 million women were contraceptively sterilized—this number did not differ significantly from the estimate in 1988 (table 1). Female sterilization is most widely used among older women who have completed their childbearing. In 1990, over one-half of contraceptors 40–44 years of age were sterilized, while only 8 percent of the contraceptors 20–24 years of age were sterilized (table 4). The continued aging of the baby boom generation (born 1946–64 and 26–44 years of age in 1990) will probably raise the prevalence of sterilization as a method choice among U.S. women in the coming decade. Women 35–44 years of age as a proportion of all U.S. women of reproductive age (15–44) rose from 26 percent in 1982 to 33 percent in 1990 (tables 1 and 2).

Age

The age pattern of method choice reflects other characteristics that vary by age, such as marital status and parity. For example, never-married women comprise a large portion of women 15–24 years of age, so use of reversible methods such as the condom and the pill is more common among women in this age group than is the use of male or female sterilization. The prevalence of condom use for birth control increased significantly between 1988 and 1990 for women 15–24 years of age (from 10 to 14 percent) while pill use among this age group declined (from 30 to 24 percent). For women 25 years of age and over, there was little change in the proportions using the pill, the condom, or sterilization (table 2).

Among women 15–19 years of age, 32 percent were using contraception in both 1988 and 1990. The data suggest that there was a rise in the proportion of teenagers 15–17 years of age who were using contraception (from 20 to 24 percent) while there was a decline in use among teenagers 18–19 years of age (from 50 to 41 percent) (table 4). The proportion of women 15–19 years of

Table 2. Number of women 15–44 years of age and percent distribution by current contraceptive status and method, according to age: United States, 1982, 1988, and 1990

[Statistics are based on samples of the female population of the United States. See Technical notes for estimates of sampling variability and definitions of terms]

Contraceptive status and method	15–24 years			25–34 years			35–44 years		
	1990[1]	1988	1982	1990	1988	1982	1990	1988	1982
	Number in thousands								
All women	17,637	18,592	20,150	21,728	21,726	19,644	19,016	17,582	14,305
	Percent distribution								
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sterile	3.8	3.1	3.3	26.4	27.0	27.9	64.6	61.3	60.0
Surgically sterile	3.1	2.4	2.6	24.8	26.0	26.4	61.1	58.6	57.2
Contraceptively sterile	2.8	2.2	2.4	22.1	23.3	21.5	48.6	46.7	39.0
Female	2.3	1.6	1.3	16.2	16.6	14.8	32.9	32.5	26.8
Male	*0.5	*0.6	*1.1	5.9	6.7	6.7	15.7	14.2	12.2
Noncontraceptively sterile	*0.3	*0.2	*0.2	2.7	2.7	4.9	12.5	11.9	18.2
Female	*0.3	*0.2	*0.2	2.7	2.7	4.6	12.5	11.9	17.4
Male	0.0	0.0	0.0	0.0	0.0	*0.3	0.0	0.0	*0.8
Nonsurgically sterile	*0.7	0.7	*0.7	1.6	1.0	1.5	3.5	2.7	2.8
Pregnant or post partum	7.0	5.0	6.3	7.9	7.6	6.5	1.2	1.1	*1.0
Seeking pregnancy	1.8	2.7	3.5	7.6	5.8	6.2	2.0	2.4	2.5
Other nonuser[1]	46.4	45.7	48.6	17.1	16.6	14.3	12.0	13.5	13.8
Never had intercourse	26.4	30.0	32.5	2.8	3.6	2.7	1.3	1.6	2.0
No intercourse in last 1 month[2]	7.7	11.4	10.6	7.1	8.2	7.1	6.4	7.7	6.7
Had intercourse in last 1 month[2]	12.3	4.3	5.5	7.2	4.8	4.5	4.3	4.2	5.1
Nonsurgical contraceptors	41.2	43.5	38.4	41.3	43.0	45.2	20.1	21.7	22.5
Pill	23.9	29.7	23.5	22.0	21.6	17.1	4.7	3.0	2.3
IUD	*0.2	*0.1	1.4	*0.4	1.4	6.5	1.8	2.1	4.2
Diaphragm	*0.2	1.3	3.7	2.3	4.8	6.8	2.4	4.1	2.4
Condom	13.9	9.5	5.5	11.0	9.1	7.6	6.7	7.7	7.0
Periodic abstinence[3]	1.0	*0.6	1.2	2.0	1.7	2.8	1.6	1.8	2.6
Natural family planning	*0.1	*0.2	*0.1	*0.4	*0.5	*0.6	*0.2	*0.4	*0.3
Withdrawal	*0.6	1.5	1.2	*0.6	1.9	1.2	*0.5	*0.6	*0.8
Other methods	1.4	0.8	1.9	3.0	2.5	3.2	2.4	2.4	3.2

[1]For 0.9 percent of U.S. women 15–24 years of age in 1990, contraceptive status was not ascertained and imputation was not performed. This group was proportionately distributed across all categories.
[2]The 3-month classification could not be used in this analysis because the necessary questions were not asked in the 1990 survey.
[3]Includes natural family planning and other types of periodic abstinence.

age who had ever had sexual intercourse rose from 53 to 55 percent, although this change was not statistically significant. Among sexually experienced teens, current contraceptive use declined slightly (from 61 to 58 percent). Meanwhile, the proportion of sexually experienced teens who were sexually active in the past month without using contraception increased dramatically (from 8 to 22 percent) while the proportion that was *not* sexually active in the past month declined dramatically (from 23 to 10 percent). These data are consistent with vital statistics: birth rates have taken an upward turn for young unmarried women in the United States since 1987 (7).

Race

The proportion of U.S. women currently using the condom as their most reliable birth control method increased between 1988 and 1990 (from 9 to 11 percent). Increased use by black women was mostly responsible for this overall rise. Condom use among black women increased from 6 to 11 percent during 1988–90. Small increases among white women and Hispanic women were not statistically significant (table 1).

The data suggest that a larger proportion of black women were using female sterilization in 1990 than in 1988 (24 versus 21 percent). The percent using female contraceptive sterilization remained significantly higher among black women than among white women in 1990 (24 versus 17 percent). However, the overall prevalence of contraceptive sterilization—including both male and female sterilization—among black and white couples was very similar, given the more widespread use among white couples of vasectomy as a method of birth control. In 1990, 9 percent of white women reported that their partners were currently using vasectomy while only 1 percent of black women reported this (table 1).

The relative size of the group that was not using contraception but had had intercourse in the past month increased significantly among white women (from 3 percent in 1988 to 8 percent in 1990) but among black women and Hispanic women it remained constant (about 8 and 7 percent, respectively) (table 1).

Marital status

Changes in contraceptive status during 1988–90 were concentrated mainly among never-married women. The proportion of never-married women who had never had sexual intercourse decreased from 32 percent in 1988 to

Table 3. Number of women 15–44 years of age and percent distribution by current contraceptive status and method, according to marital status: United States, 1982, 1988, and 1990

[Statistics are based on samples of the female population of the United States. See Technical notes for estimates of sampling variability and definitions of terms]

Contraceptive status and method	Never married			Currently married			Widowed, divorced, or separated		
	1990[1]	1988	1982	1990	1988	1982	1990	1988	1982
	Number in thousands								
All women	20,788	21,058	19,164	30,561	29,147	28,231	7,033	7,695	6,704
	Percent distribution								
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sterile	7.1	5.3	3.2	46.0	44.0	40.8	45.2	42.6	38.1
Surgically sterile	5.7	4.3	2.6	43.9	42.4	38.8	42.3	41.0	36.2
Contraceptively sterile	4.6	3.4	1.9	37.3	36.3	29.5	31.4	31.3	21.7
Female	4.1	2.7	1.3	23.7	23.4	18.7	29.8	29.2	21.8
Male	*0.5	0.7	*0.6	13.6	12.9	10.8	*1.6	2.1	*1.9
Noncontraceptively sterile	1.1	0.9	*0.7	6.6	6.1	9.3	10.9	9.7	12.5
Female	1.1	0.9	*0.7	6.6	6.1	8.7	10.9	9.7	12.5
Male	0.0	0.0	0.0	0.0	0.0	*0.6	0.0	0.0	0.0
Nonsurgically sterile	1.4	1.0	*0.6	2.1	1.6	2.0	2.9	1.6	*1.9
Pregnant or post partum	3.4	2.4	2.5	7.3	7.1	7.2	3.1	2.5	*2.6
Seeking pregnancy	1.1	1.3	1.2	6.6	6.0	6.7	*1.5	2.0	*2.1
Other nonuser[1]	50.0	52.5	59.7	6.6	4.8	5.0	24.4	26.6	25.6
Never had intercourse	26.4	31.5	38.4	0.0	0.0	0.0	0.0	0.0	0.0
No intercourse in last 1 month[2]	12.5	16.0	15.7	0.6	0.8	*0.8	18.9	21.7	19.1
Had intercourse in last 1 month[2]	11.1	5.0	5.6	6.0	4.0	4.2	5.5	4.9	6.5
Nonsurgical contraceptors	38.5	38.5	33.3	33.3	38.0	40.0	25.8	26.3	31.8
Pill	21.7	24.7	18.7	14.5	15.1	13.4	12.8	14.5	15.8
IUD	*0.4	0.6	1.9	1.0	1.5	4.8	*1.4	2.1	6.4
Diaphragm	*0.3	2.1	4.7	2.9	4.6	4.5	*0.5	3.0	*3.7
Condom	13.0	8.2	4.1	9.9	10.6	9.8	5.6	3.4	*0.8
Periodic abstinence[3]	0.8	0.6	*0.9	2.4	2.0	3.2	*0.4	*1.1	*1.3
Natural family planning	0.0	*0.1	*0.1	*0.4	0.6	*0.6	0.0	*0.2	*0.1
Withdrawal	0.7	1.1	1.2	0.5	1.7	*1.2	*0.1	*0.4	*0.3
Other methods	1.6	1.2	1.8	2.1	2.5	3.1	5.0	1.8	*3.5

[1]For 0.7 percent of the never-married women in 1990, contraceptive status was not ascertained and imputation was not performed. This group was proportionately distributed across all categories.
[2]The 3-month classification could not be used in this analysis because the necessary questions were not asked in the 1990 survey.
[3]Includes natural family planning and other types of periodic abstinence.

26 percent in 1990. At the same time, the proportion of never-married women who were not using contraception but were having intercourse increased from 5 percent in 1988 to 11 percent in 1990 (table 3). (See section, Women at risk of unintended pregnancy.) This noncontracepting "at risk" group also increased slightly among the currently married (from 4 to 6 percent).

Meanwhile, pill use among never-married women declined from 25 to 22 percent while condom use increased from 8 to 13 percent. Condom use among the never-married tripled from 1982 to 1990 (from 4 to 13 percent).

Women at risk of unintended pregnancy

In assessing trends in contraceptive use, the subpopulation "women at risk of unintended pregnancy" is often analyzed. This group includes women who are using contraception as well as women who are *not* using contraception who have had intercourse recently and are not pregnant, post partum, seeking pregnancy, or sterile for noncontraceptive reasons. In table 1, the "at risk" population includes nonsurgical contraceptors, the contraceptively sterile, and other nonusers who had had intercourse in the last 1 month. Thus, in 1990, 67 percent of women ages 15–44 were at risk of unintended pregnancy. Taking this "at risk" group as 100 percent, 12 percent were not using contraception (that is, other nonusers who had had intercourse in last 1 month) (table 1). The nonusers in the "at risk" group are considered to be most in need of family planning services and have been targeted for programmatic purposes.

In previous analyses of contraceptive trends, other nonusers who were sexually experienced have been classified according to whether they had had sexual intercourse in the previous 3 months rather than in the previous 1 month (5,8,9). However, the 3-month classification could not be used in this analysis because the necessary questions were not asked in the 1990 survey. Since information on the incidence of sexual intercourse in the month prior to interview is available from all three surveys (1982, 1988, and 1990), the 1-month criterion is used in this report for comparative purposes.

It should also be noted that the question on incidence of sexual intercourse in the past month is asked differently in 1990 than it was in 1982

Table 4. Number of women 15–44 years of age, percent using any method of contraception, and percent distribution of contraceptors by method, according to age, race and origin, and marital status: United States, 1988 and 1990

[Statistics are based on a sample of the female population of the United States. See Technical notes for estimates of sampling variability and definitions of terms]

Age, race, and marital status	Number of women in thousands	Number of women using a method	Percent using any method	All methods	Female sterilization	Male sterilization	Pill	IUD	Diaphragm	Condom	Periodic abstinence[1]	Other
1990:[2]												
All women	58,381	34,516	59.3	100.0	29.5	12.6	28.5	1.4	2.8	17.7	2.7	4.8
Age												
15–19	8,483	2,623	31.5	100.0	0.0	0.0	52.0	0.0	0.0	44.0	*1.0	*3.0
15–17	4,944	1,165	24.3	100.0	0.0	0.0	41.1	0.0	0.0	51.9	*2.2	*4.7
18–19	3,539	1,458	41.2	100.0	0.0	0.0	60.7	0.0	0.0	37.6	0.0	*1.7
20–24	9,154	5,065	55.3	100.0	8.0	*1.8	55.4	*0.8	*0.6	25.3	2.8	5.3
25–29	10,637	6,385	60.0	100.0	17.4	5.0	47.3	*0.4	2.3	19.0	2.7	5.9
30–34	11,091	7,344	66.2	100.0	32.7	13.0	23.9	*0.9	4.7	15.9	3.5	5.4
35–39	10,111	7,138	70.6	100.0	44.2	19.8	10.6	3.3	3.3	10.3	3.4	5.2
40–44	8,905	5,962	66.9	100.0	52.0	26.5	*2.2	*1.8	3.8	9.2	*1.6	2.9
Race and origin												
Hispanic	5,500	2,856	52.2	100.0	33.1	6.4	31.4	*1.9	1.5	17.1	3.7	5.1
White non-Hispanic	42,968	25,928	60.5	100.0	27.3	15.5	28.5	1.3	3.0	17.0	2.7	4.7
Black non-Hispanic	7,510	4,412	58.7	100.0	41.0	*1.3	28.5	*1.4	*1.6	19.4	*1.2	5.6
Marital status												
Currently married	30,561	21,608	70.7	100.0	33.5	19.2	20.6	1.4	4.1	14.0	3.5	3.8
Divorced, separated, widowed	7,033	4,026	57.3	100.0	52.1	*2.8	22.4	*2.5	*0.9	9.7	*0.6	9.0
Never married	20,788	8,882	43.0	100.0	9.6	*1.1	50.5	*0.8	*0.6	30.1	1.8	5.5
1988:												
All women	57,900	34,912	60.3	100.0	27.5	11.7	30.7	2.0	5.7	14.6	2.3	5.4
Age												
15–19	9,179	2,950	32.1	100.0	*1.5	*0.2	58.8	0.0	*1.0	32.8	*0.8	4.8
15–17	5,404	1,076	19.9	100.0	0.0	0.0	53.3	0.0	*0.7	40.4	*0.9	*4.7
18–19	3,775	1,874	49.6	100.0	*2.4	*0.4	61.9	0.0	*1.2	28.4	*0.8	*4.9
20–24	9,413	5,550	59.0	100.0	4.6	*1.8	68.2	*0.3	3.7	14.5	*1.7	5.2
25–29	10,796	6,967	64.5	100.0	17.0	6.0	44.5	*1.3	5.5	15.6	2.4	7.6
30–34	10,930	7,437	68.0	100.0	32.5	14.0	21.5	2.9	8.9	12.0	2.7	5.5
35–39	9,583	6,726	70.2	100.0	44.9	19.7	5.2	*2.7	7.7	11.8	3.0	5.1
40–44	7,999	5,282	66.0	100.0	51.1	22.2	3.2	3.7	3.9	10.5	*2.2	3.2
Race and origin												
Hispanic	5,557	2,799	50.4	100.0	31.7	4.3	33.4	5.0	*2.4	13.6	*2.5	7.1
White non-Hispanic	42,575	26,799	62.9	100.0	25.6	14.3	29.5	1.5	6.6	15.2	2.3	5.0
Black non-Hispanic	7,408	4,208	56.8	100.0	37.8	*0.9	38.1	3.2	2.0	10.1	2.1	5.9
Marital status												
Currently married	29,147	21,657	74.3	100.0	31.4	17.3	20.4	2.0	6.2	14.3	2.8	5.6
Divorced, separated, widowed	7,695	4,429	57.6	100.0	50.7	3.6	25.3	3.6	5.3	5.9	*1.9	3.8
Never married	21,058	8,826	41.9	100.0	6.4	1.8	59.0	*1.3	4.9	19.6	*1.3	5.7

[1] Includes natural family planning and other types of periodic abstinence.
[2] Percentages for 1990 were calculated excluding cases for whom contraceptive status was not ascertained. Overall, contraceptive status was not ascertained for only 0.3 percent of U.S. women in 1990.

and 1988. In 1990 respondents were asked the following direct question:

In the last month, how frequently, on average, did you have intercourse? Would you say...

Five or more times a week...1
Two to four times a week....2
About once a week.....3
Less than once a week.....4
Or not at all?.....5

Noncontracepting respondents who answered 1–4 were coded as nonusers who had had intercourse in the past month. In contrast, for previous cycles of the NSFG, the following question on periods of nonintercourse was used to create the category:

For never-pregnant respondents in 1988:

Many women have times when they are not having intercourse at all,

Table 5. Number of women 15–44 years of age, percent using any method of contraception, and percent distribution of contraceptors by method, according to years of school completed, poverty status, and future birth intentions: United States, 1988 and 1990

[Statistics are based on a sample of the female population of the United States. See Technical notes for estimates of sampling variability and definitions of terms]

Age, race, and marital status	Number of women in thousands	Number of women using a method	Percent using any method	All methods	Female sterilization	Male sterilization	Pill	IUD	Diaphragm	Condom	Periodic abstinence[1]	Other
1990:[2]												
All women	58,381	34,516	59.3	100.0	29.5	12.6	28.5	1.4	2.8	17.7	2.7	4.8
Income (percent of poverty level)[3]												
0–149	8,350	4,959	59.4	100.0	47.2	6.2	24.8	*1.1	*0.6	14.9	*1.7	3.6
150–299	13,191	8,734	66.2	100.0	38.5	11.8	26.6	2.5	1.9	12.9	2.3	3.5
300 and over	26,369	16,872	64.0	100.0	25.1	16.4	27.3	1.0	4.2	16.8	3.5	5.7
Education (years)[3]												
0–11	5,525	3,351	60.6	100.0	58.0	6.8	18.4	*1.7	*0.2	11.7	*1.1	*2.2
12	17,507	11,598	66.2	100.0	38.4	15.7	26.8	*1.1	1.7	11.0	2.0	3.3
13 and over	26,831	16,930	63.1	100.0	22.3	13.7	28.0	1.7	4.6	19.3	3.7	6.7
Children ever born												
0	24,205	10,451	43.4	100.0	3.3	4.7	53.0	*0.8	2.1	28.2	2.7	5.2
1	10,927	6,066	55.6	100.0	13.0	9.6	34.9	*1.7	4.5	20.7	4.1	11.4
2	13,385	9,910	74.0	100.0	42.3	17.6	16.9	1.7	3.7	12.3	2.6	3.0
3 and over	9,864	8,089	82.0	100.0	60.0	19.2	6.1	*1.5	*1.5	8.3	*1.7	*1.6
Fertility intentions												
More children	25,119	11,770	47.0	100.0	*0.7	*0.2	52.9	*0.6	3.0	30.8	3.9	7.9
No more children	29,405	20,545	69.9	100.0	49.1	21.1	12.5	1.7	2.5	8.8	1.7	2.5
1988:												
All women	57,900	34,912	60.3	100.0	27.5	11.7	30.7	2.0	5.7	14.6	2.3	5.4
Income (percent of poverty level)[3]												
0–149	10,115	6,091	60.2	100.0	42.8	5.2	31.3	3.3	2.3	10.2	*1.8	3.2
150–299	12,134	8,137	67.1	100.0	34.5	13.1	26.6	2.4	5.0	11.4	1.7	5.3
300 and over	26,472	17,734	67.0	100.0	23.5	15.1	27.8	1.7	8.0	14.5	3.0	6.3
Education (years)[3]												
0–11	7,103	4,276	60.2	100.0	51.9	6.9	22.5	3.8	*1.3	6.4	*1.6	5.6
12	17,594	11,880	67.5	100.0	34.3	15.0	29.4	1.7	2.8	10.7	1.7	4.4
13 and over	24,024	15,806	65.8	100.0	20.7	12.6	28.7	2.2	10.0	16.4	3.2	6.3
Children ever born												
0	25,129	11,057	44.0	100.0	2.6	4.8	57.9	*0.9	6.6	20.2	1.8	5.4
1	9,906	5,982	60.4	100.0	14.8	8.2	37.6	3.0	8.8	15.9	3.6	8.1
2	13,237	10,275	77.6	100.0	40.5	16.5	15.1	2.2	5.3	12.0	2.7	5.7
3 and over	9,628	7,598	78.9	100.0	56.4	17.8	7.0	2.6	2.7	9.0	1.6	3.0
Fertility intentions												
More children	25,374	12,460	49.1	100.0	0.0	*0.1	58.7	1.0	7.6	22.4	2.9	7.4
No more children	29,440	20,854	70.8	100.0	46.1	19.3	12.9	2.5	3.7	9.7	1.8	4.0

[1] Includes natural family planning and other types of periodic abstinence.
[2] Percentages for 1990 were calculated excluding cases for whom contraceptive status was not ascertained. Overall, contraceptive status was not ascertained for only 0.3 percent of U.S. women in 1990.
[3] Data on education and income pertain only to women 20–44 years of age (see Definition of terms).

for example, because of separation, not dating anyone, illness, or other reasons. Starting with the most recent time since (January 1982/your first intercourse), please tell me the times, if any, when you were not having intercourse at all for one month or more.

For ever-pregnant respondents:
Since your (last pregnancy/ January 1982), were there any times when you were not having intercourse at all for one month or more, for example, because of pregnancy, separation, not dating anyone, illness, or other reasons?

Yes 1
No.....2

Starting with the most recent time, what months and years were those?

Responses were entered in the following type of chart:

From		To	
Month	Year	Month	Year
Month	Year	Month	Year
Month	Year	Month	Year

When the month of interview was recorded as the ending month of a period of nonintercourse, then the woman was coded as not having had sex in the previous one month. Otherwise, she was coded as having had sex in the past month. Different question wordings can bias results, and this issue deserves further attention.

From 1988 to 1990 there was an increase in risk-taking among women at risk of unintended pregnancy: the proportion of "at risk" women who were not contracepting increased from 7 to 12 percent. A small decline from1982 to 1988 (from 8 to 7 percent) was barely significant at the 0.10 confidence level.

The recent increase in risk-taking has not been uniform across marital status, age, and race-origin groupings. Risk-taking has increased most among the relatively young, the never-married, and white women. Among never-married women, the proportion of at-risk women not using contraception increased from 11 percent in 1988 to 20 percent in 1990. There was little change among the currently married or the formerly married (computed from table 3). Among women 15–24 years of age, the proportion of "at risk" women not contracepting more than doubled, from 9 to 22 percent (computed from table 2). While there was little change in risk-taking for black or Hispanic women during 1988–90, the proportion of "at risk" white women who were not using increased from 5 to 11 percent (computed from table 1). In 1990 the level of risk-taking was similar for black, white, and Hispanic women.

Contraceptors

Age, race, marital status—The percent of teenaged contraceptive users who chose the condom rose from 33 to 44 percent between 1988 and 1990 (table 4). The increase amounted to 12 percentage points for teens 15–17 years of age and 10 percentage points for teens 18–19 years of age, increases that were significant only at the 0.10 (10 percent) confidence level. At the same time, pill use declined from 53 to 41 percent for teens 15–17 years of age (significant at the 0.10 level) while not changing significantly for those 18–19 years of age. Almost all contracepting teenagers (96 percent) were using the pill (52 percent) or the condom (44 percent) in 1990 (table 4). It is important to note, however, that oral contraceptives must be taken as directed in order to be effective and condoms must be used consistently and correctly. Teenagers often do not do so. An estimated 26 percent of teen users experience a contraceptive failure during the first 12 months of use (4). The estimates in this report do not measure consistency or correctness of use. Studies of the consistency of use in various demographic groups would be useful.

Among black contracepting women, female sterilization was the leading method by far in 1990 and the pill was second (41 and 29 percent, respectively) (table 4). Among white contracepting women, female sterilization and the pill were equally popular (27 and 29 percent, respectively). Use of the pill by black women declined sharply from 1988 to 1990, from 38 percent to 29 percent of contraceptors, as condom use increased from 10 to 19 percent of black women who were contracepting. The data for white contraceptors suggest a slight rise in condom use during the period, from 15 to 17 percent. Among Hispanic contraceptors, there were no significant changes in the proportions that were using the condom or the pill. However, the data do suggest that IUD use declined among Hispanic contraceptors (from 5 to 2 percent) (table 4), continuing the sharp decline from 1982 to 1988 (table 1).

A relatively high proportion of married women were using contraception in 1990 (71 percent). About one-third of married contraceptors were using female sterilization, and most of the remainder were using the pill, male sterilization, or the condom (table 4). Only 43 percent of never-married women 15–44 years of age were contracepting in 1990—about one-half with the pill and another 30 percent with the condom. Among the never-married contraceptors, there was a clear trend toward more widespread use of the condom (from 20 to 30 percent) and a decline in pill use (from 59 to 51 percent) from 1988 to 1990 (table 4).

Education and income—Educational attainment is associated with women's choice of birth control methods. Among contraceptors, more educated women are more likely to use the pill, condom, or male sterilization, and far less likely to have had a tubal ligation (table 5). A variety of factors contribute to these differentials. More educated women are more likely to delay childbearing and are therefore less likely to have had all the children they want at an early age. They are therefore more likely to be using a reversible method such as the pill. Less educated women are more likely to have had all the children they wanted at relatively younger ages, and thus more likely to choose a more permanent method of birth control, such as female sterilization. Interestingly, a significant increase in condom use occurred only among the less educated (that is, those with less than a high school education) (table 5).

In addition, pill use declined significantly only among low-income contraceptors (those whose income was less than 150 percent of the official poverty level) while condom use only increased significantly within this same group, from 1988 to 1990 (table 5).

Parity and intent—Preferred methods of contraception vary by the parity of the woman and whether she intends to have a baby in the future. In 1990, 43 percent of childless women were contracepting, and this percentage rises with the number of children ever born. Of women who had had two children, 74 percent were contracepting. From 1988 to 1990, a decline in the use of contraception occurred for women with one and two children. The proportion of single-parity women who were contracepting declined from 60 percent in 1988 to 56 percent in

Table 6. Number of women 15–44 years of age who had first premarital intercourse at 15–19 years of age during 1980–82, 1983–88, and 1988–90, and percent distribution by contraceptive method used at first intercourse: United States[1]

Race and origin and timing of first intercourse	Number of women in thousands	Used any method	Pill	Condom	Withdrawal	Periodic abstinence[2]	Other
All races and origins[3]							
1980–82	3,740	52.9	14.1	28.0	7.5	*0.3	*3.0
1983–May 1988	6,603	67.5	10.8	45.6	9.2	*0.5	*1.3
June 1988–November 1990	3,428	71.2	10.5	55.0	*2.6	*2.4	*0.7
White non-Hispanic							
1980–82	2,699	54.9	14.0	29.3	8.3	*0.3	*3.0
1983–May 1988	4,829	71.6	9.8	49.3	10.2	*0.5	*1.7
June 1988–November 1990	2,409	75.7	10.9	58.2	*3.6	*2.4	*0.5
Black non-Hispanic							
1980–82	593	57.2	21.1	29.7	*4.4	*0.3	*1.7
1983–May 1988	1,023	60.3	20.1	36.0	*3.3	*0.9	0.0
June 1988–November 1990	506	63.8	*12.9	47.8	*0.6	0.0	*2.5
Hispanic							
1980–82	281	31.8	*8.9	*16.8	*3.2	0.0	*2.9
1983–May 1988	587	48.9	*4.3	34.6	*10.0	0.0	0.0
June 1988–November 1990	332	67.3	*9.1	58.2	0.0	0.0	0.0

[1]Data for 1980–82 and 1983–88 are from Cycle IV. Data for 1988–90 are from the 1990 Telephone Reinterview.
[2]Includes natural family planning and other types of periodic abstinence.
[3]All races and origins includes non-Hispanic women of other races.

1990; for two-parity women, the decline was from 78 to 74 percent. The use of contraception increased among women with three or more children, from 79 to 82 percent. The larger the woman's family, the greater the propensity for her to be using more permanent methods such as female or male sterilization for contraception and the less likely she is to be using the pill or the condom (table 5). Condom use increased significantly for both childless and single-parity women during 1988–90 (table 5).

The most important determinant of method choice is fertility intentions. Of women who did not intend to have any more births, 70 percent were using contraception in 1990; more than two-thirds of these were using either female or male sterilization. Of women intending more children, the picture is extremely different. Only 47 percent were contracepting at all, and among these, more than one-half were using the pill and almost a third were using the condom (table 5).

Use of contraception at first intercourse among teens

The use of contraception at first intercourse has increased significantly since the early 1980's. Among women having their first intercourse premaritally at 15–19 years of age during 1988–90, 71 percent reported using a method. This compares with 53 percent of women who had their first intercourse premaritally at 15–19 years of age during 1980–82. This increase in the use of contraception at first intercourse is mainly attributable to rising condom use, from 28 to 55 percent. Concomitantly, the proportion of women who used the pill, withdrawal, and other barrier methods declined slightly (table 6).

A large increase in condom use at first intercourse occurred among black, white, and Hispanic women during the 1980's, but was most pronounced for Hispanic women. Among Hispanic women having their first premarital intercourse at 15–19 years of age during 1980–82, only 17 percent used a condom; among similar Hispanic women having their first intercourse in 1988–90, 58 percent reported condom use, more than a threefold increase. Among women having their first intercourse in 1988–90, white and Hispanic women reported higher levels of condom use at first intercourse (both 58 percent) than black women (48 percent), but the difference between Hispanic and black women was not statistically significant. The difference between black and white women was only significant at the 0.10 level of confidence (table 6).

Some caution should be used in interpreting these data when they are collected at two different points in time. Cognitive survey research has shown that some respondents will incorrectly report a behavior in order to appear to have behaved in a socially acceptable manner. In the latter half of the 1980's, the benefit of using the condom as a preventive measure against the spread of the AIDS virus and other sexually transmitted diseases was widely publicized. Thus, perceived social desirability of using a condom for disease protection may have increased. A cohort approach to analyzing the 1982 and 1988 NSFG data sets provides some evidence that condom use at first intercourse may have been overreported in 1988. For black women whose first premarital intercourse occurred during the period 1980–82, the reported level of condom use was higher in the NSFG Cycle IV (1988) than in Cycle III (1982). A similar difference was found for black women whose first intercourse

occurred 1975–79 (10). In table 6 of the present report, the estimates for 1980–82 and 1983–88 are based on the data collected in 1988 (Cycle IV), while the estimates for 1988–90 are based on data collected in 1990 (telephone reinterview). It is possible that the amount of social desirability bias may have increased between 1988 and 1990, so comparisons of condom use among black women between the 1988 and 1990 survey should be interpreted with caution.

Consistency of use

Whether or not a method is effective in preventing pregnancy or sexually transmitted diseases depends on the consistency and correctness of use of the method, as well as the effectiveness of the method given perfect use. Information on the consistency of condom use for pregnancy prevention and disease prevention has been published in a previous *Advance Data* (11). In 1990, respondents who reported that they had used condoms to avoid getting sexually transmitted diseases in the last 3 months in which they were having intercourse, were asked:

> Did you and your partner use condoms to avoid getting diseases such as genital herpes, gonorrhea, or AIDS every time you had intercourse, on most occasions, about half the time, or less than half of the time?

A similar question was also asked of respondents who reported using the condom or other coitus-dependent method for contraception in the past month:

> Did you (and your partner) use [METHOD] every time you had intercourse, on most occasions, about half of the time, or less than half of the time?

It was found that over one-half of sexually active women 15–44 years of age who were using condoms for contraception in 1990 used inconsistently—that is, not every time they had intercourse. Among users of the condom for disease prevention, almost two-thirds used inconsistently. Thus, condom use was apparently more consistent when the purpose of use was contraception. Considering current users of the condom for either contraception or disease prevention, an estimated 56 percent reported not using it every time they had intercourse. Race and marital status are more important predictors of condom use for disease prevention than condom use for contraception. Black women and unmarried women are much more likely to be using the condom for disease prevention than other women (11).

An examination of women in 1990 who used only the condom for birth control in the past month showed that 44 percent of condom users used them inconsistently. About 42 percent of women using *a single* coitus-dependent method (for example, condom, diaphragm, jelly-cream, foam, suppository) in the past month used them inconsistently (12).

Comparisons with other data

Some of the results on contraceptive use among U.S. women from the 1990 NSFG telephone reinterview differ substantially from published results of the Ortho Annual Birth Control Survey conducted by Ortho Pharmaceutical Corporation (13–16). There are methodological reasons for the differences, starting with sample selection. While the NSFG uses a nationally representative sample, the Ortho study does not. It uses a listing of households that agreed to respond to periodic surveys conducted by a marketing research firm. The Ortho study especially underrepresents women with incomes over $50,000, minority women, and unmarried women (15).

Interviewing procedures and survey response rates vary markedly in the two surveys. The Ortho survey uses mailed questionnaires. In 1992, 63 percent of the sample responded, 79 percent of married women and 50 percent of unmarried women (about 7,000 women altogether) (15). In 1991, the response rate was similar at 62 percent (13). The NSFG has traditionally sent interviewers into the homes of respondents for in-person interviews. In the 1988 NSFG, in-home interviews were completed with 8,450 women, representing a response rate of 80 percent. For the 1990 NSFG telephone reinterview, the 1988 respondents were reinterviewed by telephone and a sample of teens 15–17 years of age was interviewed for the first time by telephone. The response rate for the reinterview sample was 69 percent, while the response rate overall was 67 percent, reflecting the lower rate for teenagers 15–17 years of age.

The NSFG estimates reflect adjustments for nonresponse bias, while the Ortho survey estimates do not. Sample weights in the 1990 NSFG were adjusted for nonresponse, using information available on the characteristics of the nonrespondents—including mobility status, race, Hispanic origin, education, income, marital status, parity, and other socioeconomic characteristics (3). The weights were subsequently adjusted to U.S. population control figures provided by the U.S. Bureau of the Census. In the Ortho survey, responses were weighted to reflect the age, marital status, and geographic distributions of U.S. women according to Census Bureau estimates (15). Thus, the NSFG estimates should be representative of the U.S. female population while the Ortho survey estimates may not be adjusted for response bias by such important factors as parity, race, education, and income.

Finally, the percentage distributions from the two surveys are not directly comparable because of different approaches to coding current contraceptive status. The NSFG measure of "current contraceptive status," which is used to track national trends in contraceptive use, is based on a priority scheme for coding methods according to "effectiveness." In the NSFG, when a woman is using more than one method, only the most effective method is assigned to her. For instance, if the woman is using the pill and the condom, she would be coded as a pill user since the pill is more effective for preventing pregnancy than the condom (4). The priority scheme for all methods in the NSFG is as follows: female sterilization, male sterilization, pill, IUD, diaphragm, condom, foam, rhythm, withdrawal, douche, and other.

The Ortho study, on the other hand, presents tabulations of multiple method use. A respondent using the pill and the

condom is coded both as a condom user and a pill user, and the percentage distribution of contraceptors, by method, sums to over 100. In the 1992 Ortho study, current contraceptors were using 1.3 different methods on average (15). This difference in coding practice will particularly raise proportions of women using the condom and other coitus-dependent methods in the Ortho survey relative to levels in the NSFG, but should not much affect levels of use of the pill or sterilization since they were given priority coding in the NSFG.

Key differences in the results of the two surveys are:

1. *The proportion of women at risk of unintended pregnancy is lower in the NSFG*—The NSFG shows a smaller proportion of women at risk of unintended pregnancy (67 percent in the 1990 NSFG and 65 percent in the 1988 NSFG compared with 77 percent in the 1992 and 72 percent in the 1987, Ortho survey). The difference is due to smaller proportions of women in the Ortho study who have never had sexual intercourse, who are pregnant or seeking pregnancy, and who have intercourse so infrequently that they claim they do not need a method (the counterpart of the NSFG category "no sex in the past month" in table 1). These differences are largest for unmarried women for whom the response rate in the Ortho survey was just 50 percent (computed from tables 1 and 3) (15).
2. *The proportion of "at risk" women who were not using contraception was higher in the NSFG*—The Ortho survey produces a lower estimate of the proportion of "at risk" women who are not contracepting. The 1992 estimate in the Ortho survey is 6 percent (15). According to the 1990 NSFG, 12 percent of "at risk" women were noncontraceptors, when "at risk" noncontraceptors is defined as women who had intercourse in the past month while not contracepting, who were neither pregnant, nor postpartum, nor seeking pregnancy, nor sterile for noncontraceptive reasons (computed from table 1).
3. *Lower levels of condom use in the NSFG, especially among the unmarried*—About 25 percent of women at risk of unintended pregnancy were using the condom in the Ortho survey in 1992, either by itself or with another method (15). The percent of "at risk" women whose partners used the condom in the 1990 NSFG telephone reinterview was 16 (computed from table 1). This difference in condom use is most pronounced for unmarried women (computed from table 3). Some of the difference would be attributable to the different coding schemes for current method as described previously.
4. *Lower levels of oral contraceptive use in the NSFG*—In the Ortho survey, pill use increased from 1988 to 1990 (from 24 to 26 percent of women 15–44 years of age, amounting to an estimated 14.9 million pill users in 1990) (16). However, the NSFG finds lower levels of pill use and a flat or slightly downward trend in pill use during 1988–90, from 19 to 17 percent (or 9.9 million women in 1990) (table 1). Data on pill use among unmarried women from the two surveys are especially divergent. The 1990 NSFG estimates that 40 percent of never-married and 20 percent of formerly married women at risk were using the pill (computation based on table 3). In the Ortho survey in 1992, 52 percent of unmarried "at risk" women were pill users (15). The divergent coding schemes for current contraceptive method would have little impact on the estimates of pill use from the two surveys; in the NSFG, only the few pill users who were also using male or female sterilization would *not* be coded as pill users. Due almost entirely to the other methodological differences described previously, the NSFG shows much lower levels of pill use than the Ortho survey.
5. *The proportion of oral contraceptors also using the condom is lower in the NSFG*—Apparently, 29 percent of pill users in the 1992 Ortho survey said they were also using the condom (15). In the 1988 NSFG, only 3 percent of current pill users reported that they were also using the condom (data not shown in tables). Although condom use among pill users is likely to have increased between 1988 and 1992, the percentage is not likely to have increased tenfold.
6. *Higher rates of female sterilization in the NSFG*—The 1990 NSFG shows a greater prevalence of female sterilization among "at risk" women than does the 1992 Ortho survey (26 versus 19 percent); most of this difference is attributable to higher rates among the unmarried in the NSFG, especially the formerly married (computed from tables 1 and 3) (15).

References

1. Goksel H, Judkins DR, Mosher WD. Nonresponse adjustments for a telephone followup to a national in-person survey. J Official Stat 8(4):417–31. 1992.
2. Bachrach CA, Horn MC, Mosher WD, Shimizur I. National Survey of Family Growth, Cycle III: Sample design, weighting, and variance estimation. National Center for Health Statistics. Vital Health Stat 2(98). 1985.
3. Judkins DR, Mosher WD, Botman S. National Survey of Family Growth: Design, estimation, and inference. National Center for Health Statistics. Vital Health Stat 2(109). 1991.
4. Jones EF, Forrest JD. Contraceptive failure rates based on the 1988 NSFG. Family Planning Perspectives 24(1):12–9. 1992.
5. Mosher WD, Pratt WF. Contraceptive use in the United States, 1973–88. Advance data from vital and health statistics; no 182. Hyattsville, Maryland: National Center for Health Statistics. 1990.
6. Aral SH, Holmes KK. Epidemiology of sexual behavior and sexually transmitted diseases. In: Holmes KK, Cates W, Lemon SM, Stamm WE, eds. Sexually transmitted diseases. 2d ed. New York: McGraw-Hill. 1990.
7. National Center for Health Statistics. Advance report of final natality statistics, 1991. Monthly vital statistics report; vol 42 no 3 Supp.

Hyattsville, Maryland: Public Health Service. 1993.
8. Mosher WD. Contraceptive practice in the United States, 1982–88. Family Planning Perspectives 22(5):198–205. 1990.
9. Bachrach CA, Mosher WD. Use of contraception in the United States, 1982. Advance data from vital and health statistics; no 102. Hyattsville, Maryland: National Center for Health Statistics. 1984.
10. Unpublished table from the 1982 and 1988 National Survey of Family Growth. National Center for Health Statistics. 1992.
11. Mosher WD, Pratt WF. AIDS-related behavior among women 15–44 years of age: United States, 1988 and 1990. Advance data from vital and health statistics; no 239. Hyattsville, Maryland: National Center for Health Statistics. 1993.
12. Peterson LS, London KA, Abma JA. Determinants of inconsistent use of coitus-dependent contraceptives among U.S. women: 1990. Paper presented at the annual meeting of the Population Association of America, May 7, Miami. 1994.
13. Wall Street Journal. Use of birth control pill surges in U.S. Section: Technology and Health. 1991.
14. Mishell DR Jr. Contraceptive use, preferences, and attitudes: Results of a recent study. In: The Best of Dialogues in Contraception. Los Angeles: University of Southern California School of Medicine and Ortho Pharmaceutical Corporation. 1992.
15. Forrest JD, Fordyce RR. Women's contraceptive attitudes and use in 1992. Family Planning Perspectives 25(4). 1993.
16. Ortho Pharmaceutical Corporation. 1991 Twenty-Third Ortho Annual Birth Control Study. 1991.
17. U.S. Bureau of the Census. Poverty in the United States, 1987. Current population reports; series P-60, no 163. Washington: U.S. Department of Commerce. 1989.
18. U.S. Bureau of the Census. Poverty in the United States, 1988 and 1989. Current population reports; series P-60, no 171:354–6, especially table A-3. Washington: U.S. Department of Commerce. 1991.

Technical notes

Survey design

The National Survey of Family Growth (NSFG) is a periodic survey conducted by the National Center for Health Statistics (NCHS) to collect data on fertility, infertility, contraception, and related aspects of maternal and infant health. Fieldwork for Cycle IV was conducted in 1988 and the NSFG telephone reinterview was conducted in 1990. The contractor for the 1988 and 1990 surveys was Westat, Inc., of Rockville, Maryland.

For the 1988 NSFG, personal (face-to-face) interviews were conducted between January and August of 1988 with a national sample of women who were 15–44 years of age as of March 15, 1988. Interviews were completed with 8,450 women in 1988, including 2,771 black women, 5,354 white women, and 325 women of other races. The sample for the 1988 NSFG was selected from households that had participated in another NCHS survey, the National Health Interview Survey (NHIS) between October 1985 and March 1987. Respondents were interviewed by trained female interviewers.

The interviews covered the woman's pregnancy history; her past and current use of contraception; her ability to bear children; her use of medical services for contraception, infertility, and prenatal care; marriage and cohabitation; and a wide range of social, economic, and demographic characteristics. More detailed information on the procedures used in selecting the sample, weighting the data to make national estimates, and estimating sampling errors may be found in two other publications (1,3).

For the 1990 NSFG telephone reinterview, 5,686 women were interviewed by telephone between July 23 and November 5, 1990. Interviews were conducted by telephone with 5,359 women who were previously interviewed in 1988 and with 327 first-time respondents who had become 15 to 17 years of age in the 2 years since the main study. The response rate for the initial interviews of the teens 15–17 years of age was 53 percent. The response rate for the 17–44-year-olds initially interviewed in 1988 was 69 percent of those originally interviewed in 1988. Overall, the response rate was 67.5 percent. The most common causes of nonresponse in 1990 were inability to locate or contact the respondent because she had moved and inability to contact her because she had no telephone or had an unpublished telephone number. The 1990 reinterviews lasted an average of 20 minutes.

The 1990 sample was divided equally into two "half-samples" which were administered some core questions in common, as well as selected modules of questions that were limited to one or the other half sample. This report is based on the results of the two half samples combined. The data have been weighted to be representative of the population of the United States. Weighted estimates of the percentage distribution of U.S. women by current contraceptive status, based on each half sample alone, were obtained as an indicator of the reliability of estimates of variables that are available from a single half sample. The separate estimates are similar. For example, based on Half Sample I alone, 17.3 percent of U.S. women were using female sterilization in 1990. According to data from Half Sample II, 17.5 percent of U.S. women were using this method.

In this report, women 15–19 years of age are excluded from tabulations by education because it generally takes until about age 19 to reach the "13 years or more" education category. They are also excluded from tabulations by income because it is generally difficult

Table I. Estimates of the parameters *A* and *B* for estimating standard errors for percents of women, by race, from the Full Sample of the 1990 National Survey of Family Growth Telephone Reinterview

Race	Parameter[1]	
	A	*B*
All races	-.0002244	13,100
White or other	-.0002592	13,100
Black	-.0009177	7,200

[1] *A* = intercept and *B* = slope.

Table II. Standard errors for percents of women of all races: 1990 National Survey of Family Growth Telephone Reinterview—Full Sample

Base of percent	Estimated percent					
	5 or 95	19 or 90	20 or 80	30 or 70	40 or 60	50
500,000	*3.5	*4.9	*6.5	7.4	7.9	8.1
1,000,000	*2.5	*3.4	4.6	5.2	5.6	5.7
5,000,000	1.1	1.5	2.0	2.3	2.5	2.6
10,000,000	0.8	1.1	1.4	1.7	1.8	1.8
30,000,000	0.5	0.6	0.8	1.0	1.0	1.0
50,000,000	0.4	0.5	0.6	0.7	0.8	0.8

Table III. Standard errors for percents of black women: 1990 National Survey of Family Growth Telephone Reinterview—Full Sample

Base of percent	Estimated percent					
	5 or 95	19 or 90	20 or 80	30 or 70	40 or 60	50
100,000	*5.8	*8.0	*10.7	*12.3	*13.1	13.4
500,000	*2.6	*3.6	4.8	5.5	5.9	6.0
1,000,000	*1.8	2.5	3.4	3.9	4.2	4.2
5,000,000	0.8	1.1	1.5	1.7	1.9	1.9
7,500,000	0.7	0.9	1.2	1.4	1.5	1.5

for teenagers to accurately report the income of their parents and because income was not collected from the young women (15–17 years of age) in the 1990 Telephone Reinterview Teen Supplement.

Reliability of estimates

Because the statistics presented in this report are based on a sample, they may differ from the statistics that would result if all 58 million women represented by the survey had been interviewed. The standard error of an estimate (for example, a percent) is a measure of such differences. The standard error of an estimated number or percent is calculated by substituting the appropriate values of A and B from table I in the following equations:

$$SE(N) = \sqrt{(A + B/N') \cdot N'}$$

and

$$SE(P) = \sqrt{(B \cdot P' \cdot (100 - P')/X'}$$

where N' = the number of women
P' = the percent
X' = the number of women in the denominator of the percent

The parameters shown in table I were used to generate table II, which shows estimates of standard errors for percents of women of all races, and table III, which shows the standard errors for black women. The chances are about 68 in 100 (about 2 out of 3) that a sample estimate would fall within one standard error and about 95 in 100 that it would fall within two standard errors of a statistic computed from a complete count of the population represented by the NSFG.

Unless otherwise specified, differences between percents discussed in this report were found to be statistically significant at the 0.05 level using a two-tailed normal deviate test (z-test). This means that in repeated samples of the same type and size, a difference between the percents in the population as large as the one observed would occur in only 5 percent of the samples if there were, in fact, no difference. Statements using the phrase "the data suggest" indicate that the difference was significant at the 0.10 level (10 percent) but not the 0.05 level (5 percent). Lack of comment in the text about any two statistics does not mean that the difference was tested and found not to be significant.

Statistical differences between NSFG 1988 and 1990 percentage estimates were tested assuming that the estimates were not correlated, although a positive correlation likely occurs as the 1990 NSFG sample was a followup of the 1988 sample. In this situation the statistical test is conservative.

The relative standard error (or coefficient of variation) of a statistic is the ratio of the standard error to the statistic and usually is expressed as a percent of the estimate. In this report, percents and other statistics with relative standard errors of 30 percent or larger are indicated with an asterisk (*). These estimates may be viewed as unreliable by themselves, but they may be combined with other estimates to make comparisons of greater precision.

Statistics in this report may also be subject to nonsampling error, that is, errors or omissions in responding to the interview, in recording answers, and in processing data. The data have been adjusted for nonresponse and adjusted to independent control totals obtained from the U.S. Bureau of the Census. These adjustments reduce most types of nonsampling error. Other types of nonsampling error were eliminated by a series of quality control procedures.

Definition of terms

Current contraceptive status

Sterile—A currently married woman was classified as sterile under the current contraceptive status classification if she reported that it was impossible for her to have a baby, or her husband to father a child, for any reason, including sterilization operations or other causes. An unmarried woman was classified as sterile if she reported that it was impossible for her to have a baby or if her current method of contraception was male sterilization.

Nonsurgical—A woman or couple was classified as nonsurgically sterile if she reported that it was impossible for her to have a baby, or impossible for her husband to father a child, for any reason other than surgical sterilization. Nonsurgical reasons for sterility include menopause, sterility from accident, illness, congenital causes, or unexplained inability to conceive.

Surgical—A woman (or couple) was classified as surgically sterile if she or her husband were completely sterile due to an operation.

Surgical sterilizations were classified as contraceptive or noncontraceptive because, while most are obtained because of their effectiveness in preventing pregnancy, some are obtained for therapeutic reasons. This classification in successive cycles of the survey has been affected by changes in the wording of questions. In the 1973 (Cycle I) survey, a sterilizing operation was classified as contraceptive if the respondent answered "yes" to the question "Was the operation done at least partly so that you would not have any more children?" However, since all sterilization operations are contraceptive in effect, though not by intention, this question was ambiguous; for example, this question classified many hysterectomies as "contraceptive." In 1976 the question was revised to reflect more clearly the motive of family limitation, asking: "Was one reason for the operation because you had all the children you wanted?" This question resulted in a lower proportion of hysterectomies reported as contraceptive, but it also resulted in lower proportions of other operations reported as contraceptive—because it excluded women who would have liked more children, but for whom pregnancy would be a health risk. This problem was investigated in the 1982 survey and rectified in the 1988 survey. The figures for 1982, 1988, and 1990 are highly comparable. In this report, noncontraceptive operations in 1982 and 1988 are those for which the respondent reported that the main or only reason for the operation was "medical problems with my female organs (such as infections, cancer, etc.)." All other operations were classified as contraceptive, in its literal sense, to prevent pregnancy, regardless of why she wanted to prevent pregnancy. Reasons for contraceptive operations in 1982, 1988, and 1990 included the following: she had all the children she wanted, or wanted none; her husband wanted no more; a pregnancy would have been dangerous to her health; she could not carry the pregnancy to term; she could not afford or take care of more children; or she did not like her previous method of birth control. The data on the contraceptive intent of sterilization operations for 1973 may not be perfectly comparable to those in 1982, 1988, and 1990 because the later surveys contained these explicit answer categories for reasons for sterilizations while the 1973 question did not. It is not clear how women who had operations because pregnancy would be dangerous to their health would have answered the question in 1973.

It should be noted that the estimates of male contraceptive sterilization show the number of women relying on this method, and not necessarily the number of men who have been sterilized for contraceptive reasons.

Pregnant—A woman was classified as pregnant if she answered "yes" to the question, "Are you pregnant now?" or for those in doubt, "Well, do you think you are probably pregnant or not?" However, a woman who reported that the onset of her last menstrual period was within the last 30 days before the interview was automatically classified as not currently pregnant.

Seeking pregnancy—A woman was classified as seeking pregnancy if she reported that she was not using a method at the date of the interview because she wanted to become pregnant as soon as possible.

Post partum—A woman was classified as post partum if she reported that she was not currently using a method, was not trying to become pregnant, and her last pregnancy had terminated within 2 months before the date she was interviewed.

Other nonusers—Women (or couples) who reported that they were currently using no contraceptive method and could not be classified in any of the preceding categories of noncontraceptors were classified here. Included are women who had never had intercourse, women who had not had intercourse in the last 1 month, and women who had had intercourse in the last 1 month but were indifferent to the chances of pregnancy. Nonusers who had had intercourse only once were classified according to the timing of that intercourse: if it occurred within that past month, they were coded as having intercourse in the past month; if not, they were coded as having no intercourse in the past month.

Never had intercourse—A woman was classified as never having had intercourse if she was not currently using a method and she had never had sexual intercourse at any time up to the date of interview, or if she had had sexual intercourse but not since her menstrual periods began.

No intercourse in the last month—A woman was classified as not having had intercourse in the last month if she was not currently using a method and reported not having sexual intercourse at all in the last 1 month preceding the interview.

Intercourse in the last month—A woman (or couple) was classified as having intercourse in the last month if she was not currently using a method and was having sexual intercourse currently or in the month preceding the interview.

Contraceptors—A woman (or couple) who reported using a method at the date of interview was classified according to the specific method used. When more than one method was currently being used, they were coded using the following priority order: female sterilization, male sterilization, pill, IUD, diaphragm, condom, foam, periodic abstinence, withdrawal, and other. Methods used by extremely small proportions of the population, such as jelly, cream, suppositories, or abstinence, not in combination with any other methods, were grouped into the category "other."

Demographic terms

Age—Age is classified by the age of the respondent in completed years as of August 15, 1990, for the 1990 survey and as of March 15, 1988, for the 1988 survey. These dates are the approximate midpoints of reviewing, respectively. In the 1982 survey, age is classified by the age of the respondent at her last birthday before the date of interview.

Education—This refers to the number of years of regular schooling the woman had completed as of the date of interview in 1990. In this report, the following categories are used: 0–11 years, meaning that the woman did not

complete high school; 12 years, meaning that she obtained a high school diploma or a GED, but did not complete a full year of college; and 13 years or more, meaning that she completed at least 1 year of college. In table 5, women under the age of 20 are excluded from tabulations by education because it generally takes until at least age 19 to reach the "13 years or more" category.

Hispanic origin—Each woman was asked, "Which of the (following) groups best describe your national origin or ancestry?" Using a list of 15 groups, a woman was classified as being of Hispanic origin if she reported that her only or principal national origin was Puerto Rican, Cuban, Mexican American, Central or South American, or other Spanish. Origin is therefore classified independently of race, and Hispanic women may be of any race.

Marital status—In this report, women were classified according to their legal marital status—married, widowed, divorced, separated, or never legally married. Cohabiting women who are not legally married are classified accordingly as widowed, divorced, separated, or never married, whichever is the legal status. In all NSFG surveys, women who were married but separated from their spouse were classified as separated if the reason for the separation was marital discord, and as currently married otherwise.

Poverty level income—This is the ratio of the total family income to the poverty level threshold for a family of specified size, as published by the U.S. Bureau of the Census. In the 1988 survey, 1987 poverty level thresholds were used (17). In the 1990 survey, 1989 Census Bureau weighted average thresholds for householders under age 65 were used. The 1989 thresholds used for 1990 data were $6,451 for 1 person, $8,343 for a family of 2, $9,885 for a family of 3, $12,674 for a family of 4, up to $25,480 for a family of 9 or more (18). Thus, if a family of 4 had an income of $25,000, their poverty level income would be $25,000 divided by $12,674, or 197 percent. In the 1990 NSFG, family income was not collected from the 327 women 15–17 years of age who were interviewed for the first time in 1990. In table 5 of this report, data are not shown for those women who did not report the income or poverty level of their families.

Race—Race refers to the race of the woman interviewed. Each woman was asked, "Which of the (following) groups best describe your racial background?" The categories include black, white, Asian or Pacific Islander, and Alaskan Native or American Indian. Because of small sample sizes, the last two categories are often combined and called "other."

Symbols

- - -	Data not available
. . .	Category not applicable
–	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision
#	Figure suppressed to comply with confidentiality requirements

*U.S. Government Printing Office: 1995 — 386-952/20020

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National Center for Health Statistics

Acting Director
Jack R. Anderson

Acting Deputy Director
Jennifer H. Madans, Ph.D.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Center for Health Statistics
6525 Belcrest Road
Hyattsville, Maryland 20782

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Data Dissemination Branch
National Center for Health Statistics
Centers for Disease Control and Prevention
Public Health Service
6525 Belcrest Road, Room 1064
Hyattsville, MD 20782

(301) 436–8500
E-mail: nchsquery@nch10a.em.cdc.gov
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