DATA TABLES:

Individual Fatty Acid Intakes:
Results from the 1995 Continuing Survey of Food Intakes by Individuals

Table Set 4



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Individual Fatty Acid Intakes: Results from 1995 Continuing Survey of Food Intakes by Individuals

By Jaspreet K. Chug Ahuja, Jacob Exler, and Nancy Raper¹

Intakes of 19 individual fatty acids from USDA's 1995 Continuing Survey of Food Intakes by Individuals (CSFII) are presented in the attached set of tables. Over 5,200 individuals nationwide participated in the CSFII 1995, popularly known as the *What We Eat in America Survey*. Participants recalled food intake information for two separate days. Data presented here represent mean intakes based on respondents' first surveyed day (Day 1).

The data provide national probability estimates for the U.S. population. Sample sizes on which estimates are based are provided in appendix A. The results are weighted to adjust for differential rates of selection and nonresponse. The design and methodology of CSFII are detailed in a design and operation report for the survey (1). A data set containing information on amounts and kinds of foods reported by participants in the CSFII 1995 is available on CD-ROM (2). The CSFII 1995 data set was used to produce these tables, in conjunction with fatty acid composition data supplied by the Nutrient Data Laboratory, Beltsville Human Nutrition Research Center, Agricultural Research Service. The fatty acid data were compiled from the following sources: published literature, industry, government laboratories, and USDA-initiated contracts, some of which were funded by a cooperative agreement with National Heart, Lung and Blood Institute, National Institutes of Health.

Fatty acids are categorized as saturated (no double bond), monounsaturated (one double bond), or polyunsaturated (more than one double bond). A list of fatty acids for which data are presented in the tables is provided in appendix B (3, 4). For monounsaturated and

polyunsaturated fatty acids, both cis and trans isomers and positional isomers are included in the values.

Interpreting information in the tables --

- Sample sizes for each sex-age group provide a sufficient level of precision to ensure statistical reliability of the estimates. The one exception is the sample size for children less than one year of age. Estimates for that group should be used with caution. A few of the estimates in some sex-age groups did not meet the reliability tests, based on the HHS/ARS Statistical Guidelines (5). These estimates are flagged in the tables and should also be used with caution (appendix C).
- When respondents were able to identify the type of fat used in preparation of foods, such as vegetables, eggs, rice, pasta, and hot cereals, the fat type (oil, margarine, spread, butter, shortening, animal fat) was coded accordingly. However, if the respondent did not identify the type of fat, a default composite fat (margarine, vegetable oil, or shortening) based on industry and market data was used. Additional information about food coding and recipes can be found in the survey documentation on the CD-ROM (2).
- Data from men and women 20 years and over were used to estimate the food sources of individual fatty acids (tables 4.1-4.3). The quantities represent average intakes of consumers and nonconsumers of the foods on the survey day.

• Appendix D contains examples of foods in each food group shown in tables 4.1 - 4.3. Mixed dishes are tabulated with the food group of the primary ingredient; for example, pizza is tabulated under 'Grain Products'.

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¹ Ahuja, and Raper are with the Food Surveys Research Group. Exler is with the Nutrient Data Laboratory. Both groups are part of the Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA. The work of P. Singh Chahil in calculating the data estimates is acknowledged.

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SELECTED HIGHLIGHTS--

Fatty acids as sources of food energy

Among the three classes of fatty acids, monounsaturated fatty acids (MUFA) accounted for the largest share of food energy for most groups of individuals, providing an average of 12.5 percent of total food energy intake (see summary table below and tables 1.1 to 1.3). Oleic acid (18:1) was the predominant fatty acid in the American diet, contributing 11- 12 percent of the total energy intake for all age-sex groups.

Fatty acids as sources of food energy: mean percentages, all individuals

Saturated fatty acids		Monounsa	turated fatty acids	Polyunsati	Polyunsaturated fatty acids		
Total	11.3%	Total	12.5%	Total	6.4%		
16:0	6.2	18:1	11.7	18:2	5.6		
18:0	2.9	16:1	0.6	18:3	0.6		
14:0	1.0	Other	0.2	Other	0.2		
12:0	0.4						
Other	0.8						

Saturated fatty acids (SFA) ranked second as a source of food energy for most age groups, providing an average of 11.3 percent of total food energy intake. For children 2 and under, SFA's provided the largest share -- 16.7 percent for children under 1 and 13.2 percent for 1-2 year olds. Palmitic acid (16:0) was the largest contributor for all age groups, providing an average of 6.2 percent of food energy for all individuals. Stearic acid (18:0) ranked second, accounting for 2.9 percent of total food energy intake. Children under 1 were an exception -- due to their intake of milk-based infant formulas, lauric acid (12:0) ranked second, providing 4.3 percent of food energy. For all other age groups, lauric acid accounted for 0.3 - 0.5 percent of the energy intake. Myristic acid (14:0) provided about 0.8 - 2 percent of energy intake, with higher values among children under 5.

Polyunsaturated fatty acids (PUFA) provided an average of 6.4 percent of the energy intake. Linoleic acid (18:2) was the largest contributor (5.6 percent), followed by linolenic acid (18:3) (0.6 percent). Other than eicosatetraenoic acid (20:4) (0.1 percent), the contribution of all other PUFA's to food energy intake for all age groups was less than .05 percent.

Contribution of individual fatty acids to major classes of fatty acids

Palmitic acid (16:0) accounted for over one-half (54 percent) and stearic acid (18:0) about one-fourth (25 percent) of the total saturated fatty acid intake (see summary table below; data have been calculated from tables 2.1 to 2.3). Myristic acid (14:0) contributed 9 percent, lauric acid

(12:0) provided 3 percent, and the short chain fatty acids (4:0 - 10:0) together provided 5 percent of SFA intake. No major differences were observed in patterns of SFA intakes among age-sex groups, except for children under 1. For this group, palmitic acid was also the major contributor of SFA, but accounted for a smaller share (42 percent). Lauric acid (12:0) ranked second, providing 24 percent, followed by stearic acid (18:0) and myristic acid (14:0), each contributing 12 percent of total SFA intake.

Individual fatty acids as percentages of their classes, all individuals

Saturated fatty acids		<u>Monounsa</u>	turated fatty acids	Polyunsatu	Polyunsaturated fatty acids		
16:0	54%	18:1	93%	18:2	89%		
18:0	25	16:1	5	18:3	9		
14:0	9	Other	2	Other	2		
12:0	3						
Other	9						

Oleic acid (18:1) provided, on average, 93 percent and palmitoleic acid (16:1), 5 percent of total monounsaturated fatty acid intake. For children under 1, oleic acid accounted for 97 percent of their MUFA intake.

Linoleic acid (18:2) provided, on average, 89 percent of total polyunsaturated fatty acid intake. Linolenic acid (18:3) accounted for 9 percent. No major differences occurred in patterns of intake among sex-age groups.

Contribution of individual fatty acids to total fatty acid intake

The three major fatty acids -- oleic (18:1), palmitic (16:0), and linoleic (18:2) -- together accounted for 77 percent of total fatty acid intake (see summary table below and table 3). The contribution of these fatty acids is slightly less for children under 1 (70 percent), due to a relatively high intake of lauric acid (12:0). This group also reported lower intake of MUFA's - palmitoleic acid (16:1) and oleic acid (18:1). No differences were observed for other sex-age groups.

Mean percentages of total contributed by individual fatty acids, all individuals

18:1	38%	18:0	9%	18:3	2%
16:0	20	14:0	3	12:0	1
18:2	19	16:1	2	Other	6

Individual fatty acids from selected food groups

Saturated fatty acids

Among adults 20 years and older, milk and milk products were the major contributors to intakes of short chain SFA (4:0 - 10:0), lauric acid (12:0), and myristic acid (14:0) (see summary table below; data have been calculated from table 4.1). Grain products ranked second as a source of short chain SFA and lauric acid (12:0); the meat, poultry and fish group ranked second as a source of myristic acid (14:0).

Saturated fatty acids from selected food groups, individuals 20 years and older

Food group	4:0 - 10:0	12:0	14:0	16:0	18:0
MALES					
Meat, poultry, fish	7%	10%	24%	35%	37%
Milk and milk products	56	39	42	17	16
Grain Products	17	17	17	22	24
Fats and oils	12	16	9	7	7
Vegetables	4	10	5	10	7
Other	4	8	3	9	9
FEMALES					
Meat, poultry, fish	6%	7%	19%	31%	32%
Milk and milk products	60	39	45	19	18
Grain Products	17	17	17	23	25
Fats and oils	9	17	8	8	8
Vegetables	6	8	6	10	8
Other	2	12	5	9	9

The major contributors to intakes of palmitic acid (16:0) and stearic acid (18:0) were the meat, poultry, and fish group, followed by the grain products and milk and milk products group. These groups together provided about three-fourths of the intake of these fatty acids. No differences in patterns of intake of SFA were observed between males and females.

Monounsaturated and Polyunsaturated fatty acids

The meat, poultry, and fish group was the major contributor to intakes of palmitoleic acid (16:1) (see summary table below; data have been calculated from tables 4.2 and 4.3). Oleic acid (18:1) was obtained mainly from the meat, poultry, and fish and grain products group. They accounted for about 61-64 percent of oleic acid intake.

Monounsaturated and polyunsaturated fatty acids from selected food groups, individuals 20 years and older

Food group	16:1	18:1	18:2	18:3
MALES:				
Meat, poultry, fish	58%	34%	23%	24%
Grain Products	13	30	33	25
Milk and milk products	15	8	2	9
Vegetables	5	11	15	14
Fats and oils	3	8	17	20
Other	6	9	10	8
FEMALES:				
Meat, poultry, fish	53%	30%	21%	21%
Grain Products	14	31	33	25
Milk and milk products	17	9	2	9
Vegetables	6	10	13	14
Fats and oils	3	10	21	24
Other	7	10	10	7

Grain products ranked first as a source of linoleic acid (18:2), providing 33 percent. Two food groups -- meat, poultry, and fish and fats and oils -- contributed smaller but equal portions to females' diets (21 percent); for males the meat, poultry, fish group was a more important source than the fats and oils group.

Three food groups -- meat, poultry, and fish; grain products; fats and oils -- contributed roughly equal portions to intakes of linoleic acid (18:3). Together they provided about 70 percent of the intake.

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Table 1.1--Saturated fatty acids as sources of food energy: Mean percentages, by sex and age, 1 day, CSFII 1995

Sex and age (years)	Percentage of population	Food energy	4:0	6:0	8:0	10:0	12:0	14:0	16:0	18:0	Total saturated fatty acids
	Percent	Kilocalories					Percent				
Males and females:											
Under 1	1.2	826	.1	.1	.7	.6	4.3	2.0	6.9	1.9	16.7
1-2	3.0	1,311	.4	.2	.2	.3	.5	1.5	6.6	3.0	13.2
3-5	4.8	1,576	.3	.2	.1	.2	.4	1.2	6.3	3.0	12.1
5 and under	8.9	1,389	.3	.2	.2	.3	.9	1.4	6.5	2.9	13.0
Males:											
6-11	4.6	2,132	.3	.1	.1	.2	.4	1.1	6.3	3.0	11.9
12-19	5.8	2,721	.3	.1	.1	.2	.3	1.1	6.4	3.0	11.8
20-29	7.8	2,757	.2	.1	.1	.2	.3	.9	6.1	2.8	10.9
30-39	7.7	2,800	.2	.1	.1	.2	.3	1.0	6.4	3.0	11.7
40-49	7.2	2,378	.2	.1	.1	.2	.3	.9	6.2	2.9	11.1
50-59	4.3	2,363	.2	.1	.1	.2	.3	.8	6.3	3.0	11.1
60-69	3.4	2,120	.2	.1	.1	.2	.3	.9	6.1	2.9	10.9
70 and over	3.4	1,835	.2	.1	.1	.2	.3	.9	6.0	2.9	10.9
20 and over	33.9	2,479	.2	.1	.1	.2	.3	.9	6.2	2.9	11.2
Females:											
6-11	4.4	1,881	.3	.1	.1	.2	.4	1.1	6.3	3.1	11.9
12-19	5.6	1,905	.3	.1	.1	.2	.4	1.0	6.2	2.9	11.4
20-29	7.0	1,867	.2	.1	.1	.2	.3	.9	5.9	2.8	10.9
30-39	8.8	1,703	.2	.1	.1	.2	.3	1.0	6.1	2.9	11.2
40-49	6.7	1,697	.2	.1	.1	.2	.3	.9	6.1	2.8	11.0
50-59	5.4	1,607	.2	.1	.1	.2	.3	.9	5.9	2.7	10.8
60-69	4.1	1,484	.2	.1	.1	.2	.3	.9	5.8	2.8	10.6
70 and over	4.9	1,391	.2	.1	.1	.2	.3	.8	5.5	2.6	10.0
20 and over	36.8	1,653	.2	.1	.1	.2	.3	.9	5.9	2.8	10.8
All individuals	100.0	2,017	.2	.1	.1	.2	.4	1.0	6.2	2.9	11.3

NOTE: Mean percentage calculations excluded two individuals with zero energy intake on day 1.

SOURCE: USDA Continuing Survey of Food Intakes by Individuals, 1995;

Table 1.2--Monounsaturated fatty acids as sources of food energy: Mean percentages, by sex and age, 1 day, CSFII 1995

Sex and age (years)	Percentage of population	Food energy	16:1	18:1	20:1	22:1	Total monounsaturated fatty acids
	Percent	Kilocalories			Percent		
Males and females:							
Under 1	1.2	826	.1	11.9	*	† *	12.1
1-2	3.0	1,311	.6	10.7	*	*	11.6
3-5	4.8	1,576	.6	11.4	.1	*	12.3
5 and under	8.9	1,389	.6	11.2	*	*	12.0
Males:							
6-11	4.6	2,132	.6	11.6	.1	*	12.5
12-19		2,721	.6	12.0	.1	*	13.0
20-29		2,757	.6	11.6	.1	*	12.5
30-39		2,800	.7	12.3	.1	*	13.2
40-49		2,378	.7	11.9	.1	*	12.8
50-59		2,363	.7	12.5	.1	*	13.4
60-69	3.4	2,120	.6	12.0	.1	*	12.9
70 and over	3.4	1,835	.6	11.6	.1	*	12.4
20 and over	33.9	2,479	.7	12.0	.1	*	12.9
Females:							
6-11	4.4	1,881	.6	11.9	.1	*	12.7
12-19		1,905	.6	11.5	*	*	12.4
20-29		1,867	.6	11.2	.1	*	12.0
30-39		1,703	.6	11.8	.1	*	12.7
40-49		1,697	.6	11.7	.1	*	12.5
50-59		1,607	.6	11.5	.1	*	12.4
60-69	4.1	1,484	.6	11.4	.1	*	12.2
70 and over	4.9	1,391	.6	10.9	.1	*	11.7
20 and over	36.8	1,653	.6	11.5	.1	*	12.3
All individuals	100.0	2,017	.6	11.7	.1	*	12.5

^{*} Value less than 0.05 but greater than 0.

[†] Indicates a statistic that is potentially unreliable because of small sample size or large coefficient of variation.

NOTE: Mean percentage calculations excluded two individuals with zero energy intake on day 1.

SOURCE: USDA Continuing Survey of Food Intakes by Individuals, 1995;

ARS, Beltsville Human Nutrition Research Center, Food Surveys Research Group.

Table 1.3--Polyunsaturated fatty acids as sources of food energy: Mean percentages, by sex and age, 1 day, CSFII 1995

Sex and age (years)	Percentage of population	Food energy	18:2	18:3	18:4	20:4	20:5	22:5	22:6	Total polyunsaturated fatty acids
	Percent	Kilocalories				Pe	ercent			
Males and females:										
Under 1	1.2	826	7.5	.8	0.0	*	*	† *	*	8.6
1-2	3.0	1,311	4.3	.5	† *	*	*	*	*	4.9
3-5	4.8	1,576	4.8	.5	† *	*	*	*	*	5.3
5 and under	8.9	1,389	5.0	.5	† *	*	*	*	*	5.6
Males:										
6-11	4.6	2,132	4.8	.4	† *	*	*	*	*	5.3
12-19	5.8	2,721	5.2	.5	*	*	*	*	*	5.9
20-29	7.8	2,757	5.3	.5	† *	.1	*	*	*	5.9
30-39	7.7	2,800	5.9	.6	† *	.1	*	*	*	6.6
40-49	7.2	2,378	5.7	.6	† *	.1	*	*	*	6.4
50-59	4.3	2,363	6.3	.6	*	.1	*	*	*	7.2
60-69	3.4	2,120	6.1	.6	*	.1	*	*	*	6.9
70 and over	3.4	1,835	5.8	.6	*	.1	*	*	*	6.6
20 and over	33.9	2,479	5.8	.6	*	.1	*	*	*	6.5
Females:										
6-11	4.4	1,881	5.1	.5	† *	*	*	*	*	5.7
12-19	5.6	1,905	5.3	.5	† *	*	*	*	*	6.0
20-29	7.0	1,867	5.5	.5	† *	.1	† *	*	*	6.1
30-39	8.8	1,703	5.9	.6	*	.1	*	*	*	6.6
40-49	6.7	1,697	6.6	.7	† *	.1	*	*	*	7.5
50-59	5.4	1,607	6.1	.6	*	.1	*	*	*	6.9
60-69	4.1	1,484	6.1	.7	† *	.1	*	*	.1	7.0
70 and over	4.9	1,391	5.9	.6	*	.1	*	*	*	6.6
20 and over	36.8	1,653	6.0	.6	*	.1	*	*	*	6.8
All individuals	100.0	2,017	5.6	.6	*	.1	*	*	*	6.4

^{*} Value less than 0.05 but greater than 0.

NOTE: Mean percentage calculations excluded two individuals with zero energy intake on day 1.

[†] Indicates a statistic that is potentially unreliable because of small sample size or large coefficient of variation.

Table 2.1--Saturated fatty acids intakes: Mean per individual, by sex and age, 1 day, CSFII 1995

Sex and age (years)	Percentage of population	4:0	6:0	8:0	10:0	12:0	14:0	16:0	18:0	Total saturated fatty acids
	Percent					Grams -				
Males and females:										
Under 1	1.2	.1	.1	.6	.5	3.7	1.8	6.4	1.8	15.1
1-2	3.0	.6	.3	.2	.5	.7	2.1	9.8	4.5	19.4
3-5	4.8	.5	.3	.2	.4	.7	2.1	11.1	5.3	21.2
5 and under	8.9	.5	.3	.3	.5	1.1	2.1	10.1	4.6	19.8
Males:										
6-11	4.6	.6	.4	.2	.5	.8	2.6	15.1	7.3	28.5
12-19	5.8	.8	.4	.3	.6	1.0	3.3	19.6	9.3	36.2
20-29	7.8	.7	.3	.2	.5	.9	2.9	19.2	8.8	34.6
30-39	7.7	.8	.4	.4	.7	1.1	3.4	20.8	9.7	38.1
40-49	7.2	.6	.3	.2	.5	.7	2.5	16.7	7.9	30.2
50-59	4.3	.5	.3	.2	.4	.8	2.3	17.0	8.2	30.4
60-69	3.4	.5	.3	.2	.4	.7	2.1	14.7	7.0	26.5
70 and over	3.4	.4	.2	.2	.4	.6	1.9	12.5	5.9	22.6
20 and over	33.9	.6	.3	.3	.5	.8	2.7	17.6	8.3	31.9
Females:										
6-11	4.4	.6	.3	.2	.5	.8	2.3	13.3	6.5	25.2
12-19	5.6	.5	.3	.2	.4	.8	2.3	13.2	6.2	24.7
20-29	7.0	.5	.2	.2	.4	.6	1.9	12.4	5.8	22.5
30-39	8.8	.4	.2	.2	.3	.7	1.9	12.0	5.6	21.8
40-49	6.7	.4	.2	.2	.4	.6	1.8	11.9	5.5	21.6
50-59	5.4	.4	.2	.2	.3	.6	1.6	10.6	5.0	19.4
60-69	4.1	.3	.2	.1	.3	.5	1.5	9.9	4.7	18.0
70 and over	4.9	.3	.2	.1	.3	.5	1.3	8.7	4.1	16.0
20 and over	36.8	.4	.2	.2	.3	.6	1.7	11.2	5.2	20.3
All individuals	100.0	.5	.3	.2	.4	.8	2.3	14.1	6.6	26.0

SOURCE: USDA Continuing Survey of Food Intakes by Individuals, 1995;
ARS, Beltsville Human Nutrition Research Center, Food Surveys Research Group.

Table 2.2--Monounsaturated fatty acids intakes: Mean per individual, by sex and age, 1 day, CSFII 1995

Sex and age (years)	Percentage of population	16:1	18:1	20:1	22:1	Total monounsaturated fatty acids
	Percent			Grams		
Males and females:						
Under 1	1.2	.2	10.9	*	† *	11.2
1-2	3.0	1.0	16.0	.1	*	17.3
3-5	4.8	1.1	20.2	.1	*	21.8
5 and under	8.9	.9	17.6	.1	*	18.9
Males:						
6-11	4.6	1.5	28.0	.1	.1	30.1
12-19	5.8	1.9	36.8	.2	.1	39.7
20-29	7.8	2.0	36.2	.2	.1	39.1
30-39	7.7	2.1	39.2	.2	.1	42.2
40-49	7.2	1.8	32.1	.2	.1	34.5
50-59	4.3	1.8	33.7	.2	.1	36.3
60-69	3.4	1.5	29.1	.2	.1	31.3
70 and over	3.4	1.3	24.2	.1	*	26.0
20 and over	33.9	1.8	33.8	.2	.1	36.3
Females:						
6-11	4.4	1.2	25.2	.1	*	26.9
12-19	5.6	1.2	24.8	.1	*	26.7
20-29	7.0	1.2	23.8	.1	*	25.5
30-39	8.8	1.2	23.1	.1	*	24.9
40-49	6.7	1.2	22.7	.1	*	24.3
50-59	5.4	1.0	21.2	.1	*	22.7
60-69	4.1	1.0	19.3	.1	*	20.8
70 and over	4.9	.9	17.4	.1	*	18.6
20 and over	36.8	1.1	21.7	.1	*	23.3
All individuals	100.0	1.4	26.9	.1	*	28.9

^{*} Value less than 0.05 but greater than 0.

[†] Indicates a statistic that is potentially unreliable because of small sample size or large coefficient of variation.

SOURCE: USDA Continuing Survey of Food Intakes by Individuals, 1995;
ARS, Beltsville Human Nutrition Research Center, Food Surveys Research Group.

Table 2.3--Polyunsaturated fatty acids intakes: Mean per individual, by sex and age, 1 day, CSFII 1995

Sex and age (years)	Percentage of population	18:2	18:3	18:4	20:4	20:5	22:5	22:6	Total polyunsaturated fatty acids
	Percent				(Grams			
Males and females:									
Under 1	1.2	6.6	.7	0.0	*	*	† *	†*	7.6
1-2	3.0	6.5	.7	† *	.1	*	*	*	7.3
3-5	4.8	8.5	.8	† *	.1	*	*	*	9.4
5 and under	8.9	7.5	.8	*	.1	*	*	*	8.5
Males:									
6-11	4.6	11.6	1.1	†*	.1	*	*	*	13.0
12-19	5.8	16.1	1.6	† *	.1	*	*	.1	18.1
20-29	7.8	16.7	1.6	† *	.2	*	*	.1	18.7
30-39	7.7	18.6	2.0	† *	.2	*	*	.1	21.0
40-49	7.2	15.6	1.6	†*	.2	*	*	.1	17.5
50-59	4.3	16.9	1.7	*	.2	.1	*	.1	19.1
60-69	3.4	15.2	1.6	†*	.2	*	*	.1	17.2
70 and over	3.4	12.1	1.2	*	.1	*	*	.1	13.7
20 and over	33.9	16.3	1.7	*	.2	*	*	.1	18.4
Females:									
6-11	4.4	10.7	1.0	†*	.1	*	*	*	11.9
12-19	5.6	11.3	1.1	†*	.1	*	*	*	12.6
20-29	7.0	11.9	1.2	†*	.1	† *	*	.1	13.4
30-39	8.8	11.3	1.2	*	.1	*	*	.1	12.8
40-49	6.7	12.5	1.3	†*	.1	*	*	.1	14.0
50-59	5.4	11.1	1.2	*	.1	*	*	.1	12.6
60-69	4.1	10.5	1.1	*	.1	*	*	.1	12.0
70 and over	4.9	9.3	1.0	*	.1	*	*	.1	10.5
20 and over	36.8	11.2	1.2	*	.1	*	*	.1	12.7
All individuals	100.0	12.9	1.3	*	.1	*	*	.1	14.5

^{*} Value less than 0.05 but greater than 0.

SOURCE: USDA Continuing Survey of Food Intakes by Individuals, 1995;

[†] Indicates a statistic that is potentially unreliable because of small sample size or large coefficient of variation.

Table 3.--Fatty acids: Mean percentages of total contributed by individual fatty acids, by sex and age, 1 day, CSFII 1995

Sex and age (years)	Percentage of population	Total fatty acids	4:0	6:0	8:0	10:0	12:0	14:0	16:0	18:0
	Percent	Grams				Percent				
Males and females:										
Under 1	. 1.2	33.9	.2	.2	2.0	1.6	11.3	5.4	18.5	5.1
1-2		44.0	1.3	.8	.6	1.1	1.7	4.9	22.3	10.1
3-5		52.4	1.0	.6	.4	.8	1.2	4.0	21.4	10.1
5 and under	. 9.0	47.2	1.0	.6	.6	1.0	2.7	4.5	21.3	9.5
Males:										
6-11	. 4.6	71.6	.9	.5	.4	.7	1.2	3.7	21.2	10.2
12-19		94.0	.8	.4	.3	.7	1.1	3.4	20.8	9.8
20-29		92.4	.7	.3	.3	.6	1.0	3.1	20.6	9.4
30-39		101.3	.7	.4	.4	.6	1.0	3.1	20.4	9.4
40-49		82.2	.7	.3	.2	.5	.9	3.0	20.5	9.7
50-59		85.8	.6	.3	.2	.5	.9	2.7	19.8	9.3
60-69		75.0	.6	.3	.3	.6	1.0	2.9	19.7	9.3
70 and over		62.3	.7	.4	.3	.6	.9	3.0	20.1	9.4
20 and over	. 33.9	86.6	.7	.4	.3	.6	.9	3.0	20.3	9.4
Females:										
6-11	. 4.4	64.0	.9	.5	.4	.7	1.2	3.6	20.8	10.1
12-19		64.0	.8	.4	.3	.7	1.2	3.5	20.6	9.5
20-29	. 7.0	61.4	.8	.4	.3	.6	1.0	3.3	20.4	9.3
30-39		59.5	.7	.4	.3	.6	1.1	3.1	20.1	9.3
40-49		59.9	.7	.3	.3	.6	1.1	3.0	19.8	9.1
50-59	. 5.4	54.7	.7	.4	.3	.6	1.1	3.0	19.6	9.0
60-69	. 4.1	50.8	.7	.4	.3	.6	1.2	2.9	19.6	9.2
70 and over		45.1	.7	.4	.3	.6	1.0	2.9	19.4	9.1
20 and over	. 36.8	56.3	.7	.4	.3	.6	1.1	3.0	19.9	9.2
All individuals	. 100.0	69.4	.7	.4	.3	.6	1.2	3.3	20.3	9.4

Continued

Table 3.--Fatty acids: Mean percentages of total contributed by individual fatty acids, by sex and age, 1 day, CSFII 1995--continued

Sex and age											
(years)	16:1	18:1	20:1	22:1	18:2	18.3	18:4	20.4	20:5	22:5	22:6
					Perc	ent					
Males and females:											
Under 1	.4	31.6	*	†*	20.0	2.3	0.0	*	† *	† *	+ *
1-2	2.1	35.9	.1	*	15.0	1.7	† *	.1	*	*	.1
3-5	2.1	38.3	.2	.1	16.2	1.6	† *	.1	*	*	.1
5 and under	1.9	36.6	.1	*	16.3	1.7	† *	.1	*	*	.1
Males:											
6-11	2.1	39.0	.2	.1	16.3	1.5	†*	.1	*	*	.1
12-19	2.0	39.1	.2	.1	17.3	1.7	†*	.2	*	*	.1
20-29	2.1	38.9	.2	.1	18.9	1.7	† *	.2	*	*	.1
30-39	2.1	39.0	.2	.1	18.8	2.0	†*	.2	*	*	.1
40-49	2.2	38.8	.2	.1	18.9	2.0	†*	.2	*	*	.1
50-59	2.1	39.0	.2	.1	20.1	2.0	†*	.3	.1	*	.2
60-69	2.1	38.8	.2	.1	19.9	2.1	*	.2	.1	*	.1
70 and over	2.1	38.5	.2	.1	19.6	2.0	*	.2	.1	*	.1
20 and over	2.1	38.9	.2	.1	19.2	1.9	*	.2	.1	*	.1
Females:											
6-11	1.9	39.0	.2	.1	16.8	1.7	†*	.1	*	*	.1
12-19	1.9	38.5	.2	.1	18.2	1.7	†*	.2	*	*	.1
20-29	2.0	38.2	.2	.1	19.2	1.9	†*	.2	† .1	*	.1
30-39	2.0	38.5	.2	.1	19.5	2.0	*	.2	*	*	.1
40-49	1.9	37.7	.2	.1	21.1	2.2	† *	.2	.1	*	.1
50-59	2.0	38.3	.2	.1	20.5	2.2	*	.2	*	*	.1
60-69	2.0	38.0	.2	.1	20.5	2.3	† *	.2	.1	*	.2
70 and over	1.9	38.3	.2	.1	20.9	2.2	*	.2	.1	*	.2
20 and over	2.0	38.2	.2	.1	20.2	2.1	*	.2	.1	*	.1
All individuals	2.0	38.4	.2	.1	18.9	1.9	*	.2	*	*	.1

^{*} Value less than 0.05 but greater than 0.

[†] Indicates a statistic that is potentially unreliable because of small sample size or large coefficient of variation.

NOTE: Mean percentage calculations excluded four individuals with no fatty acid intake on day 1.

SOURCE: USDA Continuing Survey of Food Intakes by Individuals, 1995; ARS, Beltsville Human Nutrition Research Center, Food Surveys Research Group.

Table 4.1--Saturated fatty acids from selected food groups: Mean intakes, individuals 20 years and older, 1 day, CSFII 1995

Sex and age (years)	4:0	6:0	8:0	10:0	12:0	14:0	16:0	18:0	Total saturated fatty acids
					Grams	s			
Men: (N = 1703)									
Males 20 and over:									
Grain products	.11	.05	.04	.08	.14	.45	3.90	2.02	6.9
Vegetables	.03	.01	.01	.02	.08	.13	1.81	.62	2.7
Fruits	†*	†*	† *	†*	†*	*	.08	.01	.1
Milk and milk products	.35	.19	.13	.26	.32	1.12	3.02	1.33	6.9
Meat, poultry, fish	.03	.02	.01	.06	.08	.63	6.24	3.09	10.4
Eggs	.01	.01	*	.01	.01	.04	.64	.26	1.0
Legumes	† *	†*	† .02	† .01	*	.01	.23	.12	.4
Fats and oils	.07	.04	.03	.06	.13	.25	1.29	.57	2.5
Nuts and seeds	.0	† *	† *	† *	† .01	† .01	.19	.07	.3
Sugars and sweets	*	*	*	.01	.04	.03	.22	.19	.5
Beverages	†*	† *	†*	*	† .01	† .01	.02	† .01	.1
Females: (N = 1642)									
Females 20 and over:									
Grain products	.07	.03	.03	.05	.10	.30	2.58	1.32	4.6
Vegetables	.02	.01	.01	.02	.05	.10	1.13	.40	1.8
Fruits	† *	† *	† *	*	† *	*	.08	.01	.1
Milk and milk products	.24	.13	.09	.18	.23	.78	2.10	.92	4.8
Meat, poultry, fish	.01	.01	.01	.03	.04	.32	3.45	1.69	5.7
Eggs	.01	*	*	.01	† .01	.03	.42	.17	.7
Legumes	† *	† *	*	*	*	.01	.16	.08	.3
Fats and oils	.03	.02	.02	.03	.10	.14	.88	.40	1.6
Nuts and seeds	.0	.0	† *	† *	† *	*	.13	.05	.2
Sugars and sweets	*	*	*	.01	.04	.03	.24	.21	.6
Beverages	† *	*	*	*	.02	.01	.02	*	.1

^{*} Value less than 0.005 but greater than 0.

[†] Indicates a statistic that is potentially unreliable because of small sample size or large coefficient of variation.

SOURCE: USDA Continuing Survey of Food Intakes by Individuals, 1995;

ARS, Beltsville Human Nutrition Research Center, Food Surveys Research Group.

Table 4.2--Mononunsaturated fatty acids from selected food groups: Mean intakes, individuals 20 years and older, 1 day, CSFII 1995

Sex and age (years)	16:1	18:1	20:1	22:1	Total monounsaturated fatty acids
			Grams		
Men: (N = 1703)					
Males 20 and over:					
Grain products	.24	10.11	.02	*	10.5
Vegetables	.09	3.60	.02	.03	3.8
Fruits	.01	.10	†*	.0	.1
Milk and milk products	.27	2.83	† *	.0	3.2
Meat, poultry, fish	1.05	11.58	.08	.02	12.9
Eggs	.07	1.12	.01	*	1.2
Legumes	.02	.46	*	†*	.5
Fats and oils	.06	2.72	.01	*	2.8
Nuts and seeds	*	.88	.02	.0	.9
Sugars and sweets	.01	.35	*	†*	.4
Beverages	†*	† .01	.0	.0	*
Females: (N = 1642)					
Females 20 and over:					
Grain products	.15	6.66	.01	*	6.9
Vegetables	.06	2.23	.01	.01	2.3
Fruits	.01	.12	.0	.0	.1
Milk and milk products	.19	1.95	*	.0	2.2
Meat, poultry, fish	.58	6.55	.05	.02	7.3
Eggs	.05	.73	*	*	.8
Legumes	.02	.30	*	†*	.3
Fats and oils	.03	2.12	.01	*	2.2
Nuts and seeds	*	.61	.01	.0	.6
Sugars and sweets	.01	.41	*	*	.5
Beverages	† *	.01	.0	.0	*

^{*} Value less than 0.005 but greater than 0 or in the last column a value less than 0.05 but greater than 0.

SOURCE: USDA Continuing Survey of Food Intakes by Individuals, 1995;

[†] Indicates a statistic that is potentially unreliable because of small sample size or large coefficient of variation.

Table 4.3--Polyunsaturated fatty acids from selected food groups: Mean intakes, individuals 20 years and older, 1 day, CSFII 1995

Sex and age (years)	18:2	18:3	18:4	20:4	20:5	22:5	22:6	Total polyunsaturated fatty acids
				(d	Grams			
Men: (N = 1703)								
Males 20 and over:								
Grain products	5.43	.42	.0	.02	*	*	*	5.9
Vegetables	2.41	.23	.0	*	†*	.0	†*	2.7
Fruits	.10	.03	.0	.0	.0	.0	.0	.1
Milk and milk products	.29	.15	.0	†*	.0	.0	.0	.4
Meat, poultry, fish	3.79	.40	*	.12	.03	.02	.06	4.5
Eggs	.49	.03	.0	.03	*	.0	.01	.6
Legumes	.32	.04	.0	*	.0	.0	.0	.4
Fats and oils	2.81	.34	.0	† *	.0	.0	.0	3.2
Nuts and seeds	.52	.01	.0	† *	.0	.0	.0	.5
Sugars and sweets	.10	*	.0	.0	.0	.0	.0	.1
Beverages	.02	.01	.0	.0	.0	.0	.0	*
Females: (N = 1642)								
Females 20 and over:								
Grain products	3.71	.29	.0	.01	*	*	*	4.0
Vegetables	1.49	.16	.0	*	*	.0	*	1.7
Fruits	.09	.02	.0	.0	.0	.0	.0	.1
Milk and milk products	.21	.10	.0	† *	.0	.0	*	.3
Meat, poultry, fish	2.38	.24	*	.07	.03	.01	.06	2.8
Eggs	.32	.02	.0	.02	*	.0	*	.4
Legumes	.16	.02	.0	† *	.0	.0	.0	.2
Fats and oils	2.35	.28	.0	† *	.0	.0	.0	2.6
Nuts and seeds	.39	.01	.0	.0	.0	.0	.0	.4
Sugars and sweets	.11	*	.0	† *	.0	.0	.0	.1
Beverages	.01	.01	.0	.0	.0	.0	.0	*

^{*} Value less than 0.005 but greater than 0 or in the last column a value less than 0.05 but greater than 0.

SOURCE: USDA Continuing Survey of Food Intakes by Individuals, 1995;

[†] Indicates a statistic that is potentially unreliable because of small sample size or large coefficient of variation.

APPENDIX A. Counts of Day 1 respondents and population percentages, by sex and age, 1995

Interpreting information in appendix A--

- Appendix A shows unweighted counts of survey respondents in each sex-age group shown in tables 1 through 4, as well as the percentages of the population that they represent. Forty-six breast-fed children are excluded from these counts and population percentages. Weights are used to account for differential rates of selection and nonresponse, to calibrate the sample to match population characteristics known to be correlated with eating behavior, and to equalize intakes over the 4 quarters of the year and the 7 days of the week.
- The statistics presented in tables 1 through 4 are based on the data from all appropriate respondents. In general, fasters (that is, individuals reporting no foods or beverages consumed for the day) were included in the calculations for the tables. However, two individuals (a male age 40-49 and a female age 70 and over) were excluded from the calculations of sources of energy (table 1) because nonzero energy intakes are required from each person for the contribution to energy estimates and fasters are the only individuals reporting zero energy intake. Four individuals (males age 20-29, 40-49, and 50-59 and a female age 70 and over) who had zero intake of fatty acids were excluded from the mean percentage calculations in table 3 because the calculations required nonzero total nutrient intakes for each person.

APPENDIX A. Counts of Day 1 respondents and population percentages, by sex and age, 1995

Sex and age (Years)	Day 1 count (unweighted)	Day 1 percentage of population (weighted)
	number	percent
Males and females:		
Under 1	99	1.2
1-2	490	3.0
3-5	464	4.8
5 and under	1,053	8.9
Males:		
6-11	233	4.6
12-19	196	5.8
20-29	205	7.8
30-39	206	7.7
40-49	284	7.2
50-59	354	4.3
60-69	315	3.3
70 and over	339	3.4
20 and over	1,703	33.9
Females:		
6-11	245	4.4
12-19	208	5.6
20-29	171	7.0
30-39	240	8.7
40-49	266	6.6
50-59	329	5.5
60-69	301	4.1
70 and over	335	4.9
20 and over	1,642	36.8
All individuals	5,280	100.0

Excludes breast-fed children

Source: USDA Continuing Survey of Food Intakes by Individuals, 1995:

APPENDIX B. Chemical names, trivial names, and abbreviations of reported fatty acids¹

Chemical name	Trivial name of most typical isomer ²	Abbreviation
SATURATED ACIDS		
Butanoic	Butyric	4:0
Hexanoic	Caproic	6:0
Octanoic	Caprylic	8:0
Decanoic	Capric	10:0
Dodecanoic	Lauric	12:0
Tetradecanoic	Myristic	14:0
Hexadecanoic	Palmitic	16:0
Octadecanoic	Stearic	18:0
MONOUNSATURATED AC	CIDS	
Hexadecenoic	Palmitoleic	16:1
Octadecenoic	Oleic	18:1
Eicosenoic	Gadoleic	20:1
Docosenoic	Erucic	22:1
POLYUNSATURATED AC	IDS	
Octadecadienoic	Linoleic	18:2
Octadecatrienoic	Linolenic	18:3
Octadecatetraenoic	Parinaric	18:4
Eicosatetraenoic	Arachidonic	20:4
Eicsapentaenoic	Timnodonic	20:5
Docosapentaenoic	Clupanodonic	22:5
Docosahexaenoic	(no trivial name)	22:6

¹Nutrient information on the above 19 individual fatty acids in foods was provided by the Nutrient Data Laboratory, ARS, USDA

²For monounsaturated and polyunsaturated fatty acids, the trivial name reflects the most typical isomer, although all isomers, both *cis* and *trans and positional isomers*, are included in the data. Sources: Hilditch and Williams 1964, Swern 1979.

APPENDIX C. Statistical notes

Estimates based on small cell sizes may tend to be less statistically reliable than estimates based on larger cell sizes. Cell size refers to the unweighted number of individuals in a given sex-age group or demographic group (see appendix A). The guidelines (listed below) for determining when a cell size is small takes into account the average design effect for the survey. The design effect results from the complex sample design and from the procedures used to weight the data. When the design effect is 1.00, its effect on accuracy is negligible; a larger design effect implies a greater effect on variance. The guidelines derive from a policy statement (FASEB/LSRO 1995) that specifies the use of a broadly calculated design effect. In that role we are using a variance inflation factor. Variance inflation factors for the survey data sets used to generate these tables are as follows:

CSFII Day 1 1.52

Daggers are used in the tables to flag estimates that may tend to be less statistically reliable than those that are not flagged. An estimated mean is flagged when it is based on a cell size of less than 30 times the average design effect or when its coefficient of variation (CV) is equal to or greater than 30 percent. The CV is the ratio of the estimated standard error of the mean to the estimated mean, expressed as a percentage. This rule has been applied to data in tables 1 through 4 to flag estimates that should be used with caution.

Standard errors of the mean for tables 1 through 4 are available from the Food Surveys Research Group, BHNRC, ARS, USDA, 4700 River Road, Unit 83, Riverdale, MD 20737. Phone: 301-734-5825; FAX: 301-734-5496; E-mail: fsrg@rbhnrc.usda.gov.

APPENDIX D. Examples of foods in food groups used in tables 4.1 to 4.3

General Note: Many foods are mixtures of two or more ingredients. Food mixtures reported as a single item by respondents are usually coded as a single item and tabulated under the food group of the primary ingredient.

GRAIN PRODUCTS: Includes yeast breads, rolls, cereals, pasta, quick breads, pancakes, French toast, cakes, cookies, pies, crackers, popcorn, pretzels, corn chips, ready-to-eat cereals, and mixtures having a grain product as a main ingredient, such as pizza, or spaghetti with sauce.

VEGETABLES: Includes white potatoes, dark-green and deep-yellow vegetables, tomatoes, lettuce, green beans, corn, green peas, lima beans, and other vegetables; mixtures having vegetables as a main ingredient, such as vegetable soup, or creamed corn; and vegetable juices.

FRUITS: Includes citrus fruits and juices, dried fruits, and other fruits; mixtures having fruit as a main ingredient, such as fruit dessert, or fruit salad; and fruit juices.

MILK AND MILK PRODUCTS: Includes milk and milk drinks, yogurt, cheese, milk desserts such as ice-cream, or pudding; fluid and whipped cream, half-and-half, sour cream, and milk sauces and gravies.

MEAT, POULTRY, AND FISH: Includes beef, pork, lamb, veal, game, organ meats, frankfurters, sausages, luncheon meats, poultry, fish, shellfish, and mixtures having meat, poultry, or fish as a main ingredient, such as tuna salad, chicken soup, or cheeseburger on a bun coded as a single item.

EGGS: Includes whole eggs, egg whites, egg substitutes, and mixtures having egg as a main ingredient, such as omelets, egg salad, or egg sandwiches coded as a single item.

LEGUMES: Includes cooked beans, peas, and lentils; mixtures having legumes as a main ingredient, such as baked beans, or lentil soup; soybean derived products, such as soy-based baby formulas, tofu, soy sauce, and soy-based meal replacements; and meat substitutes that are mainly vegetable protein.

NUTS AND SEEDS: Includes unroasted, roasted, and honey-roasted nuts and peanuts; coconut, peanut butter, peanut butter sandwiches coded as a single item, nut mixtures; and unroasted and roasted seeds.

FATS AND OILS: Includes table fats, cooking fats, vegetable oil, salad dressings, non dairy cream substitutes; and tartar sauce and other sauces that are mainly fat and oil.

SUGAR AND SWEETS: Includes sugar, sugar substitutes, syrups, honey, sweet toppings, frostings, sweet sauces, jellies, jams, preserves, fruit butters, marmalades, gelatin desserts, ices, fruit bars, popsicles, candy (including dietetic sweets), and chewing gum.

BEVERAGES: Includes alcoholic beverages, such as beer, wine, ale, liqueurs, cocktails, other mixed drinks, and distilled liquors; nonalcoholic beverages, such as coffee, tea, fruit drinks and ades, and soft drinks.