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Update for Chapter 11 of the Exposure Factors Handbook

Intake of Meats, Dairy Products, and Fats

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11. INTAKE OF MEATS, DAIRY PRODUCTS, AND FATS

11.1. INTRODUCTION

This document is an update to Chapter 11 (“Intake of Meats, Dairy Products, and Fats”) of the *Exposure Factors Handbook: 2011 Edition* (U.S. EPA, 2011). New information that has become available since 2011 has been added, and the recommended values have been revised as needed to reflect the new information. The chapter includes a comprehensive review of the scientific literature through 2016. The new literature was identified via formal literature searches conducted by U.S. Environmental Protection Agency (EPA) staff as well as targeted Internet searches conducted by the authors of this chapter. Appendix A provides a list of the key terms that were used in the literature searches. Revisions to this chapter have been made in accordance with the approved quality assurance plan for the Exposure Factors Handbook.

The American food supply is generally considered to be one of the safest in the world. Nevertheless, meats, dairy products, and fats can become contaminated with toxic chemicals by several pathways. For example, these foods sources can become contaminated if animals are exposed to contaminated media (i.e., soil, water, or feed crops). To assess exposure through this pathway, information on meat, dairy, and fat ingestion rates are needed.

A variety of terms may be used to define intake of meats, dairy products, and fats (e.g., consumer-only intake, per capita intake, total meat, dairy product, or fat intake, as-consumed intake, uncooked edible portion intake, dry-weight intake). As described in Chapter 9, “Intake of Fruits and Vegetables,” consumer-only intake is defined as the quantity of meats, dairy products, or fats consumed by individuals during the survey period averaged across only the individuals who consumed these food items during the survey period. Per capita intake rates are generated by averaging consumer-only intakes over the entire survey population (including those that reported no intake). In general, per capita intake rates are appropriate for use in exposure assessment for which average dose estimates are of interest because they represent both individuals who ate the foods during the survey period and individuals who may eat the food items at some time, but did not consume them during the survey period. Per capita intake, therefore, represents an average across the entire population of interest, but does so at the expense of underestimating consumption for the subset of the population that consumes the food in question. Total intake refers to the sum of all meats, dairy products, or fats consumed in a day.

Intake rates may be expressed on the basis of the as-consumed weight (e.g., cooked or prepared) or on the uncooked or unprepared weight. As-consumed intake rates are based on the weight of the food in the form that it is consumed and should be used in assessments where the basis for the contaminant concentrations in foods is also indexed to the as-consumed weight. Some of the food ingestion values provided in this chapter are expressed as as-consumed intake rates because this is the way that data were reported by survey respondents. Other values are provided as uncooked weights based on analyses of survey data that account for weight changes that occur during cooking. This adjustment is important because concentration data to be used in the dose equation are often measured in uncooked food samples. Note that cooking can either increase or decrease food weight. Similarly, cooking can increase the mass of a contaminant in food (due to formation reactions, or absorption from cooking oils or water) or decrease the mass of a contaminant in food (due to vaporization, fat loss, or leaching). The combined effects of changes in food weight and changes in contaminant mass can result in either an increase or decrease in contaminant concentration in cooked food. Therefore, if the as-consumed ingestion rate and the uncooked concentration are used in the dose equation, dose may be underestimated or overestimated. It is important for the assessor to be aware of these issues and choose intake rate data that best match the concentration data being used. For more information on cooking losses and conversions necessary to account for such losses, refer to Chapter 13 of this handbook.

Sometimes contaminant concentrations in food are reported on a dry-weight basis. When these data are used in an exposure assessment, it is recommended that dry-weight intake rates also be used. Dry-weight food concentrations and intake rates are based on the weight of the food consumed after the moisture content has been removed. Similarly, when contaminant concentrations in food are reported on a lipid-weight basis, lipid-weight intake rates should be used. For information on converting the intake rates presented in this chapter to dry-weight or lipid-weight intake rates, refer to Sections 11.5 and 11.6 of this chapter.

The purpose of this chapter is to provide intake data for meats, dairy products, and fats. The recommendations for ingestion rates for these food sources for use in risk assessment are provided in the next section, along with a summary of the confidence ratings for these recommendations. The recommended values are based on the key studies identified by EPA for these factors. As described in Chapter 1 of the

Chapter 11—Intake of Meats, Dairy Products, and Fats

Exposure Factors Handbook: 2011 Edition (U.S. EPA, 2011), the key studies represent the most up-to-date and scientifically sound ones for deriving recommendations for exposure factors, whereas other studies are designated "relevant," meaning applicable or pertinent, but not necessarily the most important. For example, studies that provide supporting data or information related to the factor of interest (e.g., percentage of the population consuming meats, dairy products, or fats), or have study designs or approaches that make the data less applicable to the general population (e.g., studies that targeted specific populations or older studies) have been designated as relevant rather than key. Key studies were selected based on the general assessment factors described in Chapter 1 of the Handbook. Following the recommendations, the key study on ingestion of meats and dairy products among the general population is summarized (see Section 11.3.1). Relevant data on general population ingestion of meats and dairy products are also provided (see Section 11.3.2). These studies are presented to provide the reader with added perspective on the current state-of-knowledge pertaining to ingestion of meats and dairy products. Data on pregnant and lactating women are provided in Section 11.3.3, and key and relevant studies on intake of fats are provided in Section 11.4.

11.2. RECOMMENDATIONS

Table 11-1 presents a summary of the recommended values for per capita and consumer-only intake of meats, dairy products, and fats for use in exposure and risk assessment. Table 11-2 provides confidence ratings for these recommendations.

EPA analyses of data from the 2005–2010 National Health and Nutrition Examination Survey (NHANES) were used in selecting recommended intake rates for intake of meats and dairy products by the general population. The EPA analysis of meat and dairy products was conducted using childhood age groups from EPA's *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005). The EPA analysis of fat intake data from the U.S. Department of Agriculture's (USDA's) Continuing Survey of Food Intake by Individuals (CSFII, U.S. EPA, 2007) were used in selecting recommended intake rates for fats. This study also used the childhood age groups recommended by U.S. EPA (2005).

The NHANES data on which the recommendations for meats and dairy products are based, and the CSFII data on which the recommendations for fats are based are short-term survey data and may not necessarily reflect the

long-term distribution of average daily intake rates. However, because these broad categories of food (i.e., total meats and dairy products), are eaten on a daily basis throughout the year with minimal seasonality, the short-term distribution may be a reasonable approximation of the long-term distribution, although it will display somewhat increased variability. This implies that the upper percentiles shown here will tend to overestimate the corresponding percentiles of the true long-term distribution. In general, the recommended values based on EPA's analyses of NHANES data and CSFII data represent the uncooked weight of the edible portion of meat, dairy, and fats. It should be noted that because the recommendations for fat intake are based on 1994–1996 and 1998 CSFII data, they may not reflect the most recent changes that may have occurred in consumption patterns.

USDA and the U.S. Department of Health and Human Services (USDHHS) jointly developed *Dietary Guidelines for Americans: 2010* that provide information and advice for choosing healthy eating patterns (USDA and USDHHS, 2010). The guidance may differ from the recommended intake rates for meat, dairy, and fats that are provided in this chapter for use in exposure/risk assessment because NHANES and similar surveys reflect actual intake rather than dietary goals.

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Table 11-1. Recommended Values for 2-Day Average^a Intake of Meats^b, Dairy Products^c, and Fats, (edible portion, uncooked weight)^d						
Age Group (years)	Per Capita		Consumers Only		Multiple Percentiles	Source
	Mean g/kg-day	95 th Percentile g/kg-day	Mean g/kg-day	95 th Percentile g/kg-day		
Total Meat						
Birth to <1 month	0	0 ^e	0	0 ^e		
1 to <3 months	<0.005	0 ^e	<0.005	<0.05 ^e		
3 to <6 months	0.2	1.6 ^e	1.6	5.3 ^e		
6 to <12 months	2.4	8.1	3.1	9.3		
Birth to <1 year	1.3	5.7	3.0	8.9		
1 to <2 years	3.9	9.5	4.1	9.6		
2 to <3 years	4.2	9.5	4.3	9.6		
3 to <6 years	4.0	9.0	4.0	9.0		
6 to <11 years	3.0	6.6	3.0	6.7		
11 to <16 years	2.1	4.9	2.2	4.9	See Tables 11-3 and 11-4.	EPA Analysis of NHANES 2005–2010.
16 to <21 years	2.0	4.6	2.0	4.6		
21 to <30 years	1.9	4.2	1.9	4.2		
30 to <40 years	1.8	4.2	1.8	4.2		
40 to <50 years	1.7	3.8	1.8	3.8		
50 to <60 years	1.6	3.4	1.6	3.5		
60 to <70 years	1.4	3.2	1.4	3.2		
70 to <80 years	1.3	2.9	1.3	2.9		
80+ years	1.2	2.8	1.2	2.8		
21 to <50 years	1.8	4.1	1.8	4.1		
50+ years	1.4	3.2	1.5	3.2		
Whole Population	1.9	4.8	2.0	4.8		
Total Dairy Products						
Birth to <1 month	6.7	20.6 ^e	9.6	26.3 ^e		
1 to <3 months	5.4	17.9 ^e	8.3	19.4 ^e		
3 to <6 months	5.1	16.1 ^e	6.5	17.8 ^e		
6 to <12 months	16.1	78.7	17.0	83.2		
Birth to <1 year	10.9	57.1	13.1	64.2		
1 to <2 years	48.8	100.5	48.8	100.5		
2 to <3 years	36.1	78.7	36.1	78.7		
3 to <6 years	22.6	51.1	22.6	51.1		
6 to <11 years	13.8	31.8	13.8	31.8		
11 to <16 years	6.8	18.2	6.8	18.2	See Tables 11-3 and 11-4.	EPA Analysis of NHANES 2005–2010.
16 to <21 years	4.4	13.0	4.4	13.0		
21 to <30 years	3.2	9.7	3.2	9.7		
30 to <40 years	3.2	10.1	3.2	10.1		
40 to <50 years	3.2	8.9	3.2	8.9		
50 to <60 years	3.2	9.6	3.2	9.6		
60 to <70 years	3.0	9.1	3.0	9.1		
70 to <80 years	3.2	9.2	3.2	9.2		
80+ years	4.0	10.2	4.0	10.2		
21 to <50 years	3.2	9.6	3.2	9.6		
50+ years	3.2	9.6	3.2	9.6		
Whole Population	6.3	23.5	6.3	23.5		
Individual Meat and Dairy Products—See Tables 11-5 and 11-6.						

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Table 11-1. Recommended Values for 2-Day Average^a Intake of Meats^b, Dairy Products^c, and Fats (edible portion, uncooked weight)^d (Continued)

Age Group	Per Capita		Consumers Only		Multiple Percentiles	Source
	Mean	95 th Percentile	Mean	95 th Percentile		
	g/kg-day	g/kg-day	g/kg-day	g/kg-day		
Total Fat						
Birth to <1 month	5.2	16	7.8	16		
1 to <3 months	4.5	12	6.0	12		
3 to <6 months	4.1	8.2	4.4	8.3		
6 to <12 months	3.7	7.0	3.7	7.0		
1 to <2 years	4.0	7.1	4.0	7.1		
2 to <3 years	3.6	6.4	3.6	6.4		
3 to <6 years	3.4	5.8	3.4	5.8		
6 to <11 years	2.6	4.2	2.6	4.2	See Tables	
11 to <16 years	1.6	3.0	1.6	3.0	11-35 and	U.S. EPA
16 to <21 years	1.3	2.7	1.3	2.7	11-37.	(2007).
21 to <31 years	1.2	2.3	1.2	2.3		
31 to <41 years	1.1	2.1	1.1	2.1		
41 to <51 years	1.0	1.9	1.0	1.9		
51 to <61 years	0.9	1.7	0.9	1.7		
61 to <71 years	0.9	1.7	0.9	1.7		
71 to <81 years	0.8	1.5	0.8	1.5		
≥81 years	0.9	1.5	0.9	1.5		

^a Based on the average of two days of food consumption reported for each NHANES respondent. If the respondent reported zero consumption on one of the two days and non-zero consumption on the other day, his/her average consumption would be the average of zero and non-zero consumption.

^b Total Meat includes: beef, fat; beef, fat-baby food; beef, kidney; beef, liver; beef, liver-baby food; beef, meat; beef, meat byproducts; beef, meat byproducts-baby food; beef, meat, dried; beef, meat-baby food; chicken, fat; chicken, fat-baby food; chicken, liver; chicken, meat; chicken, meat byproducts; chicken, meat byproducts-baby food; chicken, meat-baby food; chicken, skin; chicken, skin-baby food; goat, fat; goat, kidney; goat, liver; goat, meat; goat, meat byproducts; horse, meat; meat, game; pork, fat; pork, fat-baby food; pork, kidney; pork, liver; pork, meat; pork, meat byproducts; pork, meat byproducts-baby food; pork, meat-baby food; pork, skin; poultry, other, fat; poultry, other, liver; poultry, other, meat; poultry, other, meat byproducts; poultry, other, skin; rabbit, meat; sheep, fat; sheep, fat-baby food; sheep, kidney; sheep, liver; sheep, meat; sheep, meat byproducts; sheep, meat-baby food; turkey, fat; turkey, fat-baby food; turkey, liver; turkey, liver-baby food; turkey, meat; turkey, meat byproducts; turkey, meat byproducts-baby food; turkey, meat-baby food; turkey, skin; turkey, skin-baby food.

^c Total Dairy includes: milk, fat; milk, fat-baby food/infant formula; milk, nonfat solids; milk, nonfat solids-baby food/infant formula; milk, sugar (lactose)-baby food/infant formula; milk, water; milk, water-baby food/infant formula.

^d For more information, refer to the Frequently Asked Questions at <http://fcid.foodrisk.org/>.

^e Estimates are less statistically reliable based on guidance published in the *Joint Policy on Variance Estimation and Statistical Reporting Standards on NHANES III and CSFII Reports: Human Nutrition Information Service, National Center for Health Statistics (HNIS/NCHS) Analytical Working Group Recommendations* (NCHS, 1993).

Table 11-2. Confidence in Recommendations for Intake of Meats, Dairy Products, and Fats ^a		
General Assessment Factors	Rationale	Rating
Soundness		High
<i>Adequacy of Approach</i>	The survey methodology and data analysis were adequate. The surveys sampled nearly 25,000 individuals for meats and dairy products and 20,000 individuals for fats. Analyses of primary data were conducted.	
<i>Minimal (or Defined) Bias</i>	No physical measurements were taken. The method relied on recent recall of meats and dairy products eaten.	
Applicability and Utility		High for meats and dairy products; medium for fats
<i>Exposure Factor of Interest</i>	The key studies were directly relevant to meat, dairy, and fat intake.	
<i>Representativeness</i>	The data were demographically representative of the U.S. population (based on stratified random sample).	
<i>Currency</i>	Data were collected between 2005 and 2010 for meat and dairy products and between 1994 and 1998 for fats.	
<i>Data Collection Period</i>	Data were collected for two nonconsecutive days.	
Clarity and Completeness		High
<i>Accessibility</i>	The NHANES data, the FCID Consumption Calculator, and the CSFII data are publicly available.	
<i>Reproducibility</i>	The methodology used was clearly described; enough information was included to reproduce the results.	
<i>Quality Assurance</i>	NHANES and CSFII follow strict QA/QC procedures. Data generated by the FCID Consumption Calculator has been reviewed by EPA.	
Variability and Uncertainty		Medium to high for averages, low for long-term upper percentiles; low for individual foods
<i>Variability in Population</i>	Full distributions were provided for total meats, total dairy products, and total fats. Means were provided for individual meats and dairy products.	
<i>Uncertainty</i>	Data collection was based on recall of consumption for a 2-day period; the accuracy of using these data to estimate long-term intake (especially at the upper percentiles) is uncertain. However, use of short-term data to estimate chronic ingestion can be assumed for broad categories of foods such as total meats, total dairy products, and total fats. Uncertainty is likely to be greater for individual meats and dairy products.	
Evaluation and Review		Medium
<i>Peer Review</i>	Both the NCHS NHANES and the USDA CSFII survey received high levels of peer review. The EPA analysis of the NHANES data has not been peer reviewed outside the Agency, but the methodology has been used in analysis of previous data.	
<i>Number and Agreement of Studies</i>	There was one key study for intake of meat and dairy products (2005–2010 NHANES) and one key study for fat intake (U.S. EPA, 2007, based on 1994–1996, 1998 CSFII).	
Overall Rating		Medium to high confidence in the averages; Low confidence in the long-term upper percentiles
^a	See Section 1.5.2 in Chapter 1 of the <i>Exposure Factors Handbook: 2011 Edition</i> (U.S. EPA, 2011) for a detailed description of the evaluation criteria used in this table.	
FCID	= Food Commodity Intake Database.	

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11.3. INTAKE OF MEAT AND DAIRY PRODUCTS

11.3.1. Key Meat and Dairy Intake Study

11.3.1.1. EPA Analysis of Consumption Data from 2005–2010 National Health and Nutrition Examination Survey

The key source of recent information on consumption rates of meat and dairy products is the U.S. Centers for Disease Control and Prevention’s National Center for Health Statistics’ (NCHS) NHANES. Data from NHANES 2005–2010 have been used by the EPA to generate per capita and consumer-only intake rates for both individual meat and dairy products and total meat and dairy products.

NHANES is designed to assess the health and nutritional status of adults and children in the United States. In 1999, the survey became a continuous program that interviews a nationally representative sample of approximately 7,000 persons each year and examines a nationally representative sample of about 5,000 persons each year, located in counties across the country, 15 of which are visited each year. Data are released on a 2-year basis, thus, for example, the 2005 data are combined with the 2006 data to produce NHANES 2005–2006.

The dietary interview component of NHANES is called *What We Eat in America* (WWEIA) and is conducted by the USDA and the USDHHS. USDHHS’ NCHS is responsible for the sample design and data collection and USDA’s Food Surveys Research Group is responsible for the dietary data collection methodology, maintenance of the databases used to code and process the data, and data review and processing. Beginning in 2003, two nonconsecutive days of 24-hour intake data were collected. The first day is collected in-person, and the second day is collected by telephone 3 to 10 days later. These data are collected using USDA’s dietary data collection instrument, the Automated Multiple Pass Method. This method provides an efficient and accurate means of collecting intakes for large-scale national surveys. It is fully computerized and uses a 5-step interview. Details can be found at USDA’s Agriculture Research Service (<http://www.ars.usda.gov/ba/bhnrc/fsrg>).

The 2005–2010 NHANES surveys are stratified, multistage probability samples of the civilian noninstitutionalized U.S. population. The sampling frame was based on the 2000 U.S. population census estimates. Several sets of sampling weights are available for use with the intake data. By using appropriate weights, data for all 6 years of the surveys can be combined. Additional information on NHANES can be obtained at <http://www.cdc.gov/nchs/nhanes.htm>.

The EPA Office of Pesticide Programs used NHANES 2005–2010 data to update the Food Commodity Intake Database (FCID) that was developed in earlier analyses of data from the USDA’s CSFII (USDA, 2000; U.S. EPA, 2000) (see Section 11.3.2.3). The updated FCID is available at: <http://fcid.foodrisk.org/>, along with the FCID Consumption Calculator, which was used to develop the estimates provided in this chapter for various age and racial/ethnic groups. The Calculator may also be used to develop estimates for other age groups or population, customized to the users’ needs. In the FCID, NHANES data on the foods people reported eating were converted to the quantities of agricultural commodities eaten. “Agricultural commodity” is a term used by EPA to mean plant (or animal) parts used as feed or consumed by humans as food; when such items are raw or unprocessed, they are referred to as “raw agricultural commodities.” For example, beef stew may contain the commodities beef, potatoes, carrots, and other vegetables. FCID contains approximately 560 unique commodity names and 8-digit codes. The FCID commodity names and codes were selected and defined by EPA and were based on the EPA Food Commodity Vocabulary (<http://www.epa.gov/pesticides/foodfeed/>). The codes and definitions used to determine the various meat and dairy commodities in the EPA analysis are provided in Appendix B.

Intake rates were generated for a variety of food items/groups based on the agricultural commodities included in the FCID. These intake rates represent intake of all forms of the product (e.g., both home produced and commercially produced) for 2 survey days. For respondents who reported intake on both days, their intake rate represents the average rate for the 2 survey days. For respondents who reported consumption on one day and no consumption on the other day, their intake rate represents the average of zero and nonzero consumption. Two-day average intake rates were calculated for all individuals in the database for each of the food items/groups. These average daily intake rates were divided by each individual’s reported body weight to generate intake rates in units of grams per kilogram of body weight per day (g/kg-day). The data were weighted according to the 6-year, 2-day sample weights provided in NHANES 2005–2010 to adjust the data for the sample population to reflect the national population. The 2005–2010 analysis of NHANES/FCID data for meats and dairy products included data for nearly 25,000 respondents.

Summary statistics were generated on a consumer-only and on a per capita basis. Summary statistics, including number of observations,

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percentage of the population consuming the meats and dairy products being analyzed, mean intake rate, and standard error of the mean intake rate were calculated for total meats, total dairy products, and selected individual meats and dairy products. Percentiles of the intake rate distribution (i.e., 1st, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 99th, and the maximum value) were also provided for total meats and dairy products. Data were provided for the following childhood age groups: <1 month, 1 to <3 months, 3 to <6 months, 6 to <12 months, 1 to <2 years, 2 to <3 years, 3 to <6 years, 6 to <11 years, 11 to <16 years, and 16 to <21 years to be consistent with those recommended in EPA's *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005). Data for the birth to <1-year age group were also provided to be consistent with the *Exposure Factors Handbook: 2011 Edition*. For adults, data were provided for ages 21 to <30 years, 30 to <40 years, 40 to <50 years, 50 to <60 years, 60 to <70 years, 70 to <80 years, and 80+ years, and for ages 21 to <50 years and 50+ years. Data were also provided according to the following racial/ethnic groups: Mexican American, non-Hispanic Black, non-Hispanic White, other Hispanic, and other race including multiple races.

Table 11-3 presents per capita intake data for total meats and dairy products in g/kg-day; Table 11-4 provides consumer-only intake data for total meats and total dairy products in g/kg-day. Table 11-5 provides per capita intake data for individual meats and dairy products, and Table 11-6 provides consumer-only intake data for individual meats and dairy products. In general, these data represent intake of the edible portions of uncooked foods.

Because the results are presented in units of g/kg-day, the use of these data in calculating potential dose does not require the body-weight factor to be included in the denominator of the average daily dose equation. It should be noted that converting these intake rates into units of g/day by multiplying by a single average body weight is inappropriate because individual intake rates were indexed to the reported body weights of the survey respondents. If intake data in units of g/day are needed, they can be obtained using the FCID Consumption Calculator which is available at <http://fcid.foodrisk.org/>. Also, note that the distribution of average daily intake rates generated using short-term data (e.g., 2-day) does not necessarily reflect the long-term distribution of average daily intake rates. The distributions generated from short-term and long-term data will differ to the extent that each individual's intake varies from day to day; the distributions will be similar to the extent that

individuals' intakes are constant from day to day. However, for broad categories of foods (e.g., total meats and total dairy) that are eaten on a daily basis throughout the year, the short-term distribution may be a reasonable approximation of the true long-term distribution, although it will show somewhat more variability. In this chapter, distributions are provided only for broad categories of meats and dairy (i.e., total meats and total dairy). Because of the increased variability of the short-term distribution, the short-term upper percentiles shown here may overestimate the corresponding percentiles of the long-term distribution. For individual foods, only the mean, standard error, and percent consuming are provided.

An advantage of using the EPA's analysis of NHANES data is that it provides distributions of intake rates for various age groups of children and adults, normalized by body weight. The data set was designed to be representative of the U.S. population and includes 6 years of intake data combined. Another advantage is the currency of the data; the NHANES data are from 2005–2010. However, short-term dietary data may not accurately reflect long-term eating patterns, and the upper percentiles may overestimate the corresponding percentiles of the true long-term distribution. However, because these are 2-day averages, consumption estimates at the upper end of the intake distribution may be underestimated if these consumption values are used to assess acute (i.e., short-term) exposures.

11.3.2. Relevant Meat and Dairy Intake Studies

11.3.2.1. USDA (1980, 1992, 1996a, b)—Food and Nutrient Intakes of Individuals in 1 Day in the United States

USDA calculated mean per capita intake rates for meat and dairy products using Nationwide Food Consumption Survey (NFCS) data from 1977–1978 and 1987–1988 (USDA, 1980, 1992) and CSFII data from 1994 and 1995 (USDA, 1996a, b). The mean per capita intake rates for meat are presented in Tables 11-7 through 11-9 based on intake data for 1 day from the 1977–1978 (see Table 11-7) and 1987–1988 NFCSs (see Table 11-8), and 1994 and 1995 CSFII (see Table 11-9). Tables 11-10 through 11-12 present similar data for dairy products. Note that the age classifications used in the later surveys were slightly different from those used in the 1977–1978 NFCS.

This study provides mean intake estimates for various meat, poultry, and dairy products with some additional categories not included in other studies. The consumption estimates are based on short-term

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(i.e., 1-day) dietary data, which may not reflect long-term consumption. Also, intake rates are not normalized to body weight and data are not consistent with EPA's recommended age groups. These data are based on older surveys and may not be entirely representative of current eating patterns, but may provide some historical perspective on intake of these foods.

11.3.2.2. USDA (1999a)—Food and Nutrient Intakes by Children 1994–1996, 1998, Table Set 17

USDA (1999a) calculated national probability estimates of food and nutrient intake by children based on 4 years of the CSFII (1994–1996 and 1998) for children ages 9 years and under and on CSFII 1994–1996 only for individuals ages 10 years and over. The CSFII was a series of surveys designed to measure the kinds and amounts of foods eaten by Americans. Intake data, based on 24-hour dietary recall, were collected through in-person interviews on 2 nonconsecutive days. Section 11.3.2.3 provides additional information on these surveys.

USDA (1999a) used sample weights to adjust for nonresponse, to match the sample to the U.S. population in terms of demographic characteristics, and to equalize intakes over the 4 quarters of the year and the 7 days of the week. A total of 503 breast-fed children were excluded from the estimates, but both consumers and nonconsumers were included in the analysis.

USDA (1999a) provided data on the mean per capita quantities (grams) of various food products/groups consumed per individual for 1 day, and the percentage of individuals consuming those foods in 1 day of the survey. Tables 11-13 and 11-14 present data on the mean quantities (grams) of meat and eggs consumed per individual for 1 day, and the percentage of survey individuals consuming meats and eggs on that survey day. Tables 11-15 and 11-16 present similar data for dairy products. Data on mean intakes or mean percentages are based on respondents' Day 1 intakes.

The advantage of the USDA (1999a) study is that it uses the 1994–1996, 1998 CSFII data set, which includes 4 years of intake data, combined, and includes supplemental data on children. This data set is expected to be generally representative of the U.S. population, and includes data on a wide variety of meats and dairy products. The data set is one of a series of USDA data sets that are publicly available. One limitation of this data set is that it is based on 1 day, and short-term dietary data may not accurately reflect long-term eating patterns. Other limitations of this

study are that it only provides mean values of food intake rates, consumption is not normalized by body weight, and presentation of results is not consistent with EPA's recommended age groups. These data are based on older surveys and may not be entirely representative of current eating patterns but may provide some historical perspective on intake of these foods.

11.3.2.3. EPA Analysis of CSFII 1994–1996, 1998 Based on USDA (2000) and U.S. EPA (2000)

EPA/Office of Pesticide Programs (OPP), in cooperation with USDA's Agricultural Research Service, used data from the 1994–1996, 1998 CSFII to develop the FCID (U.S. EPA, 2000; USDA, 2000), as described in Section 11.3.1.1. The CSFII 1994–1996 was conducted between January 1994 and January 1997 with a target population of noninstitutionalized individuals in all 50 states and Washington, DC. In each of the 3 survey years, data were collected for a nationally representative sample of individuals of all ages. The CSFII 1998 was conducted between December 1997 and December 1998 and surveyed children 9 years of age and younger. It used the same sample design as the CSFII 1994–1996 and was intended to be merged with CSFII 1994–1996 to increase the sample size for children. The merged surveys are designated as CSFII 1994–1996, 1998 (USDA, 2000). Additional information on the CSFII can be obtained at

<http://www.ars.usda.gov/Services/docs.htm?docid=14531>.

The CSFII 1994–1996, 1998 collected dietary intake data through in-person interviews on 2 nonconsecutive days. The data were based on 24-hour recall. A total of 21,662 individuals provided data for the first day; of those individuals, 20,607 provided data for a second day. The 2-day response rate for the 1994–1996 CSFII was approximately 76%. The 2-day response rate for CSFII 1998 was 82%. The CSFII 1994–1996, 1998 surveys were based on a complex multistage area probability sample design. The sampling frame was organized using 1990 U.S. population census estimates, and the stratification plan took into account geographic location, degree of urbanization, and socioeconomic characteristics. Several sets of sampling weights are available for use with the intake data. By using appropriate weights, data for all 4 years of the surveys can be combined. USDA has recommended that all 4 years be combined to provide an adequate sample size for children.

The meats and dairy items/groups selected for the EPA analysis included total meats and total dairy

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products, and individual meats and dairy such as beef, pork, poultry, and eggs. CSFII data on the foods people reported eating were converted to the quantities of agricultural commodities eaten. Intake rates for these food items/groups were calculated and summary statistics were generated on both a per capita and a consumer-only basis using the same general methodology as in the EPA analysis of 2003–2006 NHANES data, as described in Section 11.3.1.1. Because these data were developed for use in EPA's pesticide registration program, the childhood age groups used are slightly different from those recommended in EPA's *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005).

Table 11-17 presents per capita intake data for total meat and total dairy products in g/kg-day; Table 11-18 provides consumer-only intake data for total meat and total dairy products in g/kg-day. Table 11-19 provides per capita intake data for certain individual meats and dairy products, and Table 11-20 provides consumer-only intake data for these individual meats and dairy products. In general, these data represent intake of the edible portions of uncooked foods.

Because the results are presented in units of g/kg-day, the use of these data in calculating potential dose does not require the body-weight factor to be included in the denominator of the average daily dose equation. The cautions concerning converting these intake rates into units of g/day by multiplying by a single average body weight and the discussion of the use of short term data in the NHANES description in Section 11.3.1.1 apply to the CSFII estimates as well.

A strength of EPA's analysis is that it provides distributions of intake rates for various age groups, normalized by body weight. The analysis uses the 1994–1996, 1998 CSFII data set, which was designed to be representative of the U.S. population. The data set includes 4 years of intake data combined and is based on a 2-day survey period. As discussed above, short-term dietary data may not accurately reflect long-term eating patterns and may under-represent infrequent consumers of a given food. This is particularly true for the tails (extremes) of the distribution of food intake. Although the analysis as conducted used slightly different age groups than those recommended in EPA's *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005), given the similarities in the age groups used, the data should provide suitable intake estimates for the childhood age groups of interest. While the CSFII data are older than the NHANES data, they provide relevant information on consumption in individuals by

season, region of the United States, and urbanization, cohorts that are not available in the publicly released NHANES data.

11.3.2.4. Smiciklas-Wright et al. (2002)—Foods Commonly Eaten in the United States: Quantities Consumed per Eating Occasion and in a Day, 1994–1996

Using data gathered in the 1994–1996 USDA CSFII, Smiciklas-Wright et al. (2002) calculated distributions for the quantities of meat, poultry, and dairy products consumed per eating occasion by members of the U.S. population (i.e., serving sizes). The estimates of serving size are based on data obtained from 14,262 respondents, ages 2 years and above, who provided 2 days of dietary intake information. Only dietary intake data from users of the specified food were used in the analysis (i.e., consumer-only data).

Table 11-21 presents serving size data for meats and dairy products. These data are presented on an as-consumed basis (grams) and represent the quantity of meats and dairy products consumed per eating occasion. These estimates may be useful for assessing acute exposures to contaminants in specific foods, or they may be used in other assessments where the amount consumed per eating occasion is necessary. Only the mean and standard deviation serving size data and percentage of the population consuming the food during the 2-day survey period are presented in this handbook. Percentiles of serving sizes of the foods consumed by these age groups of the U.S. population can be found in Smiciklas-Wright et al. (2002).

The advantages of using these data are that they were derived from the USDA CSFII and are representative of the U.S. population. The analysis conducted by Smiciklas-Wright et al. (2002) accounted for individual foods consumed as ingredients of mixed foods. Mixed foods were disaggregated via recipe files so that the individual ingredients could be grouped together with similar foods that were reported separately. Thus, weights of foods consumed as ingredients were combined with weights of foods reported separately to provide a more thorough representation of consumption. However, note that because the recipes for the mixed foods consumed were not provided by the respondents, standard recipes were used. As a result, the estimates of quantity consumed for some food types are based on assumptions about the types and quantities of ingredients consumed as part of mixed foods. This study used data from the 1994–1996 CSFII; data from the 1998 children's supplement were not included.

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11.3.2.5. Vitolins et al. (2002)—Quality of Diets Consumed by Older Rural Adults

Vitolins et al. (2002) conducted a survey to evaluate the dietary intake, by food groups, of older (ages >70 years) rural adults. The sample consisted of 130 community-dwelling residents from two rural counties in North Carolina. Data on dietary intake over the preceding year were obtained in face-to-face interviews conducted in participants' homes, or in a few cases, a senior center. The food frequency questionnaire used in the survey was a modified version of the National Cancer Institute Health Habits and History Questionnaire, which included an expanded food list containing a greater number of ethnic foods than the original food frequency form. Demographic and personal data collected included sex, ethnicity, age, education, denture use, marital status, chronic disease, and weight.

Food items reported in the survey were grouped into food groups similar to the USDA Food Guide Pyramid and the National Cancer Institute's 5 A Day for Better Health program. These groups are: (1) fruits and vegetables; (2) bread, cereal, rice, and pasta; (3) milk, yogurt, and cheese; (4) meat, fish, poultry, beans, and eggs; and (5) fats, oils, sweets, and snacks. Medians, ranges, frequencies, and percentages were used to summarize intake of each food group, broken down by demographic and health characteristics. In addition, multiple regression models were used to determine which demographic and health factors were jointly predictive of intake of each of the five food groups.

Thirty-four percent of the survey participants were African-American, 36% were European American, and 30% were Native American. Sixty-two percent were female, 62% were not married at the time of the interview, and 65% had some high school education or were high school graduates. Almost all of the participants (95%) had one or more chronic diseases. Sixty percent of the respondents were between 70 and 79 years of age; the median age was 78 years old. Table 11-22 presents the median servings of milk, yogurt, and cheese broken down by demographic and health characteristics. None of the demographic characteristics were significantly associated with milk intake, and only ethnicity was found to be borderline ($p = 0.13$). In addition, none of the demographic characteristics were jointly predictive of milk, yogurt, and cheese consumption.

One limitation of the study, as noted by the study authors, is that the study did not collect information on the length of time the participants had been practicing the dietary behaviors reported in the survey. The questionnaire asked participants to report the

frequency of food consumption during the past year. The study authors noted that there are no dietary assessment tools that allow the collection of comprehensive dietary data over years of food consumption. Another limitation of the study is the small sample size used, which makes associations by sex and ethnicity difficult.

11.3.2.6. Fox et al. (2004)—Feeding Infants and Toddlers Study: What Foods Are Infants and Toddlers Eating

Fox et al. (2004) used data from the Feeding Infants and Toddlers study (FITS) to assess food consumption patterns in infants and toddlers. The FITS was sponsored by Gerber Products Company and was conducted to obtain current information on food and nutrient intakes of children, ages 4 to 24 months, in the 50 states and the District of Columbia. The FITS is described in detail in Devaney et al. (2004). FITS was based on a random sample of 3,022 infants and toddlers for which dietary intake data were collected by telephone from their parents or caregivers between March and July 2002. An initial recruitment and household interview was conducted, followed by an interview to obtain information on intake based on 24-hour recall. The interview also addressed growth, development, and feeding patterns. A second dietary recall interview was conducted for a subset of 703 randomly selected respondents. The study over-sampled children in the 4 to 6 and 9 to 11-months age groups; sample weights were adjusted for nonresponse, over-sampling, and under-coverage of some subgroups. The response rate for the FITS was 73% for the recruitment interview. The recruited households had a response rate of 94% for the dietary recall interviews (Devaney et al., 2004).

Fox et al. (2004) analyzed the first set of 24-hour recall data collected from all study participants. For this analysis, children were grouped into six age categories: 4 to 6 months, 7 to 8 months, 9 to 11 months, 12 to 14 months, 15 to 18 months, and 19 to 24 months. Table 11-23 provides the percentage of infants and toddlers consuming milk, meats, or other protein sources at least once in a day. The percentage of children consuming any type of meat or protein source ranged from 14.2% for 4 to 6-month olds to 97.2% for 19 to 24 month olds (see Table 11-23).

The advantages of this study are that the study population represented the U.S. population and the sample size was large. One limitation of the analysis done by Fox et al. (2004) was that only frequency data were provided; no information on actual intake rates was included. In addition, Devaney et al. (2004) noted several limitations associated with the FITS data. For

the FITS, a commercial list of infants and toddlers was used to obtain the sample used in the study. Because many of the households could not be located and did not have children in the target population, a lower response rate than would have occurred in a true national sample was obtained (Devaney et al., 2004). In addition, the sample was likely from a higher socioeconomic status when compared with all U.S. infants in this age group (4 to 24 months old), and the use of a telephone survey may have omitted lower income households without telephones (Devaney et al., 2004).

11.3.2.7. Ponza et al. (2004)—Nutrient Food Intakes and Food Choices of Infants and Toddlers Participating in Women, Infants, and Children (WIC)

Ponza et al. (2004) conducted a study using selected data from FITS to assess feeding patterns, food choices, and nutrient intake of infants and toddlers participating in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Ponza et al. (2004) evaluated FITS data for the following age groups: 4 to 6 months ($N = 862$), 7 to 11 months ($N = 1,159$), and 12 to 24 months ($N = 996$). Table 11-24 shows the total sample size described by WIC participants and nonparticipants.

The foods consumed were analyzed by tabulating the percentage of infants who consumed specific foods/food groups per day (Ponza et al., 2004). Weighted data were used in all of the analyses used in the study (Ponza et al., 2004). Table 11-24 provides the food choices for infants and toddlers. In general, there was little difference in food choices among WIC participants and nonparticipants, except for consumption of yogurt by infants 7 to 11 months of age and toddlers 12 to 24 months of age (see Table 11-24). Nonparticipants, 7 to 24 months of age, were more likely to eat yogurt than WIC participants (Ponza et al., 2004).

An advantage of this study is that it had a relatively large sample size and was representative of the U.S. general population of infants and children. A limitation of the study is that intake values for foods were not provided. Other limitations are associated with the FITS data and are described previously in Section 11.3.2.6.

11.3.2.8. Mennella et al. (2006)—Feeding Infants and Toddlers Study: The Types of Foods Fed to Hispanic Infants and Toddlers

Mennella et al. (2006) investigated the types of food and beverages consumed by Hispanic infants and toddlers in comparison to the non-Hispanic infants and

toddlers in the United States. The FITS 2002 data for children between 4 and 24 months old were used for the study. The data represent a random sample of 371 Hispanic and 2,367 non-Hispanic infants and toddlers (Mennella et al., 2006). Mennella et al. (2006) grouped the infants as follows: 4 to 5 months ($N = 84$ Hispanic; 538 non-Hispanic), 6 to 11 months ($N = 163$ Hispanic; 1,228 non-Hispanic), and 12 to 24 months ($N = 124$ Hispanic; 871 non-Hispanic) of age.

Table 11-25 provides the percentages of Hispanic and non-Hispanic infants and toddlers consuming milk, meats, or other protein sources on a given day. In most instances, the percentages consuming the different types of meats and protein sources were similar (Mennella et al., 2006).

The advantage of the study is that it provides information on food preferences for Hispanic and non-Hispanic infants and toddlers. A limitation is that the study did not provide food intake data, but provided frequency of use data instead. Other limitations are those noted previously in Section 11.3.2.6 for the FITS data.

11.3.2.9. Fox et al. (2006)—Average Portion of Foods Commonly Eaten by Infants and Toddlers in the United States

Fox et al. (2006) estimated average portion sizes consumed per eating occasion by children 4 to 24 months old who participated in the FITS. The FITS is a cross-sectional study designed to collect and analyze data on feeding practices, food consumption, and usual nutrient intake of U.S. infants and toddlers and is described in Section 11.3.2.6 of this chapter. It included a stratified random sample of 3,022 children between ages 4 and 24 months.

Using the 24-hour recall data, Fox et al. (2006) derived average portion sizes for six major food groups, including meats and other protein sources. Average portion sizes for select individual foods within these major groups were also estimated. For this analysis, children were grouped into six age categories: 4 to 5 months, 6 to 8 months, 9 to 11 months, 12 to 14 months, 15 to 18 months, and 19 to 24 months. Tables 11-26 and 11-27 present the average portion sizes of meats and dairy products for infants and toddlers, respectively.

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11.3.2.10. Siega-Riz et al. (2010)—Food Consumption Patterns of Infants and Toddlers: Where Are We Now?; Fox et al. (2010)—Food Consumption Patterns of Young Preschoolers: Are They Starting off on the Right Path?; Deming et al. (2014)—Infant Feeding Practices and Consumption Patterns of Children Participating in WIC

In 2008, a second FITS study was conducted (Fox et al., 2010; Siega-Riz et al., 2010). The study population included 3,273 children ages 0 to 47.9 months. Siega-Riz et al. (2010) described the dietary consumption patterns of 1,596 infants (4 to 5.9 months and 6 to 11.9 months) and toddlers (12 to 23.9 months) in the 2008 FITS. As in the 2002 FITS, parents or primary caregivers of study participants were interviewed by telephone to collect demographic and dietary information (two 24-hour dietary recalls). Food group data were used to calculate the percentage of children who consumed specific foods or food groups at least once per day. Table 11-28 provides the percentage of infants and toddlers consuming various types of meat at least once per day in 2008 (Siega-Riz et al., 2010). In general, the percentage of infants and toddlers consuming meats increased with increasing age (see Table 11-28).

Fox et al. (2010) presented data on the percentages of children, ages 21 to 47.9 months, consuming whole, 2%, 1%, and skim milk. The percentages of children, ages 21–23.9 months old, consuming whole, 2%, 1%, and skim milk were 61%, 28%, 4%, and 2%, respectively. For 24 to 29.9 month old children, the percentages were 34%, 35%, 8%, and 6%, respectively. For 30–35.9 month old children, the percentages were 34%, 36%, 19%, and 10% respectively, and for 36–47.9 month old children, the percentages were 27%, 45%, 14%, and 12%, respectively.

Deming et al. (2014) used the data for children 6–11, 12–23, and 24–47 months old from the 2008 FITS. The percentage of children consuming meats and other protein sources, and milk was estimated based on participation (n = 794) or nonparticipation (n = 2,477) in the WIC program (see Table 11–29).

The limitations of these studies are that the FITS dietary data were reported as the percentage of the respondents consuming per day and not as amounts of meats, milk, or other protein sources consumed per day. However, useful information was provided for the consumption of meats, milk, and other protein sources by children.

11.3.2.11. Briefel et al. (2010)—The Feeding Infants and Toddlers Study 2008; Study Design and Methods

Briefel et al. (2010) used a subsample of the 2008 FITS data to estimate the amount of meats and other protein sources, including milk products, consumed per eating occasion among children ages 12 to 23.9 months. The data were collected as part of a “bridging” study aimed at testing the effects of changes made to the food model booklet and protocol since the 2002 FITS was conducted. A total of 123 children were included in the sample. Table 11-30 provides the mean amount consumed per eating occasion for 2008. Siega-Riz et al. (2010) provided additional information on the 2008 FITS study population between 0 and 2 years of age, and the percentages of children eating meats and dairy products, based on comparisons between the 2002 and 2008 FITS.

The advantage of the Briefel et al. (2010) study is that it provides quantitative information on the amount of meats and other protein sources consumed by eating occasion; other FITS studies provide only percentages of the population eating certain foods. Because this study was based on a subsample of the study population, the sample size is relatively small.

11.3.2.12. Taylor et al. (2012)—Ground Beef Consumption Patterns in the United States, Food Net, 2006 through 2007

Taylor et al. (2012) used data from the Foodborne Diseases Active Surveillance Network (FoodNet) to estimate the frequency of ground beef consumption in the general population. The study was also used to estimate the percentage of the population that ate raw or undercooked (pink) ground beef because eating raw or undercooked ground beef may result in exposure to foodborne pathogens. The Centers for Disease Control, USDA, the Food and Drug Administration and selected state health departments conduct the FoodNet surveys. FoodNet data from 2006 and 2007 were used to evaluate ground beef consumption patterns at sites within 10 states: California, Colorado, Connecticut, Georgia, Maryland, Minnesota, New Mexico, New York, Oregon, and Tennessee. Survey respondents (n = 8,543) were interviewed by telephone, completing a series of questions pertaining to their consumption of ground beef inside and outside the home during the previous 7 days. An estimated 75.3% reported eating some type of ground beef within the previous week; 61.8% and 45.8% reported eating ground beef inside and outside the home, respectively. Most of the ground beef eaten at home was fresh (27.5%), and ground beef eaten outside the home, was most often eaten at restaurants (39%).

This study provides information on the proportion of the population eating different types of ground beef at different locations. However, only data on the percentage of the study population consuming ground beef were provided; Taylor et al. (2012) did not provide intake data.

11.3.3 Pregnant and Lactating Women

EPA estimated food intake rates for pregnant, lactating and all women of child-bearing age (13 to <50 years) using data from the NHANES for the years 2005 to 2010 and the FCID Consumption Calculator available at <http://fcid.foodrisk.org/>, as described in Section 11.3.1.1. NHANES 2005–2010 collected data on dietary recall of foods eaten over the previous 24-hour period on two nonconsecutive days. Two-day data were available for 426 pregnant women, 101 lactating women, and 5,543 women of child-bearing age. EPA’s FCID was used to convert the NHANES “as eaten” food consumption data into consumption of individual meat and dairy commodities, as described in Section 11.3.1.1, and the data were weighted according to sampling weights provided for the years 2005 to 2010. Two-day average intake rates were calculated for each survey respondent for total meats and total dairy, and for a variety of individual meat and dairy products. Summary statistics were calculated for the populations of pregnant, lactating, and females of child-bearing age (i.e., 13 to <50 years) on both a consumer-only and on a per capita basis.

Table 11-31 provides summary statistics for per capita intake of total meats and total dairy products, and Table 11-32 provides the same data on a consumer-only basis. Mean, standard error, 95th percentile per capita, and consumer-only intake rates for individual meats are provided in Table 11-33. Tables 11-31 and 11-32 indicate that the average per capita consumption rates of total dairy for lactating females (5.2 g/kg-day) and pregnant females (4.5 g/kg-day) were higher than that of all females 13 to <50 years (3.6 g/kg-day).

As indicated in Section 11.3.1.1, an advantage of using the EPA’s analysis of NHANES data is it was designed to be representative of the U.S. population. The data set used in this analysis used six years of intake data combined. However, the sample sizes for pregnant and lactating women were relatively small and short-term dietary data may not accurately reflect long-term eating patterns and may under-represent infrequent consumers of a given food. This is particularly true for the tails (extremes) of the food-intake distribution.

Limited data are available on differences in food choices over the duration of pregnancy. Crozier et al.

(2009) collected dietary data in Southampton, U.K. using a food frequency questionnaire for 2,270 women in early pregnancy, 2,649 women in late pregnancy, and 12,572 nonpregnant women. Data on the consumption of 48 foods or food groups were collected. During early pregnancy, intake of processed meats increased. During late pregnancy, intake of puddings, cream, milk, cheese, full-fat spread, cooking fats and salad oils, and red meat increased. Intake of liver and kidney decreased during pregnancy (Crozier et al., 2009). These results indicate that meat and dairy intake rates may change over the course of pregnancy. However, the consumption patterns or food choices observed in this study may not be representative of pregnant women in the United States. Also, while there may be differences in food choices over the course of pregnancy, the data are insufficient to draw specific conclusions. This limitation may need to be considered when assessing exposure among pregnant women.

11.4. INTAKE OF FAT

11.4.1. Key Fat Intake Study

11.4.1.1. U.S. EPA (2007)—Analysis of Fat Intake Based on the U.S. Department of Agriculture’s 1994–1996, 1998 Continuing Survey of Food Intakes by Individuals

EPA conducted an analysis to evaluate the dietary intake of fats by individuals in the United States using data from the USDA’s 1994–1996, 1998 CSFII (USDA, 2000). Intakes of CSFII foods were converted to EPA food commodity codes using data provided in EPA’s FCID (U.S. EPA, 2000). The FCID contains a “translation file” that was used to break down the USDA CSFII food codes into 548 EPA commodity codes. The method used to translate USDA food codes into EPA commodity codes is discussed in detail in U.S. EPA (2000).

Each of the 548 EPA commodity codes was assigned a value between zero and one that indicated the mass fraction of fat in that food item. For many sources of fat, a commodity code existed solely for the nutrient fat portion of the food. For example, beef is represented in the FCID database by 10 different commodity codes; several of these codes specifically exclude fat, and one code is described as “nutrient fat only.” In these cases, the fat fraction could be expressed as 0 or 1, as appropriate. Most animal food products and food oils were broken down in this way. The fat contents of other foods in the EPA commodity code list were determined using the USDA Nutrient Database for Standard Reference, Release 13 (USDA, 1999b). For each food item in the EPA code list, the

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best available match in the USDA Nutrient Database was used. If multiple values were available for different varieties of the same food item (e.g., green, white, and red grapes), a mean value was calculated. If multiple values were available for different cooking methods (i.e., fried vs. dry cooked), the method least likely to introduce other substances, such as oil or butter, was preferred. In some cases, not all of the items that fell under a given food commodity code could be assigned a fat content. For example, the food commodity code list identified “turkey, meat byproducts” as including gizzard, heart, neck, and tail. Fat contents could be determined only for the gizzard and heart. Because the relative amounts of the different items in the food commodity code were unknown, the mean fat content of these two items was assumed to be the best approximation of the fat content for the food code as a whole.

The analysis was based on respondents who had provided body weights and completed both days of the 2-day survey process. These individuals were grouped according to various age categories. The mean, standard error, and a range of percentiles of fat intake were calculated for 12 food categories (i.e., all fats, animal fats, meat and meat products, beef, pork, poultry, organ meats, milk and dairy products, fish, oils, nuts/seeds/beans/legumes/tubers, and others) and 98 demographic cohorts. Fat intake was calculated as a 2-day average consumption across both survey days in units of grams per day and grams per kilogram of body weight per day for the whole survey population and for consumers only.

A secondary objective of the study was to evaluate fat consumption patterns of individuals who consume high levels of animal fats. The entire data analysis was repeated for a subset of individuals who were identified as high consumers of animal fats. The selection of the high-consumption group was done for each age category individually, rather than on the whole population, because fat intake on a per-body-weight basis is heavily skewed towards young children, and an analysis across the entire American population was desired. For infants, the “less-than-1-year-old” group was used instead of the smaller infant groups (<1 month, 1 to <3 months, etc.). Within each of the age categories, individuals who ranked at or above the 90th percentile of consumption of all animal fats on a per-unit body-weight basis were identified. Because of the sample weighting factors, the high consumer group was not necessarily 10% of each age group. The selected individuals made up a survey population of 2,134 individuals. Fat intake of individuals in this group was calculated in g/day and g/kg-day for the whole population (i.e., per capita) and for consumers only.

The analysis presented in U.S. EPA (2007) was conducted before EPA published the guidance entitled *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005). Therefore, the age groups used for children in U.S. EPA (2007) were not entirely consistent with the age groups recommended in the 2005 guidance. A reanalysis of some of the data was conducted to conform with EPA’s recommended age groups for children. The results of this reanalysis are included in Tables 11-34 through 11-39 for all individuals. Only intake rates of all fats are provided in these tables; refer to U.S. EPA (2007) for fat intake rates from individual food sources. Tables 11-34 and 11-35 present intake rates of all fats for the whole population (i.e., per capita) in g/day and g/kg-day, respectively. Tables 11-36 and 11-37 present intake rates of all fats for consumers only in g/day and g/kg-day, respectively. Fat intake rates of all fats for the top decile of animal fat consumers from the consumers-only group are presented in Table 11-38 in g/day and in Table 11-39 in g/kg-day (per capita total fat intake rates for the top decile of animal fat consumers are not provided because they are the same as those for consumers only).

11.4.2. Relevant Fat Intake Studies

11.4.2.1. *Cresanta et al. (1988)/Nicklas et al. (1993)/Frank et al. (1986)—Bogalusa Heart Study*

Cresanta et al. (1988), Nicklas et al. (1993), and Frank et al. (1986) analyzed dietary fat intake data as part of the Bogalusa heart study. The Bogalusa study, an epidemiologic investigation of cardiovascular risk-factor variables and environmental determinants, collected dietary data on subjects residing in Bogalusa, LA, beginning in 1973. Among other research, the study collected fat intake data for children, adolescents, and young adults. Researchers examined various cohorts of subjects, including (1) six cohorts of 10-year olds, (2) two cohorts of 13-year olds, (3) one cohort of subjects from 6 months to 4 years of age, and (4) one cohort of subjects from 10 to 17 years of age (Nicklas, 1995). To collect the data, interviewers used the 24-hour dietary recall method. According to Nicklas (1995), “the diets of children in the Bogalusa study are similar to those reported in national studies of children.” Thus, these data are useful in evaluating the variability of fat intake among the general population. Tables 11-40 and 11-41 present data for 6-month-old to 17-year-old individuals collected during 1973 to 1982 (Frank et al., 1986). Data are presented for total fats, animal fats, vegetable fats, and

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fish fats in units of g/day (see Table 11-40) and g/kg-day (see Table 11-41).

11.5. CONVERSION BETWEEN WET- AND DRY-WEIGHT INTAKE RATES

The intake rates presented in this chapter are reported in units of wet weight (i.e., as-consumed or uncooked weight of meats and dairy products consumed per day or per eating occasion). However, data on the concentration of contaminants in meats and dairy products may be reported in units of either wet or dry weight (e.g., mg contaminant per gram dry-weight of meats and dairy products). It is essential that exposure assessors be aware of this difference so that they may ensure consistency between the units used for intake rates and those used for concentration data (i.e., if the contaminant concentration is measured in dry weight of meats and dairy products, then the dry-weight units should be used for their intake values).

If necessary, wet weight (e.g., as-consumed) intake rates may be converted to dry-weight intake rates using the moisture content percentages presented in Table 11-42 or Table 11-43 and the following equation:

$$IR_{dw} = IR_{ww} \left[\frac{100 - W}{100} \right] \quad (\text{Eqn. 11-1})$$

where:

- IR_{dw} = dry-weight intake rate,
- IR_{ww} = wet-weight intake rate, and
- W = percent water content.

Alternatively, dry-weight residue levels in meat and dairy products may be converted to wet-weight residue levels for use with wet-weight (e.g., as-consumed) intake rates as follows:

$$C_{ww} = C_{dw} \left[\frac{100 - W}{100} \right] \quad (\text{Eqn. 11-2})$$

where:

- C_{ww} = wet-weight concentration,
- C_{dw} = dry-weight concentration, and
- W = percent water content.

The moisture content data presented in Table 11-42 are for selected meats and dairy products taken from USDA (2007). Table 11-43 provides additional data on the water content of meats, dairy products, and fats, based on data from Popkin et al. (2010).

11.6. CONVERSION BETWEEN WET- AND LIPID-WEIGHT INTAKE RATES

In some cases, the residue levels of contaminants in meat and dairy products may be reported as the concentration of contaminant per gram of fat. This may be particularly true for lipophilic compounds. When using these residue levels, the assessor should ensure consistency in the exposure assessment calculations by using consumption rates that are based on the amount of lipids consumed for the meat or dairy product of interest.

If necessary, wet-weight (e.g., as-consumed) intake rates may be converted to lipid-weight intake rates using the fat content percentages presented in Table 11-42 and the following equation:

$$IR_{lw} = IR_{ww} \left[\frac{L}{100} \right] \quad (\text{Eqn. 11-3})$$

where:

- IR_{lw} = lipid-weight intake rate,
- IR_{ww} = wet-weight intake rate, and
- L = percentage lipid (fat) content.

Alternately, wet-weight residue levels in meat and dairy products may be estimated by multiplying the levels based on fat by the fraction of fat per product as follows:

$$C_{ww} = C_{lw} \left[\frac{L}{100} \right] \quad (\text{Eqn. 11-4})$$

where:

- C_{ww} = wet-weight concentration,
- C_{lw} = lipid-weight concentration, and
- L = percentage lipid (fat) content.

The resulting residue levels may then be used in conjunction with wet-weight (e.g., as-consumed) consumption rates. Table 11-42 presents the total fat

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content data for selected meat and dairy products taken from USDA (2007).

11.7. REFERENCES FOR CHAPTER 11

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Table 11-3. Per Capita 2-Day Average^a Intake of Total Meat and Total Dairy Products Based on 2005–2010 NHANES (g/kg-day, edible portion, uncooked weight)^b

Population Group	N	Percent Consuming ^c	Mean	SE	Percentiles									
					1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	Maximum
Total Meat ^d														
Whole Population	24,673	98	1.94	0.02	0	0.2	0.5	0.9	1.6	2.5	3.8	4.8	7.8	28.1 ^e
Age Group														
Birth to <1 month	87	0	0	0	0 ^e	0 ^e	0 ^e	0	0	0	0 ^e	0 ^e	0 ^e	0
1 to <3 months	233	<0.5	<0.005	<0.005	0 ^e	0 ^e	0	0	0	0	0	0 ^e	0 ^e	<0.05 ^e
3 to <6 months	282	15	0.24	0.06	0 ^e	0 ^e	0	0	0	0	0.4	1.6 ^e	4.7 ^e	8.3 ^e
6 to <12 months	588	75	2.36	0.22	0 ^e	0	0	<0.05	1.4	3.3	5.6	8.1	18.7 ^e	22.0 ^e
Birth to <1 year														
1 to <2 years	728	42	1.26	0.12	0 ^e	0	0	0	0	1.6	4.1	5.7	12.4 ^e	22.0 ^e
2 to <3 years	728	97	3.94	0.14	0 ^e	0.3	0.6	1.9	3.5	5.4	8.0	9.5	12.9 ^e	23.2 ^e
3 to <6 years	751	98	4.17	0.13	0 ^e	0.4	0.9	2.2	3.7	5.6	8.2	9.5	13.3 ^e	18.3 ^e
6 to <11 years	1,418	99	3.96	0.13	0 ^e	0.7	1.3	2.1	3.4	5.0	7.1	9.0	12.8 ^e	28.1 ^e
11 to <16 years	2,292	99	2.99	0.07	<0.05	0.6	1.0	1.7	2.7	3.9	5.1	6.6	9.4	16.7 ^e
16 to <21 years	2,551	99	2.13	0.06	0	0.3	0.6	1.1	1.8	2.9	4.3	4.9	7.2	13.0 ^e
21 to <30 years	2,191	99	1.98	0.05	0	0.2	0.5	1.0	1.7	2.6	3.6	4.6	7.2	13.5 ^e
30 to <40 years	2,082	99	1.86	0.04	0	0.3	0.5	1.0	1.6	2.5	3.5	4.2	6.0	12.0 ^e
40 to <50 years	2,282	98	1.81	0.03	0	0.2	0.5	0.9	1.6	2.5	3.5	4.2	5.2	8.1 ^e
50 to <60 years	2,378	99	1.73	0.03	0	0.3	0.5	1.0	1.5	2.3	3.2	3.8	5.1	10.2 ^e
60 to <70 years	2,103	99	1.57	0.03	0	0.2	0.5	0.9	1.4	2.0	2.9	3.4	5.1	10.9 ^e
70 to <80 years	2,214	99	1.42	0.04	0	0.2	0.4	0.7	1.2	1.9	2.6	3.2	4.5	12.0 ^e
80+ years	1,578	99	1.28	0.03	0 ^e	0.2	0.4	0.7	1.2	1.7	2.3	2.9	4.2 ^e	9.2 ^e
21 to <50 years	915	98	1.22	0.03	0 ^e	0.1	0.3	0.6	1.1	1.6	2.3	2.8	4.0 ^e	5.6 ^e
50+ years	6,742	99	1.79	0.02	0	0.3	0.5	0.9	1.6	2.4	3.4	4.1	5.3	12.0 ^e
Race														
Mexican American	6,810	99	1.44	0.02	0	0.2	0.4	0.8	1.3	1.9	2.7	3.2	4.7	12.0 ^e
Non-Hispanic Black	5,787	98	2.18	0.04	0	0.2	0.5	1.0	1.8	2.9	4.3	5.4	8.6	18.3 ^e
Non-Hispanic White	5,337	98	2.12	0.04	0	0.3	0.5	1.0	1.7	2.7	4.3	5.6	8.9	23.2 ^e
Other Hispanic	10,294	98	1.84	0.02	0	0.2	0.4	0.9	1.5	2.4	3.5	4.4	7.1	22.0 ^e
Other Race—Including Multiple	2,082	98	2.20	0.05	0	0.3	0.5	1.0	1.8	2.8	4.3	5.7	9.6	19.5 ^e
	1,173	97	2.11	0.07	0 ^e	<0.05	0.3	0.9	1.8	2.8	4.3	5.6	8.0 ^e	28.1 ^e

Table 11-3. Per Capita 2-Day Average^a Intake of Total Meat and Total Dairy Products Based on 2005–2010 NHANES (g/kg-day, edible portion, uncooked weight)^b (Continued)

Population Group	N	Percent Consuming ^c	Mean	SE	Percentiles									Maximum
					1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	
Total Dairy Products ^f														
Whole Population	24,673	100	6.26	0.10	<0.05	0.2	0.5	1.3	3.0	6.6	14.1	23.5	57.0	184.4 ^d
Age Group														
Birth to <1 month	87	69	6.66	1.12	0 ^e	0 ^e	0 ^e	0	2.6	13.8	17.0 ^e	20.6 ^e	28.4 ^e	28.4 ^e
1 to <3 months	233	65	5.42	0.47	0 ^e	0 ^e	0	0	2.0	10.4	15.3	17.9 ^e	25.1 ^e	26.2 ^e
3 to <6 months	282	79	5.10	0.55	0 ^e	0 ^e	0	0.3	3.2	8.3	12.4	16.1 ^e	20.6 ^e	24.2 ^e
6 to <12 months	588	95	16.14	1.59	0 ^e	0	0.3	2.0	6.3	13.9	55.9	78.7	110.2 ^e	184.4 ^e
Birth to <1 year														
1 to <2 years	1,190	84	10.92	0.89	0 ^e	0	0	1.1	4.9	11.0	24.1	57.1	95.3 ^e	184.4 ^e
2 to <3 years	728	100	48.78	1.67	0.6 ^e	4.0	8.1	25.0	47.1	67.2	88.4	100.5	139.4 ^e	175.2 ^e
3 to <6 years	751	100	36.13	0.98	1.1 ^e	5.7	9.6	17.4	32.2	50.8	64.0	78.7	99.0 ^e	164.5 ^e
6 to <11 years	1,418	100	22.55	0.50	0.6 ^e	3.9	6.8	12.1	20.2	29.9	40.8	51.1	65.9 ^e	111.5 ^e
11 to <16 years	2,292	100	13.75	0.27	0.7	2.1	3.5	7.0	11.8	18.3	26.0	31.8	43.0	62.3 ^e
16 to <21 years	2,551	100	6.79	0.25	0.2	0.6	1.0	2.5	5.5	9.3	13.8	18.2	26.1	45.0 ^e
21 to <30 years	2,191	100	4.36	0.17	0.1	0.2	0.6	1.4	3.0	6.0	9.7	13.0	20.9	35.2 ^e
30 to <40 years	2,082	100	3.23	0.17	<0.05	0.2	0.4	0.9	2.3	4.5	7.5	9.7	14.1	34.5 ^e
40 to <50 years	2,282	100	3.24	0.09	<0.05	0.2	0.4	1.0	2.3	4.4	7.4	10.1	15.3	26.9 ^e
50 to <60 years	2,378	100	3.22	0.12	<0.05	0.2	0.4	1.0	2.2	4.3	7.3	8.9	17.2	41.6 ^e
60 to <70 years	2,103	100	3.17	0.11	<0.05	0.2	0.4	0.9	2.1	4.1	7.3	9.6	15.9	33.8 ^e
70 to <80 years	2,214	100	3.01	0.11	<0.05	0.2	0.4	0.9	2.1	3.9	6.5	9.1	14.4	77.4 ^e
80+ years	1,578	100	3.24	0.10	<0.05 ^e	0.3	0.5	1.3	2.4	4.2	6.8	9.2	13.9 ^e	24.8 ^e
80+ years	915	100	4.01	0.12	0.1 ^e	0.4	0.8	1.7	3.4	5.4	8.2	10.2	14.9 ^e	18.5 ^e
21 to <50 years	6,742	100	3.23	0.10	<0.05	0.2	0.4	1.0	2.3	4.4	7.4	9.6	15.1	41.6 ^e
50+ years	6,810	100	3.22	0.06	<0.05	0.2	0.4	1.0	2.3	4.2	7.1	9.6	15.3	77.4 ^e
Race														
Mexican American	5,787	100	8.06	0.30	<0.05	0.2	0.5	1.4	3.6	8.4	21.1	32.4	67.4	184.4 ^e
Non-Hispanic Black	5,337	100	4.64	0.17	<0.05	0.1	0.2	0.7	1.7	4.4	11.4	18.3	46.8	175.2 ^e
Non-Hispanic White	10,294	100	6.20	0.11	<0.05	0.3	0.6	1.4	3.2	6.6	13.6	22.0	55.5	164.5 ^e
Other Hispanic	2,082	99	7.49	0.42	<0.05	0.2	0.5	1.4	3.2	7.3	17.7	32.5	63.2	139.4 ^e
Other Race—Including Multiple	1,173	99	6.29	0.31	<0.05 ^e	0.1	0.3	1.1	3.1	6.8	14.2	25.9	57.3 ^e	124.4 ^e

Table 11-3. Per Capita 2-Day Average^a Intake of Total Meat and Total Dairy Products Based on 2005–2010 NHANES (g/kg-day, edible portion, uncooked weight)^b (Continued)

^a Based on the average of two days of food consumption reported for each NHANES respondent. If the respondent reported zero consumption on one of the two days and non-zero consumption on the other day, his/her average consumption would be the average of zero and non-zero consumption. Single day rates can be generated using <http://fcid.foodrisk.org/>.

^b For more information, refer to the Frequently Asked Questions at <http://fcid.foodrisk.org/>.

^c Represents the percentage of individuals consuming these foods at least once over the 2-day survey period. Rounded to whole numbers; thus, values of 100 percent mean that ≥ 99.5 percent of the population consumed the foods during the 2-day survey period.

^d Total Meat includes: beef, fat; beef, fat-baby food; beef, kidney; beef, liver; beef, liver-baby food; beef, meat; beef, meat byproducts; beef, meat byproducts-baby food; beef, meat, dried; beef, meat-baby food; chicken, fat; chicken, fat-baby food; chicken, liver; chicken, meat; chicken, meat byproducts; chicken, meat byproducts-baby food; chicken, meat-baby food; chicken, skin; chicken, skin-baby food; goat, fat; goat, kidney; goat, liver; goat, meat; goat, meat byproducts; horse, meat; meat, game; pork, fat; pork, fat-baby food; pork, kidney; pork, liver; pork, meat; pork, meat byproducts; pork, meat byproducts-baby food; pork, meat-baby food; pork, skin; poultry, other, fat; poultry, other, liver; poultry, other, meat; poultry, other, meat byproducts; poultry, other, skin; rabbit, meat; sheep, fat; sheep, fat-baby food; sheep, kidney; sheep, liver; sheep, meat; sheep, meat byproducts; sheep, meat-baby food; turkey, fat; turkey, fat-baby food; turkey, liver; turkey, liver-baby food; turkey, meat; turkey, meat byproducts; turkey, meat byproducts-baby food; turkey, meat-baby food; turkey, skin; turkey, skin-baby food.

^e Estimates are less statistically reliable based on guidance published in the Joint Policy on Variance Estimation and Statistical Reporting Standards on NHANES III and CSFII Reports: NHIS/NCHS Analytical Working Group Recommendations (NCHS, 1993).

^f Total Dairy includes: milk, fat; milk, fat-baby food/infant formula; milk, nonfat solids; milk, nonfat solids-baby food/infant formula; milk, sugar (lactose)-baby food/infant formula; milk, water; milk, water-baby food/infant formula.

N = Sample size.
SE = Standard error.

Source: Based on EPA analysis of 2005–2010 NHANES using the FCID Consumption Calculator available at <http://fcid.foodrisk.org/>.

Table 11-4. Consumer-Only 2-Day Average^a Intake of Total Meat and Total Dairy Products Based on 2005–2010 NHANES (g/kg-day, edible portion, uncooked weight)^b

Population Group	N	Mean	SE	Percentiles									Maximum
				1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	
Total Meat ^c													
Whole Population	23,715	1.99	0.02	<0.05	0.3	0.5	1.0	1.6	2.6	3.8	4.8	7.8	28.1 ^d
Age Group													
Birth to <1 month	0	0	0	0 ^d	0 ^d	0 ^d	0 ^d	0	0 ^d	0 ^d	0 ^d	0 ^d	0 ^d
1 to <3 months	2	<0.005	<0.005	<0.05 ^d	<0.05 ^d	<0.05 ^d	<0.05 ^d	<0.05	<0.05 ^d	<0.05 ^d	<0.05 ^d	<0.05 ^d	<0.05 ^d
3 to <6 months	51	1.60	0.30	<0.05 ^d	<0.05 ^d	<0.05 ^d	0.2 ^d	1.2	1.9 ^d	4.5 ^d	5.3 ^d	7.6 ^d	8.3 ^d
6 to <12 months	453	3.14	0.27	<0.05 ^d	<0.05	0.2	1.0	2.3	4.0	6.7	9.3	18.7 ^d	22.0 ^d
Birth to <1 year													
1 to <2 years	506	3.02	0.25	<0.05 ^d	<0.05	0.1	1.0	2.2	3.9	6.7	8.9	18.7 ^d	22.0 ^d
2 to <3 years	714	4.05	0.13	0.1 ^d	0.5	1.0	2.0	3.6	5.6	8.0	9.6	12.9 ^d	23.2 ^d
3 to <6 years	740	4.25	0.14	<0.05 ^d	0.6	1.1	2.2	3.8	5.6	8.2	9.6	13.3 ^d	18.3 ^d
6 to <11 years	1,399	4.01	0.13	0.1 ^d	0.9	1.3	2.2	3.5	5.1	7.2	9.0	12.8 ^d	28.1 ^d
11 to <16 years	2,279	3.02	0.07	0.2	0.7	1.0	1.7	2.7	3.9	5.2	6.7	9.4	16.7 ^d
16 to <21 years	2,531	2.16	0.06	<0.05	0.4	0.7	1.1	1.8	2.9	4.3	4.9	7.2	13.0 ^d
21 to <30 years	2,172	2.00	0.05	<0.05	0.3	0.5	1.0	1.7	2.7	3.6	4.6	7.2	13.5 ^d
30 to <40 years	2,060	1.88	0.04	<0.05	0.3	0.5	1.0	1.6	2.5	3.5	4.2	6.1	12.0 ^d
40 to <50 years	2,245	1.84	0.03	0.1	0.3	0.5	1.0	1.6	2.5	3.5	4.2	5.2	8.1 ^d
50 to <60 years	2,348	1.75	0.03	<0.05	0.3	0.6	1.0	1.5	2.3	3.2	3.8	5.1	10.2 ^d
60 to <70 years	2,072	1.59	0.03	<0.05	0.3	0.5	0.9	1.4	2.0	2.9	3.5	5.1	10.9 ^d
70 to <80 years	2,192	1.44	0.04	<0.05	0.2	0.4	0.8	1.2	1.9	2.6	3.2	4.5	12.0 ^d
80+ years	1,564	1.29	0.03	<0.05 ^d	0.2	0.4	0.7	1.2	1.7	2.3	2.9	4.2 ^d	9.2 ^d
21 to <50 years	893	1.24	0.03	<0.05 ^d	0.2	0.4	0.6	1.1	1.7	2.4	2.8	4.0 ^d	5.6 ^d
50+ years	6,653	1.82	0.02	<0.05	0.3	0.5	1.0	1.6	2.4	3.4	4.1	5.4	12.0 ^d
Race													
Mexican American	6,721	1.46	0.02	<0.05	0.2	0.4	0.8	1.3	1.9	2.7	3.2	4.7	12.0 ^d
Non-Hispanic Black	5,497	2.23	0.05	<0.05	0.3	0.6	1.1	1.8	3.0	4.3	5.4	8.7	18.3 ^d
Non-Hispanic White	5,192	2.16	0.04	0.1	0.4	0.6	1.0	1.7	2.7	4.3	5.6	8.9	23.2 ^d
Other Hispanic	9,912	1.88	0.02	<0.05	0.3	0.5	0.9	1.5	2.4	3.6	4.4	7.2	22.0 ^d
Other Race—Including Multiple	2,006	2.25	0.05	<0.05	0.4	0.6	1.1	1.8	2.9	4.3	5.7	9.9	19.5 ^d
Other Race—Including Multiple	1,108	2.17	0.07	<0.05 ^d	0.2	0.5	1.0	1.8	2.9	4.3	5.6	8.2 ^d	28.1 ^d

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Table 11-4. Consumer-Only 2-Day Average^a Intake of Total Meat and Total Dairy Products Based on 2005–2010 NHANES (g/kg-day, edible portion, uncooked weight)^b (Continued)

Population Group	N	Mean	SE	Percentiles									Maximum
				1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	
Total Dairy Products ^c													
Whole Population	24,492	6.28	0.1	<0.05	0.3	0.5	1.3	3.0	6.6	14.1	23.5	57.0	184.4 ^d
Age Group													
Birth to <1 month	64	9.64	1.12	0.9 ^d	1.1 ^d	1.9 ^d	2.4 ^d	9.0	14.7 ^d	19.2 ^d	26.3 ^d	28.4 ^d	28.4 ^d
1 to <3 months	171	8.34	0.66	0.4 ^d	0.6 ^d	1.7 ^d	2.4	8.0	12.6	17.1 ^d	19.4 ^d	25.1 ^d	26.2 ^d
3 to <6 months	233	6.46	0.62	0.1 ^d	0.3 ^d	0.9	2.0	5.7	9.7	13.6	17.8 ^d	21.0 ^d	24.2 ^d
6 to <12 months	564	17.01	1.68	<0.05 ^d	0.3	1.0	2.7	6.8	15.1	57.1	83.2	110.2 ^d	184.4 ^d
Birth to <1 year	1,032	13.06	1.06	<0.05 ^d	0.3	1.0	2.4	6.7	12.7	27.9	64.2	95.3 ^d	184.4 ^d
1 to <2 years	728	48.78	1.67	0.6 ^d	4.0	8.1	25.0	47.1	67.2	88.4	100.5	139.4 ^d	175.2 ^d
2 to <3 years	751	36.13	0.98	1.1 ^d	5.7	9.6	17.4	32.2	50.8	64.0	78.7	99.0 ^d	164.5 ^d
3 to <6 years	1,418	22.55	0.50	0.6 ^d	3.9	6.8	12.1	20.2	29.9	40.8	51.1	65.9 ^d	111.5 ^d
6 to <11 years	2,292	13.75	0.27	0.7	2.1	3.5	7.0	11.8	18.3	26.0	31.8	43.0	62.3 ^d
11 to <16 years	2,549	6.79	0.25	0.2	0.6	1.0	2.5	5.5	9.3	13.8	18.2	26.1	45.0 ^d
16 to <21 years	2,189	4.36	0.17	0.1	0.2	0.6	1.4	3.0	6.0	9.7	13.0	20.9	35.2 ^d
21 to <30 years	2,076	3.24	0.17	<0.05	0.2	0.4	0.9	2.3	4.5	7.5	9.7	14.1	34.5 ^d
30 to <40 years	2,279	3.25	0.09	<0.05	0.2	0.4	1.0	2.3	4.4	7.4	10.1	15.3	26.9 ^d
40 to <50 years	2,373	3.24	0.12	<0.05	0.2	0.4	1.0	2.2	4.3	7.3	8.9	17.2	41.6 ^d
50 to <60 years	2,101	3.17	0.11	<0.05	0.2	0.4	0.9	2.1	4.1	7.3	9.6	15.9	33.8 ^d
60 to <70 years	2,211	3.01	0.11	<0.05	0.2	0.4	0.9	2.1	3.9	6.5	9.1	14.4	77.4 ^d
70 to <80 years	1,578	3.24	0.10	<0.05 ^d	0.3	0.5	1.3	2.4	4.2	6.8	9.2	13.9 ^d	24.8 ^d
80+ years	915	4.01	0.12	0.1 ^d	0.4	0.8	1.7	3.4	5.4	8.2	10.2	14.9 ^d	18.5 ^d
21 to <50 years	6,728	3.24	0.10	<0.05	0.2	0.4	1.0	2.3	4.4	7.4	9.6	15.1	41.6 ^d
50+ years	6,805	3.22	0.06	<0.05	0.2	0.4	1.0	2.3	4.2	7.1	9.6	15.3	77.4 ^d
Race													
Mexican American	5,736	8.10	0.30	<0.05	0.3	0.5	1.4	3.6	8.5	21.1	32.4	67.4	184.4 ^d
Non-Hispanic Black	5,317	4.66	0.17	<0.05	0.1	0.3	0.7	1.7	4.4	11.4	18.5	46.8	175.2 ^d
Non-Hispanic White	10,212	6.21	0.11	0.1	0.4	0.6	1.5	3.2	6.7	13.6	22.0	55.8	164.5 ^d
Other Hispanic	2,067	7.54	0.42	<0.05	0.2	0.5	1.4	3.2	7.4	17.8	32.5	63.3	139.4 ^d
Other Race—Including Multiple	1,160	6.35	0.31	<0.05 ^d	0.1	0.4	1.2	3.1	6.8	14.2	25.9	57.3 ^d	124.4 ^d

Table 11-4. Consumer-Only 2-Day Average^a Intake of Total Meat and Total Dairy Products Based on 2005–2010 NHANES (g/kg-day, edible portion, uncooked weight)^b (Continued)

^a	Based on the average of two days of food consumption reported for each NHANES respondent. If the respondent reported zero consumption on one of the two days and non-zero consumption on the other day, his/her average consumption would be the average of zero and non-zero consumption. Single day rates can be generated using http://fcid.foodrisk.org/ .
^b	For more information, refer to the Frequently Asked Questions at http://fcid.foodrisk.org/ .
^c	Total Meat includes: beef, fat; beef, fat-baby food; beef, kidney; beef, liver; beef, liver-baby food; beef, meat; beef, meat byproducts; beef, meat byproducts-baby food; beef, meat, dried; beef, meat-baby food; chicken, fat; chicken, fat-baby food; chicken, liver; chicken, meat; chicken, meat byproducts; chicken, meat byproducts-baby food; chicken, meat-baby food; chicken, skin; chicken, skin-baby food; goat, fat; goat, kidney; goat, liver; goat, meat; goat, meat byproducts; horse, meat; meat, game; pork, fat; pork, fat-baby food; pork, kidney; pork, liver; pork, meat; pork, meat byproducts; pork, meat byproducts-baby food; pork, meat-baby food; pork, skin; poultry, other, fat; poultry, other, liver; poultry, other, meat; poultry, other, meat byproducts; poultry, other, skin; rabbit, meat; sheep, fat; sheep, fat-baby food; sheep, kidney; sheep, liver; sheep, meat; sheep, meat byproducts; sheep, meat-baby food; turkey, fat; turkey, fat-baby food; turkey, liver; turkey, liver-baby food; turkey, meat; turkey, meat byproducts; turkey, meat byproducts-baby food; turkey, meat-baby food; turkey, skin; turkey, skin-baby food.
^d	Estimates are less statistically reliable based on guidance published in the Joint Policy on Variance Estimation and Statistical Reporting Standards on NHANES III and CSFII Reports: HNIS/NCHS Analytical Working Group Recommendations (NCHS, 1993).
^e	Total Dairy includes: milk, fat; milk, fat-baby food/infant formula; milk, nonfat solids; milk, nonfat solids-baby food/infant formula; milk, sugar (lactose)-baby food/infant formula; milk, water; milk, water-baby food/infant formula.
<i>N</i>	= Sample size.
SE	= Standard error.

Source: Based on EPA analysis of 2005–2010 NHANES using the FCID Consumption Calculator available at <http://fcid.foodrisk.org/>.

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Table 11-5. Per Capita 2-Day Average^a Intake of Individual Meats Based on 2005–2010 NHANES (g/kg-day, edible portion, uncooked weight)^b

Population Group	N	PC ^c	Mean	SE	N	PC ^c	Mean	SE	N	PC ^c	Mean	SE
	Beef ^d				Pork ^e				Poultry ^f			
Whole Population	24,673	86	0.73	0.01	24,673	79	0.38	0.01	24,673	76	0.81	0.02
Age Group												
Birth to <1 month	87	0	0	0	87	0	0	0	87	0	0	0
1 to <3 months	233	<0.05	<0.005	<0.005	233	0	0	0	233	<0.5	<0.005	<0.005
3 to <6 months	282	5	0.02	0.01	282	4	0.03	0.01	282	11	0.19	0.06
6 to <12 months	588	49	0.75	0.12	588	36	0.30	0.06	588	61	1.31	0.15
Birth to <1 year	1,190	26	0.39	0.06	1,190	19	0.16	0.03	1,190	34	0.71	0.08
1 to <2 years	728	81	1.27	0.09	728	67	0.60	0.05	728	82	2.06	0.09
2 to <3 years	751	88	1.46	0.08	751	75	0.76	0.06	751	81	1.94	0.09
3 to <6 years	1,418	89	1.35	0.09	1,418	81	0.75	0.05	1,418	82	1.85	0.07
6 to <11 years	2,292	90	1.14	0.05	2,292	85	0.57	0.02	2,292	80	1.27	0.05
11 to <16 years	2,551	89	0.83	0.05	2,551	79	0.39	0.02	2,551	75	0.90	0.03
16 to <21 years	2,191	88	0.79	0.04	2,191	74	0.33	0.02	2,191	77	0.84	0.04
21 to <30 years	2,082	86	0.69	0.03	2,082	78	0.34	0.01	2,082	79	0.81	0.03
30 to <40 years	2,282	86	0.70	0.02	2,282	80	0.37	0.02	2,282	76	0.72	0.02
40 to <50 years	2,378	86	0.65	0.02	2,378	79	0.36	0.02	2,378	76	0.69	0.03
50 to <60 years	2,103	86	0.59	0.02	2,103	80	0.34	0.02	2,103	76	0.63	0.02
60 to <70 years	2,214	86	0.55	0.03	2,214	82	0.30	0.01	2,214	74	0.55	0.02
70 to <80 years	1,578	86	0.53	0.03	1,578	82	0.31	0.02	1,578	67	0.43	0.02
80+ years	915	83	0.47	0.02	915	80	0.29	0.02	915	69	0.45	0.02
21 to <50 years	6,742	86	0.68	0.01	6,742	79	0.36	0.01	6,742	77	0.74	0.02
50+ years	6,810	86	0.55	0.02	6,810	81	0.32	0.01	6,810	73	0.55	0.02
Race												
Mexican American	5,787	84	0.82	0.03	5,787	84	0.42	0.01	5,787	78	0.93	0.03
Non-Hispanic Black	5,337	86	0.72	0.02	5,337	76	0.37	0.02	5,337	83	1.02	0.02
Non-Hispanic White	10,294	87	0.73	0.02	10,294	79	0.37	0.01	10,294	73	0.73	0.02
Other Hispanic	2,082	80	0.73	0.06	2,082	78	0.43	0.03	2,082	81	1.03	0.04
Other Race—Including Multiple	1,173	81	0.68	0.04	1,173	75	0.46	0.04	1,173	77	0.93	0.06

^a Based on the average of two days of food consumption reported for each NHANES respondent. If the respondent reported zero consumption on one of the two days and non-zero consumption on the other day, his/her average consumption would be the average of zero and non-zero consumption. Single day rates can be generated using <http://fcid.foodrisk.org/>.

^b For more information, refer to the Frequently Asked Questions at <http://fcid.foodrisk.org/>.

^c PC = Percent consuming. Represents the percentage of individuals consuming these foods at least once over the 2-day survey period.

^d Beef includes: beef, fat; beef, fat-baby food; beef, kidney; beef, liver; beef, liver-baby food; beef, meat; beef, meat byproducts; beef, meat byproducts-baby food; beef, meat, dried; beef, meat-baby food.

^e Pork includes: pork, fat; pork, fat-baby food; pork, kidney; pork, liver; pork, meat; pork, meat byproducts; pork, meat byproducts-baby food; pork, meat-baby food; pork, skin.

^f Poultry includes: chicken, fat; chicken, fat-baby food; chicken, liver; chicken, meat; chicken, meat byproducts; chicken, meat byproducts-baby food; chicken, meat-baby food; chicken, skin; chicken, skin-baby food; poultry, other, fat; poultry, other, liver; poultry, other, meat; poultry, other, meat byproducts; poultry, other, skin; turkey, fat; turkey, fat-baby food; turkey, liver; turkey, liver-baby food; turkey, meat; turkey, meat byproducts; turkey, meat byproducts-baby food; turkey, meat-baby food; turkey, skin; turkey, skin-baby food.

N = Sample size.
SE = Standard error.

Source: Based on EPA analysis of 2005–2010 NHANES using the FCID Consumption Calculator available at <http://fcid.foodrisk.org/>.

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Table 11-6. Consumer-Only 2-Day Average^a Intake of Individual Meats Based on 2005–2010 NHANES (g/kg-day, edible portion, uncooked weight)^b

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE
	Beef ^c			Pork ^d			Poultry ^e		
Whole Population	20,614	0.86	0.01	19,163	0.49	0.01	18,710	1.08	0.02
Age Group									
Birth to <1 month	0	0	0	0	0	0	0	0	0
1 to <3 months	1	<0.005	0	0	0	0	1	<0.005	0
3 to <6 months	18	0.46	0.23	14	0.71	0.43	41	1.67	0.33
6 to <12 months	290	1.53	0.19	212	0.84	0.14	367	2.15	0.21
Birth to <1 year	309	1.48	0.18	226	0.84	0.14	409	2.12	0.20
1 to <2 years	594	1.57	0.10	514	0.90	0.08	613	2.50	0.08
2 to <3 years	658	1.67	0.08	577	1.02	0.08	629	2.39	0.10
3 to <6 years	1,255	1.51	0.10	1,137	0.93	0.06	1,164	2.25	0.08
6 to <11 years	2,076	1.27	0.05	1,941	0.67	0.03	1,877	1.60	0.05
11 to <16 years	2,295	0.93	0.05	2,104	0.49	0.03	1,991	1.19	0.04
16 to <21 years	1,949	0.90	0.05	1,748	0.45	0.02	1,727	1.09	0.04
21 to <30 years	1,787	0.80	0.03	1,659	0.44	0.02	1,661	1.02	0.03
30 to <40 years	1,977	0.82	0.03	1,848	0.46	0.02	1,752	0.95	0.03
40 to <50 years	2,029	0.76	0.02	1,915	0.45	0.02	1,845	0.91	0.03
50 to <60 years	1,755	0.68	0.02	1,672	0.43	0.02	1,607	0.83	0.03
60 to <70 years	1,826	0.64	0.03	1,807	0.37	0.01	1,670	0.75	0.02
70 to <80 years	1,352	0.62	0.03	1,285	0.38	0.02	1,126	0.64	0.02
80+ years	752	0.57	0.02	730	0.36	0.02	639	0.64	0.02
21 to <50 years	5,793	0.79	0.01	5,422	0.45	0.01	5,258	0.96	0.02
50+ years	5,685	0.65	0.02	5,494	0.40	0.01	5,042	0.76	0.02
Race									
Mexican American	4,672	0.98	0.03	4,630	0.50	0.02	4,448	1.19	0.03
Non-Hispanic Black	4,540	0.84	0.02	4,079	0.49	0.02	4,406	1.24	0.02
Non-Hispanic White	8,824	0.84	0.02	8,051	0.47	0.01	7,324	1.00	0.02
Other Hispanic	1,649	0.91	0.06	1,548	0.56	0.03	1,653	1.27	0.03
Other Race—Including Multiple	929	0.84	0.05	855	0.62	0.05	879	1.20	0.07

^a Based on the average of two days of food consumption reported for each NHANES respondent. If the respondent reported zero consumption on one of the two days and non-zero consumption on the other day, his/her average consumption would be the average of zero and non-zero consumption. Single day rates can be generated using <http://fcid.foodrisk.org/>.

^b For more information, refer to the Frequently Asked Questions at <http://fcid.foodrisk.org/>.

^c Beef includes: beef, fat; beef, fat-baby food; beef, kidney; beef, liver; beef, liver-baby food; beef, meat; beef, meat byproducts; beef, meat byproducts-baby food; beef, meat, dried; beef, meat-baby food.

^d Pork includes: pork, fat; pork, fat-baby food; pork, kidney; pork, liver; pork, meat; pork, meat byproducts; pork, meat byproducts-baby food; pork, meat-baby food; pork, skin.

^e Poultry includes: chicken, fat; chicken, fat-baby food; chicken, liver; chicken, meat; chicken, meat byproducts; chicken, meat byproducts-baby food; chicken, meat-baby food; chicken, skin; chicken, skin-baby food; poultry, other, fat; poultry, other, liver; poultry, other, meat; poultry, other, meat byproducts; poultry, other, skin; turkey, fat; turkey, fat-baby food; turkey, liver; turkey, liver-baby food; turkey, meat; turkey, meat byproducts; turkey, meat byproducts-baby food; turkey, meat-baby food; turkey, skin; turkey, skin-baby food.

N = Sample size.

SE = Standard error.

Source: Based on EPA analysis of 2005–2010 NHANES using the FCID Consumption Calculator available at <http://fcid.foodrisk.org/>.

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Group Age (years)	Total Meat, Poultry and Fish	Beef	Pork	Lamb, Veal, Game	Frankfurters, Sausages, Luncheon Meats, Spreads	Total Poultry	Chicken Only	Meat Mixtures ^b
Male and Female								
1 and under	72	9	4	3	2	4	1	51
1 to 2	91	18	6	— ^c	15	16	13	32
3 to 5	121	23	8	— ^c	15	19	19	49
6 to 8	149	33	15	1	17	20	19	55
Male								
9 to 11	188	41	22	3	19	24	21	71
12 to 14	218	53	18	— ^c	25	27	24	87
15 to 18	272	82	24	1	25	37	32	93
19 to 22	310	90	21	2	33	45	43	112
23 to 34	285	86	27	1	30	31	29	94
35 to 50	295	75	28	1	26	31	28	113
51 to 64	274	70	32	1	29	31	29	86
65 to 74	231	54	25	2	22	29	26	72
75 and over	196	41	39	7	19	28	25	54
Female								
9 to 11	162	38	17	1	20	27	23	55
12 to 14	176	47	19	1	18	23	22	61
15 to 18	180	46	14	2	16	28	27	61
19 to 22	184	52	19	1	18	26	24	61
23 to 34	183	48	17	1	16	24	22	66
35 to 50	187	49	19	2	14	24	21	63
51 to 64	187	52	19	2	12	26	24	60
65 to 74	159	34	21	4	12	30	25	47
75 and over	134	31	17	2	9	19	16	49
Male and Female All Ages	207	54	20	2	20	27	24	72
^a	Based on USDA Nationwide Food Consumption Survey 1977–1978 data for 1 day.							
^b	Includes mixtures containing meat, poultry, or fish as a main ingredient.							
^c	Less than 0.5 g/day, but more than 0.							
Source:	USDA (1980).							

Table 11-8. Mean Meat Intakes Per Capita in a Day, by Sex and Age (g/day, as-consumed)^a for 1987–1988

Group Age (years)	Total Meat, Poultry, and Fish	Beef	Pork	Lamb, Veal, Game	Frankfurters, Sausages, Luncheon Meats	Total Poultry	Chicken Only	Meat Mixtures ^b
Male and Female								
5 and under	92	10	9	<0.5	11	14	12	39
Male								
6 to 11	156	22	14	<0.5	13	27	24	74
12 to 19	252	38	17	1	20	27	20	142
20 and over	250	44	19	23	2	31	25	108
Female								
6 to 11	151	26	9	1	11	20	17	74
12 to 19	169	31	10	<0.5	18	17	13	80
20 and over	170	29	12	1	13	24	18	73
All individuals	193	32	14	1	17	26	20	86
^a	Based on USDA Nationwide Food Consumption Survey 1987–1988 data for 1 day.							
^b	Includes mixtures containing meat, poultry, or fish as a main ingredient.							
Source:	USDA (1992).							

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Group Age (years)	Total Meat, Poultry, and Fish		Beef		Pork		Lamb, Veal, Game		Frankfurters, Sausages, Luncheon Meats		Total Poultry		Chicken Only		Meat Mixtures ^b	
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
Male and Female																
5 and under	94	87	10	8	6	4	— ^c	— ^c	17	18	16	15	14	14	41	39
Male																
6 to 11	131	161	19	18	9	7	0	— ^c	22	27	19	25	16	22	51	68
12 to 19	238	256	31	29	11	11	1	1	21	27	40	26	29	23	119	150
20 and over	266	283	35	41	17	14	2	1	29	27	39	31	30	27	124	149
Female																
6 to 11	117	136	18	16	5	5	— ^c	— ^c	18	20	19	17	15	14	51	69
12 to 19	164	158	23	22	5	7	— ^c	0	16	10	20	19	15	18	94	82
20 and over	168	167	18	21	9	11	1	1	16	15	25	22	20	19	87	83
All individuals	195	202	24	27	11	10	1	1	21	21	29	24	23	21	98	104
^a	Based on USDA CSFII 1994 and 1995 data for 1 day.															
^b	Includes mixtures containing meat, poultry, or fish as a main ingredient.															
^c	Less than 0.5 grams/day, but more than 0.															
Source: USDA (1996a, b).																

Table 11-10. Mean Dairy Product Intakes Per Capita in a Day, by Sex and Age (g/day, as-consumed)^a for 1977–1978				
Group Age (years)	Total Milk	Fluid Milk	Cheese	Eggs
Male and Female				
1 and under	618	361	1	5
1 to 2	404	397	8	20
3 to 5	353	330	9	22
6 to 8	433	401	10	18
Male				
9 to 11	432	402	8	26
12 to 14	504	461	9	28
15 to 18	519	467	13	31
19 to 22	388	353	15	32
23 to 34	243	213	21	38
35 to 50	203	192	18	41
51 to 64	180	173	17	36
65 to 74	217	204	14	36
75 and over	193	184	18	41
Female				
9 to 11	402	371	7	14
12 to 14	387	343	11	19
15 to 18	316	279	11	21
19 to 22	224	205	18	26
23 to 34	182	158	19	26
35 to 50	130	117	18	23
51 to 64	139	128	19	24
65 to 74	166	156	14	22
75 and over	214	205	20	19
^a Based on USDA Nationwide Food Consumption Survey 1977–1978 data for 1 day.				
Source: USDA (1980).				

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Group Age (years)	Total Fluid Milk	Whole Milk	Low-Fat/Skim Milk	Cheese	Eggs
Male and Female					
5 and under	347	177	129	7	11
Male					
6 to 11	439	224	159	10	17
12 to 19	392	183	168	12	17
20 and over	202	88	94	17	27
Female					
6 to 11	310	135	135	9	14
12 to 19	260	124	114	12	18
20 and over	148	55	81	15	17
All individuals	224	99	102	14	20

^a Based on USDA Nationwide Food Consumption Survey 1987–1988 data for 1 day.

Source: USDA (1992).

Group Age (years)	Total Fluid Milk		Whole Milk		Low-Fat Milk		Cheese		Eggs	
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
Male and Female										
5 and under	424	441	169	165	130	129	12	9	11	13
Male										
6 to 11	407	400	107	128	188	164	11	12	13	15
12 to 19	346	396	105	105	160	176	19	20	18	24
20 and over	195	206	50	57	83	88	19	16	23	23
Female										
6 to 11	340	330	101	93	136	146	17	13	12	15
12 to 19	239	235	75	71	88	107	14	13	13	17
20 and over	157	158	37	32	56	57	16	15	15	16
All individuals	229	236	65	66	89	92	17	15	17	19

^a Based on USDA CSFII 1994 and 1995 data for 1 day.

Source: USDA (1996a, b).

Table 11-13. Mean Quantities of Meat and Eggs Consumed Daily by Sex and Age, Per Capita (g/day, as-consumed)^a

Age Group	Sample Size	Total	Beef	Pork	Lamb, Veal, Game	Organ Meats	Frankfurters, Sausages, Luncheon Meats	Poultry		Eggs	Mixtures, Mainly Meat/Poultry/Fish
								Total	Chicken		
Male and Female											
Under 1	1,126	24	1 ^b	— ^{b,c}	— ^{b,c}	— ^{b,c}	2	3	2	3	16
1	1,016	80	5	2	— ^{b,c}	— ^{b,c}	13	12	12	13	43
2	1,102	94	7	6	— ^{b,c}	— ^{b,c}	18	17	16	18	41
1 to 2	2,118	87	6	4	— ^{b,c}	— ^{b,c}	15	15	14	16	42
3	1,831	101	8	6	— ^{b,c}	— ^{b,c}	19	19	18	13	43
4	1,859	115	10	6	— ^{b,c}	— ^{b,c}	22	20	19	13	49
5	884	121	14	6	— ^{b,c}	— ^{b,c}	22	22	19	13	51
3 to 5	4,574	112	11	6	— ^c	— ^{b,c}	21	21	19	13	47
5 and under	7,818	93	8	5	— ^c	— ^{b,c}	17	16	15	13	42
Male											
6 to 9	787	151	18	7	— ^{b,c}	— ^{b,c}	24	23	21	11	71
6 to 11	1,031	154	19	7	— ^{b,c}	— ^{b,c}	24	22	20	12	72
12 to 19	737	250	30	12	1 ^b	0	28	31	26	22	134
Female											
6 to 9	704	121	17	4	— ^{b,c}	— ^{b,c}	18	19	16	10	55
6 to 11	969	130	18	5	— ^{b,c}	— ^{b,c}	19	20	17	11	60
12 to 19	732	158	21	5	— ^{b,c}	— ^{b,c}	15	21	19	13	85
Male and Female											
9 and under	9,309	110	12	5	— ^c	— ^{b,c}	19	18	17	12	50
19 and under	11,287	152	18	7	— ^{b,c}	— ^{b,c}	20	22	19	14	76
^a	Based on data from 1994–1996, 1998 CSFII.										
^b	Estimate is not statistically reliable due to small sample size reporting intake.										
^c	Value less than 0.5, but greater than 0.										
Note:	Consumption amounts shown are representative of the 1 st day of each participant's survey response.										
Source:	USDA (1999a).										

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Table 11-14. Percentage of Individuals Consuming Meats and Eggs, by Sex and Age (%)^a

Age Group (years)	Sample Size	Total	Beef	Pork	Lamb, Veal, Game	Organ Meats	Frankfurters, Sausages, Luncheon Meats	Poultry		Eggs	Mixtures, Mainly Meat/Poultry/Fish
								Total	Chicken		
Male and Female											
Under 1	1,126	26.0	2.1	1.1 ^b	0.2 ^b	0.2 ^b	6.1	6.3	5.0	6.7	13.7
1	1,016	77.4	11.9	7.3	0.8 ^b	0.2 ^b	26.3	24.0	23.1	22.8	32.2
2	1,102	85.2	16.2	14.9	0.8 ^b	0.2 ^b	33.2	27.6	25.6	27.3	31.4
1 to 2	2,118	81.4	14.1	11.2	0.8 ^b	0.2 ^b	29.9	25.8	24.4	25.1	31.8
3	1,831	86.2	13.8	13.3	0.5 ^b	— ^{b,c}	36.4	28.3	26.0	19.8	29.2
4	1,859	86.2	16.1	13.8	0.5 ^b	0.2 ^b	37.0	27.4	25.1	16.9	30.5
5	884	87.1	18.2	13.2	0.6 ^b	0.2 ^b	35.1	27.7	24.8	16.4	30.8
3 to 5	4,574	86.5	16.0	13.4	0.5	0.2 ^b	36.1	27.8	25.3	17.7	30.2
5 and under	7,818	77.5	13.7	11.2	0.6	0.2 ^b	30.4	24.5	22.6	18.9	28.8
Male											
6 to 9	787	87.4	20.1	11.9	0.4 ^b	0.1 ^b	37.4	24.8	22.3	15.1	36.2
6 to 11	1,031	87.8	22.0	12.2	0.4 ^b	0.2 ^b	36.2	22.9	20.5	15.6	35.7
12 to 19	737	86.8	24.2	15.8	0.6 ^b	0.0	31.8	20.6	17.6	17.0	38.3
Female											
6 to 9	704	84.6	19.4	9.2	0.4 ^b	0.2 ^b	33.5	23.1	20.2	13.4	32.4
6 to 11	969	86.5	20.2	10.0	0.4 ^b	0.1 ^b	33.1	22.9	19.8	13.3	32.8
12 to 19	732	80.1	22.0	11.2	0.1 ^b	0.1 ^b	24.6	21.6	18.9	15.0	34.0
Male and Female											
9 and under	9,309	80.9	16.1	10.9	0.5	0.2 ^b	24.3	24.3	22.0	17.1	31.0
19 and under	11,287	82.8	19.6	12.1	0.4	0.1 ^b	22.7	22.7	20.1	16.4	33.3
^a	Based on data from 1994–1996, 1998 CSFII.										
^b	Estimate is not statistically reliable due to small sample size reporting intake.										
^c	Value less than 0.5, but greater than 0.										
Note:	Percentages shown are representative of the 1 st day of each participant's survey response.										
Source:	USDA (1999a).										

Table 11-15. Mean Quantities of Dairy Products Consumed Daily by Sex and Age, Per Capita (g/day, as-consumed)^a

Age Group (year)	Sample Size	Total Milk and Milk Products	Milk, Milk Drinks, Yogurt							Milk Desserts	Cheese
			Total	Fluid Milk				Yogurt			
				Total	Whole	Low-Fat	Skim				
Male and Female											
Under 1	1,126	762	757	61	49	11	— ^{b,c}	4	3	1	
1	1,016	546	526	475	347	115	5 ^b	14	11	9	
2	1,102	405	377	344	181	141	17	10	16	11	
1 to 2	2,118	474	450	408	262	128	11	12	14	10	
3	1,831	419	384	347	166	150	26	10	22	12	
4	1,859	407	369	328	147	149	27	10	23	14	
5	884	417	376	330	137	159	25	9	25	14	
3 to 5	4,574	414	376	335	150	153	26	10	23	13	
5 and under	7,818	477	447	327	177	127	18	10	18	11	
Male											
6 to 9	787	450	405	343	127	176	29	6	31	13	
6 to 11	1,031	450	402	335	121	172	33	6	35	12	
12 to 19	737	409	358	303	99	158	40	3 ^b	29	19	
Female											
6 to 9	704	380	337	288	105	146	26	4	29	13	
6 to 11	969	382	336	283	108	136	29	4	30	14	
12 to 19	732	269	220	190	66	92	30	4 ^b	29	14	
Male and Female											
9 and under	9,309	453	417	323	153	141	22	8	23	12	
19 and under	11,287	405	362	291	121	135	29	6	27	14	
^a	Based on data from 1994–1996, 1998 CSFII.										
^b	Estimate is not statistically reliable due to small sample size reporting intake.										
^c	Value less than 0.5, but greater than 0.										
Note:	Consumption amounts shown are representative of the 1 st day of each participant's survey response.										
Source:	USDA (1999a).										

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Table 11-16. Percentage of Individuals Consuming Dairy Products, by Sex and Age (%)^a

Age Group (year)	Sample Size	Total Milk and Milk Products	Milk, Milk Drinks, Yogurt							
			Total	Fluid Milk				Yogurt	Milk Desserts	Cheese
				Total	Whole	Low-Fat	Skim			
Male and Female										
Under 1	1,126	85.4	84.6	11.1	8.3	2.4	0.2 ^b	3.1	4.5	6.0
1	1,016	95.3	92.7	87.7	61.7	26.5	1.5 ^b	10.0	13.9	29.7
2	1,102	91.6	87.3	84.3	44.8	36.3	5.2	6.8	17.5	32.6
1 to 2	2,118	93.4	90.0	86.0	53.0	31.5	3.4	8.4	15.8	31.2
3	1,831	94.3	88.3	84.6	42.5	39.5	6.8	7.3	21.4	37.0
4	1,859	93.2	87.8	85.0	41.3	40.4	7.7	5.8	21.7	36.9
5	884	93.1	86.4	81.2	38.1	41.7	6.5	5.5	21.4	34.9
3 to 5	4,574	93.5	87.5	83.6	40.6	40.6	7.0	6.2	21.5	36.3
5 and under	7,818	92.5	88.0	75.7	41.0	32.9	4.9	6.6	17.5	30.9
Male										
6 to 9	787	93.2	85.5	80.7	32.4	44.3	8.6	3.8	24.0	34.6
6 to 11	1,031	92.3	84.6	79.0	30.8	43.1	9.5	3.7	25.0	32.3
12 to 19	737	81.3	65.8	59.6	22.6	30.7	7.0	1.7 ^b	13.6	37.1
Female										
6 to 9	704	90.2	82.5	77.5	31.5	40.8	8.1	2.9	24.1	30.9
6 to 11	969	90.2	81.5	76.0	33.2	37.8	8.4	3.0	22.4	31.9
12 to 19	732	75.4	54.0	49.7	17.5	23.9	9.5	2.2 ^b	17.1	36.1
Male and Female										
9 and under	9,309	92.2	86.4	77.1	37.4	36.8	6.3	5.3	20.1	31.7
19 and under	11,287	86.7	75.6	68.1	30.1	33.1	7.5	3.8	18.6	33.5
^a	Based on data from 1994–1996, 1998 CSFII.									
^b	Estimate is not statistically reliable due to small sample size reporting intake.									
Note:	Percentages shown are representative of the 1 st day of each participant's survey response.									
Source:	USDA (1999a).									

Table 11-17. Per Capita 2-Day Average Intake of Total Meat and Total Dairy Products Based on 1994–1996, 1998 CSFII (g/kg-day, edible portion, uncooked weight)														
Population Group	N	Percent Consuming ^a	Mean	SE	Percentiles									
					1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	Max
Total Meat														
Whole population	20,607	97.5	2.1	0.02	0.0	0.2	0.5	1.0	1.7	2.7	4.0	5.3	8.7	30.3
Age Group														
Birth to 1 year	1,486	40.0	1.2	0.1	0.0	0.0	0.0	0.0	0.0	1.6	4.2	6.7	10.7	29.6
1 to 2 years	2,096	97.3	4.1	0.1	0.0	0.2	0.8	1.9	3.6	5.7	8.0	9.8	14.1	20.6
3 to 5 years	4,391	98.8	4.1	0.05	0.0	0.6	1.2	2.2	3.6	5.4	7.7	9.4	12.7	23.4
6 to 12 years	2,089	98.7	2.9	0.05	0.0	0.4	0.8	1.5	2.5	3.8	5.4	6.5	9.6	18.0
13 to 19 years	1,222	98.8	2.1	0.05	0.0	0.2	0.5	1.0	1.9	2.7	3.8	4.8	7.1	30.3
20 to 49 years	4,677	98.2	1.9	0.04	0.0	0.2	0.5	1.0	1.6	2.5	3.5	4.2	6.9	13.4
50+ years	4,646	98.2	1.5	0.02	0.0	0.2	0.4	0.8	1.3	1.9	2.7	3.3	4.8	9.7
Season														
Fall	4,687	96.8	2.1	0.06	0.0	0.1	0.5	1.0	1.7	2.8	4.2	5.4	8.7	21.2
Spring	5,308	97.6	2.1	0.04	0.0	0.2	0.5	1.0	1.7	2.7	4.0	5.2	8.7	23.6
Summer	5,890	97.4	2.1	0.03	0.0	0.1	0.5	0.9	1.6	2.7	4.0	5.4	8.6	30.3
Winter	4,722	98.0	2.0	0.04	0.0	0.2	0.5	1.0	1.6	2.6	3.8	5.0	7.9	29.6
Race														
American Indian, Alaska Native	177	98.4	2.4	0.25	0.0	0.3	0.5	1.0	2.0	3.3	4.3	6.3	9.0	12.4
Asian, Pacific Islander	557	96.8	2.5	0.17	0.0	0.1	0.3	1.1	2.1	3.5	4.5	6.0	9.6	13.0
Black	2,740	97.9	2.6	0.10	0.0	0.3	0.6	1.2	2.0	3.3	5.4	7.1	10.4	23.6
Other	1,638	96.5	2.5	0.08	0.0	0.2	0.5	1.1	2.0	3.1	4.9	6.5	10.8	29.6
White	15,495	97.5	1.9	0.02	0.0	0.2	0.5	0.9	1.6	2.5	3.7	4.8	7.7	30.3
Region														
Midwest	4,822	97.9	2.2	0.04	0.0	0.3	0.6	1.1	1.8	2.8	4.1	5.3	9.1	30.3
Northeast	3,692	96.3	2.1	0.07	0.0	0.0	0.4	0.9	1.6	2.7	4.1	5.4	8.7	20.5
South	7,208	97.7	2.0	0.03	0.0	0.2	0.5	0.9	1.7	2.6	3.9	5.2	8.3	23.4
Midwest	4,822	97.9	2.2	0.04	0.0	0.3	0.6	1.1	1.8	2.8	4.1	5.3	9.1	30.3
West	4,885	97.6	2.0	0.06	0.0	0.2	0.4	0.9	1.6	2.7	4.0	5.2	8.1	29.6
Urbanization														
MSA, central city	6,164	97.3	2.1	0.04	0.0	0.1	0.5	0.9	1.7	2.7	4.2	5.6	8.9	23.6
MSA, outside central city	9,598	97.3	2.0	0.04	0.0	0.2	0.5	1.0	1.6	2.6	3.9	5.1	8.0	29.6
Non-MSA	4,845	98.1	2.1	0.03	0.0	0.3	0.6	1.0	1.7	2.7	4.1	5.1	8.6	30.3

Chapter 11—Intake of Meats, Dairy Products, and Fats

Table 11-17. Per Capita 2-Day Average Intake of Total Meat and Total Dairy Products Based on 1994–1996, 1998 CSFII (g/kg-day, edible portion, uncooked weight) (Continued)														
Population Group	N	Percent Consuming ^a	Mean	SE	Percentiles									
					1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	Max
Total Dairy Products														
Whole population	20,607	99.5	6.7	0.1	0.01	0.2	0.4	1.2	3.2	7.3	16.1	25.4	52.1	223
Age group														
Birth to 1 year	1,486	79.5	12.6	0.9	0.0	0.0	0.0	1.0	8.0	14.1	24.1	48.7	127	186
1 to 2 years	2,096	99.8	36.7	0.7	0.4	3.9	7.7	17.4	31.3	49.8	72.1	88.3	126	223
3 to 5 years	4,391	100.0	23.3	0.3	1.1	4.2	7.0	13.0	20.8	30.9	42.0	49.4	67.7	198
6 to 12 years	2,089	100.0	13.6	0.4	0.3	1.8	3.5	6.7	11.7	18.5	26.0	31.5	42.7	80.6
13 to 19 years	1,222	99.8	5.6	0.2	0.01	0.2	0.5	1.5	4.2	8.1	12.5	15.5	25.4	32.7
20 to 49 years	4,677	99.8	3.3	0.1	0.01	0.2	0.3	0.9	2.2	4.6	7.6	9.9	14.9	36.4
50+ years	4,646	99.8	3.2	0.1	0.02	0.2	0.4	1.0	2.4	4.5	6.9	8.9	14.1	42.5
Season														
Fall	4,687	99.7	7.0	0.2	0.0	0.2	0.4	1.3	3.4	8.0	16.9	26.9	55.3	156.8
Spring	5,308	99.5	6.6	0.2	0.0	0.2	0.4	1.3	3.1	7.3	16.2	25.0	52.0	185.6
Summer	5,890	99.6	6.4	0.2	0.0	0.2	0.4	1.2	3.1	6.8	15.2	24.7	52.8	164.8
Winter	4,722	99.4	6.7	0.1	0.0	0.2	0.5	1.3	3.4	7.3	16.4	25.0	49.1	223.2
Race														
American Indian, Alaska Native	177	99.8	8.0	1.1	0.0	0.0	0.1	0.8	3.1	11.0	21.2	30.2	68.9	146.2
Asian, Pacific Islander	557	97.0	6.4	0.4	0.0	0.0	0.0	0.6	3.0	7.4	14.9	28.1	51.7	164.8
Black	2,740	99.6	5.6	0.2	0.0	0.1	0.2	0.6	2.1	6.5	14.7	23.3	45.4	185.6
Other	1,638	99.1	9.5	0.6	0.0	0.1	0.4	1.3	4.2	11.5	25.4	36.3	69.3	185.2
White	15,495	99.6	6.6	0.1	0.0	0.3	0.5	1.4	3.4	7.2	15.6	24.7	51.2	223.2

Population Group	N	Percent Consuming ^a	Mean	SE	Percentiles									
					1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	Max
Region														
Midwest	4,822	99.7	7.0	0.3	0.0	0.3	0.5	1.4	3.5	7.7	16.9	25.8	52.7	198.4
Northeast	3,692	99.6	6.7	0.2	0.0	0.3	0.6	1.5	3.4	7.3	15.9	25.7	54.2	185.6
South	7,208	99.6	6.0	0.1	0.0	0.2	0.3	1.0	2.8	6.3	14.5	23.7	48.6	223.2
West	4,885	99.2	7.4	0.4	0.0	0.2	0.4	1.4	3.7	8.5	17.5	27.6	54.5	185.2
Urbanization														
MSA, central city	6,164	99.6	6.5	0.2	0.0	0.2	0.4	1.1	3.2	7.1	15.8	25.1	49.8	198.4
MSA, outside central city	9,598	99.4	7.0	0.1	0.0	0.2	0.5	1.4	3.4	7.7	16.9	26.3	54.3	223.2
Non-MSA	4,845	99.7	6.3	0.3	0.0	0.2	0.4	1.1	3.0	6.8	15.0	23.9	51.4	180.7
^a	Percent consuming at least once in 2-day survey period.													
N	= Sample size.													
SE	= Standard error.													
MSA	= Metropolitan statistical area.													
Source:	EPA analysis of 1994–1996, 1998 CSFII.													

Table 11-18. Consumer-Only 2-Day Average Intake of Total Meat and Total Dairy Products Based on 1994–1996, 1998 CSFII (g/kg-day, edible portion, uncooked weight)													
Population Group	N	Mean	SE	Percentiles									
				1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	Max
Total Meat													
Whole population	19,384	2.1	0.02	0.04	0.4	0.6	1.0	1.7	2.7	4.0	5.3	8.7	30.3
Age group													
Birth to 1 year	575	3.0	0.2	0.01	0.1	0.3	1.0	2.2	4.2	7.4	9.2	12.9	29.6
1 to 2 years	2,044	4.2	0.1	0.04	0.6	1.0	2.1	3.6	5.7	8.1	9.8	14.1	20.6
3 to 5 years	4,334	4.2	0.1	0.04	0.8	1.2	2.2	3.6	5.5	7.7	9.4	12.7	23.4
6 to 12 years	2,065	2.9	0.1	0.1	0.5	0.9	1.5	2.5	3.9	5.4	6.5	9.6	18.0
13 to 19 years	1,208	2.1	0.05	0.02	0.3	0.6	1.1	1.9	2.8	3.8	4.8	7.1	30.3
20 to 49 years	4,593	1.9	0.04	0.04	0.4	0.6	1.0	1.6	2.5	3.5	4.2	6.9	13.4
50+ years	4,565	1.5	0.02	0.03	0.3	0.5	0.8	1.3	2.0	2.7	3.3	4.8	9.7
Season													
Fall	4,423	2.2	0.06	0.04	0.4	0.6	1.0	1.7	2.8	4.2	5.5	8.7	21.2
Spring	4,995	2.1	0.04	0.04	0.3	0.6	1.0	1.7	2.7	4.1	5.2	8.8	23.6
Summer	5,510	2.1	0.03	0.04	0.3	0.5	1.0	1.7	2.7	4.0	5.5	8.7	30.3
Winter	4,456	2.0	0.04	0.02	0.4	0.6	1.0	1.7	2.6	3.9	5.0	7.9	29.6
Race													
American Indian, Alaska Native	171	2.5	0.27	0.2	0.4	0.5	1.1	2.1	3.3	4.3	6.3	9.0	12.4
Asian, Pacific Islander	503	2.6	0.18	0.01	0.3	0.6	1.2	2.3	3.5	4.5	6.0	9.6	13.0
Black	2,588	2.6	0.10	0.03	0.5	0.7	1.2	2.0	3.3	5.4	7.2	10.5	23.6
Other	1,508	2.6	0.09	0.1	0.4	0.7	1.2	2.0	3.2	5.0	6.6	10.9	29.6
White	14,614	2.0	0.02	0.04	0.3	0.5	1.0	1.6	2.5	3.7	4.8	7.7	30.3

Population Group	N	Mean	SE	Percentiles									
				1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	Max
Region													
Midwest	4,573	2.2	0.04	0.07	0.4	0.7	1.1	1.8	2.8	4.1	5.3	9.2	30.3
Northeast	3,448	2.1	0.07	0.02	0.4	0.5	1.0	1.7	2.7	4.2	5.5	8.7	20.5
South	6,798	2.1	0.03	0.03	0.3	0.5	1.0	1.7	2.7	3.9	5.2	8.3	23.4
West	4,565	2.1	0.06	0.04	0.3	0.5	1.0	1.6	2.7	4.0	5.2	8.1	29.6
Urbanization													
MSA, central city	5,783	2.2	0.04	0.03	0.3	0.5	1.0	1.7	2.8	4.2	5.6	9.1	23.6
MSA, outside central city	9,004	2.1	0.04	0.04	0.3	0.6	1.0	1.7	2.6	3.9	5.2	8.0	29.6
Non-MSA	4,597	2.2	0.02	0.05	0.4	0.6	1.1	1.7	2.8	4.1	5.1	8.6	30.3
Total Dairy Products													
Whole population	20,287	6.7	0.1	0.02	0.2	0.4	1.3	3.3	7.4	16.2	25.5	52.2	223.2
Age group													
Birth to 1 year	1,192	15.9	1.0	0.03	0.8	1.9	5.8	10.2	16.0	27.7	57.5	141.8	185.6
1 to 2 years	2,093	36.8	0.7	0.4	4.2	7.8	17.4	31.3	49.8	72.1	88.3	126.2	223.2
3 to 5 years	4,390	23.3	0.3	1.1	4.2	7.0	13.0	20.8	30.9	42.0	49.4	67.7	198.4
6 to 12 years	2,089	13.6	0.4	0.3	1.8	3.5	6.7	11.7	18.5	26.0	31.5	42.7	80.6
13 to 19 years	1,221	5.6	0.2	0.01	0.2	0.5	1.5	4.2	8.1	12.5	15.5	25.4	32.7
20 to 49 years	4,666	3.3	0.1	0.01	0.2	0.3	0.9	2.3	4.6	7.6	9.9	14.9	36.4
50+ years	4,636	3.2	0.1	0.02	0.2	0.4	1.1	2.4	4.5	6.9	8.9	14.1	42.5
Season													
Fall	4,630	7.1	0.2	0.02	0.2	0.5	1.3	3.4	8.0	16.9	26.9	55.4	156.8
Spring	5,210	6.6	0.2	0.02	0.2	0.4	1.3	3.2	7.3	16.3	25.1	52.1	185.6
Summer	5,801	6.4	0.2	0.03	0.2	0.4	1.2	3.1	6.8	15.2	24.7	53.0	164.8
Winter	4,646	6.7	0.1	0.02	0.2	0.5	1.3	3.4	7.3	16.5	25.1	49.2	223.2

Table 11-18. Consumer-Only 2-Day Average Intake of Total Meat and Total Dairy Products Based on 1994–1996, 1998 CSFII (g/kg-day, edible portion, uncooked weight) (Continued)													
Population Group	N	Mean	SE	Percentiles									
				1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	Max
Race													
American Indian, Alaskan Native	176	8.0	1.1	0.0	0.0	0.1	0.8	3.1	11.1	21.2	30.2	68.9	146.2
Asian, Pacific Islander	537	6.6	0.4	0.0	0.03	0.1	0.6	3.1	7.6	15.6	28.1	51.7	164.8
Black	2,708	5.7	0.2	0.0	0.07	0.2	0.6	2.1	6.6	14.8	23.4	45.4	185.6
Other	1,607	9.6	0.7	0.01	0.2	0.4	1.3	4.3	11.6	25.5	36.5	69.3	185.2
White	15,259	6.7	0.1	0.05	0.3	0.6	1.4	3.4	7.2	15.7	24.7	51.3	223.2
Region													
Midwest	4,765	7.1	0.3	0.05	0.3	0.6	1.4	3.5	7.8	16.9	25.8	52.7	198.4
Northeast	3,638	6.8	0.2	0.03	0.3	0.6	1.5	3.4	7.3	16.0	25.8	54.3	185.6
South	7,104	6.0	0.1	0.02	0.2	0.3	1.0	2.8	6.3	14.6	23.8	48.6	223.2
West	4,780	7.4	0.4	0.01	0.2	0.5	1.5	3.8	8.5	17.8	27.7	54.6	185.2
Urbanization													
MSA, central city	6,072	6.5	0.2	0.01	0.2	0.4	1.2	3.2	7.2	15.9	25.2	49.8	198.4
MSA, outside central city	9,440	7.0	0.1	0.03	0.3	0.5	1.4	3.5	7.8	17.0	26.4	54.3	223.2
Non-MSA	4,775	6.3	0.3	0.02	0.2	0.4	1.1	3.0	6.8	15.0	23.9	51.5	180.7
N = Sample size. SE = Standard error. MSA = Metropolitan statistical area.													
Source: EPA analysis of 1994–1996, 1998 CSFII.													

Population Group	N	Percent Consuming ^a			Percent Consuming ^a			Percent Consuming ^a			Percent Consuming ^a		
		Beef	Mean	SE	Pork	Mean	SE	Poultry	Mean	SE	Eggs	Mean	SE
Whole population	20,607	85.9	0.9	0.02	78.5	0.42	0.01	67.6	0.71	0.01	93.4	0.40	0.01
Age Group													
Birth to 1 year	1,486	25.3	0.4	0.04	17.7	0.15	0.02	30.1	0.66	0.05	27.9	0.30	0.04
1 to 2 years	2,096	85.5	1.7	0.06	69.7	0.72	0.03	73.7	1.7	0.05	92.3	1.3	0.04
3 to 5 years	4,391	90.8	1.8	0.04	79.8	0.84	0.02	73.0	1.5	0.03	95.1	0.91	0.03
6 to 12 years	2,089	92.7	1.3	0.04	82.4	0.59	0.03	67.1	0.93	0.03	95.8	0.51	0.02
13 to 19 years	1,222	91.1	1.0	0.05	81.5	0.40	0.03	65.5	0.68	0.03	95.4	0.33	0.02
20 to 49 years	4,677	86.1	0.8	0.03	78.9	0.37	0.01	69.0	0.64	0.02	94.1	0.31	0.01
50+ years	4,646	83.5	0.6	0.02	79.3	0.34	0.01	66.5	0.52	0.02	94.0	0.33	0.01
Season													
Fall	4,687	85.0	0.9	0.05	78.5	0.41	0.02	69.7	0.76	0.03	93.1	0.39	0.02
Spring	5,308	86.4	0.9	0.03	78.1	0.44	0.02	66.8	0.70	0.02	93.5	0.41	0.02
Summer	5,890	85.7	0.9	0.03	78.1	0.42	0.02	65.4	0.69	0.02	93.3	0.39	0.01
Winter	4,722	86.7	0.9	0.02	79.1	0.40	0.02	68.6	0.70	0.02	93.8	0.39	0.02
Race													
American Indian, Alaskan Native	177	87.9	1.3	0.21	85.2	0.49	0.06	78.1	0.62	0.07	94.5	0.49	0.06
Asian, Pacific Islander	557	78.6	0.9	0.08	71.5	0.63	0.11	78.1	0.90	0.09	84.7	0.46	0.05
Black	2,740	85.3	1.1	0.10	82.1	0.53	0.04	73.3	0.93	0.05	93.9	0.48	0.01
Other	1,638	85.0	1.1	0.05	79.4	0.48	0.03	68.7	0.83	0.06	89.9	0.62	0.05
White	15,495	86.4	0.9	0.02	78.0	0.39	0.01	66.1	0.66	0.01	93.9	0.36	0.01

Population Group	N	Percent Consuming ^a	Mean	SE	Percent Consuming ^a	Mean	SE	Percent Consuming ^a	Mean	SE	Percent Consuming ^a	Mean	SE
Region													
Midwest	4,822	89.8	1.0	0.02	83.1	0.47	0.02	66.9	0.69	0.03	95.1	0.38	0.01
Northeast	3,692	82.0	0.8	0.08	72.1	0.41	0.02	68.3	0.78	0.04	91.2	0.36	0.02
South	7,208	86.1	0.9	0.02	79.8	0.42	0.02	67.2	0.70	0.02	94.2	0.39	0.01
West	4,885	85.1	0.9	0.04	77.0	0.36	0.03	68.4	0.70	0.03	92.5	0.44	0.02
Urbanization													
MSA, central city	6,164	84.0	0.9	0.04	77.1	0.41	0.02	70.6	0.78	0.02	92.8	0.41	0.01
MSA, outside central city	9,598	85.9	0.9	0.02	77.2	0.39	0.01	68.5	0.72	0.02	93.4	0.39	0.01
Non-MSA	4,845	88.9	1.0	0.04	83.3	0.49	0.02	61.1	0.60	0.03	94.5	0.39	0.01
^a Percent consuming at least once in 2-day survey period. N = Sample size. SE = Standard error. MSA = Metropolitan statistical area. Source: EPA analysis of 1994–1996, 1998 CSFII.													

Population Group	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE
	Beef			Pork			Poultry			Eggs		
Whole population	17,116	1.1	0.02	15,431	0.53	0.01	13,702	1.1	0.01	18,450	0.42	0.01
Age Group												
Birth to 1 year	361	1.6	0.2	248	0.83	0.08	434	2.2	0.1	402	1.1	0.1
1 to 2 years	1,795	2.0	0.06	1,488	1.0	0.04	1,552	2.2	0.06	1,936	1.4	0.04
3 to 5 years	3,964	1.9	0.04	3,491	1.1	0.03	3,210	2.0	0.04	4,171	0.96	0.03
6 to 12 years	1,932	1.4	0.04	1,731	0.72	0.03	1,421	1.4	0.04	2,001	0.53	0.02
13 to 19 years	1,118	1.1	0.05	1,002	0.50	0.03	808	1.0	0.04	1,167	0.34	0.02
20 to 49 years	4,058	1.0	0.04	3,732	0.47	0.01	3,221	0.9	0.02	4,399	0.33	0.01
50+ years	3,888	0.7	0.02	3,739	0.43	0.01	3,056	0.8	0.02	4,374	0.35	0.01
Season												
Fall	3,894	1.1	0.06	3,547	0.5	0.02	3,217	1.1	0.03	4,211	0.4	0.02
Spring	4,429	1.0	0.03	3,979	0.6	0.02	3,491	1.1	0.02	4,751	0.4	0.02
Summer	4,855	1.1	0.03	4,354	0.5	0.02	3,810	1.1	0.03	5,245	0.4	0.01
Winter	3,938	1.0	0.02	3,551	0.5	0.02	3,184	1.0	0.03	4,243	0.4	0.02
Race												
American Indian, Alaskan Native	157	1.5	0.15	144	0.6	0.05	116	0.8	0.08	159	0.5	0.07
Asian, Pacific Islander	413	1.2	0.08	359	0.9	0.14	410	1.2	0.11	434	0.5	0.06
Black	2,280	1.3	0.11	2,122	0.6	0.04	2,025	1.3	0.05	2,462	0.5	0.02
Other	1,296	1.3	0.06	1,152	0.6	0.04	1,125	1.2	0.07	1,404	0.7	0.05
White	12,970	1.0	0.02	11,654	0.5	0.01	10,026	1.0	0.02	13,991	0.4	0.01
Region												
Midwest	4,179	1.1	0.02	3,856	0.6	0.01	3,115	1.0	0.03	4,398	0.4	0.01
Northeast	2,936	1.0	0.08	2,502	0.6	0.02	2,522	1.1	0.03	3,236	0.4	0.02
South	6,029	1.0	0.02	5,517	0.5	0.02	4,770	1.0	0.02	6,510	0.4	0.01
West	3,972	1.1	0.04	3,556	0.5	0.03	3,295	1.0	0.03	4,306	0.5	0.02

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Table 11-20. Consumer-Only 2-Day Average Intake of Individual Meats and Dairy Products Based on 1994–1996, 1998 CSFII (g/kg-day, edible portion, uncooked weight) (Continued)												
Population Group	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE
Urbanization												
MSA, central city	4,992	1.1	0.05	4,516	0.5	0.02	4,275	1.1	0.02	5,475	0.4	0.01
MSA, outside central city	7,937	1.0	0.02	7,028	0.5	0.02	6,461	1.0	0.02	8,565	0.4	0.01
Non-MSA	4,187	1.1	0.03	3,887	0.6	0.02	2,966	1.0	0.03	4,410	0.4	0.01
<i>N</i> = Sample size. SE = Standard error. MSA = Metropolitan statistical area.												
Source: EPA analysis of 1994–1996, 1998 CSFII.												

Food Category	Quantity consumed per eating occasion (g)											
	2 to 5 years old			6 to 11 years old			12 to 19 years old					
	Male and Female (N = 2,109)			Male and Female (N = 1,432)			Male (N = 696)			Female (N = 702)		
	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
Meat												
Beef steaks	11.1	58	4	11.3	87	9	9.5	168	14	9.4	112	10
Beef roasts	5.2	49	5	4.8	67	7	5.1	233 ^a	149 ^a	5.5	97 ^a	16 ^a
Ground beef	59.5	31	1	63.7	41	1	73.4	66	3	61.5	52	3
Ham	6.9	35	4	8.5	40	4	11.6	68	7	9.9	40	5
Pork chops	11.0	48	3	10.1	62	4	11.6	100	8	8.5	72	7
Bacon	10.4	15	1	9.7	19	2	14.9	25	2	11.1	18	1
Pork breakfast sausage	5.3	33	2	6.0	32	3	6.3	40 ^a	4 ^a	3.3	40 ^a	5 ^a
Frankfurters and luncheon meats	51.7	49	1	50.9	57	2	46.7	76	3	38.5	57	3
Total chicken and turkey	63.8	46	1	53.8	62	2	58.4	100	4	54.1	71	2
Chicken	44.6	52	1	36.0	70	3	34.3	117	5	36.1	80	3
Turkey	5.1	63	7	5.7	66	5	8.2	117	14	5.8	60 ^a	9 ^a
Dairy Products												
Fluid milk (all)	92.5	196	3	89.2	241	4	72.3	337	8	64.4	262	8
Fluid milk consumed with cereal	68.1	149	4	64.7	202	5	44.4	276	10	42.7	222	8
Whole milk	50.0	202	3	39.5	244	7	30.0	333	13	22.4	258	7
Whole milk consumed with cereal	33.8	161	5	26.2	212	11	14.8	265	18	14.1	235	13
Low-fat milk	47.5	189	3	52.8	238	4	39.6	326	8	32.4	262	13
Low-fat milk consumed with cereal	31.5	136	4	32.7	198	4	24.3	277	12	21.1	227	12
Skim milk	7.8	171	9	11.1	225	9	9.7	375	38	13.5	255	14
Skim milk consumed with cereal	4.9	131	11	7.5	188	14	6.5	285 ^a	23 ^a	8.3	181	13

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Table 11-21. Quantity (as-consumed) of Meat and Dairy Products Consumed per Eating Occasion and Percentage of Individuals Using These Foods in Two Days (Continued)

Quantity consumed per eating occasion (g)																		
Food Category	2 to 5 years old			6 to 11 years old			12 to 19 years old											
	Male and Female (N = 2,109)			Male and Female (N = 1,432)			Male (N = 696)			Female (N = 702)								
	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE			
Cheese, other than cream or cottage	53.2	24	1	50.4	29	1	61.1	38	2	53.9	27	1						
Ice cream and ice milk	18.4	92	3	21.1	135	4	14.2	221	12	15.2	187	14						
Boiled, poached, and baked eggs	8.0	36	3	8.2	34	3	5.0	44 ^a	9 ^a	7.7	45	7						
Fried eggs	17.3	48	1	14.0	58	2	14.9	83	5	13.5	59	3						
Scrambled eggs	10.4	59	4	7.1	72	5	7.1	72	5	8.9	103	9						
Food Category	20 to 39 years old						40 to 59 years old						60 years and older					
	Male (N = 1,543)			Female (N = 1,449)			Male (N = 1,663)			Female (N = 1,694)			Male (N = 1,545)			Female (N = 1,429)		
	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
Meat																		
Beef steaks	17.1	202	20	11.8	121	8	18.3	159	7	10.7	117	6	13.4	129	7	9.5	95	6
Beef roasts	6.9	132	14	5.8	85	8	9.9	119	8	9.6	74	5	11.7	102	6	8.8	80	4
Ground beef	65.3	80	4	51.5	52	2	50.0	82	3	44.6	57	2	40.7	73	3	36.2	62	3
Ham	10.8	78	7	9.7	47	4	13.5	68	5	12.2	50	4	15.2	56	3	14.4	45	3
Pork chops	12.8	117	8	12.5	71	4	14.3	108	6	13.0	67	4	16.4	89	3	13.1	62	3
Bacon	14.1	26	1	12.4	18	1	17.5	22	1	14.8	18	1	20.6	19	1	17.4	16	1
Pork breakfast sausage	6.6	57	4	5.1	37	3	6.6	48	4	5.8	38	4	10.7	48	4	5.5	34	3
Frankfurters and luncheon meats	46.2	88	6	35.6	61	2	44.9	79	2	34.3	59	2	41.6	62	2	33.9	51	2
Total chicken and turkey	57.3	112	4	57.8	78	2	56.8	111	4	58.7	80	2	53.8	87	3	57.8	71	2
Chicken	37.1	122	3	35.5	92	3	34.5	124	4	36.0	87	2	32.1	99	3	34.0	79	2
Turkey	6.8	131	21	5.6	76	6	8.5	115	12	8.8	81	8	7.7	80	7	7.2	77	7

Table 11-21. Quantity (as-consumed) of Meat and Dairy Products Consumed per Eating Occasion and Percentage of Individuals Using These Foods in Two Days (Continued)

Food Category	Quantity consumed per eating occasion (g)																	
	20 to 39 years old						40 to 59 years old						60 years and older					
	Male (N = 1,543)			Female (N = 1,449)			Male (N = 1,663)			Female (N = 1,694)			Male (N = 1,545)			Female (N = 1,429)		
	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
	Dairy Products																	
Fluid milk (all)	58.0	291	9	61.3	209	6	60.5	238	6	60.2	169	5	73.9	189	5	71.6	154	4
Fluid milk consumed with cereal	26.9	275	12	32.4	198	5	30.1	211	7	30.2	166	5	48.1	170	5	46.6	140	6
Whole milk	22.9	278	11	22.4	202	10	20.3	223	15	19.0	142	7	22.3	188	9	19.7	137	8
Whole milk consumed with cereal	7.9	272	16	8.7	216	14	6.2	216	16	6.1	183	10	10.1	177	10	9.9	156	13
Low-fat milk	29.4	298	15	29.4	198	7	31.2	242	7	27.7	159	5	40.2	189	5	37.8	161	6
Low-fat milk consumed with cereal	14.0	284	22	15.2	181	5	16.1	212	10	13.1	151	7	26.5	165	5	24.4	134	5
Skim milk	9.3	318	13	15.5	235	11	15.1	244	12	19.2	193	7	17.7	186	9	21.6	154	9
Skim milk consumed with cereal	5.6	260	12	9.3	207	10	8.7	197	11	11.8	173	7	12.4	174	9	14.2	135	9
Cheese, other than cream or cottage	63.8	39	2	52.6	30	1	48.3	36	1	46.3	29	1	40.9	33	2	35.4	26	1
Ice cream and ice milk	14.7	200	2	13.6	136	6	18.0	173	6	14.2	141	8	22.7	138	5	18.9	107	4
Boiled, poached, and baked eggs	9.4	50	4	10.4	39	3	12.0	45	3	14.2	38	2	15.7	45	3	16.1	39	2
Fried eggs	15.2	86	2	14.6	61	3	20.9	83	2	17.5	60	2	24.6	70	2	18.3	56	2
Scrambled eggs	10.7	89	4	7.8	74	3	11.1	83	3	8.0	66	3	12.0	73	4	9.3	64	5
^a	Indicates a statistic that is potentially unreliable because of small sample size or large coefficient of variation.																	
N	= Sample size.																	
PC	= Percent consuming at least once in 2 days.																	
SE	= Standard error of the mean.																	
Source:	Smiciklas-Wright et al. (2002), based on 1994–1996 CSFII data.																	

Table 11-22. Consumption of Milk, Yogurt, and Cheese: Median Daily Servings (and ranges) by Demographic and Health Characteristics		
Subject Characteristic	N	Milk, Yogurt, and Cheese
Sex		
Female	80	1.6 (0.2–5.6)
Male	50	1.5 (0.3–7.4)
Ethnicity		
African-American	44	1.9 (0.2–4.5)
European American	47	1.6 (0.2–5.6)
Native American	39	1.3 (0.5–7.4)
Age		
70 to 74 years	42	1.8 (0.3–7.4)
75 to 79 years	36	1.6 (0.2–5.6)
80 to 84 years	36	1.4 (0.2–4.5)
85+ years	16	1.6 (0.2–3.8)
Marital Status		
Married	49	1.5 (0.2–7.4)
Not Married	81	1.7 (0.2–5.4)
Education		
8 th grade or less	37	1.8 (0.2–5.4)
9 th to 12 th grades	47	1.6 (0.2–5.6)
> High School	46	1.4 (0.3–7.4)
Denture		
Yes	83	1.5 (0.2–7.4)
No	47	1.6 (0.3–5.6)
Chronic Disease		
0	7	2.0 (0.8–4.5)
1	31	1.8 (0.3–5.6)
2	56	1.6 (0.2–7.4)
3	26	1.2 (0.2–4.8)
4+	10	1.5 (0.5–4.5)
Weight^a		
≤130 pounds	18	1.3 (0.3–5.4)
131 to 150 pounds	32	1.6 (0.5–5.6)
151 to 170 pounds	27	1.8 (0.2–4.5)
171 to 190 pounds	22	1.6 (0.2–3.7)
≥191 pounds	29	1.5 (0.2–7.4)
^a = Two missing values. N = Number of subjects.		
Source: Vitolins et al. (2002).		

Food Group/Food	Percentage of Infants and Toddlers Consuming at Least Once in a Day					
	4 to 6 months	7 to 8 months	9 to 11 months	12 to 14 months	15 to 18 months	19 to 24 months
	<i>N</i> = 862	<i>N</i> = 483	<i>N</i> = 679	<i>N</i> = 374	<i>N</i> = 308	<i>N</i> = 316
Cow's milk	0.8	2.9	20.3	84.8	88.3	87.7
Whole	0.5	2.4	15.1	68.8	71.1	58.8
Reduced-fat or nonfat	0.3	0.5	5.3	17.7	20.7	38.1
Unflavored	0.8	2.9	19.5	84.0	87.0	86.5
Flavored	0.0	0.0	0.9	1.8	4.4	5.6
Soy milk	0.0	0.5	1.7	1.5	3.9	3.8
Any meat or protein source	14.2	54.9	79.2	91.3	92.7	97.2
Baby food meat	1.7	4.0	3.1	1.1	0.0	0.0
Nonbaby food meat	1.5	8.4	33.7	60.3	76.3	83.7
Other protein sources	2.7	9.7	36.1	59.2	66.8	68.9
Dried beans and peas, vegetarian meat substitutes	0.6	1.3	3.3	7.0	6.6	9.9
Eggs	0.7	2.9	7.3	17.0	25.0	25.2
Peanut butter, nuts, and seeds	0.0	0.5	1.9	8.8	11.6	10.4
Cheese	0.4	2.1	18.5	34.0	39.1	41.1
Yogurt	1.2	4.1	15.7	14.9	20.2	15.3
Protein sources in mixed dishes	11.0	43.3	46.2	30.1	25.5	20.5
Baby Food Dinners	9.5	39.8	33.5	10.2	2.4	1.3
Beans and rice, chili, other bean mixtures	0.0	0.0	0.9	1.2	2.1	2.0
Mixtures with vegetables and/or rice/pasta	0.9	1.2	4.7	8.2	9.0	7.8
Soup ^a	0.9	3.4	10.1	12.5	13.8	11.5
Types of meat ^b						
Beef	0.9	2.6	7.7	16.1	16.3	19.3
Chicken or turkey	2.0	7.3	22.4	33.0	46.9	47.3
Fish and shellfish	0.0	0.5	1.9	5.5	8.7	7.1
Hotdogs, sausages, and cold cuts	0.0	2.1	7.1	16.4	20.1	27.0
Pork/ham	0.3	1.7	4.0	9.7	11.2	13.9
Other	0.3	0.6	2.5	2.8	2.1	3.9
^a	The amount of protein actually provided by soups varies. Soups could not be sorted reliably into different food groups because all soups were assigned the same 2-digit food code and many food descriptions lacked detail about major soup ingredients.					
^b	Includes baby food and nonbaby food sources.					
<i>N</i>	= Sample size.					
Source: Fox et al. (2004).						

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Table 11-24. Food Choices for Infants and Toddlers by WIC Participation Status

	Infants 4 to 6 months		Infants 7 to 11 months		Toddlers 12 to 24 months	
	WIC Participant	Non-Participant	WIC Participant	Non-Participant	WIC Participant	Non-Participant
Cow's milk	1.0	0.6	11.4	13.2	92.3	85.8 ^a
Meat or other protein source						
Baby food meat	0.9	2.0	3.3	3.6	0.0	0.3
Nonbaby meat	3.7	0.5 ^b	25.0	22.0	77.7	75.1
Eggs	0.9	0.6	8.5	4.2 ^b	24.1	23.0
Peanut butter, nuts, seeds	0.0	0.0	1.4	1.3	12.9	9.8
Cheese	0.0	0.6	9.0	12.5	38.5	38.8
Yogurt	0.8	1.4	5.5	13.3 ^b	9.3	18.9 ^b
Sample size (unweighted)	265	597	351	808	205	791

^a $p < 0.05$; nonparticipants significantly different from WIC participants.

^b $p < 0.01$; nonparticipants significantly different from WIC participants.

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

Source: Ponza et al. (2004).

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Table 11-25. Percentage of Hispanic and Non-Hispanic Infants and Toddlers Consuming Different Types of Milk, Meats, or Other Protein Sources on a Given Day

	Age 4 to 5 months		Age 6 to 11 months		Age 12 to 24 months	
	Hispanic (<i>N</i> = 84)	Non-Hispanic (<i>N</i> = 538)	Hispanic (<i>N</i> = 163)	Non-Hispanic (<i>N</i> = 1,228)	Hispanic (<i>N</i> = 124)	Non-Hispanic (<i>N</i> = 871)
Milk						
Fed any cow's or goat's milk	—	—	7.5†	11.3	85.6	87.7
Fed cow's milk						
Whole	—	—	5.6†	8.3	61.7	66.3
Reduced fat or nonfat	—	—	2.2†	3.0	29.0	27.0
Meat or other protein source						
Any meat or protein source ^a	9.7†	5.3	71.6	62.0	90.3	94.7
Nonbaby food meat	—	—	22.5	19.2	72.3	76.0
Other protein sources	1.4†	—	26.5	21.2	70.1	65.3
Beans and peas	1.4†	—	5.8†	1.8	19.1 ^b	6.5
Eggs	—	—	9.5	4.2	26.4	22.5
Cheese	—	—	11.2	9.4	29.3	40.2
Yogurt	—	—	7.7	9.8	15.7	17.0
Protein sources in mixed dishes	7.5†	4.4	44.8	41.6	33.3	22.7
Baby food dinners	6.9†	3.9	24.7 ^b	35.3	3.5†	3.9
Soup ^c	—	—	16.3 ^d	5.1	23.4 ^b	10.7
Types of meat ^a						
Beef	—	—	5.0†	4.6	25.2	16.0
Chicken and turkey	—	—	11.2	11.9	46.5	43.6
Hotdogs, sausages, and cold cuts	—	—	7.2†	3.4	14.8	23.3
Pork/Ham	—	—	3.8†	1.7	11.7	12.1

^a Includes baby food and nonbaby food sources.

^b Significantly different from non-Hispanic at $p < 0.05$.

^c The amount of protein actually provided by soups varies. Soups could not be sorted reliably into different food groups because many food descriptions lacked detail about major soup ingredients.

^d Significantly different from non-Hispanic at $p > 0.01$.

† Statistic is potentially unreliable because of a high coefficient of variation.

— = Less than 1% of the group consumed this food on a given day.

N = Sample size.

Source: Mennella et al. (2006).

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Table 11-26. Average Portion Sizes per Eating Occasion of Meats and Dairy Products Commonly Consumed by Infants from the 2002 Feeding Infants and Toddlers Study				
Food Group	Reference Unit	4 to 5 months (<i>N</i> = 624)	6 to 8 months (<i>N</i> = 708)	9 to 11 months (<i>N</i> = 687)
		Mean ± SE		
Nonbaby food meats	ounce	—	0.9 ± 0.16	0.8 ± 0.05
Cheese	ounce	—	—	0.7 ± 0.05
Scrambled eggs	cup	—	—	0.2 ± 0.02
Yogurt	ounce	—	—	3.1 ± 0.20
Baby food dinners	ounce	2.9 ± 0.24	3.3 ± 0.09	3.8 ± 0.11
— = Cell size was too small to generate a reliable estimate. <i>N</i> = Sample size. SE = Standard error of the mean.				
Source: Fox et al. (2006).				

Table 11-27. Average Portion Sizes per Eating Occasion of Meats and Dairy Products Commonly Consumed by Toddlers from the 2002 Feeding Infants and Toddlers Study

Food Group	Reference Unit	12 to 14 months	15 to 18 months	19 to 24 months
		(<i>N</i> = 371)	(<i>N</i> = 312)	(<i>N</i> = 320)
		Mean ± SE		
Milk				
Milk	fluid ounce	5.6 ± 0.14	5.9 ± 0.14	6.2 ± 0.17
Milk, as a beverage	fluid ounce	5.7 ± 0.14	6.1 ± 0.14	6.4 ± 0.17
Milk, on cereal	fluid ounce	3.4 ± 0.37	2.7 ± 0.26	3.6 ± 0.29
Meats and other protein source				
All meats	ounce	1.2 ± 0.06	1.3 ± 0.08	1.3 ± 0.07
Beef	ounce	0.8 ± 0.08	1.2 ± 0.15	1.2 ± 0.14
Chicken or turkey, plain	ounce	1.3 ± 0.10	1.3 ± 0.16	1.3 ± 0.10
Hot dogs, luncheon meats, sausages	ounce	1.3 ± 0.13	1.5 ± 0.13	1.5 ± 0.12
Chicken, breaded ^a	ounce	1.5 ± 0.14	1.5 ± 0.13	1.8 ± 0.12
	nugget	2.4 ± 0.22	2.4 ± 0.21	2.8 ± 0.19
Scrambled eggs	cup	0.2 ± 0.02	0.3 ± 0.03	0.3 ± 0.02
Peanut butter	tablespoon	0.7 ± 0.08	0.7 ± 0.09	0.9 ± 0.13
Yogurt	ounce	3.4 ± 0.19	3.8 ± 0.26	3.8 ± 0.28
Cheese	ounce	0.8 ± 0.05	0.8 ± 0.05	0.7 ± 0.04
^a	Not included in total for all meats because weight includes breading.			
<i>N</i>	= Sample size.			
SE	= Standard error of the mean.			
Source:	Fox et al. (2006).			

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Table 11-28. Percentage of Infants and Toddlers Consuming Meats in the 2008 FITS

Food Group/Food	Percentage Consuming at Least Once per Day						
	Age (months)						
	4–5.9	6–8.9	9–11.9	12–14.9	15–17.9	18–20.9	21–23.9
Sample size	166	249	256	243	251	219	212
Types of meat ^a							
Beef	0 ^b	0.4 ± 0.2 ^b	1.7 ± 0.7 ^b	6.8 ± 2.1 ^b	13.4 ± 3.4	15.9 ± 4.7	13.9 ± 4.9
Chicken or turkey	0 ^b	5.7 ± 2.1 ^b	21.7 ± 4.4	35.6 ± 4.9	47.0 ± 5.0	38.0 ± 5.2	40.3 ± 5.4
Fish and shellfish	0 ^b	0.2 ± 0.2 ^b	1.9 ± 1.4 ^b	6.0 ± 1.8 ^b	2.8 ± 1.0 ^b	7.2 ± 2.1 ^b	5.0 ± 2.2 ^b
Hot dogs, sausages, and cold cuts	0 ^b	1.1 ± 0.8 ^b	6.7 ± 2.2 ^b	17.8 ± 3.9	22.2 ± 4.1	22.3 ± 3.9	28.4 ± 5.2
Pork/ham	0 ^b	0.8 ± 0.8 ^b	1.7 ± 0.9 ^b	3.3 ± 1.2 ^b	5.5 ± 2.5 ^b	14.1 ± 4.4	14.8 ± 5.0
Other	0 ^b	0 ^b	3.2 ± 3.0 ^b	4.3 ± 1.8 ^b	3.1 ± 1.5 ^b	0.6 ± 0.4 ^b	2.7 ± 1.4 ^b
^a	Includes baby foods and nonbaby food meats.						
^b	Point estimate is considered imprecise because of small sample size and uncommon or very common event.						
Source: Siega-Riz et al. (2010).							

Table 11-29. Percentage of Infants, Toddlers, and Preschoolers Consuming Meats and Other Protein Sources, and Milk in a Given Day, by WIC Participation, FITS 2008^a

	0–5.9 months		6–8.9 months		9–11.9 months		6–11.9 months		12–23.9 months		24–47.9 months	
	WIC	Non-WIC	WIC	Non-WIC	WIC	Non-WIC	WIC	Non-WIC	WIC	Non-WIC	WIC	Non-WIC
	<i>N</i> = 117	<i>N</i> = 265	<i>N</i> = 84	<i>N</i> = 165	<i>N</i> = 76	<i>N</i> = 180	<i>N</i> = 160	<i>N</i> = 345	<i>N</i> = 238	<i>N</i> = 687	<i>N</i> = 279	<i>N</i> = 1,180
Meats and other proteins												
Any meat or protein source	2.8 ^a	0.0 ^a	50.0	29.1 ^b	78.0 ^a	76.1	64.1	53.6	93.9 ^a	94.1	92.9 ^a	91.7
Baby food meat	0.0 ^a	0.0 ^a	2.8 ^a	6.0 ^a	0.9 ^a	1.3 ^a	1.9 ^a	3.6 ^a	0.4 ^a	1.2 ^a	0.0 ^a	0.0 ^a
Nonbaby food meat	0.0 ^a	0.0 ^a	3.9 ^a	3.3 ^a	42.9 ^a	25.7	23.5	15.0	71.9	72.0	79.0	65.9 ^c
Cheese	0.0 ^a	0.0 ^a	1.4 ^a	4.3 ^a	15.8 ^a	11.1 ^a	8.6 ^a	7.8	19.6	31.0 ^b	23.6	27.5
Yogurt	0.2 ^a	0.0 ^a	11.0 ^a	3.7 ^a	6.0 ^a	15.1 ^b	8.5 ^a	9.6	13.3	29.0 ^c	16.0	23.5
Eggs	0.0 ^a	0.0 ^a	0.8 ^a	0.8 ^a	9.3 ^a	8.5 ^a	5.0 ^a	4.8 ^a	28.3	16.8 ^b	25.8	16.2
Protein in mixed dishes	2.6 ^a	0.0 ^a	38.2	15.7 ^b	41.1 ^a	43.5	39.6	30.2	24.0	27.3	20.2	22.7
Milk												
Any	100.0	100.0	100.0 ^a	100.0 ^a	100.0 ^a	100.0 ^a	100.0	100.0	95.6 ^a	94.2	87.1	90.1
Breast milk	21.9	69.3 ^c	11.6 ^a	51.0 ^c	34.7 ^a	31.7	23.2	40.9 ^c	3.9 ^a	7.4	0.9 ^a	0.4 ^a
Formula	90.6 ^a	42.3 ^c	91.9 ^a	60.2 ^c	60.1 ^a	66.7	75.9	63.6	8.0 ^a	8.6	0.1 ^a	0.2 ^a
Cow's milk	0.0	0.0	9.5 ^a	1.9 ^a	17.0 ^a	16.4	13.3	9.4	86.5	81.0	86.8	86.0
Whole milk	0.0	0.0	8.2 ^a	1.9 ^a	11.9 ^a	13.2	10.0 ^a	7.8	59.2	64.2	30.7	30.5
Reduced or low fat	0.0	0.0	0.3 ^a	0.0 ^a	5.1 ^a	2.1 ^a	2.7 ^a	1.1 ^a	31.8	19.7	50.6	52.4
Nonfat	0.0	0.0	1.1 ^a	0.0 ^a	0.0 ^a	0.1 ^a	0.5	0.1 ^a	1.0 ^a	1.0	7.4 ^a	10.5
^a	Point estimate is considered imprecise because of small samples size and uncommon or very common event.											
^b	Statistically different from WIC participant at $p = 0.05$.											
^c	Statistically different from WIC participant at $p = 0.01$.											
WIC	= Special Supplemental Nutrition Program for Women, Infants, and Children.											
<i>N</i>	= Sample size.											
Source:	Deming et al. (2014).											

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Table 11-30. Mean Amount Consumed (g/eating occasion) Among Children 12–23.9 Months of Age	
Food	FITS 2008 (<i>N</i> = 123)
Meats and other protein sources	41 ± 2.5
Milk products (includes cheese, yogurt)	57 ± 6.6
Cheese	21 ± 2.3

N = Sample size.
Source: Briefel et al. (2010).

Table 11-31. Per Capita 2-Day Average^a Intake of Total Meats^b and Total Dairy^c: Pregnant, Lactating, and All Women of Child-bearing Age (13 to <50 years)

Population Group	N	Percent Consuming ^d	Mean	SE	Percentiles									Maximum
					1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	
g/day														
Total meats														
Pregnant	426	99	109	4.0	0.3 ^e	10.9	32.9	60.2	100	150	193	222	284 ^e	405 ^e
Lactating	101	97	119	12.9	0 ^e	4.1 ^e	21.0 ^e	66.3	104	173	219 ^e	282 ^e	299 ^e	314 ^e
Child-bearing age	5,543	98	106	1.4	0	7.8	27.2	57.2	96.0	142	199	238	331	542 ^e
Total dairy														
Pregnant	426	100	335	25.1	20.6 ^e	35.5	59.5	144	255	463	740	877	1,223 ^e	2,121 ^e
Lactating	101	100	337	29.3	1.2 ^e	11.8 ^e	61.4 ^e	150	318	525	543 ^e	676 ^e	950 ^e	1,321 ^e
Child-bearing age	5,543	100	242	6.5	2.2	17.6	34.7	81.8	177	339	525	666	1,049	2,390 ^e
g/kg-day														
Total meats														
Pregnant	426	99	1.5	0.06	<0.05 ^e	0.2	0.4	0.8	1.3	2.1	2.8	3.3	4.9 ^e	5.9 ^e
Lactating	101	97	1.8	0.2	0 ^e	0.1 ^e	0.4 ^e	1.0	1.7	2.1	3.3 ^e	4.9 ^e	5.7 ^e	5.7 ^e
Child-bearing age	5,543	98	1.5	0.03	0	0.1	0.4	0.8	1.3	2.0	3.0	3.6	4.9	13.3 ^e
Total dairy														
Pregnant	426	100	4.5	0.3	0.2 ^e	0.5	0.8	2.0	3.6	6.2	9.7	12.1	16.7 ^e	26.9 ^e
Lactating	101	100	5.2	0.5	<0.05 ^e	0.2 ^e	1.0 ^e	2.4	4.7	8.2	10.0 ^e	10.5 ^e	15.7 ^e	18.9 ^e
Child-bearing age	5,543	100	3.6	0.1	<0.05	0.2	0.5	1.1	2.5	4.9	8.0	10.3	16.9	45.0 ^e

Table 11-31. Per Capita 2-Day Average^a Intake of Total Meats^b and Total Dairy^c: Pregnant, Lactating, and All Women of Child-bearing Age (13 to <50 years) (Continued)

^a	Based on the average of two days of food consumption reported for each NHANES respondent. If the respondent reported zero consumption on one of the two days and non-zero consumption on the other day, his/her average consumption would be the average of zero and non-zero consumption. Single day rates can be generated using http://fcid.foodrisk.org/ .
^b	Total Meat includes: beef, fat; beef, fat-baby food; beef, kidney; beef, liver; beef, liver-baby food; beef, meat; beef, meat byproducts; beef, meat byproducts- baby food; beef, meat, dried; beef, meat-baby food; chicken, fat; chicken, fat-baby food; chicken, liver; chicken, meat; chicken, meat byproducts; chicken, meat byproducts-baby food; chicken, meat-baby food; chicken, skin; chicken, skin-baby food; goat, fat; goat, kidney; goat, liver; goat, meat; goat, meat byproducts; horse, meat; meat, game; pork, fat; pork, fat-baby food; pork, kidney; pork, liver; pork, meat; pork, meat byproducts; pork, meat byproducts-baby food; pork, meat-baby food; pork, skin; poultry, other, fat; poultry, other, liver; poultry, other, meat; poultry, other, meat byproducts; poultry, other, skin; rabbit, meat; sheep, fat; sheep, fat-baby food; sheep, kidney; sheep, liver; sheep, meat; sheep, meat byproducts; sheep, meat-baby food; turkey, fat; turkey, fat-baby food; turkey, liver; turkey, liver-baby food; turkey, meat; turkey, meat byproducts; turkey, meat byproducts-baby food; turkey, meat-baby food; turkey, skin; turkey, skin-baby food.
^c	Total Dairy includes: milk, fat; milk, fat-baby food/infant formula; milk, nonfat solids; milk, nonfat solids-baby food/infant formula; milk, sugar (lactose)-baby food/infant formula; milk, water; milk, water-baby food/infant formula.
^d	Percent consuming at least once in 2-day survey period.
^e	Estimates are less statistically reliable based on guidance published in the Joint Policy on Variance Estimation and Statistical Reporting Standards on NHANES III and CSFII Reports: HNIS/NCHS Analytical Working Group Recommendations (NCHS, 1993).
<i>N</i>	= Sample size.
<i>SE</i>	= Standard error.
Source:	Based on U.S. EPA analysis of 2005–2010 NHANES using http://fcid.foodrisk.org/ .

Table 11-32. Consumer-Only 2-Day Average^a Intake of Total Meats^b and Total Dairy^c: Pregnant, Lactating, and All Women of Child-bearing Age (13 to <50 years)

Population Group	N	Mean	SE	Percentiles									Maximum
				1 st	5 th	10 th	25 th	50 th	75 th	90 th	95 th	99 th	
g/day													
Total meats													
Pregnant	421	109	4.1	0.6 ^d	15.9	35.4	63.6	102	150	193	222	284 ^d	405 ^d
Lactating	99	122	13.0	0.7 ^d	18.2 ^d	29.4 ^d	68.5	104	173	230 ^d	282 ^d	299 ^d	314 ^d
Child-bearing age	5,454	109	1.5	0.4	17.0	30.9	59.5	97.3	144	201	239	333	542 ^d
Total dairy													
Pregnant	426	335	25.1	20.6 ^d	35.5	59.5	144	255	463	740	877	1,223 ^d	2,121 ^d
Lactating	101	337	29.3	1.2 ^d	11.8 ^d	61.4 ^d	150	318	525	543 ^d	676 ^d	950 ^d	1,321 ^d
Child-bearing age	5,543	242	6.5	3.7	18.5	35.2	82.0	178	339	525	666	1,049	2,390 ^d
g/kg-day													
Total meats													
Pregnant	421	1.5	0.06	<0.05 ^d	0.2	0.5	0.8	1.3	2.1	2.8	3.3	4.9 ^d	5.9 ^d
Lactating	99	1.9	0.2	<0.05 ^d	0.3 ^d	0.5 ^d	1.1	1.7	2.5	3.3 ^d	4.9 ^d	5.7 ^d	5.7 ^d
Child-bearing age	5,454	1.6	0.03	<0.05	0.2	0.4	0.8	1.3	2.1	3.0	3.6	4.9	13.3 ^d
Total dairy													
Pregnant	426	4.5	0.3	0.2 ^d	0.5	0.8	2.0	3.6	6.2	9.7	12.1	16.7 ^d	26.9 ^d
Lactating	101	5.2	0.5	<0.05 ^d	0.2 ^d	1.0 ^d	2.4	4.7	8.2	10.0 ^d	10.5 ^d	15.7 ^d	18.9 ^d
Child-bearing age	5,543	3.6	0.1	<0.05	0.2	0.5	1.1	2.5	4.9	8.0	10.3	16.9	45.0 ^d

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Table 11-32. Consumer-Only 2-Day Average^a Intake of Total Meats^b and Total Dairy^c: Pregnant, Lactating, and All Women of Child-bearing Age (13 to <50 years) (Continued)

^a	Based on the average of two days of food consumption reported for each NHANES respondent. If the respondent reported zero consumption on one of the two days and non-zero consumption on the other day, his/her average consumption would be the average of zero and non-zero consumption. Single day rates can be generated using http://fcid.foodrisk.org/ .
^b	Total Meat includes: beef, fat; beef, fat-baby food; beef, kidney; beef, liver; beef, liver-baby food; beef, meat; beef, meat byproducts; beef, meat byproducts-baby food; beef, meat, dried; beef, meat-baby food; chicken, fat; chicken, fat-baby food; chicken, liver; chicken, meat; chicken, meat byproducts; chicken, meat byproducts-baby food; chicken, meat-baby food; chicken, skin; chicken, skin-baby food; goat, fat; goat, kidney; goat, liver; goat, meat; goat, meat byproducts; horse, meat; meat, game; pork, fat; pork, fat-baby food; pork, kidney; pork, liver; pork, meat; pork, meat byproducts; pork, meat byproducts-baby food; pork, meat-baby food; pork, skin; poultry, other, fat; poultry, other, liver; poultry, other, meat; poultry, other, meat byproducts; poultry, other, skin; rabbit, meat; sheep, fat; sheep, fat-baby food; sheep, kidney; sheep, liver; sheep, meat; sheep, meat byproducts; sheep, meat-baby food; turkey, fat; turkey, fat-baby food; turkey, liver; turkey, liver-baby food; turkey, meat; turkey, meat byproducts; turkey, meat byproducts-baby food; turkey, meat-baby food; turkey, skin; turkey, skin-baby food.
^c	Total Dairy includes: milk, fat; milk, fat-baby food/infant formula; milk, nonfat solids; milk, nonfat solids-baby food/infant formula; milk, sugar (lactose)-baby food/infant formula; milk, water; milk, water-baby food/infant formula.
^d	Estimates are less statistically reliable based on guidance published in the Joint Policy on Variance Estimation and Statistical Reporting Standards on NHANES III and CSFII Reports: HNIS/NCHS Analytical Working Group Recommendations (NCHS, 1993)
<i>N</i>	= Sample size.
SE	= Standard error.
Source:	Based on U.S. EPA analysis of 2005–2010 NHANES using http://fcid.foodrisk.org/ .

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Table 11-33. Per Capita and Consumer-Only 2-Day Average^a Intake of Individual Meats^b: Pregnant, Lactating, and All Women of Child-Bearing Age (13 to <50 years)									
Food	Per Capita					Consumer-Only			
	PC	<i>N</i>	Mean	SE	95 th	<i>N</i>	Mean	SE	95 th
g/day									
Beef									
Pregnant	88	426	38.5	4.0	131	371	43.5	4.3	135 ^c
Lactating	82	101	48.4	8.3	180 ^c	86	59.0	8.9	180 ^c
Child-bearing age	84	5,543	38.2	0.9	132	4,689	45.7	1.0	139
Pork									
Pregnant	86	426	22.8	2.8	84.8	367	26.6	3.0	85.4 ^c
Lactating	84	101	20.6	5.4	110 ^c	84	24.6	6.2	110 ^c
Child-bearing age	75	5,543	18.6	0.6	77.2	4,327	24.9	0.7	86.6
Poultry									
Pregnant	80	426	47.3	3.8	158	338	59.0	4.0	159 ^c
Lactating	88	101	49.5	5.7	140 ^c	85	56.5	5.8	140 ^c
Child-bearing age	77	5,543	49.0	1.5	154	4,365	63.9	1.5	170
g/kg-day									
Beef									
Pregnant	88	426	0.52	0.05	1.6	371	0.59	0.06	1.9 ^c
Lactating	82	101	0.76	0.15	3.1 ^c	86	0.93	0.16	3.1 ^c
Child-bearing age	84	5,543	0.55	0.01	1.9	4,689	0.65	0.02	2.1
Pork									
Pregnant	86	426	0.32	0.04	1.2	367	0.38	0.05	1.3 ^c
Lactating	84	101	0.30	0.06	1.2 ^c	84	0.36	0.07	1.2 ^c
Child-bearing age	75	5,543	0.27	0.01	1.1	4,327	0.36	0.01	1.3
Poultry									
Pregnant	80	426	0.65	0.06	2.1	338	0.81	0.06	2.2 ^c
Lactating	88	101	0.75	0.09	2.0 ^c	85	0.86	0.09	2.0 ^c
Child-bearing age	77	5,543	0.71	0.02	2.3	4,365	0.92	0.02	2.5

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Table 11-33. Per Capita and Consumer-Only 2-Day Average^a Intake of Individual Meats^b: Pregnant, Lactating, and All Women of Child-Bearing Age (13 to <50 years) (Continued)

^a Based on the average of two days of food consumption reported for each NHANES respondent. If the respondent reported zero consumption on one of the two days and non-zero consumption on the other day, his/her average consumption would be the average of zero and non-zero consumption. Single day rates can be generated using <http://fcid.foodrisk.org/>.

^b Beef includes: beef, fat; beef, fat-baby food; beef, kidney; beef, liver; beef, liver-baby food; beef, meat; beef, meat byproducts; beef, meat byproducts-baby food; beef, meat, dried; beef, meat-baby food.
Pork includes: pork, fat; pork, fat-baby food; pork, kidney; pork, liver; pork, meat; pork, meat byproducts; pork, meat byproducts-baby food; pork, meat-baby food; pork, skin.
Poultry includes: chicken, fat; chicken, fat-baby food; chicken, liver; chicken, meat; chicken, meat byproducts; chicken, meat byproducts-baby food; chicken, meat-baby food; chicken, skin; chicken, skin-baby food; poultry, other, fat; poultry, other, liver; poultry, other, meat; poultry, other, meat byproducts; poultry, other, skin; turkey, fat; turkey, fat-baby food; turkey, liver; turkey, liver-baby food; turkey, meat; turkey, meat byproducts; turkey, meat byproducts-baby food; turkey, meat-baby food; turkey, skin; turkey, skin-baby food.

^c Estimates are less statistically reliable based on guidance published in the Joint Policy on Variance Estimation and Statistical Reporting Standards on NHANES III and CSFII Reports: HNIS/NCHS Analytical Working Group Recommendations (NCHS, 1993).

N = Sample size.
PC = Percent consuming. Represents the percentage of respondents consuming at least once in the 2-day survey period.
SE = Standard error.

Source: Based on EPA Analysis of NHANES 2005–2010 data using <http://fcid.foodrisk.org/>.

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Table 11-34. Per Capita Total Fat Intake (g/day)

Age Group ^a	N	Mean	SE	Percentiles					Max
				10 th	25 th	50 th	75 th	95 th	
Birth to <1 year									
All	1,422	29	18	0	19	31	40	59	107
Female	728	28	17	0	18	30	39	57	92
Male	694	30	18	0	20	32	40	61	107
Birth to <1 month									
All	88	17	16	0	0	19	32	52	64
Female	50	19	15	0	0	18	29	39	52
Male	38	15	18	0	0	19	31	43	64
1 to <3 months									
All	245	22	18	0	0	27	34	47	75
Female	110	20	16	0	0	24	33	45	50
Male	135	23	19	0	0	28	34	55	75
3 to <6 months									
All	411	28	17	0.1	20	31	39	52	107
Female	223	27	17	0	16	29	38	51	74
Male	188	30	18	0.2	22	31	39	50	107
6 to <12 months									
All	678	33	17	8.5	25	34	43	62	100
Female	345	32	17	5.1	24	33	43	62	92
Male	333	34	16	11	25	34	44	62	100
1 to <2 years									
All	1,002	46	19	24	33	43	55	79	159
Female	499	45	18	25	33	43	54	77	116
Male	503	46	20	23	32	44	56	80	159
2 to <3 years									
All	994	51	21	27	37	48	60	87	197
Female	494	49	20	24	35	46	59	83	127
Male	500	52	21	29	39	50	61	89	197
3 to <6 years									
All	4,112	59	22	34	44	56	70	99	218
Female	2,018	56	21	33	43	54	68	96	194
Male	2,094	61	23	35	45	59	72	103	218
6 to <11 years									
All	1,553	68	24	41	50	66	81	111	179
Female	742	64	22	38	48	61	77	101	156
Male	811	72	25	43	55	70	86	115	179
11 to <16 years									
All	975	80	38	42	56	74	97	145	342
Female	493	69	29	37	49	65	82	123	259
Male	482	91	42	50	64	84	111	163	342

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Table 11-34. Per Capita Total Fat Intake (g/day) (Continued)

Age Group ^a	N	Mean	SE	Percentiles					Max	
				10 th	25 th	50 th	75 th	95 th		
16 to <21 years										
All	743	85	47	37	54	76	108	168	463	
Female	372	79	39	35	49	75	96	154	317	
Male	371	92	53	41	57	77	114	186	463	
21 to <31 years										
All	1,412	84	45	36	53	76	104	164	445	
Female	682	65	31	30	43	59	81	126	201	
Male	730	103	48	50	68	93	125	181	445	
31 to <41 years										
All	1,628	83	43	36	52	74	106	162	376	
Female	781	64	31	29	42	58	79	121	228	
Male	847	101	45	49	69	96	127	190	376	
41 to <51 years										
All	1,644	78	39	36	50	70	99	153	267	
Female	816	63	29	31	43	59	78	114	208	
Male	828	93	42	46	63	87	119	166	267	
51 to <61 years										
All	1,578	73	37	31	46	66	90	137	306	
Female	768	58	26	27	39	56	73	104	165	
Male	810	88	40	39	57	82	110	156	306	
61 to <71 years										
All	1,507	66	33	29	42	60	80	123	235	
Female	719	53	24	26	36	49	68	96	184	
Male	788	78	35	37	53	73	98	138	235	
71 to <81 years										
All	888	60	27	28	41	55	72	104	201	
Female	421	51	22	27	37	49	62	86	158	
Male	467	68	29	34	48	67	86	114	201	
81+ years										
All	392	57	29	24	36	54	69	102	227	
Female	190	49	23	22	32	48	64	84	132	
Male	202	64	32	31	43	61	82	106	227	

^a Age groups are based on U.S. EPA (2005) *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants*.

N = Sample size.
SE = Standard error.

Source: U.S. EPA (2007).

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Table 11-35. Per Capita Total Fat Intake (g/kg-day)

Age Group ^a	N	Mean	SE	Percentiles					Max
				10 th	25 th	50 th	75 th	95 th	
Birth to <1 year									
All	1,422	4.0	2.8	0	2.3	4.1	5.6	8.9	20
Female	728	4.1	2.8	0	2.4	4.3	5.8	8.7	18
Male	694	4.0	2.8	0	2.3	4.0	5.5	9.2	20
Birth to <1 month									
All	88	5.2	4.9	0	0	5.7	9.1	16	20
Female	50	5.9	4.6	0	0	6.2	8.4	13	16
Male	38	4.3	5.3	0	0	4.7	9.7	18	20
1 to <3 months									
All	245	4.5	3.8	0	0	4.9	6.8	12	18
Female	110	4.3	3.6	0	0	4.8	6.5	11	14
Male	135	4.7	3.9	0	0	4.9	7.0	10	18
3 to <6 months									
All	411	4.1	2.7	0	2.4	4.3	5.7	8.2	18
Female	223	4.2	2.8	0	2.3	4.5	6.0	8.2	18
Male	188	4.1	2.5	0	2.6	4.1	5.5	8.2	16
6 to <12 months									
All	678	3.7	1.8	1.0	2.7	3.8	4.8	7.0	11
Female	345	3.7	1.9	0.7	2.8	3.8	5.0	7.0	9.8
Male	333	3.6	1.7	1.3	2.6	3.7	4.6	6.8	11
1 to <2 years									
All	1,002	4.0	1.7	2.1	2.8	3.7	4.7	7.1	12
Female	499	4.1	1.6	2.2	3.0	3.7	5.0	6.9	9.7
Male	503	3.9	1.7	1.9	2.6	3.6	4.5	7.2	12
2 to <3 years									
All	994	3.6	1.5	1.9	2.6	3.4	4.4	6.4	12
Female	494	3.7	1.6	1.8	2.4	3.4	4.4	6.6	10
Male	500	3.6	1.5	2.0	2.6	3.4	4.3	6.1	12
3 to <6 years									
All	4,112	3.4	1.3	1.9	2.4	3.2	4.0	5.8	11
Female	2,018	3.4	1.3	1.8	2.4	3.1	4.0	5.8	11
Male	2,094	3.5	1.4	1.9	2.4	3.2	4.1	5.8	11
6 to <11 years									
All	1,553	2.6	1.1	1.3	1.7	2.3	3.0	4.2	9.9
Female	742	2.4	1.0	1.3	1.6	2.2	2.8	4.0	7.7
Male	811	2.7	1.1	1.4	1.8	2.4	3.1	4.4	9.9
11 to <16 years									
All	975	1.6	0.8	0.8	1.1	1.4	2.0	3.0	5.7
Female	493	1.4	0.7	0.7	0.9	1.3	1.7	2.6	5.0
Male	482	1.8	0.9	0.9	1.2	1.6	2.1	3.3	5.7

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Table 11-35. Per Capita Total Fat Intake (g/kg-day) (Continued)

Age Group ^a	N	Mean	SE	Percentiles					Max	
				10 th	25 th	50 th	75 th	95 th		
16 to <21 years										
All	743	1.3	0.66	0.54	0.81	1.2	1.6	2.7	6.0	
Female	372	1.1	0.56	0.48	0.75	1.1	1.4	2.1	4.4	
Male	371	1.4	0.73	0.63	0.85	1.2	1.7	2.9	6.0	
21 to <31 years										
All	1,412	1.2	0.61	0.53	0.72	1.1	1.5	2.3	7.3	
Female	682	1.0	0.52	0.44	0.65	0.9	1.3	2.0	3.7	
Male	730	1.3	0.66	0.63	0.85	1.2	1.6	2.4	7.3	
31 to <41 years										
All	1,628	1.1	0.55	0.49	0.69	1.0	1.4	2.1	4.7	
Female	781	1.0	0.52	0.45	0.61	0.9	1.3	1.9	4.7	
Male	847	1.2	0.54	0.59	0.85	1.2	1.5	2.3	4.3	
41 to <51 years										
All	1,644	1.0	0.49	0.48	0.66	0.9	1.3	1.9	4.4	
Female	816	0.9	0.43	0.43	0.61	0.9	1.2	1.7	2.9	
Male	828	1.1	0.53	0.53	0.72	1.0	1.4	2.0	4.4	
51 to <61 years										
All	1,578	0.9	0.46	0.42	0.61	0.86	1.2	1.7	3.8	
Female	768	0.8	0.38	0.39	0.56	0.79	1.1	1.5	2.4	
Male	810	1.0	0.50	0.47	0.65	0.95	1.3	1.9	3.8	
61 to <71 years										
All	1,507	0.9	0.43	0.40	0.55	0.79	1.1	1.7	3.2	
Female	719	0.8	0.39	0.36	0.50	0.74	1.0	1.5	3.2	
Male	788	1.0	0.45	0.46	0.61	0.87	1.2	1.8	3.1	
71 to <81 years										
All	888	0.8	0.37	0.40	0.56	0.78	1.0	1.5	3.2	
Female	421	0.8	0.37	0.39	0.53	0.72	1.0	1.4	3.2	
Male	467	0.9	0.37	0.42	0.61	0.82	1.1	1.5	2.6	
81+ years										
All	392	0.9	0.43	0.37	0.56	0.82	1.1	1.5	3.7	
Female	190	0.8	0.39	0.35	0.54	0.82	1.1	1.5	2.1	
Male	202	0.9	0.47	0.39	0.56	0.82	1.1	1.6	3.7	

^a Age groups are based on U.S. EPA (2005) *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants*.

N = Sample size.
SE = Standard error.

Source: U.S. EPA (2007).

Age Group ^a	N	Mean	SE	Percentiles						
				10 th	25 th	50 th	75 th	95 th	Max	
Birth to <1 year										
All	1,301	31	16	7.0	24	32	41	61	107	
Female	664	30	16	5.1	24	32	40	58	92	
Male	637	32	16	9.0	25	33	41	62	107	
Birth to <1 month										
All	59	26	13	6.7	17	27	32	52	64	
Female	37	26	11	7.8	17	25	32	39	52	
Male	22	25	17	—	—	—	—	—	64	
1 to <3 months										
All	182	29	14	5.8	24	31	35	53	75	
Female	79	28	12	4.3	21	30	35	46	50	
Male	103	31	16	8.5	27	31	38	59	75	
3 to <6 months										
All	384	30	16	2.5	24	32	40	54	107	
Female	205	29	16	1.2	24	31	39	52	72	
Male	179	31	17	4.6	25	33	39	53	107	
6 to <12 months										
All	676	33	16	8.9	25	34	43	62	100	
Female	343	32	17	6.2	24	34	43	62	92	
Male	333	34	16	11	25	34	44	62	100	
1 to <2 year										
All	1,002	46	19	24	33	43	55	79	159	
Female	499	45	18	25	33	43	54	77	116	
Male	503	46	20	23	32	44	56	80	159	
2 to <3 years										
All	994	51	21	27	37	48	60	87	197	
Female	494	49	20	24	35	46	59	83	127	
Male	500	52	21	29	39	50	61	89	197	
3 to <6 years										
All	4,112	59	22	34	44	56	70	99	218	
Female	2,018	56	21	33	43	54	68	96	194	
Male	2,094	61	23	35	45	59	72	103	218	
6 to <11 years										
All	1,553	68	24	41	50	66	81	111	179	
Female	742	64	22	38	48	61	77	101	156	
Male	811	72	25	43	55	70	86	115	179	
11 to <16 years										
All	975	80	38	42	56	74	97	145	342	
Female	493	69	29	37	49	65	82	123	259	
Male	482	91	42	50	64	84	111	163	342	

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Table 11-36. Consumer-Only Total Fat Intake (g/day) (Continued)

Age Group ^a	N	Mean	SE	Percentiles						
				10 th	25 th	50 th	75 th	95 th	Max	
16 to <21 years										
All	743	85	47	37	54	76	108	168	463	
Female	372	79	39	35	49	75	96	154	317	
Male	371	92	53	41	57	77	114	186	463	
21 to <31 years										
All	1,412	84	45	36	53	76	104	164	445	
Female	682	65	31	30	43	59	81	126	201	
Male	730	103	48	50	68	93	125	181	445	
31 to <41 years										
All	1,628	83	43	36	52	74	106	162	376	
Female	781	64	31	29	42	58	79	121	228	
Male	847	101	45	49	69	96	127	190	376	
41 to <51 years										
All	1,644	78	39	36	50	70	99	153	267	
Female	816	63	29	31	43	59	78	114	208	
Male	828	93	42	46	63	87	119	166	267	
51 to <61 years										
All	1,578	73	37	31	46	66	90	137	306	
Female	768	58	26	27	39	56	73	104	165	
Male	810	88	40	39	57	82	110	156	306	
61 to <71 years										
All	1,507	66	33	29	42	60	80	123	235	
Female	719	53	24	26	36	49	68	96	184	
Male	788	78	35	37	53	73	98	138	235	
71 to <81 years										
All	888	60	27	28	41	55	72	104	201	
Female	421	51	22	27	37	49	62	86	158	
Male	467	68	29	34	48	67	86	114	201	
81+ years										
All	392	57	29	24	36	54	69	102	227	
Female	190	49	23	22	32	48	64	84	132	
Male	202	64	32	31	43	61	82	106	227	

^a Age groups are based on U.S. EPA (2005) *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants*.
— = Percentiles were not calculated for sample sizes less than 30.
N = Sample size.
SE = Standard error.

Source: U.S. EPA (2007).

Age Group ^a	N	Mean	SE	Percentiles						
				10 th	25 th	50 th	75 th	95 th	Max	
Birth to <1 year										
All	1,301	4.4	2.6	0.94	2.9	4.3	5.8	9.2	20	
Female	664	4.5	2.6	0.67	3.1	4.5	6.0	8.9	18	
Male	637	4.3	2.6	1.2	2.8	4.1	5.6	9.3	20	
Birth to <1 month										
All	59	7.8	4.1	1.4	5.4	8.0	9.7	16	20	
Female	37	8.0	3.5	2.0	5.3	7.7	9.1	13	16	
Male	22	7.4	4.9	—	—	—	—	—	20	
1 to <3 months										
All	182	6.0	3.1	1.0	4.1	6.0	7.8	12	18	
Female	79	5.9	2.9	0.80	4.3	6.0	7.7	12	14	
Male	103	6.1	3.3	1.8	4.1	6.0	7.8	12	18	
3 to <6 months										
All	384	4.4	2.5	0.35	3.1	4.5	5.8	8.3	18	
Female	205	4.5	2.6	0.14	3.1	4.7	6.1	8.2	18	
Male	179	4.3	2.4	0.57	3.1	4.2	5.6	8.8	16	
6 to <12 months										
All	676	3.7	1.8	1.0	2.7	3.8	4.8	7.0	11	
Female	343	3.7	1.9	0.75	2.8	3.8	5.0	7.0	9.8	
Male	333	3.6	1.7	1.3	2.6	3.7	4.6	6.8	11	
1 to <2 years										
All	1,002	4.0	1.7	2.1	2.8	3.7	4.7	7.1	12	
Female	499	4.1	1.6	2.2	3.0	3.7	5.0	6.9	9.7	
Male	503	3.9	1.7	1.9	2.6	3.6	4.5	7.2	12	
2 to <3 years										
All	994	3.6	1.5	1.9	2.6	3.4	4.4	6.4	12	
Female	494	3.7	1.6	1.8	2.4	3.4	4.4	6.6	10	
Male	500	3.6	1.5	2.0	2.6	3.4	4.3	6.1	12	
3 to <6 years										
All	4,112	3.4	1.3	1.9	2.4	3.2	4.0	5.8	11	
Female	2,018	3.4	1.3	1.8	2.4	3.1	4.0	5.8	11	
Male	2,094	3.5	1.4	1.9	2.4	3.2	4.1	5.8	11	
6 to <11 years										
All	1,553	2.6	1.1	1.3	1.7	2.3	3.0	4.2	9.9	
Female	742	2.4	1.0	1.3	1.6	2.2	2.8	4.0	7.7	
Male	811	2.7	1.1	1.4	1.8	2.4	3.1	4.4	9.9	
11 to <16 years										
All	975	1.6	0.80	0.77	1.1	1.4	2.0	3.0	5.7	
Female	493	1.4	0.69	0.67	0.91	1.3	1.7	2.6	5.0	
Male	482	1.8	0.86	0.88	1.2	1.6	2.1	3.3	5.7	

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Table 11-37. Consumer-Only Total Fat Intake (g/kg-day) (Continued)

Age Group ^a	N	Mean	SE	Percentiles						
				10 th	25 th	50 th	75 th	95 th	Max	
16 to <21 years										
All	743	1.3	0.66	0.54	0.81	1.2	1.6	2.7	6.0	
Female	372	1.1	0.56	0.48	0.75	1.1	1.4	2.1	4.4	
Male	371	1.4	0.73	0.63	0.85	1.2	1.7	2.9	6.0	
21 to <31 years										
All	1,412	1.2	0.61	0.53	0.72	1.1	1.5	2.3	7.3	
Female	682	1.0	0.52	0.44	0.65	0.93	1.3	2.0	3.7	
Male	730	1.3	0.66	0.63	0.85	1.2	1.6	2.4	7.3	
31 to <41 years										
All	1,628	1.1	0.55	0.49	0.69	1.0	1.4	2.1	4.7	
Female	781	0.98	0.52	0.45	0.61	0.91	1.3	1.9	4.7	
Male	847	1.2	0.54	0.59	0.85	1.2	1.5	2.3	4.3	
41 to <51 years										
All	1,644	1.0	0.49	0.48	0.66	0.94	1.3	1.9	4.4	
Female	816	0.92	0.43	0.43	0.61	0.86	1.2	1.7	2.9	
Male	828	1.1	0.53	0.53	0.72	1.0	1.4	2.0	4.4	
51 to <61 years										
All	1,578	0.94	0.46	0.42	0.61	0.86	1.2	1.7	3.8	
Female	768	0.83	0.38	0.39	0.56	0.79	1.1	1.5	2.4	
Male	810	1.0	0.50	0.47	0.65	0.95	1.3	1.9	3.8	
61 to <71 years										
All	1,507	0.88	0.43	0.40	0.55	0.79	1.1	1.7	3.2	
Female	719	0.79	0.39	0.36	0.50	0.74	0.99	1.5	3.2	
Male	788	0.95	0.45	0.46	0.61	0.87	1.2	1.8	3.1	
71 to <81 years										
All	888	0.82	0.37	0.40	0.56	0.78	1.0	1.5	3.2	
Female	421	0.77	0.37	0.39	0.53	0.72	0.95	1.4	3.2	
Male	467	0.87	0.37	0.42	0.61	0.82	1.1	1.5	2.6	
81+ years										
All	392	0.86	0.43	0.37	0.56	0.82	1.1	1.5	3.7	
Female	190	0.83	0.39	0.35	0.54	0.82	1.1	1.5	2.1	
Male	202	0.89	0.47	0.39	0.56	0.82	1.1	1.6	3.7	

^a Age groups are based on U.S. EPA (2005) *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants*.
— = Percentiles were not calculated for sample sizes less than 30.
N = Sample size.
SE = Standard error.

Source: U.S. EPA (2007).

Age Group ^a	N	Mean	SE	Percentiles					
				10 th	25 th	50 th	75 th	95 th	Max
Birth to <1 year									
All	140	45	16	28	35	45	54	77	100
Female	70	45	15	26	35	45	54	69	92
Male	70	45	17	28	34	44	53	79	100
1 to <2 years									
All	109	75	20	52	61	74	85	108	159
Female	54	68	16	52	57	70	78	89	114
Male	55	81	22	54	67	78	90	125	159
2 to <3 years									
All	103	79	20	55	64	74	85	116	133
Female	58	77	16	55	65	74	79	109	116
Male	45	81	24	52	61	73	90	121	133
3 to <6 years									
All	461	88	25	62	72	84	102	135	218
Female	217	84	24	59	68	80	95	130	194
Male	244	92	25	66	76	90	103	136	218
6 to <11 years									
All	198	94	25	66	77	88	105	140	178
Female	71	88	21	58	70	86	100	123	156
Male	127	97	27	69	78	91	112	168	178
11 to <16 years									
All	96	133	53	85	95	121	154	223	342
16 to <21 years									
All	68	167	64	98	122	154	189	278	463
11 to <21 years									
All	165	146	60	90	105	139	168	254	463
Female	53	117	30	81	92	111	140	162	195
Male	112	160	65	94	117	151	191	276	463
21 to <31 years									
All	150	151	55	97	113	139	173	236	445
Female	44	115	31	80	97	108	131	160	201
Male	106	166	56	107	128	161	177	254	445
31 to <41 years									
All	148	147	51	93	110	135	172	352	376
Female	48	120	33	79	93	106	132	160	228
Male	100	160	53	110	125	149	201	352	376
41 to <51 years									
All	166	137	42	88	110	136	156	208	267
Female	49	110	30	72	86	103	130	150	208
Male	117	148	41	106	119	142	166	218	267

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Age Group ^a	N	Mean	SE	Percentiles						
				10 th	25 th	50 th	75 th	95 th	Max	
51 to <61 years										
All	183	127	41	80	98	118	144	206	306	
Female	39	96	27	63	74	86	106	126	165	
Male	144	135	41	96	112	122	151	214	306	
61 to <71 years										
All	168	114	35	74	88	108	133	183	235	
Female	47	91	24	68	74	87	103	120	184	
Male	121	123	35	87	102	117	140	197	235	
71 to <81 years										
All	104	98	28	65	76	92	109	144	201	
81+ years										
All	40	97	37	60	67	86	104	137	227	
71+ years										
All	144	98	30	62	72	91	107	144	227	
Female	50	83	25	54	63	72	95	123	147	
Male	94	105	30	76	88	97	115	165	227	
^a	Age groups are based on U.S. EPA (2005) <i>Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants</i> .									
N	= Sample size.									
SE	= Standard error.									
Source:	U.S. EPA (2007).									

Age Group ^a	N	Mean	SE	Percentiles					
				10 th	25 th	50 th	75 th	95 th	Max
Birth to <1 year									
All	140	4.7	1.7	2.8	3.7	4.6	6.0	7.7	11
Female	70	4.8	1.6	2.7	3.7	4.7	6.0	7.7	9.5
Male	70	4.6	1.7	2.8	3.6	4.4	5.8	7.5	11
1 to <2 years									
All	109	6.9	1.5	5.1	5.7	6.8	7.7	9.5	12
Female	54	6.6	1.2	5.1	5.7	6.7	7.4	9.3	9.7
Male	55	7.1	1.6	5.1	5.8	6.9	8.0	9.4	12
2 to <3 years									
All	103	6.1	1.3	4.6	5.2	5.8	6.7	8.3	9.5
Female	58	6.2	1.2	4.6	5.2	5.9	6.8	7.9	9.5
Male	45	6.1	1.3	4.5	5.2	5.6	6.6	8.4	9.5
3 to <6 years									
All	461	5.6	1.3	4.2	4.7	5.3	6.2	8.3	11
Female	217	5.5	1.3	4.2	4.5	5.3	6.0	7.8	11
Male	244	5.7	1.3	4.2	4.8	5.3	6.2	8.4	11
6 to <11 years									
All	198	4.2	1.1	3.0	3.4	3.8	4.6	6.0	9.9
Female	71	4.2	1.1	2.9	3.3	3.8	4.8	5.8	7.7
Male	127	4.2	1.1	3.0	3.4	3.8	4.5	6.3	9.9
11 to <16 years									
All	96	3.0	0.85	2.0	2.4	2.8	3.3	4.6	5.7
16 to <21 years									
All	68	2.5	0.74	1.7	2.0	2.4	2.9	3.7	6.0
11 to <21 years									
All	165	2.8	0.84	1.9	2.1	2.7	3.1	4.4	6.0
Female	53	2.6	0.65	1.7	2.0	2.3	2.7	3.4	4.6
Male	112	2.9	0.90	1.9	2.3	2.8	3.1	4.5	6.0
21 to <31 years									
All	150	2.2	0.73	1.5	1.7	2.1	2.4	3.2	7.3
Female	44	2.0	0.54	1.5	1.8	1.9	2.3	3.1	3.7
Male	106	2.2	0.79	1.6	1.7	2.1	2.4	3.2	7.3
31 to <41 years									
All	148	2.1	0.59	1.5	1.7	1.9	2.4	3.9	4.7
Female	48	2.1	0.62	1.5	1.7	1.9	2.2	2.8	4.7
Male	100	2.1	0.58	1.5	1.6	2.0	2.6	3.9	4.3
41 to <51 years									
All	166	1.8	0.49	1.3	1.5	1.8	2.1	2.8	4.0
Female	49	1.8	0.45	1.3	1.4	1.8	2.1	2.6	2.9
Male	117	1.9	0.50	1.4	1.6	1.8	2.0	2.8	4.0

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Age Group ^a	N	Mean	SE	Percentiles						
				10 th	25 th	50 th	75 th	95 th	Max	
51 to <61 years										
All	183	1.7	0.46	1.2	1.3	1.6	1.9	2.5	3.8	
Female	39	1.5	0.34	1.1	1.3	1.4	1.7	2.0	2.4	
Male	144	1.7	0.48	1.2	1.4	1.6	1.9	2.6	3.8	
61 to <71 years										
All	168	1.6	0.42	1.2	1.3	1.5	1.8	2.5	3.2	
Female	47	1.6	0.42	1.1	1.3	1.5	1.7	2.3	3.2	
Male	121	1.6	0.43	1.2	1.3	1.5	1.8	2.5	3.1	
71 to <81 years										
All	104	1.4	0.37	1.0	1.1	1.3	1.5	2.0	3.2	
81+ years										
All	40	1.6	0.48	1.1	1.2	1.4	1.7	2.0	3.7	
71+ years										
All	144	1.4	0.41	1.0	1.1	1.3	1.6	2.0	3.7	
Female	50	1.4	0.41	0.96	1.1	1.4	1.6	1.8	3.2	
Male	94	1.5	0.41	1.1	1.2	1.3	1.5	2.1	3.7	
^a	Age groups are based on U.S. EPA (2005) <i>Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants</i> .									
N	= Sample size.									
SE	= Standard error.									
Source:	U.S. EPA (2007).									

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Age	N	Mean	SD	Percentiles					Minimum	Maximum
				10 th	25 th	50 th	75 th	90 th		
Total Fat Intake										
6 months	125	37.1	17.5	18.7	25.6	33.9	46.3	60.8	3.4	107.6
1 year	99	59.1	26.0	29.1	40.4	56.1	71.4	94.4	21.6	152.7
2 years	135	86.7	41.3	39.9	55.5	79.2	110.5	141.1	26.5	236.4
3 years	106	91.6	38.8	50.2	63.6	82.6	114.6	153.0	32.6	232.5
4 years	219	98.6	56.1	46.0	66.8	87.0	114.6	163.3	29.3	584.6
10 years	871	93.2	50.8	45.7	60.5	81.4	111.3	154.5	14.6	529.5
13 years	148	107.0	53.9	53.0	69.8	90.8	130.7	184.1	9.8	282.2
15 years	108	97.7	48.7	46.1	65.2	85.8	124.0	165.2	10.0	251.3
17 years	159	107.8	64.3	41.4	59.7	97.3	140.2	195.1	8.5	327.4
Total Animal Fat										
6 months	125	18.4	16.0	0.7	4.2	13.9	28.4	42.5	0.0	61.1
1 year	99	36.5	20.0	15.2	23.1	33.0	45.9	65.3	0.0	127.1
2 years	135	49.5	28.3	20.1	28.9	42.1	66.0	81.4	10.0	153.4
3 years	106	50.1	29.4	21.3	29.1	42.9	64.4	88.9	14.1	182.6
4 years	219	50.8	31.7	21.4	28.1	42.6	66.4	92.6	5.9	242.2
10 years	871	54.1	39.6	20.3	30.6	45.0	64.6	97.5	0.0	412.3
13 years	148	56.2	39.8	19.8	28.5	44.8	72.8	109.4	4.7	209.6
15 years	108	53.8	35.1	15.9	28.3	44.7	67.9	105.8	0.6	182.1
17 years	159	64.4	48.5	15.2	30.7	51.6	86.6	128.8	2.6	230.3
Total Vegetable Fat Intake										
6 months	125	9.2	12.8	0.6	1.2	2.8	11.6	29.4	0.0	53.2
1 year	99	15.4	14.3	3.7	6.1	11.3	18.1	38.0	0.2	70.2
2 years	135	19.3	16.3	3.8	7.9	14.8	26.6	42.9	0.7	96.6
3 years	106	21.1	15.5	3.9	8.6	18.7	26.6	45.2	1.0	70.4
4 years	219	24.5	18.6	5.7	10.4	21.8	33.3	48.5	0.9	109.0
10 years	871	23.7	21.6	4.3	9.5	18.3	30.6	49.0	0.6	203.7
13 years	148	34.3	27.4	8.4	17.9	31.2	44.6	57.5	0.0	238.3
15 years	108	27.3	22.8	5.1	11.9	22.6	38.1	54.4	0.7	132.2
17 years	159	25.7	21.3	4.2	11.7	20.8	32.9	47.6	0.0	141.5

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Table 11-40. Fat Intake among Children Based on Data from the Bogalusa Heart Study, 1973–1982 (g/day) (Continued)										
Age	N	Mean	SD	Percentiles					Minimum	Maximum
				10 th	25 th	50 th	75 th	90 th		
Total Fish Fat Intake										
6 months	125	0.05	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.9
1 year	99	0.05	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.9
2 years	135	0.04	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.9
3 years	106	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	4.5
4 years	219	2.3	31.1	0.0	0.0	0.0	0.0	0.0	0.0	459.2
10 years	871	0.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	19.2
13 years	148	0.3	2.2	0.0	0.0	0.0	0.0	0.0	0.0	25.4
15 years	108	0.4	1.5	0.0	0.0	0.0	0.0	1.5	0.0	9.5
17 years	159	0.5	2.0	0.0	0.0	0.0	0.0	0.4	0.0	15.3
N = Sample size. SD = Standard deviation.										
Source: Frank et al. (1986).										

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Table 11-41. Fat Intake among Children Based on Data from the Bogalusa Heart Study, 1973–1982 (g/kg-day)

Age	N	Mean	SD	Percentiles					Minimum	Maximum
				10 th	25 th	50 th	75 th	90 th		
Total Fat Intake										
6 months	125	4.9	2.3	2.4	3.3	4.7	6.2	8.0	0.4	13.2
1 year	99	6.1	2.8	3.0	4.1	5.7	7.5	9.5	2.3	16.4
2 years	132	7.0	3.3	3.4	4.5	6.2	8.6	11.9	2.1	18.7
3 years	106	6.4	2.7	3.6	4.6	5.5	8.2	9.9	2.2	16.7
4 years	218	6.1	3.7	2.9	4.0	5.2	7.0	10.0	2.0	38.2
10 years	861	2.7	1.5	1.2	1.7	2.4	3.3	4.5	0.3	13.9
13 years	147	2.3	1.3	1.0	1.5	2.0	2.8	3.8	0.2	10.2
15 years	105	1.7	0.8	0.8	1.2	1.5	2.1	3.1	0.2	4.7
17 years	149	1.8	1.0	0.7	0.9	1.6	2.2	3.1	0.2	6.2
Total Animal Fat										
6 months	125	2.4	2.1	0.08	0.6	2.0	3.7	5.5	0.0	9.0
1 year	99	3.8	2.1	1.7	2.4	3.4	4.9	6.5	0.0	13.6
2 years	132	4.0	2.3	1.7	2.3	3.4	5.2	6.7	0.7	13.4
3 years	106	3.5	2.0	1.6	2.1	3.1	4.2	6.1	0.9	13.1
4 years	218	3.1	2.1	1.3	1.7	2.6	4.0	5.4	0.4	15.4
10 years	861	16	1.2	0.6	0.8	1.3	1.9	2.8	0.00	10.8
13 years	147	1.2	0.9	0.4	0.6	0.9	1.6	2.3	0.08	5.2
15 years	105	1.0	0.6	0.3	0.5	0.8	1.3	1.9	0.01	3.1
17 years	149	1.0	0.8	0.3	0.5	0.8	1.4	2.0	0.05	4.2
Total Vegetable Fat Intake										
6 months	125	1.2	1.8	0.08	0.2	0.4	1.6	4.1	0.0	8.2
1 year	99	1.6	1.6	0.4	0.6	1.2	1.9	3.8	0.02	7.6
2 years	132	1.6	1.4	0.3	0.7	1.1	2.0	3.5	0.06	8.5
3 years	106	1.5	1.1	0.3	0.6	1.4	2.0	3.0	0.08	5.1
4 years	218	1.5	1.2	0.4	0.6	1.2	2.1	2.8	0.06	7.3
10 years	861	0.7	0.6	0.1	0.3	0.5	0.9	1.4	0.02	4.2
13 years	147	0.8	0.8	0.2	0.4	0.6	0.9	1.3	0.0	8.6
15 years	105	0.5	0.4	0.09	0.2	0.4	0.7	0.9	0.01	2.2
17 years	149	0.4	0.4	0.07	0.2	0.4	0.6	0.9	0.0	2.1

Table 11-41. Fat Intake among Children Based on Data from the Bogalusa Heart Study, 1973–1982 (g/kg-day) (Continued)										
Age	N	Mean	SD	Percentiles					Minimum	Maximum
				10 th	25 th	50 th	75 th	90 th		
Total Fish Fat Intake										
6 months	125	0.01	0.02	0.0	0.0	0.0	0.0	0.02	0.0	0.1
1 year	99	0.01	0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.2
2 years	132	0.003	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.2
3 years	106	0.01	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.3
4 years	218	0.2	2.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
10 years	861	0.01	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.6
13 years	147	0.01	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.4
15 years	105	0.01	0.03	0.0	0.0	0.0	0.0	0.04	0.0	0.2
17 years	149	0.01	0.03	0.0	0.0	0.0	0.0	0.008	0.0	0.2
<p>N = Sample size. SD = Standard deviation.</p> <p>Source: Frank et al. (1986).</p>										

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Table 11-42. Mean Percentage of Moisture and Total Fat Content of Selected Meat and Dairy Products^a			
Product	Moisture Content (%)	Total Fat Content (%)	Comment
Meat			
Beef (composite of trimmed retail cuts; all grades)	70.62	6.16	Raw; lean only
	59.25	9.91	Cooked; lean only
	60.44	19.24	Raw; lean and fat, 1/4 in fat trim
	51.43	21.54	Cooked; lean and fat, 1/4 in fat trim
Pork (composite of trimmed retail cuts)	72.34	5.88	Raw; lean only
	60.31	9.66	Cooked; lean only
	65.11	14.95	Raw; lean and fat
	54.55	17.18	Cooked; lean and fat
Cured ham	63.46	12.90	Center slice, unheated; lean and fat
	55.93	8.32	Raw, center slice, country style; lean only
Cured bacon	40.20	45.04	Raw
	12.52	43.27	Cooked, baked
	12.32	41.78	Cooked, broiled
	12.12	40.30	Cooked, pan-fried
	16.49	37.27	Cooked, microwaved
Lamb (composite of trimmed retail cuts)	73.42	5.25	Raw; lean only
	61.96	9.52	Cooked; lean only
	60.70	21.59	Raw; lean and fat, 1/4 in fat trim
	53.72	20.94	Cooked; lean and fat, 1/4 in fat trim
Veal (composite of trimmed retail cuts)	75.91	2.87	Raw; lean only
	60.16	6.58	Cooked; lean only
	72.84	6.77	Raw; lean and fat, 1/4 in fat trim
	57.08	11.39	Cooked; lean and fat, 1/4 in fat trim
Rabbit (domesticated)	72.82	5.55	Raw
	60.61	8.05	Cooked, roasted
	58.82	8.41	Cooked, stewed
Chicken (broilers or fryers)	75.46	3.08	Raw; meat only
	66.81	6.71	Cooked, stewed; meat only
	63.79	7.41	Cooked, roasted; meat only
	57.53	9.12	Cooked, fried; meat only
	65.99	15.06	Raw; meat and skin
	63.93	12.56	Cooked, stewed; meat and skin
	59.45	13.60	Cooked, roasted; meat and skin
	52.41	14.92	Cooked, fried, flour; meat and skin
Duck (domesticated)	73.77	5.95	Raw; meat only
	64.22	11.20	Cooked, roasted; meat only
	48.50	39.34	Raw; meat and skin
	51.84	28.35	Cooked, roasted; meat and skin
Turkey (all classes)	74.16	2.86	Raw; meat only
	64.88	4.97	Cooked, roasted; meat only
	70.40	8.02	Raw; meat and skin
	61.70	9.73	Cooked, roasted; meat and skin
	71.97	8.26	Raw; ground
	59.42	13.15	Cooked; ground

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Product	Moisture Content (%)	Total Fat Content (%)	Comment
Dairy			
Milk			
Whole	88.32	3.25	3.25% milkfat
Human	87.50	4.38	Whole, mature, fluid
Low-fat (1%)	89.81	0.97	Fluid, with added nonfat milk solids and vitamin A
Reduced fat (2%)	88.86	1.92	Fluid, with added nonfat milk solids and vitamin A
Skim or fat free	90.38	0.25	Fluid, with added nonfat milk solids and vitamin A
Cream			
Half and half	80.57	11.50	Fluid
Light (coffee cream or table cream)	73.75	19.31	Fluid
Heavy-whipping	57.71	37.00	Fluid
Sour	70.95	20.96	Cultured
Sour, reduced fat	80.14	12.00	Cultured
Butter	15.87	81.11	Salted
Cheese			
American	39.16	31.25	Pasteurized
Cheddar	36.75	33.14	
Swiss	37.12	27.80	
Cream	53.75	34.87	
Parmesan	29.16; 20.84	25.83; 28.61	Hard; grated
Cottage, Low-fat	82.48; 79.31	1.02; 1.93	1% fat; 2% fat
Colby	38.20	32.11	
Blue	42.41	28.74	
Provolone	40.95	26.62	
Mozzarella	50.01; 53.78	22.35; 15.92	Whole milk; Skim milk
Yogurt	85.07; 87.90	1.55; 3.25	Plain, Low-fat; Plain, with fat
Egg	75.84	9.94	Chicken, whole raw, fresh
^a Based on the water and lipid content in 100 grams, edible portion. Total Fat Content = saturated, monosaturated, and polyunsaturated. For additional information, consult the USDA nutrient database.			
Source: USDA (2007).			

Food Item	Percent Water
Fat-free milk	90–99
Yogurt	80–89
Cottage cheese, ricotta cheese, shrimp	70–79
Salmon, ice cream, chicken breast	60–69
Ground beef, hot dogs, feta cheese, tenderloin steak (cooked)	50–59
Pizza	40–49
Cheddar cheese	30–39
Pepperoni sausage	20–29
Butter, margarine	10–19
Source: Popkin et al. (2010).	

APPENDIX A

Table A-1. Terms Used in Literature Searches

Meat intake/consumption/ingestion
Dairy product intake/consumption/ingestion
Fat intake/consumption/ingestion
Poultry intake/consumption/ingestion
Chicken intake/consumption/ingestion
Beef intake/consumption/ingestion
Pork intake/consumption/ingestion
Egg intake/consumption/ingestion
Lipid intake/consumption/ingestion
Milk intake/consumption/ingestion
Dietary intake
Food preferences
Older adults diet
Pregnant/lactating women diet
Fox MK
Nicklas TA
Vitolins
Smiciklas-Wright H

APPENDIX B

SUPPLEMENTAL TABLE

CODES AND DEFINITIONS USED TO DETERMINE THE VARIOUS COMMODITIES USED IN THE EPA ANALYSIS OF WHAT WE EAT IN AMERICA FOOD COMMODITY INTAKE DATABASE (WWEIA-FCID) DATA

The U.S. Environmental Protection Agency (EPA) analyses of the National Health and Nutrition Examination Survey (NHANES) 2005–2010 food consumption data provided in the EPA’s Exposure Factors Handbook (EFH) was performed using the What We Eat in America Food Commodity Intake Database (WWEIA-FCID) (<http://fcid.foodrisk.org/>), which converted the WWEIA food items into FCID raw agricultural commodities using recipes developed by EPA. This supplement lists the FCID commodities used to generate statistics for corresponding foods and food categories as defined in the Exposure Factors Handbook. For example, “beef” as defined here in the EFH consists of the following ten FCID commodities: beef, meat (3100044000); beef, meat-baby food (3100044001); beef, meat, dried (3100045000); beef, meat byproducts (3100046000); beef, meat byproducts-baby food (3100046001); beef, fat (3100047000); beef, fat-baby food (3100047001); beef, kidney (3100048000); beef, liver (3100049000); and beef, liver-baby food (3100049001).

Table B-1. Food Commodity Codes and Definitions Used in Analysis of the 2005–2010 (and 2003–2008) NHANES WWEIA		
EFH Food Category	EPA Food Commodity Codes	
Dairy	3600222000 Milk, fat 3600222001 Milk, fat-baby food/infant formula 3600223000 Milk, nonfat solids 3600223001 Milk, nonfat solids-baby food/infant formula	3600224000 Milk, water 3600224001 Milk, water-baby food/infant formula 3600225001 Milk, sugar (lactose)-baby food/infant formula
Beef	3100044000 Beef, meat 3100044001 Beef, meat-baby food 3100045000 Beef, meat, dried 3100046000 Beef, meat byproducts 3100046001 Beef, meat byproducts-baby food	3100047000 Beef, fat 3100047001 Beef, fat-baby food 3100048000 Beef, kidney 3100049000 Beef, liver 3100049001 Beef, liver-baby food
Pork	3400290000 Pork, meat 3400290001 Pork, meat-baby food 3400291000 Pork, skin 3400292000 Pork, meat byproducts 3400292001 Pork, meat byproducts-baby food	3400293000 Pork, fat 3400293001 Pork, fat-baby food 3400294000 Pork, kidney 3400295000 Pork, liver
Poultry	4000093000 Chicken, meat 4000093001 Chicken, meat-baby food 4000094000 Chicken, liver 4000095000 Chicken, meat byproducts 4000095001 Chicken, meat byproducts-baby food 4000096000 Chicken, fat 4000096001 Chicken, fat-baby food 4000097000 Chicken, skin 4000097001 Chicken, skin-baby food 5000382000 Turkey, meat 5000382001 Turkey, meat-baby food 5000383000 Turkey, liver	5000383001 Turkey, liver-baby food 5000384000 Turkey, meat byproducts 5000384001 Turkey, meat byproducts-baby food 5000385000 Turkey, fat 5000385001 Turkey, fat-baby food 5000386000 Turkey, skin 5000386001 Turkey, skin-baby food 6000301000 Poultry, other, meat 6000302000 Poultry, other, liver 6000303000 Poultry, other, meat byproducts 6000304000 Poultry, other, fat 6000305000 Poultry, other, skin

Table B-1. Food Commodity Codes and Definitions Used in Analysis of the 2005-2010 (and 2003-2008) NHANES WWEIA (Continued)

EFH Food Category	EPA Food Commodity Codes	
Total Meat	3100044000 Beef, meat	3500341001 Sheep, fat-baby food
	3100044001 Beef, meat-baby food	3500342000 Sheep, kidney
	3100045000 Beef, meat, dried	3500343000 Sheep, liver
	3100046000 Beef, meat byproducts	3800221000 Meat, game
	3100046001 Beef, meat byproducts-baby food	3900312000 Rabbit, meat
	3100047000 Beef, fat	4000093000 Chicken, meat
	3100047001 Beef, fat-baby food	4000093001 Chicken, meat-baby food
	3100048000 Beef, kidney	4000094000 Chicken, liver
	3100049000 Beef, liver	4000095000 Chicken, meat byproducts
	3100049001 Beef, liver-baby food	4000095001 Chicken, meat byproducts-baby food
	3200169000 Goat, meat	4000096000 Chicken, fat
	3200170000 Goat, meat byproducts	4000096001 Chicken, fat-baby food
	3200171000 Goat, fat	4000097000 Chicken, skin
	3200172000 Goat, kidney	4000097001 Chicken, skin-baby food
	3200173000 Goat, liver	5000382000 Turkey, meat
	3300189000 Horse, meat	5000382001 Turkey, meat-baby food
	3400290000 Pork, meat	5000383000 Turkey, liver
	3400290001 Pork, meat-baby food	5000383001 Turkey, liver-baby food
	3400291000 Pork, skin	5000384000 Turkey, meat byproducts
	3400292000 Pork, meat byproducts	5000384001 Turkey, meat byproducts-baby food
	3400292001 Pork, meat byproducts-baby food	5000385000 Turkey, fat
	3400293000 Pork, fat	5000385001 Turkey, fat-baby food
	3400293001 Pork, fat-baby food	5000386000 Turkey, skin
	3400294000 Pork, kidney	5000386001 Turkey, skin-baby food
	3400295000 Pork, liver	6000301000 Poultry, other, meat
	3500339000 Sheep, meat	6000302000 Poultry, other, liver
	3500339001 Sheep, meat-baby food	6000303000 Poultry, other, meat byproducts
	3500340000 Sheep, meat byproducts	6000304000 Poultry, other, fat
	3500341000 Sheep, fat	6000305000 Poultry, other, skin