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## **Update for Chapter 9 of the Exposure Factors Handbook**

### *Intake of Fruits and Vegetables*

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**Chapter 9—Intake of Fruits and Vegetables**

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**9. INTAKE OF FRUITS AND VEGETABLES**

**9.1. INTRODUCTION**

This document is an update to Chapter 9 (Intake of Fruits and Vegetables) 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 recommended values for the general population in this chapter have been updated using National Health and Nutrition Examination Survey (NHANES) data for 2005-2010; the 2011 version of this chapter used NHANES data for 2003-2006. The 2018 recommendations include some more disaggregated age groupings than the 2011 Handbook (for those under age 1 and for adults), and for some childhood age groups provide more statistically reliable estimates because the new analysis uses six years of NHANES data versus four in the 2011 estimates.

Estimates of the mean per capita intake of total vegetables did not change in adults over age 21 and for total fruit there was some increase in those ages 21 to 50 years of age, but not in those over 50 years of age. For younger and more disaggregated ages, there is no simple pattern in the updates to the estimates, but Appendix A provides a comparison of the recommended values in this update to those of the 2011 Handbook.

This update also provides, for the first time, intake data for pregnant and lactating women based on NHANES 2005-2010 data. Recent relevant studies based on data other than NHANES are also summarized to provide additional perspective on fruit and vegetable intake.

This 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 B 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, fruits and vegetables can become contaminated with toxic chemicals by several different pathways. Ambient pollutants from the air may be deposited on or absorbed by the plants or dissolved in rainfall or irrigation waters that contact the plants. Pollutants may also be absorbed through plant roots from contaminated soil and ground water. The addition of pesticides, soil additives, and fertilizers may also

result in contamination of fruits and vegetables. To assess exposure through this pathway, information on fruit and vegetable ingestion rates is needed.

A variety of terms may be used to define intake of fruits and vegetables (e.g., consumer-only intake, per capita intake, total fruit intake, total vegetable intake, as-consumed intake, dry-weight intake). These terms are defined below to assist the reader in interpreting and using the intake rates that are appropriate for the exposure scenario being assessed.

Consumer-only intake is defined as the quantity of fruits and vegetables consumed by individuals during the survey period. These data are generated by averaging intake across only the individuals in the survey who consumed these food items. Per capita intake rates are generated by averaging consumer-only intakes over the entire population (including those individuals that reported no intake). In general, per capita intake rates are appropriate for use in exposure assessments 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 consumed the food in question. Total fruit intake refers to the sum of all fruits consumed in a day including canned, dried, frozen, and fresh fruits. Likewise, total vegetable intake refers to the sum of all vegetables consumed in a day including canned, dried, frozen, and fresh vegetables.

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 that is the way in which 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 is important to know because concentration data to be used in the dose equation are often measured in uncooked food samples. It should be recognized that cooking can either increase or decrease food weight. Similarly, cooking can increase the mass of contaminants in food (due to formation reactions, or absorption from cooking oils or water) or decrease the mass of contaminants in food (due to vaporization, fat loss, or

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leaching). The combined effects of changes in 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, the 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 that are 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. For information on converting the intake rates presented in this chapter to dry-weight intake rates, refer to Section 9.4.

The purpose of this chapter is to provide intake data for fruits and vegetables. The recommendations for fruit and vegetable ingestion rates 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 study identified by U.S. EPA for these factors. As described in Chapter 1 of the *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 fruits and vegetables), or have study designs or approaches that make the data less applicable to the general population (e.g., older studies or studies that targeted specific populations) 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 fruit and vegetable ingestion is summarized (see Section 9.3.1). Relevant data on ingestion of fruits and vegetables are also provided (see Section 9.3.2). These data are presented to provide the reader with added perspective on the current state-of-knowledge pertaining to ingestion of fruits and vegetables. Data on pregnant and lactating women are provided in Section 9.3.3.

## 9.2. RECOMMENDATIONS

Table 9-1 presents a summary of the recommended values for per capita and consumer-only intake of fruits and vegetables for use in exposure and risk assessments. Table 9-2 provides confidence ratings for the fruit and vegetable intake recommendations.

The U.S. EPA analysis of data from the 2005–2010 NHANES was used in selecting recommended intake rates for the general population. The U.S. EPA analysis was conducted using the childhood age groups from U.S. EPA’s *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005).

The NHANES data on which the recommendations are based are short-term survey data and may not necessarily reflect the long-term distribution of average daily intake rates. However, because broad categories of food (i.e., total fruits and total vegetables) 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 may tend to overestimate the corresponding percentiles of the true long-term distribution. In general, the recommended values based on U.S. EPA’s analysis of NHANES data represent the uncooked weight of the edible portion of fruits and vegetables.

U.S. Department of Agriculture (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 fruits and vegetables 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 9-1. Recommended Values for 2-Day Average <sup>a</sup> Intake of Fruits and Vegetables (edible portion, uncooked weight) <sup>b</sup>						
Age Group	Per Capita		Consumers-Only		Multiple Percentiles	Source
	Mean g/kg-day	95 <sup>th</sup> Percentile g/kg-day	Mean g/kg-day	95 <sup>th</sup> Percentile g/kg-day		
Total Fruits <sup>c</sup>						
Birth to <1 month	0	0 <sup>d</sup>	0	0 <sup>d</sup>		
1 to <3 months	0.3	2.4 <sup>d</sup>	4.8	19.7 <sup>d</sup>		
3 to <6 months	4.4	19.2 <sup>d</sup>	8.8	26.9 <sup>d</sup>		
6 to <12 months	9.4	26.5	10.3	28.9		
Birth to <1 year	5.8	23.0	9.9	27.2		
1 to <2 years	9.3	23.8	9.8	24.0		
2 to <3 years	7.5	20.0	7.7	20.5		
3 to <6 years	5.6	16.2	5.8	16.4		
6 to <11 years	3.0	9.9	3.2	10.0		
11 to <16 years	1.3	4.8	1.6	5.2	See Tables 9-3 and 9-4	U.S. EPA Analysis of NHANES 2005–2010
16 to <21 years	0.9	3.5	1.1	4.0		
21 to <30 years	1.0	4.2	1.3	4.4		
30 to <40 years	1.0	3.9	1.2	4.1		
40 to <50 years	1.1	4.1	1.3	4.3		
50 to <60 years	1.4	4.3	1.5	4.5		
60 to <70 years	1.4	4.2	1.5	4.3		
70 to <80 years	1.5	4.4	1.6	4.6		
80+ years	1.8	4.6	1.8	4.7		
21 to <50 years	1.1	4.1	1.3	4.3		
50+ years	1.4	4.3	1.6	4.5		
Whole Population	1.8	6.7	2.0	7.4		
Total Vegetables <sup>e</sup>						
Birth to <1 month	0.3	4.1 <sup>d</sup>	1.6	4.1 <sup>d</sup>		
1 to <3 months	0.5	3.0 <sup>d</sup>	1.9	4.6 <sup>d</sup>		
3 to <6 months	3.2	11.2 <sup>d</sup>	4.9	12.7 <sup>d</sup>		
6 to <12 months	7.6	19.2	7.9	19.5		
Birth to <1 year	4.7	16.9	6.7	18.7		
1 to <2 years	6.7	16.3	6.7	16.3		
2 to <3 years	6.0	14.0	6.0	14.0		
3 to <6 years	5.3	13.3	5.3	13.3		
6 to <11 years	3.8	9.9	3.8	9.9		
11 to <16 years	2.4	6.3	2.4	6.3	See Tables 9-3 and 9-4	U.S. EPA Analysis of NHANES 2005–2010
16 to <21 years	2.3	5.3	2.3	5.3		
21 to <30 years	2.4	5.7	2.4	5.7		
30 to <40 years	2.6	6.7	2.6	6.7		
40 to <50 years	2.5	5.8	2.5	5.8		
50 to <60 years	2.6	5.8	2.6	5.8		
60 to <70 years	2.6	5.9	2.6	5.9		
70 to <80 years	2.6	6.1	2.6	6.1		
80+ years	2.7	6.1	2.7	6.1		
21 to <50 years	2.5	6.1	2.5	6.1		
50+ years	2.6	6.0	2.6	6.0		
Whole Population	2.9	7.4	2.9	7.4		
Individual Fruits and Vegetables—see Tables 9-5 and 9-6. Exposed and Protected Fruits and Vegetables—see Tables 9-7 and 9-8.						

**Table 9-1. Recommended Values for Intake of Fruits and Vegetables (edible portion, uncooked weight) (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.
b	For more information on the recipes used to convert the foods people reported eating to the quantities of agricultural commodities eaten, refer to the Frequently Asked Questions at <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .
c	Total fruits includes: acerola; apple, dried; apple, dried-baby food; apple, fruit with peel; apple, peeled fruit; apple, peeled fruit-baby food; apple, sauce; apple, sauce-baby food; apricot; apricot, dried; apricot-baby food; avocado; banana; banana, dried; banana, dried-baby food; banana-baby food; blackberry; blueberry; blueberry-baby food; boysenberry; breadfruit; canistel; cherimoya; cherry; cherry-baby food; citrus hybrids; crabapple; cranberry; cranberry, dried; cranberry-baby food; currant; currant, dried; date; dragon fruit; eggplant; elderberry; feijoa; fig; fig, dried; gooseberry; grape; grape, raisin; guava; guava-baby food; huckleberry; jackfruit; kiwifruit, fuzzy; kumquat; lemon; lemon, peel; lime; loganberry; longan; loquat; lychee; lychee, dried; mamey apple; mango; mango, dried; mango-baby food; nectarine; orange; orange, peel; papaya; papaya, dried; papaya-baby food; passionfruit; passionfruit-baby food; pawpaw; peach; peach, dried; peach, dried-baby food; peach-baby food; pear; pear, dried; pear-baby food; persimmon; pineapple; pineapple, dried; pineapple-baby food; plantain; plantain, dried; plum; plum, prune, dried; plum, prune, dried-baby food; plum, prune, fresh; plum, prune, fresh-baby food; plum-baby food; pomegranate; prickly pear fruit; pummelo; quince; raspberry; raspberry-baby food; sapote, mamey; soursop; Spanish lime; starfruit; strawberry; strawberry-baby food; sugar apple; tamarind; tangerine.
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 vegetables includes: alfalfa, seed; amaranth, leafy; arrowroot, flour; arrowroot, flour-baby food; artichoke, globe; artichoke, Jerusalem; arugula; asparagus; balsam pear; bamboo, shoots; basil, dried leaves; basil, dried leaves-baby food; basil, fresh leaves; basil, fresh leaves-baby food; bean, cowpea, succulent; bean, kidney, seed; bean, lima, seed; bean, lima, succulent; bean, mung, seed; bean, navy, seed; bean, pink, seed; bean, pinto, seed; bean, snap, succulent; bean, snap, succulent-baby food; beet, garden, roots; beet, garden, roots-baby food; beet, garden, tops; belgium endive; broccoli; broccoli raab; broccoli, Chinese; broccoli-baby food; brussels sprouts; cabbage; cabbage, Chinese, bok choy; cabbage, Chinese, mustard; cabbage, Chinese, napa; cactus; cantaloupe; cardoon; carrot; carrot-baby food; cassava; cassava-baby food; cauliflower; celeriac; celery; celery-baby food; celtuce; chayote, fruit; chickpea, flour; chickpea, seed; chickpea, seed-baby food; chicory, roots; chicory, tops; Chinese waxgourd; chive, fresh leaves; chrysanthemum, garland; cilantro, leaves; cilantro, leaves-baby food; cinnamon; cinnamon-baby food; coriander, seed; coriander, seed-baby food; dandelion, leaves; dasheen, corm; dasheen, leaves; dill, seed; dillweed; fennel, Florence; garlic, bulb; garlic, bulb-baby food; ginger; ginger, dried; ginger-baby food; ginseng, dried; grape, leaves; guar, seed; guar, seed-baby food; herbs, other; herbs, other-baby food; kale; kohlrabi; leek; lemongrass; lettuce, head; lettuce, leaf; marjoram; marjoram-baby food; okra; onion, bulb; onion, bulb, dried; onion, bulb, dried-baby food; onion, bulb-baby food; onion, green; palm heart, leaves; parsley, dried leaves; parsley, dried leaves-baby food; parsley, leaves; parsley, turnip rooted; parsnip; parsnip-baby food; pea, dry; pea, dry-baby food; pea, edible podded, succulent; pea, pigeon, seed; pea, pigeon, succulent; pea, succulent; pea, succulent-baby food; pepper, bell; pepper, bell, dried; pepper, bell, dried-baby food; pepper, bell-baby food; pepper, black and white; pepper, black and white-baby food; pepper, nonbell; pepper, nonbell, dried; pepper, nonbell-baby food; peppermint; potato, chips; potato, dry (granules/flakes); potato, dry (granules/flakes)-baby food; potato, flour; potato, flour-baby food; potato, tuber, without peel; potato, tuber, without peel-baby food; potato, tuber, with peel; potato, tuber, with peel-baby food; pumpkin; radicchio; radish, oriental, roots; radish, oriental, tops; radish, roots; radish, tops; rape greens; rhubarb; rutabaga; salsify, roots; salsify, tops; savory; seaweed; seaweed-baby food; shallot, bulb; soybean, flour; soybean, flour-baby food; soybean, seed; spices, other; spices, other-baby food; squash, summer; squash, summer-baby food; squash, winter; squash, winter-baby food; sweet potato; sweet potato-baby food; Swiss chard; tanier, corm; tomatillo; tomato; tomato, dried; tomato, dried-baby food; tomato, paste; tomato, paste-baby food; tomato, puree; tomato, puree-baby food; tomato-baby food; tree tomato; turmeric; turnip, greens; turnip, roots; water chestnut; watercress; watermelon; yam bean; yam, true.

CSFII = Continuing Survey of Food Intake among Individuals.  
 HNIS = Human Nutrition Information Service.  
 NCHS = National Center for Health Statistics.

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Table 9-2. Confidence in Recommendations for Intake of Fruits and Vegetables		
General Assessment Factors	Rationale	Rating
<b>Soundness</b>		
<i>Adequacy of Approach</i>	The survey methodology and data analysis were adequate. The survey sampled nearly 25,000 individuals. However, sample sizes for some individual fruits and vegetables for some of the age groups are small. An analysis of primary data was conducted.	High for total fruits and vegetables, low for some individual fruits and vegetables with small sample size
<i>Minimal (or defined) Bias</i>	No physical measurements were taken. The method relied on recent recall of fruits and vegetables eaten.	
<b>Applicability and Utility</b>		High
<i>Exposure Factor of Interest</i>	The key study was directly relevant to fruit and vegetable 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.	
<i>Data Collection Period</i>	Data were collected for two nonconsecutive days.	
<b>Clarity and Completeness</b>		High
<i>Accessibility</i>	The NHANES data and the the FCID Consumption Calculator 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 follows strict QA/QC procedures. Data generated by the FCID Consumption Calculator has been reviewed by EPA.	
<b>Variability and Uncertainty</b>		Medium to high for averages, low for long-term upper percentiles; low for individual fruits and vegetables
<i>Variability in Population</i>	Full distributions were provided for total fruits and total vegetables. Means were provided for individual fruits and vegetables.	
<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 fruits and total vegetables. Uncertainty is greater for individual fruits and vegetables.	
<b>Evaluation and Review</b>		Medium
<i>Peer Review</i>	The NCHS NHANES survey received a high level of peer review. The U.S. EPA analysis of these data has not been peer reviewed outside the Agency, but the methodology used has been peer reviewed in an analysis of previous data.	
<i>Number and Agreement of Studies</i>	There was one key study.	

Table 9-2. Confidence in Recommendations for Intake of Fruits and Vegetables (Continued)		
General Assessment Factors	Rationale	Rating
<b>Overall Rating</b>		<b>Medium to High</b> confidence in the averages; <b>Low</b> for some individual fruits and vegetables with small sample size; <b>Low</b> confidence in the long-term upper percentiles
FCID = Food Commodity Intake Database NCHS = National Center for Health Statistics. QA/QC = quality assurance/quality control.		

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9.3. INTAKE STUDIES

9.3.1 Key Fruit and Vegetable Intake Study

9.3.1.1 U.S. EPA Analysis of Consumption Data from 2003–2006 National Health and Nutrition Examination Survey (NHANES)

The key source of recent information on consumption rates of fruits and vegetables 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 U.S. EPA to generate per capita and consumer-only intake rates for both individual fruits and vegetables and total fruits and vegetables.

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 U.S. Department of Health and Human Services (DHHS). DHHS’ 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 1<sup>st</sup> day is collected in-person, and the 2<sup>nd</sup> 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 five-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. NHANES oversamples low-income persons, adolescents 12 to 19 years, persons 60 years and older, African Americans, and Mexican Americans. 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 U.S. EPA, Office of Pesticide Programs (OPP) 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 Continuing Survey of Food Intake among Individuals (CSFII) (USDA, 2000; U.S. EPA, 2000) (see Section 9.3.2.4). 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 populations, 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 U.S. 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, an apple pie may contain the commodities apples, flour, fat, sugar, and spices. FCID contains approximately 560 unique commodity names and 8-digit codes. The FCID commodity names and codes were selected and defined by U.S. EPA and were based on the U.S. EPA Food Commodity Vocabulary (<https://www.epa.gov/pesticide-tolerances/food-and-feed-commodity-vocabulary>). Appendix C provides the codes and definitions used to determine the various fruit and vegetable commodities used in the U.S. EPA analysis of the WWEIA-FCID data.

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 fruits

and vegetables 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, percentage of the population consuming the fruits or vegetables being analyzed, mean intake rate, and standard error of the mean intake rate, were calculated for total fruits, total vegetables, and selected individual fruits and vegetables. Individual fruits and vegetables were selected to be consistent with Chapter 13 of this handbook, which was based on having at least 30 households reporting consumption for the particular fruit or vegetable. Percentiles of the intake rate distribution (i.e., 1<sup>st</sup>, 5<sup>th</sup>, 10<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, 90<sup>th</sup>, 95<sup>th</sup>, 99<sup>th</sup>, and the maximum value) were also provided for total fruits and total vegetables. 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 U.S. 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* (U.S. EPA, 2011). 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 9-3 presents per capita intake data for total fruits and total vegetables in g/kg-day; Table 9-4 provides consumer-only intake data for total fruits and total vegetables in g/kg-day. Table 9-5 provides per capita intake data for individual fruits and vegetables in g/kg-day, and Table 9-6 provides consumer-only intake data for individual fruits and vegetables in g/kg-day. Tables 9-7 and 9-8 provide per capita and consumer-only data, respectively, for “exposed” and “protected” fruits and vegetables. Exposed fruits and vegetables are those that are grown above ground and are likely to be contaminated by pollutants deposited on surfaces of the foods that are eaten. Protected fruits and vegetables are those that have outer protective coatings that are typically removed before consumption. In general, these data represent intake of the edible portions of uncooked foods.

Because the results are presented in units of g/kg-day, 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. Note, however, 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, it should be noted 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. Day-to-day variation in intake among individuals will be high for fruits and vegetables that are highly seasonal and for fruits and vegetables that are eaten year-round, but that are not typically eaten every day. For these fruits and vegetables, the intake distribution generated from short-term data will not be a good reflection of the long-term distribution. On the other hand, for broad categories of foods (e.g., total fruits and total vegetables) 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 fruits and vegetables (i.e., total fruits and total vegetables). 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 percentage of respondents consuming are provided.

An advantage of using the U.S. 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.

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**9.3.2 Relevant Fruit and Vegetable Intake Studies**

**9.3.2.1 U.S. Department of Agriculture (USDA) (1980, 1992, 1996a, b)—Food and Nutrient Intakes of Individuals in 1 Day in the United States**

USDA calculated mean intake rates for total fruits and total vegetables using data from the 1977–1978 and 1987–1988 Nationwide Food Consumption Surveys (NFCS) (USDA, 1980, 1992) and CSFII data from 1994 and 1995 (USDA, 1996a, b). Table 9-9 presents the mean per capita total intake rates for total fruits and total vegetables from the 1977–1978 NFCS. Table 9-10 presents similar data from the 1987–1988 NFCS and the 1994 and 1995 CSFII. Note that the age classifications used in these surveys were slightly different than those used in the 1977–1978 NFCS. Tables 9-9 and 9-10 include both per capita intake rates and intake rates for consumers-only for various ages of individuals. Intake rates for consumers-only were calculated by dividing the per capita consumption rate by the fraction of the population consuming vegetables or fruits in a day.

The advantages of using these data are that they provide intake estimates for all fruits or all vegetables, combined. Again, these estimates are based on 1-day dietary data, which may not reflect usual consumption patterns. 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.

**9.3.2.2 U.S. Department of Agriculture (USDA) (1999a)—Food Consumption, Prices, and Expenditures, 1970–1997**

The USDA's Economic Research Service calculates the amount of food available for human consumption in the United States on an annual basis (USDA, 1999a). Supply and utilization balance sheets are generated based on the flow of food items from production to end uses for Years 1970 to 1997. Total available supply is estimated as the sum of production and imports (USDA, 1999a). The availability of food for human use commonly termed as "food disappearance" is determined by subtracting exported foods from the total available supply (USDA, 1999a). USDA (1999a) calculates the per capita food consumption by dividing the total food disappearance by the total U.S. population. USDA (1999a) estimated per capita consumption data for various fruit and vegetable products from 1970–1997. Table 9-11 presents retail weight per capita data. These data have been derived from the annual per capita values in units

of pounds per year, presented by USDA (1999a), by converting to units of g/day.

An advantage of this study is that it provides per capita consumption rates for fruits and vegetables that are representative of long-term intake because disappearance data are generated annually. One of the limitations of this study is that disappearance data do not account for losses from the food supply from waste or spoilage. As a result, intake rates based on these data may overestimate daily consumption because they are based on the total quantity of marketable commodity utilized. Thus, these data represent bounding estimates of intake rates only. It should also be noted that per capita estimates based on food disappearance are not a direct measure of actual consumption or quantity ingested; instead, the data are used as indicators of changes in usage over time (USDA, 1999a). These data are based on older surveys and may not be entirely representative of current consumption patterns.

**9.3.2.3 U.S. Department of Agriculture (USDA) (1999b)—Food and Nutrient Intakes by Children 1994–1996, 1998, Table Set 17**

USDA (1999b) 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 children 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 two nonconsecutive days. Section 9.3.2.4 provides additional information on these surveys.

USDA (1999b) 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 (1999b) 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 9-12 through 9-15 present data on the mean quantities (grams) of fruits and vegetables consumed per individual for 1 day, and the percentage of survey individuals consuming fruits and vegetables on that survey day. Data on mean intakes or mean percentages are based on respondents' Day 1 intakes.

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The advantage of the USDA (1999b) study is that it uses the 1994–1996, 1998 CSFII data set, which includes 4 years of intake data, combined, and includes the supplemental data on children. These data are expected to be generally representative of the U.S. population, and they include data on a wide variety of fruits and vegetables. 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 U.S. 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.

**9.3.2.4 U.S. EPA Analysis of Continuing Survey of Food Intake among Individuals (CSFII) 1994–1996, 1998 Based on U.S. Department of Agriculture (USDA) (2000) and U.S. EPA (2000)**

U.S. EPA/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 9.3.1.1. 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 two nonconsecutive days. The data were based on 24-hour recall. A total of 21,662 individuals provided data for the 1<sup>st</sup> day; of those individuals, 20,607 provided data for a 2<sup>nd</sup> 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 the 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 recommends that all 4 years be combined in order to provide an adequate sample size for children.

The fruits and vegetable items/groups selected for the U.S. EPA analysis included total fruits and vegetables, and various individual fruits and vegetables. 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 U.S. EPA analysis of 2003–2006 NHANES data, as described in Section 9.3.1.1. Because these data were developed for use in U.S. EPA's pesticide registration program, the childhood age groups used are slightly different than those recommended in U.S. EPA's *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005).

Table 9-16 presents per capita intake data for total fruits and total vegetables in g/kg-day; Table 9-17 provides consumer-only intake data for total fruits and total vegetables in g/kg-day. Table 9-18 provides per capita intake data for individual fruits and vegetables, and Table 9-19 provides consumer-only intake data for individual fruits and vegetables. In general, these data represent intake of the edible portions of uncooked foods. Tables 9-20 through 9-24 present data for exposed/protected fruits and vegetables and root vegetables. These five tables were created using only CSFII 1994–1996. These data represent as-consumed intake rates.

Because the results are presented in units of g/kg-day, 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 about 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 9.3.1.1, apply to the CSFII estimates as well.

A strength of U.S. EPA's analysis is that it provides distributions of intake rates for various age groups of children and adults, normalized by body weight. The analysis uses the 1994–1996, 1998 CSFII data set, which was designed to be representative of



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the U.S. population. Also, the data set includes 4 years of intake data combined and is based on a 2-day survey period. However, 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. Also, the analysis was conducted using slightly different childhood age groups than those recommended in U.S. EPA's Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants (U.S. EPA, 2005). However, given the similarities in the age groups used, the data should provide suitable intake estimates for the age groups of interest. While the CSFII data are older than the NHANES data, they provide relevant information on consumption by season, region of the United States, and urbanization, breakdowns that are not available in the publicly released NHANES data.

**9.3.2.5 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 fruits and vegetables consumed per eating occasion by members of the U.S. population (i.e., serving sizes). The estimates of serving size were 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 9-25 presents serving size data for selected fruits and vegetables, and Table 9-26 presents serving size data by age group. These data are presented on an as-consumed basis (grams) and represent the quantity of fruits and vegetables consumed per eating occasion. These estimates may be useful for assessing acute exposures to contaminants in specific foods, or 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. Note, however, 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 to 1996 CSFII; data from the 1998 children's supplement were not included.

**9.3.2.6 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 (>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; this modified version 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 separated 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. To assess the univariate associations of these characteristics with consumption, Wilcoxon rank-sum tests were used. In addition, multivariate 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,

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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 9-27 presents the median servings of fruits and vegetables broken down by demographic and health characteristic. The only variable predictive of fruit and vegetable intake was ethnicity ( $p = 0.02$ ), with European Americans consuming significantly more of these foods than either African Americans or Native Americans. The multiple regression model indicated a statistically significant interaction between sex and ethnicity ( $p = 0.04$ ) and a significant main effect for chronic disease ( $p = 0.04$ ) for fruit and vegetable consumption. Among males, European Americans consumed significantly more fruits and vegetables than either African Americans or Native Americans. Men and women did not differ significantly in their fruit and vegetable consumption, except for African Americans, where women had a significantly greater intake ( $p = 0.01$ ).

An advantage of this study is that dietary information was collected on older individuals (>70 years of age). 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. Also, the survey results are based on dietary recall; the questionnaire required participants to report the frequency of food consumption during the past year. The study authors noted that, currently, there are no dietary assessment tools that allow collecting comprehensive dietary data over years of food consumption. Another limitation of the study is that the small sample size used makes associations by sex and ethnicity difficult.

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

Fox et al. (2004) used data from the 2002 *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 old, in the 50 states and the District of Columbia. The FITS is described in detail in Devaney et al. (2004). FITS 2002 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 oversampled children in the 4- to 6-month and 9- to 11-month age groups; sample weights were adjusted for nonresponse, oversampling, and undercoverage of some population groups. The response rate for the FITS 2002 was 73% for the recruitment interview. Of the recruited households, there was 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 9-28 provides the percentage of infants and toddlers consuming different types of vegetables at least once in a day. The percentages of children eating any type of vegetable ranged from 39.9% for 4- to 6-month-olds to 81.6% for 19- to 24-month-olds. Table 9-29 provides the top five vegetables consumed by each age group. Some of the highest percentages ranged from baby food carrots (9.6%) in the 4- to 6-month-old group to French fries (25.5%) in the 19- to 24-month-old group. Table 9-30 provides the percentage of children consuming different types of fruit at least once per day. The percentages of children eating any type of fruit ranged from 41.9% to 4- to 6-month-olds to 77.2% for 12 to 14-month-olds. Table 9-31 provides information on the top five fruits eaten by infants and toddlers at least once per day. The highest percentages were for bananas among infants 9 to 24 months old, and baby food applesauce among infants 4 to 8 months old.

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

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use of a telephone survey may have omitted lower income households without telephones (Devaney et al., 2004).

**9.3.2.8 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 the 2002 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 ( $N = 996$ ).

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 9-32 provides information on the food choices for the infants and toddlers studied. There was little difference in vegetable choices among WIC participants and nonparticipants (see Table 9-32). However, there were some differences for fruits.

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 those associated with the FITS data, as described previously in Section 9.3.2.7.

**9.3.2.9 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 of age who participated in the 2002 FITS. Section 9.3.2.7 describes the FITS, which 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. It included a stratified random sample of 3,022 children between 4 and 24 months of age.

Using the 24-hour recall data, Fox et al. (2006) derived average portion sizes for major food groups, including fruits and vegetables. 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 9-33 and 9-34 present the average portion sizes for fruits and vegetables for infants and toddlers, respectively.

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. Limitations are those associated with the FITS data, as described previously in Section 9.3.2.7.

**9.3.2.10 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 of age 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 9-35 provides the percentages of Hispanic and non-Hispanic infants and toddlers consuming fruits and vegetables. In most instances, the percentages consuming the different types of fruits and vegetables were similar. However, 4- to 5-month-old Hispanic infants were more likely to eat fruits than non-Hispanic infants in this age group. Table 9-36 provides the top five fruits and vegetables consumed and the percentage of children consuming these foods at least once in a day. Apples and bananas were the fruits with the highest percentage of infants and toddlers consuming them in both the Hispanic and non-Hispanic study groups. Potatoes and carrots were the vegetables with the highest percentage of infants and toddlers consuming them in both study groups.

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 9.3.2.7 for the FITS data.

**9.3.2.11 Colon-Ramos et al. (2009)—Differences in Fruit and Vegetable Intake among Hispanic Subgroups in California: Results from the 2005 California Health Interview Survey**

Colon-Ramos et al. (2009) used data from the 2005/2006 California Health Interview Survey to look for differences in fruit and vegetable intake among

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Hispanic/Latino survey participants. A total of 7,954 participants were grouped into six subgroups based on their geographic location of origin: Mexican, Central American, Caribbean, Spanish American, South American, and individuals with more than one of the other Hispanic or Latino origin groups (>1 origin). Daily intakes of seven categories of fruits and vegetables (fruit; 100% fruit juice; green leafy lettuce or salad; cooked dried beans; French fries, home fries, or hash browns; other potatoes; and other vegetables) were estimated as cup equivalents using data on frequency of consumption and estimated portion sizes.

Table 9-37 presents the mean daily intake rates for the fruit and vegetable categories in cup equivalents. Colon-Ramos observed no statistical differences between Hispanic subgroups for total fruits and vegetables, but there were some statistical differences between subgroups for cooked dried beans and other white potatoes.

The advantage of this study is that it compares intake rates between Hispanic subgroups. However, the data are presented in cup equivalents instead of in units of g/day, and the data are limited to California.

### 9.3.2.12 Locke et al. (2009)—Seasonal Variation in Fruit and Vegetable Consumption in a Rural Agricultural Community

Locke et al. (2009) conducted a study during 2004 and 2005 in the Lower Yakima Valley of Washington State. Its purpose was to investigate seasonal variations in fruit and vegetable consumption among Hispanic farmworkers and nonfarmworkers in a rural agricultural community, and the sources of the fruits and vegetables that were consumed by this population. Questionnaires were administered to 101 farmworker families and 100 nonfarmworker families at three different time periods corresponding to agricultural seasons for apples and pears: thinning, which occurred between June and July (summer); harvest, which occurred in September and October (fall); and the nonspray period for pesticides, which occurred in December and January (winter). Participants were asked about the fruits and vegetables that they had consumed during the previous month and whether it was purchased fresh, dried, canned, or frozen. They were also asked about whether they had obtained the produce at a grocery store, fruit stand, work, at their own or a friend's garden, or other location.

Table 9-38 presents the number and percentage of study participants that reported obtaining their produce from the various sources. The grocery store and work were the most common places where the study participants obtained their produce, but a higher

percentage of nonfarmworkers obtained their produce from the grocery store than farmworkers, and the results varied by season. Table 9-39 provides the number and percentage of study participants that consumed the various types of fruits and vegetables according to agricultural season.

The advantage of this study is that it provides information on the sources of fruits and vegetables consumed by farmworkers and nonfarmworkers and information on seasonal variations in consumption. However, data on actual intake rates are not provided and the data are limited to Washington State.

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

In 2008, a second FITS study was conducted (Fox et al., 2010; Siega-Riz, 2010; Deming et al., 2014). The study population included 3,273 children ages 0–47.9 months. Siega-Riz et al. (2010) described the dietary consumption patterns of 1,596 infants (4–5.9 months and 6–11.9 months) and toddlers (12–23.9 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 9-40 provides the percentage of infants and toddlers consuming fruits and fruit juices at least once per day in 2008 (Siega-Riz et al., 2010). The percentage of infants and toddlers consuming any type of fruit and fruit juice ranged from 21.8% for the 4- to 5.9-month age group to 92.8% for the 21- to 23.9-month age group (see Table 9-41). The percentage of infants and toddlers consuming any kind of vegetable ranged from 25.9% for the 4- to 5.9-month age group to 72.4% for the 12- to 14.9-month age group (see Table 9-41). Apples and bananas were the most commonly eaten fruits among these age groups. Potatoes (sweet, mashed/whipped, and French fried/other potatoes) were the most commonly eaten vegetables (Siega-Riz et al., 2010).

Fox et al. (2010) presented similar data for 2- and 3-year-old children. The mean percentage of 2- and 3-year-old children eating any type of vegetable in a day was 70%. The most commonly eaten vegetables

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were French fries and other fried potatoes (~19% of children). Approximately 87% of 2- and 3-year-olds consumed some types of fruit or juice in a day with fresh fruit being the most common type of fruit eaten (62%). The data for 2- and 3-year-olds from the 2008 FITS are provided in Tables 9-35 and 9-36.

Deming et al. (2014) used the data for children 6–11, 12–23, and 24–47 months of age from the 2008 FITS. The percentage of children consuming fruits and vegetables was estimated based on participation (N = 794) or nonparticipation (N = 2,477) in the WIC program. Deming et al. (2014) reported that a high percentage of WIC infants 6 to 8.9 months old consumed fruit or fruit juice than nonparticipants, but fewer WIC infants consumed vegetables than nonparticipants (see Table 9-42).

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 fruits and vegetables consumed per day. However, useful information was provided for the consumption of fruits and vegetables by infants and toddlers.

### 9.3.2.14 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 fruits and vegetables consumed per eating occasion among children ages 12–23.9 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 9-43 provides the mean amount consumed per eating occasion for 2008.

The advantage of the Briefel et al. (2010) study is that it provides quantitative information on the amount of fruits and vegetables 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.

### 9.3.2.15 U.S. Department of Agriculture (USDA) (2010)—*Canned Fruit and Vegetable Consumption in the United States*

USDA’s Economic Research Service (ERS) estimated the per capita availability of canned fruits and vegetables in 2008 (USDA, 2010), using data from the ERS Food Availability Data System. The amounts of canned fruits and vegetables were assumed to be “proxies” for the amounts actually consumed. According to USDA (2010), “In the Food Availability

Data System, food available for domestic consumption is calculated as a residual. That is, for a given year, the total supply is the sum of production, imports, and beginning inventories; from this amount, exports, farm and industrial uses, and ending stocks are subtracted, leaving domestic consumption as the remainder.” Because food availability data overestimate the amount of food actually ingested, the food availability data were adjusted to account for “the amount of food lost at the market and consumer levels (e.g., plate waste and spoilage).” For the purposes of developing these estimates, “canned” fruits and vegetables were defined as those marketed in traditional airtight, shelf-stable metal cans and containers as well as other newer and increasingly popular types of airtight containers, such as single-serving plastic cups.

Table 9-44 provides the 2008 estimated per capita availability of canned fruits and vegetables, adjusted for losses. The most popular canned fruits and canned vegetables were apples and applesauce and tomatoes, respectively.

This study provides data for canned fruits and vegetables. However, the data are based on the food supply (or the disappearance of food into the food marketing system). Because the data are based on economic consumption and spending estimates, they may not be entirely representative of actual intake.

### 9.3.2.16 Demydas (2011)—*Consumer Segmentation Based on the Level and Structure of Fruit and Vegetable Intake: An Empirical Evidence for U.S. Adults from the National Health and Nutrition Examination Survey (NHANES) 2005–2006*

Demydas (2011) identified adult intake patterns on the basis of the degree of processing of the consumed fruits and vegetables using a clustering approach. The sample population consisted of 2,444 nonpregnant/nonlactating adults, aged 20–59 years, taken from the 2005–2006 NHANES. Two 24-hour dietary recalls were used to collect fruit and vegetable intake from each respondent. For statistical analysis, a two-stage clustering procedure was applied, identifying groups of subjects with similar fruit and vegetable consumption patterns. The fruit subgroups, arranged by the degree of processing, were raw, juice, and canned/frozen/dried/dessert. The vegetable subgroups were: raw, cooked, mixed dishes, and fried.

The mean daily fruit and vegetable intake was 359.4 g for all consumers, and intake dropped to 285.1 g when fruit juice was excluded (see Table 9-45). The major contributors to the fruit group were fruit juice (236.5 g/day) and raw fruit (139.3 g/day).

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Three intake patterns were identified. The first group of 1,802 individuals represented the majority of the sample population (74%). This group was characterized by low intake from all of the fruit and vegetable subgroups (mean intake of 255 g/day). A large portion of this group was made up of individuals with lower education, smokers, and those that ate out often/very often. The second group was comprised of 323 individuals (13% of the sample population), and had a mean fruit and vegetable intake of 599 g/day. The second group was characterized by healthier choices (a higher consumption of raw fruits, raw vegetables, and cooked vegetables without dressings and lower intake of fried vegetables). Females, older individuals, married individuals, and those with higher education and household income were associated with this consumption pattern. The third group of 319 individuals (13% of the sample population) consumed a large amount of fruit and vegetables when fruit juice was included (700 g/day); however, this intake dropped to 284 g/day when fruit juice was excluded. This consumption pattern was associated with males, younger individuals, non-Hispanic blacks, and those with lower household incomes.

The advantages of this study are that the sample population was large and daily fruit and vegetable amounts were provided. In addition, intake for various preparation forms was included in the study. However, the study used 2-day dietary recall data, which may not be representative of longer term fruit and vegetable intake.

**9.3.2.17 Arcan et al. (2014)—Dietary and Weight-Related Behaviors and Body Mass Index among Hispanic, Hmong, Somali, and White Adolescents. *J of the Academy of Nutrition and Dietetics*. 113(3): 375–383**

Arcan et al. (2014) evaluated the dietary behaviors of adolescents living in an urban community in Minnesota. The purpose of the study was to assess potential differences between ethnic groups using data from the 2010 Eating and Activity among Teens (EAT) study. EAT participants self-report on a number of factors on weight-status and weight-related behaviors. For 2010, data were available for 1,672 adolescents (Hispanic [33.6%], Hmong [28.5%], Somali [6.8%], and white [31.1%]). Arcan et al. (2014) tabulated the usual daily number of servings of vegetables (excluding potatoes) and fruits (excluding fruit juices) over the previous year (see Table 9-46). Vegetable and fruit intake was low across all ethnic groups. On average, adolescents consumed 1.5 servings of vegetables and 1.3 servings of fruit per day (Arcan et al., 2014).

This study provides information on usual servings of fruits and vegetables among urban adolescents in various ethnic groups. However, the data are for a specific geographic area and may not be representative of the U.S population. Also, the data are for servings per day. No data are provided on the quantity of foods consumed per serving.

**9.3.2.18 Wolfson and Bleich (2015)—Fruit and Vegetable Consumption and Food Values: National Patterns in the United States by Supplemental Nutrition Assistance Program Eligibility and Cooking Frequency**

Wolfson and Bleich (2015) used data from NHANES 2007–2010 (N = 9,560) to evaluate fruit and vegetable intake among nonpregnant, nondiabetic adults, ages 20 years and older, according to household cooking frequency and participation in the Supplemental Nutrition Assistance Program (SNAP). Fruit and vegetable intake was based on 24-hour dietary recall data. Wolfson and Bleich (2015) defined fruits and vegetables as total fruits/vegetables and fresh fruits/vegetables. Total fruits and vegetables included those that were raw, fresh, frozen, canned, dried, and pickled, and fresh fruits/vegetables included only those that were fresh, raw, or cooked from raw. Neither white potatoes nor sauces (e.g., tomato sauce) were included in the vegetable category. Responses to the question, “During the past seven days, how many times did you or someone else in your family cook food for dinner or supper at home?” were used to assess cooking frequency. For each survey respondent, SNAP status was categorized in one of three ways: receiving SNAP, income-eligible but not receiving SNAP, or income-ineligible for SNAP, and was based on self-reported participation, or family income. Table 9-47 provides mean consumer-only fruit and vegetable intake rates based on cooking frequency and SNAP status. According to Wolfson and Bleich (2015), the “overall results show few differences by SNAP status suggesting that income may not be a primary barrier to produce consumption.” Also, “Frequent cooking (>6 times/week) was associated with increased volume of consumption of fresh vegetables only among those ineligible for SNAP.”

This study provides information on fruit and vegetable intake by SNAP status and cooking frequency. As indicated previously, studies based on 24-hour dietary recall data may not be representative of longer term fruit and vegetable intake.

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### 9.3.2.19 Guerrero et al. (2016)—Racial and Ethnic Disparities in Dietary Intake among California Children

Guerrero et al. (2016) used data for 15,902 children, ages 2–11 years, from the 2007 and 2009 California Health Interview Survey (CHIS) to assess differences in fruit and vegetable intake based on race and ethnicity. The CHIS is a population-based telephone survey, designed to be representative of California’s population. In addition to collecting demographic data, participants also respond to a variety of health-related questions. For children, responses are provided by their caregivers. Examples of questions related to the children’s intake include: “Yesterday, how many servings of fruit, such as an apple or banana, did he/she eat?” and “Yesterday, how many glasses of fruit juice, such as orange or apple juice, did he/she drink?” Guerrero et al. (2016) evaluated the response data for four race/ethnic groups: white, Latino, African American, and Asian. The Latino and Asian groups were further subdivided according to the language in which the survey was administered (e.g., English or Spanish for Latinos). Table 9-48 provides data on the percentage of individuals in each of these groups that consumed less than 2 servings of fruit or vegetables in a day, and  $\geq 2$  serving of fruit juice in a day.

This study provides information on percentages of race/ethnic groups consuming less (or more) than a predefined number of servings of fruits, vegetables, or fruit juices in a day. No intake data in g/day or g/kg-day are provided. Also, these data are based on California’s population and may not be representative of the general population of the United States.

### 9.3.3 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 9.3.1.1. 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 (13 to <50 years). EPA’s FCID converted the NHANES “as eaten” food consumption data into consumption of individual fruit and vegetable commodities, as described in Section 9.3.1.1, and the data were weighted according to sampling weights provided for Years 2005 to 2010. Two-day average intake rates were calculated for each survey respondent for total fruits and total vegetables, and for

a variety of individual fruits and vegetables. 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 9-49 provides summary statistics for per capita intake of total fruits and total vegetables, and Table 9-50 provides the same data on a consumer-only basis. Table 9-51 provides data on individual fruits and vegetables, and Table 9-52 provides data on exposed and protected fruits and vegetables.

Lactating women had a slightly higher per capita mean intake of total vegetables (2.9 g/kg-day) than pregnant women (2.8 g/kg-day) and women of child-bearing years (2.4 mg/kg-day) (see Table 9-49). The per capita consumption of total fruits for lactating women (1.9 mg/kg-day) was also slightly higher than that of pregnant women (1.8 g/kg-day) and women of child-bearing years (1.1 mg/kg-day) (see Table 9-49).

As indicated in Section 9.3.1.1, an advantage of using the U.S. EPA’s analysis of NHANES data is that it was designed to be representative of the U.S. population. The data set used in this analysis used 6 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. This is particularly true for the tails (extremes) of the distribution of food intake.

Limited data are available on the differences in food intake rates between pregnant and nonpregnant women, based on race, ethnicity, and demographic variables. Dubowitz et al. (2007) conducted a study in a multiethnic sample of 662 low-income, postpartum women in the Boston, MA metropolitan area and found that foreign-born women ate 2.5 more servings of fruits and vegetables than women born in the United States. Leslie et al. (2012) observed differences in fruits and vegetables servings between low and high socioeconomic position among breastfeeding mothers in Melbourne, Australia. Crozier et al. (2009) collected dietary data using a food frequency questionnaire for 2,270 women in early pregnancy (11.4–12.3 weeks gestation); 2,649 women in late pregnancy (34.3–34.9 weeks gestation); and 12,572 nonpregnant women in Southampton, U.K. Data on the consumption of 48 foods or food groups were collected. During early pregnancy, intake of 21 foods or food groups increased, including: fruits and fruit juices, and dried fruit. Intake of 10 foods or food groups decreased during pregnancy, including: salad vegetables, other vegetables, and vegetable dishes (Crozier et al., 2009). Although these results indicate that fruit and vegetable intake rates may change over the course of pregnancy, the consumption

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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.

#### 9.4. CONVERSION BETWEEN WET- AND DRY-WEIGHT INTAKE RATES

The intake data presented in this chapter are reported in units of wet weight (i.e., as-consumed or edible portion uncooked fruits and vegetables consumed per day or per eating occasion). However, data on the concentration of contaminants in fruits and vegetables may be reported in units of either wet or dry weight (e.g., mg contaminant per gram dry weight of fruits and vegetables). 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 fruits and vegetables, 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 9-53 (USDA, 2007) or Table 9-54 (Popkin et al., 2010) and the following equation:

$$IR_{dw} = IR_{ww} \left[ \frac{100 - W}{100} \right] \quad (\text{Eqn. 9-1})$$

where:

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

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

$$C_{ww} = C_{dw} \left[ \frac{100 - W}{100} \right] \quad (\text{Eqn. 9-2})$$

where:

$C_{ww}$  = wet-weight concentration,  
 $C_{dw}$  = dry-weight concentration, and

$W$  = percentage water content.

Table 9-53 presents moisture data for selected fruits and vegetables taken from USDA (2007). Table 9-54 provides additional data on the water content of foods based on data from Popkin et al. (2010).

#### 9.5. REFERENCES FOR CHAPTER 9

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**Table 9-3. Per Capita 2-Day Average<sup>a</sup> Intake of Total Fruits<sup>b</sup> and Total Vegetables<sup>c</sup> Based on 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>d</sup>**

Population Group	N	Percent Consuming <sup>e</sup>	Mean	SE	Percentiles									
					1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	Maximum
Total Fruits														
Whole population	24,673	86	1.77	0.05	0	0	0	<0.05	0.8	2.2	4.3	6.7	15.4	65.5 <sup>f</sup>
Age group														
Birth to <1 month	87	0	0	0	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>
1 to <3 months	233	7	0.32	0.1	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0	0	2.4 <sup>f</sup>	7.2 <sup>f</sup>	19.7 <sup>f</sup>
3 to <6 months	282	50	4.39	0.56	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0.1	7.4	13.3	19.2 <sup>f</sup>	33.3 <sup>f</sup>	60.3 <sup>f</sup>
6 to <12 months	588	91	9.36	0.57	0 <sup>f</sup>	0	<0.05	2.7	8.1	14.0	20.6	26.5	32.7 <sup>f</sup>	43.7 <sup>f</sup>
Birth to <1 year	1,190	59	5.82	0.33	0 <sup>f</sup>	0	0	0	1.9	9.2	16.2	23.0	32.0 <sup>f</sup>	60.3 <sup>f</sup>
1 to <2 years	728	96	9.34	0.57	0 <sup>f</sup>	<0.05	0.3	2.8	7.4	14.0	19.1	23.8	41.4 <sup>f</sup>	65.5 <sup>f</sup>
2 to <3 years	751	97	7.49	0.38	0 <sup>f</sup>	<0.05	0.2	2.3	6.3	11.3	17.1	20.0	25.2 <sup>f</sup>	48.5 <sup>f</sup>
3 to <6 years	1,418	96	5.58	0.31	0 <sup>f</sup>	<0.05	<0.05	1.4	4.1	8.2	13.3	16.2	24.6 <sup>f</sup>	47.2 <sup>f</sup>
6 to <11 years	2,292	95	3.04	0.12	0	<0.05	<0.05	0.4	2.0	4.3	7.8	9.9	15.2	35.7 <sup>f</sup>
11 to <16 years	2,551	86	1.34	0.09	0	0	0	<0.05	0.7	1.9	3.6	4.8	8.5	16.4 <sup>f</sup>
16 to <21 years	2,191	79	0.87	0.06	0	0	0	<0.05	0.2	1.3	2.6	3.5	6.2	16.7 <sup>f</sup>
21 to <30 years	2,082	78	0.98	0.05	0	0	0	<0.05	0.3	1.5	2.9	4.2	6.3	12.6 <sup>f</sup>
30 to <40 years	2,282	84	1.04	0.05	0	0	0	<0.05	0.5	1.5	3.0	3.9	6.3	14.1 <sup>f</sup>
40 to <50 years	2,378	84	1.11	0.06	0	0	0	<0.05	0.5	1.6	3.2	4.1	6.5	17.4 <sup>f</sup>
50 to <60 years	2,103	90	1.36	0.05	0	0	<0.05	0.1	0.9	2.0	3.5	4.3	7.2	20.1 <sup>f</sup>
60 to <70 years	2,214	90	1.37	0.05	0	0	<0.05	0.1	1.0	2.0	3.3	4.2	8.1	15.9 <sup>f</sup>
70 to <80 years	1,578	93	1.50	0.05	0 <sup>f</sup>	0	<0.05	0.3	1.1	2.2	3.4	4.4	6.6 <sup>f</sup>	10.2 <sup>f</sup>
80+ years	915	95	1.76	0.08	0 <sup>f</sup>	<0.05	<0.05	0.5	1.4	2.6	3.7	4.6	7.4 <sup>f</sup>	14.5 <sup>f</sup>
21 to <50 years	6,742	82	1.05	0.03	0	0	0	<0.05	0.4	1.5	3.0	4.1	6.5	17.4 <sup>f</sup>
50+ years	6,810	91	1.43	0.03	0	0	<0.05	0.2	1.0	2.1	3.4	4.3	7.2	20.1 <sup>f</sup>
Race														
Mexican American	5,787	87	2.36	0.08	0	0	0	0.1	1.2	2.8	5.9	9.5	20.1	47.2 <sup>f</sup>
Non-Hispanic Black	5,337	83	1.34	0.05	0	0	0	<0.05	0.4	1.6	3.5	5.5	12.9	46.3 <sup>f</sup>
Non-Hispanic White	10,294	87	1.68	0.06	0	0	0	<0.05	0.8	2.1	4.0	6.2	14.9	65.5 <sup>f</sup>
Other Hispanic	2,082	86	2.18	0.09	0	0	0	<0.05	1.1	2.8	5.2	8.0	18.4	60.3 <sup>f</sup>
Other race—including multiple	1,173	89	2.31	0.14	0 <sup>f</sup>	0	0	0.1	1.2	3.2	5.8	8.6	15.3 <sup>f</sup>	33.8 <sup>f</sup>

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**Table 9-3. Per Capita 2-Day Average<sup>a</sup> Intake of Total Fruits<sup>b</sup> and Total Vegetables<sup>c</sup> Based on 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>d</sup> (Continued)**

Population Group	N	Percent Consuming <sup>e</sup>	Mean	SE	Percentiles									Maximum
					1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
Total Vegetables														
Whole population	24,673	99	2.86	0.04	<0.05	0.4	0.7	1.3	2.2	3.6	5.6	7.4	12.7	57.2 <sup>f</sup>
Age group														
Birth to <1 month	87	21	0.34	0.24	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0.2 <sup>f</sup>	4.1 <sup>f</sup>	4.1 <sup>f</sup>	5.5 <sup>f</sup>
1 to <3 months	233	24	0.47	0.09	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0	2.3	3.0 <sup>f</sup>	4.6 <sup>f</sup>	17.2 <sup>f</sup>
3 to <6 months	282	65	3.20	0.40	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0.9	6.0	10.6	11.2 <sup>f</sup>	14.8 <sup>f</sup>	22.6 <sup>f</sup>
6 to <12 months	588	97	7.63	0.39	0 <sup>f</sup>	0.2	1.2	3.2	6.0	10.7	16.1	19.2	23.8 <sup>f</sup>	39.2 <sup>f</sup>
Birth to <1 year	1,190	72	4.72	0.26	0 <sup>f</sup>	0	0	0	2.9	7.6	12.8	16.9	22.6 <sup>f</sup>	39.2 <sup>f</sup>
1 to <2 years	728	100	6.65	0.32	<0.05 <sup>f</sup>	0.7	1.1	2.8	5.3	8.8	13.5	16.3	27.8 <sup>f</sup>	29.1 <sup>f</sup>
2 to <3 years	751	100	5.95	0.23	0.1 <sup>f</sup>	0.7	1.2	2.7	5.0	7.9	11.4	14.0	23.3 <sup>f</sup>	37.3 <sup>f</sup>
3 to <6 years	1,418	100	5.30	0.23	0.1 <sup>f</sup>	0.6	1.2	2.3	4.1	6.8	10.4	13.3	23.8 <sup>f</sup>	55.2 <sup>f</sup>
6 to <11 years	2,292	100	3.78	0.13	0.2	0.5	0.9	1.7	3.0	4.9	7.7	9.9	14.1	37.6 <sup>f</sup>
11 to <16 years	2,551	100	2.40	0.08	<0.05	0.3	0.5	1.0	1.9	3.1	4.8	6.3	11.7	39.5 <sup>f</sup>
16 to <21 years	2,191	100	2.28	0.08	<0.05	0.3	0.5	1.1	1.8	3.1	4.5	5.3	9.3	19.1 <sup>f</sup>
21 to <30 years	2,082	100	2.39	0.06	<0.05	0.4	0.7	1.2	2.0	3.2	4.5	5.7	8.0	17.1 <sup>f</sup>
30 to <40 years	2,282	100	2.64	0.08	0.1	0.4	0.7	1.3	2.1	3.4	5.3	6.7	9.4	18.4 <sup>f</sup>
40 to <50 years	2,378	100	2.51	0.08	<0.05	0.4	0.6	1.2	2.0	3.2	4.7	5.8	9.5	57.2 <sup>f</sup>
50 to <60 years	2,103	100	2.61	0.06	0.1	0.4	0.7	1.4	2.3	3.5	4.8	5.8	9.3	16.0 <sup>f</sup>
60 to <70 years	2,214	100	2.60	0.06	0.1	0.5	0.8	1.4	2.2	3.4	4.9	5.9	9.4	17.5 <sup>f</sup>
70 to <80 years	1,578	100	2.59	0.07	0.1 <sup>f</sup>	0.4	0.7	1.3	2.2	3.5	4.8	6.1	8.9 <sup>f</sup>	13.8 <sup>f</sup>
80+ years	915	100	2.73	0.06	<0.05 <sup>f</sup>	0.4	0.8	1.4	2.4	3.7	5.2	6.1	8.4 <sup>f</sup>	16.0 <sup>f</sup>
21 to <50 years	6,742	100	2.52	0.05	<0.05	0.4	0.7	1.2	2.1	3.3	4.9	6.1	9.3	57.2 <sup>f</sup>
50+ years	6,810	100	2.62	0.03	0.1	0.4	0.7	1.4	2.3	3.5	4.8	6.0	9.1	17.5 <sup>f</sup>
Race														
Mexican American	5,787	99	3.05	0.05	0	0.4	0.7	1.3	2.3	3.8	6.2	8.3	14.0	39.2 <sup>f</sup>
Non-Hispanic Black	5,337	99	2.34	0.05	<0.05	0.2	0.4	0.9	1.7	3.0	4.7	6.6	12.0	28.8 <sup>f</sup>
Non-Hispanic White	10,294	100	2.88	0.05	<0.05	0.4	0.7	1.4	2.3	3.6	5.5	7.1	12.1	57.2 <sup>f</sup>
Other Hispanic	2,082	99	2.87	0.09	<0.05	0.3	0.6	1.2	2.1	3.7	6.0	7.8	14.2	37.6 <sup>f</sup>
Other race—including multiple	1,173	99	3.35	0.14	<0.05 <sup>f</sup>	0.5	0.7	1.5	2.6	4.3	6.5	8.7	14.0 <sup>f</sup>	35.1 <sup>f</sup>
<sup>a</sup>	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.													

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**Table 9-3. Per Capita 2-Day Average<sup>a</sup> Intake of Total Fruits<sup>b</sup> and Total Vegetables<sup>c</sup> Based on 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>d</sup> (Continued)**

<sup>b</sup>	Total fruits includes: acerola; apple, dried; apple, dried-baby food; apple, fruit with peel; apple, peeled fruit; apple, peeled fruit-baby food; apple, sauce; apple, sauce-baby food; apricot; apricot, dried; apricot-baby food; avocado; banana; banana, dried; banana, dried-baby food; banana-baby food; blackberry; blueberry; blueberry-baby food; boysenberry; breadfruit; canistel; cherimoya; cherry; cherry-baby food; citrus hybrids; crabapple; cranberry; cranberry, dried; cranberry-baby food; currant; currant, dried; date; dragon fruit; eggplant; elderberry; feijoa; fig; fig, dried; gooseberry; grape; grape, raisin; guava; guava-baby food; huckleberry; jackfruit; kiwifruit, fuzzy; kumquat; lemon; lemon, peel; lime; loganberry; longan; loquat; lychee; lychee, dried; mamey apple; mango; mango, dried; mango-baby food; nectarine; orange; orange, peel; papaya; papaya, dried; papaya-baby food; passionfruit; passionfruit-baby food; pawpaw; peach; peach, dried; peach, dried-baby food; peach-baby food; pear; pear, dried; pear-baby food; persimmon; pineapple; pineapple, dried; pineapple-baby food; plantain; plantain, dried; plum; plum, prune, dried; plum, prune, dried-baby food; plum, prune, fresh; plum, prune, fresh-baby food; plum-baby food; pomegranate; prickly pear fruit; pummelo; quince; raspberry; raspberry-baby food; sapote, mamey; soursoy; Spanish lime; starfruit; strawberry; strawberry-baby food; sugar apple; tamarind; tangerine.
<sup>c</sup>	Total vegetables includes: alfalfa, seed; amaranth, leafy; arrowroot, flour; arrowroot, flour-baby food; artichoke, globe; artichoke, Jerusalem; arugula; asparagus; balsam pear; bamboo, shoots; basil, dried leaves; basil, dried leaves-baby food; basil, fresh leaves; basil, fresh leaves-baby food; bean, cowpea, succulent; bean, kidney, seed; bean, lima, seed; bean, lima, succulent; bean, mung, seed; bean, navy, seed; bean, pink, seed; bean, pinto, seed; bean, snap, succulent; bean, snap, succulent-baby food; beet, garden, roots; beet, garden, roots-baby food; beet, garden, tops; belgium endive; broccoli; broccoli raab; broccoli, Chinese; broccoli-baby food; brussels sprouts; cabbage; cabbage, Chinese, bok choy; cabbage, Chinese, mustard; cabbage, Chinese, napa; cactus; cantaloupe; cardoon; carrot; carrot-baby food; cassava; cassava-baby food; cauliflower; celeriac; celery; celery-baby food; celtuce; chayote, fruit; chickpea, flour; chickpea, seed; chickpea, seed-baby food; chicory, roots; chicory, tops; Chinese waxgourd; chive, fresh leaves; chrysanthemum, garland; cilantro, leaves; cilantro, leaves-baby food; cinnamon; cinnamon-baby food; coriander, seed; coriander, seed-baby food; dandelion, leaves; dasheen, corm; dasheen, leaves; dill, seed; dillweed; fennel, Florence; garlic, bulb; garlic, bulb-baby food; ginger; ginger, dried; ginger-baby food; ginseng, dried; grape, leaves; guar, seed; guar, seed-baby food; herbs, other; herbs, other-baby food; kale; kohlrabi; leek; lemongrass; lettuce, head; lettuce, leaf; marjoram; marjoram-baby food; okra; onion, bulb; onion, bulb, dried; onion, bulb, dried-baby food; onion, bulb-baby food; onion, green; palm heart, leaves; parsley, dried leaves; parsley, dried leaves-baby food; parsley, leaves; parsley, turnip rooted; parsnip; parsnip-baby food; pea, dry; pea, dry-baby food; pea, edible podded, succulent; pea, pigeon, seed; pea, pigeon, succulent; pea, succulent; pea, succulent-baby food; pepper, bell; pepper, bell, dried; pepper, bell, dried-baby food; pepper, bell-baby food; pepper, black and white; pepper, black and white-baby food; pepper, nonbell; pepper, nonbell, dried; pepper, nonbell-baby food; peppermint; potato, chips; potato, dry (granules/flakes); potato, dry (granules/flakes)-baby food; potato, flour; potato, flour-baby food; potato, tuber, without peel; potato, tuber, without peel-baby food; potato, tuber, with peel; potato, tuber, with peel-baby food; pumpkin; radicchio; radish, oriental, roots; radish, oriental, tops; radish, roots; radish, tops; rape greens; rhubarb; rutabaga; salsify, roots; salsify, tops; savory; seaweed; seaweed-baby food; shallot, bulb; soybean, flour; soybean, flour-baby food; soybean, seed; spices, other; spices, other-baby food; squash, summer; squash, summer-baby food; squash, winter; squash, winter-baby food; sweet potato; sweet potato-baby food; Swiss chard; tanager, corm; tomatillo; tomato; tomato, dried; tomato, dried-baby food; tomato, paste; tomato, paste-baby food; tomato, puree; tomato, puree-baby food; tomato-baby food; tree tomato; turmeric; turnip, greens; turnip, roots; water chestnut; watercress; watermelon; yam bean; yam, true.
<sup>d</sup>	For more information on the recipes used to convert the foods people reported eating to the quantities of agricultural commodities eaten, refer to the Frequently Asked Questions at <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .
<sup>e</sup>	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.
<sup>f</sup>	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).

HNIS = Human Nutrition Information Service.  
 N = Sample size.  
 SE = Standard error.

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

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-4. Consumer-Only 2-Day Average<sup>a</sup> Intake of Total Fruits<sup>b</sup> and Total Vegetables<sup>c</sup> Based on 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>d</sup>**

Population Group	N	Mean	SE	Percentiles									Maximum
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
Total Fruits													
Whole population	21,280	2.04	0.05	<0.05	<0.05	<0.05	0.2	1.1	2.5	4.7	7.4	16.2	65.5 <sup>e</sup>
Age group													
Birth to <1 month	0	0	0	0 <sup>d</sup>	0 <sup>e</sup>	0 <sup>e</sup>	0 <sup>e</sup>	0	0 <sup>e</sup>	0 <sup>e</sup>	0 <sup>e</sup>	0 <sup>e</sup>	0 <sup>e</sup>
1 to <3 months	19	4.76	1.29	<0.05 <sup>e</sup>	<0.05 <sup>e</sup>	0.4 <sup>e</sup>	2.4 <sup>e</sup>	3.5	4.5 <sup>e</sup>	11.3 <sup>e</sup>	19.7 <sup>e</sup>	19.7 <sup>e</sup>	19.7 <sup>e</sup>
3 to <6 months	153	8.75	1.07	0.1 <sup>e</sup>	0.4 <sup>e</sup>	0.8 <sup>e</sup>	2.4	7.4	11.7	19.2 <sup>e</sup>	26.9 <sup>e</sup>	33.4 <sup>e</sup>	60.3 <sup>e</sup>
6 to <12 months	532	10.31	0.57	<0.05 <sup>e</sup>	0.4	1.3	4.2	8.3	14.9	22.3	28.9	32.7 <sup>e</sup>	43.7 <sup>e</sup>
Birth to <1 year	704	9.89	0.44	<0.05 <sup>e</sup>	0.4	1.1	3.5	8.1	14.2	20.8	27.2	33.4 <sup>e</sup>	60.3 <sup>e</sup>
1 to <2 years	694	9.78	0.57	<0.05 <sup>e</sup>	0.2	0.8	3.2	8	14.5	19.5	24.0	41.4 <sup>e</sup>	65.5 <sup>e</sup>
2 to <3 years	718	7.74	0.40	<0.05 <sup>e</sup>	<0.05	0.4	2.7	6.5	11.5	17.2	20.5	25.2 <sup>e</sup>	48.5 <sup>e</sup>
3 to <6 years	1,351	5.83	0.30	<0.05 <sup>e</sup>	<0.05	0.2	1.7	4.3	8.4	13.5	16.4	25.1 <sup>e</sup>	47.2 <sup>e</sup>
6 to <11 years	2,161	3.19	0.12	<0.05	<0.05	<0.05	0.7	2.2	4.5	7.9	10.0	15.3	35.7 <sup>e</sup>
11 to <16 years	2,210	1.56	0.09	<0.05	<0.05	<0.05	0.1	1.0	2.2	3.7	5.2	8.5	16.4 <sup>e</sup>
16 to <21 years	1,770	1.10	0.08	<0.05 <sup>e</sup>	<0.05	<0.05	0.1	0.6	1.6	2.8	4.0	7.4 <sup>e</sup>	16.7 <sup>e</sup>
21 to <30 years	1,653	1.26	0.05	<0.05 <sup>e</sup>	<0.05	<0.05	0.1	0.7	1.9	3.2	4.4	7.2 <sup>e</sup>	12.6 <sup>e</sup>
30 to <40 years	1,895	1.24	0.05	<0.05 <sup>e</sup>	<0.05	<0.05	0.1	0.7	1.8	3.3	4.1	6.8 <sup>e</sup>	14.1 <sup>e</sup>
40 to <50 years	1,998	1.32	0.06	<0.05	<0.05	<0.05	0.1	0.8	1.9	3.4	4.3	6.7	17.4 <sup>e</sup>
50 to <60 years	1,845	1.51	0.05	<0.05 <sup>e</sup>	<0.05	<0.05	0.3	1.1	2.2	3.6	4.5	7.2 <sup>e</sup>	20.1 <sup>e</sup>
60 to <70 years	1,965	1.51	0.05	<0.05	<0.05	<0.05	0.4	1.1	2.2	3.4	4.3	8.4	15.9 <sup>e</sup>
70 to <80 years	1,448	1.61	0.05	<0.05 <sup>e</sup>	<0.05	0.1	0.5	1.3	2.4	3.4	4.6	6.6 <sup>e</sup>	10.2 <sup>e</sup>
80+ years	868	1.84	0.08	<0.05 <sup>e</sup>	<0.05	0.1	0.7	1.5	2.7	3.7	4.7	7.4 <sup>e</sup>	14.5 <sup>e</sup>
21 to <50 years	5,546	1.28	0.03	<0.05	<0.05	<0.05	0.1	0.8	1.9	3.3	4.3	6.7	17.4 <sup>e</sup>
50+ years	6,126	1.56	0.03	<0.05	<0.05	<0.05	0.4	1.2	2.3	3.5	4.5	7.2	20.1 <sup>e</sup>
Race													
Mexican American	5,009	2.72	0.09	<0.05	<0.05	<0.05	0.4	1.5	3.2	6.6	10.5	20.6	47.2 <sup>e</sup>
Non-Hispanic Black	4,498	1.62	0.05	<0.05	<0.05	<0.05	<0.05	0.8	2.0	4.0	6.4	13.9	46.3 <sup>e</sup>
Non-Hispanic White	8,904	1.94	0.06	<0.05	<0.05	<0.05	0.2	1.1	2.4	4.3	6.7	15.4	65.5 <sup>e</sup>
Other Hispanic	1,836	2.52	0.10	<0.05 <sup>e</sup>	<0.05	<0.05	0.4	1.5	3.2	5.6	9.1	19.1 <sup>e</sup>	60.3 <sup>e</sup>
Other race—including multiple	1,033	2.59	0.16	<0.05 <sup>e</sup>	<0.05	<0.05	0.4	1.5	3.6	6.4	9.1	15.8 <sup>e</sup>	33.8 <sup>e</sup>

Chapter 9—Intake of Fruits and Vegetables

**Table 9-4. Consumer-Only 2-Day Average<sup>a</sup> Intake of Total Fruits<sup>b</sup> and Total Vegetables<sup>c</sup> Based on 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>d</sup> (Continued)**

Population Group	N	Mean	SE	Percentiles									Maximum
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
Total Vegetables													
Whole population	24,279	2.87	0.04	0.1	0.4	0.7	1.3	2.2	3.6	5.6	7.4	12.7	57.2 <sup>e</sup>
Age group													
Birth to <1 month	12	1.62	0.94	<0.05 <sup>e</sup>	<0.05 <sup>e</sup>	<0.05 <sup>e</sup>	0.1 <sup>e</sup>	0.2	4.1 <sup>e</sup>	4.1 <sup>e</sup>	4.1 <sup>e</sup>	5.5 <sup>e</sup>	5.5 <sup>e</sup>
1 to <3 months	53	1.92	0.31	<0.05 <sup>e</sup>	<0.05 <sup>e</sup>	<0.05 <sup>e</sup>	0.1 <sup>e</sup>	2.0	2.9 <sup>e</sup>	3.8 <sup>e</sup>	4.6 <sup>e</sup>	10.1 <sup>e</sup>	17.2 <sup>e</sup>
3 to <6 months	182	4.91	0.43	<0.05 <sup>e</sup>	<0.05 <sup>e</sup>	0.1 <sup>e</sup>	1.2	3.3	8.4	11.2 <sup>e</sup>	12.7 <sup>e</sup>	19.4 <sup>e</sup>	22.6 <sup>e</sup>
6 to <12 months	567	7.87	0.38	<0.05 <sup>e</sup>	0.9	1.9	3.5	6.4	10.9	16.5	19.5	23.8 <sup>e</sup>	39.2 <sup>e</sup>
Birth to <1 year	814	6.72	0.26	<0.05 <sup>e</sup>	0.1	0.4	2.5	5.4	9.5	14.8	18.7	23.5 <sup>e</sup>	39.2 <sup>e</sup>
1 to <2 years	726	6.66	0.32	<0.05 <sup>e</sup>	0.7	1.1	2.8	5.3	8.8	13.5	16.3	27.8 <sup>e</sup>	29.1 <sup>e</sup>
2 to <3 years	750	5.96	0.23	0.1 <sup>e</sup>	0.7	1.2	2.7	5.0	7.9	11.4	14.0	23.3 <sup>e</sup>	37.3 <sup>e</sup>
3 to <6 years	1,416	5.31	0.23	0.1 <sup>e</sup>	0.6	1.2	2.3	4.1	6.8	10.4	13.3	23.8 <sup>e</sup>	55.2 <sup>e</sup>
6 to <11 years	2,290	3.78	0.13	0.2	0.6	0.9	1.7	3.0	4.9	7.7	9.9	14.1	37.6 <sup>e</sup>
11 to <16 years	2,550	2.40	0.08	<0.05	0.3	0.5	1.1	1.9	3.1	4.8	6.3	11.7	39.5 <sup>e</sup>
16 to <21 years	2,189	2.28	0.08	0.1	0.3	0.5	1.1	1.8	3.1	4.5	5.3	9.3	19.1 <sup>e</sup>
21 to <30 years	2,080	2.39	0.05	<0.05	0.4	0.7	1.2	2.0	3.2	4.5	5.7	8.0	17.1 <sup>e</sup>
30 to <40 years	2,282	2.64	0.08	0.1	0.4	0.7	1.3	2.1	3.4	5.3	6.7	9.4	18.4 <sup>e</sup>
40 to <50 years	2,376	2.51	0.08	<0.05	0.4	0.6	1.2	2.0	3.2	4.7	5.8	9.5	57.2 <sup>e</sup>
50 to <60 years	2,101	2.62	0.06	0.1	0.4	0.7	1.4	2.3	3.5	4.8	5.8	9.3	16.0 <sup>e</sup>
60 to <70 years	2,214	2.60	0.06	0.1	0.5	0.8	1.4	2.2	3.4	4.9	5.9	9.4	17.5 <sup>e</sup>
70 to <80 years	1,577	2.59	0.07	0.1 <sup>e</sup>	0.4	0.7	1.3	2.2	3.5	4.8	6.1	8.9 <sup>e</sup>	13.8 <sup>e</sup>
80+ years	914	2.73	0.06	<0.05 <sup>e</sup>	0.4	0.8	1.4	2.4	3.7	5.2	6.1	8.4 <sup>e</sup>	16.0 <sup>e</sup>
21 to <50 year	6,738	2.52	0.05	<0.05	0.4	0.4	1.2	2.1	3.3	4.9	6.1	9.3	57.2 <sup>e</sup>
50+ years	6,806	2.62	0.03	0.1	0.4	0.7	1.4	2.3	3.5	4.8	6.0	9.1	17.5 <sup>e</sup>
Race													
Mexican American	5,629	3.08	0.05	0.1	0.5	0.7	1.3	2.4	3.9	6.3	8.4	14.1	39.2 <sup>e</sup>
Non-Hispanic Black	5,272	2.36	0.05	<0.05	0.2	0.5	0.9	1.7	3.0	4.8	6.6	12.0	28.8 <sup>e</sup>
Non-Hispanic White	10,183	2.89	0.05	0.1	0.4	0.7	1.4	2.3	3.7	5.5	7.1	12.1	57.2 <sup>e</sup>
Other Hispanic	2,046	2.89	0.09	0.1	0.3	0.6	1.2	2.1	3.7	6.0	7.9	14.2	37.6 <sup>e</sup>
Other race—including multiple	1,149	3.39	0.14	0.2 <sup>e</sup>	0.5	0.7	1.6	2.6	4.4	6.5	8.7	14.0 <sup>e</sup>	35.1 <sup>e</sup>
<sup>a</sup>	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.												

**Table 9-4. Consumer-Only 2-Day Average<sup>a</sup> Intake of Total Fruits<sup>b</sup> and Total Vegetables<sup>c</sup> Based on 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>d</sup> (Continued)**

b	Total fruits includes: acerola; apple, dried; apple, dried-baby food; apple, fruit with peel; apple, peeled fruit; apple, peeled fruit-baby food; apple, sauce; apple, sauce-baby food; apricot; apricot, dried; apricot-baby food; avocado; banana; banana, dried; banana, dried-baby food; banana-baby food; blackberry; blueberry; blueberry-baby food; boysenberry; breadfruit; canistel; cherimoya; cherry; cherry-baby food; citrus hybrids; crabapple; cranberry; cranberry, dried; cranberry-baby food; currant; currant, dried; date; dragon fruit; eggplant; elderberry; feijoa; fig; fig, dried; gooseberry; grape; grape, raisin; guava; guava-baby food; huckleberry; jackfruit; kiwifruit, fuzzy; kumquat; lemon; lemon, peel; lime; loganberry; longan; loquat; lychee; lychee, dried; mamey apple; mango; mango, dried; mango-baby food; nectarine; orange; orange, peel; papaya; papaya, dried; papaya-baby food; passionfruit; passionfruit-baby food; pawpaw; peach; peach, dried; peach, dried-baby food; peach-baby food; pear; pear, dried; pear-baby food; persimmon; pineapple; pineapple, dried; pineapple-baby food; plantain; plantain, dried; plum; plum, prune, dried; plum, prune, dried-baby food; plum, prune, fresh; plum, prune, fresh-baby food; plum-baby food; pomegranate; prickly pear fruit; pummelo; quince; raspberry; raspberry-baby food; sapote, mamey; soursoy; Spanish lime; starfruit; strawberry; strawberry-baby food; sugar apple; tamarind; tangerine.
c	Total vegetables includes: alfalfa, seed; amaranth, leafy; arrowroot, flour; arrowroot, flour-baby food; artichoke, globe; artichoke, Jerusalem; arugula; asparagus; balsam pear; bamboo, shoots; basil, dried leaves; basil, dried leaves-baby food; basil, fresh leaves; basil, fresh leaves-baby food; bean, cowpea, succulent; bean, kidney, seed; bean, lima, seed; bean, lima, succulent; bean, mung, seed; bean, navy, seed; bean, pink, seed; bean, pinto, seed; bean, snap, succulent; bean, snap, succulent-baby food; beet, garden, roots; beet, garden, roots-baby food; beet, garden, tops; belgium endive; broccoli; broccoli raab; broccoli, Chinese; broccoli-baby food; brussels sprouts; cabbage; cabbage, Chinese, bok choy; cabbage, Chinese, mustard; cabbage, Chinese, napa; cactus; cantaloupe; cardoon; carrot; carrot-baby food; cassava; cassava-baby food; cauliflower; celeriac; celery; celery-baby food; celtuce; chayote, fruit; chickpea, flour; chickpea, seed; chickpea, seed-baby food; chicory, roots; chicory, tops; Chinese waxgourd; chive, fresh leaves; chrysanthemum, garland; cilantro, leaves; cilantro, leaves-baby food; cinnamon; cinnamon-baby food; coriander, seed; coriander, seed-baby food; dandelion, leaves; dasheen, corm; dasheen, leaves; dill, seed; dillweed; fennel, Florence; garlic, bulb; garlic, bulb-baby food; ginger; ginger, dried; ginger-baby food; ginseng, dried; grape, leaves; guar, seed; guar, seed-baby food; herbs, other; herbs, other-baby food; kale; kohlrabi; leek; lemongrass; lettuce, head; lettuce, leaf; marjoram; marjoram-baby food; okra; onion, bulb; onion, bulb, dried; onion, bulb, dried-baby food; onion, bulb-baby food; onion, green; palm heart, leaves; parsley, dried leaves; parsley, dried leaves-baby food; parsley, leaves; parsley, turnip rooted; parsnip; parsnip-baby food; pea, dry; pea, dry-baby food; pea, edible podded, succulent; pea, pigeon, seed; pea, pigeon, succulent; pea, succulent; pea, succulent-baby food; pepper, bell; pepper, bell, dried; pepper, bell, dried-baby food; pepper, bell-baby food; pepper, black and white; pepper, black and white-baby food; pepper, nonbell; pepper, nonbell, dried; pepper, nonbell-baby food; peppermint; potato, chips; potato, dry (granules/flakes); potato, dry (granules/flakes)-baby food; potato, flour; potato, flour-baby food; potato, tuber, without peel; potato, tuber, without peel-baby food; potato, tuber, with peel; potato, tuber, with peel-baby food; pumpkin; radicchio; radish, oriental, roots; radish, oriental, tops; radish, roots; radish, tops; rape greens; rhubarb; rutabaga; salsify, roots; salsify, tops; savory; seaweed; seaweed-baby food; shallot, bulb; soybean, flour; soybean, flour-baby food; soybean, seed; spices, other; spices, other-baby food; squash, summer; squash, summer-baby food; squash, winter; squash, winter-baby food; sweet potato; sweet potato-baby food; Swiss chard; tanager, corm; tomatillo; tomato; tomato, dried; tomato, dried-baby food; tomato, paste; tomato, paste-baby food; tomato, puree; tomato, puree-baby food; tomato-baby food; tree tomato; turmeric; turnip, greens; turnip, roots; water chestnut; watercress; watermelon; yam bean; yam, true.
d	For more information on the recipes used to convert the foods people reported eating to the quantities of agricultural commodities eaten, refer to the Frequently Asked Questions at <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .
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).

HNIS = Human Nutrition Information Service.

N = Sample size.

SE = Standard error.

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



Chapter 9—Intake of Fruits and Vegetables

**Table 9-5. Per Capita 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup>**

Population Group	N	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
		Apples <sup>c</sup>			Asparagus <sup>d</sup>			Bananas <sup>e</sup>			Beans <sup>f</sup>		
Whole population	24,673	35	0.48	0.02	2	0.01	<0.005	57	0.39	0.01	45	0.23	<0.005
<b>Age group</b>													
Birth to <1 month	87	0	0	0	0	0	0	0	0	0	0	0	0
1 to <3 months	233	3	0.18	0.08	0	0	0	4	0.08	0.03	<0.5	<0.005	<0.005
3 to <6 months	282	30	1.96	0.43	0	0	0	31	1.26	0.17	15	0.25	0.04
6 to <12 months	588	62	3.45	0.21	1	<0.005	<0.005	75	2.71	0.22	46	0.92	0.13
Birth to <1 year	1,190	39	2.23	0.15	1	<0.005	<0.005	46	1.68	0.12	27	0.53	0.07
1 to <2 years	728	56	2.53	0.25	2	0.02	0.01	77	2.52	0.35	49	0.79	0.08
2 to <3 years	751	50	1.96	0.17	1	0.05	0.03	81	1.83	0.13	48	0.69	0.08
3 to <6 years	1,418	45	1.57	0.14	1	<0.005	<0.005	76	1.1	0.10	45	0.58	0.05
6 to <11 years	2,292	41	0.93	0.06	1	0.01	<0.005	73	0.48	0.03	38	0.28	0.02
11 to <16 years	2,551	32	0.46	0.05	1	0.01	<0.005	56	0.18	0.02	33	0.16	0.01
16 to <21 years	2,191	26	0.29	0.04	<0.5	<0.005	<0.005	49	0.17	0.02	33	0.13	0.01
21 to <30 years	2,082	27	0.25	0.03	1	0.01	<0.005	47	0.22	0.02	42	0.16	0.01
30 to <40 years	2,282	29	0.24	0.02	2	0.02	0.01	51	0.22	0.01	49	0.19	0.01
40 to <50 years	2,378	31	0.26	0.02	1	0.01	<0.005	51	0.25	0.02	49	0.21	0.01
50 to <60 years	2,103	39	0.34	0.03	3	0.03	0.01	59	0.32	0.02	47	0.21	0.01
60 to <70 years	2,214	38	0.30	0.02	4	0.02	<0.005	60	0.33	0.02	51	0.23	0.01
70 to <80 years	1,578	42	0.35	0.03	4	0.03	<0.005	63	0.36	0.02	51	0.21	0.01
80+ years	915	44	0.32	0.02	5	0.03	0.01	72	0.47	0.03	50	0.24	0.02
21 to <50 years	6,742	29	0.25	0.01	2	0.01	<0.005	50	0.23	0.01	47	0.19	0.01
50+ years	6,810	39	0.33	0.02	4	0.03	<0.005	61	0.35	0.01	49	0.22	0.01
<b>Race</b>													
Mexican American	5,787	36	0.67	0.03	1	<0.005	<0.005	57	0.58	0.03	57	0.29	0.01
Non-Hispanic Black	5,337	28	0.40	0.03	1	<0.005	<0.005	55	0.25	0.01	42	0.25	0.01
Non-Hispanic White	10,294	36	0.45	0.03	3	0.02	<0.005	57	0.37	0.01	42	0.22	0.01
Other Hispanic	2,082	33	0.57	0.05	1	<0.005	<0.005	59	0.50	0.04	55	0.27	0.02
Other race— including multiple	1,173	36	0.51	0.04	2	0.02	0.01	61	0.48	0.04	51	0.24	0.02

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-5. Per Capita 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
			Beets <sup>g</sup>			Berries and Small Fruit <sup>h</sup>			Broccoli <sup>i</sup>			Bulb Vegetables <sup>j</sup>	
Whole population	24,673	3	0.01	<0.005	69	0.35	0.02	15	0.10	<0.005	96	0.19	<0.005
Age group													
Birth to <1 month	87	0	0	0	0	0	0	0	0	0	0	0	0
1 to <3 months	233	0	0	0	1	<0.005	<0.005	0	0	0	<0.5	<0.005	<0.005
3 to <6 months	282	1	<0.005	<0.005	7	0.03	0.01	1	0.01	0.01	10	0.01	<0.005
6 to <12 months	588	7	<0.005	<0.005	42	0.53	0.11	12	0.15	0.03	63	0.15	0.02
Birth to <1 year	1,190	4	<0.005	<0.005	23	0.28	0.06	6	0.08	0.02	35	0.08	0.01
1 to <2 years	728	3	<0.005	<0.005	83	1.58	0.17	19	0.34	0.07	94	0.27	0.02
2 to <3 years	751	3	<0.005	<0.005	85	1.74	0.20	15	0.27	0.05	96	0.29	0.02
3 to <6 years	1,418	1	0.01	<0.005	86	1.20	0.09	16	0.19	0.03	96	0.28	0.02
6 to <11 years	2,292	1	0.01	<0.005	84	0.73	0.06	11	0.13	0.02	97	0.20	0.01
11 to <16 years	2,551	<0.5	<0.005	<0.005	70	0.30	0.03	11	0.07	0.01	98	0.15	0.01
16 to <21 years	2,191	1	<0.005	<0.005	62	0.16	0.02	10	0.06	0.01	97	0.17	0.01
21 to <30 years	2,082	2	<0.005	<0.005	59	0.18	0.02	14	0.07	0.01	98	0.18	0.01
30 to <40 years	2,282	3	<0.005	<0.005	64	0.20	0.01	17	0.09	0.01	98	0.22	0.01
40 to <50 years	2,378	3	0.01	<0.005	65	0.23	0.02	17	0.09	0.01	98	0.19	0.01
50 to <60 years	2,103	4	0.01	<0.005	71	0.29	0.02	16	0.1	0.01	98	0.18	0.01
60 to <70 years	2,214	6	0.01	<0.005	72	0.27	0.02	17	0.09	0.01	97	0.17	0.01
70 to <80 years	1,578	5	0.01	<0.005	77	0.29	0.02	15	0.07	0.01	96	0.16	0.01
80+ years	915	6	0.01	<0.005	81	0.32	0.03	16	0.09	0.01	94	0.14	0.01
21 to <50 years	6,742	3	<0.005	<0.005	63	0.20	0.01	16	0.08	0.01	98	0.20	0.01
50+ years	6,810	5	0.01	<0.005	73	0.29	0.01	16	0.09	0.01	97	0.17	0.01
Race													
Mexican American	5,787	1	<0.005	<0.005	59	0.23	0.02	14	0.08	0.01	96	0.26	0.01
Non-Hispanic Black	5,337	1	<0.005	<0.005	65	0.20	0.01	13	0.09	0.01	95	0.14	<0.005
Non-Hispanic White	10,294	4	0.01	<0.005	71	0.39	0.02	15	0.10	0.01	97	0.18	0.01
Other Hispanic	2,082	3	0.01	<0.005	66	0.34	0.03	13	0.07	0.01	95	0.20	0.01
Other race— including multiple	1,173	2	<0.005	<0.005	66	0.40	0.05	18	0.14	0.02	97	0.29	0.02

Chapter 9—Intake of Fruits and Vegetables

**Table 9-5. Per Capita 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
		Cabbage <sup>k</sup>			Carrots <sup>l</sup>			Citrus Fruits <sup>m</sup>			Corn <sup>n</sup>		
Whole population	24,673	12	0.05	<0.005	46	0.15	<0.005	22	0.18	0.01	96	0.42	0.01
Age group													
Birth to <1 month	87	0	0	0	0	0	0	0	0	0	11	0.42	0.20
1 to <3 months	233	0	0	0	0	0	0	0	0	0	7	0.23	0.09
3 to <6 months	282	0	0	0	3	0.03	0.01	2	<0.005	<0.005	33	0.41	0.10
6 to <12 months	588	3	0.05	0.02	27	0.27	0.05	7	0.15	0.05	83	0.60	0.05
Birth to <1 year	1,190	2	0.02	0.01	15	0.14	0.03	4	0.08	0.03	52	0.47	0.06
1 to <2 years	728	7	0.05	0.02	55	0.47	0.05	23	0.70	0.09	97	0.99	0.07
2 to <3 years	751	7	0.06	0.02	48	0.43	0.06	26	0.68	0.08	99	1.19	0.06
3 to <6 years	1,418	5	0.03	0.01	44	0.38	0.04	23	0.60	0.07	100	1.15	0.05
6 to <11 years	2,292	6	0.05	0.01	43	0.24	0.02	20	0.31	0.04	100	0.91	0.04
11 to <16 years	2,551	6	0.03	0.01	35	0.11	0.01	16	0.12	0.02	97	0.46	0.02
16 to <21 years	2,191	8	0.03	0.01	35	0.08	0.01	14	0.08	0.01	97	0.35	0.02
21 to <30 years	2,082	11	0.03	0.01	45	0.10	0.01	16	0.09	0.01	95	0.33	0.01
30 to <40 years	2,282	13	0.05	<0.005	47	0.12	0.01	22	0.13	0.02	96	0.32	0.01
40 to <50 years	2,378	13	0.05	0.01	47	0.12	0.01	24	0.13	0.01	95	0.32	0.01
50 to <60 years	2,103	16	0.06	0.01	52	0.13	0.01	27	0.15	0.02	95	0.30	0.02
60 to <70 years	2,214	19	0.08	0.01	54	0.14	0.01	24	0.15	0.02	97	0.29	0.02
70 to <80 years	1,578	18	0.10	0.01	57	0.14	0.01	29	0.18	0.02	96	0.26	0.02
80+ years	915	19	0.08	0.01	57	0.15	0.01	31	0.25	0.03	96	0.25	0.01
21 to <50 years	6,742	12	0.04	<0.005	46	0.11	0.01	21	0.12	0.01	95	0.32	0.01
50+ years	6,810	18	0.07	<0.005	54	0.13	0.01	27	0.16	0.01	96	0.28	0.01
Race													
Mexican American	5,787	11	0.04	<0.005	45	0.16	0.01	25	0.37	0.03	97	0.77	0.02
Non-Hispanic Black	5,337	12	0.06	0.01	37	0.08	<0.005	17	0.19	0.02	95	0.44	0.02
Non-Hispanic White	10,294	12	0.05	<0.005	48	0.15	0.01	22	0.13	0.01	96	0.37	0.01
Other Hispanic	2,082	10	0.03	<0.005	46	0.14	0.01	22	0.24	0.02	94	0.42	0.03
Other race— including multiple	1,173	18	0.12	0.01	52	0.21	0.02	24	0.29	0.05	92	0.36	0.03

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-5. Per Capita 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
		Cucumbers <sup>o</sup>			Cucurbits <sup>p</sup>			Fruiting Vegetables <sup>q</sup>			Leafy Vegetables <sup>r</sup>		
Whole population	24,673	37	0.09	<0.005	47	0.34	0.02	95	0.79	0.02	91	0.53	0.01
<b>Age group</b>													
Birth to <1 month	87	0	0	0	0	0	0	0	0	0	3	<0.005	<0.005
1 to <3 months	233	0	0	0	<0.5	0.01	0.01	<0.5	<0.005	<0.005	6	0.01	<0.005
3 to <6 months	282	<0.5	<0.005	<0.005	13	0.38	0.08	5	0.03	0.01	18	0.05	0.02
6 to <12 months	588	7	0.05	0.02	35	1.30	0.24	52	0.64	0.08	63	0.37	0.06
Birth to <1 year	1,190	4	0.02	0.01	21	0.75	0.13	28	0.33	0.04	38	0.20	0.03
1 to <2 years	728	16	0.09	0.02	33	1.09	0.22	91	1.37	0.08	83	0.64	0.08
2 to <3 years	751	25	0.19	0.04	37	0.86	0.15	94	1.52	0.09	87	0.73	0.07
3 to <6 years	1,418	24	0.18	0.03	36	0.77	0.11	96	1.53	0.12	88	0.57	0.05
6 to <11 years	2,292	29	0.13	0.01	40	0.62	0.10	96	1.08	0.05	89	0.48	0.03
11 to <16 years	2,551	28	0.07	0.02	34	0.30	0.05	97	0.75	0.03	88	0.35	0.02
16 to <21 years	2,191	35	0.06	0.01	41	0.21	0.03	95	0.73	0.04	91	0.39	0.02
21 to <30 years	2,082	39	0.07	0.01	46	0.16	0.02	97	0.77	0.03	93	0.47	0.02
30 to <40 years	2,282	39	0.08	0.01	49	0.25	0.03	97	0.83	0.04	94	0.54	0.03
40 to <50 years	2,378	42	0.09	0.01	53	0.30	0.03	96	0.7	0.03	94	0.56	0.03
50 to <60 years	2,103	45	0.08	0.01	57	0.31	0.03	96	0.65	0.03	95	0.62	0.03
60 to <70 years	2,214	44	0.10	0.02	54	0.32	0.03	96	0.67	0.03	94	0.60	0.03
70 to <80 years	1,578	42	0.07	0.01	54	0.31	0.03	95	0.61	0.03	94	0.59	0.03
80+ years	915	36	0.06	0.01	50	0.33	0.03	92	0.54	0.02	92	0.57	0.03
21 to <50 years	6,742	40	0.08	<0.005	49	0.24	0.02	97	0.77	0.02	94	0.52	0.02
50+ years	6,810	43	0.08	0.01	55	0.32	0.02	95	0.64	0.02	94	0.60	0.01
<b>Race</b>													
Mexican American	5,787	27	0.06	0.01	42	0.31	0.03	95	1.02	0.03	89	0.39	0.02
Non-Hispanic Black	5,337	34	0.06	<0.005	41	0.19	0.02	93	0.61	0.02	90	0.45	0.02
Non-Hispanic White	10,294	40	0.1	0.01	50	0.37	0.03	96	0.78	0.02	92	0.55	0.02
Other Hispanic	2,082	31	0.08	0.01	42	0.27	0.03	92	0.90	0.04	88	0.46	0.02
Other race— including multiple	1,173	34	0.08	0.01	47	0.47	0.09	93	0.79	0.03	92	0.71	0.05

Chapter 9—Intake of Fruits and Vegetables

**Table 9-5. Per Capita 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
		Legumes <sup>s</sup>			Lettuce <sup>t</sup>			Onions <sup>u</sup>			Peaches <sup>v</sup>		
Whole population	24,673	84	0.44	0.02	52	0.22	0.01	96	0.18	<0.005	51	0.11	0.01
<b>Age group</b>													
Birth to <1 month	87	0	0	0	0	0	0	0	0	0	0	0	0
1 to <3 months	233	1	0.05	0.03	0	0	0	<0.5	<0.005	<0.005	1	<0.005	<0.005
3 to <6 months	282	27	0.73	0.13	<0.5	<0.005	<0.005	10	0.01	<0.005	14	0.44	0.11
6 to <12 months	588	77	2.09	0.22	4	0.01	<0.005	63	0.14	0.01	43	0.99	0.15
Birth to <1 year	1,190	45	1.24	0.13	2	0.01	<0.005	34	0.07	0.01	25	0.60	0.08
1 to <2 years	728	84	2.77	0.72	15	0.08	0.01	94	0.26	0.02	73	0.74	0.10
2 to <3 years	751	88	1.32	0.20	26	0.14	0.02	95	0.28	0.02	71	0.44	0.09
3 to <6 years	1,418	87	1.09	0.14	29	0.18	0.02	96	0.27	0.02	71	0.33	0.06
6 to <11 years	2,292	88	0.53	0.05	35	0.17	0.01	97	0.19	0.01	71	0.17	0.02
11 to <16 years	2,551	84	0.23	0.02	41	0.16	0.01	97	0.14	0.01	53	0.07	0.01
16 to <21 years	2,191	79	0.22	0.02	55	0.22	0.02	96	0.16	0.01	44	0.04	0.01
21 to <30 years	2,082	84	0.32	0.03	58	0.24	0.01	97	0.18	0.01	42	0.04	0.01
30 to <40 years	2,282	87	0.38	0.03	61	0.24	0.02	97	0.21	0.01	45	0.05	0.01
40 to <50 years	2,378	85	0.34	0.02	56	0.25	0.02	98	0.18	0.01	46	0.07	0.01
50 to <60 years	2,103	86	0.36	0.02	60	0.26	0.01	97	0.17	0.01	50	0.07	0.01
60 to <70 years	2,214	86	0.39	0.02	58	0.24	0.01	97	0.17	0.01	52	0.10	0.01
70 to <80 years	1,578	84	0.36	0.02	52	0.22	0.02	96	0.15	0.01	57	0.13	0.02
80+ years	915	80	0.42	0.03	48	0.20	0.01	94	0.14	0.01	62	0.20	0.02
21 to <50 years	6,742	85	0.35	0.02	58	0.24	0.01	97	0.19	0.01	44	0.06	0.01
50+ years	6,810	85	0.37	0.01	57	0.24	0.01	97	0.16	0.01	53	0.10	0.01
<b>Race</b>													
Mexican American	5,787	85	0.43	0.03	50	0.18	0.01	96	0.25	0.01	44	0.11	0.01
Non-Hispanic Black	5,337	84	0.41	0.02	45	0.14	0.01	94	0.13	<0.005	52	0.10	0.01
Non-Hispanic White	10,294	84	0.41	0.02	54	0.24	0.01	96	0.17	0.01	52	0.11	0.01
Other Hispanic	2,082	85	0.56	0.08	52	0.23	0.01	94	0.20	0.01	50	0.11	0.01
Other race— including multiple	1,173	89	0.73	0.07	43	0.16	0.01	97	0.28	0.02	48	0.12	0.02

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-5. Per Capita 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
			Pears <sup>w</sup>			Peas <sup>x</sup>			Pome Fruit <sup>y</sup>			Pumpkins <sup>z</sup>	
Whole population	24,673	10	0.1	0.01	20	0.08	<0.005	39	0.57	0.02	2	0.01	<0.005
Age group													
Birth to <1 month	87	0	0	0	0	0	0	0	0	0	0	0	0
1 to <3 months	233	2	0.05	0.04	1	0.05	0.03	5	0.23	0.08	0	0	0
3 to <6 months	282	16	0.61	0.12	21	0.48	0.11	38	2.57	0.47	<0.5	<0.005	<0.005
6 to <12 months	588	31	1.07	0.18	46	0.82	0.10	70	4.52	0.31	1	0.09	0.05
Birth to <1 year	1,190	20	0.69	0.10	28	0.53	0.06	45	2.92	0.18	1	0.05	0.03
1 to <2 years	728	32	0.72	0.13	30	0.29	0.04	67	3.25	0.30	1	0.02	0.01
2 to <3 years	751	24	0.40	0.06	23	0.18	0.02	60	2.36	0.20	1	0.01	0.01
3 to <6 years	1,418	22	0.37	0.06	17	0.14	0.02	56	1.94	0.17	1	0.01	<0.005
6 to <11 years	2,292	19	0.17	0.02	15	0.09	0.01	52	1.10	0.07	2	0.01	<0.005
11 to <16 years	2,551	11	0.06	0.01	12	0.04	0.01	38	0.52	0.05	2	<0.005	<0.005
16 to <21 years	2,191	5	0.02	<0.005	13	0.04	<0.005	29	0.32	0.04	2	<0.005	<0.005
21 to <30 years	2,082	7	0.05	0.01	17	0.05	0.01	30	0.30	0.03	2	<0.005	<0.005
30 to <40 years	2,282	6	0.03	0.01	22	0.05	<0.005	32	0.28	0.02	3	0.01	<0.005
40 to <50 years	2,378	6	0.04	0.01	19	0.05	0.01	34	0.31	0.03	2	<0.005	<0.005
50 to <60 years	2,103	8	0.05	0.01	23	0.07	0.01	43	0.39	0.03	2	<0.005	<0.005
60 to <70 years	2,214	10	0.09	0.01	24	0.07	0.01	43	0.38	0.03	3	0.01	<0.005
70 to <80 years	1,578	11	0.07	0.01	29	0.08	0.01	46	0.42	0.03	3	0.01	<0.005
80+ years	915	15	0.09	0.02	31	0.10	0.01	51	0.41	0.03	2	0.01	<0.005
21 to <50 years	6,742	6	0.04	0.01	19	0.05	<0.005	32	0.30	0.02	2	0.01	<0.005
50+ years	6,810	10	0.07	0.01	25	0.07	<0.005	44	0.40	0.02	2	<0.005	<0.005
Race													
Mexican American	5,787	10	0.14	0.01	15	0.05	0.01	41	0.81	0.04	5	0.02	<0.005
Non-Hispanic Black	5,337	10	0.08	0.01	19	0.07	0.01	34	0.49	0.03	1	<0.005	<0.005
Non-Hispanic White	10,294	9	0.09	0.01	20	0.08	<0.005	40	0.54	0.03	2	<0.005	<0.005
Other Hispanic	2,082	9	0.10	0.01	22	0.07	0.01	36	0.67	0.05	2	0.01	<0.005
Other race— including multiple	1,173	12	0.17	0.03	30	0.12	0.01	42	0.68	0.05	2	0.01	0.01

Chapter 9—Intake of Fruits and Vegetables

**Table 9-5. Per Capita 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
		Root Tuber Vegetables <sup>aa</sup>			Stalk/Stem vegetables <sup>bb</sup>			Stone Fruit <sup>cc</sup>			Strawberries <sup>dd</sup>		
Whole population	24,673	99	1.09	0.02	21	0.05	<0.005	54	0.17	0.01	41	0.12	0.01
<b>Age group</b>													
Birth to <1 month	87	21	0.23	0.19	0	0	0	0	0	0	0	0	0
1 to <3 months	233	18	0.27	0.07	0	0	0	1	0.01	0.01	1	<0.005	<0.005
3 to <6 months	282	60	1.97	0.31	<0.5	<0.005	<0.005	16	0.49	0.12	5	<0.005	<0.005
6 to <12 months	588	94	3.73	0.26	4	0.01	<0.005	47	1.18	0.16	24	0.16	0.05
Birth to <1 year	1,190	66	2.41	0.15	2	0.01	<0.005	28	0.71	0.09	14	0.08	0.03
1 to <2 years	728	100	2.89	0.17	13	0.07	0.02	75	0.91	0.09	54	0.34	0.06
2 to <3 years	751	100	2.64	0.09	14	0.11	0.03	75	0.57	0.10	54	0.56	0.12
3 to <6 years	1,418	100	2.36	0.09	11	0.06	0.01	74	0.47	0.06	53	0.36	0.06
6 to <11 years	2,292	100	1.78	0.05	12	0.03	<0.005	73	0.25	0.02	51	0.22	0.04
11 to <16 years	2,551	100	1.06	0.04	12	0.03	<0.005	56	0.12	0.02	43	0.14	0.03
16 to <21 years	2,191	100	0.92	0.03	16	0.03	<0.005	45	0.06	0.01	32	0.06	0.01
21 to <30 years	2,082	100	0.88	0.03	25	0.06	0.01	45	0.07	0.01	35	0.08	0.01
30 to <40 years	2,282	100	0.86	0.02	28	0.06	0.01	47	0.09	0.01	36	0.07	0.01
40 to <50 years	2,378	100	0.86	0.02	22	0.04	<0.005	48	0.12	0.02	37	0.08	0.01
50 to <60 years	2,103	100	0.89	0.02	26	0.07	0.01	54	0.13	0.01	43	0.11	0.01
60 to <70 years	2,214	100	0.85	0.03	28	0.05	<0.005	57	0.17	0.02	45	0.09	0.01
70 to <80 years	1,578	100	0.92	0.03	20	0.05	0.01	62	0.21	0.02	49	0.11	0.02
80+ years	915	100	1.09	0.05	20	0.05	0.01	67	0.28	0.02	54	0.11	0.01
21 to <50 years	6,742	100	0.86	0.02	25	0.05	<0.005	47	0.10	0.01	36	0.07	0.01
50+ years	6,810	100	0.90	0.02	25	0.06	<0.005	58	0.17	0.01	46	0.10	0.01
<b>Race</b>													
Mexican American	5,787	99	1.08	0.03	14	0.03	<0.005	47	0.15	0.01	32	0.08	0.01
Non-Hispanic Black	5,337	99	1.05	0.02	13	0.02	<0.005	54	0.13	0.01	29	0.05	0.01
Non-Hispanic White	10,294	100	1.10	0.02	24	0.06	<0.005	55	0.18	0.01	45	0.14	0.02
Other Hispanic	2,082	99	1.08	0.05	15	0.03	<0.005	52	0.17	0.02	37	0.12	0.02
Other race— including multiple	1,173	99	1.19	0.05	30	0.09	0.01	51	0.17	0.03	38	0.13	0.02

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-5. Per Capita 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
		Tomatoes <sup>ee</sup>			Tropical Fruits <sup>ff</sup>			White Potatoes <sup>gg</sup>					
Whole population	24,673	87	0.71	0.01	66	0.48	0.01	90	0.61	0.01			
Age group													
Birth to <1 month	87	0	0	0	0	0	0	10	<0.005	<0.005			
1 to <3 months	233	<0.5	<0.005	<0.005	4	0.08	0.03	6	<0.005	<0.005			
3 to <6 months	282	4	0.03	0.01	32	1.29	0.17	28	0.19	0.08			
6 to <12 months	588	46	0.62	0.08	78	2.94	0.23	69	0.92	0.11			
Birth to <1 year	1,190	24	0.32	0.04	47	1.80	0.13	43	0.51	0.06			
1 to <2 years	728	79	1.31	0.07	83	2.90	0.36	92	1.47	0.13			
2 to <3 years	751	85	1.43	0.08	86	2.12	0.15	92	1.41	0.07			
3 to <6 years	1,418	87	1.45	0.12	82	1.37	0.12	93	1.20	0.07			
6 to <11 years	2,292	88	1.02	0.05	80	0.65	0.03	92	0.91	0.05			
11 to <16 years	2,551	91	0.71	0.03	65	0.28	0.03	92	0.61	0.03			
16 to <21 years	2,191	90	0.65	0.03	58	0.23	0.02	89	0.57	0.02			
21 to <30 years	2,082	92	0.69	0.02	59	0.31	0.02	91	0.55	0.03			
30 to <40 years	2,282	91	0.72	0.03	62	0.30	0.02	91	0.50	0.02			
40 to <50 years	2,378	88	0.61	0.03	60	0.31	0.02	89	0.49	0.02			
50 to <60 years	2,103	87	0.57	0.03	67	0.38	0.02	91	0.52	0.02			
60 to <70 years	2,214	86	0.59	0.03	69	0.40	0.03	92	0.49	0.03			
70 to <80 years	1,578	84	0.56	0.02	71	0.43	0.02	93	0.54	0.03			
80+ years	915	77	0.51	0.02	79	0.56	0.03	92	0.67	0.05			
21 to <50 years	6,742	90	0.67	0.02	69	0.31	0.01	90	0.51	0.01			
50+ years	6,810	85	0.57	0.02	69	0.41	0.01	92	0.53	0.02			
Race													
Mexican American	5,787	91	0.89	0.02	68	0.75	0.04	85	0.58	0.02			
Non-Hispanic Black	5,337	83	0.57	0.02	64	0.34	0.02	90	0.61	0.02			
Non-Hispanic White	10,294	88	0.70	0.02	65	0.43	0.02	92	0.61	0.02			
Other Hispanic	2,082	86	0.84	0.03	71	0.72	0.03	88	0.58	0.03			
Other race— including multiple	1,173	84	0.68	0.03	72	0.69	0.06	87	0.61	0.04			

<sup>a</sup> 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/>.

<sup>b</sup> For more information on the recipes used to convert the foods people reported eating to the quantities of agricultural commodities eaten, refer to the Frequently Asked Questions at <http://fcid.foodrisk.org/>.



Chapter 9—Intake of Fruits and Vegetables

**Table 9-5. Per Capita 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

c	Apples: apple, dried; apple, dried-baby food; apple, fruit with peel; apple, peeled fruit; apple, peeled fruit-baby food; apple, sauce; apple, sauce-baby food.
d	Asparagus: asparagus.
e	Bananas: banana; banana, dried; banana, dried-baby food; banana-baby food.
f	Beans: bean, black, seed; bean, broad, seed; bean, broad, succulent; bean, cowpea, seed; bean, cowpea, succulent; bean, great northern, seed; bean, kidney, seed; bean, lima, seed; bean, lima, succulent; bean, mung, seed; bean, navy, seed; bean, pink, seed; bean, pinto, seed; bean, snap, succulent; bean, snap, succulent-baby food.
g	Beets: beet, garden, roots; beet, garden, roots-baby food; beet, garden, tops.
h	Berries and small fruits: blackberry; blueberry; blueberry-baby food; boysenberry; cranberry; cranberry, dried; cranberry-baby food; currant; currant, dried; elderberry; gooseberry; grape; grape, leaves; grape, raisin; huckleberry; kiwifruit, fuzzy; loganberry; mulberry; raspberry; raspberry-baby food; strawberry; strawberry-baby food.
i	Broccoli: broccoli; broccoli-baby food.
j	Bulb vegetables: chive, fresh leaves; garlic, bulb; garlic, bulb-baby food; leek; onion, bulb; onion, bulb, dried; onion, bulb, dried-baby food; onion, bulb-baby food; onion, green; shallot, bulb.
k	Cabbage: cabbage; cabbage, Chinese, mustard; cabbage, Chinese, napa.
l	Carrots: carrot.
m	Citrus fruits: citron; citrus hybrids; grapefruit; kumquat; lemon; lemon, peel; lime; orange; orange, peel; pummelo; tangerine.
n	Corn: corn, field, bran; corn, field, flour; corn, field, flour-baby food; corn, field, meal; corn, field, meal-baby food; corn, field, starch; corn, field, starch-baby food; corn, pop; corn, sweet; corn, sweet-baby food.
o	Cucumbers: cucumber.
p	Cucurbit vegetables: balsam pear; cantaloupe; chayote, fruit; Chinese waxgourd; cucumber; honeydew melon; pumpkin; pumpkin, seed; squash, summer; squash, summer-baby food; squash, winter; squash, winter-baby food; watermelon.
q	Fruiting vegetables: eggplant; okra; pepper, bell; pepper, bell, dried-baby food; pepper, bell-baby food; pepper, nonbell; pepper, nonbell, dried; pepper, nonbell-baby food; tomatillo; tomato; tomato, dried; tomato, dried-baby food; tomato, paste; tomato, paste-baby food; tomato, puree; tomato, puree-baby food; tomato-baby food.
r	Leafy vegetables (brassica and nonbrassica): amaranth, leafy; arugula; beet, garden, tops; belgium endive; broccoli; broccoli raab; broccoli, Chinese; broccoli-baby food; brussels sprouts; cabbage; cabbage, Chinese, bok choy; cabbage, Chinese, mustard; cabbage, Chinese, napa; cardoon; cauliflower; celery; celery-baby food; celtuce; chicory, tops; chrysanthemum, garland; collards; cress, garden; cress, upland; dandelion, leaves; dasheen, leaves; endive; fennel, florence; kale; kohlrabi; lettuce, head; lettuce, leaf; mustard greens; parsley, leaves; radicchio; radish, oriental, tops; radish, tops; rape greens; rhubarb; salsify, tops; seaweed; seaweed-baby food; spinach; spinach-baby food; Swiss chard; turnip, greens; watercress.
s	Legume vegetables: bean, black, seed; bean, broad, seed; bean, broad, succulent; bean, cowpea, seed; bean, cowpea, succulent; bean, great northern, seed; bean, kidney, seed; bean, lima, seed; bean, lima, succulent; bean, mung, seed; bean, navy, seed; bean, pink, seed; bean, pinto, seed; bean, snap, succulent; bean, snap, succulent-baby food; chickpea, flour; chickpea, seed; chickpea, seed-baby food; guar, seed; guar, seed-baby food; lentil, seed; pea, dry; pea, dry-baby food; pea, edible podded, succulent; pea, pigeon, seed; pea, pigeon, succulent; pea, succulent; pea, succulent-baby food; soybean, seed; soybean, soy milk; soybean, soy milk-baby food or infant formula.
t	Lettuce: lettuce, head; lettuce, leaf.
u	Onions: onion, bulb; onion, bulb, dried; onion, bulb, dried-baby food; onion, bulb-baby food; onion, green.
v	Peaches: peach; peach, dried; peach, dried-baby food; peach-baby food.
w	Pears: pear; pear, dried; pear-baby food.
x	Peas: pea, dry; pea, dry-baby food; pea, edible podded, succulent; pea, pigeon, seed; pea, pigeon, succulent; pea, succulent; pea, succulent-baby food.
y	Pome fruits: apple, dried; apple, dried-baby food; apple, fruit with peel; apple, peeled fruit; apple, peeled fruit-baby food; apple, sauce; apple, sauce-baby food; crabapple; loquat; pear; pear, dried; pear-baby food; quince.
z	Pumpkin: pumpkin; pumpkin, seed.

**Table 9-5. Per Capita 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

aa	Root and tuber vegetables: arrowroot, flour; arrowroot, flour-baby food; artichoke, Jerusalem; beet, garden, roots; beet, garden, roots-baby food; beet, garden, tops; beet, sugar; beet, sugar-baby food; burdock; carrot; carrot-baby food; cassava; cassava-baby food; celeriac; chicory, roots; dasheen, corm; ginger; ginger, dried; ginger-baby food; ginseng, dried; horseradish; parsley, turnip rooted; parsnip; parsnip-baby food; potato, chips; potato, dry (granules/flakes); potato, dry (granules/flakes)-baby food; potato, flour; potato, flour-baby food; potato, tuber, without peel; potato, tuber, without peel-baby food; potato, tuber, with peel; potato, tuber, with peel-baby food; radish, Oriental, roots; radish, roots; rutabaga; sweet potato; sweet potato-baby food; tanager, corm; turmeric; turnip, roots; water chestnut; yam bean; yam, true.
bb	Stalk and stem vegetable and edible fungi: artichoke, globe; asparagus; bamboo, shoots; mushroom; palm heart, leaves.
cc	Stone fruits: apricot; apricot, dried; apricot-baby food; cherry; cherry-baby food; nectarine; peach; peach, dried; peach, dried-baby food; peach-baby food; plum; plum, prune, dried; plum, prune, dried-baby food; plum, prune, fresh; plum, prune, fresh-baby food; plum-baby food.
dd	Strawberries: strawberry; strawberry-baby food.
ee	Tomatoes: tomato; tomato, dried; tomato, dried-baby food; tomato, paste; tomato, paste-baby food; tomato, puree; tomato, puree-baby food; tomato-baby food.
ff	Tropical fruits: acerola; bamboo, shoots; banana; banana, dried; banana, dried-baby food; banana-baby food; breadfruit; canistel; cherimoya; date; dragon fruit; feijoa; fig; fig, dried; guava; guava-baby food; jackfruit; longan; lychee; lychee, dried; mamey apple; mango; mango, dried; mango-baby food; papaya; papaya, dried; papaya-baby food; passionfruit; passionfruit-baby food; pawpaw; pineapple; pineapple, dried; pineapple-baby food; plantain; plantain, dried; pomegranate; prickly pear fruit; sapote, mamey; soursop; Spanish lime; starfruit; sugar apple; tamarind.
gg	White potatoes: potato, chips; potato, dry (granules/flakes); potato, dry (granules/flakes)-baby food; potato, flour; potato, flour-baby food; potato, tuber, without peel; potato, tuber, without peel-baby food; potato, tuber, with peel; potato, tuber, with peel-baby food.
N	= Sample size.
PC	= Percent consuming. 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 $\geq 99.5$ percent of the population consumed the foods during the 2-day survey period.
SE	= Standard error.
Note:	Data for fruits and vegetables for which only small percentages of the population reported consumption may be less reliable than data for fruits and vegetables with higher percentages consuming.
Source:	Based on U.S. EPA analysis of 2005–2010 NHANES using the FCID Consumption Calculator available at <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .

Chapter 9—Intake of Fruits and Vegetables

**Table 9-6. Consumer-Only 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup>**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
	Apples <sup>c</sup>			Asparagus <sup>d</sup>			Bananas <sup>e</sup>			Beans <sup>f</sup>		
Whole population	8,743	1.38	0.04	350	0.73	0.06	14,474	0.68	0.02	11,278	0.52	0.01
Age group												
Birth to <1 month	0	0	0	0	0	0	0	0	0	0	0	0
1 to <3 months	9	5.42	2.36	0	0	0	14	2.08	0.57	1	0.16	0
3 to <6 months	86	6.52	1.34	0	0	0	96	4.01	0.34	49	1.67	0.24
6 to <12 months	354	5.60	0.32	3	0.23	0.02	424	3.62	0.31	261	2.01	0.29
Birth to <1 year	449	5.75	0.35	3	0.23	0.02	534	3.65	0.26	311	1.96	0.27
1 to <2 years	372	4.53	0.36	5	1.26	0.32	547	3.27	0.46	364	1.62	0.14
2 to <3 years	365	3.89	0.28	8	3.21	1.08	585	2.26	0.15	370	1.44	0.11
3 to <6 years	656	3.48	0.21	5	0.63	0.29	1,072	1.44	0.12	644	1.29	0.10
6 to <11 years	981	2.25	0.10	18	0.78	0.21	1,648	0.66	0.03	965	0.74	0.04
11 to <16 years	808	1.43	0.07	19	0.66	0.22	1,473	0.33	0.03	900	0.49	0.03
16 to <21 years	560	1.13	0.11	10	0.66	0.12	1,122	0.35	0.03	835	0.41	0.04
21 to <30 years	562	0.93	0.06	22	0.68	0.09	1,028	0.46	0.03	959	0.38	0.02
30 to <40 years	650	0.82	0.05	39	0.88	0.20	1,163	0.42	0.03	1,149	0.38	0.02
40 to <50 years	744	0.84	0.06	30	0.52	0.08	1,243	0.49	0.04	1,200	0.42	0.02
50 to <60 years	754	0.87	0.06	47	0.85	0.15	1,176	0.55	0.03	1,069	0.44	0.02
60 to <70 years	827	0.78	0.05	57	0.50	0.05	1,283	0.55	0.03	1,225	0.45	0.02
70 to <80 years	621	0.84	0.05	49	0.64	0.06	960	0.57	0.02	818	0.42	0.02
80+ years	394	0.73	0.05	38	0.70	0.09	640	0.65	0.04	469	0.48	0.03
21 to <50 years	1,956	0.86	0.03	91	0.71	0.10	3,434	0.46	0.02	3,308	0.40	0.01
50+ years	2,596	0.83	0.03	191	0.69	0.07	4,059	0.57	0.02	3,581	0.44	0.01
Race												
Mexican American	2,157	1.87	0.08	28	0.75	0.44	3,363	1.02	0.05	3,201	0.51	0.02
Non-Hispanic Black	1,614	1.43	0.08	27	0.60	0.07	3,081	0.46	0.03	2,240	0.58	0.03
Non-Hispanic White	3,774	1.27	0.05	252	0.72	0.07	6,008	0.64	0.02	4,190	0.52	0.01
Other Hispanic	753	1.73	0.11	17	0.46	0.11	1,310	0.83	0.07	1,119	0.48	0.02
Other race—including multiple	445	1.42	0.09	26	0.97	0.13	712	0.79	0.06	528	0.47	0.03

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-6. Consumer-Only 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE
	Beets <sup>g</sup>			Berries and Small Fruit <sup>h</sup>			Broccoli <sup>i</sup>			Bulb Vegetables <sup>j</sup>		
Whole population	585	0.2	0.03	16,525	0.51	0.02	3,299	0.65	0.02	23,179	0.19	<0.005
Age group												
Birth to <1 month	0	0	0	0	0	0	0	0	0	0	0	0
1 to <3 months	0	0	0	2	<0.005	<0.005	0	0	0	2	<0.005	<0.005
3 to <6 months	4	<0.005	<0.005	15	0.38	0.11	4	1.50	0.08	42	0.11	0.01
6 to <12 months	32	0.01	<0.005	226	1.25	0.24	52	1.23	0.17	402	0.23	0.03
Birth to <1 year	36	0.01	<0.005	243	1.19	0.22	56	1.24	0.17	446	0.23	0.02
1 to <2 years	14	0.01	<0.005	565	1.92	0.20	107	1.85	0.28	690	0.28	0.02
2 to <3 years	11	0.14	0.13	622	2.04	0.23	101	1.80	0.28	725	0.31	0.02
3 to <6 years	12	0.45	0.38	1,175	1.39	0.10	202	1.21	0.11	1,368	0.29	0.02
6 to <11 years	23	0.58	0.20	1,864	0.86	0.07	263	1.21	0.13	2,246	0.21	0.01
11 to <16 years	8	0.25	0.18	1,786	0.42	0.04	265	0.68	0.06	2,483	0.15	0.01
16 to <21 years	17	0.22	0.08	1,391	0.26	0.03	216	0.55	0.05	2,129	0.17	0.01
21 to <30 years	28	0.20	0.05	1,260	0.31	0.03	275	0.49	0.06	2,029	0.19	0.01
30 to <40 years	56	0.17	0.06	1,396	0.31	0.02	368	0.51	0.05	2,232	0.22	0.01
40 to <50 years	55	0.16	0.05	1,496	0.35	0.03	395	0.55	0.05	2,309	0.19	0.01
50 to <60 years	70	0.22	0.06	1,386	0.41	0.03	312	0.59	0.05	2,033	0.18	0.01
60 to <70 years	117	0.15	0.03	1,479	0.38	0.03	354	0.50	0.03	2,123	0.18	0.01
70 to <80 years	81	0.27	0.07	1,138	0.37	0.02	240	0.49	0.04	1,508	0.16	0.01
80+ years	57	0.22	0.06	724	0.39	0.03	145	0.57	0.07	858	0.15	0.01
21 to <50 years	139	0.17	0.04	4,152	0.33	0.02	1,038	0.52	0.03	6,570	0.20	0.01
50+ years	325	0.20	0.02	4,727	0.39	0.02	1,051	0.55	0.02	6,522	0.17	0.01
Race												
Mexican American	61	0.22	0.14	3,415	0.39	0.02	683	0.59	0.05	5,407	0.27	0.01
Non-Hispanic Black	66	0.18	0.04	3,628	0.31	0.01	687	0.72	0.06	4,996	0.14	<0.005
Non-Hispanic White	372	0.20	0.03	7,318	0.55	0.02	1,458	0.63	0.03	9,741	0.18	0.01
Other Hispanic	63	0.22	0.05	1,377	0.51	0.04	278	0.56	0.04	1,939	0.22	0.01
Other race—including multiple	23	0.19	0.08	787	0.61	0.07	193	0.78	0.08	1,096	0.30	0.02

Chapter 9—Intake of Fruits and Vegetables

**Table 9-6. Consumer-Only 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
	Cabbage <sup>k</sup>			Carrots <sup>l</sup>			Citrus Fruits <sup>m</sup>			Corn <sup>n</sup>		
Whole population	2,790	0.41	0.01	10,804	0.31	0.01	5,259	0.81	0.03	23,301	0.44	0.01
Age group												
Birth to <1 month	0	0	0	0	0	0	0	0	0	7	3.92	0.90
1 to <3 months	0	0	0	0	0	0	0	0	0	17	3.44	0.62
3 to <6 months	0	0	0	18	0.96	0.29	2	0.06	0.08	88	1.25	0.21
6 to <12 months	18	1.31	0.34	191	0.97	0.14	47	2.03	0.68	491	0.72	0.06
Birth to <1 year												
1 to <2 years	18	1.31	0.34	209	0.97	0.14	49	1.84	0.63	603	0.91	0.08
2 to <3 years	47	0.75	0.25	390	0.85	0.08	169	3.07	0.39	712	1.02	0.07
3 to <6 years	44	0.89	0.22	360	0.91	0.11	184	2.58	0.27	740	1.21	0.06
6 to <11 years	91	0.66	0.12	648	0.85	0.07	325	2.64	0.22	1,409	1.15	0.05
11 to <16 years	149	0.71	0.17	1,004	0.55	0.05	520	1.53	0.12	2,276	0.92	0.04
16 to <21 years	162	0.46	0.09	878	0.31	0.02	454	0.77	0.06	2,495	0.47	0.02
21 to <30 years	170	0.34	0.06	720	0.24	0.02	337	0.58	0.07	2,107	0.37	0.02
30 to <40 years	239	0.30	0.03	901	0.23	0.02	365	0.54	0.06	2,002	0.34	0.01
40 to <50 years	320	0.38	0.02	1,049	0.25	0.02	495	0.61	0.08	2,187	0.33	0.01
50 to <60 years	333	0.35	0.04	1,102	0.25	0.02	583	0.52	0.05	2,261	0.34	0.01
60 to <70 years	317	0.39	0.03	1,013	0.24	0.01	537	0.55	0.05	1,996	0.31	0.02
70 to <80 years	441	0.42	0.03	1,144	0.25	0.01	532	0.63	0.06	2,127	0.29	0.02
80+ years	290	0.52	0.04	880	0.25	0.01	425	0.65	0.07	1,513	0.27	0.02
21 to <50 years												
50+ years	169	0.44	0.05	506	0.25	0.01	284	0.79	0.07	873	0.26	0.01
	892	0.35	0.02	3,052	0.25	0.01	1,443	0.56	0.04	6,450	0.34	0.01
	1,217	0.43	0.02	3,543	0.25	0.01	1,778	0.62	0.03	6,509	0.30	0.01
Race												
Mexican American	575	0.32	0.03	2,561	0.34	0.02	1,480	1.44	0.1	5,457	0.79	0.02
Non-Hispanic Black	626	0.52	0.04	1,950	0.22	0.01	921	1.10	0.09	5,059	0.46	0.02
Non-Hispanic White	1,187	0.38	0.02	4,766	0.32	0.01	2,105	0.61	0.03	9,797	0.38	0.01
Other Hispanic	216	0.32	0.02	954	0.30	0.02	487	1.09	0.07	1,919	0.45	0.02
Other race—including multiple	186	0.66	0.06	573	0.41	0.03	266	1.18	0.15	1,069	0.40	0.03

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-6. Consumer-Only 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
	Cucumbers <sup>o</sup>			Cucurbits <sup>p</sup>			Fruiting Vegetables <sup>q</sup>			Leafy Vegetables <sup>r</sup>		
Whole population	7,939	0.23	0.01	10,487	0.72	0.04	22,773	0.83	0.02	21,761	0.57	0.01
Age group												
Birth to <1 month	0	0	0	0	0	0	0	0	0	1	0.09	0
1 to <3 months	0	0	0	1	3.13	0	1	0.06	0	12	0.09	0.02
3 to <6 months	2	0.06	0.03	31	2.83	0.46	24	0.64	0.28	59	0.31	0.08
6 to <12 months	33	0.64	0.21	172	3.68	0.50	341	1.22	0.12	368	0.59	0.08
Birth to <1 year	35	0.62	0.21	204	3.56	0.44	366	1.19	0.12	440	0.54	0.07
1 to <2 years	105	0.59	0.14	232	3.33	0.63	667	1.50	0.08	610	0.77	0.10
2 to <3 years	147	0.77	0.14	242	2.32	0.39	710	1.62	0.09	660	0.84	0.08
3 to <6 years	320	0.76	0.13	498	2.12	0.29	1,346	1.60	0.12	1,249	0.65	0.06
6 to <11 years	620	0.44	0.04	845	1.52	0.18	2,220	1.12	0.05	2,065	0.54	0.03
11 to <16 years	701	0.27	0.06	861	0.88	0.14	2,453	0.78	0.03	2,264	0.40	0.03
16 to <21 years	756	0.18	0.02	875	0.50	0.08	2,106	0.76	0.04	1,977	0.43	0.02
21 to <30 years	797	0.17	0.01	962	0.36	0.03	2,010	0.79	0.03	1,926	0.50	0.02
30 to <40 years	870	0.20	0.02	1,082	0.52	0.05	2,207	0.86	0.04	2,119	0.57	0.03
40 to <50 years	932	0.22	0.02	1,189	0.58	0.06	2,273	0.73	0.03	2,197	0.59	0.03
50 to <60 years	830	0.18	0.01	1,087	0.55	0.05	2,002	0.68	0.03	1,936	0.65	0.03
60 to <70 years	887	0.23	0.04	1,148	0.60	0.05	2,098	0.69	0.03	2,020	0.64	0.03
70 to <80 years	610	0.17	0.02	807	0.57	0.05	1,479	0.64	0.03	1,461	0.63	0.03
80+ years	329	0.18	0.02	455	0.65	0.06	836	0.59	0.03	837	0.62	0.03
21 to <50 years	2,599	0.20	0.01	3,233	0.49	0.03	6,490	0.79	0.02	6,242	0.56	0.02
50+ years	2,656	0.19	0.02	3,497	0.58	0.03	6,415	0.67	0.02	6,254	0.64	0.02
Race												
Mexican American	1,417	0.24	0.04	2,275	0.72	0.07	5,328	1.07	0.03	4,968	0.44	0.02
Non-Hispanic Black	1,767	0.17	0.01	2,073	0.46	0.04	4,917	0.65	0.02	4,766	0.50	0.02
Non-Hispanic White	3,788	0.24	0.01	4,785	0.74	0.05	9,596	0.81	0.02	9,216	0.59	0.02
Other Hispanic	604	0.25	0.03	861	0.64	0.06	1,882	0.98	0.04	1,776	0.52	0.02
Other race—including multiple	363	0.25	0.04	493	1.00	0.19	1,050	0.84	0.03	1,035	0.77	0.06

Chapter 9—Intake of Fruits and Vegetables

**Table 9-6. Consumer-Only 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
	Legumes <sup>s</sup>			Lettuce <sup>t</sup>			Onions <sup>u</sup>			Peaches <sup>v</sup>		
Whole population	20,449	0.52	0.02	11,421	0.42	0.01	23,060	0.19	<0.005	12,742	0.22	0.01
Age group												
Birth to <1 month	0	0	0	0	0	0	0	0	0	0	0	0
1 to <3 months	5	3.96	1.94	0	0	0	2	<0.005	<0.005	3	0.16	0.11
3 to <6 months	85	2.71	0.27	1	0.06	0	42	0.1	0.01	37	3.07	0.79
6 to <12 months	418	2.73	0.28	20	0.27	0.06	400	0.23	0.02	236	2.30	0.28
Birth to <1 year												
1 to <2 years	508	2.73	0.25	21	0.26	0.06	444	0.22	0.02	276	2.37	0.28
2 to <3 years	614	3.31	0.86	104	0.55	0.07	684	0.27	0.02	491	1.01	0.12
3 to <6 years	664	1.49	0.22	190	0.54	0.06	719	0.29	0.02	528	0.62	0.13
6 to <11 years	1,230	1.26	0.15	443	0.62	0.06	1,364	0.28	0.02	1,016	0.47	0.07
11 to <16 years	2,024	0.60	0.06	860	0.49	0.02	2,239	0.20	0.01	1,605	0.23	0.03
16 to <21 years	2,125	0.28	0.02	1,144	0.40	0.03	2,464	0.14	0.01	1,409	0.12	0.01
21 to <30 years	1,781	0.28	0.02	1,232	0.39	0.02	2,114	0.17	0.01	1,032	0.10	0.02
30 to <40 years	1,757	0.38	0.04	1,220	0.40	0.02	2,021	0.18	0.01	897	0.10	0.01
40 to <50 years	1,989	0.43	0.03	1,338	0.40	0.03	2,220	0.22	0.01	988	0.12	0.02
50 to <60 years	2,019	0.41	0.02	1,315	0.44	0.02	2,301	0.18	0.01	1,054	0.16	0.02
60 to <70 years	1,805	0.42	0.02	1,166	0.43	0.02	2,019	0.18	0.01	989	0.15	0.02
70 to <80 years	1,887	0.45	0.02	1,176	0.42	0.02	2,114	0.17	0.01	1,061	0.20	0.03
80+ years	1,300	0.43	0.02	787	0.42	0.02	1,501	0.16	0.01	841	0.23	0.03
21 to <50 years	746	0.52	0.03	425	0.43	0.02	856	0.15	0.01	555	0.31	0.03
50+ years	5,765	0.41	0.02	3,873	0.41	0.01	6,542	0.19	0.01	2,939	0.13	0.01
	5,738	0.44	0.01	3,554	0.43	0.01	6,490	0.17	0.01	3,446	0.20	0.02
Race												
Mexican American	4,761	0.51	0.03	2,662	0.36	0.01	5,379	0.26	0.01	2,610	0.25	0.02
Non-Hispanic Black	4,454	0.49	0.02	2,254	0.32	0.01	4,966	0.14	<0.005	2,958	0.19	0.02
Non-Hispanic White	8,516	0.49	0.02	5,049	0.45	0.01	9,695	0.18	0.01	5,467	0.22	0.01
Other Hispanic	1,719	0.66	0.09	993	0.44	0.02	1,925	0.21	0.01	1,092	0.22	0.02
Other race—including multiple	999	0.82	0.08	463	0.37	0.02	1,095	0.29	0.02	615	0.26	0.04

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-6. Consumer-Only 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
	Pears <sup>w</sup>			Peas <sup>x</sup>			Pome Fruit <sup>y</sup>			Pumpkins <sup>z</sup>		
Whole population	2,889	0.99	0.04	4,840	0.38	0.01	10,158	1.46	0.04	539	0.28	0.03
Age group												
Birth to <1 month	0	0	0	0	0	0	0	0	0	0	0	0
1 to <3 months	4	2.68	0.35	4	6.43	0.68	12	4.57	1.59	0	0	0
3 to <6 months	40	3.78	0.44	58	2.28	0.28	106	6.74	1.10	1	0.62	0
6 to <12 months	156	3.48	0.37	233	1.78	0.16	398	6.42	0.39	5	8.26	1.35
Birth to <1 year	200	3.52	0.31	295	1.89	0.14	516	6.44	0.32	6	7.42	1.33
1 to <2 years	196	2.24	0.29	198	0.97	0.11	450	4.86	0.38	12	1.69	0.54
2 to <3 years	172	1.67	0.21	155	0.80	0.09	439	3.95	0.27	7	1.04	0.63
3 to <6 years	323	1.70	0.21	241	0.83	0.10	809	3.48	0.20	22	0.78	0.23
6 to <11 years	430	0.91	0.11	371	0.59	0.05	1,218	2.14	0.10	50	0.38	0.08
11 to <16 years	295	0.54	0.07	306	0.35	0.04	989	1.36	0.06	49	0.21	0.06
16 to <21 years	141	0.40	0.05	296	0.29	0.03	646	1.08	0.11	36	0.17	0.06
21 to <30 years	153	0.75	0.12	360	0.30	0.02	640	0.99	0.06	43	0.25	0.06
30 to <40 years	148	0.61	0.09	466	0.24	0.02	729	0.86	0.05	61	0.22	0.04
40 to <50 years	152	0.74	0.11	458	0.29	0.03	809	0.91	0.07	60	0.21	0.05
50 to <60 years	162	0.68	0.09	477	0.29	0.02	833	0.90	0.05	55	0.14	0.02
60 to <70 years	214	0.85	0.09	519	0.29	0.02	927	0.90	0.05	72	0.27	0.12
70 to <80 years	167	0.66	0.07	424	0.27	0.02	692	0.93	0.05	47	0.18	0.03
80+ years	136	0.62	0.05	274	0.33	0.02	461	0.81	0.05	19	0.35	0.08
21 to <50 years	453	0.70	0.07	1,284	0.28	0.01	2,178	0.92	0.03	164	0.22	0.02
50+ years	679	0.72	0.05	1,694	0.29	0.01	2,913	0.90	0.03	193	0.21	0.04
Race												
Mexican American	674	1.34	0.10	906	0.35	0.03	2,486	1.99	0.09	267	0.32	0.06
Non-Hispanic Black	677	0.80	0.08	975	0.39	0.03	1,995	1.43	0.07	41	0.39	0.07
Non-Hispanic White	1,145	0.92	0.06	2,154	0.38	0.01	4,302	1.34	0.05	155	0.23	0.03
Other Hispanic	236	1.08	0.10	464	0.33	0.04	859	1.84	0.10	52	0.24	0.05
Other race—including multiple	157	1.39	0.18	341	0.40	0.03	516	1.64	0.11	24	0.61	0.28



Chapter 9—Intake of Fruits and Vegetables

**Table 9-6. Consumer-Only 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
	Root Tuber Vegetables <sup>aa</sup>			Stalk/Stem Vegetables <sup>bb</sup>			Stone Fruit <sup>cc</sup>			Strawberries <sup>dd</sup>		
Whole population	24,226	1.1	0.02	4,023	0.23	0.01	13,410	0.32	0.02	9,386	0.29	0.03
Age group												
Birth to <1 month	11	1.11	0.8	0	0	0	0	0	0	0	0	0
1 to <3 months	39	1.48	0.29	0	0	0	4	0.58	0.44	2	<0.005	<0.005
3 to <6 months	165	3.27	0.39	2	0.28	0.15	45	3.02	0.69	9	0.07	0.02
6 to <12 months	551	3.96	0.25	22	0.29	0.07	255	2.52	0.28	132	0.67	0.19
Birth to <1 year	766	3.62	0.19	24	0.29	0.07	304	2.56	0.27	143	0.61	0.18
1 to <2 years	726	2.90	0.17	72	0.51	0.1	503	1.21	0.11	335	0.63	0.10
2 to <3 years	751	2.64	0.09	97	0.73	0.16	543	0.77	0.13	372	1.05	0.21
3 to <6 years	1,417	2.36	0.09	130	0.52	0.07	1,041	0.63	0.07	721	0.68	0.12
6 to <11 years	2,292	1.78	0.05	245	0.26	0.03	1,644	0.34	0.03	1,077	0.43	0.06
11 to <16 years	2,551	1.06	0.04	293	0.21	0.02	1,444	0.21	0.04	969	0.33	0.06
16 to <21 years	2,191	0.92	0.03	301	0.18	0.02	1,072	0.14	0.02	637	0.20	0.04
21 to <30 years	2,077	0.88	0.03	465	0.22	0.02	956	0.16	0.02	685	0.22	0.03
30 to <40 years	2,279	0.86	0.02	567	0.23	0.02	1,052	0.19	0.02	792	0.19	0.03
40 to <50 years	2,373	0.86	0.02	490	0.18	0.01	1,120	0.26	0.03	819	0.21	0.04
50 to <60 years	2,100	0.89	0.02	448	0.25	0.03	1,059	0.24	0.02	782	0.25	0.03
60 to <70 years	2,213	0.85	0.03	444	0.20	0.02	1,158	0.29	0.03	854	0.20	0.03
70 to <80 years	1,575	0.92	0.03	281	0.26	0.03	918	0.34	0.03	722	0.22	0.03
80+ years	915	1.09	0.05	166	0.26	0.03	596	0.41	0.04	478	0.21	0.02
21 to <50 years	6,729	0.87	0.02	1,522	0.21	0.01	3,128	0.20	0.02	2,296	0.21	0.03
50+ years	6,803	0.90	0.02	1,339	0.24	0.02	3,731	0.30	0.02	2,836	0.22	0.02
Race												
Mexican American	5,607	1.09	0.03	669	0.21	0.03	2,722	0.32	0.03	1,885	0.24	0.02
Non-Hispanic Black	5,264	1.06	0.02	618	0.16	0.01	3,065	0.25	0.02	1,639	0.16	0.02
Non-Hispanic White	10,165	1.10	0.02	2,168	0.24	0.01	5,823	0.33	0.02	4,634	0.30	0.04
Other Hispanic	2,042	1.09	0.05	270	0.18	0.03	1,146	0.32	0.03	782	0.32	0.05
Other race—including multiple	1,148	1.20	0.05	298	0.29	0.03	654	0.34	0.05	446	0.34	0.05

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-6. Consumer-Only 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
	Tomatoes <sup>ec</sup>			Tropical Fruits <sup>ff</sup>			White Potatoes <sup>gg</sup>					
Whole population	20,828	0.81	0.01	16,598	0.73	0.02	21,755	0.67	0.01			
Age group												
Birth to <1 month	0	0	0	0	0	0	6	0.04	0.01			
1 to <3 months	1	0.06	0	14	2.08	0.57	14	0.05	0.01			
3 to <6 months	22	0.65	0.29	97	4.09	0.35	79	0.69	0.24			
6 to <12 months	303	1.36	0.13	446	3.78	0.32	408	1.33	0.14			
Birth to <1 year												
1 to <2 years	326	1.33	0.13	557	3.80	0.27	507	1.19	0.12			
2 to <3 years	583	1.66	0.08	600	3.48	0.44	664	1.59	0.14			
3 to <6 years	645	1.69	0.09	633	2.46	0.17	698	1.53	0.07			
6 to <11 years	1,228	1.67	0.13	1,162	1.67	0.14	1,318	1.29	0.07			
11 to <16 years	2,066	1.16	0.05	1,811	0.82	0.04	2,123	0.98	0.06			
16 to <21 years	2,293	0.78	0.03	1,700	0.43	0.04	2,338	0.67	0.03			
21 to <30 years	1,977	0.72	0.04	1,311	0.40	0.03	1,986	0.64	0.02			
30 to <40 years	1,899	0.75	0.02	1,257	0.52	0.03	1,873	0.60	0.03			
40 to <50 years	2,070	0.79	0.03	1,429	0.48	0.03	2,042	0.55	0.02			
50 to <60 years	2,081	0.69	0.03	1,479	0.53	0.03	2,088	0.55	0.02			
60 to <70 years	1,807	0.66	0.03	1,373	0.57	0.03	1,864	0.57	0.02			
70 to <80 years	1,855	0.69	0.03	1,484	0.58	0.04	1,975	0.54	0.03			
80+ years	1,285	0.67	0.03	1,104	0.60	0.02	1,433	0.58	0.03			
21 to <50 years	713	0.66	0.03	698	0.71	0.03	846	0.73	0.06			
50+ years	6,050	0.74	0.02	4,165	0.51	0.02	6,003	0.56	0.02			
Race												
Mexican American	5,660	0.67	0.02	4,659	0.59	0.02	6,118	0.58	0.02			
Non-Hispanic Black	5,054	0.98	0.02	3,935	1.11	0.05	4,820	0.68	0.02			
Non-Hispanic White	4,373	0.68	0.02	3,492	0.53	0.03	4,792	0.68	0.02			
Other Hispanic	8,710	0.80	0.02	6,827	0.67	0.02	9,354	0.67	0.02			
Other race—including multiple	1,761	0.97	0.03	1,522	1.01	0.04	1,794	0.67	0.03			
	930	0.81	0.03	822	0.96	0.08	995	0.70	0.05			

<sup>a</sup> 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/>.

<sup>b</sup> For more information on the recipes used to convert the foods people reported eating to the quantities of agricultural commodities eaten, refer to the Frequently Asked Questions at <http://fcid.foodrisk.org/>.

Chapter 9—Intake of Fruits and Vegetables

**Table 9-6. Consumer-Only 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

c	Apples: apple, dried; apple, dried-baby food; apple, fruit with peel; apple, peeled fruit; apple, peeled fruit-baby food; apple, sauce; apple, sauce-baby food.
d	Asparagus: asparagus.
e	Bananas: banana; banana, dried; banana, dried-baby food; banana-baby food.
f	Beans: bean, black, seed; bean, broad, seed; bean, broad, succulent; bean, cowpea, seed; bean, cowpea, succulent; bean, great northern, seed; bean, kidney, seed; bean, lima, seed; bean, lima, succulent; bean, mung, seed; bean, navy, seed; bean, pink, seed; bean, pinto, seed; bean, snap, succulent; bean, snap, succulent-baby food.
g	Beets: beet, garden, roots; beet, garden, roots-baby food; beet, garden, tops.
h	Berries and small fruits: blackberry; blueberry; blueberry-baby food; boysenberry; cranberry; cranberry, dried; cranberry-baby food; currant; currant, dried; elderberry; gooseberry; grape; grape, leaves; grape, raisin; huckleberry; kiwifruit, fuzzy; loganberry; mulberry; raspberry; raspberry-baby food; strawberry; strawberry-baby food.
i	Broccoli: broccoli; broccoli-baby food.
j	Bulb vegetables: chive, fresh leaves; garlic, bulb; garlic, bulb-baby food; leek; onion, bulb; onion, bulb, dried; onion, bulb, dried-baby food; onion, bulb-baby food; onion, green; shallot, bulb.
k	Cabbage: cabbage; cabbage, Chinese, mustard; cabbage, Chinese, napa.
l	Carrots: carrot.
m	Citrus fruits: citron; citrus hybrids; grapefruit; kumquat; lemon; lemon, peel; lime; orange; orange, peel; pummelo; tangerine.
n	Corn: corn, field, bran; corn, field, flour; corn, field, flour-baby food; corn, field, meal; corn, field, meal-baby food; corn, field, starch; corn, field, starch-baby food; corn, pop; corn, sweet; corn, sweet-baby food.
o	Cucumbers: cucumber.
p	Cucurbit vegetables: balsam pear; cantaloupe; chayote, fruit; Chinese waxgourd; cucumber; honeydew melon; pumpkin; pumpkin, seed; squash, summer; squash, summer-baby food; squash, winter; squash, winter-baby food; watermelon.
q	Fruiting vegetables: eggplant; okra; pepper, bell; pepper, bell, dried-baby food; pepper, bell-baby food; pepper, nonbell; pepper, nonbell, dried; pepper, nonbell-baby food; tomatillo; tomato; tomato, dried; tomato, dried-baby food; tomato, paste; tomato, paste-baby food; tomato, puree; tomato, puree-baby food; tomato-baby food.
r	Leafy vegetables (brassica and nonbrassica): amaranth, leafy; arugula; beet, garden, tops; belgium endive; broccoli; broccoli raab; broccoli, Chinese; broccoli-baby food; brussels sprouts; cabbage; cabbage, Chinese, bok choy; cabbage, Chinese, mustard; cabbage, Chinese, napa; cardoon; cauliflower; celery; celery-baby food; celtuce; chicory, tops; chrysanthemum, garland; collards; cress, garden; cress, upland; dandelion, leaves; dasheen, leaves; endive; fennel, florence; kale; kohlrabi; lettuce, head; lettuce, leaf; mustard greens; parsley, leaves; radicchio; radish, oriental, tops; radish, tops; rape greens; rhubarb; salsify, tops; seaweed; seaweed-baby food; spinach; spinach-baby food; Swiss chard; turnip, greens; watercress.
s	Legume vegetables: bean, black, seed; bean, broad, seed; bean, broad, succulent; bean, cowpea, seed; bean, cowpea, succulent; bean, great northern, seed; bean, kidney, seed; bean, lima, seed; bean, lima, succulent; bean, mung, seed; bean, navy, seed; bean, pink, seed; bean, pinto, seed; bean, snap, succulent; bean, snap, succulent-baby food; chickpea, flour; chickpea, seed; chickpea, seed-baby food; guar, seed; guar, seed-baby food; lentil, seed; pea, dry; pea, dry-baby food; pea, edible podded, succulent; pea, pigeon, seed; pea, pigeon, succulent; pea, succulent; pea, succulent-baby food; soybean, seed; soybean, soy milk; soybean, soy milk-baby food or infant formula.
t	Lettuce: lettuce, head; lettuce, leaf.
u	Onions: onion, bulb; onion, bulb, dried; onion, bulb, dried-baby food; onion, bulb-baby food; onion, green.
v	Peaches: peach; peach, dried; peach, dried-baby food; peach-baby food.
w	Pears: pear; pear, dried; pear-baby food.
x	Peas: pea, dry; pea, dry-baby food; pea, edible podded, succulent; pea, pigeon, seed; pea, pigeon, succulent; pea, succulent; pea, succulent-baby food.
y	Pome fruits: apple, dried; apple, dried-baby food; apple, fruit with peel; apple, peeled fruit; apple, peeled fruit-baby food; apple, sauce; apple, sauce-baby food; crabapple; loquat; pear; pear, dried; pear-baby food; quince.
z	Pumpkin: pumpkin; pumpkin, seed.

**Table 9-6. Consumer-Only 2-Day Average<sup>a</sup> Intake of Individual Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>b</sup> (Continued)**

aa	Root and tuber vegetables: arrowroot, flour; arrowroot, flour-baby food; artichoke, Jerusalem; beet, garden, roots; beet, garden, roots-baby food; beet, garden, tops; beet, sugar; beet, sugar-baby food; burdock; carrot; carrot-baby food; cassava; cassava-baby food; celeriac; chicory, roots; dasheen, corm; ginger; ginger, dried; ginger-baby food; ginseng, dried; horseradish; parsley, turnip rooted; parsnip; parsnip-baby food; potato, chips; potato, dry (granules/flakes); potato, dry (granules/flakes)-baby food; potato, flour; potato, flour-baby food; potato, tuber, without peel; potato, tuber, without peel-baby food; potato, tuber, with peel; potato, tuber, with peel-baby food; radish, Oriental, roots; radish, roots; rutabaga; sweet potato; sweet potato-baby food; tanager, corm; turmeric; turnip, roots; water chestnut; yam bean; yam, true.
bb	Stalk and stem vegetable and edible fungi: artichoke, globe; asparagus; bamboo, shoots; mushroom; palm heart, leaves.
cc	Stone fruits: apricot; apricot, dried; apricot-baby food; cherry; cherry-baby food; nectarine; peach; peach, dried; peach, dried-baby food; peach-baby food; plum; plum, prune, dried; plum, prune, dried-baby food; plum, prune, fresh; plum, prune, fresh-baby food; plum-baby food.
dd	Strawberries: strawberry; strawberry-baby food.
ee	Tomatoes: tomato; tomato, dried; tomato, dried-baby food; tomato, paste; tomato, paste-baby food; tomato, puree; tomato, puree-baby food; tomato-baby food.
ff	Tropical fruits: acerola; bamboo, shoots; banana; banana, dried; banana, dried-baby food; banana-baby food; breadfruit; canistel; cherimoya; date; dragon fruit; feijoa; fig; fig, dried; guava; guava-baby food; jackfruit; longan; lychee; lychee, dried; mamey apple; mango; mango, dried; mango-baby food; papaya; papaya, dried; papaya-baby food; passionfruit; passionfruit-baby food; pawpaw; pineapple; pineapple, dried; pineapple-baby food; plantain; plantain, dried; pomegranate; prickly pear fruit; sapote, mamey; soursop; Spanish lime; starfruit; sugar apple; tamarind.
gg	White potatoes: potato, chips; potato, dry (granules/flakes); potato, dry (granules/flakes)-baby food; potato, flour; potato, flour-baby food; potato, tuber, without peel; potato, tuber, without peel-baby food; potato, tuber, with peel; potato, tuber, with peel-baby food.
N	= Sample size.
SE	= Standard error.
Note:	Data for fruits and vegetables for which only a small numbers of people reported consumption may be less reliable than data for fruits and vegetables with higher numbers consuming.
Source:	Based on U.S. EPA analysis of 2005–2010 NHANES using the FCID Consumption Calculator available at <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .

Chapter 9—Intake of Fruits and Vegetables

**Table 9-7. Per Capita 2-Day Average<sup>a</sup> Intake of Exposed and Protected<sup>b</sup> Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>c</sup>**

Population Group	N	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE	PC	Mean	SE
		Exposed Fruits <sup>d</sup>			Protected Fruits <sup>e</sup>			Exposed Vegetables <sup>f</sup>			Protected Vegetables <sup>g</sup>		
Whole population	24,673	78	1.10	0.03	71	0.66	0.02	99	1.27	0.02	98	0.58	0.02
<b>Age group</b>													
Birth to <1 month	87	0	0	0	0	0	0	3	<0.005	<0.005	20	0.33	0.24
1 to <3 months	233	5	0.24	0.09	4	0.08	0.03	7	0.01	<0.005	17	0.33	0.08
3 to <6 months	282	40	3.09	0.49	32	1.30	0.17	19	0.06	0.01	53	1.37	0.17
6 to <12 months	588	83	6.22	0.45	79	3.14	0.26	75	0.96	0.11	92	3.17	0.27
Birth to <1 year	1,190	52	3.91	0.24	48	1.91	0.14	44	0.51	0.06	63	2.01	0.16
1 to <2 years	728	91	5.73	0.39	86	3.61	0.36	99	2.03	0.11	99	2.08	0.23
2 to <3 years	751	91	4.68	0.32	88	2.81	0.18	99	2.22	0.10	99	1.53	0.17
3 to <6 years	1,418	92	3.62	0.20	85	1.96	0.14	99	2.08	0.14	100	1.32	0.14
6 to <11 years	2,292	90	2.07	0.11	83	0.98	0.05	100	1.54	0.05	100	0.87	0.10
11 to <16 years	2,551	79	0.93	0.07	69	0.41	0.03	99	1.09	0.04	98	0.44	0.05
16 to <21 years	2,191	70	0.54	0.05	62	0.33	0.03	99	1.09	0.05	97	0.35	0.03
21 to <30 years	2,082	66	0.56	0.04	64	0.43	0.03	99	1.20	0.03	99	0.32	0.02
30 to <40 years	2,282	72	0.58	0.03	68	0.46	0.03	99	1.33	0.05	99	0.44	0.03
40 to <50 years	2,378	74	0.67	0.04	67	0.44	0.03	99	1.19	0.04	98	0.47	0.03
50 to <60 years	2,103	81	0.83	0.04	74	0.54	0.03	100	1.22	0.04	99	0.52	0.04
60 to <70 years	2,214	82	0.83	0.04	75	0.53	0.03	100	1.21	0.04	100	0.53	0.03
70 to <80 years	1,578	87	0.93	0.04	78	0.57	0.03	100	1.15	0.04	99	0.53	0.04
80+ years	915	90	1.02	0.05	82	0.74	0.04	100	1.08	0.04	99	0.60	0.04
21 to <50 years	6,742	71	0.60	0.02	66	0.44	0.02	99	1.24	0.03	99	0.42	0.02
50+ years	6,810	83	0.87	0.03	76	0.56	0.02	100	1.19	0.02	99	0.53	0.02
<b>Race</b>													
Mexican American	5,787	74	1.19	0.04	76	1.16	0.06	98	1.41	0.03	97	0.59	0.04
Non-Hispanic Black	5,337	74	0.83	0.03	68	0.50	0.03	98	0.98	0.02	98	0.45	0.02
Non-Hispanic White	10,294	79	1.11	0.04	71	0.57	0.02	99	1.29	0.03	99	0.59	0.03
Other Hispanic	2,082	75	1.18	0.05	76	1.00	0.05	98	1.34	0.05	98	0.53	0.03
Other race—including multiple	1,173	80	1.33	0.09	76	0.98	0.08	98	1.38	0.05	98	0.78	0.10

**Table 9-7. Per Capita 2-Day Average<sup>a</sup> Intake of Exposed and Protected<sup>b</sup> Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>c</sup> (Continued)**

<sup>a</sup>	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 <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .
<sup>b</sup>	Exposed fruits and vegetables are those that are grown above ground and are likely to be contaminated by pollutants deposited on surfaces of the foods that are eaten. Protected fruits and vegetables are those that have outer protective coatings that are typically removed before consumption.
<sup>c</sup>	For more information on the recipes used to convert the foods people reported eating to the quantities of agricultural commodities eaten, refer to the Frequently Asked Questions at <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .
<sup>d</sup>	Exposed fruits: acerola; apple, dried; apple, dried-baby food; apple, fruit with peel; apple, peeled fruit; apple, peeled fruit-baby food; apple, sauce; apple, sauce-baby food; apricot; apricot, dried; apricot-baby food; blackberry; blueberry; blueberry-baby food; boysenberry; canistel; cherry; cherry-baby food; crabapple; cranberry; cranberry, dried; cranberry-baby food; currant; currant, dried; date; eggplant; elderberry; fig; fig, dried; gooseberry; grape; grape, raisin; guava; guava-baby food; huckleberry; loganberry; nectarine; peach; peach, dried; peach, dried-baby food; peach-baby food; pear; pear, dried; pear-baby food; persimmon; plum; plum, prune, dried; plum, prune, dried-baby food; plum, prune, fresh; plum, prune, fresh-baby food; plum-baby food; quince; raspberry; raspberry-baby food; starfruit; strawberry; strawberry-baby food.
<sup>e</sup>	Protected fruits: avocado; banana; banana, dried; banana, dried-baby food; banana-baby food; breadfruit; cherimoya; citrus hybrids; feijoa; jackfruit; kiwifruit, fuzzy; kumquat; lemon; lemon, peel; lime; longan; loquat; lychee; lychee, dried; mamey apple; mango; mango, dried; mango-baby food; orange; orange, peel; papaya; papaya, dried; papaya-baby food; passionfruit; passionfruit-baby food; pawpaw; pineapple; pineapple, dried; pineapple-baby food; plantain; plantain, dried; pomegranate; pummelo; sapote, mamey; soursop; Spanish lime; sugar apple; tamarind; tangerine.
<sup>f</sup>	Exposed vegetables: alfalfa, seed; amaranth, leafy; artichoke, globe; artichoke, Jerusalem; arugula; asparagus; balsam pear; basil, dried leaves; basil, dried leaves-baby food; basil, fresh leaves; basil, fresh leaves-baby food; Belgium endive; broccoli; broccoli raab; broccoli, Chinese; broccoli-baby food; brussels sprouts; cabbage; cabbage, Chinese, bok choy; cabbage, Chinese, mustard; cabbage, Chinese, napa; cauliflower; celery; celery-baby food; celtuce; chayote, fruit; chicory, tops; chive, fresh leaves; chrysanthemum, garland; cilantro, leaves; cilantro, leaves-baby food; coriander, seed; coriander, seed-baby food; dandelion, leaves; dasheen, leaves; dill, seed; dillweed; fennel, Florence; grape, leaves; herbs, other; herbs, other-baby food; kale; lemongrass; lettuce, head; lettuce, leaf; marjoram; marjoram-baby food; okra; palm heart, leaves; parsley, dried leaves; parsley, dried leaves-baby food; parsley, leaves; pepper, bell; pepper, bell, dried; pepper, bell, dried-baby food; pepper, bell-baby food; pepper, black and white; pepper, black and white-baby food; pepper, nonbell; pepper, nonbell, dried; pepper, nonbell-baby food; peppermint; radicchio; rape greens; rhubarb; salsify, tops; savory; seaweed; seaweed-baby food; spices, other; spices, other-baby food; Swiss chard; tomatillo; tomato; tomato, dried; tomato, dried-baby food; tomato, paste; tomato, paste-baby food; tomato, puree; tomato, puree-baby food; tomato-baby food; tree Tomato; watercress.
<sup>g</sup>	Protected vegetables: bamboo, shoots; bean, cowpea, succulent; bean, kidney, seed; bean, lima, seed; bean, lima, succulent; bean, mung, seed; bean, navy, seed; bean, pink, seed; bean, pinto, seed; bean, snap, succulent; bean, snap, succulent-baby food; cactus; cantaloupe; cardoon; cassava; cassava-baby food; chickpea, flour; chickpea, seed; chickpea, seed-baby food; Chinese waxgourd; cinnamon; cinnamon-baby food; guar, seed; guar, seed-baby food; pea, dry; pea, dry-baby food; pea, edible podded, succulent; pea, pigeon, seed; pea, pigeon, succulent; pea, succulent; pea, succulent-baby food; pumpkin; soybean, flour; soybean, flour-baby food; soybean, seed; squash, summer; squash, summer-baby food; squash, winter; squash, winter-baby food; water chestnut; watermelon.
<i>N</i>	= Sample size.
<i>PC</i>	= Percent consuming. 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 $\geq 99.5$ percent of the population consumed the foods during the 2-day survey period.
<i>SE</i>	= Standard error.
Note:	Data for fruits and vegetables for which only small percentages of the population reported consumption may be less reliable than data for fruits and vegetables with higher percentages consuming.
Source:	Based on U.S. EPA analysis of 2005–2010 NHANES using the FCID Consumption Calculator available at <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .

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**Table 9-8. Consumer-Only 2-Day Average<sup>a</sup> Intake of Exposed and Protected<sup>b</sup> Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>c</sup>**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
	Exposed Fruits <sup>d</sup>			Protected Fruits <sup>e</sup>			Exposed Vegetables <sup>f</sup>			Protected Vegetables <sup>g</sup>		
Whole population	19,133	1.42	0.04	17,861	0.93	0.03	23,828	1.29	0.02	23,900	0.59	0.02
Age group												
Birth to <1 month	0	0	0	0	0	0	2	0.07	<0.005	11	1.65	0.98
1 to <3 months	13	4.38	1.48	14	2.08	0.57	16	0.09	0.02	39	1.89	0.32
3 to <6 months	121	7.63	1.08	97	4.12	0.34	67	0.34	0.07	148	2.58	0.23
6 to <12 months	473	7.49	0.47	451	3.99	0.35	447	1.29	0.13	531	3.45	0.27
Birth to <1 year	607	7.45	0.35	562	3.97	0.29	532	1.16	0.12	729	3.17	0.20
1 to <2 years	649	6.28	0.39	621	4.20	0.42	714	2.06	0.11	720	2.10	0.24
2 to <3 years	674	5.13	0.33	648	3.19	0.20	745	2.24	0.10	742	1.54	0.17
3 to <6 years	1,282	3.93	0.20	1,208	2.31	0.16	1,400	2.11	0.14	1,410	1.32	0.14
6 to <11 years	2,054	2.28	0.11	1,900	1.18	0.06	2,281	1.55	0.05	2,281	0.87	0.10
11 to <16 years	2,024	1.17	0.07	1,812	0.59	0.04	2,526	1.10	0.04	2,504	0.45	0.05
16 to <21 years	1,576	0.78	0.07	1,430	0.53	0.04	2,168	1.11	0.05	2,141	0.36	0.03
21 to <30 years	1,425	0.84	0.05	1,375	0.67	0.04	2,069	1.21	0.03	2,041	0.33	0.02
30 to <40 years	1,618	0.81	0.04	1,568	0.67	0.04	2,269	1.34	0.05	2,247	0.44	0.03
40 to <50 years	1,736	0.90	0.05	1,645	0.65	0.04	2,359	1.20	0.04	2,346	0.48	0.03
50 to <60 years	1,619	1.02	0.04	1,526	0.72	0.03	2,090	1.23	0.04	2,073	0.52	0.04
60 to <70 years	1,742	1.01	0.04	1,625	0.71	0.04	2,193	1.21	0.04	2,198	0.53	0.03
70 to <80 years	1,315	1.07	0.04	1,202	0.73	0.03	1,572	1.15	0.04	1,564	0.54	0.04
80+ years	812	1.13	0.06	739	0.90	0.05	910	1.08	0.04	904	0.61	0.04
21 to <50 years	4,779	0.85	0.02	4,588	0.66	0.03	6,697	1.25	0.03	6,634	0.42	0.02
50+ years	5,488	1.04	0.03	5,092	0.74	0.02	6,765	1.19	0.02	6,739	0.54	0.02
Race												
Mexican American	4,302	1.63	0.05	4,369	1.53	0.07	5,522	1.44	0.03	5,486	0.61	0.04
Non-Hispanic Black	4,104	1.12	0.04	3,716	0.74	0.04	5,174	1.00	0.02	5,201	0.46	0.02
Non-Hispanic White	8,181	1.41	0.05	7,289	0.81	0.02	10,014	1.31	0.03	10,067	0.60	0.03
Other Hispanic	1,605	1.57	0.07	1,616	1.32	0.07	1,996	1.37	0.05	2,010	0.55	0.03
Other race—including multiple	941	1.67	0.11	871	1.29	0.11	1,122	1.40	0.05	1,136	0.79	0.10

**Table 9-8. Consumer-Only 2-Day Average<sup>a</sup> Intake of Exposed and Protected<sup>b</sup> Fruits and Vegetables Based on the 2005–2010 National Health and Nutrition Examination Survey (NHANES) (g/kg-day, edible portion, uncooked weight)<sup>c</sup> (Continued)**

<sup>a</sup>	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 <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .
<sup>b</sup>	Exposed fruits and vegetables are those that are grown above ground and are likely to be contaminated by pollutants deposited on surfaces of the foods that are eaten. Protected fruits and vegetables are those that have outer protective coatings that are typically removed before consumption.
<sup>c</sup>	For more information on the recipes used to convert the foods people reported eating to the quantities of agricultural commodities eaten, refer to the Frequently Asked Questions at <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .
<sup>d</sup>	Exposed fruits: acerola; apple, dried; apple, dried-baby food; apple, fruit with peel; apple, peeled fruit; apple, peeled fruit-baby food; apple, sauce; apple, sauce-baby food; apricot; apricot, dried; apricot-baby food; blackberry; blueberry; blueberry-baby food; boysenberry; canistel; cherry; cherry-baby food; crabapple; cranberry; cranberry, dried; cranberry-baby food; currant; currant, dried; date; eggplant; elderberry; fig; fig, dried; gooseberry; grape; grape, raisin; guava; guava-baby food; huckleberry; loganberry; nectarine; peach; peach, dried; peach, dried-baby food; peach-baby food; pear; pear, dried; pear-baby food; persimmon; plum; plum, prune, dried; plum, prune, dried-baby food; plum, prune, fresh; plum, prune, fresh-baby food; plum-baby food; quince; raspberry; raspberry-baby food; starfruit; strawberry; strawberry-baby food.
<sup>e</sup>	Protected fruits: avocado; banana; banana, dried; banana, dried-baby food; banana-baby food; breadfruit; cherimoya; citrus hybrids; feijoa; jackfruit; kiwifruit, fuzzy; kumquat; lemon; lemon, peel; lime; longan; loquat; lychee; lychee, dried; mamey apple; mango; mango, dried; mango-baby food; orange; orange, peel; papaya; papaya, dried; papaya-baby food; passionfruit; passionfruit-baby food; pawpaw; pineapple; pineapple, dried; pineapple-baby food; plantain; plantain, dried; pomegranate; pummelo; sapote, mamey; soursop; Spanish lime; sugar apple; tamarind; tangerine.
<sup>f</sup>	Exposed vegetables: alfalfa, seed; amaranth, leafy; artichoke, globe; artichoke, Jerusalem; arugula; asparagus; balsam pear; basil, dried leaves; basil, dried leaves-baby food; basil, fresh leaves; basil, fresh leaves-baby food; Belgium endive; broccoli; broccoli raab; broccoli, Chinese; broccoli-baby food; brussels sprouts; cabbage; cabbage, Chinese, bok choy; cabbage, Chinese, mustard; cabbage, Chinese, napa; cauliflower; celery; celery-baby food; celtuce; chayote, fruit; chicory, tops; chive, fresh leaves; chrysanthemum, garland; cilantro, leaves; cilantro, leaves-baby food; coriander, seed; coriander, seed-baby food; dandelion, leaves; dasheen, leaves; dill, seed; dillweed; fennel, Florence; grape, leaves; herbs, other; herbs, other-baby food; kale; lemongrass; lettuce, head; lettuce, leaf; marjoram; marjoram-baby food; okra; palm heart, leaves; parsley, dried leaves; parsley, dried leaves-baby food; parsley, leaves; pepper, bell; pepper, bell, dried; pepper, bell, dried-baby food; pepper, bell-baby food; pepper, black and white; pepper, black and white-baby food; pepper, nonbell; pepper, nonbell, dried; pepper, nonbell-baby food; peppermint; radicchio; rape greens; rhubarb; salsify, tops; savory; seaweed; seaweed-baby food; spices, other; spices, other-baby food; Swiss chard; tomatillo; tomato; tomato, dried; tomato, dried-baby food; tomato, paste; tomato, paste-baby food; tomato, puree; tomato, puree-baby food; tomato-baby food; tree Tomato; watercress.
<sup>g</sup>	Protected vegetables: bamboo, shoots; bean, cowpea, succulent; bean, kidney, seed; bean, lima, seed; bean, lima, succulent; bean, mung, seed; bean, navy, seed; bean, pink, seed; bean, pinto, seed; bean, snap, succulent; bean, snap, succulent-baby food; cactus; cantaloupe; cardoon; cassava; cassava-baby food; chickpea, flour; chickpea, seed; chickpea, seed-baby food; Chinese waxgourd; cinnamon; cinnamon-baby food; guar, seed; guar, seed-baby food; pea, dry; pea, dry-baby food; pea, edible podded, succulent; pea, pigeon, seed; pea, pigeon, succulent; pea, succulent; pea, succulent-baby food; pumpkin; soybean, flour; soybean, flour-baby food; soybean, seed; squash, summer; squash, summer-baby food; squash, winter; squash, winter-baby food; water chestnut; watermelon.
<i>N</i>	= Sample size.
<i>SE</i>	= Standard error.
Note:	Data for fruits and vegetables for which only a small number of people reported consumption may be less reliable than data for fruits and vegetables with higher numbers consuming.

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



Chapter 9—Intake of Fruits and Vegetables

Table 9-9. Mean Total Fruit and Total Vegetable Intake (as-consumed) in a Day by Sex and Age (1977–1978) <sup>a</sup>			
Age (years)	Per Capita Intake (g/day)	Percentage of Population Consuming in a Day	Consumer-Only Intake (g/day) <sup>b</sup>
Fruits			
Male and female			
≤1	169	86.8	196
1 to 2	146	62.9	231
3 to 5	134	56.1	239
6 to 8	152	60.1	253
Male			
9 to 11	133	50.5	263
12 to 14	120	51.2	236
15 to 18	147	47.0	313
19 to 22	107	39.4	271
23 to 34	141	46.4	305
35 to 50	115	44.0	262
51 to 64	171	62.4	275
65 to 74	174	62.2	281
≥75	186	62.6	197
Female			
9 to 11	148	59.7	247
12 to 14	120	48.7	247
15 to 18	126	49.9	251
19 to 22	133	48.0	278
23 to 34	122	47.7	255
35 to 50	133	52.8	252
51 to 64	171	66.7	256
65 to 74	179	69.3	259
≥75	189	64.7	292
Male and female			
All ages	142	54.2	263
Vegetables			
Male and female			
≤1	76	62.7	121
1 to 2	91	78.0	116
3 to 5	100	79.3	126
6 to 8	136	84.3	161
Male			
9 to 11	138	83.5	165
12 to 14	184	84.5	217
15 to 18	216	85.9	251
19 to 22	226	84.7	267
23 to 34	248	88.5	280
35 to 50	261	86.8	300
51 to 64	285	90.3	316
65 to 74	265	88.5	300
≥75	264	93.6	281

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**Table 9-9. Mean Total Fruit and Total Vegetable Intake (as-consumed) in a Day by Sex and Age (1977–1978)<sup>a</sup> (Continued)**

Age (years)	Per Capita Intake (g/day)	Percentage of Population Consuming in a Day	Consumer-Only Intake (g/day) <sup>b</sup>
Female			
9 to 11	139	83.7	166
12 to 14	154	84.6	183
15 to 18	178	83.8	212
19 to 22	184	81.1	227
23 to 34	187	84.7	221
35 to 50	187	84.6	221
51 to 64	229	89.8	255
65 to 74	221	87.2	253
≥75	198	88.1	226
Male and female			
All ages	201	85.6	235
<sup>a</sup>	Based on USDA Nationwide Food Consumption Survey (1977–1978) data for 1 day.		
<sup>b</sup>	Intake for users only was calculated by dividing the per capita intake rate by the fraction of the population consuming fruit in a day.		
Source: USDA (1980).			

Chapter 9—Intake of Fruits and Vegetables

Table 9-10. Mean Total Fruit and Total Vegetable Intake (as-consumed) in a Day by Sex and Age (1987–1988, 1994, and 1995) <sup>a</sup>									
Age (years)	Per Capita Intake (g/day)			Percentage of Population Consuming in 1 Day			Consumer-Only Intake (g/day) <sup>b</sup>		
	1987–1988	1994	1995	1987–1988	1994	1995	1987–1988	1994	1995
Fruits									
Male and female 5 and under	157	230	221	59.2	70.6	72.6	265	326	304
Male									
6 to 11	182	176	219	63.8	59.8	62.2	285	294	352
12 to 19	158	169	210	49.4	44.0	47.1	320	384	446
≥20	133	175	170	46.5	50.2	49.6	286	349	342
Female									
6 to 11	154	174	172	58.3	59.3	63.6	264	293	270
12 to 19	131	148	167	47.1	47.1	44.4	278	314	376
≥20	140	157	155	52.7	55.1	54.4	266	285	285
Male and female All ages	142	171	173	51.4	54.1	54.2	276	316	319
Vegetables									
Male and female 5 and under	81	80	83	74.0	75.2	75.0	109	106	111
Male									
6 to 11	129	118	111	86.8	82.4	80.6	149	143	138
12 to 19	173	154	202	85.2	74.9	79.0	203	206	256
≥20	232	242	241	85.0	85.9	86.4	273	282	278
Female									
6 to 11	129	115	108	80.6	82.9	79.1	160	139	137
12 to 19	129	132	144	75.8	78.5	76.0	170	168	189
≥20	183	190	189	82.9	84.7	83.2	221	224	227
Male and female All ages	182	186	188	82.6	83.2	82.6	220	223	228
<sup>a</sup>	Based on USDA NFCS (1987–1988) and CSFII (1994 and 1995) data for 1 day.								
<sup>b</sup>	Intake for users only was calculated by dividing the per capita intake rate by the fraction of the population consuming fruits in a day.								
Source: USDA (1996a, b).									

## Chapter 9—Intake of Fruits and Vegetables

Table 9-11. Per Capita Consumption of Fresh Fruits and Vegetables in 1997<sup>a</sup>

Fresh Fruits		Fresh Vegetables	
Food Item	Per Capita Consumption (g/day) <sup>b</sup>	Food Item	Per Capita Consumption (g/day) <sup>b</sup>
Citrus		Artichokes	0.6
Oranges (includes Temple oranges)	16.9	Asparagus	0.7
Tangerines and tangelos	3.0	Bell peppers	8.3
Lemons	3.4	Broccoli	6.0
Limes	1.4	Brussel sprouts	0.4
Grapefruit	7.6	Cabbage	11.8
Total fresh citrus	32.2	Carrots	15.1
Noncitrus		Cauliflower	1.9
Apples	22.0	Celery	7.0
Apricots	0.1	Sweet corn	9.2
Avocados	1.6	Cucumber	7.2
Bananas	34.5	Eggplant	0.5
Cherries	0.6	Escarole/endive	0.2
Cranberries	0.1	Garlic	2.1
Grapes	9.1	Head lettuce	28.1
Kiwi fruit	0.5	Romaine lettuce	7.0
Mangoes	1.7	Onions	20.9
Peaches and nectarines	6.7	Radishes	0.5
Pears	4.1	Snap beans	1.6
Pineapple	2.9	Spinach	0.6
Papayas	0.6	Tomatoes	20.0
Plums and prunes	1.9	Total fresh vegetables	149.8
Strawberries	4.9		
Melons	34.5		
Total fresh noncitrus	125.6		
Total fresh fruits	157.8		
<sup>a</sup>	Based on retail-weight equivalent. Includes imports; excludes exports and foods grown in home gardens. Data for 1997 were used.		
<sup>b</sup>	Original data were presented in lbs/year; data were converted to g/day by multiplying by a factor of 454 g/lb and dividing by 365 day/year.		
Source: USDA (1999a).			

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**Table 9-12. Mean Quantities of Vegetables Consumed Daily by Sex and Age, for Children, Per Capita (g/day, as-consumed)<sup>a</sup>**

Age Group (years)	Sample Size	White Potatoes			Dark Green Vegetables	Deep Yellow Vegetables	Tomatoes	Lettuce, Lettuce-based Salads	Green Beans	Corn, Green Peas, Lima Beans	Other Vegetables
		Total	Fried	Total							
Male and Female											
Under 1	1,126	57	9	1	2	19	1 <sup>b</sup>	<sup>b,c</sup>	6	5	16
1	1,016	79	26	11	5	9	7	1	8	9	16
2	1,102	87	32	17	4	5	11	2	7	10	17
1 to 2	2,118	83	29	14	5	7	9	1	7	9	17
3	1,831	91	34	17	5	5	13	2	5	11	16
4	1,859	97	37	19	6	5	11	3	5	12	18
5	884	103	44	22	4	6	12	3	6	12	17
3 to 5	4,574	97	38	20	5	5	12	3	5	11	17
≤5	7,818	88	31	16	4	7	10	2	6	10	17
Male											
6 to 9	787	110	47	26	4	5	16	5	5	11	16
6 to 11	1,031	115	50	27	5	5	16	5	5	11	18
12 to 19	737	176	85	44	6	6	28	12	3 <sup>b</sup>	10	25
Female											
6 to 9	704	110	42	22	5	4	14	6	5	13	21
6 to 11	969	116	46	25	5	4	15	7	5	12	22
12 to 19	732	145	61	31	9	4	18	12	4	8	28
Male and Female											
≤9	9,309	97	37	19	4	6	12	3	6	11	18
≤19	11,287	125	53	27	6	6	17	7	5	10	22
<sup>a</sup>	Based on data from 1994–1996, 1998 CSFII.										
<sup>b</sup>	Estimate is not statistically reliable due to small number of individuals reporting intake.										
<sup>c</sup>	Value less than 0.5, but greater than 0.										
Note:	Consumption amounts shown are representative of the 1 <sup>st</sup> day of each participant’s survey response.										
Source:	USDA (1999b).										

## Chapter 9—Intake of Fruits and Vegetables

Table 9-13. Percentage of Individuals Consuming Vegetables, by Sex and Age, for Children (%)<sup>a</sup>

Age Group (years)	Sample Size	White Potatoes			Dark Green Vegetables	Deep Yellow Vegetables	Tomatoes	Lettuce, Lettuce-based Salads	Green Beans	Corn, Green Peas, Lima Beans	Other Vegetables
		Total	Total	Fried							
Male and Female											
Under 1	1,126	47.2	12.3	4.3	2.3	20.5	1.8	0.2 <sup>b</sup>	7.8	8.5	14.8
1	1,016	73.3	40.4	25.2	6.4	13.3	18.0	3.9	13.7	17.6	19.4
2	1,102	78.4	46.7	34.5	7.6	10.5	30.8	7.5	11.5	15.0	22.3
1 to 2	2,118	75.9	43.6	29.9	7.0	11.8	24.6	5.7	12.6	16.2	20.9
3	1,831	80.5	46.7	34.7	7.0	10.7	34.1	8.3	10.1	14.6	24.7
4	1,859	80.7	47.3	34.8	7.2	12.0	33.0	10.0	9.0	16.4	26.5
5	884	83.0	50.7	38.3	4.6	13.3	36.5	13.4	10.4	16.1	28.8
3 to 5	4,574	81.4	48.2	35.9	6.3	12.0	34.5	10.6	9.9	15.7	26.7
≤5	7,818	75.4	42.3	30.1	6.1	13.0	27.2	7.6	10.5	15.0	23.3
Male											
6 to 9	787	78.8	47.9	38.0	6.3	12.5	38.2	13.1	7.8	15.0	29.7
6 to 11	1,031	79.3	48.7	38.4	6.1	12.4	38.7	13.9	6.7	13.8	30.8
12 to 19	737	78.2	49.5	38.6	3.6	8.0	43.0	23.8	3.5	7.4	33.2
Female											
6 to 9	704	80.5	48.2	36.3	5.9	11.9	33.8	15.8	8.4	15.9	26.6
6 to 11	969	81.7	50.8	38.9	5.4	11.4	33.5	17.1	7.8	15.1	29.2
12 to 19	732	79.5	46.4	34.6	7.0	10.6	35.3	25.1	4.4	7.4	34.5
Male and Female											
≤9	9,309	77.1	44.6	32.9	6.1	12.7	30.7	10.3	9.6	15.2	25.2
≤19	11,287	78.3	46.8	35.3	5.6	11.2	34.6	16.6	7.0	11.9	29.4
<sup>a</sup>	Based on data from 1994–1996, 1998 CSFII.										
<sup>b</sup>	Estimate is not statistically reliable due to small number of individuals reporting intake.										
Note:	Consumption amounts shown are representative of the 1 <sup>st</sup> day of each participant's survey response.										
Source:	USDA (1999b).										

Chapter 9—Intake of Fruits and Vegetables

**Table 9-14. Mean Quantities of Fruits Consumed Daily by Sex and Age, for Children, Per Capita (g/day, as-consumed)<sup>a</sup>**

Age Group (years)	Sample Size	Citrus Fruits and Juices				Other Fruits, Mixtures, and Juices					
		Total	Total	Juices	Dried Fruits	Total	Apples	Bananas	Melons and Berries	Other Fruits and Mixtures (mainly fruit)	Noncitrus Juices and Nectars
Male and Female											
Under 1	1,126	131	4	4	-b,c	126	14	10	1 <sup>b</sup>	39	61
1	1,016	267	47	42	2	216	22	23	8	29	134
2	1,102	276	65	56	2	207	27	20	10	20	130
1 to 2	2,118	271	56	49	2	212	24	22	9	24	132
3	1,831	256	61	51	1	191	27	18	13	24	110
4	1,859	243	62	52	1	177	31	17	14	22	92
5	884	218	55	44	-b,c	160	31	14	13	24	78
3 to 5	4,574	239	59	49	1	176	30	16	13	23	93
≤5	7,818	237	52	44	1	182	26	17	10	26	103
Male											
6 to 9	787	194	58	51	-b,c	133	32	11	21	20	50
6 to 11	1,031	183	67	60	-b,c	113	28	11	16	19	40
12 to 19	737	174	102	94	1 <sup>b</sup>	70	13	8	11 <sup>b</sup>	10	29
Female											
6 to 9	704	180	63	54	1 <sup>b</sup>	113	23	10	10	25	46
6 to 11	969	169	64	54	-b,c	103	21	8	8	23	42
12 to 19	732	157	72	67	-b,c	83	13	5	15	14	35
Male and Female											
≤9	9,309	217	55	47	1	159	27	15	12	24	81
≤19	11,287	191	70	62	1	118	21	11	12	19	56
<sup>a</sup>	Based on data from 1994–1996, 1998 CSFII.										
<sup>b</sup>	Estimate is not statistically reliable due to small samples size reporting intake.										
<sup>c</sup>	Value less than 0.5, but greater than 0.										
-	Indicates value as not statistically significant or less than 0.5, but greater than 0.										
Note:	Consumption amounts shown are representative of the first day of each participant’s survey response.										
Source:	USDA (1999b).										

## Chapter 9—Intake of Fruits and Vegetables

Table 9-15. Percentage of Individuals Consuming, Fruits by Sex and Age, for Children (%)<sup>a</sup>

Age Group (years)	Sample Size	Citrus Fruits and Juices				Other Fruits, Mixtures, and Juices					
		Total	Total	Juices	Dried Fruits	Total	Apples	Bananas	Melons and Berries	Other Fruits and Mixtures (mainly fruit)	Noncitrus Juices and Nectars
Male and Female											
Under 1	1,126	59.7	3.6	2.7	0.4 <sup>b</sup>	59.0	15.7	13.3	1.8	29.9	33.0
1	1,016	81.0	23.6	19.0	5.9	73.0	23.4	25.1	6.9	26.5	43.2
2	1,102	76.6	30.6	23.4	5.3	64.7	24.0	20.2	8.5	19.4	37.0
1 to 2	2,118	78.8	27.2	21.3	5.6	68.8	23.7	22.6	7.7	22.9	40.0
3	1,831	74.5	27.9	21.4	4.1	64.2	22.4	17.5	7.8	20.1	33.3
4	1,859	72.6	28.0	21.8	3.0	62.1	23.7	15.7	7.6	20.0	30.8
5	884	67.6	26.9	19.5	1.3 <sup>b</sup>	56.9	21.9	12.6	7.4	19.0	24.5
3 to 5	4,574	71.6	27.6	20.9	2.8	61.0	22.7	15.3	7.6	19.7	29.5
≤5	7,818	72.6	24.6	18.8	3.5	63.5	22.2	17.6	6.9	22.0	33.5
Male											
6 to 9	787	59.0	24.8	20.5	0.8 <sup>b</sup>	49.1	20.3	8.7	7.3	16.8	15.5
6 to 11	1,031	56.5	25.2	21.6	1.1 <sup>b</sup>	44.2	18.2	8.0	6.6	15.4	12.7
12 to 19	737	44.5	24.7	21.7	1.0 <sup>b</sup>	27.1	8.2	6.0	4.1	7.1	8.2
Female											
6 to 9	704	64.9	27.9	22.3	1.5 <sup>b</sup>	50.4	17.3	8.8	7.4	20.4	17.3
6 to 11	969	62.1	27.7	21.5	1.1 <sup>b</sup>	47.2	16.2	7.3	7.4	19.0	14.9
12 to 19	732	45.6	22.4	18.1	1.1 <sup>b</sup>	30.2	8.2	4.4	6.0	11.3	9.7
Male and Female											
≤9	9,309	68.3	25.2	19.8	2.5	58.0	20.9	14.0	7.1	20.6	26.7
≤19	11,287	57.8	24.8	20.1	1.8	44.4	15.2	9.7	6.2	15.5	17.9
<sup>a</sup>	Based on data from 1994–1996, 1998 CSFII.										
<sup>b</sup>	Estimate is not statistically reliable due to small sample size reporting intake.										
Note:	Percentages shown are representative of the first day of each participant's survey response.										
Source:	USDA (1999b).										



Chapter 9—Intake of Fruits and Vegetables

Table 9-16. Per Capita 2-Day Average Intake of Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight)														
Population Group	N	Percent Consuming <sup>a</sup>	Mean	SE	Percentiles									
					1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	Max
Fruits														
Whole population	20,607	80.0	1.6	0.0	0.0	0.0	0.0	0.0	0.5	2.0	4.2	6.5	14.0	73.8
Age group														
Birth to 1 year	1,486	56.4	5.7	0.3	0.0	0.0	0.0	0.0	1.5	9.6	17.1	21.3	32.2	73.8
1 to 2 years	2,096	89.5	6.2	0.2	0.0	0.0	0.0	0.5	4.7	9.4	14.6	18.5	26.4	44.0
3 to 5 years	4,391	90.0	4.6	0.1	0.0	0.0	0.0	0.2	3.2	7.0	11.4	14.4	22.3	45.5
6 to 12 years	2,089	88.3	2.4	0.1	0.0	0.0	0.0	0.1	1.3	3.3	6.4	8.8	14.3	25.0
13 to 19 years	1,222	73.2	0.8	0.1	0.0	0.0	0.0	0.0	0.1	1.1	2.4	3.5	6.9	12.8
20 to 49 years	4,677	75.3	0.9	0.0	0.0	0.0	0.0	0.0	0.2	1.3	2.7	3.9	6.2	16.7
≥50 years	4,646	85.8	1.4	0.0	0.0	0.0	0.0	0.1	0.9	2.1	3.6	4.8	7.6	18.4
Season														
Fall	4,687	79.6	1.5	0.1	0.0	0.0	0.0	0.0	0.5	2.0	4.2	6.4	13.3	43.8
Spring	5,308	80.2	1.6	0.1	0.0	0.0	0.0	0.0	0.5	1.9	4.2	6.7	14.7	73.8
Summer	5,890	78.3	1.5	0.1	0.0	0.0	0.0	0.0	0.4	1.9	4.0	6.2	12.8	53.2
Winter	4,722	81.7	1.7	0.0	0.0	0.0	0.0	0.0	0.7	2.1	4.4	6.6	14.3	37.5
Race														
Asian, Pacific Islander	557	78.8	2.1	0.2	0.0	0.0	0.0	0.0	1.1	3.2	6.0	7.4	14.7	43.5
American Indian, Alaskan Native	177	77.8	1.9	0.3	0.0	0.0	0.0	0.0	0.9	1.9	5.3	9.6	16.4	20.9
Black	2,740	71.3	1.2	0.1	0.0	0.0	0.0	0.0	0.1	1.2	3.6	5.6	13.3	40.0
Other/NA	1,638	78.5	2.2	0.2	0.0	0.0	0.0	0.0	0.9	2.9	6.1	10.0	18.5	45.5
White	15,495	81.5	1.6	0.0	0.0	0.0	0.0	0.0	0.6	2.0	4.1	6.3	13.4	73.8

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**Table 9-16. Per Capita 2-Day Average Intake of Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>	Mean	SE	Percentiles									
					1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	Max
<b>Region</b>														
Midwest	4,822	82.3	1.6	0.0	0.0	0.0	0.0	0.0	0.6	2.0	4.1	6.2	13.1	43.5
Northeast	3,692	83.4	1.7	0.1	0.0	0.0	0.0	0.0	0.8	2.2	4.2	6.3	14.1	40.0
South	7,208	74.7	1.3	0.1	0.0	0.0	0.0	0.0	0.2	1.5	3.5	5.7	13.0	73.8
West	4,885	82.7	2.0	0.1	0.0	0.0	0.0	0.0	0.9	2.6	5.2	8.0	15.3	45.5
<b>Urbanization</b>														
City center	6,164	79.0	1.6	0.0	0.0	0.0	0.0	0.0	0.5	2.0	4.4	6.3	14.1	45.5
Suburban	9,598	82.5	1.7	0.0	0.0	0.0	0.0	0.0	0.7	2.1	4.5	6.9	14.5	43.8
Nonmetropolitan	4,845	75.9	1.3	0.1	0.0	0.0	0.0	0.0	0.3	1.6	3.6	5.4	12.8	73.8
<b>Vegetables</b>														
Whole population	20,607	99.5	3.4	0.0	0.0	0.4	0.8	1.6	2.7	4.3	6.4	8.3	14.8	58.2
<b>Age group</b>														
Birth to 1 year	1,486	72.1	4.5	0.2	0.0	0.0	0.0	0.0	2.7	7.4	12.2	14.8	25.3	56.8
1 to 2 years	2,096	99.7	6.9	0.2	0.0	0.7	1.5	3.2	5.6	9.3	13.9	17.1	26.5	58.2
3 to 5 years	4,391	100.0	5.9	0.1	0.0	0.8	1.4	2.8	4.7	7.7	11.7	14.7	23.4	50.9
6 to 12 years	2,089	99.9	4.1	0.1	0.1	0.6	1.0	1.8	3.2	5.3	7.8	9.9	17.4	53.7
13 to 19 years	1,222	100.0	2.9	0.1	0.0	0.4	0.7	1.4	2.4	3.8	5.5	6.9	11.4	29.5
20 to 49 years	4,677	99.9	2.9	0.0	0.1	0.5	0.8	1.5	2.5	3.8	5.4	6.8	10.0	42.7
≥50 years	4,646	99.9	3.1	0.0	0.0	0.5	0.9	1.6	2.6	4.0	5.7	7.0	10.6	38.7
<b>Season</b>														
Fall	4,687	99.6	3.3	0.1	0.0	0.5	0.8	1.6	2.7	4.3	6.2	7.6	13.0	58.2
Spring	5,308	99.5	3.4	0.1	0.0	0.4	0.8	1.5	2.6	4.2	6.6	8.8	16.0	53.7
Summer	5,890	99.5	3.6	0.1	0.0	0.4	0.8	1.6	2.9	4.6	7.2	9.5	15.8	50.9
Winter	4,722	99.5	3.2	0.1	0.0	0.5	0.9	1.6	2.6	4.2	5.8	7.5	12.8	56.8

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**Table 9-16. Per Capita 2-Day Average Intake of Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>	Mean	SE	Percentiles									
					1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	Max
<b>Race</b>														
Asian, Pacific Islander	557	99.0	4.4	0.3	0.0	0.8	1.3	2.3	3.9	5.6	8.2	10.2	15.9	32.3
American Indian, Alaskan Native	177	99.7	3.9	0.3	0.0	0.5	0.8	1.6	2.8	5.2	8.1	9.8	18.4	34.5
Black	2,740	99.5	3.0	0.1	0.0	0.2	0.5	1.2	2.1	3.9	6.2	8.4	16.1	56.8
Other/NA	1,638	98.8	4.1	0.2	0.0	0.5	0.9	1.7	3.0	5.1	8.2	11.6	21.1	58.2
White	15,495	99.6	3.3	0.0	0.0	0.5	0.8	1.6	2.7	4.3	6.2	8.0	13.5	50.9
<b>Region</b>														
Midwest	4,822	99.6	3.4	0.1	0.0	0.5	0.8	1.6	2.7	4.3	6.5	8.6	14.1	53.7
Northeast	3,692	99.7	3.3	0.1	0.0	0.4	0.7	1.5	2.6	4.3	6.2	8.2	14.4	42.7
South	7,208	99.5	3.2	0.1	0.0	0.4	0.8	1.6	2.6	4.1	6.2	7.9	14.2	58.2
West	4,885	99.3	3.6	0.1	0.0	0.5	0.9	1.7	2.9	4.6	7.0	8.8	15.5	50.9
<b>Urbanization</b>														
City center	6,164	99.5	3.3	0.1	0.0	0.4	0.7	1.5	2.7	4.3	6.4	8.5	15.3	58.2
Suburban	9,598	99.5	3.4	0.0	0.0	0.5	0.9	1.6	2.7	4.3	6.5	8.3	14.0	53.7
Nonmetropolitan	4,845	99.6	3.3	0.1	0.0	0.5	0.8	1.6	2.6	4.2	6.4	8.1	14.9	49.4
<sup>a</sup>	Represents the percentage of individuals consuming these foods at least once over the 2-day survey period.													
N	= Sample size.													
SE	= Standard error.													
Source: U.S. EPA analysis of 1994–1996, 1998 CSFII.														

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**Table 9-17. Consumer-Only 2-Day Average Intake of Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight)**

Population Group	N	Mean	SE	Percentiles									
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	Max
Fruits													
Whole population	16,762	2.0	0.0	0.0	0.0	0.0	0.1	1.0	2.5	4.9	7.3	15.0	73.8
Age group													
Birth to 1 year	830	10.1	0.4	0.0	0.4	1.2	3.7	8.5	14.4	20.4	26.4	34.7	73.8
1 to 2 years	1,878	6.9	0.2	0.0	0.0	0.1	2.2	5.4	10.1	15.3	19.0	27.1	44.0
3 to 5 years	3,957	5.1	0.1	0.0	0.0	0.0	1.0	3.8	7.5	11.9	15.0	22.8	45.5
6 to 12 years	1,846	2.7	0.1	0.0	0.0	0.0	0.3	1.7	3.7	6.7	9.3	14.8	25.0
13 to 19 years	898	1.1	0.1	0.0	0.0	0.0	0.0	0.5	1.5	2.9	3.7	7.6	12.8
20 to 49 years	3,458	1.2	0.0	0.0	0.0	0.0	0.1	0.7	1.7	3.2	4.4	6.6	16.7
≥50 years	3,895	1.6	0.0	0.0	0.0	0.0	0.3	1.1	2.3	3.8	5.0	8.0	18.4
Season													
Fall	3,796	1.9	0.1	0.0	0.0	0.0	0.1	0.9	2.4	4.9	7.1	14.4	43.8
Spring	4,289	2.0	0.1	0.0	0.0	0.0	0.2	1.0	2.4	4.9	7.5	16.1	73.8
Summer	4,744	1.9	0.1	0.0	0.0	0.0	0.1	0.9	2.4	4.7	7.1	14.5	53.2
Winter	3,933	2.0	0.1	0.0	0.0	0.0	0.2	1.1	2.6	4.9	7.6	15.3	37.5
Race													
Asian, Pacific Islander	427	2.7	0.2	0.0	0.0	0.0	0.5	1.7	3.8	6.6	7.8	14.7	43.5
American Indian, Alaskan Native	146	2.4	0.4	0.0	0.0	0.0	0.4	1.1	2.9	5.8	10.0	17.6	20.9
Black	2,065	1.7	0.1	0.0	0.0	0.0	0.0	0.6	2.0	4.6	6.7	15.7	40.0
Other/NA	1,323	2.9	0.2	0.0	0.0	0.0	0.3	1.5	3.6	7.7	11.2	19.3	45.5
White	12,801	1.9	0.0	0.0	0.0	0.0	0.2	1.0	2.4	4.7	7.0	14.5	73.8

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Table 9-17. Consumer-Only 2-Day Average Intake of Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)													
Population Group	N	Mean	SE	Percentiles									Max
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
<b>Region</b>													
Midwest	4,023	1.9	0.1	0.0	0.0	0.0	0.1	1.0	2.3	4.7	6.7	14.4	43.5
Northeast	3,145	2.0	0.1	0.0	0.0	0.0	0.2	1.1	2.6	4.6	6.9	14.8	40.0
South	5,531	1.7	0.1	0.0	0.0	0.0	0.1	0.7	2.1	4.5	6.9	14.4	73.8
West	4,063	2.4	0.1	0.0	0.0	0.0	0.3	1.3	3.0	5.8	8.9	16.4	45.5
<b>Urbanization</b>													
City center	4,985	2.0	0.1	0.0	0.0	0.0	0.1	1.0	2.7	4.9	7.1	14.8	45.5
Suburban	8,046	2.1	0.1	0.0	0.0	0.0	0.2	1.1	2.5	5.1	7.7	15.6	43.8
Nonmetropolitan	3,731	1.7	0.1	0.0	0.0	0.0	0.1	0.8	2.1	4.1	6.3	13.9	73.8
<b>Vegetables</b>													
Whole population	20,163	3.4	0.0	0.0	0.5	0.8	1.6	2.7	4.3	6.4	8.4	14.8	58.2
<b>Age group</b>													
Birth to 1 year	1,062	6.2	0.3	0.0	0.1	0.1	2.0	4.9	9.4	13.4	16.1	26.4	56.8
1 to 2 years	2,090	6.9	0.2	0.0	0.7	1.5	3.2	5.6	9.3	13.9	17.1	26.5	58.2
3 to 5 years	4,389	5.9	0.1	0.0	0.8	1.4	2.8	4.7	7.7	11.7	14.7	23.4	50.9
6 to 12 years	2,087	4.1	0.1	0.1	0.6	1.0	1.8	3.2	5.3	7.8	9.9	17.4	53.7
13 to 19 years	1,222	2.9	0.1	0.0	0.4	0.7	1.4	2.4	3.8	5.5	6.9	11.4	29.5
20 to 49 years	4,673	2.9	0.0	0.1	0.5	0.8	1.5	2.5	3.8	5.4	6.8	10.0	42.7
≥50 years	4,640	3.1	0.0	0.0	0.5	0.9	1.6	2.6	4.0	5.7	7.0	10.6	38.7
<b>Season</b>													
Fall	4,606	3.3	0.1	0.1	0.5	0.8	1.6	2.8	4.3	6.2	7.7	13.0	58.2
Spring	5,185	3.4	0.1	0.0	0.5	0.8	1.5	2.6	4.2	6.7	8.8	16.0	53.7
Summer	5,740	3.6	0.1	0.1	0.4	0.8	1.7	2.9	4.6	7.2	9.5	15.8	50.9
Winter	4,632	3.2	0.1	0.0	0.6	0.9	1.6	2.7	4.2	5.9	7.5	12.8	56.8

**Table 9-17. Consumer-Only 2-Day Average Intake of Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Mean	SE	Percentiles									Max
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
<b>Race</b>													
Asian, Pacific Islander	530	4.4	0.3	0.1	1.0	1.4	2.4	3.9	5.6	8.2	10.2	15.9	32.3
American Indian, Alaskan Native	174	3.9	0.3	0.0	0.5	0.9	1.7	2.9	5.2	8.1	9.8	18.4	34.5
Black	2,683	3.1	0.1	0.0	0.2	0.5	1.2	2.1	3.9	6.2	8.4	16.1	56.8
Other/NA	1,577	4.2	0.2	0.1	0.6	0.9	1.8	3.0	5.2	8.3	11.7	21.3	58.2
White	15,199	3.3	0.0	0.1	0.5	0.9	1.6	2.7	4.3	6.2	8.0	13.6	50.9
<b>Region</b>													
Midwest	4,721	3.4	0.1	0.1	0.5	0.8	1.6	2.7	4.3	6.5	8.6	14.2	53.7
Northeast	3,634	3.3	0.1	0.0	0.4	0.8	1.5	2.6	4.3	6.2	8.2	14.4	42.7
South	7,078	3.3	0.1	0.0	0.5	0.8	1.6	2.6	4.1	6.2	7.9	14.2	58.2
West	4,730	3.6	0.1	0.1	0.5	0.9	1.7	2.9	4.6	7.1	8.9	15.6	50.9
<b>Urbanization</b>													
City center	6,029	3.4	0.1	0.0	0.4	0.8	1.5	2.7	4.3	6.4	8.6	15.4	58.2
Suburban	9,381	3.4	0.0	0.1	0.5	0.9	1.7	2.8	4.4	6.5	8.4	14.0	53.7
Nonmetropolitan	4,753	3.3	0.1	0.0	0.5	0.9	1.6	2.7	4.2	6.4	8.1	14.9	49.4
N	= Sample size.												
SE	= Standard error.												
Source: U.S. EPA analysis of 1994–1996, 1998 CSFII.													

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**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE	SE	Mean	SE	SE	Mean	SE	SE	Mean	SE	SE
		Apples			Asparagus			Bananas			Beans		
Whole population	20,607	30.5	0.45	0.01	1.4	0.01	0.00	48.1	0.35	0.01	44.9	0.27	0.01
Age group													
Birth to 1 year	1,486	34.6	2.32	0.13	0.2	0.01	0.00	40.7	1.24	0.06	21.6	0.43	0.04
1 to 2 years	2,096	44.8	1.79	0.09	0.8	0.02	0.01	62.8	1.77	0.09	46.8	0.76	0.04
3 to 5 years	4,391	44.6	1.64	0.05	0.5	0.01	0.00	60.7	0.93	0.04	43.0	0.52	0.02
6 to 12 years	2,089	38.2	0.83	0.05	0.7	0.01	0.00	57.7	0.38	0.03	38.8	0.32	0.02
13 to 19 years	1,222	22.5	0.20	0.02	0.6	0.00	0.00	42.1	0.13	0.02	36.0	0.18	0.02
20 to 49 years	4,677	25.7	0.21	0.01	1.3	0.01	0.00	41.7	0.21	0.01	45.5	0.22	0.01
≥50 years	4,646	34.5	0.32	0.02	2.5	0.02	0.00	54.1	0.35	0.01	51.4	0.26	0.01
Season													
Fall	4,687	35.0	0.55	0.03	1.2	0.01	0.00	45.6	0.36	0.02	47.3	0.29	0.01
Spring	5,308	29.6	0.45	0.02	1.9	0.02	0.00	49.8	0.35	0.02	43.3	0.25	0.01
Summer	5,890	25.5	0.34	0.02	0.9	0.01	0.00	49.6	0.33	0.02	43.6	0.28	0.01
Winter	4,722	32.2	0.46	0.02	1.6	0.02	0.00	47.3	0.38	0.01	45.5	0.26	0.01
Race													
Asian, Pacific Islander	557	33.5	0.53	0.06	1.0	0.01	0.00	45.4	0.43	0.04	52.0	0.25	0.02
American Indian, Alaskan Native	177	31.0	0.60	0.12	2.5	0.02	0.01	44.1	0.39	0.05	37.8	0.26	0.06
Black	2,740	22.0	0.36	0.02	0.4	0.00	0.00	45.4	0.43	0.04	45.2	0.32	0.02
Other/NA	1,638	27.7	0.55	0.05	0.2	0.00	0.00	44.1	0.26	0.02	60.6	0.43	0.03
White	15,495	32.0	0.45	0.01	1.7	0.01	0.00	47.5	0.58	0.07	43.6	0.25	0.01

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE	SE	Mean	SE	SE	Mean	SE	SE	Mean	SE	SE
<b>Region</b>													
Midwest	4,822	34.5	0.47	0.02	1.5	0.01	0.00	51.1	0.35	0.02	43.6	0.26	0.01
Northeast	3,692	32.7	0.48	0.03	1.3	0.01	0.00	52.9	0.36	0.01	36.7	0.21	0.01
South	7,208	25.3	0.36	0.01	1.1	0.01	0.00	42.4	0.30	0.02	48.8	0.33	0.01
West	4,885	32.7	0.55	0.02	1.9	0.01	0.00	49.6	0.44	0.03	47.5	0.25	0.02
<b>Urbanization</b>													
City center	6,164	28.9	0.42	0.02	1.7	0.01	0.00	48.4	0.36	0.02	46.2	0.29	0.01
Suburban	9,598	33.2	0.49	0.02	1.1	0.01	0.00	50.5	0.38	0.01	42.4	0.25	0.01
Nonmetropolitan	4,845	27.0	0.39	0.02	1.5	0.01	0.00	42.3	0.28	0.03	48.7	0.30	0.02
		<b>Beets</b>			<b>Berries and Small Fruit</b>			<b>Broccoli</b>			<b>Bulb Vegetables</b>		
Whole population	20,607	2.2	0.01	0.00	58.7	0.23	0.01	13.9	0.11	0.01	95.3	0.20	0.00
<b>Age group</b>													
Birth to 1 year	1,486	0.4	0.01	0.01	16.5	0.13	0.02	3.5	0.07	0.02	33.4	0.07	0.01
1 to 2 years	2,096	0.7	0.01	0.00	66.2	0.91	0.05	12.0	0.25	0.03	93.3	0.30	0.01
3 to 5 years	4,391	0.8	0.01	0.00	72.7	0.72	0.03	10.7	0.18	0.01	95.8	0.27	0.01
6 to 12 years	2,089	0.8	0.01	0.00	73.4	0.40	0.03	11.0	0.14	0.02	97.3	0.21	0.01
13 to 19 years	1,222	0.7	0.00	0.00	55.4	0.15	0.02	8.3	0.06	0.01	97.7	0.19	0.01
20 to 49 years	4,677	1.9	0.00	0.00	53.1	0.14	0.01	14.7	0.10	0.01	97.4	0.21	0.01
≥50 years	4,646	4.6	0.02	0.00	63.0	0.19	0.01	17.3	0.11	0.01	93.4	0.17	0.00
<b>Season</b>													
Fall	4,687	2.0	0.01	0.00	57.4	0.18	0.01	14.6	0.12	0.01	95.8	0.21	0.01
Spring	5,308	2.3	0.01	0.00	60.6	0.27	0.02	13.5	0.11	0.02	95.4	0.20	0.01
Summer	5,890	2.3	0.01	0.00	60.4	0.29	0.02	13.7	0.11	0.01	94.3	0.19	0.01



Chapter 9—Intake of Fruits and Vegetables

**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE	SE	Mean	SE	SE	Mean	SE	SE	Mean	SE	SE
Winter	4,722	2.3	0.01	0.00	56.6	0.20	0.01	13.7	0.10	0.01	95.5	0.21	0.01
<b>Race</b>													
Asian, Pacific Islander	557	2.7	0.00	0.00	41.7	0.28	0.06	25.7	0.23	0.06	95.0	0.38	0.03
American Indian, Alaskan Native	177	0.3	0.00	0.00	49.6	0.13	0.02	9.1	0.11	0.07	99.3	0.25	0.04
Black	2,740	0.9	0.00	0.00	50.6	0.14	0.01	13.2	0.14	0.02	92.9	0.16	0.01
Other/NA	1,638	1.3	0.01	0.00	47.5	0.21	0.03	8.2	0.09	0.02	95.0	0.31	0.02
White	15,495	2.5	0.01	0.00	61.6	0.25	0.01	14.0	0.10	0.01	95.6	0.19	0.00
<b>Region</b>													
Midwest	4,822	2.3	0.01	0.00	63.1	0.25	0.02	13.0	0.09	0.01	96.2	0.19	0.01
Northeast	3,692	2.4	0.01	0.00	63.2	0.24	0.02	15.3	0.13	0.01	94.5	0.19	0.01
South	7,208	1.7	0.01	0.00	53.3	0.19	0.01	13.1	0.11	0.01	94.4	0.18	0.01
West	4,885	2.8	0.01	0.00	58.7	0.28	0.03	14.6	0.12	0.02	96.3	0.25	0.01
<b>Urbanization</b>													
City center	6,164	2.3	0.01	0.00	57.3	0.22	0.01	15.1	0.13	0.01	95.0	0.21	0.01
Suburban	9,598	2.2	0.01	0.00	62.0	0.27	0.02	14.9	0.12	0.01	95.7	0.20	0.01
Nonmetropolitan	4,845	2.4	0.01	0.00	53.6	0.17	0.02	9.7	0.06	0.01	94.7	0.19	0.01
		Cabbage			Carrots			Citrus Fruits			Corn		
Whole population	20,607	15.5	0.08	0.01	49.8	0.17	0.00	19.3	0.19	0.01	94.6	0.44	0.01
<b>Age group</b>													
Birth to 1 year	1,486	1.0	0.01	0.00	12.3	0.17	0.03	2.5	0.07	0.02	46.0	0.48	0.03
1 to 2 years	2,096	8.0	0.06	0.01	46.8	0.41	0.02	15.5	0.47	0.05	96.5	1.13	0.05
3 to 5 years	4,391	8.9	0.07	0.01	46.2	0.34	0.02	18.2	0.50	0.03	98.7	1.24	0.03
6 to 12 years	2,089	9.5	0.06	0.01	44.4	0.22	0.01	16.0	0.26	0.02	98.9	0.87	0.03

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE	SE	Mean	SE	SE	Mean	SE	SE	Mean	SE	SE
13 to 19 years	1,222	9.0	0.04	0.01	40.3	0.11	0.01	12.3	0.11	0.02	95.7	0.43	0.02
20 to 49 years	4,677	16.0	0.07	0.01	50.2	0.14	0.01	18.1	0.12	0.01	94.7	0.32	0.01
≥50 years	4,646	22.8	0.12	0.01	58.1	0.17	0.01	27.1	0.23	0.01	94.2	0.26	0.01
Season													
Fall	4,687	16.2	0.07	0.01	53.9	0.19	0.01	16.6	0.16	0.01	94.2	0.42	0.01
Spring	5,308	15.1	0.08	0.01	46.5	0.17	0.01	20.3	0.20	0.01	94.5	0.44	0.02
Summer	5,890	14.5	0.08	0.01	44.3	0.14	0.01	15.8	0.08	0.01	95.1	0.50	0.02
Winter	4,722	16.3	0.08	0.01	54.5	0.18	0.01	24.6	0.33	0.02	94.8	0.41	0.02
Race													
Asian, Pacific Islander	557	33.9	0.24	0.04	59.4	0.28	0.04	23.4	0.35	0.07	85.6	0.32	0.04
American Indian, Alaskan Native	177	15.8	0.05	0.04	47.3	0.12	0.02	20.4	0.33	0.13	93.6	0.51	0.06
Black	2,740	15.9	0.14	0.03	36.6	0.10	0.01	13.0	0.15	0.02	93.7	0.49	0.02
Other/NA	1,638	9.5	0.02	0.01	46.2	0.21	0.02	22.4	0.37	0.06	92.6	0.70	0.05
White	15,495	15.2	0.07	0.00	51.9	0.18	0.01	20.0	0.18	0.01	95.3	0.42	0.01
Region													
Midwest	4,822	15.5	0.08	0.01	50.9	0.17	0.01	18.9	0.16	0.01	96.6	0.46	0.02
Northeast	3,692	13.4	0.08	0.01	53.8	0.18	0.01	22.4	0.21	0.02	93.3	0.40	0.01
South	7,208	16.8	0.09	0.01	44.9	0.14	0.01	15.1	0.14	0.01	94.4	0.44	0.01
West	4,885	15.5	0.06	0.01	52.8	0.21	0.01	23.7	0.28	0.02	94.1	0.47	0.02
Urbanization													
City center	6,164	16.4	0.09	0.01	48.8	0.16	0.01	19.8	0.20	0.01	93.8	0.44	0.01
Suburban	9,598	16.0	0.07	0.00	52.3	0.19	0.01	20.0	0.19	0.01	94.8	0.45	0.01
Nonmetropolitan	4,845	13.4	0.06	0.01	45.7	0.15	0.01	17.0	0.17	0.01	95.5	0.43	0.02

Chapter 9—Intake of Fruits and Vegetables

**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE		Mean	SE		Mean	SE		Mean	SE	
		Cucumbers			Cucurbits			Fruiting Vegetables			Leafy Vegetables		
Whole population	20,607	40.1	0.10	0.01	48.9	0.40	0.02	93.8	0.82	0.01	90.1	0.59	0.01
Age group													
Birth to 1 year	1,486	1.7	0.00	0.00	14.0	0.45	0.04	25.5	0.32	0.04	44.2	0.29	0.05
1 to 2 years	2,096	20.5	0.11	0.01	31.3	0.72	0.06	92.1	1.56	0.06	82.1	0.71	0.04
3 to 5 years	4,391	29.3	0.16	0.02	38.7	0.83	0.07	95.4	1.46	0.03	86.9	0.67	0.02
6 to 12 years	2,089	32.6	0.14	0.02	39.9	0.54	0.06	95.9	1.05	0.03	89.5	0.55	0.03
13 to 19 years	1,222	41.3	0.11	0.03	46.7	0.32	0.08	96.1	0.79	0.03	90.3	0.43	0.02
20 to 49 years	4,677	44.8	0.09	0.01	52.8	0.29	0.01	96.0	0.75	0.02	92.2	0.58	0.02
≥50 years	4,646	41.0	0.08	0.01	52.8	0.43	0.03	92.0	0.66	0.02	90.7	0.66	0.02
Season													
Fall	4,687	36.7	0.08	0.01	45.4	0.21	0.01	92.6	0.81	0.03	89.7	0.59	0.02
Spring	5,308	43.3	0.10	0.01	51.8	0.48	0.04	94.3	0.77	0.02	90.9	0.60	0.02
Summer	5,890	43.2	0.14	0.02	55.6	0.73	0.06	94.5	0.88	0.02	90.1	0.56	0.02
Winter	4,722	37.2	0.07	0.01	43.0	0.16	0.01	93.7	0.80	0.02	89.6	0.59	0.02
Race													
Asian, Pacific Islander	557	34.9	0.24	0.16	46.9	0.90	0.39	88.4	0.86	0.06	92.8	1.13	0.12
American Indian, Alaskan Native	177	41.0	0.09	0.03	51.3	0.53	0.13	98.2	0.91	0.08	89.3	0.52	0.17
Black	2,740	39.1	0.06	0.01	43.4	0.27	0.04	91.9	0.69	0.04	89.5	0.65	0.04
Other/NA	1,638	33.4	0.10	0.01	46.1	0.53	0.09	93.6	1.25	0.05	85.3	0.50	0.03
White	15,495	40.9	0.10	0.01	50.1	0.39	0.02	94.3	0.80	0.01	90.4	0.56	0.01
Region													
Midwest	4,822	42.1	0.10	0.01	49.6	0.37	0.03	94.8	0.81	0.02	92.1	0.55	0.03

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE	SE	Mean	SE	SE	Mean	SE	SE	Mean	SE	SE
Northeast	3,692	39.4	0.10	0.01	50.7	0.43	0.05	92.3	0.82	0.02	87.4	0.62	0.03
South	7,208	39.7	0.09	0.01	46.7	0.33	0.03	93.3	0.76	0.03	90.1	0.55	0.02
West	4,885	39.3	0.11	0.03	50.1	0.50	0.06	94.9	0.91	0.03	90.3	0.64	0.03
Urbanization													
City center	6,164	39.7	0.09	0.00	48.3	0.34	0.02	93.9	0.84	0.03	89.2	0.64	0.02
Suburban	9,598	40.6	0.11	0.01	49.9	0.44	0.04	93.5	0.81	0.01	90.5	0.60	0.02
Nonmetropolitan	4,845	39.7	0.10	0.01	47.8	0.37	0.03	94.3	0.80	0.04	90.5	0.46	0.03
		Legumes			Lettuce			Okra			Onions		
Whole population	20,607	95.5	0.43	0.01	52.2	0.24	0.01	1.4	0.01	0.00	94.9	0.19	0.00
Age group													
Birth to 1 year	1,486	51.7	1.21	0.06	1.1	0.00	0.00	0.2	0.00	0.00	32.8	0.07	0.01
1 to 2 years	2,096	96.9	1.30	0.08	23.3	0.14	0.01	1.3	0.01	0.00	93.0	0.29	0.01
3 to 5 years	4,391	98.3	0.85	0.06	33.4	0.21	0.01	0.8	0.01	0.00	95.6	0.26	0.01
6 to 12 years	2,089	98.1	0.48	0.03	41.7	0.22	0.01	1.3	0.01	0.00	96.8	0.20	0.01
13 to 19 years	1,222	94.9	0.27	0.02	55.2	0.22	0.02	0.8	0.00	0.00	97.3	0.18	0.01
20 to 49 years	4,677	95.7	0.34	0.01	60.1	0.27	0.01	1.3	0.01	0.00	97.1	0.20	0.01
≥50 years	4,646	96.2	0.40	0.01	51.4	0.23	0.01	2.1	0.01	0.00	93.2	0.16	0.00
Season													
Fall	4,687	96.0	0.44	0.02	50.6	0.23	0.01	1.7	0.01	0.00	95.5	0.20	0.01
Spring	5,308	95.3	0.40	0.02	54.5	0.25	0.01	1.1	0.01	0.00	95.0	0.19	0.01
Summer	5,890	95.2	0.43	0.02	51.7	0.23	0.01	1.7	0.01	0.00	94.0	0.18	0.00
Winter	4,722	95.5	0.44	0.02	52.1	0.24	0.01	1.0	0.01	0.00	95.3	0.20	0.01

Chapter 9—Intake of Fruits and Vegetables

**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE		Mean	SE		Mean	SE		Mean	SE	
<b>Race</b>													
Asian, Pacific Islander	557	96.1	0.76	0.09	48.1	0.28	0.05	4.8	0.01	0.01	94.9	0.37	0.03
American Indian, Alaskan Native	177	97.5	0.42	0.07	61.3	0.21	0.04	0.6	0.00	0.00	99.3	0.25	0.04
Black	2,740	95.6	0.50	0.04	42.7	0.15	0.01	2.4	0.01	0.00	92.6	0.16	0.01
Other/NA	1,638	93.5	0.55	0.04	52.1	0.25	0.02	0.6	0.00	0.00	95.0	0.30	0.02
White	15,495	95.6	0.40	0.01	53.8	0.25	0.01	1.2	0.01	0.00	95.3	0.18	0.00
<b>Region</b>													
Midwest	4,822	96.9	0.40	0.02	53.3	0.25	0.02	0.4	0.00	0.00	96.0	0.18	0.01
Northeast	3,692	93.4	0.38	0.02	49.3	0.24	0.01	0.8	0.00	0.00	94.0	0.18	0.01
South	7,208	96.1	0.47	0.02	50.7	0.21	0.01	2.6	0.01	0.00	94.1	0.18	0.01
West	4,885	95.0	0.44	0.02	56.0	0.27	0.01	1.2	0.00	0.00	96.1	0.24	0.01
<b>Urbanization</b>													
City center	6,164	95.1	0.47	0.02	51.3	0.24	0.01	1.8	0.01	0.00	94.8	0.20	0.01
Suburban	9,598	95.4	0.41	0.01	53.0	0.26	0.01	1.0	0.01	0.00	95.3	0.19	0.01
Nonmetropolitan	4,845	96.2	0.41	0.02	51.6	0.20	0.01	1.7	0.01	0.00	94.3	0.19	0.01
		Peaches			Pears			Peas			Peppers		
Whole population	20,607	40.8	0.11	0.00	8.2	0.09	0.00	22.3	0.11	0.01	83.0	0.06	0.00
<b>Age group</b>													
Birth to 1 year	1,486	24.4	0.85	0.08	15.9	0.73	0.07	29.5	0.47	0.04	15.6	0.01	0.00
1 to 2 years	2,096	50.7	0.47	0.04	17.2	0.40	0.04	28.3	0.34	0.03	77.5	0.05	0.01
3 to 5 years	4,391	55.4	0.26	0.02	16.6	0.26	0.03	20.5	0.21	0.02	84.6	0.05	0.00
6 to 12 years	2,089	54.7	0.14	0.02	17.5	0.14	0.01	17.2	0.12	0.01	85.1	0.05	0.00
13 to 19 years	1,222	39.1	0.06	0.01	5.9	0.03	0.01	14.0	0.07	0.01	84.8	0.04	0.00

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE	SE	Mean	SE	SE	Mean	SE	SE	Mean	SE	SE
20 to 49 years	4,677	34.5	0.05	0.00	4.4	0.04	0.00	21.3	0.08	0.01	86.9	0.08	0.01
≥50 years	4,646	44.1	0.10	0.01	9.0	0.07	0.01	28.4	0.10	0.01	78.9	0.06	0.01
Season													
Fall	4,687	35.9	0.07	0.01	9.6	0.11	0.01	24.1	0.10	0.01	81.3	0.07	0.01
Spring	5,308	42.9	0.10	0.01	7.7	0.07	0.00	20.2	0.10	0.01	84.8	0.06	0.00
Summer	5,890	46.6	0.17	0.01	6.8	0.07	0.01	19.8	0.10	0.01	83.1	0.06	0.00
Winter	4,722	37.9	0.09	0.01	8.7	0.10	0.01	24.9	0.13	0.01	83.0	0.06	0.00
Race													
Asian, Pacific Islander	557	32.2	0.07	0.02	9.2	0.13	0.03	41.0	0.15	0.02	70.9	0.08	0.01
American Indian, Alaskan Native	177	38.0	0.20	0.06	11.2	0.15	0.06	22.5	0.13	0.03	89.3	0.08	0.02
Black	2,740	39.4	0.10	0.01	5.6	0.06	0.01	20.9	0.13	0.02	82.8	0.04	0.01
Other/NA	1,638	35.2	0.13	0.02	8.3	0.11	0.02	19.8	0.07	0.01	81.7	0.12	0.01
White	15,495	41.8	0.11	0.01	8.6	0.09	0.00	21.9	0.10	0.01	83.6	0.06	0.00
Region													
Midwest	4,822	45.3	0.11	0.01	9.1	0.09	0.01	22.1	0.10	0.01	85.6	0.06	0.01
Northeast	3,692	44.0	0.10	0.01	9.4	0.10	0.01	24.7	0.13	0.02	79.0	0.07	0.01
South	7,208	35.8	0.11	0.01	6.5	0.07	0.01	19.9	0.10	0.01	82.1	0.05	0.00
West	4,885	41.1	0.11	0.01	8.9	0.10	0.01	24.0	0.10	0.01	85.4	0.08	0.01
Urbanization													
City center	6,164	39.9	0.11	0.01	8.1	0.09	0.01	24.0	0.12	0.01	83.4	0.07	0.01
Suburban	9,598	43.1	0.11	0.01	8.8	0.10	0.01	22.3	0.11	0.01	82.2	0.06	0.00
Nonmetropolitan	4,845	37.1	0.10	0.00	7.2	0.06	0.01	19.6	0.09	0.01	84.4	0.06	0.01

Chapter 9—Intake of Fruits and Vegetables

**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE		Mean	SE		Mean	SE		Mean	SE	
		Pome Fruit			Pumpkins			Root Tuber Vegetables			Stalk, Stem Vegetables		
Whole population	20,607	34.7	0.54	0.01	1.8	0.01	0.00	99.2	1.42	0.02	19.4	0.05	0.00
Age group													
Birth to 1 year	1,486	40.0	3.04	0.17	0.3	0.00	0.00	61.7	2.60	0.15	1.9	0.01	0.00
1 to 2 years	2,096	52.0	2.19	0.10	0.7	0.01	0.00	99.6	3.38	0.09	13.2	0.06	0.01
3 to 5 years	4,391	51.7	1.90	0.06	0.9	0.01	0.00	100.0	2.96	0.07	10.9	0.04	0.00
6 to 12 years	2,089	47.9	0.97	0.06	1.8	0.01	0.00	100.0	2.09	0.07	10.7	0.03	0.01
13 to 19 years	1,222	26.5	0.23	0.02	1.3	0.01	0.00	99.9	1.36	0.06	16.6	0.03	0.01
20 to 49 years	4,677	27.9	0.25	0.01	1.7	0.00	0.00	99.7	1.12	0.02	24.5	0.05	0.00
≥50 years	4,646	39.0	0.39	0.02	2.3	0.01	0.00	99.7	1.13	0.02	18.3	0.05	0.00
Season													
Fall	4,687	39.5	0.66	0.04	4.9	0.01	0.00	99.4	1.49	0.04	18.5	0.04	0.00
Spring	5,308	33.6	0.52	0.03	0.4	0.00	0.00	99.3	1.41	0.03	20.1	0.05	0.00
Summer	5,890	29.1	0.41	0.02	0.7	0.00	0.00	99.2	1.34	0.03	17.0	0.03	0.00
Winter	4,722	36.7	0.56	0.03	1.0	0.00	0.00	99.0	1.45	0.04	21.8	0.06	0.01
Race													
Asian, Pacific Islander	557	36.5	0.66	0.08	1.0	0.00	0.00	97.3	1.31	0.10	36.5	0.11	0.01
American Indian, Alaskan Native	177	39.5	0.75	0.14	1.2	0.00	0.00	99.7	1.71	0.30	21.6	0.05	0.02
Black	2,740	24.8	0.42	0.03	0.5	0.00	0.00	99.0	1.31	0.09	8.1	0.01	0.00
Other/NA	1,638	32.7	0.67	0.06	3.5	0.01	0.00	98.0	1.47	0.05	14.5	0.03	0.00
White	15,495	36.4	0.54	0.01	1.9	0.01	0.00	99.4	1.44	0.02	20.9	0.05	0.00
Region													
Midwest	4,822	38.9	0.55	0.03	2.4	0.01	0.00	99.5	1.57	0.05	22.1	0.05	0.00

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE	SE	Mean	SE	SE	Mean	SE	SE	Mean	SE	SE
Northeast	3,692	37.3	0.57	0.02	2.0	0.01	0.00	99.4	1.33	0.05	17.2	0.05	0.01
South	7,208	28.9	0.43	0.02	1.1	0.00	0.00	99.2	1.40	0.04	16.4	0.04	0.00
West	4,885	37.2	0.65	0.03	1.9	0.01	0.00	98.8	1.38	0.05	23.1	0.06	0.00
Urbanization													
City center	6,164	33.2	0.51	0.02	1.5	0.00	0.00	99.0	1.34	0.04	19.6	0.05	0.00
Suburban	9,598	37.6	0.59	0.02	1.8	0.00	0.00	99.3	1.44	0.03	20.0	0.05	0.00
Nonmetropolitan	4,845	30.7	0.45	0.03	2.0	0.01	0.00	99.4	1.52	0.06	17.8	0.04	0.00
		Strawberries			Stone Fruit			Tomatoes			Tropical Fruits		
Whole population	20,607	32.4	0.06	0.00	44.5	0.17	0.01	84.4	0.74	0.01	58.3	0.43	0.01
Age group													
Birth to 1 year	1,486	6.8	0.02	0.00	29.2	1.15	0.10	21.5	0.30	0.03	42.2	1.31	0.07
1 to 2 years	2,096	33.5	0.19	0.03	53.6	0.60	0.04	80.7	1.50	0.05	70.1	1.97	0.10
3 to 5 years	4,391	37.1	0.14	0.01	57.5	0.38	0.02	85.7	1.40	0.03	69.7	1.10	0.04
6 to 12 years	2,089	37.3	0.10	0.01	56.8	0.23	0.02	86.9	1.00	0.03	67.0	0.50	0.04
13 to 19 years	1,222	26.8	0.05	0.01	41.1	0.09	0.01	90.2	0.74	0.03	54.5	0.19	0.02
20 to 49 years	4,677	29.8	0.05	0.00	38.1	0.09	0.01	87.1	0.66	0.01	52.8	0.27	0.01
≥50 years	4,646	37.7	0.06	0.00	49.4	0.17	0.01	80.1	0.57	0.01	63.1	0.41	0.01
Season													
Fall	4,687	26.8	0.03	0.00	39.3	0.11	0.01	83.5	0.73	0.03	56.5	0.42	0.02
Spring	5,308	36.8	0.11	0.01	46.8	0.17	0.01	84.3	0.69	0.02	59.4	0.43	0.02
Summer	5,890	36.1	0.06	0.01	50.3	0.28	0.02	85.1	0.80	0.02	58.2	0.41	0.02
Winter	4,722	29.9	0.05	0.01	41.6	0.12	0.01	84.5	0.72	0.02	58.9	0.45	0.02
Race													



Chapter 9—Intake of Fruits and Vegetables

**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE	SE	Mean	SE	SE	Mean	SE	SE	Mean	SE	SE
Asian, Pacific Islander	557	23.9	0.07	0.03	36.5	0.16	0.04	74.1	0.73	0.06	55.4	0.61	0.07
American Indian, Alaskan Native	177	28.2	0.03	0.02	39.2	0.24	0.07	89.2	0.82	0.07	54.1	0.43	0.05
Black	2,740	21.1	0.02	0.00	40.7	0.14	0.02	78.1	0.63	0.03	53.6	0.36	0.03
Other/NA	1,638	22.3	0.05	0.01	38.2	0.19	0.03	89.6	1.11	0.05	60.9	0.77	0.09
White	15,495	35.3	0.07	0.00	45.9	0.17	0.01	85.4	0.73	0.01	59.0	0.41	0.01
<b>Region</b>													
Midwest	4,822	34.9	0.07	0.01	49.9	0.18	0.01	85.5	0.74	0.02	60.1	0.40	0.03
Northeast	3,692	37.1	0.06	0.01	47.5	0.15	0.01	83.4	0.73	0.02	62.4	0.47	0.02
South	7,208	27.2	0.05	0.00	38.9	0.15	0.01	82.7	0.69	0.02	53.1	0.36	0.02
West	4,885	33.9	0.08	0.01	44.8	0.20	0.01	86.6	0.81	0.02	60.8	0.53	0.03
<b>Urbanization</b>													
City center	6,164	29.7	0.05	0.01	43.5	0.17	0.01	84.1	0.75	0.02	58.8	0.46	0.02
Suburban	9,598	36.2	0.08	0.00	46.9	0.18	0.01	84.5	0.73	0.01	60.2	0.44	0.01
Nonmetropolitan	4,845	28.1	0.05	0.01	40.6	0.15	0.01	84.4	0.73	0.03	53.0	0.34	0.03
<b>White Potatoes</b>													
Whole population	20,607	91.3	0.89	0.02									
<b>Age group</b>													
Birth to 1 year	1,486	39.9	0.64	0.07									
1 to 2 years	2,096	91.2	1.95	0.08									
3 to 5 years	4,391	95.1	1.75	0.06									
6 to 12 years	2,089	93.9	1.21	0.06									
13 to 19 years	1,222	92.6	0.93	0.05									
20 to 49 years	4,677	91.5	0.74	0.02									

**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>			Percent Consuming <sup>a</sup>		
		Mean	SE		Mean	SE		Mean	SE	
≥50 years	4,646	91.7	0.72	0.02						
Season										
Fall	4,687	91.5	0.91	0.04						
Spring	5,308	91.3	0.87	0.03						
Summer	5,890	91.3	0.86	0.03						
Winter	4,722	91.1	0.90	0.03						
Race										
Asian, Pacific Islander	557	82.3	0.72	0.09						
American Indian, Alaskan Native	177	92.7	1.29	0.32						
Black	2,740	88.5	0.81	0.07						
Other/NA	1,638	86.5	0.86	0.07						
White	15,495	92.4	0.90	0.02						
Region										
Midwest	4,822	94.5	1.00	0.03						
Northeast	3,692	88.6	0.79	0.04						
South	7,208	91.8	0.90	0.04						
West	4,885	89.6	0.82	0.06						
Urbanization										
City center	6,164	89.5	0.81	0.04						
Suburban	9,598	91.2	0.87	0.02						
Nonmetropolitan	4,845	94.2	1.02	0.06						

*Chapter 9—Intake of Fruits and Vegetables*

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**Table 9-18. Per Capita 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

<sup>a</sup> Represents the percentage of individuals consuming these foods at least once over the 2-day survey period.  
*N* = Sample size.  
SE = Standard error.  
Note: Data for fruits and vegetables for which only small percentages of the population reported consumption may be less reliable than data for fruits and vegetables with higher percentages consuming.

Source: U.S. EPA analysis of 1994–1996, 1998 CSFII.

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-19. Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight)**

Population Group	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE	<i>N</i>	Mean	SE
	Apples			Asparagus			Bananas			Beans			Beets		
Whole population	7,193	1.47	0.03	233	0.85	0.04	10,734	0.73	0.02	9,086	0.60	0.01	374	0.35	0
Age group															
Birth to 1 year	496	6.71	0.31	3	2.59	1.16	605	3.04	0.12	313	2.00	0.16	6	1.42	0.9
1 to 2 years	947	4.00	0.15	19	1.99	0.54	1,328	2.82	0.12	996	1.63	0.08	13	0.98	0.3
3 to 5 years	1,978	3.68	0.08	23	1.37	0.32	2,746	1.54	0.06	1,909	1.22	0.04	36	0.9	0.2
6 to 12 years	792	2.17	0.12	13	1.77	0.43	1,214	0.66	0.05	833	0.82	0.05	16	0.66	0.3
13 to 19 years	271	0.90	0.06	4	0.56	0.08	511	0.30	0.04	472	0.49	0.03	9	0.2	0.1
20 to 49 years	1,171	0.82	0.03	58	0.79	0.08	1,887	0.50	0.01	2,153	0.48	0.01	93	0.23	0
≥50 years	1,538	0.92	0.04	113	0.77	0.07	2,443	0.65	0.02	2,410	0.52	0.02	201	0.38	0
Season															
Fall	1,841	1.57	0.06	44	0.80	0.13	2,292	0.79	0.04	2,122	0.60	0.02	90	0.25	0
Spring	1,818	1.52	0.07	91	0.90	0.07	2,856	0.70	0.03	2,311	0.59	0.02	92	0.45	0.1
Summer	1,801	1.32	0.06	36	0.66	0.12	3,124	0.66	0.03	2,539	0.65	0.02	104	0.34	0.1
Winter	1,733	1.44	0.05	62	0.94	0.10	2,462	0.80	0.03	2,114	0.57	0.02	88	0.33	0.1
Race															
Asian, Pacific Islander	182	1.59	0.12	5	0.62	0.15	265	0.95	0.10	265	0.48	0.05	16	0.04	0
American Indian, Alaskan Native	58	1.93	0.27	2	0.81	-	88	0.87	0.15	74	0.70	0.12	1	0.02	-
Black	762	1.62	0.12	8	1.01	0.64	1,288	0.59	0.05	1,205	0.71	0.04	18	0.29	0.1
Other/NA	536	2.00	0.13	5	0.31	0.09	865	1.21	0.11	911	0.71	0.04	16	0.39	0.2
White	5,655	1.42	0.03	213	0.86	0.05	8,228	0.71	0.02	6,631	0.58	0.01	323	0.36	0

Chapter 9—Intake of Fruits and Vegetables

**Table 9-19. Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
<b>Region</b>															
Midwest	1,792	1.35	0.06	63	0.91	0.08	2,589	0.68	0.04	2,071	0.59	0.02	90	0.35	0.1
Northeast	1,385	1.46	0.05	43	0.72	0.10	2,122	0.68	0.02	1,342	0.56	0.02	78	0.42	0.1
South	2,201	1.44	0.05	64	1.07	0.09	3,356	0.70	0.04	3,465	0.68	0.02	99	0.29	0
West	1,815	1.67	0.06	63	0.69	0.04	2,667	0.89	0.03	2,208	0.52	0.03	107	0.33	0.1
<b>Urbanization</b>															
City center	2,091	1.46	0.05	81	0.85	0.07	3,182	0.75	0.03	2,840	0.62	0.02	110	0.28	0
Suburban	3,647	1.49	0.05	97	0.78	0.07	5,303	0.75	0.02	3,957	0.58	0.01	171	0.39	0.1
Nonmetropolitan	1,455	1.45	0.03	55	0.98	0.11	2,249	0.67	0.04	2,289	0.61	0.01	93	0.35	0
	<b>Berries and Small Fruits</b>			<b>Broccoli</b>			<b>Bulb Vegetables</b>			<b>Cabbage</b>			<b>Carrots</b>		
Whole population	12,206	0.40	0.01	2,474	0.80	0.03	18,738	0.21	0.00	2,633	0.50	0.03	9,513	0.34	0.01
<b>Age group</b>															
Birth to 1 year	229	0.81	0.07	49	2.09	0.33	489	0.22	0.02	15	0.61	0.41	179	1.39	0.20
1 to 2 years	1,396	1.38	0.06	242	2.11	0.16	1,957	0.32	0.01	160	0.73	0.11	999	0.87	0.05
3 to 5 years	3,166	0.99	0.04	475	1.67	0.09	4,207	0.28	0.01	369	0.78	0.07	2,048	0.74	0.03
6 to 12 years	1,523	0.54	0.04	213	1.29	0.16	2,040	0.22	0.01	190	0.63	0.11	904	0.50	0.03
13 to 19 years	679	0.27	0.03	102	0.69	0.07	1,194	0.20	0.01	106	0.40	0.06	482	0.27	0.02
20 to 49 years	2,393	0.27	0.02	640	0.68	0.04	4,546	0.22	0.01	746	0.45	0.03	2,289	0.28	0.01
≥50 years	2,820	0.31	0.01	753	0.63	0.03	4,305	0.18	0.00	1,047	0.52	0.02	2,612	0.29	0.01
<b>Season</b>															
Fall	2,706	0.31	0.02	582	0.81	0.05	4,310	0.22	0.01	623	0.44	0.03	2,338	0.35	0.02
Spring	3,202	0.45	0.03	651	0.82	0.07	4,835	0.21	0.01	684	0.52	0.03	2,345	0.36	0.02
Summer	3,558	0.48	0.02	660	0.79	0.05	5,280	0.20	0.01	676	0.56	0.07	2,440	0.33	0.01
Winter	2,740	0.35	0.02	581	0.76	0.07	4,313	0.22	0.01	650	0.48	0.04	2,390	0.34	0.01

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-19. Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (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	<i>N</i>	Mean	SE
<b>Race</b>															
Asian, Pacific Islander	252	0.66	0.13	118	0.89	0.12	481	0.40	0.03	152	0.69	0.09	329	0.47	0.05
American Indian, Alaskan Native	85	0.26	0.04	16	1.18	0.43	169	0.25	0.04	18	0.34	0.13	82	0.26	0.03
Black	1,430	0.27	0.02	286	1.06	0.12	2,438	0.18	0.01	359	0.87	0.11	958	0.28	0.02
Other/NA	782	0.45	0.06	131	1.09	0.10	1,484	0.33	0.02	144	0.24	0.05	749	0.45	0.03
White	9,657	0.41	0.01	1,923	0.73	0.03	14,166	0.20	0.00	1,960	0.43	0.02	7,395	0.34	0.01
<b>Region</b>															
Midwest	3,042	0.40	0.03	533	0.66	0.03	4,457	0.20	0.01	629	0.49	0.04	2,313	0.34	0.02
Northeast	2,383	0.37	0.03	511	0.84	0.07	3,324	0.20	0.01	413	0.56	0.06	1,843	0.34	0.01
South	3,896	0.35	0.02	810	0.83	0.04	6,497	0.19	0.01	978	0.52	0.06	2,981	0.31	0.01
West	2,885	0.48	0.03	620	0.83	0.08	4,460	0.26	0.01	613	0.41	0.03	2,376	0.40	0.01
<b>Urbanization</b>															
City center	3,525	0.38	0.02	741	0.83	0.06	5,547	0.22	0.01	794	0.58	0.07	2,759	0.34	0.01
Suburban	6,039	0.44	0.02	1,283	0.81	0.03	8,768	0.21	0.01	1,251	0.45	0.02	4,690	0.36	0.01
Nonmetropolitan	2,642	0.31	0.03	450	0.64	0.05	4,423	0.20	0.01	588	0.48	0.04	2,064	0.32	0.01
	Citrus Fruits			Corn			Cucumbers			Cucurbits			Fruiting Vegetables		
Whole population	3,656	0.99	0.03	19,059	0.47	0.01	6,779	0.24	0.02	8,763	0.81	0.04	18,407	0.87	0.01
<b>Age group</b>															
Birth to 1 year	37	2.79	0.53	671	1.05	0.07	25	0.28	0.11	213	3.19	0.29	371	1.24	0.11
1 to 2 years	336	3.06	0.20	2,027	1.17	0.05	439	0.52	0.05	682	2.29	0.17	1,927	1.70	0.06
3 to 5 years	751	2.75	0.15	4,334	1.26	0.03	1,266	0.56	0.05	1,694	2.15	0.17	4,180	1.53	0.03
6 to 12 years	324	1.60	0.12	2,064	0.88	0.03	667	0.43	0.06	833	1.34	0.15	2,014	1.10	0.03
13 to 19 years	157	0.90	0.15	1,176	0.45	0.01	500	0.26	0.06	563	0.69	0.16	1,176	0.82	0.03

Chapter 9—Intake of Fruits and Vegetables

**Table 9-19. Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
20 to 49 years	841	0.68	0.04	4,415	0.34	0.01	2,033	0.20	0.01	2,400	0.55	0.03	4,489	0.78	0.02
≥50 years	1,210	0.84	0.03	4,372	0.28	0.01	1,849	0.21	0.01	2,378	0.81	0.05	4,250	0.71	0.02
Season															
Fall	761	0.93	0.06	4,342	0.44	0.01	1,374	0.22	0.02	1,778	0.46	0.03	4,186	0.87	0.03
Spring	1,002	0.97	0.05	4,909	0.47	0.02	1,906	0.23	0.01	2,408	0.94	0.07	4,755	0.82	0.02
Summer	815	0.53	0.04	5,423	0.52	0.02	2,070	0.32	0.05	2,855	1.32	0.10	5,262	0.93	0.02
Winter	1,078	1.32	0.06	4,385	0.44	0.02	1,429	0.20	0.02	1,722	0.36	0.03	4,204	0.85	0.03
Race															
Asian, Pacific Islander	117	1.50	0.19	454	0.37	0.05	134	0.68	0.43	217	1.92	0.79	439	0.98	0.06
American Indian, Alaskan Native	41	1.61	0.17	165	0.55	0.06	60	0.23	0.06	75	1.04	0.32	162	0.93	0.08
Black	369	1.15	0.08	2,502	0.52	0.02	858	0.17	0.01	987	0.62	0.08	2,398	0.75	0.04
Other/NA	347	1.66	0.16	1,475	0.76	0.05	413	0.30	0.03	633	1.14	0.19	1,447	1.34	0.05
White	2,782	0.89	0.03	14,463	0.44	0.01	5,314	0.24	0.01	6,851	0.77	0.03	13,961	0.85	0.01
Region															
Midwest	842	0.84	0.06	4,562	0.48	0.02	1,693	0.23	0.02	2,091	0.75	0.05	4,379	0.85	0.02
Northeast	754	0.94	0.06	3,377	0.43	0.01	1,191	0.25	0.02	1,614	0.85	0.08	3,254	0.88	0.02
South	998	0.94	0.04	6,648	0.46	0.01	2,356	0.22	0.02	2,905	0.70	0.06	6,416	0.81	0.03
West	1,062	1.20	0.07	4,472	0.49	0.02	1,539	0.29	0.07	2,153	0.99	0.12	4,358	0.96	0.03
Urbanization															
City center	1,146	1.01	0.04	5,641	0.47	0.01	1,965	0.22	0.01	2,570	0.71	0.05	5,477	0.89	0.03
Suburban	1,738	0.97	0.04	8,886	0.47	0.01	3,151	0.26	0.03	4,119	0.89	0.07	8,563	0.86	0.01
Nonmetropolitan	772	0.99	0.07	4,532	0.45	0.02	1,663	0.25	0.03	2,074	0.78	0.06	4,367	0.85	0.04

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-19. Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (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	<i>N</i>	Mean	SE
	Leafy Vegetables			Legumes			Lettuce			Okra			Onions		
Whole population	17,637	0.65	0.01	19,258	0.45	0.01	8,430	0.46	0.01	272	0.51	0.04	18,678	0.20	0.00
Age group															
Birth to 1 year	639	0.65	0.11	754	2.34	0.11	15	0.17	0.02	4	1.50	0.54	481	0.22	0.02
1 to 2 years	1,729	0.87	0.05	2,037	1.34	0.08	481	0.58	0.04	29	0.64	0.19	1,948	0.31	0.01
3 to 5 years	3,815	0.77	0.03	4,308	0.86	0.06	1,415	0.62	0.03	34	1.16	0.32	4,200	0.27	0.01
6 to 12 years	1,860	0.62	0.03	2,045	0.49	0.03	858	0.53	0.02	21	0.62	0.15	2,030	0.21	0.01
13 to 19 years	1,101	0.47	0.02	1,168	0.29	0.02	669	0.40	0.03	12	0.43	0.13	1,190	0.19	0.01
20 to 49 years	4,308	0.63	0.02	4,477	0.36	0.01	2,693	0.45	0.01	62	0.44	0.06	4,533	0.21	0.01
≥50 years	4,185	0.72	0.02	4,469	0.41	0.01	2,299	0.45	0.01	110	0.50	0.05	4,296	0.17	0.00
Season															
Fall	4,046	0.66	0.03	4,412	0.46	0.02	1,894	0.46	0.02	58	0.39	0.04	4,300	0.21	0.01
Spring	4,579	0.66	0.02	4,952	0.42	0.02	2,279	0.46	0.02	66	0.47	0.09	4,815	0.20	0.01
Summer	4,964	0.62	0.02	5,476	0.45	0.02	2,325	0.45	0.01	106	0.65	0.08	5,265	0.19	0.01
Winter	4,048	0.66	0.02	4,418	0.46	0.02	1,932	0.46	0.02	42	0.53	0.13	4,298	0.21	0.01
Race															
Asian, Pacific Islander	469	1.22	0.12	503	0.79	0.09	191	0.58	0.09	15	0.20	0.06	480	0.39	0.03
American Indian, Alaskan Native	151	0.59	0.19	170	0.44	0.08	88	0.34	0.04	2	0.40	-	169	0.25	0.04
Black	2,367	0.73	0.04	2,563	0.52	0.04	884	0.35	0.02	67	0.63	0.08	2,431	0.17	0.01
Other/NA	1,329	0.59	0.04	1,478	0.58	0.05	643	0.49	0.04	15	0.70	0.25	1,484	0.32	0.02
White	13,321	0.62	0.01	14,544	0.42	0.01	6,624	0.47	0.01	173	0.51	0.05	14,114	0.19	0.00
Region															
Midwest	4,226	0.60	0.03	4,577	0.41	0.02	2,035	0.47	0.03	24	0.42	0.20	4,448	0.19	0.01



Chapter 9—Intake of Fruits and Vegetables

**Table 9-19. Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
Northeast	3,081	0.71	0.03	3,421	0.40	0.02	1,396	0.49	0.02	22	0.50	0.18	3,308	0.19	0.01
South	6,174	0.61	0.02	6,771	0.49	0.02	2,830	0.41	0.02	178	0.58	0.05	6,479	0.19	0.01
West	4,156	0.71	0.04	4,489	0.47	0.03	2,169	0.49	0.03	48	0.30	0.07	4,443	0.25	0.01
Urbanization															
City center	5,232	0.72	0.03	5,735	0.50	0.02	2,414	0.46	0.02	96	0.49	0.07	5,531	0.21	0.01
Suburban	8,220	0.67	0.02	8,950	0.43	0.02	3,999	0.49	0.01	102	0.59	0.07	8,739	0.20	0.01
Nonmetropolitan	4,185	0.51	0.03	4,573	0.43	0.02	2,017	0.39	0.02	74	0.42	0.04	4,408	0.20	0.01
	Peaches			Pears			Peas			Peppers			Pome Fruit		
Whole population	9,069	0.26	0.01	2,355	1.06	0.04	4,661	0.48	0.02	16,093	0.08	0.00	8,316	1.55	0.03
Age group															
Birth to 1 year	344	3.47	0.28	217	4.55	0.28	417	1.60	0.09	224	0.05	0.01	572	7.60	0.34
1 to 2 years	1,067	0.93	0.08	354	2.33	0.16	609	1.21	0.06	1,627	0.06	0.01	1,097	4.21	0.13
3 to 5 years	2,461	0.48	0.03	711	1.59	0.12	888	1.02	0.07	3,706	0.06	0.00	2,291	3.68	0.08
6 to 12 years	1,150	0.26	0.03	382	0.81	0.07	346	0.68	0.06	1,784	0.05	0.01	1,012	2.03	0.10
13 to 19 years	480	0.15	0.03	72	0.45	0.09	168	0.48	0.06	1,041	0.05	0.00	320	0.87	0.06
20 to 49 years	1,544	0.14	0.01	205	0.80	0.05	959	0.37	0.02	4,068	0.09	0.01	1,274	0.88	0.03
≥50 years	2,023	0.22	0.01	414	0.81	0.04	1,274	0.37	0.02	3,643	0.08	0.01	1,750	1.00	0.03
Season															
Fall	1,841	0.20	0.02	596	1.15	0.08	1,172	0.43	0.02	3,643	0.08	0.01	2,102	1.67	0.07
Spring	2,439	0.23	0.02	590	0.86	0.05	1,120	0.51	0.03	4,212	0.07	0.01	2,102	1.54	0.06
Summer	2,815	0.37	0.02	585	1.05	0.06	1,213	0.48	0.02	4,568	0.08	0.01	2,092	1.40	0.06
Winter	1,974	0.22	0.02	584	1.14	0.09	1,156	0.52	0.04	3,670	0.07	0.01	2,020	1.53	0.06
Race															
Asian, Pacific Islander	200	0.23	0.04	56	1.43	0.21	192	0.35	0.04	344	0.11	0.01	209	1.82	0.14

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-19. Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (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	<i>N</i>	Mean	SE	
American Indian, Alaskan Native	68	0.54	0.17	23	1.31	0.60	51	0.59	0.10	144	0.09	0.03	73	1.89	0.29	
Black	1,146	0.25	0.03	244	1.09	0.15	612	0.64	0.05	2,150	0.05	0.01	878	1.68	0.12	
Other/NA	590	0.38	0.07	171	1.39	0.22	323	0.38	0.04	1,233	0.15	0.01	624	2.05	0.14	
White	7,065	0.26	0.01	1,861	1.02	0.04	3,483	0.48	0.02	12,222	0.07	0.00	6,532	1.48	0.03	
Region																
Midwest	2,283	0.25	0.02	625	0.96	0.06	1,108	0.46	0.02	3,920	0.07	0.01	2,094	1.42	0.07	
Northeast	1,778	0.22	0.02	470	1.04	0.06	923	0.52	0.05	2,711	0.08	0.01	1,598	1.54	0.05	
South	2,849	0.30	0.02	648	1.08	0.10	1,526	0.51	0.03	5,579	0.06	0.01	2,535	1.50	0.05	
West	2,159	0.26	0.02	612	1.17	0.08	1,104	0.43	0.04	3,883	0.10	0.01	2,089	1.74	0.07	
Urbanization																
City center	2,640	0.27	0.02	686	1.06	0.06	1,480	0.50	0.03	4,780	0.09	0.01	2,408	1.54	0.05	
Suburban	4,457	0.26	0.01	1,205	1.12	0.06	2,179	0.48	0.03	7,436	0.07	0.00	4,224	1.58	0.06	
Nonmetropolitan	1,972	0.27	0.01	464	0.89	0.05	1,002	0.45	0.04	3,877	0.07	0.01	1,684	1.48	0.03	
		Pumpkins			Root Tuber Vegetables			Stalk, Stem Vegetables			Strawberries			Stone Fruit		
Whole population	299	0.30	0.02	19,997	1.44	0.02	3,095	0.24	0.01	6,675	0.20	0.01	9,786	0.38	0.01	
Age group																
Birth to 1 year	3	1.06	0.71	916	4.21	0.19	24	0.56	0.22	96	0.26	0.06	418	3.95	0.25	
1 to 2 years	15	1.08	0.51	2,087	3.40	0.09	272	0.48	0.05	729	0.57	0.08	1,130	1.13	0.08	
3 to 5 years	36	0.56	0.10	4,388	2.96	0.07	502	0.38	0.03	1,710	0.38	0.03	2,556	0.66	0.03	
6 to 12 years	37	0.52	0.11	2,089	2.09	0.07	218	0.32	0.04	783	0.28	0.02	1,194	0.41	0.03	
13 to 19 years	14	0.42	0.16	1,221	1.36	0.06	190	0.20	0.03	326	0.18	0.03	508	0.21	0.03	
20 to 49 years	89	0.24	0.02	4,664	1.12	0.02	1,079	0.20	0.01	1,330	0.15	0.02	1,715	0.23	0.01	
≥50 years	105	0.22	0.01	4,632	1.14	0.02	810	0.27	0.02	1,701	0.15	0.01	2,265	0.34	0.02	

Chapter 9—Intake of Fruits and Vegetables

**Table 9-19. Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, edible portion, uncooked weight) (Continued)**

Population Group	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
Season															
Fall	193	0.29	0.02	4,565	1.50	0.04	720	0.22	0.02	1,250	0.13	0.01	1,987	0.27	0.02
Spring	22	0.65	0.18	5,151	1.43	0.03	825	0.25	0.01	1,911	0.30	0.03	2,627	0.35	0.02
Summer	40	0.22	0.06	5,690	1.35	0.03	796	0.20	0.01	2,060	0.17	0.02	3,029	0.56	0.03
Winter	44	0.25	0.04	4,591	1.46	0.03	754	0.26	0.02	1,454	0.16	0.02	2,143	0.29	0.02
Race															
Asian, Pacific Islander	4	0.33	0.07	518	1.35	0.10	158	0.29	0.03	149	0.29	0.11	218	0.44	0.08
American Indian, Alaskan Native	3	0.11	0.01	174	1.71	0.30	32	0.25	0.05	50	0.11	0.04	73	0.60	0.18
Black	12	0.34	0.05	2,642	1.32	0.09	188	0.18	0.03	550	0.11	0.02	1,184	0.34	0.04
Other/NA	43	0.21	0.08	1,561	1.50	0.05	172	0.21	0.02	367	0.22	0.06	649	0.50	0.08
White	237	0.31	0.02	15,102	1.45	0.02	2,545	0.24	0.01	5,559	0.20	0.01	7,662	0.38	0.01
Region															
Midwest	87	0.31	0.01	4,709	1.58	0.05	883	0.22	0.02	1,668	0.20	0.01	2,469	0.36	0.02
Northeast	62	0.30	0.09	3,598	1.34	0.05	467	0.26	0.03	1,381	0.16	0.02	1,912	0.32	0.02
South	70	0.28	0.03	6,998	1.41	0.04	908	0.24	0.02	1,952	0.18	0.02	3,060	0.39	0.02
West	80	0.30	0.05	4,692	1.40	0.05	837	0.24	0.02	1,674	0.23	0.03	2,345	0.45	0.03
Urbanization															
City center	76	0.31	0.05	5,961	1.36	0.04	891	0.25	0.02	1,772	0.18	0.02	2,845	0.38	0.02
Suburban	137	0.26	0.02	9,315	1.45	0.03	1,492	0.23	0.01	3,517	0.22	0.01	4,808	0.38	0.02
Nonmetropolitan	86	0.36	0.04	4,721	1.53	0.07	712	0.24	0.02	1,386	0.17	0.03	2,133	0.36	0.01
	Tomatoes			Tropical Fruits			White Potatoes								
Whole population	16,403	0.87	0.01	12,539	0.73	0.02	18,261	0.97	0.02						
Age group															

**Table 9-19. Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (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	<i>N</i>	Mean	SE
Birth to 1 year	315	1.42	0.13	630	3.09	0.12	577	1.60	0.15						
1 to 2 years	1,684	1.86	0.06	1,476	2.81	0.12	1,918	2.14	0.09						
3 to 5 years	3,764	1.63	0.03	3,106	1.57	0.05	4,147	1.84	0.06						
6 to 12 years	1,832	1.15	0.03	1,407	0.75	0.05	1,963	1.29	0.06						
13 to 19 years	1,098	0.82	0.03	652	0.35	0.04	4,271	0.81	0.02						
20 to 49 years	4,053	0.75	0.02	2,428	0.51	0.02	2,664	0.75	0.02						
≥50 years	3,657	0.72	0.01	2,840	0.64	0.02	4,254	0.78	0.02						
Season															
Fall	3,732	0.87	0.03	2,748	0.75	0.03	4,205	1.00	0.04						
Spring	4,173	0.82	0.02	3,291	0.72	0.03	4,703	0.96	0.03						
Summer	4,731	0.94	0.02	3,595	0.70	0.02	5,190	0.94	0.03						
Winter	3,767	0.86	0.03	2,905	0.77	0.03	4,163	0.99	0.03						
Race															
Asian, Pacific Islander	373	0.99	0.08	314	1.10	0.13	428	0.88	0.09						
American Indian, Alaskan Native	146	0.92	0.08	103	0.79	0.12	162	1.40	0.33						
Black	2,017	0.80	0.04	1,541	0.67	0.05	2,365	0.92	0.08						
Other/NA	1,369	1.24	0.05	1,034	1.26	0.10	1,353	1.00	0.06						
White	12,498	0.85	0.01	9,547	0.69	0.02	13,953	0.98	0.02						
Region															
Midwest	3,915	0.87	0.02	2,989	0.67	0.04	4,436	1.06	0.04						
Northeast	2,906	0.88	0.02	2,412	0.75	0.02	3,199	0.90	0.03						
South	5,629	0.83	0.02	4,016	0.67	0.03	6,415	0.98	0.04						
West	3,953	0.93	0.02	3,122	0.87	0.03	4,211	0.92	0.06						

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**Table 9-19. Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables Based on 1994–1996, 1998 Continuing Survey of Food Intake among Individuals (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	<i>N</i>	Mean	SE
Urbanization															
City center	4,867	0.89	0.02	3,750	0.79	0.03	5,337	0.91	0.04						
Suburban	7,647	0.87	0.01	6,092	0.73	0.02	8,488	0.96	0.02						
Nonmetropolitan	3,889	0.86	0.03	2,697	0.64	0.05	4,436	1.08	0.06						
<p><i>N</i> = Sample size.                      SE = Standard error.                      Note: Data for fruits and vegetables for which only small percentages of the population reported consumption may be less reliable than data for fruits and vegetables with higher percentages consuming.</p>															
<p>Source: U.S. EPA analysis of 1994–1996, 1998 CSFII.</p>															

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**Table 9-20. Per Capita 2-Day Average Intake of Exposed Fruits Based on 1994–1996 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, as-consumed)**

Population Group	Percent Consuming <sup>a</sup>	Mean	SE	Percentile									Max
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
Whole population	39.9	1.5	0.06	0	0	0	0	0	1.3	3.8	7.0	22.6	101.3
Age group													
0 to 5 months	32.8	6.4	1.6	0	0	0	0	0	6.9	23.7	40.2	48.5	63.4
6 to 12 months	79.9	14.1	1.2	0	0	0	4.5	11.8	19.3	32.7	37.1	63.7	69.6
<1 years	54.9	10.0	1.0	0	0	0	0	4.5	16.5	30.1	38.8	58.5	69.6
1 to 2 years	69.2	10.9	0.47	0	0	0	0	5.7	15.7	29.4	39.0	65.8	101.3
3 to 5 years	59.8	5.6	0.28	0	0	0	0	2.7	8.1	15.8	22.2	35.0	77.1
6 to 11 years	50	2.2	0.14	0	0	0	0	0	3.1	6.3	8.8	17.6	32.2
12 to 19 years	32.7	0.87	0.09	0	0	0	0	0	1.1	2.9	4.9	8.8	14.9
20 to 39 years	29.6	0.58	0.05	0	0	0	0	0	0.60	2.0	3.1	6.2	16.0
40 to 69 years	40	0.69	0.03	0	0	0	0	0	0.94	2.2	3.3	6.3	18.6
≥70 years	51.6	0.97	0.06	0	0	0	0	0.11	1.3	2.8	4.1	7.5	18.6
Season													
Fall	40.7	1.6	0.11	0	0	0	0	0	1.4	4.0	7.0	22.5	101.3
Spring	40.4	1.5	0.10	0	0	0	0	0	1.3	3.8	7.1	20.9	77.1
Summer	39.7	1.5	0.11	0	0	0	0	0	1.3	3.7	6.9	23.7	81.1
Winter	38.6	1.5	0.12	0	0	0	0	0	1.2	3.4	7.1	21.2	83.6
Urbanization													
Central city	39.6	1.6	0.11	0	0	0	0	0	1.4	4.3	7.3	23.6	83.6
Nonmetropolitan	33.6	1.1	0.10	0	0	0	0	0	0.8	2.8	5.4	16.5	65.8
Suburban	42.9	1.6	0.08	0	0	0	0	0	1.4	3.9	7.5	23.7	101.3

Chapter 9—Intake of Fruits and Vegetables

**Table 9-20. Per Capita Intake of Exposed Fruits Based on 1994–1996 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, as-consumed) (Continued)**

Population Group	Percent Consuming <sup>a</sup>	Mean	SE	Percentile									Max
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
<b>Race</b>													
Asian	41.6	1.7	0.35	0	0	0	0	0	1.8	5.0	6.4	22.1	61.9
Black	29	1.3	0.17	0	0	0	0	0	0.67	3.3	6.3	22.4	101.3
Native American	33.2	1.2	0.57	0	0	0	0	0	0.99	3.8	6.4	14.0	40.8
Other/NA	38.2	1.9	0.29	0	0	0	0	0	1.4	4.3	8.8	28.4	69.6
White	41.7	1.5	0.06	0	0	0	0	0	1.3	3.7	7.1	21.6	83.6
<b>Region</b>													
Midwest	42.2	1.5	0.11	0	0	0	0	0	1.4	3.7	6.7	21.0	101.3
Northeast	45.3	1.8	0.13	0	0	0	0	0	1.5	4.5	7.5	24.6	81.1
South	33.3	1.3	0.10	0	0	0	0	0	0.86	3.2	6.4	20.4	81.3
West	42.9	1.6	0.12	0	0	0	0	0	1.6	4.2	7.5	22.1	83.6
<sup>a</sup>	Represents the percentage of individuals consuming these foods at least once over the 2-day survey period.												
SE	= Standard error.												
Source: U.S. EPA analysis of the 1994–1996 CSFII.													

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**Table 9-21. Per Capita 2-Day Average Intake of Protected Fruits Based on 1994–1996 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, as-consumed)**

Population Group	Percent Consuming <sup>a</sup>	Mean	SE	Percentile									
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	Max
Whole population	53	1.9	0.04	0	0	0	0	0.38	2.6	5.4	8.1	16.3	113.4
Age group													
0 to 5 months	10.8	0.5	0.34	0	0	0	0	0	0	1.3	4.3	7.7	12.5
6 to 12 months	49	3.1	0.58	0	0	0	0	0	4.4	8.3	11.2	26.8	30.3
<1 years	28.7	1.7	0.39	0	0	0	0	0	2.0	6.0	8.3	16.6	30.3
1 to 2 years	61.8	6.5	0.31	0	0	0	0	3.6	9.2	17.8	24.2	39.0	113.4
3 to 5 years	56.2	4.4	0.22	0	0	0	0	2.1	6.7	12.1	17.2	27.9	66.5
6 to 11 years	50.7	2.7	0.17	0	0	0	0	0.17	3.8	8.1	11.4	19.8	31.7
12 to 19 years	47.3	1.8	0.12	0	0	0	0	0	2.6	5.4	8.4	15.4	27.0
20 to 39 years	48	1.4	0.07	0	0	0	0	0	1.9	4.3	6.3	11.8	39.3
40 to 69 years	56.5	1.4	0.04	0	0	0	0	0.61	2.2	4.1	5.5	9.7	45.8
≥70 years	68.7	1.8	0.07	0	0	0	0	1.3	2.8	4.7	5.9	9.2	27.6
Season													
Fall	50.8	1.8	0.08	0	0	0	0	0.06	2.3	5.0	7.3	16.1	75.7
Spring	53.5	2.0	0.08	0	0	0	0	0.46	2.6	5.4	8.8	18.7	47.4
Summer	52.4	2.0	0.08	0	0	0	0	0.29	2.7	5.5	8.4	15.9	113.4
Winter	55.4	1.9	0.07	0	0	0	0	0.61	2.6	5.5	8.0	15.1	52.0
Urbanization													
Central city	55.5	2.1	0.07	0	0	0	0	0.67	2.8	5.8	8.5	17.2	66.5
Nonmetropolitan	45.6	1.5	0.08	0	0	0	0	0	1.9	4.4	7.0	14.9	61.9
Suburban	54.6	2.0	0.06	0	0	0	0	0.59	2.7	5.5	8.3	16.6	113.4



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**Table 9-21. Per Capita 2-Day Average Intake of Protected Fruits Based on 1994–1996 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, as-consumed) (Continued)**

Population Group	Percent Consuming <sup>a</sup>	Mean	SE	Percentile									
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	Max
<b>Race</b>													
Asian	62.3	3.0	0.30	0	0	0	0	1.5	4.1	8.1	11.7	18.7	64.0
Black	48.1	1.8	0.11	0	0	0	0	0	2.2	5.4	8.1	16.6	50.1
Native American	44.1	2.0	0.65	0	0	0	0	0	2.5	6.8	7.9	17.0	61.9
Other/NA	60.3	2.8	0.21	0	0	0	0	0.98	3.9	7.5	10.8	22.4	113.4
White	53	1.8	0.04	0	0	0	0	0.37	2.5	5.1	7.7	15.7	75.7
<b>Region</b>													
Midwest	51	1.8	0.08	0	0	0	0	0.08	2.4	5.3	7.8	16.5	75.7
Northeast	62.5	2.4	0.09	0	0	0	0	1.1	3.2	6.2	9.5	19.5	66.5
South	47.6	1.6	0.06	0	0	0	0	0	2.1	4.7	7.1	14.9	65.7
West	55.3	2.0	0.09	0	0	0	0	0.61	2.8	5.8	8.4	15.3	113.4
<sup>a</sup>	Represents the percentage of individuals consuming these foods at least once over the 2-day survey period.												
NA	= Not available.												
SE	= Standard error.												
Source: U.S. EPA analysis of the 1994–1996 CSFII.													

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**Table 9-22. Per Capita 2-Day Average Intake of Exposed Vegetables Based on 1994–1996 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, as-consumed)**

Population Group	Percent Consuming <sup>a</sup>	Mean	SE	Percentile									Max
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
Whole population	79.2	1.3	0.02	0	0	0	0.11	0.80	1.9	3.4	4.4	7.6	45.0
Age group													
0 to 5 months	6	0.48	0.62	0	0	0	0	0	0	0	4.6	11.8	12.5
6 to 12 months	40.8	2.0	0.49	0	0	0	0	0	3.1	5.8	10.3	14.7	19.0
<1 years	22.3	1.2	0.37	0	0	0	0	0	0	5.0	7.4	14.7	19.0
1 to 2 years	63.3	2.0	0.11	0	0	0	0	0.59	2.7	5.8	8.6	14.9	45.0
3 to 5 years	67.8	1.6	0.08	0	0	0	0	0.67	2.2	4.4	6.4	12.8	25.1
6 to 11 years	70.8	1.2	0.06	0	0	0	0	0.60	1.6	3.4	4.8	8.1	19.6
12 to 19 years	77.4	0.97	0.04	0	0	0	0.06	0.53	1.3	2.5	3.6	5.8	13.0
20 to 39 years	82.6	1.3	0.03	0	0	0	0.15	0.81	1.8	3.2	4.1	6.9	18.4
40 to 69 years	84	1.4	0.02	0	0	0	0.28	0.97	2.0	3.3	4.3	6.4	16.4
≥70 years	83.2	1.5	0.05	0	0	0	0.31	1.09	2.1	3.6	4.4	7.2	20.1
Season													
Fall	79.6	1.3	0.03	0	0	0	0.12	0.79	1.9	3.4	4.4	7.3	45.0
Spring	78.8	1.3	0.03	0	0	0	0.09	0.79	1.8	3.3	4.3	7.9	25.1
Summer	81.2	1.5	0.03	0	0	0	0.16	0.92	2.1	3.5	4.8	8.6	25.1
Winter	77.4	1.2	0.03	0	0	0	0.08	0.74	1.7	3.2	4.2	7.0	20.9
Urbanization													
Central city	79.5	1.4	0.03	0	0	0	0.12	0.83	2.0	3.5	4.5	8.1	25.1
Nonmetropolitan	78	1.2	0.03	0	0	0	0.08	0.69	1.6	2.9	4.1	6.9	45.0
Suburban	79.6	1.4	0.02	0	0	0	0.12	0.85	1.9	3.4	4.5	7.8	25.1

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**Table 9-22. Per Capita 2-Day Average Intake of Exposed Vegetables Based on 1994–1996 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, as-consumed) (Continued)**

Population Group	Percent Consuming <sup>a</sup>	Mean	SE	Percentile									Max
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
<b>Race</b>													
Asian	82.2	2.1	0.15	0	0	0	0.34	1.39	3.0	4.9	7.1	13.0	20.1
Black	76.3	1.2	0.04	0	0	0	0.04	0.66	1.7	3.3	4.1	7.2	20.9
Native American	70.7	1.3	0.40	0	0	0	0	0.45	1.5	2.0	4.5	9.5	45.0
Other/NA	73.8	1.3	0.08	0	0	0	0	0.73	1.8	3.3	4.7	10.4	24.8
White	80.1	1.3	0.02	0	0	0	0.13	0.82	1.9	3.3	4.4	7.2	25.1
<b>Region</b>													
Midwest	80.2	1.3	0.03	0	0	0	0.12	0.81	1.8	3.3	4.4	7.1	24.8
Northeast	79.4	1.4	0.04	0	0	0	0.12	0.91	2.1	3.5	4.6	7.9	25.1
South	79.6	1.3	0.03	0	0	0	0.12	0.78	1.8	3.2	4.2	7.1	25.1
West	77.5	1.3	0.04	0	0	0	0.08	0.78	1.8	3.4	4.6	8.9	45.0

<sup>a</sup> Represents the percentage of individuals consuming these foods at least once over the 2-day survey period.  
SE = Standard error.

Source: U.S. EPA analysis of the 1994–1996 CSFII.

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**Table 9-23. Per Capita 2-Day Average Intake of Protected Vegetables Based on 1994–1996 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, as-consumed)**

Population Group	Percent Consuming <sup>a</sup>	Mean	SE	Percentile									
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	Max
Whole population	38.0	0.63	0.02	0	0	0	0	0	0.73	2.0	3.1	6.6	45.8
Age group													
0 to 5 months	10.3	0.49	0.41	0	0	0	0	0	0	1.4	3.9	9.2	11.0
6 to 12 months	34.8	2.2	0.55	0	0	0	0	0	4.4	7.3	9.6	19.5	23.1
<1 years	21.8	1.3	0.37	0	0	0	0	0	0	5.4	7.8	11.9	23.1
1 to 2 years	40.8	1.5	0.13	0	0	0	0	0	1.9	4.4	7.0	14.2	27.8
3 to 5 years	38.2	1.1	0.09	0	0	0	0	0	1.4	3.5	5.4	10.3	18.0
6 to 11 years	38.8	0.78	0.07	0	0	0	0	0	1.0	2.6	3.9	7.5	26.5
12 to 19 years	30.4	0.46	0.06	0	0	0	0	0	0.44	1.5	2.4	5.8	21.6
20 to 39 years	36.7	0.53	0.04	0	0	0	0	0	0.61	1.7	2.7	5.5	23.6
40 to 69 years	41.2	0.56	0.03	0	0	0	0	0	0.73	1.7	2.6	4.8	45.8
≥70 years	42.2	0.65	0.05	0	0	0	0	0	0.86	2.0	3.1	5.7	21.5
Season													
Fall	37.9	0.62	0.04	0	0	0	0	0	0.71	2.1	3.2	5.9	21.6
Spring	37.8	0.62	0.04	0	0	0	0	0	0.67	1.8	2.9	7.6	23.6
Summer	39.3	0.67	0.04	0	0	0	0	0	0.85	1.9	3.1	6.3	45.8
Winter	37.1	0.61	0.04	0	0	0	0	0	0.71	1.9	3.0	6.9	27.8
Urbanization													
Central city	38.9	0.70	0.04	0	0	0	0	0	0.78	2.1	3.4	7.3	45.8
Nonmetropolitan	39.7	0.62	0.04	0	0	0	0	0	0.75	1.9	3.1	6.0	25.8
Suburban	36.6	0.59	0.03	0	0	0	0	0	0.68	1.9	2.9	5.9	27.8

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**Table 9-23. Per Capita 2-Day Average Intake of Protected Vegetables Based on 1994–1996 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, as-consumed) (Continued)**

Population Group	Percent Consuming <sup>a</sup>	Mean	SE	Percentile									
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	Max
<b>Race</b>													
Asian	45.4	0.85	0.14	0	0	0	0	0	1.1	2.7	4.1	7.8	23.3
Black	36.2	0.72	0.07	0	0	0	0	0	0.77	2.2	3.5	7.9	45.8
Native American	32.0	0.34	0.13	0	0	0	0	0	0.13	1.6	2.0	3.5	5.3
Other/NA	50.4	1.1	0.10	0	0	0	0	0.04	1.5	3.4	5.2	10.0	26.5
White	37.2	0.57	0.02	0	0	0	0	0	0.68	1.8	2.8	5.9	27.8
<b>Region</b>													
Midwest	36.3	0.57	0.04	0	0	0	0	0	0.62	1.8	2.9	5.6	21.5
Northeast	37.5	0.61	0.05	0	0	0	0	0	0.75	1.8	2.9	6.3	27.8
South	38.5	0.66	0.03	0	0	0	0	0	0.78	2.1	3.1	6.3	45.8
West	39.5	0.67	0.04	0	0	0	0	0	0.75	2.1	3.3	7.8	23.1
<sup>a</sup>	Represents the percentage of individuals consuming these foods at least once over the 2-day survey period.												
SE	= Standard error.												
Source: U.S. EPA analysis of the 1994–1996 CSFII.													

**Table 9-24. Per Capita 2-Day Average Intake of Root Vegetables Based on 1994–1996 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, as-consumed)**

Population Group	Percent Consuming <sup>a</sup>	Mean	SE	Percentile									Max
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
Whole population	75.4	1.2	0.02	0	0	0	0.03	0.75	1.7	3.0	4.1	7.6	83.3
Age group													
0 to 5 months	12	0.96	0.61	0	0	0	0	0	0	3.9	8.3	11.9	21.9
6 to 12 months	56.9	2.8	0.45	0	0	0	0	0.80	4.6	8.0	10.4	16.6	32.9
<1 years	33	1.8	0.36	0	0	0	0	0	2.3	6.9	9.6	15.6	32.9
1 to 2 years	67.5	2.6	0.13	0	0	0	0	1.5	3.6	6.8	8.3	16.8	83.3
3 to 5 years	71.9	2.2	0.09	0	0	0	0	1.4	3.2	5.5	7.1	14.1	32.1
6 to 11 years	73.8	1.6	0.06	0	0	0	0	1.0	2.3	4.2	5.3	9.5	20.6
12 to 19 years	76.4	1.3	0.05	0	0	0	0.09	0.82	1.8	3.0	4.0	7.7	22.5
20 to 39 years	77.5	1.1	0.03	0	0	0	0.10	0.73	1.6	2.7	3.5	6.0	16.6
40 to 69 years	77.2	0.99	0.02	0	0	0	0.08	0.68	1.5	2.5	3.2	4.8	15.1
≥70 years	73.2	1.1	0.04	0	0	0	0	0.70	1.6	2.7	3.4	5.3	9.8
Season													
Fall	77.3	1.3	0.04	0	0	0	0.09	0.83	1.8	3.1	4.2	8.1	83.3
Spring	75.9	1.2	0.03	0	0	0	0.05	0.73	1.7	3.1	4.3	7.7	30.0
Summer	74	1.2	0.03	0	0	0	0	0.73	1.6	2.9	3.9	7.4	25.8
Winter	74.4	1.2	0.03	0	0	0	0	0.74	1.7	3.0	4.1	7.4	34.3
Urbanization													
Central city	71.9	1.2	0.03	0	0	0	0	0.66	1.6	2.9	4.2	7.3	83.3
Nonmetropolitan	78.5	1.4	0.04	0	0	0	0.14	0.89	1.9	3.2	4.5	9.5	34.3
Suburban	76.4	1.2	0.02	0	0	0	0.07	0.77	1.7	3.0	4.0	7.2	26.1

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**Table 9-24. Per Capita 2-Day Average Intake of Root Vegetables Based on 1994–1996 Continuing Survey of Food Intake among Individuals (CSFII) (g/kg-day, as-consumed) (Continued)**

Population Group	Percent Consuming <sup>a</sup>	Mean	SE	Percentile									
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	Max
<b>Race</b>													
Asian	64.2	0.97	0.10	0	0	0	0	0.37	1.3	2.8	4.0	7.1	17.3
Black	68.9	1.1	0.05	0	0	0	0	0.62	1.4	2.9	4.2	7.6	32.9
Native American	71.1	1.4	0.27	0	0	0	0	1.0	1.9	2.8	3.0	11.2	34.3
Other/NA	67	1.1	0.10	0	0	0	0	0.50	1.4	2.8	3.7	9.6	83.3
White	77.5	1.3	0.02	0	0	0	0.09	0.81	1.8	3.1	4.2	7.5	32.1
<b>Region</b>													
Midwest	79.4	1.4	0.04	0	0	0	0.16	0.90	2.0	3.4	4.6	8.6	26.1
Northeast	72.3	1.1	0.03	0	0	0	0	0.64	1.5	2.9	3.8	7.1	20.7
South	77	1.3	0.03	0	0	0	0.09	0.81	1.8	3.0	4.1	7.6	83.3
West	71.3	1.1	0.03	0	0	0	0	0.61	1.5	2.8	3.7	6.9	34.3
<sup>a</sup>	Represents the percentage of individuals consuming these foods at least once over the 2-day survey period.												
SE	= Standard error.												
Source: U.S. EPA analysis of the 1994–1996 CSFII.													

**Table 9-25. Quantity (as-consumed) of Fruits and Vegetables Consumed per Eating Occasion and the Percentage of Individuals Consuming These Foods in 2 Days**

Food Category	Percentage Consuming <sup>a</sup>	Quantity Consumed per Eating Occasion (gram)		Consumers-Only Quantity Consumed per Eating Occasion at Specified Percentiles (gram) <sup>a</sup>						
		Average	SE	5	10	25	50	75	90	95
<b>Raw vegetables</b>										
Cucumbers	10.8	48	3	7	14	16	29	54	100	157
Lettuce	53.3	41	1	7	8	13	27	55	91	110
Mixed lettuce-based salad	2.2	97	6	11	18	55	74	123	167	229
Carrots	14.1	33	1	5	7	14	27	40	61	100
Tomatoes	32.0	53	1	15	20	27	40	61	93	123
Coleslaw	5.0	102	3	18	32	55	91	134	179	183
Onions	14.4	23	1	3	7	10	15	28	41	60
<b>Cooked vegetables</b>										
Broccoli	7.3	119	4	23	35	61	92	156	232	275
Carrots	5.8	72	2	13	19	36	65	78	146	156
Total tomato sauce	54.3	34	1	1	2	7	17	40	80	124
String beans	13.2	90	2	17	31	52	68	125	136	202
Peas	6.1	86	3	11	21	40	80	120	167	170
Corn	15.1	101	2	20	33	55	82	123	171	228
French-fried potatoes	25.5	83	1	28	35	57	70	112	125	140
Home-fried and hash-browned potatoes	8.9	135	3	36	47	70	105	192	284	308
Baked potatoes	12.4	120	2	48	61	92	106	143	184	217
Boiled potatoes	5.3	157	5	34	52	91	123	197	308	368
Mashed potatoes	15.0	188	3	46	61	105	156	207	397	413
Dried beans and peas	8.0	133	3	22	33	64	101	173	259	345
Baked beans	4.7	171	6	24	47	84	126	235	314	385
<b>Fruits</b>										
Raw oranges	7.9	132	2	42	64	95	127	131	183	253
Orange juice	27.2	268	4	124	124	187	249	311	447	498
Raw apples	15.6	135	2	46	68	105	134	137	209	211
Applesauce and cooked apples	4.6	134	4	31	59	85	121	142	249	254
Apple juice	7.0	271	7	117	120	182	242	307	481	525
Raw bananas	20.8	111	1	55	58	100	117	118	135	136

<sup>a</sup> = Percentage 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).



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Table 9-26. Quantity (as-consumed) of Fruits and Vegetables Consumed per Eating Occasion and Percentage of Individuals Consuming These Foods in 2 Days, by Food												
Food Category	Quantity Consumed per Eating Occasion (grams)											
	2 to 5 years			6 to 11 years			12 to 19 years					
	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
Raw Vegetables												
Carrots	10.4	27	2	17.8	32	2	9.2	35	6	11.9	32	4
Cucumbers	6.4	32	4	6.6	39	6	6.1	71 <sup>a</sup>	22 <sup>a</sup>	6.8	48	11
Lettuce	34.0	17	1	40.8	26	1	56.0	32	3	52.3	34	2
Onions	3.9	9	2	4.5	17	2	11.1	28	4	7.9	23	4
Tomatoes	14.8	31	2	14.0	42	4	25.7	49	5	23.9	44	3
Cooked Vegetables												
Beans (string)	16.8	50	2	12.1	71	6	8.3	85	9	7.6	78	5
Broccoli	7.2	61	3	5.6	102	16	3.9	127 <sup>a</sup>	17 <sup>a</sup>	5.7	109 <sup>a</sup>	14 <sup>a</sup>
Carrots	6.0	48	4	3.8	46	5	2.8	81 <sup>a</sup>	16 <sup>a</sup>	2.1	75 <sup>a</sup>	17 <sup>a</sup>
Corn	18.9	68	3	22.2	79	4	12.8	125	9	12.3	100	6
Peas	8.4	48	3	6.8	72	9	3.6	115 <sup>a</sup>	15 <sup>a</sup>	2.4	93 <sup>a</sup>	17 <sup>a</sup>
Potatoes (French-fried)	32.7	52	1	33.7	67	2	41.7	97	3	38.1	81	4
Potatoes (home-fried and hash-browned)	9.3	85	5	10.1	93	6	10.1	145	13	6.1	138	13
Potatoes (baked)	7.6	70	4	8.2	95	6	8.6	152	15	8.8	115	10
Potatoes (boiled)	4.8	81	9	2.7	103 <sup>a</sup>	17 <sup>a</sup>	2.0	250 <sup>a</sup>	40 <sup>a</sup>	3.2	144 <sup>a</sup>	16 <sup>a</sup>
Potatoes (mashed)	14.8	118	6	13.3	162	12	14.6	245	16	11.9	170	17
Fruits												
Apples (raw)	26.8	106	2	21.9	123	3	11.7	149	9	12.4	129	5
Apples (cooked and applesauce)	10.1	118	5	9.0	130	7	2.3	153 <sup>a</sup>	19 <sup>a</sup>	2.6	200 <sup>a</sup>	47 <sup>a</sup>
Apple juice	26.3	207	5	12.2	223	10	7.8	346	22	8.5	360	44
Bananas (raw)	25.0	95	2	16.5	105	3	10.3	122	6	8.4	119	5
Oranges (raw)	11.1	103	5	10.5	114	5	4.3	187 <sup>a</sup>	38 <sup>a</sup>	5.4	109 <sup>a</sup>	8 <sup>a</sup>
Orange juice	34.4	190	4	30.9	224	6	30.8	354	16	29.5	305	11

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**Table 9-26. Quantity (as-consumed) of Fruits and Vegetables Consumed per Eating Occasion and Percentage of Individuals Consuming These Foods in 2 Days, by Food (Continued)**

Food Category	Quantity Consumed per Eating Occasion (grams)																	
	20 to <40 years						40 to <60 years						≥60 years					
	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
Raw Vegetables																		
Carrots	12.3	35	4	15.4	38	4	14.4	35	2	18.1	31	2	13.6	29	2	12.7	27	1
Cucumbers	10.5	62	12	10.4	45	4	12.5	47	4	15.7	41	3	14.2	51	4	13.2	45	3
Lettuce	63.4	40	2	57.6	44	2	55.5	48	2	59.1	48	1	48.1	47	2	46.1	42	2
Onions	17.9	27	2	14.7	22	1	19.6	26	1	18.3	19	1	19.0	19	1	15.6	19	1
Tomatoes	33.1	57	2	32.3	49	2	38.1	60	2	42.4	53	1	40.0	62	3	41.0	52	2
Cooked Vegetables																		
Beans (string)	10.6	111	5	12.5	89	6	13.7	114	6	13.4	93	4	18.3	99	4	19.7	78	3
Broccoli	7.6	152	13	6.7	129	13	7.8	127	7	7.6	114	7	8.5	117	7	10.9	107	6
Carrots	5.0	79	7	5.3	69	6	6.7	83	7	6.4	66	4	9.6	78	4	9.0	75	4
Corn	12.7	122	5	15.3	98	5	17.1	133	6	13.5	90	3	14.2	109	4	13.0	83	5
Peas	4.4	109	10	4.9	82	9	7.4	113	7	6.3	79	7	8.4	88	7	9.4	73	5
Potatoes (French-fried)	35.3	107	2	23.9	79	3	20.6	89	2	16.8	72	3	11.2	76	3	8.1	58	3
Potatoes (home-fried/hash-browned)	9.5	160	10	8.8	129	7	11.	174	10	6.4	119	7	10.4	152	8	7.1	110	9
Potatoes (baked)	11.4	154	7	11.1	126	5	13.0	133	3	16.5	112	3	17.9	115	3	18.1	100	4
Potatoes (boiled)	3.9	185	16	2.9	162	15	6.3	209	12	7.0	142	9	11.0	166	6	10.2	131	5
Potatoes (mashed)	14.7	269	12	13.5	167	5	16.0	225	11	14.3	156	7	19.7	173	6	18.1	140	5
Fruits																		
Apples (raw)	6.6	153	8	6.3	126	6	7.4	148	8	8.3	132	5	8.9	133	5	11.2	129	4
Apples (cooked and applesauce)	24.3	373	20	23.2	289	12	24.1	285	10	25.2	231	6	30.2	213	5	31.7	196	5

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**Table 9-26. Quantity (as-consumed) of Fruits and Vegetables Consumed per Eating Occasion and Percentage of Individuals Consuming These Foods in 2 Days, by Food (Continued)**

Food Category	Quantity Consumed per Eating Occasion (grams)																	
	20 to <40 years						40 to <60 years						≥60 years					
	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
Apple juice	12.1	161	6	12.9	134	3	14.1	145	3	16.2	136	4	17.6	145	8	16.1	128	3
Bananas (raw)	1.3	153 <sup>a</sup>	31 <sup>a</sup>	2.4	155 <sup>a</sup>	21 <sup>a</sup>	3.1	142	12	3.9	125	10	8.1	135	10	9.2	121	7
Oranges (raw)	4.2	345	20	4.7	302	19	4.7	358	33	3.2	259	21	4.8	233	11	5.0	225	13
Orange juice	14.4	126	2	18.5	112	2	21.9	125	3	24.4	111	2	36.5	105	2	34.0	96	2

<sup>a</sup> Indicates a statistic that is potentially unreliable because of a small sample size and a large SE.  
 PC = Percentage consuming at least once in 2 days.  
 SE = Standard error of the mean.  
 N = Sample size.

Source: Smiciklas-Wright et al. (2002) (based on 1994–1996 CSFII data).

<b>Table 9-27. Consumption of Major Food Groups: Median Servings (and ranges) by Demographic and Health Characteristics, for Older Adults</b>		
Subject Characteristic	<i>N</i>	Fruits and Vegetables (servings per day)
<b>Sex</b>		
Female	80	5.7 (1.5–8.1)
Male	50	4.5 (0.8–8.8)
<b>Ethnicity<sup>a</sup></b>		
African American	44	4.5 (0.8–8.0)
European American	47	6.0 (1.5–8.0)
Native American	39	4.5 (1.6–8.8)
<b>Age</b>		
70 to 74 years	42	4.5 (1.6–8.1)
75 to 79 years	36	5.6 (0.8–8.0)
80 to 84 years	36	5.6 (1.5–8.8)
≥85 years	16	5.4 (1.8–8.0)
<b>Marital Status</b>		
Married	49	4.5 (1.6–8.0)
Not married	81	5.6 (0.8–8.8)
<b>Education</b>		
8 <sup>th</sup> grade or less	37	5.0 (1.5–8.1)
9 <sup>th</sup> to 12 <sup>th</sup> grades	47	4.5 (0.8–8.0)
> High school	46	6.0 (1.5–8.8)
<b>Dentures</b>		
Yes	83	5.4 (1.5–8.8)
No	47	4.7 (0.8–8.0)
<b>Chronic Diseases</b>		
0	7	7.0 (5.2–8.8)
1	31	5.4 (1.5–8.0)
2	56	5.4 (1.6–8.1)
3	26	4.5 (2.0–8.0)
4+	10	5.5 (0.8–8.0)

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Subject Characteristic	<i>N</i>	Fruits and Vegetables (servings per day)
<b>Weight<sup>b</sup></b>		
130 pounds	18	6.0 (1.8–8.0)
131 to 150 pounds	32	5.5 (1.5–8.0)
151 to 170 pounds	27	5.7 (1.7–8.1)
171 to 190 pounds	22	5.6 (1.8–8.8)
191 pounds	29	4.5 (0.8–8.0)
<sup>a</sup> <i>p</i> < 0.05.		
<sup>b</sup> Two missing values.		
<i>N</i> = Number of individuals.		
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
Any vegetable	39.9	66.5	72.6	76.5	79.2	81.6
Baby food vegetables	35.7	54.5	34.4	12.7	3.0	1.6
Cooked vegetables	5.2	17.4	45.9	66.3	72.9	75.6
Raw vegetables	0.5	1.6	5.5	7.9	14.3	18.6
Types of Vegetables <sup>a</sup>						
Dark green vegetables <sup>b</sup>	0.1	2.9	4.2	5.0	10.4	7.8
Deep yellow vegetables <sup>c</sup>	26.5	39.3	29.0	24.0	13.6	13.4
White potatoes	3.6	12.4	24.1	33.2	42.0	40.6
French fries and other fried potatoes	0.7	2.9	8.6	12.9	19.8	25.5
Other starchy vegetables <sup>d</sup>	6.5	10.9	16.9	17.3	20.8	24.2
Other vegetables	11.2	25.9	35.1	39.1	45.6	43.3
<sup>a</sup> Totals include commercial baby food, cooked vegetables, and raw vegetables.						
<sup>b</sup> Reported dark green vegetables include broccoli, spinach and other greens, and romaine lettuce.						
<sup>c</sup> Reported deep yellow vegetables include carrots, pumpkin, sweet potatoes, and winter squash.						
<sup>d</sup> Reported starchy vegetables include corn, green peas, immature lima beans, black-eyed peas (not dried), cassava, and rutabaga.						
Source: Fox et al. (2004).						

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<b>Table 9-29. Top Five Vegetables Consumed by Infants and Toddlers</b>	
Top Vegetables by Age Group <sup>a</sup>	Percentage Consuming at Least Once in a Day
4 to 6 months	
Baby food carrots	9.6
Baby food sweet potatoes	9.1
Baby food squash	8.1
Baby food green beans	7.2
Baby food peas	5.0
7 to 8 months	
Baby food carrots	14.2
Baby food sweet potatoes	12.9
Baby food squash	12.9
Baby food green beans	11.2
Baby food mixed/garden vegetables	10.1
9 to 11 months	
Cooked green beans	9.7
Mashed/whipped potatoes	9.0
French fries/other fried potatoes	8.6
Baby food mixed/garden vegetables	8.4
Cooked carrots	8.0
12 to 14 months	
Cooked green beans	18.2
French fries/other fried potatoes	12.9
Cooked carrots	11.5
Mashed/whipped potatoes	10.3
Cooked peas	8.4
15 to 18 months	
French fries/other fried potatoes	19.8
Cooked green beans	16.7
Cooked peas	13.9
Cooked tomatoes/tomato sauce	13.7
Mashed/whipped potatoes	12.4
19 to 24 months	
French fries/other fried potatoes	25.5
Cooked green beans	16.8
Cooked corn	15.2
Cooked peas	11.4
Cooked tomatoes/tomato sauce	9.4
<sup>a</sup>	Baby food vegetables include single vegetables (majority of vegetables reported) as well as mixtures with the named vegetables the predominant vegetable, e.g., broccoli and cauliflower or broccoli and carrots.
Source: Fox et al. (2004).	

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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
Any fruit	41.9	75.5	75.8	77.2	71.8	67.3
Baby food Fruit	39.1	67.9	44.8	16.2	4.2	1.8
Nonbaby food fruit	5.3	14.3	44.2	67.1	69.4	66.8
Types of nonbaby food fruit						
canned fruit	1.4	5.8	21.6	31.9	25.1	20.2
Packed in syrup	0.7	0.7	8.1	14.9	12.7	8.1
Packed in juice or water	0.7	4.5	13.5	18.5	11.3	11.4
Unknown pack	0.0	0.7	1.5	1.2	3.1	1.2
Fresh fruit	4.4	9.5	29.5	52.1	55.0	54.6
Dried fruit	0.0	0.4	2.1	3.5	7.1	9.4
Types of fruit <sup>a</sup>						
Apples	18.6	33.1	31.6	27.5	19.8	22.4
Bananas	16.0	30.6	34.5	37.8	32.4	30.0
Berries	0.1	0.6	5.3	6.6	11.3	7.7
Citrus fruits	0.2	0.4	1.6	4.9	7.3	5.1
Melons	0.6	1.0	4.4	7.3	7.2	9.6
<sup>a</sup> Totals include all baby food and nonbaby food fruits.						
Source: Fox et al. (2004).						

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<b>Table 9-31. Top Five Fruits Consumed by Infants and Toddlers</b>	
Top Fruits by Age Group <sup>a</sup>	Percentage Consuming at Least Once in a Day
4 to 6 months	
Baby food applesauce	17.5
Baby food bananas	13.0
Baby food pears	7.5
Baby food peaches	7.4
Fresh banana	0.3
7 to 8 months	
Baby food applesauce	29.0
Baby food bananas	25.2
Baby food pears	18.2
Baby food peaches	13.1
Fresh banana	6.6
9 to 11 months	
Fresh banana	19.0
Baby food applesauce	17.7
Baby food bananas	16.8
Baby food pears	12.4
Canned applesauce	11.1
12 to 14 months	
Fresh banana	33.0
Canned applesauce	15.2
Fresh grapes	9.0
Fresh apple	8.8
Canned peaches	7.2
Canned fruit cocktail	7.2
15 to 18 months	
Fresh banana	30.5
Fresh grapes	13.2
Fresh apple	11.2
Fresh strawberries	10.6
Canned peaches	8.9



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Top Fruits by Age Group <sup>a</sup>		Percentage Consuming at Least Once in a Day
19 to 24 months		
Fresh banana		29.6
Fresh apple		15.0
Fresh grapes		11.2
Raisins		9.0
Fresh strawberries		7.6
<sup>a</sup> Baby food fruits include single fruits (majority of fruits reported) as well as mixtures with the named fruit as the predominant fruit, e.g., pears and raspberries or prunes with pears. Baby food fruits with tapioca and other baby food dessert fruits were counted as desserts.		
Source: Fox et al. (2004).		

	Infants 4 to 6 months		Infants 7 to 11 months		Toddlers 12 to 24 months	
	WIC Participant	Nonparticipant	WIC Participant	Nonparticipant	WIC Participant	Nonparticipant
Vegetables						
Any vegetable	40.2	39.8	68.2	70.7	77.5	80.2
Baby food vegetables	32.9	37.0	38.2	45.0	4.8	4.7
Cooked vegetables	8.0	3.9 <sup>a</sup>	33.8	33.8	73.1	72.3
Raw vegetables	1.4	0.1 <sup>b</sup>	3.6	4.1	11.8	15.4
Dark green vegetables	0.4	0.0	2.9	4.0	6.3	8.4
Deep yellow vegetables	23.2	28.1	30.1	34.8	12.5	16.9
Other starchy vegetables	6.5	6.4	12.9	15.2	21.1	21.5
Potatoes	6.0	2.4 <sup>a</sup>	20.7	18.2	43.1	38.3
Fruits						
Any fruit	47.8	39.2 <sup>a</sup>	64.7	81.0 <sup>b</sup>	58.5	74.6 <sup>b</sup>
Baby food fruits	43.8	36.9	48.4	57.4 <sup>a</sup>	3.8	6.5
Nonbaby food fruit	8.1	4.0	22.9	35.9 <sup>b</sup>	56.4	70.9 <sup>b</sup>
Fresh fruit	5.4	3.8	14.3	24.3 <sup>b</sup>	43.6	57.0 <sup>b</sup>
Canned fruit	3.4	0.5 <sup>b</sup>	10.3	17.3 <sup>b</sup>	22.3	25.3
Sample size (unweighted)	265	597	351	808	205	791
<sup>a</sup> = $p < 0.05$ nonparticipants significantly different from WIC participants. <sup>b</sup> = $p < 0.01$ 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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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		
Fruits and Juices				
All fruits	tablespoon	3.6 ± 0.19	4.7 ± 0.11	5.8 ± 0.17
Baby food fruit	tablespoon	3.3 ± 0.16	4.6 ± 0.11	5.6 ± 0.17
Baby food peaches	tablespoon	3.6 ± 0.37	4.4 ± 0.26	5.3 ± 0.36
Baby food pears	tablespoon	3.5 ± 0.46	4.5 ± 0.21	6.0 ± 0.40
Baby food bananas	tablespoon	3.4 ± 0.23	5.0 ± 0.21	5.9 ± 0.35
Baby food applesauce	tablespoon	3.7 ± 0.29	4.6 ± 0.17	5.6 ± 0.25
Canned fruit	tablespoon	-	4.5 ± 0.59	4.8 ± 0.25
Fresh fruit	tablespoon	-	5.3 ± 0.52	6.4 ± 0.37
100% juice	fluid ounce	2.5 ± 0.17	2.8 ± 0.11	3.1 ± 0.09
Apple/apple blends	fluid ounce	2.7 ± 0.22	2.9 ± 0.13	3.2 ± 0.11
Grape	fluid ounce	-	2.6 ± 0.19	3.1 ± 0.21
Pear	fluid ounce	-	2.6 ± 0.29	3.1 ± 0.28
Vegetables				
All vegetables	tablespoon	3.8 ± 0.20	5.8 ± 0.16	5.6 ± 0.20
Baby food vegetables	tablespoon	4.0 ± 0.20	5.9 ± 0.16	6.6 ± 0.21
Baby food green beans	tablespoon	3.5 ± 0.33	5.1 ± 0.28	6.1 ± 0.50
Baby food squash	tablespoon	4.3 ± 0.47	5.6 ± 0.30	6.9 ± 0.41
Baby food sweet	tablespoon	4.3 ± 0.31	6.1 ± 0.34	7.2 ± 0.69
Baby food carrots	tablespoon	3.5 ± 0.33	5.6 ± 0.27	6.7 ± 0.48
Cooked vegetables, excluding French fries	tablespoon	-	4.2 ± 0.47	3.8 ± 0.31
Deep yellow vegetables	tablespoon	-	3.2 ± 0.59	3.2 ± 0.39
Mashed potatoes	tablespoon	-	4.1 ± 0.67	2.8 ± 0.37
Green beans	tablespoon	-	3.2 ± 0.62	5.0 ± 0.61
- = Cell size was too small to generate a reliable estimate.				
<i>N</i> = Number of respondents.				
SE = Standard error.				
Source: Fox et al. (2006).				

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<b>Table 9-34. Average Portion Sizes per Eating Occasion of Fruits and Vegetables Commonly Consumed by Toddlers from the 2002 Feeding Infants and Toddlers Study</b>				
Food Group	Reference Unit	12 to 14 months ( <i>N</i> = 371)	15 to 18 months ( <i>N</i> = 312)	19 to 24 months ( <i>N</i> = 320)
		Mean ± SE		
Fruits and Juices				
All fruits	cup	0.4 ± 0.02	0.5 ± 0.03	0.6 ± 0.03
Canned fruit	cup	0.3 ± 0.02	0.4 ± 0.03	0.4 ± 0.04
Fresh fruit	cup	0.4 ± 0.02	0.5 ± 0.03	0.6 ± 0.03
Fresh apple	cup, slice	0.4 ± 0.05	0.6 ± 0.07	0.8 ± 0.14
	1 medium	0.3 ± 0.04	0.5 ± 0.06	0.6 ± 0.11
Fresh banana	cup, slice	0.4 ± 0.02	0.5 ± 0.03	0.5 ± 0.03
	1 medium	0.6 ± 0.03	0.7 ± 0.03	0.7 ± 0.04
Fresh grapes	cup	0.2 ± 0.01	0.3 ± 0.03	0.3 ± 0.02
100% juice	fluid ounce	3.7 ± 0.15	5.0 ± 0.20	5.1 ± 0.18
Orange/orange blends	fluid ounce	3.3 ± 0.38	4.5 ± 0.33	5.2 ± 0.35
Apple/apple blends	fluid ounce	3.6 ± 0.21	4.5 ± 0.29	4.9 ± 0.27
Grape	fluid ounce	3.6 ± 0.38	5.6 ± 0.43	4.7 ± 0.31
Vegetables				
All vegetables	cup	0.4 ± 0.02	0.4 ± 0.03	0.4 ± 0.02
Cooked vegetables, excluding French fries	cup	0.3 ± 0.03	0.3 ± 0.03	0.3 ± 0.02
Deep yellow vegetables	cup	0.2 ± 0.03	0.3 ± 0.05	0.3 ± 0.05
Corn	cup	0.2 ± 0.03	0.2 ± 0.03	0.2 ± 0.03
Peas	cup	0.2 ± 0.02	0.2 ± 0.02	0.2 ± 0.02
Green beans	cup	0.4 ± 0.05	0.4 ± 0.05	0.3 ± 0.03
Mashed potatoes	cup	0.3 ± 0.05	0.4 ± 0.05	0.3 ± 0.05
Baked/boiled potatoes	cup	0.3 ± 0.05	0.4 ± 0.06	-
French fries	cup	0.4 ± 0.05	0.6 ± 0.05	0.6 ± 0.05
-	Cell size too small to generate reliable estimate.			
<i>N</i>	= Number of respondents.			
SE	= Standard error of the mean.			
Source: Fox et al. (2006).				

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	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)
<b>Fruits</b>						
Any fruit or 100% fruit juice	45.0	35.9	86.2	86.8	84.6	87.2
Any fruit <sup>a</sup>	39.4	28.8	68.1	76.0	67.6	71.5
100% fruit juice	19.3	15.3	57.8	47.7	64.1	58.9
<b>Fruit preparation</b>						
Baby food fruit	32.6	28.4	42.9 <sup>b</sup>	58.1	5.6 <sup>c</sup>	6.3
Nonbaby food fruit	9.1 <sup>c</sup>	1.3 <sup>c</sup>	35.8	27.4	64.2	68.0
Canned fruit	2.3 <sup>c</sup>	-	8.8	13.7	12.1 <sup>d</sup>	26.2
Fresh fruit	9.1 <sup>b,c</sup>	-	30.0 <sup>d</sup>	17.7	59.3	53.1
<b>Vegetables</b>						
Any vegetable or 100% vegetable juice <sup>e</sup>	30.0	27.3	66.2	70.3	76.0	80.5
<b>Type of preparation</b>						
Baby food vegetables	25.7	25.4	34.4 <sup>b</sup>	47.6	4.1 <sup>c</sup>	4.9
Cooked vegetables	4.2 <sup>c</sup>	2.4 <sup>c</sup>	33.2	29.4	71.4	72.9
Raw vegetables	2.3 <sup>c</sup>	-	8.3 <sup>c</sup>	2.6	25.0	13.1
<b>Types of vegetables<sup>e</sup></b>						
Dark green vegetables <sup>f</sup>	-	-	3.3 <sup>c</sup>	3.1	11.4 <sup>c</sup>	7.5
Deep yellow vegetables <sup>g</sup>	21.0	18.2	32.2	25.9	20.0	15.4
<b>Starchy vegetables</b>						
White potatoes	1.4 <sup>c</sup>	2.3 <sup>c</sup>	20.7	17.4	43.5	39.0
French fries/fried potatoes	-	-	5.7 <sup>c</sup>	5.3	23.4	20.3
Baked/mashed	-	-	14.4 <sup>c</sup>	10.7	19.8	17.7
Other starchy vegetables <sup>h</sup>	5.0 <sup>c</sup>	4.0	6.7 <sup>d</sup>	15.1	16.6	22.2
Other nonstarchy vegetables <sup>i</sup>	8.1 <sup>c</sup>	8.0	28.5	29.0	42.0	43.4
<sup>a</sup>	Total includes all baby food and nonbaby food fruits and excludes 100% fruit juices and juice drinks.					
<sup>b</sup>	Significantly different from non-Hispanic at the $p < 0.05$ .					
<sup>c</sup>	Statistic is potentially unreliable because of a high coefficient of variation.					
<sup>d</sup>	Significantly different from non-Hispanic at the $p < 0.01$ .					
<sup>e</sup>	Total includes commercial baby food, cooked vegetables, raw vegetables, and 100% vegetable juices.					
<sup>f</sup>	Reported dark green vegetables include broccoli, spinach, romaine lettuce, and other greens such as kale.					
<sup>g</sup>	Reported yellow vegetables include carrots, pumpkin, sweet potatoes, and winter squash.					
<sup>h</sup>	Reported starchy vegetables include corn, green peas, immature lima beans, black-eyed peas (not dried), cassava, and rutabaga. Corn is also shown as a subcategory of other starchy vegetables.					
<sup>i</sup>	Reported nonstarchy vegetables include asparagus, cauliflower, cabbage, onions, green beans, mixed vegetables, peppers, and tomatoes.					
-	= Less than 1% of the group consumed this food on a given day.					
<i>N</i>	= Sample size.					
Source: Mennella et al. (2006).						

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<b>Table 9-36. Top Five Fruits and Vegetables Consumed by Hispanic and Non-Hispanic Infants and Toddlers Per Age Group<sup>a</sup></b>			
Age (month)	N	Ethnicity	
		Hispanic	Non-Hispanic
<b>Top Fruits by Age Group</b>			
4 to 5	84 Hispanic	Bananas (16.3%)	Apples (12.5%)
	538 Non-Hispanic	Apples (14.7%) Peaches (10.9%) Melons (3.5%) Pears (2.5%)	Bananas (10.0%) Pears (5.9%) Peaches (5.8%) Prunes (1.6%)
6 to 11	136 Hispanic	Bananas (35.9%) Apples (29.7%)	Apples (32.9%) Bananas (31.5%)
	1,228 Non-Hispanic	Pears (15.2%) Peaches (11.7%) Melons (4.7%)	Pears (17.5%) Peaches (13.9%) Apricots (3.7%)
12 to 24	124 Hispanic	Bananas (41.5%) Apples (25.7%)	Bananas (30.9%) Apples (22.0%)
	871 Non-Hispanic	Berries (8.5%) Melons (7.6%) Pears (7.3%)	Grapes (12.3%) Peaches (9.6%) Berries (8.7%)
<b>Top Vegetables by Age Group</b>			
4 to 5	84 Hispanic	Carrots (9.9%)	Sweet Potatoes (7.5%)
	538 Non-Hispanic	Sweet Potatoes (6.8%) Green Beans (5.8%) Peas (5.0%) Squash (4.3%)	Carrots (6.6%) Green Beans (5.9%) Squash (5.4%) Peas (3.8%)
6 to 11	136 Hispanic	Potatoes (20.7%) Carrots (19.0%)	Carrots (17.5%) Potatoes (16.4%)
	1,228 Non-Hispanic	Mixed Vegetables (11.1%) Green Beans (11.0%) Sweet Potatoes (8.7%)	Green Beans (15.9%) Squash (11.8%) Sweet Potatoes (11.4%)
12 to 24	124 Hispanic	Potatoes (43.5%) Tomatoes (23.1%)	Potatoes (39.0%) Green Beans (19.6%)
	871 Non-Hispanic	Carrots (18.6%) Onions (11.8%) Corn (10.2%)	Peas (12.8%) Carrots (12.3%) Tomatoes (11.9%)
<sup>a</sup>	Percentage consuming at least one in a day is in parentheses.		
N	= Sample size.		
Source: Mennella et al. (2006).			

## Chapter 9—Intake of Fruits and Vegetables

<b>Table 9-37. Adjusted<sup>a</sup> Mean Daily Intake of Total and Individual<sup>b</sup> Fruit and Vegetable Cup Equivalents for Adults: California Health Interview Survey 2005<sup>c</sup></b>						
Women (N = 4,711)						
	Mexican N = 3,608	Central American N = 415	Caribbean N = 125	Spanish N = 186	South American N = 160	>1 Origin N = 217
Total fruits and vegetables	2.93	3.01	2.97	3.00	3.00	2.98
Fruit	0.97	0.96	0.94	1.02	0.95	0.97
100% fruit juice	0.51	0.63	0.66	0.54	0.54	0.55
Green salad	0.22	0.21	0.24	0.25	0.28	0.23
Cooked dried beans	0.18	0.16	0.14	0.12	0.08	0.16
Fried potatoes	0.06	0.06	0.04	0.05	0.06	0.06
Other white potatoes	0.10	0.09	0.07	0.08	0.16	0.11
Other vegetables	0.48	0.49	0.46	0.52	0.51	0.50
Men (N = 3,188)						
	Mexican N = 3,608	Central American N = 415	Caribbean N = 125	Spanish N = 186	South American N = 160	>1 Origin N = 217
Total fruits and vegetables	3.43	3.33	3.51	3.19	3.53	3.69
Fruit	0.88	0.85	0.91	0.75	0.89	0.89
100% fruit juice	0.61	0.63	0.70	0.57	0.72	0.74
Green salad	0.16	0.15	0.14	0.15	0.20	0.19
Cooked dried beans	0.29	0.23	0.22	0.23	0.17	0.32
Fried potatoes	0.12	0.11	0.10	0.15	0.14	0.10
Other white potatoes	0.13	0.14	0.16	0.10	0.19	0.17
Other vegetables	0.45	0.44	0.47	0.42	0.42	0.53
<sup>a</sup>	Adjusted for age, household income, education, body mass index, current smoking, and born in the United States.					
<sup>b</sup>	Values are a product of frequency and estimated portion size.					
<sup>c</sup>	Sample sizes are for total fruits and vegetables; sample sizes for individual foods may differ because of missing data.					
N	= Sample size.					
Source: Colon-Ramos et al. (2009).						

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Table 9-38. Sources of Obtaining Fruits and Vegetables among Participants in the Community-Based Participatory Research Project by Agricultural Task Season and by Occupation								
Source	Agricultural Season <sup>a</sup>						Worker Occupation	
	Thinning <sup>b</sup> N = 201		Harvest <sup>c</sup> N = 182		Nonspray <sup>d</sup> N = 182		Farmworker N = 101	Nonfarmworker N = 100
	N	%	N	%	N	%	%	%
<b>Fruits</b>								
Grocery	173	86.1	118	60.2	159	87.4	72.5	82.9
Fruit stand	11	5.5	14	7.1	3	1.6	2.8	6.8
Work	90	44.8	135	68.9	73	40.1	74.6	28.8
Garden	15	7.5	34	17.3	7	3.8	7.7	11.6
Other	33	16.4	39	19.9	12	6.6	9.8	19.2
<b>Vegetables</b>								
Grocery	200	99.5	188	95.9	182	100	97.9	99.0
Fruit stand	13	6.5	49	25.0	8	4.4	10.1	14.0
Work	81	40.3	37	18.9	10	5.5	22.6	21.6
Garden	14	7.0	94	48.0	7	3.8	19.9	19.9
Other	20	10.0	7	3.6	4	2.2	4.5	6.2
<sup>a</sup>	Five farmworkers at harvest season, and 11 farmworkers and 8 nonfarmworkers at nonspray season, were lost to follow-up.							
<sup>b</sup>	Thinning season for apples and pears (June–July). Buds and shoots are removed from trees.							
<sup>c</sup>	Harvest season for apples and pears (September–October).							
<sup>d</sup>	Nonspray season for apples and pears (December–January). Limited pesticides are applied to crops.							
<i>N</i>	= Sample size.							
Source: Locke et al. (2009).								

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Respondents Who Consumed	Agricultural Season <sup>a</sup>						Worker Occupation	
	Thinning <sup>b</sup> N = 201		Harvest <sup>c</sup> N = 182		Nonspray <sup>d</sup> N = 182		Farmworker N = 101	Nonfarmworker N = 100
	N	%	N	%	N	%	N	%
<b>Fresh fruits</b>								
Apples	140	69.7	179	91.3	150	82.4	85.0	77.1
Pears	20	10.0	127	64.8	34	18.7	33.8	28.8
Plums	16	8.0	49	25.0	10	5.5	15.7	10.3
Grapes	142	70.6	128	65.3	130	71.4	68.3	69.9
Peaches	48	23.9	135	68.9	19	10.4	39.4	30.5
Apricots	21	10.5	39	19.9	6	3.3	15.3	7.6
Cherries	102	51.0	20	10.3	6	3.3	31.0	13.4
<b>Fresh vegetables</b>								
Asparagus	114	56.7	6	3.1	5	2.7	20.6	22.6
Green beans	37	18.5	46	23.5	35	19.2	25.9	15.1
Carrots	161	80.5	161	82.1	163	89.6	88.5	79.4
Peppers	159	79.1	171	87.2	152	83.5	93.4	73.3
Corn	103	51.5	162	82.7	51	28.0	62.7	46.7
Pumpkin	49	24.4	58	29.9	69	37.9	41.3	19.9
Squash	96	47.8	120	61.2	110	60.4	68.3	44.5
Cucumbers	141	70.5	160	81.6	119	65.4	75.9	69.5
Tomatoes	199	99.0	189	96.4	176	96.7	97.2	97.6
Onions	190	94.5	179	91.3	171	94.0	96.9	89.7
<sup>a</sup>	Five farmworkers at harvest season, and 11 farmworkers and 8 nonfarmworkers at nonspray season, were lost to follow-up.							
<sup>b</sup>	Thinning season for apples and pears (June–July). Buds and shoots are removed from trees.							
<sup>c</sup>	Harvest season for apples and pears (September–October).							
<sup>d</sup>	Nonspray season for apples and pears (December–January). Limited pesticides are applied to crops.							
N	= Sample size.							
Source: Locke et al. (2009).								



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**Table 9-40. Percentage of Infants and Toddlers Consuming Different Types of Fruit in the 2008 Feeding Infant and Toddlers Study (FITS)**

Food Group/Food	Percentage Consuming at Least Once per Day (mean ± standard error)								
	Age (months)								
	4–5.9	6–8.9	9–11.9	12–14.9	15–17.9	18–20.9	21–23.9	24–35.9	36–47.9
Sample Size	166	249	256	243	251	219	212	736	725
Any fruit or juice	21.8 ± 3.9	76.9 ± 3.6	89.8 ± 2.5	90.2 ± 2.4	86.9 ± 3.7	92.1 ± 2.4	92.8 ± 2.0 <sup>a</sup>	87.8 ± 2.3	85.2 ± 2.0
Any fruit	18.5 ± 3.6	64.5 ± 5.1	80.6 ± 4.0	74.3 ± 4.2	74.7 ± 4.5	84.0 ± 3.0	73.4 ± 4.6	73.2 ± 3.0	72.2 ± 2.5
Baby food fruit	16.8 ± 3.5	50.2 ± 5.4	42.4 ± 4.9	15.9 ± 3.7	8.6 ± 2.4	10.3 ± 3.4	2.1 ± 1.0 <sup>a</sup>	--	--
Nonbaby food fruit	1.7 ± 0.8 <sup>a</sup>	21.2 ± 5.2	51.0 ± 5.0	68.8 ± 4.4	71.9 ± 4.5	80.8 ± 3.3	72.2 ± 4.6	--	--
100% fruit juice	7.1 ± 2.3 <sup>a</sup>	31.2 ± 5.6	40.9 ± 4.8	55.0 ± 4.8	51.8 ± 5.2	54.0 ± 5.4	60.9 ± 5.7	60.8 ± 3.1	56.9 ± 3.0
<b>Types of nonbaby food fruit</b>									
Canned fruit	1.2 ± 0.7 <sup>a</sup>	4.1 ± 1.4 <sup>a</sup>	18.6 ± 4.0	31.4 ± 4.5	27.1 ± 3.9	31.1 ± 5.3	29.8 ± 5.5	20.0 ± 2.0	18.9 ± 2.2
Sweetened or packed in syrup	0 <sup>a</sup>	1.2 ± 0.7 <sup>a</sup>	7.4 ± 3.3 <sup>a</sup>	10.9 ± 2.4	9.1 ± 2.2	14.4 ± 4.5	14.7 ± 5.2	10.6 ± 1.6	5.8 ± 1.2
Unsweetened or packed in juice or water	1.0 ± 0.7 <sup>a</sup>	2.4 ± 1.1 <sup>a</sup>	10.4 ± 2.7	18.8 ± 4.4	17.1 ± 3.5	13.8 ± 3.7	11.1 ± 2.6	8.5 ± 1.2	10.4 ± 1.5
Unknown pack	0.2 ± 0.2 <sup>a</sup>	0.5 ± 0.5 <sup>a</sup>	1.9 ± 1.2 <sup>a</sup>	3.9 ± 1.5 <sup>a</sup>	2.8 ± 0.9 <sup>a</sup>	3.4 ± 1.6 <sup>a</sup>	4.2 ± 1.5 <sup>a</sup>	2.0 ± 0.6	3.4 ± 1.5
Fresh or frozen fruit	0.8 ± 0.4 <sup>a</sup>	18.4 ± 5.2	37.0 ± 5.0	54.1 ± 4.8	61.3 ± 4.7	59.0 ± 5.1	56.1 ± 5.8	61.9 ± 3.1	61.3 ± 2.8
Dried fruit	0 <sup>c</sup>	0 <sup>c</sup>	1.7 ± 0.8 <sup>a</sup>	6.5 ± 2.9 <sup>a</sup>	6.7 ± 3.1 <sup>a</sup>	9.6 ± 3.4	6.6 ± 2.0 <sup>a</sup>	8.3 ± 1.3	7.2 ± 1.4
<b>Types of fruit<sup>c</sup></b>									
Apples	7.2 ± 2.5 <sup>a</sup>	27.9 ± 5.2	32.5 ± 4.5	25.9 ± 4.4	32.1 ± 4.8	28.6 ± 4.6	30.6 ± 5.3	--	--
Bananas	6.1 ± 1.8 <sup>a</sup>	34.3 ± 5.5	32.4 ± 4.8	29.3 ± 4.1	30.3 ± 4.8	24.7 ± 4.1	29.7 ± 5.3	--	--
Berries	0	1.1 ± 0.9 <sup>a</sup>	4.7 ± 1.5 <sup>a</sup>	7.8 ± 2.3 <sup>a</sup>	14.4 ± 3.8	11.6 ± 3.5	4.3 ± 1.5 <sup>a</sup>	--	--
Citrus fruits	0 <sup>a</sup>	0 <sup>a</sup>	6.4 ± 3.2 <sup>a</sup>	6.4 ± 2.7 <sup>a</sup>	5.4 ± 1.6 <sup>a</sup>	14.6 ± 4.8	6.4 ± 2.1 <sup>a</sup>	--	--
Grapes	0 <sup>a</sup>	0 <sup>a</sup>	6.3 ± 2.4 <sup>a</sup>	9.4 ± 3.4	15.8 ± 4.0	17.3 ± 3.5	14.3 ± 3.1	--	--
Melons	0 <sup>a</sup>	0 <sup>a</sup>	3.6 ± 1.8 <sup>a</sup>	10.1 ± 4.0	2.9 ± 1.2 <sup>a</sup>	4.7 ± 2.0 <sup>a</sup>	4.6 ± 2.0 <sup>a</sup>	--	--
<b>Types of juice<sup>c</sup></b>									
Apple/apple blend	4.0 ± 1.7 <sup>a</sup>	17.9 ± 4.7	24.4 ± 4.2	29.6 ± 4.2	32.4 ± 4.7	31.1 ± 5.3	22.8 ± 4.0	33.1 ± 3.1	28.3 ± 2.6
Grape/grape blend	1.7 ± 1.3 <sup>a</sup>	6.4 ± 4.3 <sup>a</sup>	7.7 ± 2.7 <sup>a</sup>	6.4 ± 2.1 <sup>a</sup>	5.7 ± 2.8 <sup>a</sup>	7.0 ± 2.4 <sup>a</sup>	12.5 ± 3.3	6.2 ± 1.2	8.2 ± 1.9
Citrus/citrus blend	0 <sup>a</sup>	1.8 ± 1.2 <sup>a</sup>	2.7 ± 1.5 <sup>a</sup>	10.5 ± 3.4	11.7 ± 4.1	9.9 ± 2.5	12.1 ± 3.1	16.6 ± 2.3	16.8 ± 2.2
<sup>a</sup>	Point estimate is considered imprecise because of small sample size and uncommon or very common event.								
<sup>b</sup>	Includes all baby food and nonbaby food fruits.								
<sup>c</sup>	Includes all 100% juice (baby and nonbaby).								
Source: Siega-Riz et al. (2010) and Fox et al. (2010).									

**Table 9-41. Percentage of Infants and Toddlers Consuming Different Types of Vegetables in the 2008 Feeding Infant and Toddlers Study (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	24–35.9	36–47.9
Sample Size	166	249	256	243	251	219	212	736	725
Any vegetable	25.9 ± 4.6	62.8 ± 5.3	72.3 ± 4.8	72.4 ± 4.7	70.8 ± 5.0	72.1 ± 4.1	68.1 ± 5.7	71.0 ± 2.8	68.4 ± 2.7
Baby food vegetables	24.3 ± 4.6	51.3 ± 5.3	33.8 ± 4.3	15.1 ± 3.5	7.6 ± 2.3 <sup>a</sup>	2.7 ± 1.6	1.5 ± 1.0 <sup>a</sup>	--	--
Cooked vegetables <sup>b</sup>	1.8 ± 0.7 <sup>a</sup>	15.2 ± 3.5	45.4 ± 5.0	61.0 ± 4.8	60.7 ± 5.1	69.2 ± 4.2	62.9 ± 5.7	62.8 ± 3.1	56.8 ± 3.0
Raw vegetables	0 <sup>a</sup>	0 <sup>a</sup>	4.8 ± 1.9 <sup>a</sup>	6.1 ± 1.9 <sup>a</sup>	9.5 ± 2.3	8.6 ± 2.7 <sup>a</sup>	15.6 ± 4.5	23.2 ± 3.0	20.3 ± 2.1
<b>Types of vegetables<sup>c</sup></b>									
Dark green vegetables <sup>d</sup>	0 <sup>a</sup>	2.0 ± 1.6 <sup>a</sup>	10.9 ± 3.6	10.9 ± 3.2	6.5 ± 1.8 <sup>a</sup>	12.6 ± 4.5	8.7 ± 2.6 <sup>a</sup>	14.0 ± 2.6	11.3 ± 2.2
Deep yellow vegetables <sup>e</sup>	20.5 ± 4.3	36.0 ± 4.9	30.3 ± 4.1	24.4 ± 4.5	15.1 ± 3.6	20.7 ± 5.1	15.4 ± 4.7	14.2 ± 2.4	13.8 ± 2.3
White potatoes	0.6 ± 0.4 <sup>a</sup>	5.4 ± 2.5 <sup>a</sup>	20.1 ± 3.6	32.4 ± 4.6	29.6 ± 5.0	26.1 ± 4.2	31.5 ± 5.6	34.8 ± 3.1	26.4 ± 2.5
French fries, other fried potatoes	0 <sup>a</sup>	0.8 ± 0.6	6.3 ± 2.3 <sup>a</sup>	18.5 ± 3.8	11.6 ± 2.7	13.8 ± 3.2	16.7 ± 3.7	19.1 ± 2.7	17.8 ± 2.3
Other starchy vegetables <sup>f</sup>	1.8 ± 0.9 <sup>a</sup>	12.4 ± 3.5	12.6 ± 2.7	11.8 ± 2.1	22.8 ± 4.3	17.9 ± 4.5	22.6 ± 4.6	15.4 ± 1.9	13.8 ± 1.9
Other vegetables <sup>g</sup>	8.1 ± 3.3 <sup>a</sup>	23.9 ± 4.9	28.4 ± 4.4	26.8 ± 3.7	34.3 ± 4.4	36.2 ± 5.3	35.2 ± 5.6	32.3 ± 3.0	36.0 ± 3.0
<sup>a</sup>	Point estimate is considered imprecise because of small sample size and uncommon or very common event.								
<sup>b</sup>	Includes 100% vegetable juice.								
<sup>c</sup>	Includes commercial baby food, cooked vegetables, and raw vegetables.								
<sup>d</sup>	Reported dark-green vegetables include broccoli, spinach and other greens, and romaine lettuce.								
<sup>e</sup>	Reported deep-yellow vegetables include carrots, pumpkin, sweet potatoes, and winter squash.								
<sup>f</sup>	Reported starchy vegetables include corn, green peas, immature lima beans, black-eyed peas (not dried), cassava, and rutabaga.								
<sup>g</sup>	Other reported vegetables include artichoke, asparagus, beets, Brussels sprouts, cabbage, cauliflower, celery, cucumber, eggplant, green beans, lettuce, mushrooms, okra, onions, pea pods, peppers, tomatoes/tomato sauce, wax/yellow beans, and zucchini/summer squash.								
Source:	Siege-Riz et al. (2010); Fox et al. (2010).								

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**Table 9-42. Percentage of Infants, Toddlers, and Preschoolers Consuming Fruits and Vegetables in a Given Day, By Women, Infants, and Children (WIC) Participation, Feeding Infant and Toddlers Study (FITS) 2008<sup>a</sup>**

	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
	N = 117	N = 265	N = 84	N = 165	N = 76	N = 180	N = 160	N = 345	N = 238	N = 687	N = 279	N = 1,180
<b>Fruits (including juice)</b>												
Any fruit or 100% fruit juice	12.8 <sup>a</sup>	9.7	82.0 <sup>a</sup>	72.7	85.3 <sup>a</sup>	93.1 <sup>a</sup>	83.7	83.3	87.8	91.9	83.9	87.2
Any fruit	8.6 <sup>a</sup>	6.4 <sup>a</sup>	67.1	62.3	71.1 <sup>a</sup>	87.8 <sup>b</sup>	69.1	75.6	62.3	83.6 <sup>c</sup>	62.6	75.6 <sup>c</sup>
Baby food fruit	8.6 <sup>a</sup>	5.5 <sup>a</sup>	54.3	46.8	24.0 <sup>a</sup>	56.4 <sup>c</sup>	39.1	51.8	3.3 <sup>a</sup>	12.0 <sup>c</sup>	0.2 <sup>a</sup>	0.3 <sup>a</sup>
Nonbaby food fruit	0.0 <sup>a</sup>	0.8 <sup>a</sup>	25.3	17.8	50.3 <sup>a</sup>	51.5	37.9	35.4	60.6	79.8 <sup>c</sup>	62.4	75.6 <sup>c</sup>
Canned fruit	0.0 <sup>a</sup>	0.6 <sup>a</sup>	2.3 <sup>a</sup>	5.7 <sup>a</sup>	24.5 <sup>a</sup>	14.2	13.4	10.1	29.3	30.1	16.1	20.5
Fresh or frozen fruit	0.0 <sup>a</sup>	0.4 <sup>a</sup>	23.1 <sup>a</sup>	14.6	27.8 <sup>a</sup>	44.0	25.5	29.9	44.6	64.0 <sup>c</sup>	50.1	64.9 <sup>c</sup>
100% fruit juice	8.2 <sup>a</sup>	3.8 <sup>a</sup>	43.5	21.0	48.7 <sup>a</sup>	35.0	46.1	28.3	61.9	52.4	66.8	56.5 <sup>b</sup>
<b>Vegetables</b>												
Any	11.2 <sup>a</sup>	8.4	50.6	72.9 <sup>b</sup>	64.8 <sup>a</sup>	78.1	57.7	75.6 <sup>b</sup>	73.5	69.5	69.4	69.8
Baby food vegetables	10.2 <sup>a</sup>	7.7 <sup>a</sup>	41.0	59.7	25.6 <sup>a</sup>	40.0	33.3	49.5 <sup>b</sup>	6.0	6.9	0.2 <sup>a</sup>	0.6 <sup>a</sup>
Cooked vegetables	1.0 <sup>a</sup>	0.7 <sup>a</sup>	10.6 <sup>a</sup>	19.0	46.0 <sup>a</sup>	45.1	28.4	32.6	67.2	61.6	63.4	58.7
Raw vegetables	0.0 <sup>a</sup>	0.0 <sup>a</sup>	0.0 <sup>a</sup>	0.0 <sup>a</sup>	2.2 <sup>a</sup>	6.8 <sup>a</sup>	1.1 <sup>a</sup>	3.5 <sup>a</sup>	7.0 <sup>a</sup>	11.5	18.9	22.5
Dark green vegetables	0.0 <sup>a</sup>	0.0 <sup>a</sup>	0.6 <sup>a</sup>	3.1 <sup>a</sup>	12.6 <sup>a</sup>	9.6 <sup>a</sup>	6.6 <sup>a</sup>	6.5	12.0	8.5	16.7	11.5
Deep yellow vegetables	6.3 <sup>a</sup>	7.6 <sup>a</sup>	35.1	36.7	22.4 <sup>a</sup>	36.4	28.7	36.6	16.0	20.3	16.1	13.4
White potatoes	1.0 <sup>a</sup>	0.1 <sup>a</sup>	8.1 <sup>a</sup>	3.1 <sup>a</sup>	24.1 <sup>a</sup>	17.1	16.1	10.4	41.5	24.2 <sup>c</sup>	39.8	27.9 <sup>b</sup>
French fries (or other fried)	0.0 <sup>a</sup>	0.0 <sup>a</sup>	0.9 <sup>a</sup>	0.7 <sup>a</sup>	8.1 <sup>a</sup>	5.0 <sup>a</sup>	4.5 <sup>a</sup>	2.9 <sup>a</sup>	20.0	12.8	25.4	16.3
Other starchy vegetables	0.4 <sup>a</sup>	0.8 <sup>a</sup>	12.0 <sup>a</sup>	12.7 <sup>a</sup>	11.6 <sup>a</sup>	13.3	11.8 <sup>a</sup>	13.0	17.0	19.7	15.1	14.4
Other vegetables	4.1 <sup>a</sup>	2.1 <sup>a</sup>	10.3 <sup>a</sup>	35.0 <sup>c</sup>	19.6 <sup>a</sup>	35.1	15.0	35.1 <sup>c</sup>	28.7	35.4	28.5	35.7

<sup>a</sup> Point estimate is considered imprecise because of small samples size and uncommon or very common event.

<sup>b</sup> Statistically different from WIC participant at  $p = 0.05$ .

<sup>c</sup> Statistically different from WIC participant at  $p = 0.01$ .

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

Source: Deming et al. (2014).

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<b>Table 9-43. Mean ± Standard Error Amount Consumed (g/eating occasion) among Children 12–23.9 Months of Age</b>	
Food	FITS 2008 (N = 123)
Fruit (includes 100% juices)	109 ± 4.4
Nonbaby food fruits	76 ± 3.9
Fresh or frozen fruits	71 ± 4.1
Banana	74 ± 4.9
Vegetables	62 ± 4.9
Cooked vegetables	57 ± 5.0
Starchy vegetables	55 ± 5.4
Potatoes	58 ± 6.6
FITS = Feeding Infants and Toddlers Study. N = Sample size.	
Source: Briefel et al. (2010).	

<b>Table 9-44. Estimated Per Capita Availability of Canned<sup>a</sup> Fruits and Vegetables, Adjusted for Loss,<sup>b</sup> 2008</b>			
Fruits	Pounds/year	Vegetables	Pounds/year
Apples and Applesauce	3.0	Tomatoes	23.3
Pineapples	2.2	Sweet Corn	4.2
Peaches	2.1	Chile Peppers	3.8
Pears	1.9	Snap Beans	1.7
Olives	0.7	Other Canned Vegetables <sup>c</sup>	1.6
Cherries	0.1	Cucumbers (pickles)	1.2
Apricots	0.1	Mushrooms	0.7
Plums	<0.1	Carrots	0.6
		Green Peas	0.6
		Potatoes	0.6
		Cabbage (sauerkraut)	0.4
		Asparagus	0.1
<b>TOTAL</b>	<b>10.0</b>	<b>TOTAL</b>	<b>38.9</b>
<sup>a</sup> Canned refers to “both traditional airtight, shelf-stable metal cans and containers, and other newer and increasingly popular types of airtight containers, such as single-serving plastic cups.” <sup>b</sup> These data account for “the amount of food lost at the market and consumer levels (e.g., plate waste and spoilage).” <sup>c</sup> Other canned vegetables include beets, pulses, water chestnuts, bamboo shoots, juices, and other miscellaneous vegetables.			
Source: USDA (2010).			

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Groups	Low-Intake Consumers ( <i>N</i> = 1,802)		Consumers of Healthier Options ( <i>N</i> = 323)		Intensive Fruit Juice Consumers ( <i>N</i> = 319)		<i>p</i> -Value <sup>b</sup>	All ( <i>N</i> = 2,444)	
	Mean	SE	Mean	SE	Mean	SE		Mean	SE
<b>Fruit</b>									
Raw	77.1 <sup>c</sup>	2.4	276.3 <sup>c</sup>	8.4	134.1 <sup>c</sup>	9.9	0.000	139.3	6.5
Juice	112.8 <sup>c</sup>	5.4	143.7 <sup>c</sup>	12.4	427.6 <sup>c</sup>	21.1	0.000	236.5	8.9
Canned/frozen/dried/desserts	58.5	6.2	52.9	7.0	54.6	8.3	0.775	56.9	5.0
<b>Vegetables</b>									
Raw	84.5 <sup>c</sup>	3.6	116.6 <sup>c</sup>	8.8	94.4 <sup>c</sup>	7.5	0.023	9.09	3.6
Cooked	96.6 <sup>c</sup>	3.9	139.8 <sup>c</sup>	6.5	112.6 <sup>c</sup>	10.5	0.000	105.2	4.1
In mixed dishes	77.5	4.3	92.7	9.2	78.4	8.4	0.302	79.7	4.3
Fried	53.0 <sup>c</sup>	2.4	42.7 <sup>c</sup>	3.2	57.7 <sup>c</sup>	4.4	0.022	52.7	1.8
Total fruits and vegetables	255.2 <sup>c</sup>	4.7	599.1 <sup>c</sup>	16.5	703.7 <sup>c</sup>	25.5	0.000	359.4	10.6
Total excluding fruit juice	233.2 <sup>c</sup>	5.0	552.6 <sup>c</sup>	13.7	284.0 <sup>c</sup>	14.0	0.000	285.1	8.9
<p><sup>a</sup> Data are weighted to be representative of the population; multiple answers were possible. Persons who reported no consumption of a particular subgroup were not considered during mean calculation.</p> <p><sup>b</sup> <i>p</i>-Value among groups (one-way ANOVA).</p> <p><sup>c</sup> Mean values within a row were significantly different (<i>p</i> &lt; 0.05, least significant difference test).</p> <p><i>N</i> = Sample size.</p> <p>SE = Standard error.</p> <p>Note:  Raw fruit = orange; papaya; plum; fruit salad without dressing.  Fruit juice = apple juice, fresh; lemon juice, bottled; tangerine juice, canned.  Canned/frozen/dried/dessert fruits = grapefruit, canned or frozen, in light syrup; apricot, cooked or canned, in heavy syrup; cherry pie filling; mango, pickled; blackberries, frozen; banana chips; pear, dried, cooked with sugar; lime soufflé; fruit salad with salad dressing or mayonnaise.  Raw vegetables = broccoli, raw; spinach salad, no dressing; cucumber salad with creamy dressing; artichoke salad in oil.  Cooked vegetables = beet greens, cooked, fat not added in cooking; tomatoes, from fresh produce, broiled; mushrooms, stuffed; white potato, baked, peel not eaten; green plantains, boiled.  Vegetables in mixed dishes = vegetable combinations, cooked, with pasta; carrots, tomato beef rice soup, prepared with water; potato from Puerto Rican beef stew, with gravy; corn, cooked, from fresh produce, with cream sauce, made with milk; bean and rice soup.  Fried Vegetables = potato pancake; aubergine, batter dipped, fried; white potato, French fries, from frozen produce, deep fried.</p> <p>Source: Demydas (2011).</p>									

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Boys				
	White N = 275	Hispanic N = 252	Hmong N = 217	Somali N = 59
Vegetables (without potatoes)	1.4 (0.09)	1.6 (0.09)	1.3 (0.1)	1.4 (0.2)
Fruit (without juice)	1.1 (0.07)	1.4 (0.07)	1.1 (0.07)	1.4 (0.1)
Girls				
	White N = 245	Hispanic N = 310	Hmong N = 260	Somali N = 54
Vegetables (without potatoes)	1.6 (0.1)	1.7 (0.1)	1.3 (0.1)	1.9 (0.2)
Fruit (without juice)	1.2 (0.08)	1.5 (0.07)	1.2 (0.08)	1.9 (0.1)

N = Sample size.  
SE = Standard error.

Source: Arcan et al. (2014).

	All	Received SNAP	Eligible, but no SNAP	Ineligible for SNAP
<b>Total fruit<sup>a</sup></b>				
Overall	203	201	186	206
Low cooking frequency (0–1 days/week)	198	237	156	200
Medium cooking frequency (2–5 days/week)	194	207	164	197
High cooking frequency (6–7 days/week)	211	194	207	213
<b>Fresh fruit<sup>b</sup></b>				
Overall	178	171	167	179
Low cooking frequency (0–1 days/week)	175	194	131	180
Medium cooking frequency (2–5 days/week)	173	184	146	176
High cooking frequency (6–7 days/week)	181	158	184	182
<b>Total vegetables<sup>a,c</sup></b>				
Overall	150	152	141	151
Low cooking frequency (0–1 days/week)	126	98	159	124
Medium cooking frequency (2–5 days/week)	141	133	137	142
High cooking frequency (6–7 days/week)	162	175	143	163
<b>Fresh vegetables<sup>b,c</sup></b>				
Overall	102	86	100	105
Low cooking frequency (0–1 days/week)	87	63	121	84
Medium cooking frequency (2–5 days/week)	100	97	108	99
High cooking frequency (6–7 days/week)	108	80	91	112

<sup>a</sup> Total includes; raw, fresh, frozen, canned, dried, and pickled.  
<sup>b</sup> Fresh includes raw or cooked from raw fruits or vegetables.  
<sup>c</sup> Vegetables excludes white potatoes.  
SNAP = Supplemental Nutrition Assistance Program.

Source: Wolfson and Bleich (2015).

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<b>Table 9-48. Percentage of Respondents Reporting Intake of &lt;2 Servings of Fruit or Vegetables, or ≥2 Servings of Fruit Juice in the Previous Day, by Race and Ethnicity, Children 2–11 Years of Age, California Health Interview Survey 2007 and 2009</b>							
Dietary Practice	White	Latino		African American	Asian		p-Value <sup>a</sup>
	(Reference) N = 7,906	English interview N = 1,853	Spanish interview N = 2,332	N = 629	English interview N = 1,559	Non-English interview N = 484	
Fruit (<2 servings)	34.0%	36.2%	38.9%	39.1%	44.5%	67.1%	< 0.05
Vegetables (<2 servings)	55.9%	67.2%	71.0%	62.1%	60.6%	77.9%	< 0.05
Fruit juice (≥2 servings)	25.3%	42.8%	45.3%	42.8%	23.0%	27.3%	< 0.05
<sup>a</sup>	Values differ significantly across race/ethnic groups.						
N	= Sample size.						
Source: Guerrero et al. (2016).							

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**Table 9-49. Per Capita 2-Day Average<sup>a</sup> Intake of Total Fruits<sup>b</sup> and Total Vegetables<sup>c</sup>: Pregnant, Lactating, and All Women of Child-Bearing Age (13 to <50 years) (g/kg-day)**

Population Group	N	Percent Consuming <sup>d</sup>	Mean	SE	Percentiles									Maximum
					1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
Total fruits														
Pregnant	426	92	1.75	0.16	0 <sup>e</sup>	0	<0.05	0.1	1.1	2.8	4.4	5	7.8 <sup>e</sup>	11.0 <sup>e</sup>
Lactating	101	84	1.86	0.24	0 <sup>e</sup>	0 <sup>e</sup>	0 <sup>e</sup>	0.3	1.4	2.7	4.6 <sup>e</sup>	5.0 <sup>e</sup>	7.5 <sup>e</sup>	9.1 <sup>e</sup>
Child-bearing age	5,543	84	1.11	0.04	0	0	0	<0.05	0.5	1.7	3.2	4.3	6.8	16.7 <sup>e</sup>
Total vegetables														
Pregnant	426	100	2.77	0.14	0.1 <sup>e</sup>	0.7	1	1.4	2.3	3.7	4.9	5.7	9.6 <sup>e</sup>	14.3 <sup>e</sup>
Lactating	101	100	2.90	0.42	0.4 <sup>e</sup>	0.5 <sup>e</sup>	0.7 <sup>e</sup>	1.5	2.3	3.8	5.7 <sup>e</sup>	7.2 <sup>e</sup>	10.6 <sup>e</sup>	10.6 <sup>e</sup>
Child-bearing age	5,543	100	2.44	0.06	<0.05	0.3	0.6	1.1	2	3.2	4.8	6.2	9.4	35.0 <sup>e</sup>



Chapter 9—Intake of Fruits and Vegetables

**Table 9-49. Per Capita 2-Day Average<sup>a</sup> Intake of Total Fruits<sup>b</sup> and Total Vegetables<sup>c</sup>: Pregnant, Lactating, and All Women of Child-Bearing Age (13 to <50 years) (g/kg-day) (Continued)**

<sup>a</sup>	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 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 <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .	two can be
<sup>b</sup>	Total fruits includes: acerola; apple, dried; apple, dried-baby food; apple, fruit with peel; apple, peeled fruit; apple, peeled fruit-baby food; apple, sauce; apple, sauce-baby food; apricot, dried; apricot-baby food; avocado; banana; banana, dried; banana, dried-baby food; banana-baby food; blackberry; blueberry; blueberry-baby food; boysenberry; breadfruit; canistel; cherimoya; cherry; cherry-baby food; citrus hybrids; crabapple; cranberry; cranberry, dried; cranberry-baby food; currant; currant, dried; date; dragon fruit; eggplant; elderberry; feijoa; fig; fig, dried; gooseberry; grape; grape, raisin; guava; guava-baby food; huckleberry; jackfruit; kiwifruit, fuzzy; kumquat; lemon; lemon, peel; lime; loganberry; longan; loquat; lychee; lychee, dried; mamey apple; mango; mango, dried; mango-baby food; nectarine; orange; orange, peel; papaya; papaya, dried; papaya-baby food; passionfruit; passionfruit-baby food; pawpaw; peach; peach, dried; peach, dried-baby food; peach-baby food; pear; pear, dried; pear-baby food; persimmon; pineapple; pineapple, dried; pineapple-baby food; plantain; plantain, dried; plum; plum, prune, dried; plum, prune, dried-baby food; plum, prune, fresh; plum, prune, fresh-baby food; plum-baby food; pomegranate; prickly pear fruit; pummelo; quince; raspberry; raspberry-baby food; sapote, mamey; soursop; Spanish lime; starfruit; strawberry; strawberry-baby food; sugar apple; tamarind; tangerine.	
<sup>c</sup>	Total vegetables includes: alfalfa, seed; amaranth, leafy; arrowroot, flour; arrowroot, flour-baby food; artichoke, globe; artichoke, Jerusalem; arugula; asparagus; balsam pear; bamboo, shoots; basil, dried leaves; basil, dried leaves-baby food; basil, fresh leaves; basil, fresh leaves-baby food; bean, cowpea, succulent; bean, kidney, seed; bean, lima, seed; bean, lima, succulent; bean, mung, seed; bean, navy, seed; bean, pink, seed; bean, pinto, seed; bean, snap, succulent; bean, snap, succulent-baby food; beet, garden, roots; beet, garden, roots-baby food; beet, garden, tops; belgium endive; broccoli; broccoli raab; broccoli, Chinese; broccoli-baby food; brussels sprouts; cabbage; cabbage, Chinese, bok choy; cabbage, Chinese, mustard; cabbage, Chinese, napa; cactus; cantaloupe; cardoon; carrot; carrot-baby food; cassava; cassava-baby food; cauliflower; celeriac; celery; celery-baby food; celtuce; chayote, fruit; chickpea, flour; chickpea, seed; chickpea, seed-baby food; chicory, roots; chicory, tops; Chinese waxgourd; chive, fresh leaves; chrysanthemum, garland; cilantro, leaves; cilantro, leaves-baby food; cinnamon; cinnamon-baby food; coriander, seed; coriander, seed-baby food; dandelion, leaves; dasheen, corm; dasheen, leaves; dill, seed; dillweed; fennel, Florence; garlic, bulb; garlic, bulb-baby food; ginger; ginger, dried; ginger-baby food; ginseng, dried; grape, leaves; guar, seed; guar, seed-baby food; herbs, other; herbs, other-baby food; kale; kohlrabi; leek; lemongrass; lettuce, head; lettuce, leaf; marjoram; marjoram-baby food; okra; onion, bulb; onion, bulb, dried; onion, bulb, dried-baby food; onion, bulb-baby food; onion, green; palm heart, leaves; parsley, dried leaves; parsley, dried leaves-baby food; parsley, leaves; parsley, turnip rooted; parsnip; parsnip-baby food; pea, dry; pea, dry-baby food; pea, edible podded, succulent; pea, pigeon, seed; pea, pigeon, succulent; pea, succulent; pea, succulent-baby food; pepper, bell; pepper, bell, dried; pepper, bell, dried-baby food; pepper, bell-baby food; pepper, black and white; pepper, black and white-baby food; pepper, nonbell; pepper, nonbell, dried; pepper, nonbell-baby food; peppermint; potato, chips; potato, dry (granules/flakes); potato, dry (granules/flakes)-baby food; potato, flour; potato, flour-baby food; potato, tuber, without peel; potato, tuber, without peel-baby food; potato, tuber, with peel; potato, tuber, with peel-baby food; pumpkin; radicchio; radish, oriental, roots; radish, oriental, tops; radish, roots; radish, tops; rape greens; rhubarb; rutabaga; salsify, roots; salsify, tops; savory; seaweed; seaweed-baby food; shallot, bulb; soybean, flour; soybean, flour-baby food; soybean, seed; spices, other; spices, other-baby food; squash, summer; squash, summer-baby food; squash, winter; squash, winter-baby food; sweet potato; sweet potato-baby food; Swiss chard; taniel, corm; tomatillo; tomato; tomato, dried; tomato, dried-baby food; tomato, paste; tomato, paste-baby food; tomato, puree; tomato, puree-baby food; tomato-baby food; tree tomato; turmeric; turnip, greens; turnip, roots; water chestnut; watercress; watermelon; yam bean; yam, true.	
<sup>d</sup>	Represents the percentage of individuals consuming these foods at least once over the 2-day survey period.	
<sup>e</sup>	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).	

HNIS Human Nutrition Information Science.  
 N = Sample size.  
 SE = Standard error.

Source: Based on U.S. EPA analysis of 2005–2010 NHANES using <http://fcid.foodrisk.org/>.

**Table 9-50. Consumer-Only 2-Day Average<sup>a</sup> Intake of Total Fruits<sup>b</sup> and Total Vegetables<sup>c</sup>: Pregnant, Lactating, and All Women of Child-Bearing Age (13 to <50 years) (g/kg-day)**

Population Group	N	Mean	SE	Percentiles									Maximum
				1 <sup>st</sup>	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	99 <sup>th</sup>	
Total fruits													
Pregnant	389	1.91	0.17	<0.05 <sup>d</sup>	<0.05	<0.05	0.4	1.4	3.0	4.5	5	8.0 <sup>d</sup>	11.0 <sup>d</sup>
Lactating	88	2.20	0.27	<0.05 <sup>d</sup>	0.1 <sup>d</sup>	0.2 <sup>d</sup>	0.8	2.2	3.4	4.8 <sup>d</sup>	5.6 <sup>d</sup>	7.5 <sup>d</sup>	9.1 <sup>d</sup>
Child-bearing age	4,703	1.32	0.04	<0.05	<0.05	<0.05	0.1	0.8	2.0	3.4	4.4	7	16.7 <sup>d</sup>
Total vegetable													
Pregnant	426	2.77	0.14	0.1 <sup>d</sup>	0.7	1.0	1.4	2.3	3.7	4.9	5.7	9.6 <sup>d</sup>	14.3 <sup>d</sup>
Lactating	101	2.90	0.42	0.4 <sup>d</sup>	0.5 <sup>d</sup>	0.7 <sup>d</sup>	1.5	2.3	3.8	5.7 <sup>d</sup>	7.2 <sup>d</sup>	10.6 <sup>d</sup>	10.6 <sup>d</sup>
Child-bearing age	5,541	2.44	0.06	0.1	0.3	0.6	1.1	2.0	3.2	4.8	6.2	9.4	35.0 <sup>d</sup>
<sup>a</sup>	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 <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .												
<sup>b</sup>	Total fruits includes: acerola; apple, dried; apple, dried-baby food; apple, fruit with peel; apple, peeled fruit; apple, peeled fruit-baby food; apple, sauce; apple, sauce-baby food; apricot; apricot, dried; apricot-baby food; avocado; banana; banana, dried; banana, dried-baby food; banana-baby food; blackberry; blueberry; blueberry-baby food; boysenberry; breadfruit; canistel; cherimoya; cherry; cherry-baby food; citrus hybrids; crabapple; cranberry; cranberry, dried; cranberry-baby food; currant; currant, dried; date; dragon fruit; eggplant; elderberry; feijoa; fig; fig, dried; gooseberry; grape; grape, raisin; guava; guava-baby food; huckleberry; jackfruit; kiwifruit, fuzzy; kumquat; lemon; lemon, peel; lime; loganberry; longan; loquat; lychee; lychee, dried; mamey apple; mango; mango, dried; mango-baby food; nectarine; orange; orange, peel; papaya; papaya, dried; papaya-baby food; passionfruit; passionfruit-baby food; pawpaw; peach; peach, dried; peach, dried-baby food; peach-baby food; pear; pear, dried; pear-baby food; persimmon; pineapple; pineapple, dried; pineapple-baby food; plantain; plantain, dried; plum; plum, prune, dried; plum, prune, dried-baby food; plum, prune, fresh; plum, prune, fresh-baby food; plum-baby food; pomegranate; prickly pear fruit; pummelo; quince; raspberry; raspberry-baby food; sapote, mamey; soursop; Spanish lime; starfruit; strawberry; strawberry-baby food; sugar apple; tamarind; tangerine.												

Chapter 9—Intake of Fruits and Vegetables

**Table 9-50. Consumer-Only 2-Day Average<sup>a</sup> Intake of Total Fruits<sup>b</sup> and Total Vegetables<sup>c</sup>: Pregnant, Lactating, and All Women of Child-Bearing Age (13 to <50 years) (g/kg-day) (Continued)**

<sup>c</sup> Total vegetables includes: alfalfa, seed; amaranth, leafy; arrowroot, flour; arrowroot, flour-baby food; artichoke, globe; artichoke, Jerusalem; arugula; asparagus; balsam pear; bamboo, shoots; basil, dried leaves; basil, dried leaves-baby food; basil, fresh leaves; basil, fresh leaves-baby food; bean, cowpea, succulent; bean, kidney, seed; bean, lima, seed; bean, lima, succulent; bean, mung, seed; bean, navy, seed; bean, pink, seed; bean, pinto, seed; bean, snap, succulent; bean, snap, succulent-baby food; beet, garden, roots; beet, garden, roots-baby food; beet, garden, tops; belgium endive; broccoli; broccoli raab; broccoli, Chinese; broccoli-baby food; brussels sprouts; cabbage; cabbage, Chinese, bok choy; cabbage, Chinese, mustard; cabbage, Chinese, napa; cactus; cantaloupe; cardoon; carrot; carrot-baby food; cassava; cassava-baby food; cauliflower; celeriac; celery; celery-baby food; celtuce; chayote, fruit; chickpea, flour; chickpea, seed; chickpea, seed-baby food; chicory, roots; chicory, tops; Chinese waxgourd; chive, fresh leaves; chrysanthemum, garland; cilantro, leaves; cilantro, leaves-baby food; cinnamon; cinnamon-baby food; coriander, seed; coriander, seed-baby food; dandelion, leaves; dasheen, corm; dasheen, leaves; dill, seed; dillweed; fennel, Florence; garlic, bulb; garlic, bulb-baby food; ginger; ginger, dried; ginger-baby food; ginseng, dried; grape, leaves; guar, seed; guar, seed-baby food; herbs, other; herbs, other-baby food; kale; kohlrabi; leek; lemongrass; lettuce, head; lettuce, leaf; marjoram; marjoram-baby food; okra; onion, bulb; onion, bulb, dried; onion, bulb, dried-baby food; onion, bulb-baby food; onion, green; palm heart, leaves; parsley, dried leaves; parsley, dried leaves-baby food; parsley, leaves; parsley, turnip rooted; parsnip; parsnip-baby food; pea, dry; pea, dry-baby food; pea, edible podded, succulent; pea, pigeon, seed; pea, pigeon, succulent; pea, succulent; pea, succulent-baby food; pepper, bell; pepper, bell, dried; pepper, bell, dried-baby food; pepper, bell-baby food; pepper, black and white; pepper, black and white-baby food; pepper, nonbell; pepper, nonbell, dried; pepper, nonbell-baby food; peppermint; potato, chips; potato, dry (granules/flakes); potato, dry (granules/flakes)-baby food; potato, flour; potato, flour-baby food; potato, tuber, without peel; potato, tuber, without peel-baby food; potato, tuber, with peel; potato, tuber, with peel-baby food; pumpkin; radicchio; radish, oriental, roots; radish, oriental, tops; radish, roots; radish, tops; rape greens; rhubarb; rutabaga; salsify, roots; salsify, tops; savory; seaweed; seaweed-baby food; shallot, bulb; soybean, flour; soybean, flour-baby food; soybean, seed; spices, other; spices, other-baby food; squash, summer; squash, summer-baby food; squash, winter; squash, winter-baby food; sweet potato; sweet potato-baby food; Swiss chard; tanager, corm; tomatillo; tomato; tomato, dried; tomato, dried-baby food; tomato, paste; tomato, paste-baby food; tomato, puree; tomato, puree-baby food; tomato-baby food; tree tomato; turmeric; turnip, greens; turnip, roots; water chestnut; watercress; watermelon; yam bean; yam, true.

<sup>d</sup> 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).

HNIS Human Nutrition Information Science.

*N* = Sample size.

SE = Standard error.

Source: Based on U.S. EPA analysis of 2005–2010 NHANES using <http://fcid.foodrisk.org/>.

## Chapter 9—Intake of Fruits and Vegetables

Food	Per Capita					Consumer-Only			
	PC	N	Mean	SE	95 <sup>th</sup>	N	Mean	SE	95 <sup>th</sup>
<b>Apple</b>									
Pregnant	38	426	0.33	0.06	2.0	177	0.88	0.14	2.7 <sup>b</sup>
Lactating	41	101	0.41	0.10	1.9 <sup>b</sup>	42	1.02	0.13	2.6 <sup>b</sup>
Child-bearing age	30	5,543	0.28	0.02	1.8	1,633	0.94	0.04	2.9
<b>Banana</b>									
Pregnant	64	426	0.36	0.04	1.9	267	0.56	0.06	2.0 <sup>b</sup>
Lactating	57	101	0.31	0.10	1.5 <sup>b</sup>	62	0.54	0.15	2.2 <sup>b</sup>
Child-bearing age	52	5,543	0.22	0.01	1.3	2,996	0.43	0.02	1.7
<b>Beans</b>									
Pregnant	48	426	0.18	0.02	0.8	209	0.38	0.04	1.1 <sup>b</sup>
Lactating	59	101	0.27	0.05	1.0 <sup>b</sup>	59	0.45	0.07	1.3 <sup>b</sup>
Child-bearing age	45	5,543	0.18	0.01	0.9	2,533	0.40	0.01	1.3
<b>Berries and small fruits</b>									
Pregnant	72	426	0.37	0.08	2.4	298	0.52	0.11	2.4 <sup>b</sup>
Lactating	65	101	0.28	0.06	1.3 <sup>b</sup>	69	0.44	0.08	1.8 <sup>b</sup>
Child-bearing age	67	5,543	0.24	0.01	1.3	3,670	0.36	0.02	1.7
<b>Broccoli</b>									
Pregnant	19	426	0.11	0.02	0.8	74	0.55	0.09	1.3 <sup>b</sup>
Lactating	21	101	0.11	0.04	0.6 <sup>b</sup>	16	0.50	0.08	0.9 <sup>b</sup>
Child-bearing age	17	5,543	0.09	0.01	0.7	840	0.55	0.03	1.6
<b>Bulb vegetables</b>									
Pregnant	98	426	0.19	0.02	0.7	416	0.20	0.02	0.7
Lactating	98	101	0.23	0.06	1.3 <sup>b</sup>	100	0.24	0.06	1.3 <sup>b</sup>
Child-bearing age	97	5,543	0.17	0.01	0.6	5,380	0.17	0.01	0.6
<b>Cabbage</b>									
Pregnant	7	426	0.02	0.01	0.1	51	0.25	0.06	1.1 <sup>b</sup>
Lactating	17	101	0.03	0.01	0.2 <sup>b</sup>	15	0.16	0.05	0.4 <sup>b</sup>
Child-bearing age	12	5,543	0.04	<0.005	0.2	655	0.36	0.03	1.3

## Chapter 9—Intake of Fruits and Vegetables

<b>Table 9-51. Per Capita and Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables:<sup>a</sup> Pregnant, Lactating, and All Women of Child-Bearing Age (13 to &lt;50 years) (g/kg-day) (Continued)</b>									
Food	Per Capita					Consumer-Only			
	PC	N	Mean	SE	95 <sup>th</sup>	N	Mean	SE	95 <sup>th</sup>
<b>Apple</b>									
Pregnant	38	426	0.33	0.06	2.0	177	0.88	0.14	2.7 <sup>b</sup>
Lactating	41	101	0.41	0.10	1.9 <sup>b</sup>	42	1.02	0.13	2.6 <sup>b</sup>
Child-bearing age	30	5,543	0.28	0.02	1.8	1,633	0.94	0.04	2.9
<b>Banana</b>									
Pregnant	64	426	0.36	0.04	1.9	267	0.56	0.06	2.0 <sup>b</sup>
Lactating	57	101	0.31	0.10	1.5 <sup>b</sup>	62	0.54	0.15	2.2 <sup>b</sup>
Child-bearing age	52	5,543	0.22	0.01	1.3	2,996	0.43	0.02	1.7
<b>Beans</b>									
Pregnant	48	426	0.18	0.02	0.8	209	0.38	0.04	1.1 <sup>b</sup>
Lactating	59	101	0.27	0.05	1.0 <sup>b</sup>	59	0.45	0.07	1.3 <sup>b</sup>
Child-bearing age	45	5,543	0.18	0.01	0.9	2,533	0.40	0.01	1.3
<b>Berries and small fruits</b>									
Pregnant	72	426	0.37	0.08	2.4	298	0.52	0.11	2.4 <sup>b</sup>
Lactating	65	101	0.28	0.06	1.3 <sup>b</sup>	69	0.44	0.08	1.8 <sup>b</sup>
Child-bearing age	67	5,543	0.24	0.01	1.3	3,670	0.36	0.02	1.7
<b>Broccoli</b>									
Pregnant	19	426	0.11	0.02	0.8	74	0.55	0.09	1.3 <sup>b</sup>
Lactating	21	101	0.11	0.04	0.6 <sup>b</sup>	16	0.50	0.08	0.9 <sup>b</sup>
Child-bearing age	17	5,543	0.09	0.01	0.7	840	0.55	0.03	1.6
<b>Bulb vegetables</b>									
Pregnant	98	426	0.19	0.02	0.7	416	0.20	0.02	0.7
Lactating	98	101	0.23	0.06	1.3 <sup>b</sup>	100	0.24	0.06	1.3 <sup>b</sup>
Child-bearing age	97	5,543	0.17	0.01	0.6	5,380	0.17	0.01	0.6
<b>Cabbage</b>									
Pregnant	7	426	0.02	0.01	0.1	51	0.25	0.06	1.1 <sup>b</sup>
Lactating	17	101	0.03	0.01	0.2 <sup>b</sup>	15	0.16	0.05	0.4 <sup>b</sup>
Child-bearing age	12	5,543	0.04	<0.005	0.2	655	0.36	0.03	1.3
<b>Carrots</b>									
Pregnant	50	426	0.15	0.04	0.5	208	0.30	0.08	1.1 <sup>b</sup>
Lactating	59	101	0.20	0.05	1.0 <sup>b</sup>	59	0.34	0.07	1.4 <sup>b</sup>
Child-bearing age	45	5,543	0.12	0.01	0.6	2,421	0.25	0.01	0.9
<b>Citrus</b>									
Pregnant	26	426	0.25	0.06	1.8	109	0.96	0.21	3.2 <sup>b</sup>

## Chapter 9—Intake of Fruits and Vegetables

Food	Per Capita					Consumer-Only			
	PC	N	Mean	SE	95 <sup>th</sup>	N	Mean	SE	95 <sup>th</sup>
Lactating	31	101	0.35	0.14	2.1 <sup>b</sup>	26	1.13	0.32	5.2 <sup>b</sup>
Child-bearing age	22	5,543	0.13	0.01	1.0	1,194	0.59	0.04	2.3
<b>Corn</b>									
Pregnant	98	426	0.38	0.03	1.3	421	0.38	0.03	1.3
Lactating	94	101	0.41	0.06	1.4 <sup>b</sup>	96	0.44	0.06	1.4 <sup>b</sup>
Child-bearing age	95	5,543	0.33	0.01	1.2	5,319	0.34	0.01	1.2
<b>Cucumber</b>									
Pregnant	39	426	0.13	0.05	0.5	161	0.32	0.12	1.2 <sup>b</sup>
Lactating	34	101	0.04	0.02	0.3 <sup>b</sup>	31	0.13	0.03	0.3 <sup>b</sup>
Child-bearing age	40	5,543	0.10	0.01	0.5	2,028	0.24	0.02	0.9
<b>Cucurbits</b>									
Pregnant	53	426	0.42	0.08	2.9	205	0.80	0.15	3.8 <sup>b</sup>
Lactating	44	101	0.32	0.15	2.8 <sup>b</sup>	41	0.74	0.31	2.8 <sup>b</sup>
Child-bearing age	50	5,543	0.29	0.03	1.5	2,524	0.59	0.05	2.7
<b>Fruiting vegetables</b>									
Pregnant	98	426	0.80	0.05	2.1	416	0.82	0.05	2.1
Lactating	100	101	0.90	0.15	3.0 <sup>b</sup>	100	0.91	0.15	3.0 <sup>b</sup>
Child-bearing age	96	5,543	0.71	0.02	2.3	5,300	0.74	0.02	2.3
<b>Leafy vegetables</b>									
Pregnant	94	426	0.49	0.05	1.8	394	0.52	0.05	1.9
Lactating	95	101	0.50	0.08	1.7 <sup>b</sup>	96	0.52	0.08	1.7 <sup>b</sup>
Child-bearing age	92	5,543	0.55	0.02	2.1	5,074	0.60	0.02	2.1
<b>Legume vegetables</b>									
Pregnant	88	426	0.50	0.11	2.1	367	0.56	0.12	2.2 <sup>b</sup>
Lactating	84	101	0.42	0.06	1.8 <sup>b</sup>	90	0.49	0.07	1.8 <sup>b</sup>
Child-bearing age	83	5,543	0.33	0.02	1.5	4,623	0.40	0.02	1.7
<b>Lettuce</b>									
Pregnant	60	426	0.2	0.02	0.9	251	0.33	0.03	1.1 <sup>b</sup>
Lactating	58	101	0.17	0.03	0.7 <sup>b</sup>	59	0.29	0.05	0.8 <sup>b</sup>
Child-bearing age	58	5,543	0.25	0.01	1.1	3,127	0.44	0.02	1.4
<b>Onion</b>									
Pregnant	98	426	0.19	0.02	0.7	415	0.19	0.02	0.7
Lactating	98	101	0.23	0.06	1.3 <sup>b</sup>	100	0.23	0.06	1.3 <sup>b</sup>
Child-bearing age	97	5,543	0.16	0.01	0.5	5,348	0.16	0.01	0.6

## Chapter 9—Intake of Fruits and Vegetables

<b>Table 9-51. Per Capita and Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables:<sup>a</sup> Pregnant, Lactating, and All Women of Child-Bearing Age (13 to &lt;50 years) (g/kg-day) (Continued)</b>									
Food	Per Capita					Consumer-Only			
	PC	N	Mean	SE	95 <sup>th</sup>	N	Mean	SE	95 <sup>th</sup>
<b>Peaches</b>									
Pregnant	54	426	0.10	0.03	0.9	218	0.19	0.05	1.2 <sup>b</sup>
Lactating	50	101	0.14	0.05	1.1 <sup>b</sup>	51	0.28	0.09	1.1 <sup>b</sup>
Child-bearing age	47	5,543	0.05	<0.005	0.2	2,680	0.11	0.01	0.8
<b>Pears</b>									
Pregnant	10	426	0.05	0.01	0.2	43	0.48	0.11	1.7 <sup>b</sup>
Lactating	11	101	0.05	0.03	0.2 <sup>b</sup>	13	0.49	0.23	1.6 <sup>b</sup>
Child-bearing age	7	5,543	0.04	0.01	0.1	440	0.59	0.06	2.1
<b>Peas</b>									
Pregnant	18	426	0.06	0.02	0.3	77	0.32	0.08	1.0 <sup>b</sup>
Lactating	18	101	0.05	0.02	0.5 <sup>b</sup>	20	0.25	0.08	0.5 <sup>b</sup>
Child-bearing age	19	5,543	0.05	<0.005	0.3	995	0.27	0.02	0.8
<b>Pome fruit</b>									
Pregnant	41	426	0.38	0.06	2.0	193	0.92	0.12	2.7 <sup>b</sup>
Lactating	42	101	0.47	0.11	2.0 <sup>b</sup>	45	1.13	0.14	3.2 <sup>b</sup>
Child-bearing age	33	5,543	0.32	0.02	1.9	1,874	0.97	0.04	3.1
<b>Root/tuber vegetables</b>									
Pregnant	100	426	1.06	0.08	3.8	426	1.06	0.08	3.8
Lactating	100	101	0.98	0.12	2.2 <sup>b</sup>	101	0.98	0.12	2.2 <sup>b</sup>
Child-bearing age	100	5,543	0.85	0.02	2.3	5,537	0.85	0.02	2.3
<b>Stalk/stem vegetables</b>									
Pregnant	27	426	0.05	0.01	0.2	98	0.18	0.03	0.7 <sup>b</sup>
Lactating	24	101	0.07	0.02	0.2 <sup>b</sup>	21	0.28	0.08	1.1 <sup>b</sup>
Child-bearing age	22	5,543	0.04	<0.005	0.2	1,085	0.2	0.01	0.7
<b>Stone fruits</b>									
Pregnant	57	426	0.16	0.04	1.2	231	0.28	0.06	1.4 <sup>b</sup>
Lactating	54	101	0.20	0.06	1.2 <sup>b</sup>	55	0.37	0.1	1.7 <sup>b</sup>
Child-bearing age	51	5,543	0.10	0.01	0.7	2,843	0.2	0.02	1.2
<b>Strawberries</b>									
Pregnant	50	426	0.16	0.07	1.0	181	0.32	0.13	1.8 <sup>b</sup>
Lactating	41	101	0.07	0.03	0.4 <sup>b</sup>	37	0.18	0.07	1.2 <sup>b</sup>
Child-bearing age	40	5,543	0.10	0.01	0.6	2,048	0.24	0.03	1.2
<b>Tomatoes</b>									
Pregnant	93	426	0.71	0.04	1.8	398	0.76	0.04	1.8

## Chapter 9—Intake of Fruits and Vegetables

**Table 9-51. Per Capita and Consumer-Only 2-Day Average Intake of Individual Fruits and Vegetables:<sup>a</sup> Pregnant, Lactating, and All Women of Child-Bearing Age (13 to <50 years) (g/kg-day) (Continued)**

Food	Per Capita					Consumer-Only			
	PC	N	Mean	SE	95 <sup>th</sup>	N	Mean	SE	95 <sup>th</sup>
Lactating	97	101	0.78	0.12	2.4 <sup>b</sup>	96	0.81	0.12	2.4 <sup>b</sup>
Child-bearing age	88	5,543	0.63	0.02	2.1	4,902	0.71	0.02	2.2
Tropical fruits									
Pregnant	72	426	0.56	0.07	2.3	310	0.77	0.08	3.3 <sup>b</sup>
Lactating	67	101	0.45	0.11	2.2 <sup>b</sup>	72	0.68	0.14	2.2 <sup>b</sup>
Child-bearing age	62	5,543	0.30	0.01	1.6	3,569	0.49	0.02	2.0
White potatoes									
Pregnant	92	426	0.62	0.06	1.7	388	0.68	0.07	1.8
Lactating	85	101	0.45	0.08	1.9 <sup>b</sup>	89	0.53	0.09	2.0 <sup>b</sup>
Child-bearing age	90	5,543	0.48	0.02	1.8	4,944	0.54	0.02	1.9
<sup>a</sup>	See Table 9-5 for a detailed list of the food items included in each individual fruit and vegetable group.								
<sup>b</sup>	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 2-day survey period.								
SE	= Standard error.								
Source:	Based on U.S. EPA Analysis of NHANES 2005–2010 data using <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .								



Chapter 9—Intake of Fruits and Vegetables

<b>Table 9-52. Per Capita and Consumer-Only 2-Day Average Intake of Exposed and Protected Fruits and Vegetables:<sup>a</sup> Pregnant, Lactating, and All Women of Child-Bearing Age (13 to &lt;50 years) (g/kg-day)</b>									
Food	Per Capita					Consumer-Only			
	PC	N	Mean	SE	95 <sup>th</sup>	N	Mean	SE	95 <sup>th</sup>
<b>Exposed fruits</b>									
Pregnant	81	426	0.90	0.10	3.2	346	1.12	0.13	3.4 <sup>b</sup>
Lactating	74	101	1.00	0.17	3.0 <sup>b</sup>	81	1.35	0.18	3.2 <sup>b</sup>
Child-bearing age	75	5,543	0.68	0.03	3.1	4,171	0.91	0.03	3.4
<b>Protected fruits</b>									
Pregnant	80	426	0.85	0.11	3.3	340	1.06	0.13	3.5 <sup>b</sup>
Lactating	75	101	0.86	0.20	3.6 <sup>b</sup>	78	1.14	0.25	3.6 <sup>b</sup>
Child-bearing age	69	5,543	0.44	0.02	2.1	3,923	0.64	0.03	2.5
<b>Exposed vegetables</b>									
Pregnant	100	426	1.21	0.06	3.1	424	1.22	0.06	3.1
Lactating	100	101	1.32	0.20	4.4 <sup>b</sup>	101	1.32	0.20	4.4 <sup>b</sup>
Child-bearing age	99	5,543	1.20	0.03	3.5	5,502	1.21	0.03	3.5
<b>Protected vegetables</b>									
Pregnant	99	426	0.54	0.08	2.3	422	0.54	0.08	2.3
Lactating	100	101	0.60	0.16	2.9 <sup>b</sup>	101	0.60	0.16	2.9 <sup>b</sup>
Child-bearing age	98	5,543	0.44	0.03	1.9	5,447	0.45	0.03	2.0
<sup>a</sup>	See Table 9-7 for a detailed list of the food items included in each exposed and protected fruit and vegetable group.								
<sup>b</sup>	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 2-day survey period.								
SE	= Standard error.								
Source:	Based on U.S. EPA Analysis of NHANES 2005–2010 data using <a href="http://fcid.foodrisk.org/">http://fcid.foodrisk.org/</a> .								

## Chapter 9—Intake of Fruits and Vegetables

<b>Table 9-53. Mean Moisture Content of Selected Food Groups Expressed as Percentages of Edible Portions</b>			
Food	Moisture Content		Comments
	Raw	Cooked	
Fruits			
Apples—dried	31.76	84.13*	sulfured; * without added sugar
Apples	85.56*	-	*with skin
	86.67**	-	**without skin
Apples—juice	-	87.93	canned or bottled
Applesauce	-	88.35*	*unsweetened
Apricots	86.35	86.62*	*canned juice pack with skin
Apricots—dried	30.09	75.56*	sulfured; *without added sugar
Bananas	74.91	-	
Blackberries	88.15	-	
Blueberries	84.21	86.59*	*frozen unsweetened
Boysenberries	85.90	-	frozen unsweetened
Cantaloupes	90.15	-	
Casabas	91.85	-	
Cherries—sweet	82.25	84.95*	*canned, juice pack
Crabapples	78.94	-	
Cranberries	87.13	-	
Cranberries—juice cocktail	85.00	-	Bottled
Currants (red and white)	83.95	-	
Elderberries	79.80	-	
Grapefruit (pink, red and white)	90.89	-	
Grapefruit—juice	90.00	90.10*	*canned unsweetened
Grapefruit—unspecified	90.89	-	pink, red, white
Grapes—fresh	81.30	-	American type (slip skin)
Grapes—juice	84.12	-	canned or bottled
Grapes—raisins	15.43	-	Seedless
Honeydew melons	89.82	-	
Kiwi fruit	83.07	-	
Kumquats	80.85	-	
Lemons—juice	90.73	92.46*	*canned or bottled
Lemons—peel	81.60	-	
Lemons—pulp	88.98	-	

Chapter 9—Intake of Fruits and Vegetables

<b>Table 9-53. Mean Moisture Content of Selected Food Groups Expressed as Percentages of Edible Portions (Continued)</b>			
Food	Moisture Content		Comments
	Raw	Cooked	
Limes	88.26	-	
Limes—juice	90.79	92.52*	*canned or bottled
Loganberries	84.61*	-	*frozen
Mulberries	87.68	-	
Nectarines	87.59	-	
Oranges—unspecified	86.75	-	all varieties
Peaches	88.87	87.49*	*canned juice pack
Pears—dried	26.69	64.44*	sulfured; *without added sugar
Pears—fresh	83.71	86.47*	*canned juice pack
Pineapple	86.00	83.51*	*canned juice pack
Pineapple—juice	-	86.37	Canned
Plums—dried (prunes)	30.92	-	
Plums	87.23	84.02*	*canned juice pack
Quinces	83.80	-	
Raspberries	85.75	-	
Strawberries	90.95	89.97*	*frozen unsweetened
Tangerine—juice	88.90	87.00*	*canned sweetened
Tangerines	85.17	89.51*	*canned juice pack
Watermelon	91.45	-	
Vegetables			
Alfalfa seeds—sprouted	92.82		
Artichokes—globe and French	84.94	84.08	boiled, drained
Artichokes—Jerusalem	78.01	-	
Asparagus	93.22	92.63	boiled, drained
Bamboo shoots	91.00	95.92	boiled, drained
Beans—dry—blackeyed peas (cowpeas)	77.20	75.48	boiled, drained
Beans—dry—hyacinth (mature seeds)	87.87	86.90	boiled, drained
Beans—dry—navy (mature seeds)	79.15	76.02	boiled, drained
Beans—dry—pinto (mature seeds)	81.30	93.39	boiled, drained
Beans—lima	70.24	67.17	boiled, drained
Beans—snap—green—yellow	90.27	89.22	boiled, drained
Beets	87.58	87.06	boiled, drained
Beets—tops (greens)	91.02	89.13	boiled, drained
Broccoli	90.69	89.25	boiled, drained
Brussel sprouts	86.00	88.90	boiled, drained

**Table 9-53. Mean Moisture Content of Selected Food Groups Expressed as Percentages of Edible Portions (Continued)**

Food	Moisture Content		Comments
	Raw	Cooked	
Cabbage—Chinese (pak-choi)	95.32	95.55	boiled, drained
Cabbage—red	90.39	90.84	boiled, drained
Cabbage—savoy	91.00	92.00	boiled, drained
Carrots	88.29	90.17	boiled, drained
Cassava (yuca blanca)	59.68	-	
Cauliflower	91.91	93.00	boiled, drained
Celeriac	88.00	92.30	boiled, drained
Celery	95.43	94.11	boiled, drained
Chives	90.65	-	
Cole slaw	81.50	-	
Collards	90.55	91.86	boiled, drained
Corn—sweet	75.96	69.57	boiled, drained
Cress—garden	89.40	92.50	boiled, drained
Cucumbers—peeled	96.73	-	
Dandelion—greens	85.60	89.80	boiled, drained
Eggplant	92.41	89.67	boiled, drained
Endive	93.79	-	
Garlic	58.58	-	
Kale	84.46	91.20	boiled, drained
Kohlrabi	91.00	90.30	boiled, drained
Lambsquarter	84.30	88.90	boiled, drained
Leeks—bulb and lower leaf-portion	83.00	90.80	boiled, drained
Lentils—sprouted	67.34	68.70	stir-fried
Lettuce—iceberg	95.64	-	
Lettuce—cos or romaine	94.61	-	
Mung beans—mature seeds (sprouted)	90.40	93.39	boiled, drained
Mushrooms—unspecified	-	91.08	boiled, drained
Mushrooms—oyster	88.80	-	
Mushrooms—Maitake	90.53	-	
Mushrooms—portabella	91.20	-	
Mustard greens	90.80	94.46	boiled, drained
Okra	90.17	92.57	boiled, drained
Onions	89.11	87.86	boiled, drained
Onions—dehydrated or dried	3.93	-	
Parsley	87.71	-	

Chapter 9—Intake of Fruits and Vegetables

<b>Table 9-53. Mean Moisture Content of Selected Food Groups Expressed as Percentages of Edible Portions (Continued)</b>			
Food	Moisture Content		Comments
	Raw	Cooked	
Parsnips	79.53	80.24	boiled, drained
Peas—edible-podded	88.89	88.91	boiled, drained
Peppers—sweet—green	93.89	91.87	boiled, drained
Peppers—hot chili-green	87.74	92.50*	*canned solids and liquid
Potatoes (white)	81.58	75.43	Baked
Pumpkin	91.60	93.69	boiled, drained
Radishes	95.27	-	
Rutabagas—unspecified	89.66	88.88	boiled, drained
Salsify (vegetable oyster)	77.00	81.00	boiled, drained
Shallots	79.80	-	
Soybeans—mature seeds—sprouted	69.05	79.45	Steamed
Spinach	91.40	91.21	boiled, drained
Squash—summer	94.64	93.70	all varieties; boiled, drained
Squash—winter	89.76	89.02	all varieties; baked
Sweet potatoes	77.28	75.78	baked in skin
Swiss chard	92.66	92.65	boiled, drained
Taro—leaves	85.66	92.15	Steamed
Taro	70.64	63.80	
Tomatoes—juice	-	93.90	Canned
Tomatoes—paste	-	73.50	Canned
Tomatoes—puree	-	87.88	Canned
Tomatoes	93.95	-	
Towel gourd	93.85	84.29	boiled, drained
Turnips	91.87	93.60	boiled, drained
Turnips—greens	89.67	93.20	boiled, drained
Water chestnuts—Chinese	73.46	86.42*	*canned solids and liquids
Yambean—tuber	90.07	90.07	boiled, drained
-	Indicates data are not available for the fruit or vegetable under those conditions.		
*	Number without added sugar.		
Source: USDA (2007).			

**Table 9-54. Water Content Range of Selected Foods**

Food Item	Percentage Water
Water	100
Fat-free milk, cantaloupe, strawberries, watermelon, lettuce, cabbage, celery, spinach, pickles, squash (cooked)	90–99
Fruit juice, yogurt, apples, grapes, oranges, carrots, broccoli (cooked), pears, pineapple	80–89
Bananas, avocados, cottage cheese, ricotta cheese, potato (baked), corn (cooked), shrimp	70–79
Pasta, legumes, salmon, ice cream, chicken breast	60–69
Ground beef, hot dogs, feta cheese, tenderloin steak (cooked)	50–59
Pizza	40–49
Cheddar cheese, bagels, bread	30–39
Pepperoni sausage, cake, biscuits	20–29
Butter, margarine, raisins	10–19
Walnuts, peanuts (dry roasted), chocolate chip cookies, crackers, cereals, pretzels, taco shells, peanut butter	1–9
Oils, sugars	0

Source: Popkin et al. (2010).

APPENDIX A

Table A-1. Comparison of Recommended Values for Intake of Total Fruits and Total Vegetables in this Update to those of the Exposure Factors Handbook: 2011 Edition (g/kg-day)								
Total Fruits								
Age	Update based on NHANES 2005–2010				2011 Handbook based on NHANES 2003–2006			
	Per Capita		Consumer Only		Per Capita		Consumer Only	
	Mean	95 <sup>th</sup>	Mean	95 <sup>th</sup>	Mean	95 <sup>th</sup>	Mean	95 <sup>th</sup>
Birth to <1 month	0	0 <sup>a</sup>	0	0 <sup>a</sup>	-	-	-	-
1 to <3 months	0.3	2.4 <sup>a</sup>	4.8	19.7 <sup>a</sup>	-	-	-	-
3 to <6 months	4.4	19.2 <sup>a</sup>	8.8	26.9 <sup>a</sup>	-	-	-	-
6 to <12 months	9.4	26.5	10.3	28.9	-	-	-	-
Birth to <1 year	5.8	23.0	9.9	27.2	6.2	23.0 <sup>a</sup>	10.1	25.8 <sup>a</sup>
1 to <2 years	9.3	23.8	9.8	24.0	7.8	21.3 <sup>a</sup>	8.1	21.4 <sup>a</sup>
2 to <3 years	7.5	20.0	7.7	20.5	7.8	21.3 <sup>a</sup>	8.1	21.4 <sup>a</sup>
3 to <6 years	5.6	16.2	5.8	16.4	4.6	14.9	4.7	15.1
6 to <11 years	3.0	9.9	3.2	10.0	2.3	8.7	2.5	9.2
11 to <16 years	1.3	4.8	1.6	5.2	0.9	3.5	1.1	3.8
16 to <21 years	0.9	3.5	1.1	4.0	0.9	3.5	1.1	3.8
21 to <30 years	1.0	4.2	1.3	4.4	-	-	-	-
30 to <40 years	1.0	3.9	1.2	4.1	-	-	-	-
40 to <50 years	1.1	4.1	1.3	4.3	-	-	-	-
50 to <60 years	1.4	4.3	1.5	4.5	-	-	-	-
60 to <70 years	1.4	4.2	1.5	4.3	-	-	-	-
70 to <80 years	1.5	4.4	1.6	4.6	-	-	-	-
80+ years	1.8	4.6	1.8	4.7	-	-	-	-
21 to <50 years	1.1	4.1	1.3	4.3	0.9	3.7	1.1	3.8
50+ years	1.4	4.3	1.6	4.5	1.4	4.4	1.5	4.6
Whole Population	1.8	6.7	2.0	7.4	-	-	-	-
Total Vegetables								
Birth to <1 month	0.3	4.1 <sup>a</sup>	1.6	4.1 <sup>a</sup>	-	-	-	-
1 to <3 months	0.5	3.0 <sup>a</sup>	1.9	4.6 <sup>a</sup>	-	-	-	-
3 to <6 months	3.2	11.2 <sup>a</sup>	4.9	12.7 <sup>a</sup>	-	-	-	-
6 to <12 months	7.6	19.2	7.9	19.5	-	-	-	-
Birth to <1 year	4.7	16.9	6.7	18.7	5.0	16.2 <sup>a</sup>	6.8	18.1 <sup>a</sup>
1 to <2 years	6.7	16.3	6.7	16.3	6.7	15.6 <sup>a</sup>	6.7	15.6 <sup>a</sup>
2 to <3 years	6.0	14.0	6.0	14.0	6.7	15.6 <sup>a</sup>	6.7	15.6 <sup>a</sup>
3 to <6 years	5.3	13.3	5.3	13.3	5.4	13.4	5.4	13.4
6 to <11 years	3.8	9.9	3.8	9.9	3.7	10.4	3.7	10.4
11 to <16 years	2.4	6.3	2.4	6.3	2.3	5.5	2.3	5.5
16 to <21 years	2.3	5.3	2.3	5.3	2.3	5.5	2.3	5.5
21 to <30 years	2.4	5.7	2.4	5.7	-	-	-	-
30 to <40 years	2.6	6.7	2.6	6.7	-	-	-	-
40 to <50 years	2.5	5.8	2.5	5.8	-	-	-	-
50 to <60 years	2.6	5.8	2.6	5.8	-	-	-	-
60 to <70 years	2.6	5.9	2.6	5.9	-	-	-	-
70 to <80 years	2.6	6.1	2.6	6.1	-	-	-	-
80+ years	2.7	6.1	2.7	6.1	-	-	-	-
21 to <50 years	2.5	6.1	2.5	6.1	2.5	5.9	2.5	5.9
50+ years	2.6	6.0	2.6	6.0	2.6	6.1	2.6	6.1
Whole Population	2.9	7.4	2.9	7.4	-	-	-	-
<sup>a</sup> 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). - = Recommended value not available.								

**APPENDIX B**

**Table B-1. Terms Used in Literature Searches**

Fruit intake/consumption/ingestion
Vegetable intake/consumption/ingestion
Raw agricultural commodity intake/consumption/ingestion
Processed agricultural commodity intake/consumption/ingestion
Fruit/vegetable serving size
Dietary intake
Food preferences
Older adults diet
Pregnant/lactating women diet
Fox MK
Vitolins M
Smicklas-Wright H



**APPENDIX C**

**SUPPLEMENTAL TABLES**

**CODES AND DEFINITIONS USED TO DETERMINE THE VARIOUS COMMODITIES USED IN THE  
U.S. EPA ANALYSIS OF NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY  
(NHANES)-FOOD COMMODITY INTAKE DATABASE (FCID) DATA**

The U.S. Environmental Protection Agency (EPA) analyses of the National Health and Nutrition Examination Survey (NHANES) 2005–2010 food consumption data analysis was performed using the NHANES-Food Commodity Intake Database (FCID) (<http://fcid.foodrisk.org/>), which converted the NHANES food items into FCID raw agricultural commodities using recipes developed by U.S. EPA. This supplement lists the FCID commodities used to generate statistics for corresponding foods and food categories as defined in the Exposure Factors Handbook (EFH). For example, “apples,” as defined here in the EFH, consists of the following seven FCID commodities: apple, dried (1100009000), apple, dried-baby food (1100009001), apple, fruit with peel (1100007000), apple, peeled fruit (1100008000), apple, peeled fruit-baby food (1100008001), apple sauce (1100011000) and apple, sauce-baby food (1100011001); apple juice is not included.

## Chapter 9—Intake of Fruits and Vegetables

**Table C-1. Food Commodity Codes and Definitions Used in Analysis of the 2005-2010 National Health and Nutrition Examination Survey (NHANES)-Food Commodity Intake Database (FCID) Data**

EFH Food Category	EPA Food Commodity Codes			
<b>TOTAL FRUITS AND VEGETABLES</b>				
Total fruits	9500001000	Acerola	9500193000	Jackfruit
	1100009000	Apple, dried	1304195000	Kiwifruit
	1100009001	Apple, dried-baby food	1002197000	Kumquat
	1100007000	Apple, fruit with peel	1002199000	Lemon
	1100008000	Apple, peeled fruit	1002201000	Lemon, peel
	1100008001	Apple, peeled fruit-baby food	1002206000	Lime
	1100011000	Apple, sauce	1301208000	Loganberry
	1100011001	Apple, sauce-baby food	9500209000	Longan
	1202012000	Apricot	1100210000	Loquat
	1202013000	Apricot, dried	9500211000	Lychee
	1202012001	Apricot-baby food	9500212000	Lychee, dried
	9500020000	Avocado	9500214000	Mamey apple
	9500023000	Banana	9500215000	Mango
	9500024000	Banana, dried	9500216000	Mango, dried
	9500024001	Banana, dried-baby food	9500215001	Mango-baby food
	9500023001	Banana-baby food	9500227000	Mulberry
	1301055000	Blackberry	1202230000	Nectarine
	1302057000	Blueberry	1001240000	Orange
	1302057001	Blueberry-baby food	1001242000	Orange, peel
	1301058000	Boysenberry	9500245000	Papaya
	9500060000	Breadfruit	9500246000	Papaya, dried
	9500074000	Canistel	9500245001	Papaya-baby food
	9500089000	Cherimoya	9500252000	Passionfruit
	1201090000	Cherry	9500252001	Passionfruit-baby food
	1201090001	Cherry-baby food	9500254000	Pawpaw
	1000106000	Citrus citron	1202260000	Peach
	1001107000	Citrus hybrids	1202261000	Peach, dried
	9500112000	Coconut, dried	1202261001	Peach, dried-baby food
	9500111000	Coconut, meat	1202260001	Peach-baby food
	9500111001	Coconut, meat-baby food	1100266000	Pear
	9500113000	Coconut, milk	1100267000	Pear, dried
	1100129000	Crabapple	1100266001	Pear-baby food
	1307130000	Cranberry	9500277000	Persimmon
	1307131000	Cranberry, dried	9500279000	Pineapple
	1307130001	Cranberry-baby food	9500280000	Pineapple, dried
	1302136000	Currant	9500279001	Pineapple-baby food
	1302137000	Currant, dried	9500283000	Plantain
	9500141000	Date	9500284000	Plantain, dried
	0802148000	Eggplant	1203285000	Plum
	1302149000	Elderberry	1203287000	Plum, prune, dried
	9500151000	Feijoa	1203287001	Plum, prune, dried-baby food
	9500153000	Fig	1203286000	Plum, prune, fresh
	9500154000	Fig, dried	1203286001	Plum, prune, fresh-baby food
	1302174000	Gooseberry	1203285001	Plum-baby food
	1304175000	Grape	9500289000	Pomegranate
	9500178000	Grape, raisin	1003307000	Pummelo
	1000180000	Grapefruit	1100310000	Quince
	9500183000	Guava	1301320000	Raspberry
	9500183001	Guava-baby food	1301320001	Raspberry-baby food
	1302191000	Huckleberry	9500333000	Sapote, Mamey
	9500358000	Starfruit	9500346000	Soursop
	1307359000	Strawberry	9500351000	Spanish lime
	1307359001	Strawberry-baby food	9500368000	Tamarind

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Table C-1. Food Commodity Codes and Definitions Used in Analysis of the 2005-2010 National Health and Nutrition Examination Survey (NHANES)-Food Commodity Intake Database (FCID) Data (Continued)				
EFH Food Category	EPA Food Commodity Codes			
	9500361000	Sugar apple	1001369000	Tangerine
Total vegetables	1800002000	Alfalfa, seed	0902088000	Chayote, fruit
	0401005000	Amaranth, leafy	0603099000	Chickpea, flour
	0103015000	Arrowroot, flour	0603098000	Chickpea, seed
	0103015001	Arrowroot, flour-baby food	0603098001	Chickpea, seed-baby food
	9500016000	Artichoke, globe	0101100000	Chicory, roots
	0103017000	Artichoke, Jerusalem	0200101000	Chicory, tops
	0401018000	Arugula	0902102000	Chinese waxgourd
	9500019000	Asparagus	0302103000	Chive
	0902021000	Balsam pear	0401104000	Chrysanthemum, garland
	9500022000	Bamboo, shoots	1902105000	Cinnamon
	1901029000	Basil, dried leaves	1902105001	Cinnamon-baby food
	1901029001	Basil, dried leaves-baby food	1901118000	Cilantro, leaves
	1901028000	Basil, fresh leaves	1901118001	Cilantro, leaves-baby food
	1901028001	Basil, fresh leaves-baby food	1902119000	Coriander, seed
	0602033000	Bean, cowpea, succulent	1902119001	Coriander, seed-baby food
	0603036000	Bean, kidney, seed	0401138000	Dandelion, leaves
	0603038000	Bean, lima, seed	0103139000	Dasheen, corm
	0602037000	Bean, lima, succulent	0200140000	Dasheen, leaves
	0603039000	Bean, mung, seed	1901144000	Dill
	0603040000	Bean, navy, seed	1902143000	Dill, seed
	0603041000	Bean, pink, seed	0402152000	Fennel, Florence
	0603042000	Bean, pinto, seed	0301165000	Garlic
	0601043000	Bean, snap, succulent	0301165001	Garlic, bulb-baby food
	0601043001	Bean, snap, succulent-baby food	0103166000	Ginger
	0101050000	Beet, garden, roots	0103167000	Ginger, dried
	0101050001	Beet, garden, roots-baby food	0103166001	Ginger-baby food
	0200051000	Beet, garden, tops	0101168000	Ginseng, dried
	9500054000	Belgium endive	9500177000	Grape, leaves
	0501061000	Broccoli	0603182000	Guar, seed
	0502063000	Broccoli raab	0603182001	Guar, seed-baby food
	0501062000	Broccoli, Chinese	1901184000	Herbs, other
	0501061001	Broccoli-baby food	1901184001	Herbs, other-baby food
	0501064000	Brussels sprouts	0502194000	Kale
	0501069000	Cabbage	0501196000	Kohlrabi
	0502070000	Cabbage, Chinese, bok choy	0302198000	Leek
	0501072000	Cabbage, Chinese, mustard	1901202000	Lemongrass
	0501071000	Cabbage, Chinese, napa	0401204000	Lettuce, head
	9500073000	Cactus	0401205000	Lettuce, leaf
	0901075000	Cantaloupe	1901220000	Marjoram
	0402076000	Cardoon	1901220001	Marjoram-baby food
	0101078000	Carrot	0802234000	Okra
	0101078001	Carrot-baby food	0301237000	Onion, bulb
	0103082000	Cassava	0301238000	Onion, bulb, dried
	0103082001	Cassava-baby food	0301238001	Onion, bulb, dried-baby food
	0501083000	Cauliflower	0301237001	Onion, bulb-baby food
	0101084000	Celeriac	0302239000	Onion, green
	0402085000	Celery	9500243000	Palm heart, leaves
	0402085001	Celery-baby food	1901249000	Parsley, dried leaves
	0402087000	Celtuce	1901249001	Parsley, dried leaves-baby food
	0401248000	Parsley, leaves	0101327000	Rutabaga
	0101250000	Parsley, turnip rooted	0101331000	Salsify, roots
	0101251000	Parsnip	0200332000	Salsify, tops
			1901334000	Savory

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**Table C-1. Food Commodity Codes and Definitions Used in Analysis of the 2005-2010 National Health and Nutrition Examination Survey (NHANES)-Food Commodity Intake Database (FCID) Data (Continued)**

EFH Food Category	EPA Food Commodity Codes			
	0101251001	Parsnip-baby food	9500335000	Seaweed
	0603256000	Pea, dry	9500335001	Seaweed-baby food
	0603256001	Pea, dry-baby food	0301338000	Shallot
	0601257000	Pea, edible podded, succulent	0603348000	Soybean, flour
	0603258000	Pea, pigeon, seed	0603348001	Soybean, flour-baby food
	0602259000	Pea, pigeon, succulent	0600347000	Soybean, seed
	0602255000	Pea, succulent	1902354000	Spices, other
	0602255001	Pea, succulent-baby food	1902354001	Spices, other-baby food
	0802270000	Pepper, bell	0902356000	Squash, summer
	0802271000	Pepper, bell, dried	0902356001	Squash, summer-baby food
	0802271001	Pepper, bell, dried-baby food	0902357000	Squash, winter
	0802270001	Pepper, bell-baby food	0902357001	Squash, winter-baby food
	1902274000	Pepper, black and white	0103366000	Sweet potato
	1902274001	Pepper, black and white-baby food	0103366001	Sweet potato-baby food
			0402367000	Swiss chard
	0802272000	Pepper, nonbell	0103371000	Tanier, corm
	0802273000	Pepper, nonbell, dried	0801374000	Tomatillo
	0802272001	Pepper, nonbell-baby food	0801375000	Tomato
	9500275000	Peppermint	0801378000	Tomato, dried
	0103296000	Potato, chips	0801378001	Tomato, dried-baby food
	0103297000	Potato, dry (granules/flakes)	0801376000	Tomato, paste
	0103297001	Potato, dry (granules/flakes)-baby food	0801376001	Tomato, paste-baby food
			0801377000	Tomato, puree
	0103298000	Potato, flour	0801377001	Tomato, puree-baby food
	0103298001	Potato, flour-baby food	0801380000	Tomato, Tree
	0103300000	Potato, tuber, without peel	0801375001	Tomato-baby food
	0103300001	Potato, tuber, without peel-baby food	0103387000	Turmeric
			0502389000	Turnip, greens
	0103299000	Potato, tuber, with peel	0101388000	Turnip, roots
	0103299001	Potato, tuber, with peel-baby food	9500397000	Water chestnut
			9500398000	Watercress
	0902308000	Pumpkin	0901399000	Watermelon
	0401313000	Radicchio	0103407000	Yam bean
	0101316000	Radish, Oriental, roots	0103406000	Yam, true
	0200317000	Radish, Oriental, tops		
	0101314000	Radish, roots		
	0200315000	Radish, tops		
	0502318000	Rape greens		
	0402322000	Rhubarb		
<b>INDIVIDUAL FRUIT CATEGORIES</b>				
Apples	1100009000	Apple, dried	1100008000	Apple, peeled fruit
	1100009001	Apple, dried-baby food	1100008001	Apple, peeled fruit-baby food
	1100007000	Apple, fruit with peel	1100011000	Apple, sauce
			1100011001	Apple, sauce-baby food
Bananas	9500023000	Banana	9500024001	Banana, dried-baby food
	9500024000	Banana, dried	9500023001	Banana-baby food
Berries and small fruits	1301055000	Blackberry	1302191000	Huckleberry
	1301058000	Boysenberry	1307130000	Cranberry
	1301208000	Loganberry	1307130001	Cranberry-baby food
	1301320000	Raspberry	1307131000	Cranberry, dried
	1301320001	Raspberry-baby food	1304175000	Grape
	1302057000	Blueberry	9500177000	Grape, leaves

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Table C-1. Food Commodity Codes and Definitions Used in Analysis of the 2005-2010 National Health and Nutrition Examination Survey (NHANES)-Food Commodity Intake Database (FCID) Data (Continued)				
EFH Food Category	EPA Food Commodity Codes			
	1302057001	Blueberry-baby food	9500178000	Grape, raisin
	1302136000	Currant	1304195000	Kiwifruit
	1302137000	Currant, dried	1303227000	Mulberry
	1302149000	Elderberry	1307359000	Strawberry
	1302174000	Gooseberry	1307359001	Strawberry-baby food
Citrus fruits	1001106000	Citron	1002206000	Lime
	1001107000	Citrus hybrids	1001240000	Orange
	1003180000	Grapefruit	1001242000	Orange, peel
	1002197000	Kumquat	1003307000	Pummelo
	1002199000	Lemon	1001369000	Tangerine
	1002201000	Lemon, peel		
Peaches	1202260000	Peach	1202261001	Peach, dried-baby food
	1202261000	Peach, dried	1202260001	Peach-baby food
Pears	1100266000	Pear	1100266001	Pear-baby food
	1100267000	Pear, dried		
Pome fruits	1100007000	Apple, fruit with peel	1100129000	Crabapple
	1100008000	Apple, peeled fruit	1100210000	Loquat
	1100008001	Apple, peeled fruit-baby food	1100266000	Pear
	1100009000	Apple, dried	1100266001	Pear-baby food
	1100009001	Apple, dried-baby food	1100267000	Pear, dried
	1100011000	Apple, sauce	1100310000	Quince
	1100011001	Apple, sauce-baby food		
Strawberries	1307359000	Strawberry	1307359001	Strawberry-baby food
Stone fruits	1202012000	Apricot	1202261000	Peach, dried
	1202012001	Apricot-baby food	1202261001	Peach, dried-baby food
	1202013000	Apricot, dried	1203285000	Plum
	1201090000	Cherry	1203285001	Plum-baby food
	1201090001	Cherry-baby food	1203286000	Plum, prune, fresh
	1202230000	Nectarine	1203286001	Plum, prune, fresh-baby food
	1202260000	Peach	1203287000	Plum, prune, dried
	1202260001	Peach-baby food	1203287001	Plum, prune, dried-baby food
Tropical fruits	9500001000	Acerola	9500214000	Mamey apple
	9500022000	Avocado	9500215000	Mango
	9500023000	Banana	9500215001	Mango-baby food
	9500023001	Banana-baby food	9500216000	Mango, dried
	9500024000	Banana, dried	9500245000	Papaya
	9500024001	Banana, dried-baby food	9500245001	Papaya-baby food
	9500060000	Breadfruit	9500246000	Papaya, dried
	9500074000	Canistel	9500252000	Passionfruit
	9500089000	Cherimoya	9500252001	Passionfruit-baby food
	9500111000	Coconut, meat	9500254000	Pawpaw
	9500111001	Coconut, meat-baby food	9500279000	Pineapple
	9500112000	Coconut, dried	9500279001	Pineapple-baby food
	9500113000	Coconut, milk	9500280000	Pineapple, dried
	9500141000	Date	9500283000	Plantain
	9500151000	Feijoa	9500284000	Plantain, dried
	9500153000	Fig	9500289000	Pomegranate
	9500154000	Fig, dried	9500333000	Sapote, Mamey
	9500183000	Guava	9500346000	Soursop
	9500183001	Guava-baby food	9500351000	Spanish lime
	9500193000	Jackfruit	9500358000	Starfruit

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<b>Table C-1. Food Commodity Codes and Definitions Used in Analysis of the 2005-2010 National Health and Nutrition Examination Survey (NHANES)-Food Commodity Intake Database (FCID) Data (Continued)</b>				
EFH Food Category	EPA Food Commodity Codes			
	9500209000	Longan	9500361000	Sugar apple
	9500211000	Lychee	9500368000	Tamarind
	9500212000	Lychee, dried		
<b>INDIVIDUAL VEGETABLE CATEGORIES</b>				
Asparagus	9500019000	Asparagus		
Beans	0603035000	Bean, great northern, seed	0602037000	Bean, lima, succulent
	0603030000	Bean, black, seed	0603039000	Bean, mung, seed
	0603032000	Bean, broad, seed	0603040000	Bean, navy, seed
	0602031000	Bean, broad, succulent	0603041000	Bean, pink, seed
	0603034000	Bean, cowpea, seed	0603042000	Bean, pinto, seed
	0602033000	Bean, cowpea, succulent	0601043000	Bean, snap, succulent
	0603036000	Bean, kidney, seed	0601043001	Bean, snap, succulent-baby food
	0603038000	Bean, lima, seed		
Beets	0101050000	Beet, garden, roots	0200051000	Beet, garden, tops
	0101050001	Beet, garden, roots-baby food		
Broccoli	0501061000	Broccoli	0501061001	Broccoli-baby food
Bulb vegetables	0301164000	Garlic	0301238000	Onion, bulb, dried
	0301165000	Garlic, bulb	0301238001	Onion, bulb, dried-baby food
	0301165001	Garlic, bulb-baby food	0302239000	Onion, green
	0302198000	Leek	0301338000	Shallot
	0301237000	Onion, bulb	0302103000	Chive
	0301237001	Onion, bulb-baby food		
Cabbage	0501069000	Cabbage	0501071000	Cabbage, Chinese, napa
	0501072000	Cabbage, Chinese, mustard		
Carrots	0101078000	Carrot		
Corn	1500122000	Corn, field, bran	1500123000	Corn, field, starch
	1500120000	Corn, field, flour	1500123001	Corn, field, starch-baby food
	1500120001	Corn, field, flour-baby food	1500126000	Corn, pop
	1500121000	Corn, field, meal	1500127000	Corn, sweet
	1500121001	Corn, field, meal-baby food	1500127001	Corn, sweet-baby food
Cucumbers	0902135000	Cucumber		
Cucurbit vegetables	0901075000	Cantaloupe	0902308000	Pumpkin
	0901187000	Honeydew melon	0902309000	Pumpkin, seed
	0901399000	Watermelon	0902356000	Squash, summer
	0902021000	Balsam pear	0902356001	Squash, summer-baby food
	0902088000	Chayote, fruit	0902357000	Squash, winter
	0902102000	Chinese waxgourd	0902357001	Squash, winter-baby food
	0902135000	Cucumber		
Fruiting vegetables	0802148000	Eggplant	0801374000	Tomatillo
	0802234000	Okra	0801375000	Tomato
	0802270000	Pepper, bell	0801375001	Tomato-baby food
	0802270001	Pepper, bell-baby food	0801376000	Tomato, paste
	0802271000	Pepper, bell, dried	0801376001	Tomato, paste-baby food
	0802271001	Pepper, bell, dried-baby food	0801377000	Tomato, puree
	0802272000	Pepper, nonbell	0801377001	Tomato, puree-baby food
	0802272001	Pepper, nonbell-baby food	0801378000	Tomato, dried
	0802273000	Pepper, nonbell, dried	0801378001	Tomato, dried-baby food

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Table C-1. Food Commodity Codes and Definitions Used in Analysis of the 2005-2010 National Health and Nutrition Examination Survey (NHANES)-Food Commodity Intake Database (FCID) Data (Continued)				
EFH Food Category	EPA Food Commodity Codes			
Leafy vegetables ( <i>Brassica</i> and <i>Nonbrassica</i> )	0200051000	Beet, garden, tops	0402152000	Fennel, Florence
	0200101000	Chicory, tops	0402322000	Rhubarb
	0200140000	Dasheen, leaves	0402367000	Swiss chard
	0200315000	Radish, tops	0501061000	Broccoli
	0200317000	Radish, Oriental, tops	0501061001	Broccoli-baby food
	0200332000	Salsify, tops	0501062000	Broccoli, Chinese
	0401005000	Amaranth, leafy	0501064000	Brussels sprouts
	0401018000	Arugula	0501069000	Cabbage
	0401104000	Chrysanthemum, garland	0501071000	Cabbage, Chinese, napa
	0401133000	Cress, garden	0501072000	Cabbage, Chinese, mustard
	0401134000	Cress, upland	0501083000	Cauliflower
	0401138000	Dandelion, leaves	0501196000	Kohlrabi
	0401150000	Endive	0502063000	Broccoli raab
	0401204000	Lettuce, head	0502070000	Cabbage, Chinese, bok choy
	0401205000	Lettuce, leaf	0502117000	Collards
	0401248000	Parsley, leaves	0502194000	Kale
	0401313000	Radicchio	0502229000	Mustard greens
	0401355000	Spinach	0502318000	Rape greens
	0401355001	Spinach-baby food	0502389000	Turnip, greens
	0402076000	Cardoon	9500054000	Belgium endive
	0402085000	Celery	9500335000	Seaweed
	0402085001	Celery-baby food	9500335001	Seaweed-baby food
	0402087000	Celtuce	9500398000	Watercress
Legume vegetables	0600347000	Soybean, seed	0603034000	Bean, cowpea, seed
	0600348000	Soybean, flour	0603035000	Bean, great northern, seed
	0600348001	Soybean, flour-baby food	0603036000	Bean, kidney, seed
	0600349000	Soybean, soy milk	0603038000	Bean, lima, seed
	0600349001	Soybean, soy milk-baby food or infant formula	0603039000	Bean, mung, seed
			0603040000	Bean, navy, seed
	0601043000	Bean, snap, succulent	0603041000	Bean, pink, seed
	0601043001	Bean, snap, succulent-baby food	0603042000	Bean, pinto, seed
			0603098000	Chickpea, seed
	0601257000	Pea, edible podded, succulent	0603098001	Chickpea, seed-baby food
	0602031000	Bean, broad, succulent	0603099000	Chickpea, flour
	0602033000	Bean, cowpea, succulent	0603182000	Guar, seed
	0602037000	Bean, lima, succulent	0603182001	Guar, seed-baby food
	0602255000	Pea, succulent	0603203000	Lentil, seed
	0602255001	Pea, succulent-baby food	0603256000	Pea, dry
	0602259000	Pea, pigeon, succulent	0603256001	Pea, dry-baby food
	0603030000	Bean, black, seed	0603258000	Pea, pigeon, seed
0603032000	Bean, broad, seed			
Lettuce	0401204000	Lettuce, head	0401205000	Lettuce, leaf
Onions	0301237000	Onion, bulb	0301237001	Onion, bulb-baby food
	0301238000	Onion, bulb, dried	0302239000	Onion, green
	0301238001	Onion, bulb, dried-baby food		
Peas	0603256000	Pea, dry	0602259000	Pea, pigeon, succulent
	0603256001	Pea, dry-baby food	0602255000	Pea, succulent
	0601257000	Pea, edible podded, succulent	0602255001	Pea, succulent-baby food
	0603258000	Pea, pigeon, seed		
Pumpkin	0902308000	Pumpkin	0902309000	Pumpkin, seed

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**Table C-1. Food Commodity Codes and Definitions Used in Analysis of the 2005-2010 National Health and Nutrition Examination Survey (NHANES)-Food Commodity Intake Database (FCID) Data (Continued)**

EFH Food Category	EPA Food Commodity Codes			
Root and tubervegetables	0103015000	Arrowroot, flour	0101251000	Parsnip
	0103015001	Arrowroot, flour-baby food	0101251001	Parsnip-baby food
	0103017000	Artichoke, Jerusalem	0103296000	Potato, chips
	0101050000	Beet, garden, roots	0103297000	Potato, dry (granules/flakes)
	0101050001	Beet, garden, roots-baby food	0103297001	Potato, dry (granules/flakes)-baby food
	0200051000	Beet, garden, tops		Potato, flour
	0101052000	Beet, sugar	0103298000	Potato, flour-baby food
	0101052001	Beet, sugar-baby food	0103298001	Potato, tuber, without peel
	0101067000	Burdock	0103300000	Potato, tuber, without peel-baby food
	0101078000	Carrot	0103300001	Potato, tuber, with peel
	0101078001	Carrot-baby food		Potato, tuber, with peel-baby food
	0103082000	Cassava	0103299000	Potato, tuber, with peel-baby food
	0103082001	Cassava-baby food	0103299001	Radish, Oriental, roots
	0101084000	Celeriac		Radish, roots
	0101100000	Chicory, roots	0101316000	Rutabaga
	0103139000	Dasheen, corm	0101314000	Sweet potato
	0103166000	Ginger	0101327000	Sweet potato-baby food
	0103167000	Ginger, dried	0103366000	Tanier, corm
	0103166001	Ginger-baby food	0103366001	Turmeric
	0101168000	Ginseng, dried	0103371000	Turnip, roots
	0101190000	Horseradish	0103387000	Water chestnut
	0101250000	Parsley, turnip rooted	0101388000	Yam bean
			9500397000	Yam, true
		0103407000		
		0103406000		
Stalk and stem vegetable and edible fungi	9500016000	Artichoke, globe	2100228000	Mushroom
	9500019000	Asparagus	9500243000	Palm heart, leaves
	9500022000	Bamboo, shoots		
Tomatoes	0801375000	Tomato	0801376001	Tomato, paste-baby food
	0801378000	Tomato, dried	0801377000	Tomato, puree
	0801378001	Tomato, dried-baby food	0801377001	Tomato, puree-baby food
	0801376000	Tomato, paste	0801375001	Tomato-baby food
White potatoes	0103296000	Potato, chips	0103300000	Potato, tuber, without peel
	0103297000	Potato, dry (granules/flakes)	0103300001	Potato, tuber, without peel-baby food
	0103297001	Potato, dry (granules/flakes)-baby food	0103299000	Potato, tuber, with peel
	0103298000	Potato, flour	0103299001	Potato, tuber, with peel-baby food
	0103298001	Potato, flour-baby food		food