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Factors Affecting U.S. Beef Consumption

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Abstract

Beef is a highly consumed meat in the United States, averaging 67 pounds per person per year. Findings based on the 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals (CSFII) indicate that most beef was eaten at home. Annual beef consumption per person was highest in the Midwest (73 pounds), followed by the South and West (65 pounds each), and the Northeast (63 pounds). Rural consumers ate more beef (75 pounds) than did urban and suburban consumers (66 and 63 pounds). Beef consumption also varies by race and ethnicity. Blacks ate 77 pounds of beef per person per year, followed by 69 pounds by Hispanics, 65 pounds by Whites, and 62 pounds by other races. Low-income consumers tend to eat more beef than do consumers in other income households.

Keywords: Beef, consumption, fresh beef, processed beef, per capita use, ethnicity, region, gender, age, income

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Introduction

Beef is a Highly Consumed Meat in America

For many years, beef reigned as Americans' number one source of protein. Beef consumption continues to be strong, and beef is the most preferred of the red meats. In 2004, retail beef represented 56 percent of all red meats (beef, pork, lamb, and veal) consumed in the United States (USDA, ERS, 2005). Although beef is not eaten by some global citizens because of their belief that cattle are sacred animals and is relatively more expensive than pork or chicken, beef still ranks third in per capita consumption of all meats in the world (excluding fish). Beef accounts for more than 20 percent of consumers' meat protein intake worldwide (Taha, 2003).

Beef consumption has been one of the major meats researched throughout the literature (Lusk and Fox, 2001; Unterschult et al., 1998; Miller et al., 1995; Schroeder et al., 2000; Ward et al., 2002). How much beef is consumed, the nutritional value of beef, and the demand for U.S. beef have all served as research topics. Hahn (1996) postulates that beef demand has changed and, even if consumers' taste for beef had remained constant over time, lower poultry prices would lead to lower beef demand. Another study shows that consumers who purchase select top loin steaks use tenderness as their primary determinant of satisfaction. Of 1,036 (65 percent) consumers surveyed, 759 indicated that they would purchase all their beef from one retail store if that store supplied a line of beef cuts guaranteed to be tender (Shackelford et al., 2001).

Americans' meat consumption helps fulfill the daily recommended dietary intake of protein, and beef is rich in vitamin B_{12}, iron, and zinc. Numerous studies (Friday and Cook, 2004; Juan et al., 2004; Lucier et al., 2004) have examined the nutritional components of food using the 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals (CSFII). However, no studies using CSFII data have analyzed U.S. beef consumption by cut from a demographic perspective. Thus, very little is known about who consumes various beef products in the U.S., how much of each major beef product is consumed, and where these products are consumed.

Understanding the basic factors underlying beef consumption may enable the industry to design effective marketing strategies and predict demand and to help ERS improve its analysis of supply and demand shifts in the U.S. beef market. For example, changes in the U.S. racial/ethnic landscape in the United States and the "graying" of Americans will probably reduce per capita beef demand (Lin et al., 2003).

A significant challenge to the U.S. beef industry in the past few years has been the discovery of two cases of bovine spongiform encephalopathy (BSE), or "mad cow" disease, in the U.S. (December 23, 2003, and June 24, 2005). BSE, an invariably fatal, neurological disease found in cattle, was recognized in cattle in the mid-1980s and became a human health issue in 1996 when its human form, variant Creutzfeldt-Jacob Disease (vCJD), also invariably fatal, was recognized.[1] If the number of BSE cases reported in

[1]However, vCJD is considered an extremely low risk in humans as only about 150 cases have been confirmed in humans worldwide, mostly in the United Kingdom, where over 90 percent of BSE cases in cattle have been confirmed.

the United States were to substantially increase, some analyses have suggested that people will consume less beef (Fox and Blake, 2004).

While beef consumption has drawn significant attention from a food safety perspective, it has also been advertised as a component in a dietary strategy that could help consumers lose weight through high-protein, low-carbohydrate diets. The results from the surveys used here do not address changes in consumption from disease issues or individual changes in diet as a result of weight-management strategies.

This report analyzes 1994-96 and 1998 (the most recent available) USDA survey data on food consumption to determine key factors associated with U.S. beef product consumption (see box, "Data and Methodology"). More specifically, this analysis describes the distribution of beef consumption across different marketing channels, geographic regions, and population groups.

Data and Methodology

This report is part of a series on food consumption that uses the Continuing Survey of Food Intakes by Individuals (CSFII). The first such analysis examined the demographics of dry bean consumption. The concept was expanded to include many fruits and vegetables, such as garlic, cucumbers, spinach, watermelon, snap beans, tree nuts, potato products, and apples. Most recently, a report on pork consumption was added. The complete list of products analyzed for who eats what, how much, and where may be found on the ERS website in the Food Consumption briefing room (http://www.ers.usda.gov/Briefing/Consumption).

Since the 1930s, periodic surveys of U.S. household and individual food consumption have been designed and administered by the U.S. Department of Agriculture (USDA). The most recent are the 1994-96 and 1998 surveys conducted by USDA's Agricultural Research Service (ARS). Data from the 1994-96 CSFII represent noninstitutionalized people living in the 50 States and Washington, DC. In 1998, an identical survey was taken to increase the data, expanding the sample to include children. In 2002, CSFII was integrated into the National Health and Nutrition Examination Survey administered by the U.S. Department of Health and Human Services' National Center for Health Statistics.

The CSFIIs were administered to people of all ages to collect dietary intake data for 2 nonconsecutive days, 3-10 days apart. In each interview, participants were asked to recall what they had eaten over the last 24 hours. The 1994-96 CSFII contains responses from 15,303 people who answered questions about the types and amounts of food consumed. The 1998 CSFII collected data on 5,559 children up to age 9. For more information on the CSFII, visit the website at http://www.barc.usda.gov/bhnrc/foodsurvey/home.htm.

The respondents provided lists of food consumed as well as information on how much of each food was eaten, where, and when. Several categories were used to code the locations where the food was purchased. An array of economic, social, and demographic characteristics of individuals, such as education level, household income, race, age, and gender, was also collected. This rich database can be used for estimating the market/consumption distribution of a selected food by numerous delineations.

U.S. Beef Consumption Patterns

Beef is a primary protein source for Americans, but changes in consumer demand for all kinds of meats have influenced the market. Convenience often tops nutrition when it comes to food choices. The consumer has a much broader range of food available, thanks to technological advances in transportation, packaging, and processing. Concern about calories, fat, and cholesterol influence consumers' choices. These changes, and more, affect who eats beef and what cuts they prefer.

Although beef production represents the category with the largest U.S. farm cash receipts, retail per capita disappearance (retail weight equivalent) has fluctuated between 1960 and 2004 (table 1; fig. 1).[2] Average beef disappearance per capita in 1960 slightly exceeded 66 pounds and peaked in 1975 after increasing by almost 5 percent between 1970 and 1975. Beef disappearance fell from 89 pounds per person in 1975 to 76 pounds in 1980, its largest plunge during 1960-2004 (USDA, ERS, 2004). Between 1980 and 1985, per capita disappearance rose again but then fell by 16 percent between 1985 and 1990. Fluctuations are usually associated with beef price changes and/or beef availability (USDA, OCE, 1998-2002). The data show that per capita disappearance was approximately 67 pounds of beef per year during 1994-98. When that number is converted to boneless weight equivalent, it indicates that Americans consumed about 3 ounces of beef per day (USDA, ERS, 2004).[3]

[2]Disappearance can be measured at least three ways. Carcass or dressed weight is the weight of a chilled animal carcass. Conversion factors are applied to this carcass weight to derive retail weight equivalent and boneless weight equivalent. Retail weight equivalent is the nearest measurement of what consumers buy at the supermarket.

[3]According to the disappearance statistics, 67 pounds of beef consumption per capita per year, retail product, equal about 97 pounds of carcass weight, or 63.5 pounds of boneless beef available for consumption. Using this conversion means that 2.78 ounces per day of boneless beef are available to U.S. consumers. We have no data on how much beef is purchased bone-in or boneless.

Table 1—U.S. per capita disappearance of fresh, chilled, frozen, and processed beef, pork, and chicken, selected years

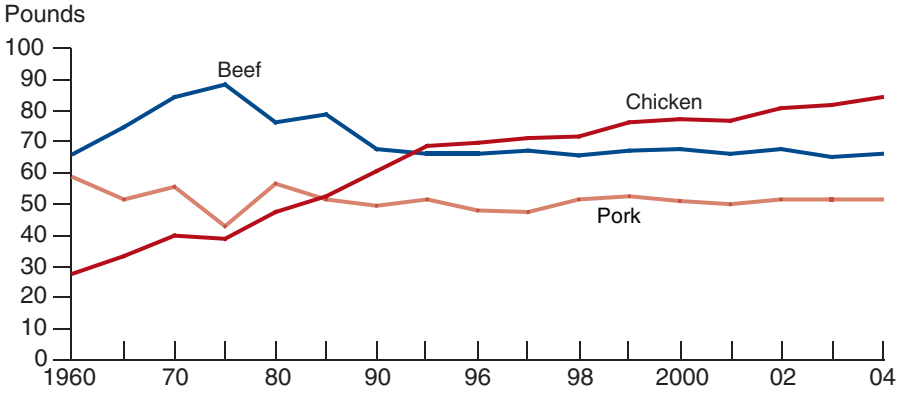
Year	Beef	Pork	Chicken
	Pounds, retail weight equivalent		
1960	66.4	56.3	28.0
1965	74.7	51.5	33.4
1970	84.4	55.4	40.1
1975	88.5	42.9	38.7
1980	76.4	56.8	47.4
1985	79.0	51.5	52.5
1990	67.5	49.4	60.6
1995	66.1	51.5	68.9
1996	66.4	48.1	69.7
1997	67.0	47.6	71.4
1998	65.5	51.3	71.9
1999	67.3	52.5	76.4
2000	67.5	50.8	77.4
2001	66.0	50.0	77.0
2002	67.5	51.3	81.0
2003	64.9	51.7	82.0
2004	66.1	51.3	84.3

Note: If retail weight equivalent is converted to boneless weight, beef consumption would be 63.5 pounds per capita in 2004, pork consumption 48.2 pounds, and chicken consumption about 59 pounds. For all meats, retail products are being sold with less bone and closer trim.

Source: U.S. Department of Agriculture, Economic Research Service.

Figure 1

U.S. per capita disappearance of beef, pork, and chicken, selected years, retail weight equivalent



Source: U.S. Department of Agriculture, Economic Research Service.

Calculating Per Capita Shares

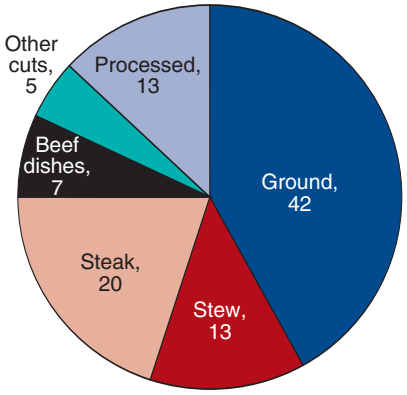
One way to describe the various consumption shares is by converting the survey shares into information already familiar to those in the agricultural industry: per capita disappearance (retail weight equivalent). Per capita shares were calculated by distributing the 1994-98 ERS food disappearance data for beef using CSFII data as distribution factors. This calculation presents the share of consumption described in the survey in terms of beef consumption per person.[4]

[4]This method has been used in other ERS analyses of the CSFII (Davis and Lin, 2005) and is based on per capita disappearance (retail weight equivalent) and distribution factors. The CSFII asks consumers to recall the product eaten; therefore, retail weight equivalent is the appropriate measure for this analysis. Other than the CSFII, we have no data on how much beef is actually eaten, but retail weight equivalent reflects the actual product purchased at the supermarket and corresponds to the retail price series published at ERS.

Fresh Market Dominates U.S. Beef Consumption

In this study, beef was categorized into two main types—fresh (including ground beef, steaks, stew beef, beef dishes, and other beef cuts) and processed (including smoked sausage, corned beef, and beef jerky). Fresh products are those muscle cuts of beef purchased from wholesale markets by food services or from grocery meat counters directly by consumers and are cooked just before eating. Processed beef products are transformed by curing, smoking, or seasoning prior to cooking before wholesale or retail sale. Both categories can include frozen products.[5] The 1994-98 CSFII data indicate that 87 percent of beef consumed was fresh and 13 percent was processed (fig. 2). Using these proportions calculated from survey results, of the 67 pounds per capita of beef disappearance (retail weight equivalent) noted previously, Americans ate, on average, 58 pounds of fresh beef and 9 pounds of processed beef per year during 1994-96 and 1998.

Figure 2
Share of beef consumption by cuts



Notes: Processed consists of canned and dehydrated. See section, "Calculating Per Capita Shares, on p. 6 for an explanation of methodology.
Source: U.S. Department of Agriculture (USDA), Economic Research Service, based on data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Ground beef held the largest market share (42 percent) for all identifiable beef cuts, followed by steaks, which accounted for 20 percent, and then stew beef, beef dishes, and other beef cuts (fig. 2). These shares translate into the average person eating about 28 pounds of ground beef, 13 pounds of steaks, 9 pounds of processed beef, and 8, 7, and 5 pounds each of stew beef, beef dishes, and other beef cuts (including hot dogs).

[5]Because processed products are excluded from country-of-origin labeling regulations that are under discussion, there are proposed specific guidelines delineating the specific regulatory definition of processed products. These guidelines may not exactly match our definitions here. Frozen products are considered as belonging to either the muscle cuts category we are calling "fresh" or to the processed meat category.

Low-Income Households Report More Beef Consumption

In the CSFII, households were classified into three income brackets using the Federal poverty guidelines. The Census Bureau reported that the weighted average poverty income threshold for a four-person household was $15,961 annually during 1994-98 (USDC, U.S. Census Bureau, 2000). The poverty guideline was developed by the U.S. Department of Health and Human Services for implementation of Federal food programs. Some of these programs, such as the Food Stamp Program, have used annual household income at 130 percent of the poverty level to determine eligibility. This study uses the same eligibility level to define the low-income category, which accounts for about 19 percent of U.S. households. About 39 percent of households had income exceeding 350 percent of the poverty level (high-income), while 42 percent of households had income falling between 130 and 350 percent of the poverty level (middle income).

The CSFII results indicate that low-income consumers ate 72 pounds of beef yearly—more than did middle- and high-income consumers by at least 4 pounds (table 2). Ground beef was the dominant beef product eaten per capita, regardless of income level, followed by steaks (fig. 3). High-income households were big consumers of steaks, while middle-income households ate relatively more stew beef.

Table 2—U.S. beef consumption by household income as a share of poverty threshold

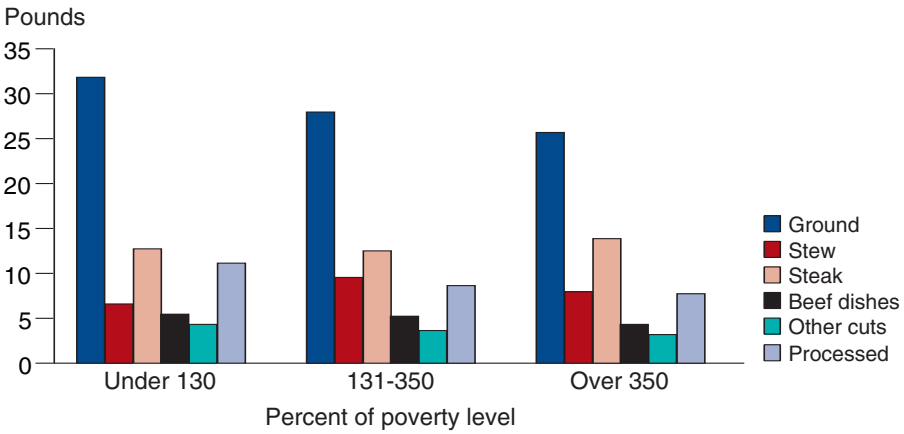
Income/poverty threshold ratio	All beef	Processed		Ground		Stew	
	Pounds per capita	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
Under 130 percent	71.94	24.62	11.20	21.87	31.73	15.27	6.62
131-350 percent	67.63	41.32	8.64	42.03	28.01	47.92	9.54
Over 350 percent	62.61	34.06	7.63	36.10	25.79	36.81	7.86
		Steak		Beef dish		Other cuts	
		Percent	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
Under 130 percent		18.64	12.66	21.34	5.49	22.53	4.22
131-350 percent		40.14	12.52	44.85	5.30	41.99	3.61
Over 350 percent		41.21	13.78	33.81	4.28	35.48	3.27

Notes: Processed consists of canned and dehydrated. See section, "Calculating Per Capita Shares," on p. 6, for an explanation of methodology.

Source: U.S. Department of Agriculture (USDA), Economic Research Service, using data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Figure 3

Per capita beef consumption by income



Source: U.S. Department of Agriculture (USDA), Economic Research Service, based on data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Non-Hispanic Blacks Are Dominant Beef Consumers

The 1994-96 and 1998 CSFII contains questions based on the 1990 Census methodology for collecting data on race and ethnicity.[6] The four races used in this study that cover the total U.S. population include non-Hispanic Whites (73 percent), non-Hispanic Blacks (13 percent), Hispanics (11 percent), and Other races (including Asians) (4 percent). When respondents are grouped by ethnicity, different patterns emerge in the composition of beef products consumed. On average, non-Hispanic Whites and people in the Other race category ate less beef than other consumers. Blacks ate 77 pounds of beef per capita during the observation periods (table 3). Blacks ate more ground beef than they did other beef products, followed by steaks, processed beef, stew beef, beef dishes, and other beef cuts (fig. 4). Likewise, Whites, Hispanics, and Other races (including Asians) ate more ground beef per capita than they did any other single beef product. Hispanics were the dominant consumers of stew beef and other beef cuts, while Other races, including Asians, ate more prepared beef dishes

[6]The questions used to ascertain respondents' race/ethnicity were the following—Which of the groups on this card best describes (NAME)'s race: (1) WHITE, (2) BLACK, (3) ASIAN, (4) AM. INDIAN, (5) OTHER? Do any of the groups on this card represent (NAME)'s national origin: (1) MEXICAN, (2) PUERTO RICAN, (3) CUBAN, (4) OTHER SPANISH/HISPANIC, (5) NONE OF ABOVE?

Table 3—U.S. beef consumption by race/ethnicity

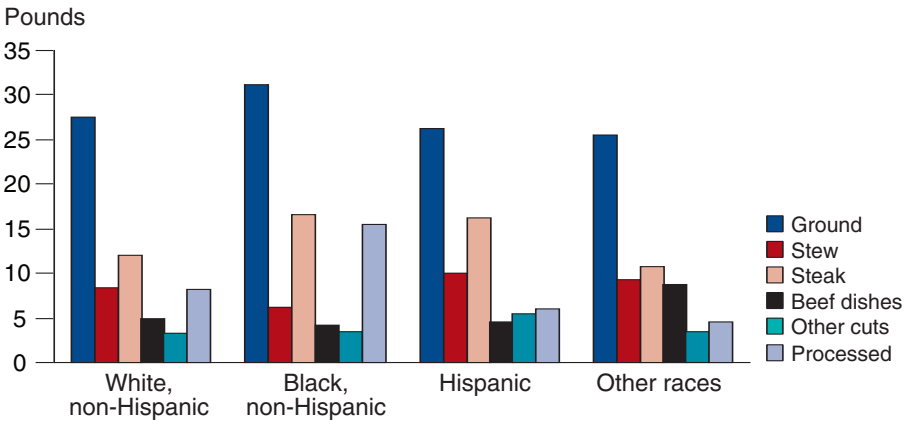
Race/ethnicity	All beef	Processed		Ground		Stew	
	Pounds per capita	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
White, non-Hispanic	64.50	68.24	8.22	71.82	27.60	72.73	8.35
Black, non-Hispanic	77.21	22.25	15.43	14.14	31.26	9.51	6.28
Hispanic	68.51	7.19	5.93	10.00	26.28	12.82	10.07
Other races	62.42	2.32	4.61	4.04	25.58	4.93	9.33
		Steak		Beef dishes		Other cuts	
		Percent	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
White, non-Hispanic		67.24	12.10	71.86	4.89	67.32	3.34
Black, non-Hispanic		15.95	16.51	10.63	4.17	12.43	3.55
Hispanic		13.18	16.22	9.74	4.54	16.05	5.45
Other races		3.63	10.76	7.78	8.74	4.20	3.43

Notes: Processed consists of canned and dehydrated. See section, "Calculating Per Capita Shares," on p. 6, for an explanation of methodology.

Source: U.S. Department of Agriculture (USDA), Economic Research Service, using data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Figure 4

Per capita beef consumption by race/ethnicity



Source: U.S. Department of Agriculture (USDA), Economic Research Service, based on data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

At-Home Use Dominated Beef Consumption

The CSFII categorizes the source of food as either "at-home" or "away-from-home" food, according to where the food is obtained or prepared but not where it is eaten (see box, "Food Sources: At Home or Away From Home").

Nearly 65 percent of all beef was purchased at retail stores and thus is considered to be at-home food. Of the six beef groupings, ground beef had the highest at-home consumption per capita, followed by steaks (table 4; fig. 5). American consumers purchased an average of 43 pounds of beef from retail stores for home use—6 pounds processed and 37 pounds fresh.

Ground beef eaten at restaurants, including fast food places, accounted for 60 percent of the beef eaten away from home. In away-from-home markets, Americans ate an average of more than 14 pounds of ground beef yearly. Ground beef is eaten in such food as hamburgers, spaghetti meat sauce, and meat pizzas.

Food Sources: At Home or Away From Home

Food eaten at home is generally bought at a retail store, such as a supermarket, grocery store, or convenience store. Food eaten away from home is generally purchased from commercial foodservice establishments but also can be obtained from such places as school cafeterias, community feeding programs, or child/adult care centers. Foods purchased for either at-home or away-from-home use can be eaten at or away from home. For example, a bagged lunch prepared at home and consumed at work is classified as at-home food. A commercially prepared pizza delivered and eaten at home is considered away-from-home food. Other away-from-home eating places include fast food restaurants, self-service establishments and carryout places, restaurants that have wait staff, and school cafeterias, such as those at day care facilities and summer camps. "Others" is a catchall category that includes places to eat or obtain food, such as community feeding centers, bars/taverns, and vending machines.

Table 4—U.S. beef consumption at home and away from home

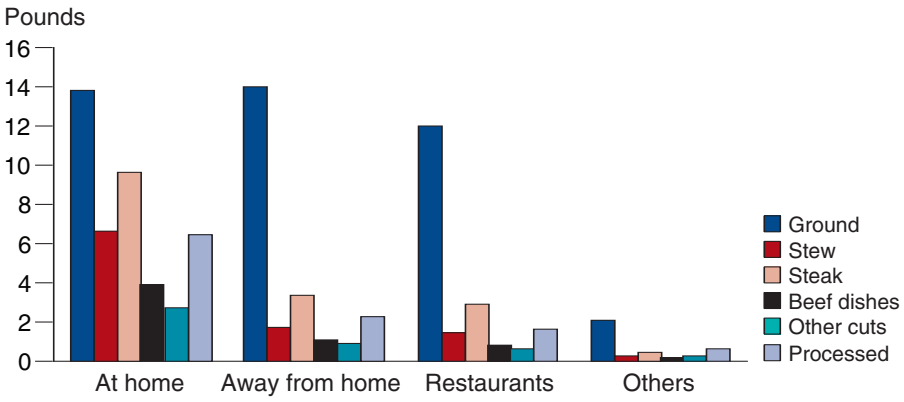
Food sources	All beef	Processed		Ground		Stew	
	Pounds per capita	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
Home	43.13	73.97	6.46	49.59	13.81	79.27	6.60
Away from home	23.38	26.02	2.27	50.41	14.04	20.73	1.73
Restaurants	19.45	18.39	1.61	42.95	11.97	17.83	1.48
Others	3.93	7.63	.67	7.46	2.08	2.90	.24
		Steak		Beef dishes		Other cuts	
		Percent	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
Home		74.20	9.68	78.50	3.88	74.86	2.69
Away from home		25.80	3.36	21.50	1.06	25.14	.90
Restaurants		22.22	2.90	17.28	.85	17.71	.64
Others		3.58	.47	4.22	.21	7.43	.27

Notes: Processed consists of canned and dehydrated. See section, "Calculating Per Capita Shares," on p. 6, for an explanation of methodology.

Source: U.S. Department of Agriculture (USDA), Economic Research Service, using data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Figure 5

Per capita beef consumption by food source



Source: U.S. Department of Agriculture (USDA), Economic Research Service, based on data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Hispanics Are the Big Consumers of Beef Products at Home

Hispanics ate a greater share of beef at home than did other consumers (table 5). Hispanics ate 77 percent or more of all beef products, except ground beef, at home. They purchased relatively more stew beef at grocery stores for home consumption and ate more ground beef while dining out than they did any other beef products.

Blacks ate the smallest share of beef at home, implying that they ate the largest share away from home—38 percent, compared with 35 percent for Whites and 31 percent for Hispanics. The greater part of beef eaten by Blacks away from home was ground beef, implying that Blacks ate more food like hamburgers, spaghetti meat sauce, and/or meat pizzas per capita than did Whites or Hispanics. Whites bought a greater share of their away-from-home ground beef from restaurants and other food establishments than they did any other beef products.

Table 5—Source of U.S. beef consumption by race/ethnicity

Race/ethnicity and food source	All beef	Processed	Ground	Stew	Steak	Beef dishes	Other cuts
			Percent				
White, non-Hispanic:							
Home	64.82	74.49	51.95	76.18	71.61	80.30	71.79
Away from home	35.18	22.51	48.05	23.82	28.39	19.70	28.21
Restaurants	29.46	17.66	41.08	21.15	24.85	15.90	19.73
Others	5.72	7.85	6.97	2.67	3.54	3.80	8.48
Black, non-Hispanic:							
Home	61.50	69.85	38.61	86.01	79.97	70.68	86.87
Away from home	38.49	30.15	61.39	13.99	20.03	29.32	13.13
Restaurants	32.81	24.63	53.36	9.77	17.54	24.53	8.64
Others	5.68	5.52	8.03	4.22	2.49	4.79	4.19
Hispanic:							
Home	69.23	76.96	50.83	88.28	78.77	78.13	78.61
Away from home	30.77	23.04	49.17	11.72	21.23	21.87	21.39
Restaurants	23.29	10.95	39.87	8.17	15.45	15.02	14.80
Others	7.48	12.09	9.30	3.55	5.78	6.85	6.59

Source: U.S. Department of Agriculture (USDA), Economic Research Service, using data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Low-Income Consumers Eat More Beef at Home

Based on demand theory, low-income consumers are likely to buy a greater proportion of food for home consumption than middle- or high-income consumers because of the high price of restaurant-prepared food compared with unprepared retail food. As expected, the CSFII results revealed that low-income consumers tended to eat more beef at home than did middle- or high-income consumers. Low-income consumers ate 70 percent of their beef at home. Across products, stew beef had the largest share of at-home consumption (table 6). Like low-income consumers, middle-income consumers purchased a larger share of stew beef from retail stores for home consumption than they did ground beef, steaks, prepared beef dishes, or other beef products. Consumers in all three income classes purchased a larger share of their ground beef away from home than they did any other beef product.

Table 6—Source of U.S. beef consumption by income

Income and food source	All beef	Processed	Ground	Stew	Steak	Beef dishes	Other cuts
			Percent				
Lower income:							
Home	69.84	75.44	53.03	89.31	87.59	79.35	85.07
Away from home	30.16	24.56	46.96	10.69	12.40	20.64	14.92
Restaurants	24.17	19.85	38.74	7.45	8.68	15.61	9.98
Others	5.99	4.71	8.22	3.24	3.72	5.03	4.94
Middle income:							
Home	66.72	76.33	51.05	81.75	76.22	79.78	73.47
Away from home	33.27	23.67	48.94	18.25	23.78	20.22	26.52
Restaurants	27.36	14.87	41.84	16.03	20.24	15.96	16.34
Others	5.91	8.80	7.10	2.22	3.54	4.26	10.18
Upper income:							
Home	59.86	70.06	45.80	71.87	66.17	76.27	70.01
Away from home	40.14	29.94	54.20	28.14	33.82	23.73	29.99
Restaurants	34.28	21.61	46.78	24.48	30.28	20.08	24.24
Others	5.86	8.33	7.42	3.66	3.54	3.65	5.75

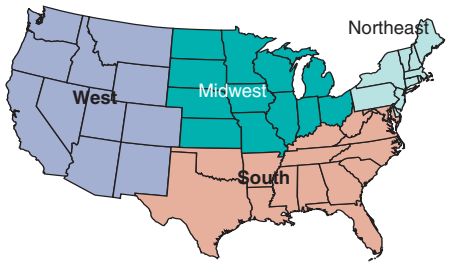
Notes: Lower income = <130 percent of poverty threshold, middle income = 130-350 percent of poverty threshold, and upper income = >350 percent of poverty threshold.

Source: U.S. Department of Agriculture (USDA), Economic Research Service, using data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Beef Consumption Strongest in the Midwest

The CSFII data represent the four Census regions that account for the total U.S. population: Northeast (20 percent), Midwest (24 percent), South (35 percent), and West (22 percent) (fig. 6). Results from the 1994-98 CSFII study show that consumers in all Census regions, except the Midwest, ate less beef than their population share would indicate. Consumers in the Midwest ate more beef per capita than consumers in the other surveyed regions (table 7; fig. 7). The dominant beef product eaten in all regions was ground beef. Consumers in the Northeast ate relatively more steaks and processed beef per capita than did consumers in other regions, while consumers in the Midwest ate relatively more stew beef.

Figure 6
U.S. regional aggregation



Source: U.S. Department of Commerce, Bureau of the Census.

Table 7—U.S. beef consumption by region

Region	All beef	Processed		Ground		Stew	
	Pounds per capita	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
Northeast	62.53	26.60	11.86	15.90	22.60	18.79	7.98
Midwest	72.92	25.05	9.31	26.30	31.18	28.60	10.13
South	65.22	32.02	8.02	36.25	28.93	30.93	7.38
West	65.17	16.33	6.49	21.55	27.29	21.68	8.20

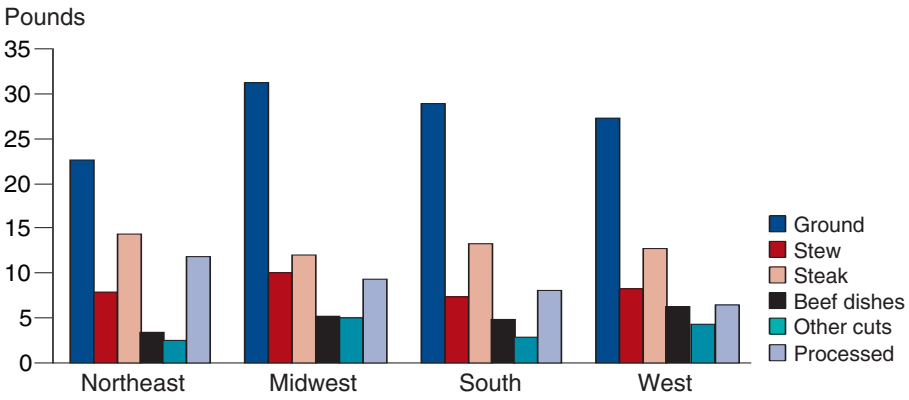
	Steak		Beef dishes		Other cuts	
	Percent	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
Northeast	21.45	14.27	13.27	3.35	13.58	2.49
Midwest	21.78	12.09	24.52	5.16	32.95	5.04
South	35.38	13.22	34.27	4.85	27.42	2.83
West	21.38	12.67	27.9	6.27	26.04	4.26

Notes: Processed consists of canned and dehydrated. See section, "Calculating Per Capita Shares," on p. 6, for an explanation of methodology.

Source: U.S. Department of Agriculture (USDA), Economic Research Service, using data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Figure 7

Per capita beef consumption by region



Source: U.S. Department of Agriculture (USDA), Economic Research Service, based on data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Rural Consumers Eat More Beef, Especially Ground Beef

According to the 1990 Census, over 47 percent of Americans lived in suburban areas, 32 percent in cities, and 21 percent in rural areas. The CSFII data show that consumers in rural areas ate more beef (75 pounds) per capita than did consumers in suburban or urban areas (table 8; fig. 8). More ground beef (33 pounds) was the eaten in rural areas than any other beef product, followed by stew beef (12 pounds), steaks (11 pounds), processed beef (8 pounds), beef dishes (6 pounds), and other beef cuts (4 pounds). Like consumers in rural areas, consumers in suburban and urban areas ate more ground beef than other beef products.

Table 8—U.S. rural, urban, and suburban beef consumption

Location	All beef	Processed		Ground		Stew	
	Pounds per capita	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
Urban	66.21	34.07	9.36	31.54	27.63	25.42	6.66
Suburban	62.69	45.88	8.53	43.10	25.55	43.13	7.64
Rural	75.38	20.05	8.26	25.36	33.32	31.45	12.35

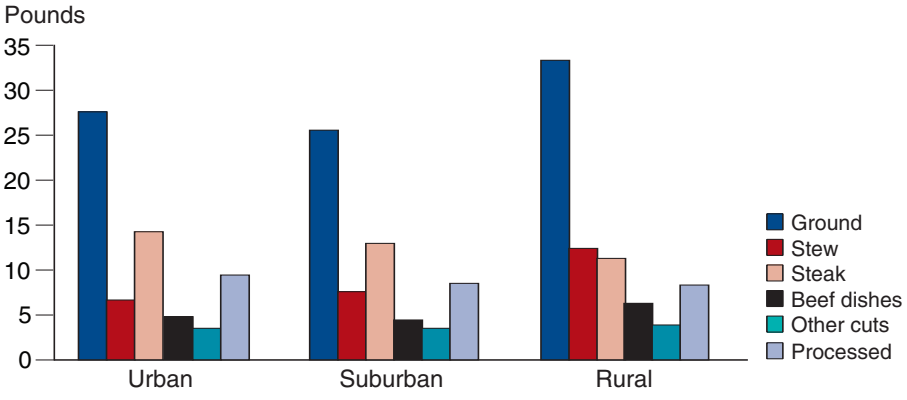
	Steak		Beef dishes		Other cuts	
	Percent	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
Urban	34.67	14.22	31.01	4.82	31.12	3.52
Suburban	46.84	13.00	42.34	4.45	46.18	3.53
Rural	18.49	11.37	26.65	6.21	22.70	3.85

Notes: Processed consists of canned and dehydrated. See section, "Calculating Per Capita Shares," on p. 6, for an explanation of methodology.

Source: U.S. Department of Agriculture (USDA), Economic Research Service, using data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Figure 8

Per capita beef consumption by urban/rural location



Source: U.S. Department of Agriculture (USDA), Economic Research Service, based on data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Young Men Eat the Most Beef

According to CSFII data, beef consumption varied greatly by gender, with males eating 86 pounds versus 48 pounds for females (table 9). Males ages 20-39 ate more beef than did males in other age groups. Males ages 12-19 ate more ground beef than did other age groups, affirming what most of us know: Male teenagers eat a lot of hamburgers, spaghetti meat sauce, and/or meat pizzas. Males ages 20-39 consumed relatively more steaks, beef dishes, and processed beef, while males ages 60 and older consumed relatively more stew beef. As the male population grows older (after age 39), their total consumption of beef begins to decline (fig. 9). Older Americans

Table 9—U.S. beef consumption by gender and age

Gender and age	All beef	Processed		Ground		Stew	
	Pounds per capita	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
Males:	85.70	63.02	11.26	62.85	35.80	61.15	10.41
Age—							
2-11	54.01	10.17	12.01	6.66	25.07	3.84	4.32
12-19	95.24	7.82	11.58	10.60	50.05	7.74	10.92
20-39	109.85	26.10	14.25	27.25	47.44	21.09	10.97
40-59	89.43	15.36	11.57	13.35	32.06	17.64	12.66
60 and older	64.81	5.89	7.68	4.99	20.75	10.84	13.47
Females:	48.14	36.98	6.32	37.15	20.25	38.85	6.33
Age—							
2-11	47.31	7.36	9.19	5.22	20.77	3.19	3.79
12-19	56.23	3.81	5.84	5.84	28.54	4.24	6.19
20-39	52.36	10.46	5.75	12.41	21.74	11.38	5.96
40-59	49.90	8.27	5.97	8.82	20.31	11.16	7.68
60 and older	43.23	4.75	4.83	4.86	15.74	8.88	8.60

	Steak		Beef dishes		Other cuts	
	Percent	*Pounds per capita*	*Percent*	*Pounds per capita*	*Percent*	*Pounds per capita*
Males:	65.73	17.53	57.70	8.48	60.61	4.46
Age—						
2-11	3.61	6.36	5.06	4.91	5.83	2.83
12-19	5.54	12.25	6.94	8.45	7.66	4.67
20-39	30.35	24.74	25.50	11.45	20.37	4.58
40-59	19.06	21.43	14.40	8.92	17.99	5.58
60 and older	7.17	13.96	5.80	6.22	8.76	4.70
Female:	34.28	8.75	42.30	4.09	39.37	2.77
Age—						
2-11	3.78	7.04	5.67	4.00	4.81	2.47
12-19	3.96	9.06	4.56	3.95	4.11	2.59
20-39	13.34	10.94	15.65	4.86	13.63	3.08
40-59	8.36	9.01	9.56	3.90	10.20	3.03
60 and older	4.84	7.34	6.86	3.94	6.62	2.77

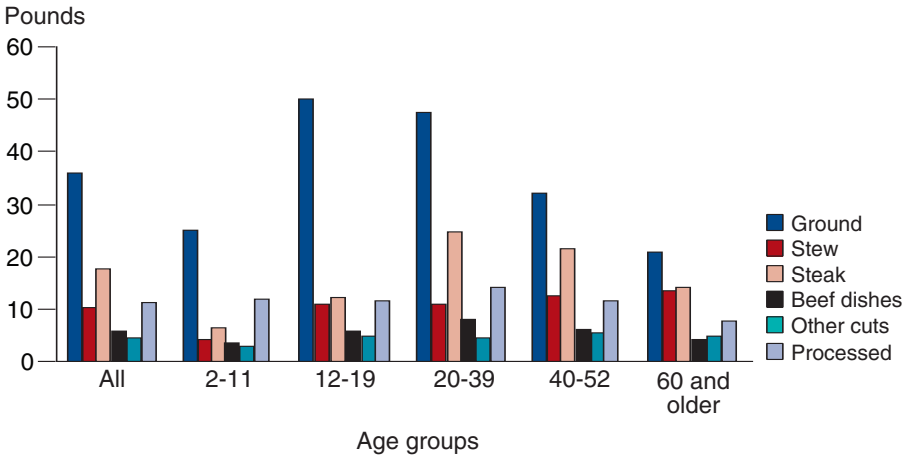
Notes: Processed consists of canned and dehydrated. See section, "Calculating Per Capita Shares," on p. 6, for an explanation of methodology.

Source: U.S. Department of Agriculture (USDA), Economic Research Service, using data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

typically eat less food than do younger people because of lower activity levels and energy needs and dine out less frequently (Ballenger and Blaylock, 2003).

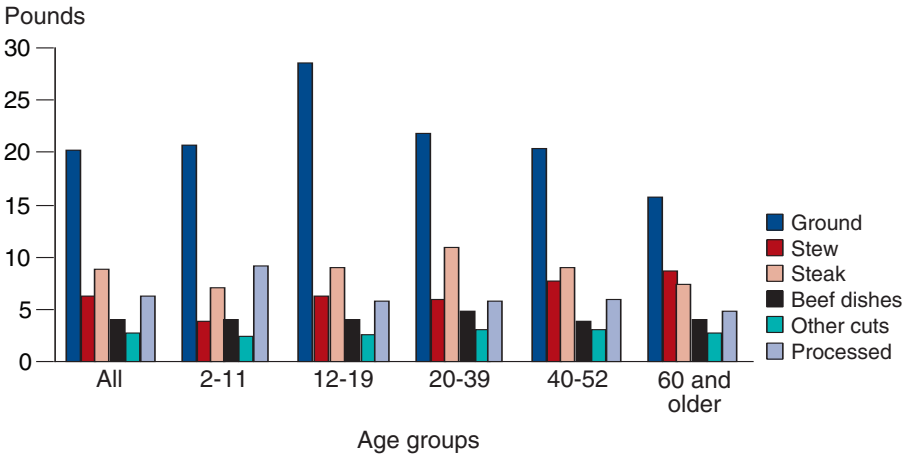
Females ages 12-19 were the biggest female consumers of beef (table 9) in their group. They ate more ground beef than did females in other age groups but less stew beef, steaks, beef dishes, processed beef, and other beef cuts than other females. After age 19, total consumption of beef products by females begins to decline, indicating a shift in diet as they mature (fig. 10).

Figure 9
Per capita beef consumption by males by age



Source: U.S. Department of Agriculture (USDA), Economic Research Service, based on data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Figure 10
Per capita beef consumption by females by age



Source: U.S. Department of Agriculture (USDA), Economic Research Service, based on data from USDA, Agricultural Research Service, 2000: 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals.

Trends in Consumption

What information can be extracted from beef consumption patterns that could inform us about the future of the beef industry? Beef continues to play an essential role in American diets. In this study, beef consumption is described in terms of who eats what kinds of beef, where, and how much using USDA's CSFII survey data. Although such information is important and useful to retailers, processors, beef producers, and others investigating the health and structure of the industry, it has not been readily available. Important findings of this study include the following:

- Although the trend has been for consumers to eat more of their meals away from home, this study shows that most of the beef eaten by consumers was purchased at retail stores and consumed at home. Ground beef is the noticeable exception.
- Blacks had the highest beef consumption per capita (77 pounds) of all races, followed by Hispanics (68 pounds), Whites (65 pounds), and Other races (including Asians) (62 pounds). As the Hispanic population continues to grow at a faster rate than the rates of other ethnic groups, total beef consumption by Hispanics is expected to exceed that of non-Hispanic Blacks.
- A relatively higher share of ground beef per capita was eaten away from home by Blacks than by other racial/ethnic groups.
- Consumers in the Midwest ate at least 7 pounds more beef per capita than did beef consumers in other regions, while consumers in rural areas ate at least 9 pounds more beef per capita than did consumers in urban or suburban areas.
- Low-income consumers ate more beef, mainly ground beef and processed beef, than did middle- or high-income consumers. As eating out rises with income, high-income consumers have eaten relatively more beef away from home than have middle- or low-income consumers.
- On average, annual consumption of beef by males was 38 pounds more than for females. Per capita beef consumption was highest for males ages 20-39 and females ages 12-19. However, after age 39 for males and 19 for females, per capita beef consumption began to decline.

Trends in beef consumption will continue to change relative to prices of other meats, health concerns, and changes in the composition of products offered, among the many factors that affect consumption and production. As suggested, per capita beef consumption is expected to fall over the next two decades as the population ages. Other ERS research shows that expenditures on away-from-home food now account for about 47 percent of total U.S. food expenditures. The National Restaurant Association projects away-from-home food expenditures to exceed at-home food expenditures by 2010 (Davis and Stewart, 2002). Because eating out is on the rise, it is expected that per capita beef consumption away from home will rise while beef consumption at home will decline. Although beef is more often eaten at home, the large per capita consumption of ground beef and steaks by high-income households leads us to expect that consumption of hamburgers

and high-quality beef prepared at restaurants will increase. Changes in total per capita beef consumption will depend on population growth, tastes and preferences, and/or other factors identified in this study.

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