

BEEF FACTS:



Nutrition

Beef's Role in Improving Overall Diet Quality

How does intake of beef and beef products improve the overall quality of the diet, especially considering Americans' changing dietary patterns and actual food intake? To answer this question and learn more about dietary beef consumption for specific population groups and how factors influence beef intake, the National Cattlemen's Beef Association (NCBA) commissioned a study to evaluate data from the United States Department of Agriculture (USDA) 1994-96 Continuing Survey of Food Intakes by Individuals (CSFII) (1,2).

This study analyzed beef consumption patterns and overall dietary habits for 63 age/sex/special diet groups. The relationship between beef consumption and intake of many macro- and micro-nutrients was examined for three tertiles of beef consumption (high, medium, and low), and for non-beef users. Additionally, ranges of beef intake were compared to measures of diet quality such as USDA's Healthy Eating Index, Food Guide Pyramid, and Variety Score (3,4).

Recognizing that animal products such as meat are a major source of conjugated linoleic acid (CLA), the contribution of beef (including veal) intake to total CLA intake was determined. CLA, a derivative of the essential fatty acid, linoleic acid, may potentially protect against cancer, heart disease, and diabetes, enhance immune function, and reduce body fat (5).

This review highlights some of the key findings from this analysis of beef's unique contribution to the American diet.

Study Design

Data for this study were obtained from USDA's 1994-96 CSFII (2). This is a three-year survey in which data were collected from a cross-section of individuals nationwide. Individual food intake data were obtained for two non-consecutive days by trained interviewers

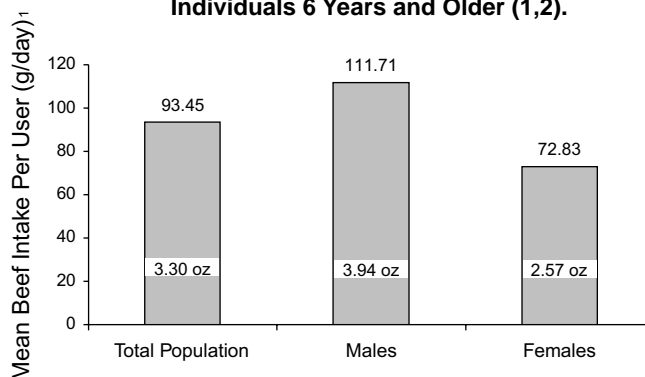
using a 24-hour recall of foods and beverages. Beef intake was analyzed for 3 sex groups (male, female, both combined); 7 age categories; 3 diet status categories (not on special diets, on special fat-reduced or calorie-reduced diets, or both combined); 5 household income categories; 4 different places (at home, school lunch, away from home or school, all places combined), and 6 occasions (breakfast, brunch, lunch, dinner, supper, snack).

Intakes of total beef and a variety of beef cuts were determined. Relationships between beef consumption and mean intakes of many macro- and micro-nutrients were examined for each age/sex/special diet group and for the three tertiles of beef intake and non-beef users.

Consumption of Beef

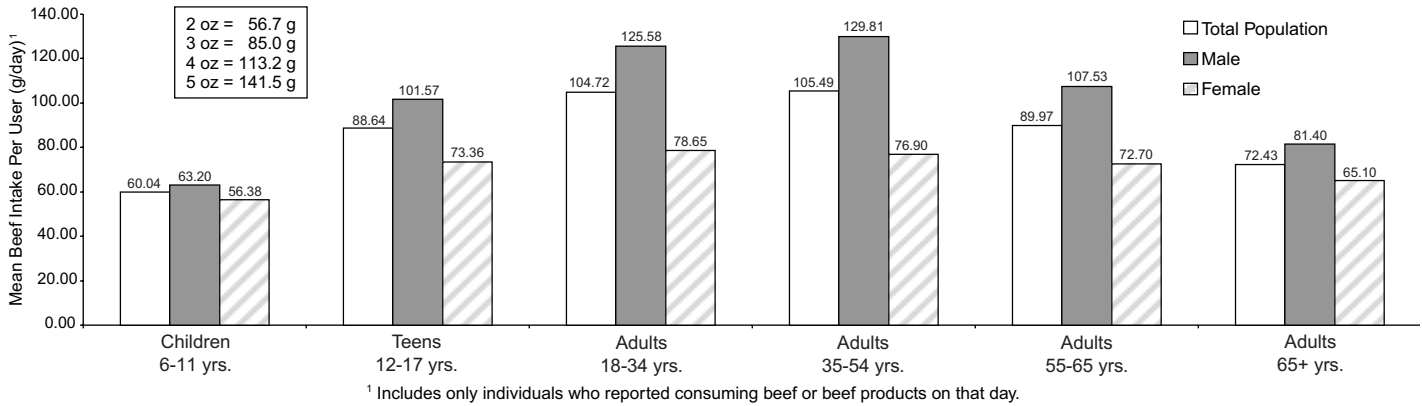
Figures 1 and 2 indicate the mean daily intake of beef and beef products, or the average amount consumed on a given day by individuals who reported consumption on that day. Intake of beef and beef products was greater for males than females both for the

Figure 1. Estimated Mean Daily Intake of Beef and Beef Products in the U.S. for all Individuals 6 Years and Older (1,2).



¹ Includes only individuals who reported consuming beef or beef products on that day.

Figure 2. Estimated Mean Daily Intake of Beef and Beef Products in the U.S. for Various Age Groups (1,2).



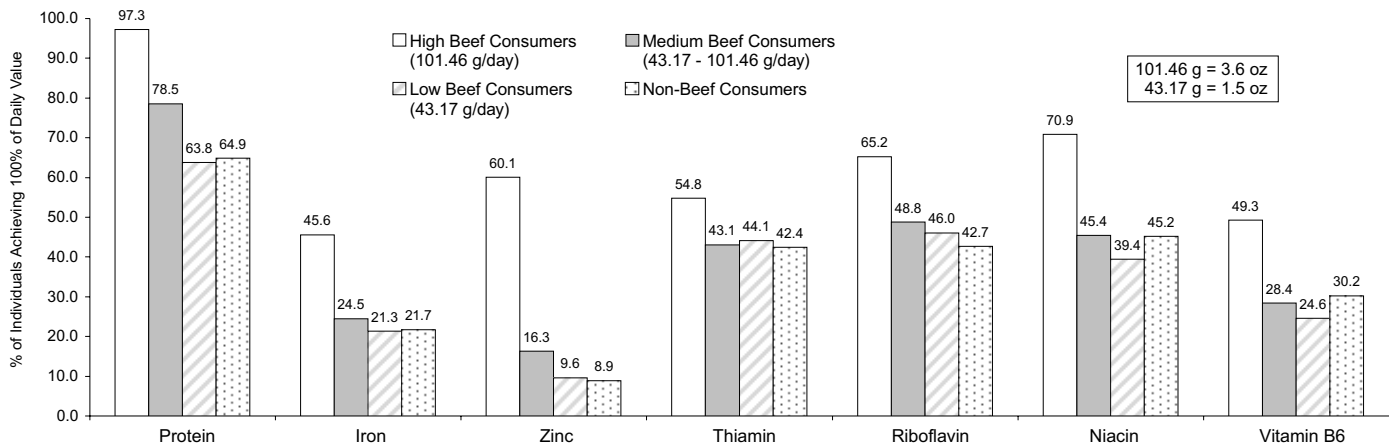
total population and for specific age groups. Figure 2 indicates that beef intake peaks at about 4½ ounces per day for adults aged 35 to 54 years. Thereafter, beef intake declines to about 3 ounces per day for adults 65 years of age and older. Despite the perception that beef intake is excessive, the data indicate that even in the 35 to 54 year age group intake of beef is not particularly high compared to dietary recommendations. USDA’s Food Guide Pyramid (4) recommends that Americans eat 2-3 servings (or 5-7 oz.) of foods from the Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts Group each day. A serving is 2-3 ounces of cooked lean meat, poultry, or fish. Beef is most commonly consumed in mixed dishes, followed by ground beef sandwiches such as hamburgers and cheeseburgers (1).

It should also be noted that intakes presented in Figures 1 and 2 represent the amount of beef people consume on days that they actually eat beef. Because people do not consume beef every day, long-term daily

intakes of beef are considerably lower. Furthermore, when the data are presented as tertiles of beef consumption, it is clear that the majority of Americans can easily increase their daily beef consumption and still be within recommended guidelines.

As beef consumption increases, intake of all nutrients and food groups tend to increase. Figure 3 indicates that high users of beef are more likely to meet 100% of the Daily Value for protein, iron, zinc, and B-vitamins than are people consuming lower amounts of beef or non-users. Over 97% of high beef consumers met 100% of the Daily Value for protein, whereas only about 64% of low beef consumers met this recommendation. For iron, the similar figures were 46% and 21% when comparing high beef vs. low beef consumers. For zinc, the figures were 60% and 9.6%. A similar pattern is found for the other nutrients. Likewise, the pattern is similar for both males and females (1). However, because males consume higher amounts of beef

Figure 3. Percent of Individuals 6 Years of Age and Older Achieving 100% of the Daily Value for Specific Nutrients Based on Tertiles of Beef Consumption Value in the U.S. (1,2).



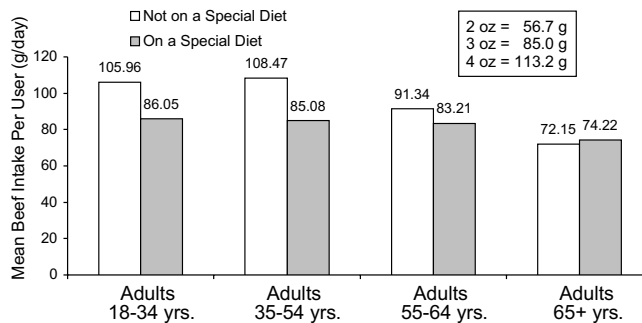
at all tertiles of beef intake, they more often meet dietary recommendations for these nutrients than do females. For example, among high beef consumers, 99.4% of males met 100% of the dietary recommendation for protein, whereas slightly fewer (90.5%) females met this recommendation (1).

Not only does consuming beef improve nutrient intake, but it also improves dietary variety. A higher percentage of high beef users (59.1%) scored a “good” rating on the variety score compared to non-beef consumers (43.7%) (1).

Is Beef Consumption Influenced by Special Diets?

As shown in Figure 4, adults following special calorie-reduced or fat-reduced diets reduce their intake of beef. An exception is older adults 65 years of age and above for whom following special diets appears to have little effect on beef intake.

Figure 4. Effect of Intake of Special Diets (Calorie-Reduced and Fat-Reduced) on Adults’ Beef Intake (1,2).



Where Is Beef Consumed?

Clearly, people consume beef in a variety of settings – at home, at school, and away from home or school, at restaurants, stores, or someone else’s home. As shown in Table 1, although home is the major place of beef consumption, schools and other away from home locations are important sources of beef (especially ground beef or hamburger sandwich) for young children. A similar pattern, with higher consumption levels, occurs for adolescents. Not surprisingly, school makes little contribution to adults’ beef intake (1).

Table 1. Place of Consumption of Beef Dishes by Types (1,2).

(Per Capita Intakes for Children Age 6 – 11)

	All Places g/day	Home %	School %	Other Away %
Total Beef	39.95	66	13	22
Mixed Beef Dish	9.69	75	12	13
Hamburger Sandwich	11.31	37	20	42
Hamburger Sandwich (with lean beef)	3.80	61	24	14

Beef is An Important Source of CLA

The estimated mean daily intake per capita of CLA for all individuals surveyed is 173.4 mg/day – 215.3 mg for males and 133.7 mg for females. As indicated in Table 2, 36.2% of CLA intake comes from beef (38.1% for males and 33.1% for females).

Table 2. Intake of Conjugated Linoleic Acid (CLA) by Individuals 6 Years of Age and Older (1,2).

	All Individuals	Males	Females
Mean Intake per Capita (mg/d)	173.4	215.3	133.7
% from Animal Sources	97.6	97.7	97.4
% from Red Meat	42.4	44.7	39.0
% from Beef	36.2	38.1	33.1

Summary

An analysis of the USDA 1994-96 CSFII dataset documents that current levels of beef intake are not excessive and fit well within recommended levels of intake. Based on tertiles of consumption, beef intake for many individuals could be easily increased and still not be out of line with the Food Guide Pyramid recommendations.

Beef is widely consumed in a variety of forms by Americans. An analysis of the USDA CSFII 1994-96 data reveals that beef can be included as part of a healthful diet. Beef consumers consistently have more varied diets than non-beef consumers. The Dietary Guidelines for

Americans, issued by USDA and the U.S. Department of Health and Human Services (6), recommend that individuals include a variety of foods in their diets “to obtain the nutrients and other substances needed for good health.”

The analysis also demonstrates that beef is an important source of essential nutrients such as protein, iron, zinc, and B-vitamins. Iron and zinc are of special concern for many population groups (7,8). Adequate iron intake is important for infants, children, and women to help prevent iron deficiency anemia, a prevalent public health problem (7). Adequate zinc intake is important for growth and development, immune function, and hormone activity (8).

Additionally, beef is an important source of CLA which has several potential health benefits. Experimental animal and in vitro studies demonstrate that CLA reduces several types of cancer, enhances immune function, may reduce atherosclerosis development and thus lower the risk of heart disease, helps regulate body weight and body fat distribution, and helps to normalize blood glucose levels, thereby possibly preventing diabetes mellitus (5).

In conclusion, beef, because of its nutrient content and components such as CLA, can play an important role in a healthful diet. Americans are therefore encouraged to regularly consume beef as part of a diet based on the Food Guide Pyramid recommendations.

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