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The Contribution of Meats to Energy and Essential Nutrient Intakes of Women in the United States

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THE CONTRIBUTION OF MEATS TO ENERGY AND ESSENTIAL NUTRIENT INTAKES OF WOMEN IN THE UNITED STATES

by

C. Dian Martin

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DEDICATION

This work is dedicated to my mother in deep appreciation for her continuing support and encouragement, without which this effort would not have been completed.

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Colleen Dian Martin

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ABSTRACT

The Contribution of Meats to Energy and Essential Nutrient
Intakes of Women in the United States

by

C. Dian Martin, Doctor of Philosophy
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Department: Nutrition and Food Sciences

This study used the 1987-88 USDA Nationwide Food Consumption Survey to investigate the contribution meat products make to intakes of nutrients at risk of inadequate or excessive consumption by women. The study is unique in that meat nutrients were extracted from mixed dishes, providing a more accurate picture of consumption. Cluster analysis was used to classify nonpregnant, nonlactating women 19 years and older based on their consumption patterns of total meat and individual meats (beef, poultry, processed meats, pork and seafoods) as percent of caloric intake.

Total fat and SFA intakes exceeded National Research Council (NRC) goals regardless of meat intake level. Results indicate an inverse relationship of total energy intake and calories from all meats. Total fat intakes had a small, positive relationship with meat calories. Saturated fatty acid (SFA) intakes appeared to have a weak, positive relationship.

Vitamin B_6 intakes were below the RDA in all clusters but were adequate relative to protein intakes. Iron intakes of women under age 51 were less than

70% of RDA. Zinc had a strong, positive association with total meat intake. Individuals that did not consume beef met only 48% to 62% of RDA.

An analysis to determine if increases in vitamin B_6, iron, and zinc seen with high meat intake were due to increased meat or caloric intake showed that total fat and SFA increased 12% and 8%, respectively, when $\leq$ 2 ounces of meat and $\geq$ 6 ounces of meat were consumed. All of the increase was derived from meat. Vitamin B_6, iron, and zinc increased 100%, 59%, and 132%, respectively; 77%, 64%, and 90% were due to meat.

In summary, women's diets were significantly low in iron and zinc, which are strongly present in meat products, especially beef. Intakes of vitamin B_6 appear to meet calculated needs, but some women may be at risk due to the increased requirements found with age and the low bioavailabilty of plant sources. Attempting to reduce total fat and SFA intakes by reducing meat intake, especially red meat, may have a deleterious effect on women's nutrient status.

(308 pages)

STATEMENT OF THESIS PROBLEM

Introduction

The United States has seen an unprecedented level of concern expressed about health and nutrition in the past two decades. Various government and health-related organizations have issued recommendations or guidelines on how to achieve optimum nutrient intake for health and disease prevention. Sometimes guidelines conflicted. As scientific discoveries concerning relationship of nutrition and health became known, some recommendations were altered and others replaced. However, when a guideline, such as decrease consumption of eggs or red meat, was clearly stated by a number of groups and over a period of time, the general population responded by reducing intake of these items (Williams 1987).

The national interest in nutrition is likely to continue, and it is fairly safe to predict that many individuals will continue to modify their dietary habits in accordance with published guidelines. Dietary guidelines do change with time, and there is a potential for harm inherent in recommending radical changes to current dietary patterns.

Originally, dietary guidelines were designed to ensure a level of nutrient intake that would prevent specific deficiency diseases, such as scurvy. Currently in the United States, most dietary guidelines deal with preventing the overconsumption of energy and specific nutrients thought to increase risk of developing chronic diseases such as hypertension, cancer, and heart disease. An example is the guideline from the U.S. Department of Agriculture (USDA) and the U. S. Department of Health and Human Services (USDHHS) to "avoid too much fat, saturated fat and cholesterol" (USDA and USDHHS 1990, p. 1).

Other recommendations are more specific. The fat intake guideline published by the National Research Council (NRC) states, "Reduce total fat intake to 30% or less of calories. Reduce saturated fat intake to less than 10% of calories and the intake of cholesterol to less than 300 milligrams daily" (NRC 1989b, p. 13).

The methods by which a dietary goal may be achieved can be numerous and of unequal benefit. For example, the American Heart Association (AHA) and the National Cancer Institute (NCI) (Patterson and Block 1988) have widely promoted the concept of reducing consumption of meats, especially red meats, in order to achieve lower fat and cholesterol intake. However, meats contain concentrations of vitamins and minerals such as vitamin B_6, iron, and zinc. Reducing meat in the diet decreases the intake of these nutrients. This is of concern in population groups, like women, whose intake status of vitamin B_6, iron, and zinc is already marginal (Dimperio 1990; Pennington and Young 1991; USDA 1988a). Careful consideration of the total nutrient contribution of a specific food should be made before suggesting its increase or decrease in the diet.

Background of the Study

Epidemiologic studies have implicated consumption of a high-protein diet as a factor in the development of various cancers and heart disease, because of the association with fat and cholesterol. In addition, it has been suggested that a high dietary protein intake may lead to increased urinary calcium losses. The NRC (1989b, p. 15) has expressed concern about consumption of dietary protein and recommends, "maintaining total protein intake at levels lower than twice the RDA for all age groups." The promotion of this recommendation and that of reducing red meat and using poultry and seafood as a substitute have, over time, resulted in individuals altering their dietary intake.

Between 1976 and 1991 average annual per capita consumption of red meat dropped 27.4 pounds, a decrease of 30% (American Meat Institute 1992). During the same time, poultry and seafood intake increased by 22.2 and 2.0 pounds, respectively. Women's intake of red meat, declined even further, dropping 40% between 1977 and 1986 (USDA 1984; 1988a). From 1977 to 1986, the overall meat consumption of women aged 19-50 years dropped between 17% and 22%. The effect that this trend could have on American women's nutritional status is an important consideration.

Both iron and zinc are closely associated with high-protein, animal muscle foods. Their respective concentrations in red meats are about twice the level found in poultry and from three to five times that present in most seafoods (USDA 1988b). An individual following either the NRC guideline to restrict dietary protein (thus limiting meat intake) or the AHA and NCI recommendations to substitute poultry and seafood for red meats will find that these recommendations negatively impact the content of iron and zinc in the diet unless very careful food choices are made.

The Nationwide Food Consumption Survey (NFCS), conducted every 10 years by the USDA's Human Nutrition Information Service (HNIS), has collected information on the food and nutrient intake of individuals since 1965. Beginning in 1985, in between the decennial surveys, the USDA conducts a Continuing Survey of Food Intake by Individuals (CSFII). Together these surveys allow the tracking of trends in food and nutrient consumption patterns. Analysis of the data from the 1977-78 NFCS showed that in general, except for vitamins A and C, Americans of various age-sex and socioeconomic status tend to consume diets that are very similar in nutrient content per 1000 kilocalories (Windham et al. 1981). Thus, average nutrient intake will depend heavily on individual energy intake. Population subgroups, such as women, that have low energy intakes are at a greater risk of developing nutrient deficiencies. Not only have women had traditionally lower caloric intake than men, it appears there has been a downward trend in their energy consumption in the past 25 years (USDA 1972; 1984; 1987a; 1988a).

In 1965-66, the USDA conducted the Household Food Consumption Survey (HFCS) which, for the first time, included one 24-hour diet recall per subject. The 1985-86 CSFII reports on the mean intake calculated from four non-consecutive one-day food records. Considering the difference in methodology between the surveys, definitive conclusions cannot be drawn; however, it appears that the average daily intakes of protein and iron for women aged 19-50 decreased approximately 15% and 10%, respectively (USDA 1972; 1988a). In 1986, women's iron intake averaged less than 56% of the 1980 Recommended Dietary Allowances (NRC 1980). Although meat, fish, and poultry contributed about 43% of women's daily iron intake in 1965, by 1986 this had decreased to 26% (USDA 1988a). Heme-iron, found only in animal products, has a significantly greater absorption rate than iron from plant sources (Carpenter and Mahoney 1992), so the actual amount available for absorption decreased far more than the 10% reduction in total dietary intake suggests.

Not only are women at risk of poor iron intake, zinc and vitamin B_6 intakes are also marginal. The 1985-86 CSFII was the first USDA survey to analyze for both vitamin B_6 and zinc. Zinc intake for women met only 57% of the 1980 RDA while men's intake met 95%. Women's intake of vitamin B_6 was equally low at only 58% of RDA (USDA 1987a; 1987b). Pregnant and lactating women with their increased metabolic needs may be at an even higher risk of developing nutritional problems.

Other U.S. population subgroups, such as young children or the elderly, may be at risk of inadequate intake. Caloric intake of the elderly has been shown to decrease as age increases (USDA 1972; 1984), and their ability to metabolize certain nutrients, such as thiamin and vitamin B_6, has been thought to decline (Ahmed 1992; Klein and Rogers 1990). This lower energy intake requires the individual to increase the percent of calories coming from protein to meet the protein RDA. Differences in activity level, presence of disease, and intake of prescription drugs may all impair or alter nutrient metabolism in the elderly (Pellett 1990). Smoking is associated with a lower intake of both calories and protein, while drinkers tend to have a lower diet nutrient density, especially with respect to protein and iron (Windham et al. 1983). For these groups, implementing current recommendations by decreasing dietary intake of protein, especially in the form of red meat, may be detrimental.

In addition to the guidelines on fats and cholesterol, the NRC recommends designing daily meals to provide the RDAs and Estimated Safe and Adequate Daily Dietary Intakes (ESADDI) for vitamins and minerals (NRC 1989b). This can be accomplished when caloric intake is adequate and red meat is included in the diet. The concurrent NRC recommendation of limiting protein intake to twice the RDA may not be achievable while maintaining adequate levels of all nutrients.

In a recent study (DeLeeuw et al.1992), menus were designed that would comply with all the NRC recommendations. The average energy content of the menus was 2000 kilocalories. To meet the NRC criteria on limiting protein, meat intake had to be limited to 3.5 ounces per day. This is significantly lower than the 5-7 ounces recommended by the USDA in the 1992 Food Guide Pyramid (USDA 1992a). Less commonly used foods, like wheat germ, had to be added to raise vitamin and mineral levels to meet the RDA. In this study, iron and zinc requirements could not be met until red meat was used in place of poultry and seafood for several meals. Even with the advantages of a dietitian's expertise in designing the menus and the use of a computerized diet analysis program, the authors concluded that it was very difficult to limit protein to twice the RDA and still provide adequate zinc and iron (DeLeeuw et al. 1992).

Given the fact the average caloric intake of women is about 25% lower than the baseline level used in the study (USDA 1988a) and that few consumers have access to computerized dietary analysis programs, it appears unlikely that the average individual will be able to comply with all the NRC guidelines.

Statement of the Problem

A major concern with some dietary recommendations is they may require individuals to radically alter their food intake habits. To be valid, a dietary guideline should be based on an American's current eating patterns. Emphasis must be on attainable goals, and individuals should be able to comply without having to alter all familiar eating patterns. A viable dietary guideline will be applicable to the entire population and not result in lowering the intake of any nutrient to a marginal or inadequate level. Two guidelines currently being advocated that may not meet these criteria are the recommendations to limit red meat consumption and to restrict protein intake to a maximum of twice the RDA.

Research is needed to determine the actual relationship of nutrient contribution from meat products to the quality of the diet as a whole with respect to specific population groups. With this knowledge, nutritionists can assess the relative importance of the recommendations regarding protein and meat intake and make decisions as to how dietary goals can be achieved.

Purpose of the Study

The purpose of this study was to identify meat consumption patterns that allow for meeting the RDAs for nutrients as well as the NRC recommendations on fat and cholesterol intake. In addition, subgroups of women, based on demographics, that are at risk of inadequate intake of meat-associated nutrients were identified. This information allows nutritionists to design dietary modifications that can be adapted to identified groups in the population. Finally, this study identified the impact meat consumption has on total nutrient intake and assessed whether compliance with the recommendations to decease meat and red meat consumption and to limit protein intake to two times the RDA are feasible and/or desirable for all subgroups within the adult female population.

Objectives of the Study

There were two main goals of this study. The first was the development of a statement of the contribution meat makes to diet in terms of essential vitamins and minerals and what subgroups of women currently meet the NRC guidelines on protein, fats, and cholesterol intake. The second goal was to obtain information which allows nutritionists to more accurately focus nutrition education messages to identified women's groups, based on their current meat consumption patterns, and demographic and lifestyle profiles. Specific objectives were:

1. Using the USDA's 1987-1988 Nationwide Food Consumption Survey as a data base, apply cluster analysis to classify the

sample (within age groups) according to similar patterns of average daily consumption of nutrients. Nutrient intake will be expressed in terms of weight and nutrient density, and as a percent of RDA, ESADDI, and NRC recommended levels. Cluster analysis will be performed on the following variables:

a) the total intake of all meat, fish, and poultry (as percent of total caloric intake) including amounts in mixed dishes;

b) the total intake of the following meats (as percent of total caloric intake): beef, pork, poultry, seafood, and processed meats;

c) iron, zinc, and vitamin B_6 as percent of respective RDAs.

2. Use the clusters identified above to accomplish the following:

   a) Determine nutritional contribution of all meats to the mean daily intake of: energy; protein; total fat; saturated, mono-unsaturated, and polyunsaturated fatty acids; cholesterol; iron; zinc; magnesium; copper; and vitamin B_6.

   b) Determine, within age levels, the subgroups currently not meeting RDAs for the nutrients listed above and quantify the effect of limiting red meat and total daily meat protein intake on specific nutrient status.

   c) Determine nutritional contribution of meat categories and meat products to the total daily nutrient intake for iron, zinc, copper, magnesium, and vitamin B_6 within identified eating patterns.

3. Compare results from the three clustering sets (1a, b, and c) and identify strengths of each.

4. Make suggestions for realistic dietary recommendations of meat intake for women based on findings from the analyses conducted.

Significance of the Study

In the past, analysis of dietary intake patterns has been limited by statistical methods which did not adapt well to study of more than two or three variables at once. The advent of cluster analysis in assessing nutrition intake has overcome this barrier by allowing for analysis of multiple variables. Cluster analysis is a generic term covering a group of techniques with the common goal of classifying objects into groups having similar measures on a given variable or set of variables (McLachlan and Basford 1988). Although a fairly new technique, this method has been frequently used for food composition and consumption analysis during the past decade (Windham et al. 1985; Akin et al. 1986; Jacobson and Stanton 1986). Its use in this study will not only provide the first balanced view of current meat intake patterns, but will do so within the context of varied population subgroups having diverse dietary intakes and self-reported health patterns. Given the results of this study, nutritionists will be able to design attainable diet modifications that can be adapted to a variety of diet patterns and food preferences while addressing the health concerns of different population segments.

Research Design

The study utilized data from the individual 3-day intake component of the basic, all-income sample from the 1987-88 NFCS that includes information on over 3,300 non-pregnant, non-lactating women from a statistically selected sample of households in the forty-eight contiguous states. Individual participants were sorted by age into the following categories: non-pregnant, non-lactating women aged 19-24, 25-34, 35-50, 51-64, 65-74, and 75 or more years.

The survey data base provided information on daily food and nutrient intake. In addition, demographic, socioeconomic, physiologic, and health-related characteristics were provided for each subject. In order to generalize the study results to the entire population, the sample weights, calculated by the USDA to account for nonresponse, were used in computing the final estimates of means and proportions.

For each individual the average daily intake of nutrients, as well as the caloric and nutrient contribution of meat, was calculated from the nutritive value data provided by the USDA. The USDA recipe file, which lists combination dishes and links to the survey nutrient data base, was used to determine the nutrient contribution from meat for each combination dish reported as consumed by women. These figures were added to the nutrient contribution attributed to plain meats, and the average daily intakes (in grams) supplied by each meat group (beef, pork, poultry, processed meat, seafood, organ meats, and lamb/veal/game) were calculated.

Cluster analyses were conducted on the following sets of variables: percent of caloric intake provided by each separate meat group; percent of caloric intake provided by intake of all meats; and intake of vitamin B_6, iron, and zinc as percent of RDA.

The food components associated with each cluster pattern included: kilocalories; protein; total fat; saturated, monounsaturated and polyunsaturated fatty acids; cholesterol; vitamin B_6; niacin; calcium; iron; zinc; phosphorus; copper; and magnesium. Output also included: average daily caloric intake;

average daily intake of nutrients and other food components per 1000 kilocalories and in terms of percentage of 1989 RDAs; and average contribution of daily nutrient intake derived from meat consumption expressed in both nutrients per 1000 calories and percentage of RDAs.

Individual mean intakes per 1000 kilocalories were computed by dividing average daily nutrient and food component intakes by average daily caloric intakes. The individual mean contribution of nutrients found in meat were computed by dividing the average 3-day intake for each nutrient from all foods by the average 3-day intake for each nutrient derived from meat and meat products. The percentages of caloric intake provided by total fat and the fatty acids were computed by multiplying average fat intakes by a factor of 9 and dividing by total caloric intake.

Descriptive variables, also measured for each cluster in the analyses, included: race; geographic region; urbanization; education; employment; and income as percentage of federal income guidelines. In addition, the following health-related variables were considered: Body Mass Index (BMI); self-reported healthfulness of diet; and use of vitamin/mineral supplements.

Means within each cluster were determined for each of the quantitative variables. Categorical descriptive variables were treated and presented as contingency tables with the proportion for each subcategory computed for each cluster. Heuristic chi-square tests were used to test for significant differences among cluster means and proportions and the overall sample means and proportions to identify variables significantly associated with different meat consumption patterns.

Hypotheses

The women consuming diets having higher meat intakes will have intakes of vitamin B_6, iron, and zinc that are closer to RDA levels than those with lower meat intakes. When caloric levels of diets are similar, the diets that include larger amounts of meat, particularly beef, will come closer to meeting the RDAs for iron and zinc. Provision of meat in the diet will be significant in providing certain vitamins and trace minerals low in women's diets.

Limitations

Utilizing data from the Nationwide Food Consumption Survey, by the nature of its methodology, placed some limitations on the scope of this study. The formation of conclusions could have been enhanced if the NFCS had been able to provide (1) 3 or more days of non-consecutive food records collected over a year's time, (2) a nutrient data base that included data on content of specific saturated fatty acids (particularly stearic acid) and bioavailability of vitamin B_6 in individual foods, (3) information on variables such as nutrition knowledge of homemaker, especially in regard to intake of meats and fats, and (4) data pertaining to weight control history and current blood lipid levels.

REVIEW OF LITERATURE

United States Food Surveys and Health Guidelines

Insights into American women's food consumption patterns and the resulting health and nutrient intake status have been obtained from data collected by the U.S. Department of Agriculture (USDA) and the Department of Health and Human Services (USDHHS), formerly titled the Department of Health, Education and Welfare (USDHEW). In general, the role of the USDA is to collect data on food and nutrient consumption and costs; the USDHHS examines individual food intake and health status.

USDA Surveys

The USDA monitors the food and nutrient content of U.S. diets at three levels: food available from the U.S. food supply, food used by households, and food eaten by individuals (Sims 1988). Since 1909, the USDA has provided annual per capita estimates of nutrient content of the civilian food supply consumed at home or away. These data allow the USDA to follow trends in the per capita availability of food and nutrients, but provide no insight into distribution of food at the household level or into individual food intake. This information is obtained from the Nationwide Food Consumption Surveys (NFCS), called the Household Food Consumption Surveys until 1977.

The USDA has conducted seven national food consumption surveys since 1936-37. The first four were concerned primarily with measuring household food consumption during a 7-day period. In 1965-66 the survey was expanded to include a 24-hour recall of food intake of individuals in the sampled households (NRC 1984). Built on a stratified sampling model, this survey represented both the total household food consumption and the individual food intakes from individuals in 10,000 households in the forty-eight contiguous states. The reported 1-day intakes were analyzed for consumption of calories, protein, fat, and carbohydrate intake as well as five additional nutrients: calcium, iron, vitamin A, thiamin, riboflavin, and vitamin C. Reported heights and weights were also collected from respondents as well as a variety of demographic data (USDA 1972).

The sixth survey, the NFCS 1977-78 (USDA 1984), expanded the number of intake records collected to 3 days per individual and added vitamin B_6, niacin, phosphorus, and magnesium to the nutrients for analysis. Like the 1965-66 HFCS (USDA 1972), the individual dietary intake phase of the basic survey consisted of members of households that participated in the household food use phase of the survey. Unlike the HFCS, households were contacted at least a week prior to the interview at which time a 24-hour food recall was administered by a trained interviewer. The "household food manager" completed this for self and any children under age of 12. Participants were shown how to keep food diaries for 2 additional days after which the interviewer returned and collected food records. Statistical adjustments were made to account for nonresponse (NRC 1981). Special surveys were conducted in Alaska, Hawaii and Puerto Rico and for the elderly and low-income households. The 1977-78 NFCS sampled about 15,000 households and interviewed more than 30,000 individuals.

The USDA instituted the Continuing Survey of Food Intake by Individuals (CSFII) in 1985. This survey was designed to assess the dietary status of high risk groups between the large decennial surveys. Addressing the concern resulting from evidence of poor nutritional intake in women of child-bearing age and in many young children, the survey covered only part of the population: women 19-50 years of age and their children aged one to five years. Data from an all-income sample and a low-income sample were collected.

The CSFII was designed so that the dietary data for the first day were collected by personal interview. Thereafter, about every 2 months an additional day of food intake record was collected by phone interview for a total of 6 days. Due to problems with response, final reports are based on a total of 4 days of intake. Improvements in the survey nutrient data base used to analyze the dietary intakes allowed the addition of zinc, copper, cholesterol and saturated, monounsaturated and polyunsaturated fatty acids to the nutrient analysis. In 1985, a 1-day dietary intake was also collected for men aged 19-50 (Sims 1988).

In addition to collecting household and individual food intakes, the USDA develops methods for determining the nutrient content of foods, then compiles them into its Nutrient Data Bank. The USDA also sponsors research to fill gaps in the food data base. In essence, the USDA's role in monitoring American's nutritional status is to act as an early warning system. Assessing the dietary status of Americans gives the first indication of possible nutritional problems. To confirm the manifestation and extent of nutritional problems is the role of the USDHHS.

The Health Survey Act of 1956 authorized the Secretary of the Department of Health, Education and Welfare to collect statistics on health issues by acting through the National Center for Health Statistics (NCHS). Congress authorized NCHS (Public Health Service Act) to collect statistics and support research in several areas of concern. These include: extent and nature of illness and disability in the United States; their impact on the U.S. economy; determinants of health, health resources, and hazards; utilization of health care and its costs; and family formation, growth, and dissolution. In order to meet this mandate, NCHS developed two categories of data systems: population surveys and record-based systems (Woteki et al. 1988). Of the latter, the National Ambulatory Medical Care Survey contributes the most to nutritional monitoring by providing information on office-based patient care for nutrition-related diseases.

DHHS Surveys

The DHHS conducts four population surveys on a regular basis. Of these, the National Health and Nutrition Examination Surveys (NHANES) has provided the data most relevant to nutritional monitoring purposes. The first survey (NHANES I) was conducted in 1971 with NHANES II following in 1976-80. The surveys were designed as stratified, multistage probability cluster samples of the civilian, noninstitutionalized population by households throughout the U.S. Specially designed mobile exam centers were used for clinical examinations and dietary interviews. The dietary component of the NHANES I and II consisted of a 24-hour recall and a food-frequency questionnaire for the previous three months of food intake. Additional indices of nutritional status were obtained through biochemical levels of various nutrients based on assessment of blood and urine samples, a physicians' examination for clinical signs of possible nutritional deficiencies, and anthropometric measurements (USDHEW 1979; USDHHS 1983).

The overall goals of the NHANES, in the words of R.S. Murphy, Director of the Health Statistics Branch of NCHS, are to "develop information on the total prevalence of a disease condition or a physical state; to provide descriptive or normative information; and to provide information on the interrelationships of health and nutrition variables within the population groups" (NRC 1984, p. 32). NHANES measurements of body weight, blood pressure, serum lipids, and glucose tolerance permit assessing the prevalence of several major diet and nutrition-related risk factors for several chronic diseases. Successive NHANES provide the measurements needed to monitor general changes in health and in the biochemical aspects of nutritional status from survey to survey.

Currently, both USDA and DHHS surveys are under the umbrella of the National Nutrition Monitoring System (NNMS). This system was enacted in Public Law 101-445 (1990) in response to the increasing evidence that Americans need assistance in obtaining and selecting food intakes that can meet both health and nutrient needs.

Evolution of Nutrition Monitoring in the United States

Americans' interest in nutrition dates from the institution of the U.S. Senate Subcommittee on Employment, Manpower and Poverty hearings in 1967. These addressed the concern that hunger and severe malnutrition existed in parts of the United States. The hearings concluded that while there was evidence documenting the existence of both hunger and malnutrition, its extent was not known (U.S. Senate 1967).

The results of the 1965-66 HFCS demonstrated that about half the households surveyed had diets that failed to meet the 1968 RDAs for one or more nutrients. Income levels were roughly correlated with nutrient intake, with higher incomes denoting a higher level of dietary adequacy. Women's intakes of iron and calcium were particularly low (between 63% and 73% of RDAs). In addition, women received about 43% of their caloric intake in the form of fat (USDA 1972).

After reviewing the survey results, Congress directed the Secretary of USDHEW to initiate a comprehensive survey of the location and incidence of serious hunger and malnutrition in the U.S. In addition, the Senate established the Select Committee on Nutrition and Human Needs, giving it the on-going charge to study the food, medical, and other related basic needs of Americans (U.S. Senate 1968).

In response to the Congressional mandate, the USDHEW directed the Public Health Service to undertake the National Nutrition Survey (Ten State Survey) of low-income populations in 1968-70. Overall, the results showed a significant number of individuals were either malnourished or at high risk of developing nutritional problems. Income was again found to be a major determinant of nutritional status although cultural and geographic differences also significantly impacted nutritional status. While the nutrient density of diets of low- and middle-income individuals did not differ significantly, the caloric intake did, being lower in those with low incomes. Women's intakes, especially of calcium and iron, were significantly beneath the RDA levels, while low levels of hemoglobin indicated widespread iron deficiency anemia among women of child-bearing age (USDHEW 1972).

A major step was taken toward the long-term goal of defining nutrition problems and their effects upon health with the establishment of a continuing National Nutrition Surveillance System (NNSS) by the National Center for Health Statistics (USDHEW 1975). The NNSS reviewed the results from the NHANES I which, in common with previous nutrition surveys, reported some individuals at every socioeconomic level failed to meet nutritional standards, and a large proportion of these individuals was female. Again, intakes of iron and calcium by women and adolescent girls were found to be low (less than

60% and 60%-80% of the 1968 RDAs, respectively). Anemia was present among many of the elderly and found at higher levels in the poor and in black populations. Additionally, 73% of low-income white women had intakes of vitamin A and C that were below respective RDAs. Women also were noted to have a high prevalence of obesity, about 19% in young white women (20-44 years old) and 32% for older black women (45-74 years). Black women were also identified as having the highest risk for developing chronic diseases such as hypertension, heart disease, and diabetes (USDHEW 1975).

National Nutrition Monitoring System

The National Research Council's Coordinating Committee on Evaluation of Food Consumption Surveys (1984) reported the results of NHANES, HFCS, and NFCS surveys. They concluded that the present system of two separate national surveys should continue, but they needed to develop and implement a common methodological core, including identical data collection methods.

With the goal of improving methods to assess the nation's nutrition and health status, the USDHHS and USDA submitted to Congress the Joint Implementation Plan, designed by the Federation of American Societies for Experimental Biology (FASEB 1989), for a comprehensive National Nutrition Monitoring System (NNMS). The proposed NNMS was designed to supervise and report on all existing and proposed Federal survey and research activities dealing with monitoring nutritional status.

Several changes have been instituted in both the NFSC and NHANES. The data file for surveys has been expanded from 14 to 27 food components and, along with the food coding system, is being used for both NFCS and NHANES dietary assessments (Sims 1988). Work has progressed toward using a common core of sociodemographic descriptors in all NNMS surveys, providing greater similarity in NNMS data reporting, and improving response rates and analyzing non-response.

In the future, every ten years the USDA will conduct a comprehensive NFCS of household food use and individual food intake at home and away. In intervening years, the USDA will conduct CSFIIs that will collect individual intake information from national samples of 1500 households in the general population and 750 low-income households. All household members will provide a 3-day dietary data (1-day recall and 2-day intake). Results will be used to provide 2-year moving averages for women and men 19-50 years of age and a 3- to 5- year moving average for other sex-age groups.

Uses of Survey Data

Data obtained from the NNMS are used for a variety of purposes (FASEB 1989). The UDSA components are used to: determine food consumption patterns and nutrient intake of populations and subgroups; demonstrate historical and secular trends in food consumption and nutritional status; identify food safety considerations; and assess the nutritional quality of diets in the population. The USDHHS surveys assess the prevalence of nutrition-related health conditions; examine the relationship of food consumption patterns and nutrient intakes to physical and physiological indicators of health status; and assess the prevalence of specific nutrition knowledge and certain health practices. From these data government agencies are able to develop educational programs and materials for dietary guidance that are based on actual food intake patterns as well as associated or perceived health risks.

Changing Focus on Nutrition and Disease

Diet and Disease Relationships Identified from Surveys

While the nutrition consumption surveys providing data on intake of food and nutrients have remained much the same, the focus of the NHANES questions and the use of assessment tools have changed over the years as new studies indicated that Americans' nutrition-related health problems had changed. Up to the 1940's, diseases such as rickets, pellagra, scurvy, beriberi, xeropthalmia, and goiter (caused by lack of adequate dietary vitamin D, niacin, vitamin C, thiamin, vitamin A, and iodine, respectively) were prevalent in the United States. Today such classical deficiency diseases have been virtually eliminated in the U.S. because of both the abundant food supply and fortification of some foods (USDHHS 1988). Iron deficiency anemia is still prevalent, however, and low intakes of vitamin B_6 and some trace elements are of concern.

As nutritional deficiency diseases became less common, they were replaced by diseases thought to be caused by dietary imbalance or excess. In the past several years some chronic diseases have been linked to overconsumption of specific food components such as energy, fat, saturated fatty acids, cholesterol, and sodium. Additionally, the underconsumption of dietary fiber, complex carbohydrates, and, recently, carotenoids has been of concern. Chronic diseases such as coronary heart disease (CHD), cancer, diabetes mellitus, hypertension, and obesity are currently the leading causes of death and disability in America (USDHHS 1988). In 1989, the National Research Council published a report, Diet and Health: Implications for Reducing Chronic Disease (NRC 1989b), which reviewed hundreds of scientific studies dealing with diet as a causative factor in chronic diseases.

In the report, coronary heart disease, the leading cause of death in Americans, was strongly linked with diet. High total fat, saturated fatty acid, and cholesterol intakes raise, to different extents, an individual's serum lipid components which in turn increase the risk of developing both CHD and atherosclerosis. Hypertension and obesity were also linked with higher risks of CHD (NRC 1989b).

Cancer, the second leading cause of death in the United States, was less strongly linked to diet as the contribution to total incidence of, and mortality from, cancer could not be determined with any degree of certainty. It was estimated that about 30% of cancer deaths may be related to diet. In general, it appears that high levels of dietary fat are associated with the development of some cancers, such as colon, breast, and prostate. Various plant food components, such as dietary fiber, vitamin A, carotenoids, and vitamin C, have been identified as potentially protective against cancer development (NRC 1989b).

Hypertension, or sustained elevated arterial blood pressure, was identified in the report as increasing the risk of stroke, coronary heart disease, congestive heart failure, peripheral vascular disease, and nephrosclerosis. The degree of cardiovascular risk is quantitatively related to the level of both systolic and diastolic blood pressure. Obesity and lateral body build both appear to be associated with an increased risk of hypertension. A high intake of sodium appears to have a major adverse effect on hypertension risk in some sodium-sensitive people, but there is no certain method to identify sensitive individuals or determine how many will become hypertensive as a result of high sodium intake (NRC 1989b).

Consuming calories in amounts greater than an individual's need results in the storage of fat, a condition generally termed as overweight or obesity. For most adults overweight results from the expenditure of fewer calories than are ingested. As segments of our society have become more sedentary, the easy access to food, coupled with a relative decrease in energy expenditure, have resulted in increasing numbers of individuals being classified as overweight, defined by a Body Mass Index (BMI) of 27-30 kg/m2. As individuals age, their BMI increases.

By 1988, it was estimated that in the adult U.S. population more than 25% of the females and 31% of the males over 18 years of age were overweight. Recently published results from the NHANES III indicate that the overall proportion of overweight individuals in the population has increased to 34% (Kuczmarski et al. 1993). Severe overweight, defined as a BMI higher than 30, is present in 12% of the population (NRC 1989b). Overweight is a particular problem for poor and minority populations, affecting 44% of black women over age 20 and 37% of all women below poverty level (USDHHS 1990). As BMI increases, so does the risk for coronary heart disease (Manson et al. 1990), adult-onset diabetes mellitus, gallbladder disease, and some types of cancers, such as breast cancer.

Women, as a group, demonstrate a lower incidence of overweight than men but are under more pressure to lose weight. In American society overweight is viewed punitively. Dieting has become a national obsession; a 33 plus billion dollar business is targeted mainly at women (Wolf 1991). Some recent studies cited by Berg (1992) note that 40% of American women are currently dieting even though two-thirds are not medically overweight. In adolescents, one study noted over 68% of girls had been consuming a weight loss diet in the previous year as opposed to 28% of the boys. Perhaps as a result of this chronic emphasis of dieting, women's caloric intakes appear to have decreased about

16% from 1965 to 1987. The average BMIs for women in the same age group, however, have increased at least one full point during that time period (USDA 1972; 1988a).

Development of Dietary Guidelines

As the first studies linking diet to chronic diseases were published, American's nutrition concerns shifted from preventing nutrient deficiency diseases to preventing chronic diseases. At the same time, dietary surveys demonstrated changes in American dietary patterns that might impact health. After considering both study and survey results, a Senate subcommittee published a report on Dietary Goals for the United States, the government's first comprehensive statement on the risk factors (U.S. Senate 1977). It linked the increase in fat and decrease in grains and carbohydrate consumption seen from the start of the century with the increasing incidence of heart disease, cancer, stroke and obesity. The report set six basic goals to change dietary levels of carbohydrate, fat, cholesterol, sugar, and salt. Later in the year, a second edition of the Dietary Goals, including a new goal for maintaining or achieving appropriate body weight, was released.

Although the Senate subcommittee dietary goals were controversial, with some feeling that evidence was insufficient for their development, they were quite widely publicized. The Surgeon General's office published a report on health promotion and disease prevention in 1979 that discussed the environmental and behavioral changes Americans could make to reduce risks of morbidity and mortality. A year later the USDA and USDHHS jointly developed and published the first Dietary Guidelines for Americans, designed to make Americans more aware of the role of diet in health and disease prevention (USDA and USDHHS 1980). These guidelines were published nationwide.

The Dietary Guidelines for Americans were revised in 1985 and again in 1990 (USDA and USDHHS 1985; 1990). In the 1990 edition, specific guidelines were given for the first time on the consumption of fats and cholesterol. Substantial changes were made to the supporting wording to reflect both advances in research relating diet and health and the greater consensus on some issues that had developed since the early 1980s. For example, prominence was given to recommendations to decrease the intake of fat, especially saturated fatty acids, and to increase consumption of vegetables, fruits, and grains (Peterkin 1991). The bulletin also emphasized the need to maintain a healthy body weight.

The first Surgeon General's Report on Health Promotion and Disease Prevention (USDHHS 1980) defined five broad goal areas for reducing mortality and morbidity in various stages of the life cycle. Fifteen priority areas were identified for national attention. These included items varying from controlling blood pressure to family planning. One of the areas identified was that of nutrition; however, the goals defined were broad and nonquantifiable.

The following year the 1990 Health Objectives for the Nation (USDHHS 1980) report was published which discussed the current status and trends concerning each of the priority areas mentioned in the Surgeon General's Report and gave quantifiable goals to be achieved by 1990. Among the nutrition objectives were decrease the proportion of pregnant women having iron deficiency anemia; decrease the prevalence of significant overweight in the population; reduce sodium intake; and decrease serum cholesterol in adults and children. Additional goals were to increase public and professional awareness of nutrition problems; improve services and protection (e.g., nutrition labeling); and to improve surveillance/evaluations systems.

In 1986, a midcourse review of the 1990 objectives (USDHHS 1986) was released that assessed progress towards the goals. For some goals, such as improving weight loss and decreasing iron deficiency in pregnancy, progress could not be assessed as new data were not available from the NNMS. For other goals, baseline data were not available. One area that showed improvement was a decrease in serum cholesterol from mean intakes of 223 mg/dl to 215 mg/dl for women.

Two years later the Surgeon General's office released a second report, "Surgeon General's Report on Nutrition and Health" (USDHHS 1988). It identified key nutrition research issues, provided documentation on the current state of knowledge concerning these issues, and evaluated the implications these data had for public health policies. The 712-page report presented for the first time the consensus of the Public Health Service of the USDHHS on the scientific evidence that links specific dietary factors to specific chronic disease conditions. The report stated that for the two of three adults that neither smoke nor drink excessively, the one personal choice that affects long-term health prospects more than any other was the amount and type of food consumed (Nestle 1988).

The Surgeon General's report divided nutrition concerns according to population needs. The issues of concern for most people were listed as: reducing consumption of fat (especially saturated fatty acids) and cholesterol, and achieving and maintaining a desirable body weight. Issues of concern identified in the 1988 report were that adolescent girls and adult women should increase consumption of foods high in calcium; children, adolescents, and women of childbearing age (especially those residing in low-income households) should increase intake of iron-rich foods (USDHHS 1988). In summary, the Surgeon General's Report on Nutrition and Health provided overwhelming evidence in support of the Dietary Guidelines, established reduction of total fat as the primary priority for dietary change, and distinguished recommendations that apply to the general public from those that apply only to specific population groups (USDHHS 1988).

The Healthy People 2000 program (USDHHS 1990) is an extension of the 1990 Health Objectives for the Nation. Originating with the U.S. Public Health Service, Healthy People 2000 is a broad-based initiative involving about 300 national membership organizations and all the Health Departments of the 50 states. Its goal, like that of the 1990 Health Objectives for the Nation, is to improve health of all Americans over the 1990's through an emphasis on disease prevention. Selected objectives from the nutrition area include: reduce overweight to no more than 20% in adults; reduce dietary fat to less than 30% of calories and saturated fatty acids to less than 10% of calories; increase complex carbohydrates to at least five servings of vegetables and fruit and at least six servings of grains daily; decrease salt and sodium intake; and reduce iron deficiency to less than 3% in women of child bearing age and children age one to four years (USDHHS 1990).

Women's Energy and Nutrient Intake in the United States

Trends in Fat Intake and Food Sources of Fat

Women's intakes from the 1965 HFCS to the 1986 CSFII show a 16% decrease in average caloric intake and an alteration in the composition of the diet. In 1965, women aged 18-55 years consumed approximately 44% of their calories in the form of fat. This decreased to between 37% and 38% by 1986. Protein intake remained fairly constant at about 16% to 17% of calories, while the contribution of carbohydrate to the diet has increased from 40% to approximately 46% of calories (USDA 1972; 1984; 1988a).

When women's intakes from the 1986 CSFII were compared to the 1-day intake collected in the 1965 HFCS, it was found that diets differed significantly. While the difference in data collection methodology must be considered, it appeared that a shift from animal sources of fat to vegetable sources of fats had occurred. This was combined with a decline in the consumption of some high-fat foods. Women in 1985 reported less whole milk intake, less meat consumed as entrees, and a decrease in egg consumption. Butter use had declined with a concomitant increase in the use of margarine.

During the same period, skim and low fat milk consumption increased substantially. Intake of mixtures that were mainly meat, fish and poultry (MFP) increased from 30% of MFP consumption in 1977 to 49% in the 1985-86 CSFIIs (USDA 1990). Grain products and beverage consumption (especially carbonated soft drinks) increased. Intake of fats and oils decreased from 6% of total caloric intake to 5%. Generally, the women from higher-income households were more likely to make these food-consumption changes (USDA 1987a; 1988a).

The decrease seen in intake from the MFP group was especially significant. In 1965, MFP contributed 32% of calories; by 1986, this decreased to 22%. Total meat consumption by women aged 18 to 55 dropped from 198 to 152 grams per day during the same period. Poultry consumption decreased 9%, while the intake of seafood increased by 9% (USDA 1972; 1988a).

The largest decrease, however, was seen in the intakes of beef and pork. The 1985 CSFII separately categorized high-fat meats (frankfurters, sausage, and luncheon meats) in the breakdown of meat consumption. When the intake from this meat group was combined with beef and pork groups, the total consumption of beef and pork decreased 55% between the surveys (USDA 1972; 1988a). As beef intake decreased, an increased consumption of meat with nonseparable fat, such as ground beef or hot dogs, was noted (Thompson et al. 1992).

Meat contains many nutrients, some in concentrations large enough that a decrease in meat intake makes it difficult to obtain the RDAs for certain nutrients. Specific nutrients that are concentrated in meat but found to be low in women's diets include vitamin B_6, zinc, and iron.

In 1985, the mean nutrient intakes of American women failed to meet RDAs for vitamin B_6, folacin, vitamin E, calcium, iron, magnesium, and zinc. Copper intake was below the Estimated Safe and Adequate Daily Dietary Intake (ESADDI) range. Although vitamin E intake almost met the RDA level, the intakes for vitamin B_6, folacin, calcium iron, magnesium, and zinc averaged 40% to 78% of the recommended intakes. Intakes of these same nutrients were below the recommended levels whether women were grouped by income, race, region, or urbanization (USDA 1988a).

The 1988 Surgeon General's report (USDHHS 1988) concluded that the major health focus for the general population should be on decreasing the intake of dietary fats, especially saturated fatty acids. The 1985-86 CSFII noted that women's fat intake was generally above recommended NRC levels. Only 12% of women consumed fewer than 30% of their calories from fat while 10% met the goal of saturated fatty acid intake providing less than 10% of energy. In addition, the mean levels of calcium, iron, and zinc in these lower-fat diets were below levels in diets of other women (USDA 1988a).

Given the goal of decreasing fat intake, it is necessary to analyze where a population derives that intake before targeting any particular food or food groups as needing to be limited. Overall, in the past two decades there has been a decrease in visible separable fat consumption and an increase in "hidden fat" consumption through processed foods, fried foods and foods consumed in restaurants (Thompson et al. 1992). In reviewing the 1985 CSFII, Krebs-Smith and associates (1992) listed the food sources of fat in diets of women 19-50 in order of descending fat contribution. These were salad dressings, margarine, cheese, ground beef, luncheon meats/sausages, beef cuts, and poultry. Salad dressings provided more than twice the fat calories of beef cuts while margarine provided about 60% more.

The foods providing the largest percent of saturated fatty acids in the diet were cheese, 13.4%; ground beef, 7.8%; and whole milk products, 7.8%. Beef cuts provided 5.6%. Women with the highest saturated fatty acid intakes consumed butter/margarine more frequently, at greater serving sizes, and chose butter and highly saturated fatty acid margarines more frequently than did women with the lowest saturated fatty acid intakes (Thompson et al. 1992).

Food sources of fat tend to vary by age. One study found adolescents consumed more than 50% of their dietary fat in dairy foods, bakery products, and snack-type foods (Witschi et al. 1990). Women aged 19-50 years with the highest fat intakes consumed regular salad dressing and butter/margarine more frequently and in greater serving sizes (Thompson et al. 1992).

Georgiou and Arquitt (1992) analyzed fat intakes of 199 undergraduate women at two universities. The subjects were divided into two groups based on their eating habits. One group consumed less than 30% and the other group consumed greater than 30% of daily calories from fat. The investigators found that five food-fat categories accounted for more than 40% of daily per capita fat intake in each group. For those consuming less than 30% of their calories in the form of fat, the percent of contribution to total fat intake were from higher-fat categories: cheeses; salty snacks; desserts; grain products; and lunch meats. The categories for the group consuming greater that 30% of their calories from fat were higher fat desserts, cheeses, grain products, salty snacks, and butter or margarine. Individuals in the low-fat group ate fewer grams of fat from these food-fat categories than subjects in the high-fat group and also consumed fewer grams of fat from salad dressings. Low-fat group members also more frequently excluded foods from higher fat cheeses, potatoes, and salad dressings as well as butter/margarine and higher fat beef and pork cuts. In this study, it appeared that individuals who ate small amounts of high-fat foods and substituted low-fat varieties of higher-fat, nutrient-dense foods such as meat were able to meet the NRC guideline for total fat intake.

The National Research Council (1989b) has made two recommendations that concern meat intake, namely: decrease fat intake (by limiting meat intake or using lean meats) and limit dietary protein to two times the RDA. Their report, Diet and Health, did not state that meat was to be avoided or that animal protein in the diet should come only from poultry or fish. However, other health-related professional organizations have made these recommendations.

The Women's Health Trial (WHT), a feasibility study for a trial of low-fat diets for the prevention of breast cancer, was conducted in Seattle from 1985-88 (Kristal et al. 1992). Subjects were taught five concepts designed to reduce fat in their diets; the first was to avoid fat as a flavoring. The second concept was to avoid consumption of beef, pork, and lamb, regardless of respective fat content. In addition, study participants were instructed to avoid meat sauces on pastas. On the average, fat intake of the subjects dropped from 40% to 27% of total energy intake during the study. Caloric intake of those most successful in decreasing their fat intake (18.2% of total calories) had an average daily intake of 1284 calories (Burrows et al. 1993).

Low caloric intakes are strongly associated with marginal to inadequate nutrient intakes. Although in the WHT study subjects were strongly recommended to avoid all red meats, study results did not provide nutrient intake data for meat-associated minerals such as magnesium, copper, or zinc. Study participants averaged 55 years of age. Individuals that achieved the lowest fat intake had an average total iron intake of 13.0 mg/d. This is adequate for older women but would fail to meet the RDA for premenopausal women. Reduction or elimination of red meat from women's diets would be expected to significantly reduce iron bioavailability resulting in a reduced iron absorption. Standardized data from an iron intake study using young women subjects

(Johnson and Walker 1992) showed that with identical total iron intakes, subjects' retention and absorption of iron when consuming 3 ounces of beef daily was 154% of that found when consuming a vegetarian diet. Increasing the beef intake to 6 ounces daily resulted in an absorption level 226% of that found in the vegetarian diet.

Finally, the WHT study noted that when subjects tended to return to previous high-fat dietary intake patterns, they did so in the area of added fats and oils, not in red meat consumption (Burrows et al. 1993). Fats and oils provide none of the essential nutrients that were not measured (i.e., copper, magnesium, and zinc) but could be expected to be low in the diet.

Although total avoidance of meat is not a commonly used guideline, the avoidance of red meat intake to decrease fat consumption is frequently recommended. In 1988, the National Cancer Institute issued dietary guidelines designed to promote consumption patterns associated with reducing cancer risk and enhancing health. A study by Patterson and Block (1988, p. 284) following these guidelines considered red meat and any mixed dish containing red meat, regardless of amount, to be associated with an increased risk for developing cancer, but poultry and fish were "believed to have a protective effect against cancer."

Buzzard and associates (1990) reported results of a study designed to reduce postmenopausal women's fat intake to 15% of total caloric intake. The dietary intervention emphasized substituting low-fat foods for medium and high fat foods. All red meats were listed as medium or high-fat selections. During the study, poultry consumption increased 74%. Caloric contribution from fat dropped from 42% to 23% of calories and serum cholesterol dropped 7.7%. However, intakes of zinc and magnesium were significantly reduced, with zinc dropping from 84% to 68% of RDA and magnesium decreasing from 92% to 82% of the RDA.

In some studies, a low-fat intake has been associated with a low intake of nutrients linked to meat intake, such as iron, zinc, and magnesium (Buzzard et al. 1990; USDA 1988a). The studies, reported by Buzzard and coworkers and by Kristal and cohorts (1990; 1992), indicated the use of several strategies to lower fat intake. It is not possible to know which strategy, if any, was more effective in decreasing serum lipid levels. Obviously, if reducing fat intake from nutrient-poor sources is effective, it should be the method of choice. Advocating avoidance of a nutrient-dense food like meat is not a health benefit to women whose intake of nutrients present in meat, i.e., iron and zinc, is already low.

At present, the best indicators of the influence of dietary fat in risk of heart disease are serum lipid levels. Worthington-Roberts (1987) looked at the major dietary protein sources and their association with serum lipid levels in 72 non-pregnant, premenopausal women. The women were divided into three groups: those who consumed mainly fish and poultry, those who used red meat at least five times weekly, and those who were ovo-lacto vegetarians. There were no significant differences among the groups in terms of daily intake of calories or fat. Although red meat consumers obtained almost one fourth of their daily fat intake from red meat, blood tests revealed no significant differences among the groups for total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides, or HDL2 and HDL3 subfractions. However, women consuming red meat showed superior iron status (demonstrated by serum ferritin levels) even though their total daily intake of iron was not significantly different from the other groups. Those consuming fish and poultry showed the highest frequency of reduced iron stores.

In summary, it appears there are numerous ways to lower fat intake or serum lipid levels in women without severely limiting red meat as a protein source. Various studies have indicated that reduction of meat intake not only lowers fat, but also lowers intakes of nutrients such as iron, zinc, and magnesium. Additionally, individuals using poultry and fish in place of red meats demonstrate a higher incidence of low iron stores. Finally, there are several techniques to lower fat consumption in women's diets that would not adversely affect intake of iron, zinc, or magnesium.

Study of women's current dietary patterns indicates that decreasing the intakes of nutrient-poor foods such as salad dressings, margarine/butter, snack chips, and heavy desserts could substantially reduce intakes of total fat and saturated fatty acids. Further reductions could be achieved by substituting low-fat salad dressings, margarines, dairy products (including cheeses), and lean meats for the higher fat varieties. A large percentage of the fat found in meat can be reduced by judicious selection of well-trimmed meat and use of low-fat cooking techniques. In addition, meat production and food processing industries have produced many low-fat meat products and made substantial progress in the last 10 years in breeding animals with less carcass fat (NRC 1988). These newer meat products have necessitated that the UDSA update their nutrient data base files (USDA 1988b) to reflect the lower fat composition present in today's meats. Consumers, especially women, should be made aware of all the alternatives which decrease fat intake without compromising nutrient consumption and without having to avoid meat, especially red meat.

Much of the concern about decreasing red meats in the diet arises from their higher concentration of SFAs when compared to poultry or seafood. At one time all SFAs were thought to increase plasma cholesterol and platelet aggregation, both risk factors for coronary heart disease. Stearic acid comprises 28%-34% of total SFAs in beef and pork. Recent studies (Kris-Etherton et al. 1993) indicate that stearic acid has an independent plasma total cholesterol and LDL-cholesterol lowering effect. Their findings also suggest that stearic acid, unlike other SFAs, does not promote thrombosis.

Marginal Nutrient Intakes in Women's Diets

The high level of fat and saturated fat intake in women's diets was not the only nutritional concern revealed by study of the 1986 CSFII data. Vitamin B_6, calcium, iron, magnesium, and zinc intakes met only 73%, 78%, 67%, 73% and 73% of respective RDAs. Copper intake was 67% of the lowest value in the ESADDI range. With the exception of calcium, meat products provide significant amounts of these nutrients.

Meat, fish, and poultry products provided 17% and 20% of daily intake for magnesium and copper, respectively. Iron, vitamin B_6, and zinc intakes in the 1986 CSFII were strongly affected by meat consumption; MFP provided 26%, 32%, and 45% of respective mean daily intakes (USDA 1988a). To assess the impact of meat intake on women's nutritional and health status, the role of each nutrient should be reviewed.

Vitamin B_6

Pyridoxal-5'-phosphate (PLP), the biologically active form of vitamin B_6, is a coenzyme in more than 50 mammalian enzymes used in amino acid and carbohydrate metabolism and nervous system functions (Cochary et al. 1990).

Dietary sources. Women aged 19-50 obtain about 32% of their vitamin B_6

intake from MFP, 23% from grains, and 30% from fruits and vegetables. Both age and race are factors that affect the level of intake from specific food groups. Vitamin B_6 data described in NHANES II (Kant and Block 1990) showed that white women received more from plant sources than did black women (54% versus 47%, respectively). Manore and coworkers (1990) found that for elderly low-income Caucasians, the fruit and vegetable group was the largest contributor of vitamin B_6 (0.69 mg/d) while flesh foods and cereals/grains contributed equally to intake at 0.35 and 0.34 mg/d, respectively (21% of intake). Fortified breakfast cereals contributed 18% of total daily intake, but the bioavailability was only 18% to 44% (Kant and Block 1990).

Requirements. Vitamin B_6 is needed for catabolism of amino acids. Hence, the RDA for vitamin B_6 is related to protein intake and was set assuming a protein intake of 100 gm for adult women or a ratio of vitamin B_6 to dietary protein of 0.016 mg/g (NRC 1989a). Since women's actual average protein intake is approximately 60 g/d, it may be that the low intake levels seen in women are not indicative of actual deficiency.

Requirements for vitamin B_6 increase to 2.2 mg/d in pregnancy and 2.1 mg/d in lactation. The requirement may also increase with age (Kant et al. 1988; Manore et al. 1990; Lowik et al. 1989). Cochary and coworkers (1990) found a high incidence of subclinical biochemical vitamin B_6 deficiency in the elderly based on low plasma PLP concentration. One study (Ribaya-Mercado et al. 1991) concluded that the vitamin B_6 requirements of elderly women are about 1.9 mg/d. In their study, two of three subjects did not experience a decrease in vitamin B_6 requirement when ingesting low levels of protein.

Average intake of U.S. women. Actual intake for women in the 1986 CSFII met only 73% of the 1980 RDA of 0.02 mg/g protein. Caucasian women appeared to have a higher total vitamin B_6 intake than African-American women (1.16 mg/d versus 1.02 mg/d); however, they consumed a greater proportion of foods that had low levels of vitamin B_6 bioavailability (Kant and Block 1990).

Bioavailability. Bioavailability of vitamin B_6 from animal products is high, reaching 100% for many foods. In general, plant foods have a low bio-availability. The presence of fiber reduces availability by 5% to 10%, but the presence of pyridoxine glucoside reduces it by 75% to 80% (Reynolds 1988). The amount of pyridoxine glucoside in plant foods appears to be the major determinant of vitamin B_6 bioavailability. Kabir and associates (1983) noted that the higher the content of pyridoxine glucoside in the diet, the higher the excretion of the unmetabolized glucoside in the urine and the lower the vitamin B_6 status of the subject. Some of the foods with the highest level of glucoside are the crucifers, such as broccoli, cabbage, and cauliflower. The NCI recommendation to increase consumption of crucifers may result in compromised vitamin B_6 intake, especially when associated with women's already marginal intake (Kant and Block 1990; Reynolds 1988). It is not known if the presence of foods with a high pyridoxine glucoside content in a mixed meal has a negative effect on the bioavailability of the nonglycosylated vitamin B_6 in a meal.

Assessing vitamin B_6 status. In the past, plasma PLP concentration was the main indicator of vitamin B_6 status. This measure may not be the best method to use (Leklem 1990; Vermaak et al. 1990) now that other methods are available. Leklem (1990) recommended the use of several indices to evaluate vitamin B_6 status including plasma PLP, urinary 4-pyridoxic acid, and an additional indirect measure such as the tryptophan load test. Additionally, a three to six day dietary intake record should be taken and analyzed for vitamin B_6 and protein intake.

Computer analysis of a dietary vitamin B_6 contribution is complicated by the fact that presently there is no database that lists the amount of either the nonglycoslyated or the less bioavailable glycosylated form. The percentage of the glycosylated form in a food item may change upon storage (Reynolds 1988). The accuracy of diet records is also in question. It has been estimated (Nelson et al. 1989) that between 9 and 15 days of food records are required in order to classify an adult correctly into the top or bottom quartiles of distribution of intake for vitamin B_6. Finally, existing nutrient data bases are not complete. In the 1986 CSFII, analytical values were available for only 70% of important sources of vitamin B_6 (Hepburn 1987).

Vitamin B_6 deficiency and supplementation. Symptoms of vitamin B_6 deficiency include eczema and seborrheic dermatitis, cheilosis, glossitis, angular stomatitis, anemia, hyperirritability, convulsive seizures, abnormal electroencephalograms (EEGs) and impairment of immune system function (Kretsch et al. 1991). Deficiency in rats has been shown to increase lipid peroxidation and decrease levels of antioxidants in the kidney, leading to formation of kidney stones (Ravichandran and Selvam 1990).

The most common manifestations in humans have been central nervous system changes and abnormal EEGs. One study by Kretsch et al. (1991) noted that within 12 days on a vitamin B_6 depletion diet two of eight healthy young women exhibited abnormal EEG readings. These were readily reversed by repletion of vitamin B_6 at the 0.5 mg/d level. In these subjects, biochemical measures reflected lowered B-6 status, but were not predictive of EEG changes.

Meydani and associates (1991) found that vitamin B_6 deficiency in otherwise healthy elderly adults impairs interleukin-2 production and peripheral blood lymphocyte proliferation of both T and B-cell mitogens. These impairments were reversed with vitamin B_6 repletion, but reversal required higher levels of the vitamin than the current RDA for the age group.

In 1980, 30% of adult Americans took supplements containing vitamin B_6 (Stewart et al. 1985). Median intake among users was about 140% of the RDA. Pregnancy and lactation increase vitamin B_6 requirements. Mangels and coworkers (1990) found mean daily vitamin B_6 intake to be 1.45 mg/dl for a study group of lactating women (2 months post-natal). This is less than 70% of the RDA. Supplementing lactating women with vitamin B_6 at 2.5 or 4.0 mg per day during lactation maintained maternal plasma PLP concentrations at the levels of nonlactating women and increased the concentration of vitamin B_6 in the milk (Chang and Kirksey 1990; Moser-Veillon and Reynolds 1990) Supplementing vitamin B_6 at or below the RDA appears to have no adverse effects (Bassler 1988). Some studies, however, have found ingesting large quantities of vitamin B_6 over a period results in neurological symptoms such as ataxia, impaired sense of touch, and absence of limb reflexes (Schaumberg et al. 1983; Dalton and Dalton 1987). These symptoms may be only partially reversible when vitamin B_6 intake is reduced to normal levels.

Trace Mineral Intake

Iron, zinc, copper, and magnesium are all metals that can exist as divalent cations. Although their content in the body is low, usually only a few grams, each is involved in multiple enzyme systems essential for human metabolism. Copper and magnesium have been studied only recently and relatively little is known about their function. Even in iron metabolism, which has been the object of analysis for several decades, many questions about function remain unanswered. A brief review of each nutrient and its role in women's metabolism follows.

Iron

Iron is required for the transport of oxygen and carbon dioxide, and is a component of various tissue enzymes essential for energy production and proper immune system function.

Dietary sources. Iron is found widely in the U.S. food supply in meats, eggs, vegetables, and cereals, especially fortified cereal products. In the mid-1940's the iron in the food supply increased as iron enrichment of flour was introduced and reached 17 mg/person/day by 1985. In 1986, the average iron intake of women aged 19-50 in the United States was 10.0 mg per day. Of this amount, 26% came from MFP group and 43% from grain products (USDA 1988a). NHANES II food consumption data revealed that 25% of daily intake was provided by iron added to foods mainly cereals as fortification or enrichment (NRC 1989b).

Requirements. The median daily iron requirement for absorbed iron set by the NRC is 1.5 mg for 90% of menstruating women. The other 10% will require at least 2.2 mg (NRC, 1989a). Hallberg and Rossander-Hulten (1991) suggested that to meet the needs of 95% of women, the intake of absorbed iron should be even greater, 2.84 mg/d for adults and 3.21 mg/d for adolescents. Women taking oral contraceptives require only 1.89 mg/d of absorbable iron while those using intrauterine devices (IUDs), which promote extra blood loss in menstruation, need 4.78 mg/d.

Pregnancy increases women's need for iron. This is reflected in the increased RDA of 30 mg/day. A woman's ability to absorb iron increases dramatically in the last two trimesters of pregnancy. Whittaker and coworkers (1991) found iron absorption increased from 7.6% at 12 weeks gestation to 37.4% at 36 weeks.

Another factor that increases iron requirements is sustained exercise. Overt anemia is not common; however, depletion of body iron stores is found in 40% to 50% of adolescent female athletes (Rowland 1990). In general, women can expect to lose about 1.4 mg/d in feces, urine, and sweat, however, in the athlete iron losses are increased to 2.3 mg/d (Weaver and Rajaram 1992).

Average intake of U.S. women. Although iron density of U.S diets is about 7 mg/1000 calories for men, women, and children, the lower caloric intake of women, plus their increased need, places them at high risk for inadequate consumption. Data from NHANES I and II and the 1986 CSFII indicated that women's iron consumption ranges from 9.2 to 10.8 mg/d with over 95% of premenopausal women failing to meet the RDA. Dietary iron density does not appear to vary by race or socioeconomic status. However, the lower caloric intake seen in some racial and lower socioeconomic groups results in lower total iron intake.

A low level of iron intake is reflected in low iron stores. NHANES II found body iron reserves averaged about 300 mg in menstruating women and 600 mg in postmenopausal women. There was an absence of iron stores in > 20% of menstruating women and > 5% of postmenopausal women, a strong indication of potential iron deficiency (Carpenter and Mahoney 1992). Estimates from NHANES II for prevalence of iron deficiency in women of child-bearing years ranged from 2.4% to 14%.

Bioavailability. Dietary iron is divided into two forms, heme iron found only in animal tissues, and nonheme iron found in plant and animal foods. The proportion of heme iron in animal tissues varies, but appears to average about 45%. It is highly absorbable, up to 35% or more, compared to nonheme iron absorption which ranges from 3% to 11%. The level of heme iron in the diet, not the total intake of iron is the best single indicator of iron status (Wisker et al. 1991).

Nonheme iron absorption is enhanced by the presence of ascorbic acid and animal protein in the form of MFP (Hallberg and Rossander-Hulten 1991; Hunt et al. 1990; Carpenter and Mahoney 1992). Inhibitors of nonheme absorption include dietary fiber, calcium, phytate, and tannins. A final dietary consideration of nonheme absorption is that most compounds used for iron fortification are only partially soluble and are thus only partially available for absorption in the GI tract. Heme iron is absorbed by the intestinal mucosa as the intact heme complex. The only dietary factor affecting its absorption is the presence of MFP protein, which promotes absorption (Carpenter and Mahoney 1992).

In addition to diet composition, iron absorption is affected by the individual's iron status. The physiologic capacity to both absorb and utilize both heme and non-heme iron is highest when iron status is low (Carpenter and Mahoney 1992). An individual with 300 mg of iron stores will need ingest about twice as much total iron as a person with no iron stores in order to absorb an equivalent amount.

Assessing iron status. Serum ferritin appears to be the best single indicator of iron stores, and low values provide an early warning of potential problems (Skikne et al. 1990). In the NHANES II data, 25% of women aged 20-44 had serum ferritin values equal to or less than 14 µg/dL (normal range 20 - 200 µg/dL). Guyatt and cohorts (1990) found that serum ferritin values less than 18 µg/dL increased the probability of iron deficiency in the elderly to over 95%.

Hemoglobin concentration is used as a measure to determine degree of iron deficiency once iron stores are depleted. There is a day-to-day variation in blood values. While one measurement is sufficient for hemoglobin, it takes three to ten independent measurements to accurately determine serum ferritin (Borel et al. 1991).

Iron deficiency and supplementation. Dietary iron deficiency is considered to be the most common nutritional deficiency in the United States (USDHHS and USDA 1989). The symptoms most frequently appearing are pallor, weakness, fatigue, and dysnepia. Increased sensitivity to cold, palpitations, gastrointestinal tract abnormalities, and reduced work capacity are also seen. Even a mild iron deficiency, one not reflected by hemoglobin levels, may have significant health consequences and affect capacity for work or exercise (Carpenter and Mahoney 1992; NRC 1989a; Rowland 1990; Lukaski et al. 1991). Iron deficiency anemia is observed mainly at times of increased need: in early childhood, six months to four years; in the rapid growth of early adolescence; and during female reproductive period and during pregnancy.

Iron deficiency strongly affects immune system function and may result in lowered protein synthesis in immunological important tissues. Thymic atrophy and reduced cellularity of the thymus have been seen in iron deficiency and these symptoms are not reversed with iron repletion (Sherman 1992). In neonates, splenic development is retarded. Iron is needed by neutrophils and lymphocytes for optimal function, and in a deficiency state the lymphocyte proliferation response to mitogens and antigens is impaired (Chandra 1992). Iron-deficient infants have an increased incidence of infectious diseases and respiratory and gastrointestinal tract infections. The incidence can be reduced by up to 50% with iron supplementation.

There are three phases of iron deficiency anemia. The first is depletion of storage iron, detected by a decrease in serum ferritin. The second phase occurs when iron stores are depleted to the point that levels of functional iron become compromised. At this time transferrin saturation rapidly decreases and erythrocyte protoporphyrin rapidly increases, but hemoglobin levels may remain constant. The last phase is overt anemia, detected by lower than normal hemoglobin levels (Carpenter and Mahoney 1992; Hallberg and Rossander-Hulten 1991). The incidence of the first two phases is substantially higher than the overt deficiency (NRC 1989a).

Iron deficiency and anemia during pregnancy may have repercussions for many years. Iron deficiency anemia in pregnancy has been associated with large placental weight and a high ratio of placental weight to birthweight (Godfrey et al. 1991). Barker and associates (1990) noted that adults having the highest blood pressures (both systolic and diastolic) were born having heavy placentas and lower birthweights than might have been expected from placental weights.

While iron deficiency is far more common than iron toxicity, recently, evidence has emerged that high levels of body iron stores may result in health risks. A Finnish study (Salonen et al. 1992) showed that in men aged 40-60, those with serum ferritin equal to or greater than 200 mg/dl, had a 2.2 fold increase in risk of acute myocardial infarction compared with men with a lower serum ferritin. This association was stronger in men with Low Density Lipoprotein (LDL) concentrations above 193 mg/dl. This factor, while of interest to a small percent of postmenopausal women, does not greatly concern pre-menopausal women whose plight is lack of iron stores, not their excess.

Supplemental iron was consumed by about 22% of the adult U.S. population and 56% of all supplement users. Intake of supplemental iron was about 120% of RDA but was not in a readily absorbable form (Stewart et al. 1985). Iron supplements often cause gastrointestinal distress, making it difficult for women, especially pregnant women, to consume them.

Zinc

A component of more than 70 enzymes, zinc is essential for protein synthesis, wound healing, immune function, and growth and maintenance of tissues. Despite its many functions, the human body contains only two to three grams of zinc.

Dietary sources. The amount of zinc provided by the U.S. food supply has varied between 11 and 13 mg/d/person since the start of the century (Moser-Veillon 1990). Meat, fish, and poultry are concentrated sources of zinc and contribute about one half the zinc in the U.S. diet. Within this food group, beef contributes over half of the zinc intake (Gallaher et al. 1988; Sandstead 1991). In 1985, the general population received 49% of zinc intake from MFP, 19% from dairy products, and 13% from grain products (USDHHS and USDA 1989). Women, however, received only 45% of zinc from MFP, 14% from dairy foods, and about 23% from grains (USDA 1988a). This is a significant difference as zinc from animal sources is more bioavailable than from plant sources.

Requirements. The 1989 zinc RDA established for women was 12 mg/d, increasing to 20 mg/d in pregnancy. The recommendations were based on balance studies indicating an average requirement for absorbed zinc of 2.5 mg/d and an absorption factor of 20% (NRC 1989a). Adding an increment as a safety factor may have resulted in a high recommendation (Mertz 1987).

Pregnant women are at risk of zinc deficiency as fetal requirements for zinc increase 50-fold during the last two trimesters of pregnancy (Repke 1991). An evaluation of the reported zinc content of self-selected diets of young women (Sandstead 1973) suggested that 20% to 43% of the subjects would have been at risk of zinc deficiency if they had been pregnant.

Serum zinc concentrations in the pregnant adult are physiologically lower during the last two trimesters due to the normal 30% to 50% increase in total blood volume (Dawson et al. 1989). Levels of maternal zinc concentration below normal hemodilution have been linked to an increased risk for congenital malformations, intrauterine growth retardation and pregnancy-induced hypertension (Repke 1991). Low levels of zinc concentration in amniotic fluid have been associated with an increased risk of intra-amniotic infection.

Maternal serum zinc was significantly related to birth weight in studies by Neggers and coworkers (1990,1991). They found for each µg/dL increase in serum zinc, birthweight increased. Serum zinc levels of less than 60 µg/dL late in pregnancy were associated with greater than a five-fold increase in risk of delivering a low birthweight infant. In an attempt to avert these negative outcomes zinc supplementation during pregnancy has been tested.

Zinc supplementation of 30 mg/d reduced the rate of premature delivery by 32% in low-income pregnant teens and nearly eliminated the need for respiratory assistance of newborns (Cherry et al. 1989). Hunt and coworkers (1984) found zinc supplementation significantly reduced the risk of pregnancy-induced hypertension. Oral zinc supplements given to women at risk of delivering low birthweight infants (Simmer et al. 1991) significantly reduced the incidence of intrauterine growth retardation. In addition, the number of inductions and cesarean sections decreased.

Average zinc intake of U.S. women. In the 1986 CSFII the average intake of zinc for women aged 19-50 was 8.7 mg per day, or 58% of the 1980 RDA. The mean intakes of zinc were lower for African-Americans than Caucasians, for poor as opposed to rich and for individuals having a lower level of education (USDA 1988a).

Bioavailability. Zinc status is subject to strong homeostatic regulation. Small amounts are more efficiently absorbed than larger ones, and individuals with poor zinc status absorb the mineral more efficiently than those with good zinc status (NRC 1989a). The degree of zinc absorption also depends on diet composition. Dietary facilitators to zinc absorption include digestible dietary protein, histidine, cysteine, citrate, and picolinate (Sandstead 1991). Sandstroem and associates (1989) noted the the total zinc content of a meal was an important factor influencing the amount of zinc absorbed.

Dietary inhibitors of zinc absorption include phytate, oxalate, some components of dietary fiber, phosphopeptide products from the digestion of caseins, ferrous iron, calcium, copper, and cadmium. The most potent inhibitor of zinc absorption identified so far is phytic acid (Sandstroem 1986). In diets where whole grain cereals account for less than 30% of the total energy intake, as in the United States, phytic acid probably has minor effects on zinc supply (Sandstroem 1986). Strict vegetarians, however, may experience some problems with zinc absorption.

Assessing zinc status. Currently, no sensitive indicator for zinc status has been identified. Serum zinc, which is commonly used, is not a reliable indicator of zinc status because factors other than zinc deficiency, such as infection, inflammation, or acute inflammatory response, can influence its level (USDHHS and USDA 1989).

Zinc deficiency and supplementation. Low zinc status has been reported to be associated with depressed growth, delayed sexual maturation, and impaired taste function in small groups studied the the U.S. (USDHHS and USDA 1989). Severe zinc deficiency characterized by hypogonadism and dwarfism has been observed in the Middle East. Other manifestations of zinc deficiency include alopecia, diarrhea, emotional disorders, weight loss, neurosensory disorders, and problems with immune system function (Kuramoto et al. 1991).

Dietary zinc deficiency impairs both humoral and cellular immune functions. Altered humoral response in zinc deficiency is manifested in: increased susceptibility to a number of infectious diseases; lymphoid atrophy, decreased delayed cutaneous hypersensitivity responses; and lower thymic hormone activity (Chandra 1992). Cellular immunity is decreased due to thymic atrophy and loss of T helper cell function (Sherman 1992; Bogden et al. 1988).

During aging both immunologic function and zinc status are diminished. A study of both young and elderly subjects (Wisker et al. 1991) found zinc absorption on zinc-adequate diets was 39% in young adults and only 21% in elderly subjects. Bogden and cohorts (1988) found >90% of their elderly subjects had zinc intakes below the RDA, and the incidence of anergy to a panel of skin-test antigens was 41%.

Estimates of human zinc requirements at different times in the life cycle, the zinc content of human diets, and the evidence that phytate and other factors can impair the utilization of dietary zinc suggest that the risk of the zinc deficiency increases as economic resources and the availability of a varied diet decrease (Sandstead 1991; Ferguson et al. 1989). However, analysis of zinc data from NHANES II found a 3.3% incidence of low serum zinc in children aged three to eight, irrespective of income (Pilch and Senti 1985).

In 1980, an estimated 13.5% of the adult population used supplements containing zinc (Stewart et al. 1985). The median intake from supplements was 50% of the RDA. About 5% of supplement users had intakes three times the RDA, a level that could interfere with copper metabolism.

Copper

Although found in a variety of enzymes, the extent of copper's role in metabolism is just beginning to be elucidated. The level of copper in the food supply has declined by 19% between 1909 and 1985 to a level of 1.7 mg/d. In 1985, the food groups contributing the major share of copper were MFP, 21%; vegetables, 20%; grain products, 18%; and legumes, nuts, and soy, 18% (USDHHS and USDA 1989). Organ meats are the richest sources of copper in the diet, followed by seafoods, nuts, and seeds.

Copper has an estimated safe and adequate daily dietary intake (ESADDI) of 1.5 to 3.0 mg/d for adults. It is estimated that copper losses from the body surface are less than 0.1 mg/d while urinary and fecal losses are about 1.3 mg/d. The intake of copper is low, averaging about 0.9 mg for women from 1982-1986 (Pennington and Young 1991). The intake of copper in women aged 19-50 years was 1.0 mg/d in the 1986 CSFII and over 90% of women had intakes below the ESADDI (USDA 1988a).

Intake estimates for copper are uncertain because analytical data on the copper content of foods are lacking in the nutrient composition database for about 30% of food sources (USDHHS and USDA 1989). The NRC (1980) has noted that the remarkably steady tissue concentrations of copper in adults in the U.S. are probably an indication of a sufficient dietary intake and strong homeostatic control.

Copper absorption is increased or decreased in response to low or high copper intakes, respectively. The dietary factors that decrease copper bioavailability are ascorbic acid, zinc intakes above the RDA, and the presence of fructose in diet.

Copper deficiency in humans is rare but has been diagnosed in malnourished children in Peru, in premature infants, and as a result of overzealous zinc supplementation (Sherman 1992). Copper deficiency impairs function of the immune system. Animal studies show a reduction in the number of antibody-producing cells and a decrease in macrophage function (Chandra 1992). Copper-deficient infants have a high incidence of lower respiratory tract infections, which is reduced with copper supplementation. Early laboratory manifestations of copper deficiency include a low serum copper and decreased number of neutrophils.

In 1980, only 12% of the adult population consumed copper supplements. The median intake of copper from supplements was 67% of the upper limit of the ESADDI (Stewart et al. 1985).

Magnesium

Magnesium is required for bone formation and protein synthesis, energy release from muscle glycogen, and regulation of body temperature and blood pressure. It is essential in cyclic adenosine monophosphate-dependent membrane transport, glycolysis, and genetic transcription and translation. In addition, magnesium activates more than 300 enzymes. Found mostly in bone and muscle, only about 1% is present in the extracellular fluid and plasma levels seem to be under renal control.

Magnesium is present in all unprocessed foods but the highest concentrations are found in nuts, legumes, green vegetables, and unmilled grains. The magnesium content of the U.S. food supply has declined since the beginning of the century due to the increasing use of refined grain products. Currently the major sources of magnesium in food are dairy products, 20%; grain products, 18%; vegetables, 16%; MFP, 15%; and legumes, 13% (USDHHS and USDA 1989).

The RDA of 280 mg/d of magnesium has been set for women aged 19 and older, increasing to 300 mg/d in pregnancy and 340-355 mg/dl during lactation. These recommendations were based primarily on data from balance studies of young men (NRC 1989a) and may not accurately reflect women's needs. The 1986 CSFII showed women's average intake to be 205 mg/d (USDA 1988a). As seen with iron and zinc, mean intakes of magnesium are lower for African-Americans than for Caucasians; for persons with incomes below poverty levels; and for individuals with a lower level of education (USDA 1988a).

Average net magnesium absorption is about 40%-46% of intake and the presence of phytate or fiber may reduce magnesium absorption (NRC 1989a). Urinary, fecal, and serum magnesium levels have been used to determine magnesium levels, but they are not sensitive indicators of body status.

Pure magnesium deficiency is rare in humans and has not been reported to occur in response to low dietary intake (NRC 1989a), but it has been noted in alcoholic individuals, in those with prolonged vomiting and diarrhea, and in inpatients using magnesium-free total parenteral solutions. Experimental deficiency has caused such symptoms as altered mental status, irritability, and alterations in muscle function as demonstrated by electromyography. These alterations were in settings of concomitant hypokalemia and hypocalcemia, and it may be that the observed effects may not have been due to magnesium deficiency alone, but that magnesium is an important factor in both potassium and calcium homeostasis (Repke 1991). Magnesium supplementation is not common. Only 14% of the adult U.S. population consumed supplemental magnesium in 1980. Median intake from supplements was only 22% of the RDA (Stewart et al. 1985).

Factors Affecting Nutrient Intake and Absorption

Dietary analysis of food intake records, such as those used in the NFCS and CSFII, does not give a complete picture of nutrient intake. An individual's water supply and cookware may significantly impact their intakes of various minerals. Depending on the type of cookware used, daily intake could vary from 6 to 11 mg of iron; 9 to 11 mg of zinc, and 1 to 2 mg of copper (Reilly 1985). Drinking water and the pipes it runs through may also significantly enhance dietary content of one or more of these minerals.

Several factors act to influence nutrient absorption. A deficiency or oversupply of one nutrient may drastically alter the bioavailability of another. In addition, dietary fat and fiber intake can alter nutrient absorption. A review of some of these interactions is helpful in understanding nutrient intake and absorption problems.

Vegetarian Diets and/or High Fiber Intake

Predicting the degree of mineral absorption from a vegetarian diet is problematic, especially for iron and zinc. First, the foods that provide the highest density and most bioavailable sources of these minerals, i.e., animal products, are mostly omitted. Secondly, dietary fiber and associated compounds inhibit absorption. The actual fiber components appear to have a limited effect on iron bioavailability; the major inhibitors to absorption are the phytate and tannins associated with dietary fiber (Freeland-Graves 1988). Depending on their concentration in the diet, iron absorption from a Western-type vegetarian diet seems to range from 5% to 12% (Hallberg and Rossander-Hulten 1991).

A classic study by Reinhold and associates (1976) noted that when men were fed a high-fiber diet for 20 days they developed negative balances of calcium, magnesium, zinc, and phosphorus due to increased fecal excretion of each element. In a more recent study, looking at women's intakes, Mason and associates (1990) found that although a high-fiber diet led to a significant increase in dietary intake of zinc and iron, iron absorption was decreased.

Srikumar and coworkers (1992) found healthy nonsmokers who switched from a mixed diet to a vegetarian diet experienced a reduction in copper and zinc absorption although zinc intake remained stable. After 3 months on the diet, the serum, urine, and hair concentrations of zinc and copper deceased by 13% and 22%, respectively. The extensive use of soy products in vegetarian diets also decreases zinc bioavailability (Cossack and Prasad 1983). The substitution of soy protein for animal protein in a human diet has been shown to induce a negative zinc balance and a marginal deficiency of zinc.

One component associated with dietary fiber is phytate (myoinositol hexophosphate), the storage form of phosphorus. Phytate forms insoluble complexes with divalent cations such as zinc, iron, and calcium, reducing bioavailability significantly. The phytic acid content of a food, rather than dietary fiber, provides the major effect of decreasing mineral absorption (Naevert et al. 1985). Humans do not adapt to habitually high intakes of phytate. Researchers found through a study of iron absorption in vegetarians and nonvegetarians that wheat bran inhibited iron absorption equally regardless of diet (Brune et al.

1989). The phytic acid content of whole grain breads can be reduced by leavening, and the negative effect of phytic acid can be counteracted by a reasonable intake of animal protein (Sandstroem 1986). Coffee is an often overlooked source of phytate which could strongly impact mineral absorption (Harland and Oberleas 1985). Heavy coffee intake, especially of percolated coffee (which has a phytate: zinc molar ratio range of 5-40), could significantly inhibit mineral absorption.

Dietary Fat Intake

Low dietary fat intake may also negatively affect mineral absorption. A series of studies (Kies 1988) was conducted on the effects of two levels of total fat (30% and 40% of total calories) and two levels of cholesterol (300 mg and 600 mg) on absorption of minerals. The higher levels of dietary fat resulted in increased absorption of zinc and iron while higher cholesterol intake increased absorption of calcium as well as iron and zinc.

Vitamin and Mineral Interactions

Vitamin B_6 and minerals. Copper and zinc metabolism appear to be affected by vitamin B_6 intake. A metabolic study of young women (Turnlund et al. 1991) found that with a low to moderate vitamin B_6 intake (0.5 to 2.0 mg/d), zinc absorption averaged 27%. With vitamin B_6 depletion, however, zinc absorption increased to 40% but serum zinc declined, suggesting impaired zinc utilization. Copper absorption was also significantly lower during vitamin B_6 depletion (18.2%), but this did not appear to affect serum copper levels.

Calcium and iron. Calcium can inhibit iron absorption and the degree of interference depends partially on the calcium compound (Cook et al. 1991). When calcium and iron supplements are taken without food, calcium citrate and calcium phosphate inhibit the absorption of ferrous sulfate although calcium carbonate does not. All three calcium supplements inhibit the absorption of the iron supplement when taken with food, but inhibition is decreased when the meal contains foods with high-iron bioavailability.

Iron and zinc. Iron supplementation during pregnancy is common and may adversely affect zinc status (Dawson et al. 1989). Iron supplementation of 18 mg iron daily during teenage pregnancies resulted in zinc concentrations (adjusted for hemodilution) decreasing from prestudy levels by 35% in the third trimester while iron concentrations increased 38%. Subjects receiving a multivitamin supplement without iron had adjusted serum zinc concentrations that remained stable, but serum iron decreased to 28% below prestudy concentrations.

Yadrick and associates (1989) conducted a mineral supplementation study with women aged 25-40. Subjects in the zinc group received 50 mg/d, while those in the iron/zinc group received 50 mg iron and 50 mg zinc daily. After 10 weeks, the zinc supplemented group showed increased serum zinc levels, but iron and copper absorption were inhibited as demonstrated by significant decreases in serum ferritin, hematocrit, erythrocyte copper, and zinc superoxide dismutase (ESOD) levels. Those receiving both iron and zinc supplements showed significant increases in serum ferritin and serum zinc but ESOD decreased with treatment, as did salivary sediment zinc (p-value <0.05).

Zinc and copper. Although zinc supplementation can inhibit copper absorption, one study (Bodgen et al. 1988) found that supplementation of 100 mg zinc daily did not affect plasma copper levels if the supplement also provided 2 mg copper daily. When the effects of different zinc to copper ratios (2:1, 5: 1 and 15: 1) were compared (Wisker et al. 1991), it was found that the effect on absorption of the change in dietary zinc copper ratio was less than the effect of dietary restriction. Zinc absorption increased more after zinc restriction than after copper restriction, and copper absorption increased more after copper restriction that after zinc restriction, particularly in the elderly subjects. This suggests the existence of separate absorptive mechanisms for each metal.

Dosage Effect

Although many mineral supplements are given in excess of their respective RDAs, the higher dosage may not provide an increase in benefit. Powell and Tucker (1991) explored the use of a high-dosage (130 mg elemental iron), short-term (2 weeks) supplementation to improve iron status of iron-depleted female cross-country runners. The supplementation did not affect iron blood or metabolic parameters. A low level supplementation of iron (18-20 mg/d) over 6 months significantly improved individual's serum ferritin levels (Borch-Iohnsen et al. 1990).

Potentials for Bias in Nutrition Surveys

Food and Nutrient Data Collection Methods

Statistics concerning American women's average nutrient intakes are only as valid as the methods used to collect and interpret the data. There are multiple ways in which these processes can introduce bias and thus weaken, or even negate, the validity of the results or call for use of data adjustment methods.

The USDA studies previously described each used different methods to collect food and nutrient intake data. In the 1965 HFCS a 24-hour recall was employed. Researchers (Rizek and Pao 1990) have found that interviewer-administered 1-day and 2-day recalls have the smallest number of imprecise food descriptions and amounts and additionally require the least time per intake to review, code, and check. However, they provide lower energy intake values. One day dietary recalls cannot provide any day-to-day variation information or information on less frequently eaten foods.

Studies conducted after the 1965 HFCS indicated that provision of multiple days of intake would eliminate these short comings and led to the suggestion that a 1-day recall plus a 2-day food diary be combined to provide 3 consecutive days of data (Response Analysis Corp. 1976). Enhanced accuracy in reporting food amounts was facilitated by providing measuring cups, spoons, and a ruler to help respondents accurately describe food portions. These recommendations were implemented in the 1977-87 NFCS.

A second method, providing several days of nonconsecutive recall throughout the year, was utilized in the 1985 CSFII. In this survey each participant, following the 1-day interviewer-administered recall, was recontacted about every 2 months to give a 1-day record by phone for a total of 6 days of dietary intake. High attrition rates resulted in using only data from individuals who reported at least 4 days of intake. The 1986 CSFII only collected data for 4 days. The question of which provides a more accurate estimate of actual intake, consecutive days versus random day records had been explored by various researchers. In analyzing differences between 3 consecutive and 3 random days of intake records, Larkin and associates (1991) found that the random sample provided a slightly closer estimate of energy and nutrient intake than the consecutive day sample. However, for large study groups the difference was not critical. Tarasuk and Beaton (1992) also found that mean intake estimates derived from adjacent day samples were more likely to be biased than those based on randomly selected days. The major difference between random and adjacent day samples is the ability to capture within-subject variance associated with long-term patterns in the intakes of individuals. Within-subject variance exceeds between-subject variances and leads to a higher risk of Type 2 Errors in mean intake estimates.

After various validation studies, the USDA decided to utilize the 3-consecutive-day recall-record method for both the 1987-88 NFCS and the succeeding CSFIIs. This method allows for more precise descriptions of foods and amounts, and the interviewers are able to probe for detailed information and review and clarify records during the follow-up visit. Having records retrieved and reviewed by interviewers improved the response rate and decreased the demands on respondents' memory (Rizek and Pao 1990).

As a result of a validation study conducted after the 1977 NFCS, the USDA developed several new procedures including more detailed probing, development of a checklist of commonly overlooked foods, and more training in use of measuring utensils (Rizek and Pao 1990). In order to compare the effect of these differences between the NFCS 1977-78 and 1987-88, a Bridging Study was conducted in 1988 (Guenther and Perloff 1990). As both surveys were conducted by National Analyst under contract from the USDA, the basic format, flow, and content were quite similar. The differences were the addition of a series of probing questions to assist respondents in recalling food items that might be forgotten; the expansion of the Food Instruction Booklet used in the interview from 4 to 18 pages; and a greater emphasis in 1987-88 on probing for the trimming of fat from meat and removing skin from poultry. The 1988 Bridging Study concluded that the changes and improvements in interview procedures made between NFCS 1977 and 1987, including probes and coding procedures, had little effect on estimated intakes of all nutrients.

Errors and bias can be introduced by the interviewer by improperly recording or coding the information provided by the respondent. Other errors may result from the manner the interviewer phrases survey questions. Probing can lead to biased responses if probe questions are not strictly neutral. Even small changes in wording of questions can result in large differences in responses (Guenther and Perloff 1990).

The respondent also may provide flawed data. The under- or overreporting of intake is common (Guthrie 1989). This may be a random event which can occur with any and all individuals due to problems in estimating portion sizes or in having distorted memory (Dwyer et al. 1987). A more systematic bias may result when the respondent consistently over- or underreports the intake of specific foods or nutrients (NRC 1986). This may result from the respondent desiring to give a socially correct answer, e.g., showing lower consumption of alcohol, fat, or certain foods like candy bars or French fries. When the respondent does not feel threatened by the question, it appears the memory is the most important barrier to correct answers (Dwyer et al. 1987).

Other errors may arise if the respondent either forgets items or remembers them incorrectly (Guenther and Perloff 1990); if he does not understand the question or answers it in his own frame of reference (which may not correspond with what the interviewer had in mind); and finally, if the respondent does not know the answer but replies anyway.

Potential Errors in Interpretation

Even should the interviewer introduce no bias in the manner of asking questions and the respondent display perfect memory and accurate portion size recall, errors can be introduced due to coding procedures. Coding rules and conventions should be formalized, documented, and retained from one survey to another. Even then, coding retains an interpretive nature (Guenther and Perloff 1990).

Once the survey data have been coded, further opportunities for introduction of error or bias arise. The interpretation of nutrient intake data is influenced by the quality of the food composition data base used to calculate it. There are several ways in which errors may arise. The first is the random variability found due to differences in where the food was grown and under what weather, soil, fertilizer, and pesticide conditions (Guthrie 1989). Other sources of variability arise from changes in food composition during storage and processing. Finally, various geneotypes of a specific food may have significantly different nutrient profiles (e.g., high vitamin A carrots vs. normal carrots). Random variations in the food composition data can be estimated statistically. Other errors cannot.

Biased food composition data may result from incorrectly identifying a food. One concern is the use of generic data for a brand name product having a formulation that provides significantly different nutrient means. The science of assessing nutrients in food is not yet perfected and better analytical methodologies are constantly being sought. Currently, some methods may not measure all the chemical forms a nutrient may have in foods, thus under-reporting the foods' content of that specific nutrient. Other methodologies may respond to chemical compounds in addition to the nutrient of interest, resulting in overreporting. Finally, the presence of another chemical compound may interfere with the analysis.

In addition to errors that may result from less than perfect analytical methods, food composition tables generally have missing data for certain nutrients in certain foods; an example is vitamin B-12, for which correct data are available for only a few foods (Guthrie 1989). In such cases, the nutrient value is imputed from other foods felt to have a similar nutrient profile or from other forms of the same food (e.g., cooked vs. raw).

Currently, there are no data bases able to compensate for variations in bioavailability found with some nutrients such as iron and vitamin B_6. Recalling that up to 90% of vitamin B_6 when found in the glycosylated form may not be absorbed, individuals may be misclassified as having adequate intake when the low bioavailability actually results in an inadequate level of absorption.

The USDA Nutrient Data Bank (NDB) is a computer-based system for storing and summarizing nutrient values. This data base had been implemented, but was not fully operational when the NFCS 1977-78 began. Between the 1977-78 and 1987-88 NFCSs, the NDB was expanded in both number of food items and number of nutrients listed and is being constantly updated as new information becomes available. This updating includes two types of changes. The first encompasses real changes in the nutrient composition of foods, e.g., those resulting from the closer trimming of fat from cuts of meat at the retail level. The second type of change results from improvements in the quality of food composition data arising from improved food sampling techniques and newer or improved analytical techniques.

The difference these changes made in the 1977 and 1987 NFCS results was assessed in the 1988 Bridging Study (Guenther and Perloff 1990). For energy, fat, protein, carbohydrate, calcium, phosphorus, thiamin, riboflavin, niacin, and vitamins A and C, the data base changes did not significantly affect comparisons between the two studies. However, when comparing results for iron, magnesium, and vitamins B_6 and B_{12}, data base changes should be considered.

Most of the 15% increase seen between the two surveys for vitamins B_{12} resulted from higher vitamin B_{12} values for meat and fish in the 1987 data base and was largely due to improvement in analytical methods. Nutrient data improvements, especially for potatoes and meat, accounted for most of the 7% difference found in vitamin B_6 intakes.

Differences caused by changes in the nutrient data base were also statistically significant for both magnesium and thiamin. For magnesium, the difference was primarily caused by a large decrease in the magnesium value for coffee, which is consumed so frequently it can make a significant difference to magnesium intake, especially among women. Thiamin is widely found in foods; many items in the data base had small changes in thiamin contents, which accumulated to a 10% increase, with changes in meat and grain products contributing most to the increase.

The Bridging Study found that differences in iron values attributable to changes in nutrient data base from 1977 to 1987 were not statistically significant ($p < .07$) but did reflect major changes between the two surveys. Iron values for beef and pork items decreased due to improvements in analytical methods. However, these decreases were more than offset by a real increase in grain products, resulting from a change in enrichment standards and increased fortification (Guenther and Perloff 1990). In this case, the data base's lack of bioavailability information is critical. The higher consumption of low-bioavailable iron from grains may result in an increase in total iron intake. However, the lower consumption of red meat by women and, therefore, the decrease in intake of highly bioavailable iron, seen between 1977 and 1988, may result in less iron being absorbed.

Between 1976 and 1987 the food composition data base was updated to reflect actual changes in fat content of beef resulting from changes in beef trimming practices. An analysis of product changes between 1977 and 1987 and data base changes over the same time period with respect to fat content of foods (Perloff 1988) suggested that product changes made the greater contribution to the decrease in women's total fat intake observed between the 1977-78 NFCS and the 1986 CSFII. Changes in coding and probing procedures between the 1977 and 1987 NFCS appeared to have little effect on estimated intakes of total fat (Guenther and Perloff 1990).

In the 1987-88 NFCS the automated system for updating the nutrient data base was introduced. All survey food codes are linked electronically to the Nutrient Data Bank. Food codes for mixtures are linked through recipes, yield, and retention factors to the nutrient values of their ingredients (Perloff 1989).

Some of the most common sources of bias and error inherent in implementing a survey of dietary intake and evaluating the results have been noted. According to the Bridging Study, changes in the interviewing techniques, coding, and weighting procedures between the 1977 and 1987 NFCS did not significantly affect the ability to compare respective nutrient intakes although improvements in the nutrient data base did affect comparisons between selected nutrients. Improvements in the data base can be quantified and factored out. However, there are other sources of potential error that may affect the validity of a survey. These include systematic bias, where some individuals are not identified as part of the target population; sampling errors, caused by the selection of a subset of the target population for study (where persons selected may not be representative of the reference population); and by nonresponse. It is in these three areas that significant concerns are raised about the 1987-88 NFCS.

Areas of Concern in the 1987-88 NFCS

The Government Accounting Office (GAO) (1991) published a report on the 1987-88 NFCS. It addressed various methodological problems, deviations from the original survey design, and laxity of controls over data collection and processing. Quality control issues resulted from frequent staff turnover as some new staff received less training from the contractor than required by the contract. These problems led to a response rate of 38% at the household level and 31% at the individual level. Thus the most serious question examined was whether the survey results could be considered representative of the U.S. population from which it was drawn.

The 1987-88 survey had expanded the interview procedure significantly from 1977-78. For the average household the interview took about 3 hours. Households were given a token $2 for participation. In addition, between the 1977 and the 1987 surveys an increasing number of women entered the workforce. As women were traditionally the "household respondent" in USDA surveys, this limited both the interviewer's ability to contact them and the respondent's available time to participate in the survey. As a result of these and other factors, the number of selected households refusing to participate was high. The survey's design required an equal number of households be interviewed over the four seasons to correctly estimate and control for seasonal differences in eating patterns. Due to the low response rate in the first quarter of the survey, the sample size for subsequent quarters was increased and the data collection period was extended for a fifth quarter without an additional sample of households being drawn. Despite this attempt, the response rate was low.

In an attempt to determine if nonresponse biased the survey results, 1987-88 NFCS data on 13 demographic variables were compared to population distributions from the March 1987 Current Population Survey (CPS) of the Bureau of the Census (FASEB 1991). Because the NFCS was designed to be self-weighting, its unweighted data should match the CPS unless there were problems due to nonresponse. The analysis did show some statistically significant differences. These included: a larger proportion of individuals from economically poorer households and a smaller proportion from "richer" households; a larger proportion of individuals from households with two adults; a smaller proportion of women from households with working female heads; a smaller proportion of men and women from households with a female head under 41 years or age; and smaller proportions of participants 20-24 years of age and 15-19 years of age. These findings suggested there was underrepresentation of nontraditional families. As a result, nontraditional families in the survey were heavily weighted. If these respondents were not truly representative of nontraditional families in the U.S., severe bias could occur.

An independent Expert Panel assembled by the Federation of American Societies for Experimental Biology (FASEB) convened to assess the impact of nonresponse in the NFCS. This panel concluded that it is not possible, based on the information available, to establish the presence or absence of nonresponse bias. However, the potential for such bias is present, and it is not possible to determine the extent to which it may influence the interpretation of analyses using the 1987-88 NFCS data (USDA 1992b). Both the FASEB and the GAO did "not recommend use of the data" unless users employed the greatest caution.

To determine if level of participation in the survey affected nutrient intake values, the HNIS conducted a study comparing nutrient levels and food use among households, based on level of participation. Households that had provided responses at the household level but did not respond to the individual intake component were compared with households that responded partially or fully in the individual intake component. The mean nutritive value of household food used was not statistically significantly different by level of participation in the survey (FASEB 1991). Unfortunately, no information was available about characteristics of nonrespondent households that declined to participate in any degree.

If respondents and nonrespondents have systematically different behavior, then the 1987-88 NFCS results may be biased. Additionally, unequal numbers of interviews were obtained in different calendar months and on different days of the week, which could also provide biased data. For these reasons, the data from the 1987-88 NFCS, as all previous USDA surveys, were weighted. These weights were designed to yield estimates that match the population distribution of 13 demographic characteristics that are related to food intake behavior and to equalize interviews over months of the year and days of the week. Weighting reduces the magnitude of the nonresponse bias, but also increases the variance of the estimates (USDA 1992b).

The response rates in the 1987-88 NFCS were so low that the weighting factors to make the adjustments were much larger than usual for this type of survey. The range of weights in the system was very large (1 to 78 for females over the age of 20 years). The mean weighting factors for participants in the survey were 23.5 for all individuals; 23.4 for everyone under 20 years or age; 25.1 for men over 20; and 22.3 for women over 20 (FASEB 1991). It is not possible to accurately compare the ranges in weights in the 1987-88 NFCS with those of other surveys due to the need for equal sample representation by day of week and month of year. Because of the extremely large range and unusual distribution of the weights in the 1987-88 NFCS, the Expert Panel was concerned about potential bias resulting from use of the weights. "Because of the high level of nonresponse, the Expert Panel is of the opinion that no weighting procedure could give one confidence that it had dealt successfully with the low response rate."

The Expert Panel concluded that between-group comparisons are possible, but must be made with the recognition that respondents may not be completely representative of the subgroups. Such estimates should not be aggregated to the national level. In addition, the use of the data for estimates of specific foods or food groups, estimates of upper percentiles of intake, or estimates of intakes of subgroups for which the cell size is small is questionable.

The 1987-88 NFCS data have limitations; however, they are the only current data available and, if care is used in interpretation, should be useful in providing a general indication of current American eating patterns and nutrient intake. The FASEB Expert Panel concludes, "If the 1987-88 NFCS data are used for estimation of nutrient intakes, sensitivity analyses should be done using the 1977-78 NFCS data. If the results are meaningfully different, then the 1985 or 1986 CSFII data should be used to see if there is a trend that would support the difference. If there is not, the 1987-88 NFCS data should not be used" (FASEB 1991, p. 13)

In addition to comparing data to previous USDA survey results, researchers using the 1987-88 NFCS data need to take into account the coefficient of variation (cv) for means. HNIS policy is to identify estimates for which the cv is between 25% and 50%. Those with cv's ≥ 50% should not be used (USDA 1992b).

Other Considerations in Interpreting Survey Data

Besides following the FASEB and the HNIS recommendations for dealing with 1987-88 NFCS data, some further cautions need to be observed in interpreting data. The first deals with categorizing food mixtures. There are two main ways to do so. A food mixture may be classified as a single item and assigned to a food group according to its main ingredient, or a food mixture can be separated into constituent ingredients and each ingredient assigned to the appropriate food group. The resulting nutrient profiles are significantly different. Krebs-Smith and associates (1990) found that separating food mixtures into constituent ingredients gave a more precise picture of dietary contributions of various food groups. For example, meat, poultry, and fish (MFP) contributed 26% of total fat intake using the constituent ingredient method, whereas classifying food mixtures on the basis of main ingredient resulted in MFP appearing to contribute 31% of total fat.

The interpretation of the nutrient intake data is determined by the United States' standards for nutrients, the RDAs. It is therefore useful to know how the standards were derived. For a very few nutrients, such as protein, sufficient data were available, and the Food and Nutrition Board set the RDA two standard deviations above the mean requirement for a particular age and sex category. For most nutrients, however, the RDA had to be extrapolated from data on other age and sex groups or other nutrients (Guthrie 1989).

For most nutrients, the coefficient of variation of the requirement is assumed to be equal to 15% of the mean, so unless indicated otherwise, the RDA is set at 130% of the mean. Or stated conversely, for these nutrients, the mean requirement is 77% of the RDA. Therefore, an intake of 77% of RDA meets the needs of one half of a given population. An intake of 65% of the RDA, one standard deviation below the mean, will be adequate for only 17% of any population. Intakes less than the RDA are not necessarily inadequate; however, the more the intake falls below this standard, the greater the number of people for whom it is potentially inadequate (Guthrie 1989). The National Research Council's subcommittee on Criteria for Dietary Evaluation (NRC, 1986) concluded it is inappropriate to use fixed cutoff points, whether 60% or 70% or 80% of the RDA as it increases the possibility for misclassification of people into "adequate" or "inadequate" groups due largely to the variability in requirements. Another risk for misclassification of individuals exists when study subjects display a large intrapersonal variance in food intake.

In the statistical analysis of dietary studies the error estimate is derived by dividing the intraindividual variance (day-to day variability in food intake) by the interindividual variance (person-to-person variability in food intake). If not controlled for or adjusted, a large component of intraindividual variation in daily nutrient intake can attenuate the analyzed relationships between diet and other variables and result in a false negative conclusion that there are no differences when, in fact, there are (Beaton et al. 1983). Both types of variability must therefore be taken into consideration in interpretation of results of studies on dietary status.

Using data collected from 151 women on two randomly selected days per sampling month over a 2-year period, Sempos and cohorts (1985) found that intraindividual variation in dietary intake of all nutrients studies was greater than interindividual variation. Further insights as to the respective roles of inter-and intrapersonal variance were provided by the Beltsville Study, which collected daily food intake for 29 individuals over the period of one year. Analysis of data demonstrated that individuals possess characteristic patterns of variability in their total food intake (Tarasuk and Beaton 1991). Although day-to-day variation was a sizable random component, significant nonrandom components were also detected which explained up to 37% of the variance observed for a subject. As these patterns were unique to the individual, this suggests that observed within-subject variance is a function of the particular combination of environment and biological pressures on the individual at any one time.

The Beltsville Study demonstrated presence of distinct long-term and weekly patterns within individual subject's energy intakes across the year. Analysis of group data showed patterns for day of the week and month of the year as well (Tarasuk and Beaton 1991). For women there were also noted variations in intake patterns associated with the menstrual cycle. This would suggest that women would have a higher ratio of within to between subject variance than males, a concept confirmed in a study by Nelson and coworkers (1989). So in studies including both sexes, the accuracy of ranking of males will, for most nutrients, be more accurate than for females. In studying an elderly population, Hunt and associates (1983) found the usual nutrient intake for individuals changes from year to year in addition to the variance in the population that may also be present.

Cluster Analysis as a Tool to Identify Food Consumption Patterns

Although assessing the intake of a specific nutrient presents little statistical difficulty, determining the importance of many nutrients at the same time in one analysis requires sophisticated statistical techniques. One method is to look for inherent structures in the data using clustering techniques. Cluster analysis is a generic term for a wide variety of multivariate statistical procedures that can be used to create a classification (Aldenderfer and Blashfield 1984). A typical cluster analysis starts with a data set containing a number of entities and then reorganizes these entities so that group members are as similar as possible to each other according to a distance measure, while the different groups are as distant as possible from each other. By its nature, clustering is heuristic and encourages exploration of data (Dubes and Jain 1980).

Cluster analysis was used in the field of social sciences as early as the 1930's (Driver and Kroeber 1932). It did not attract much attention as a practical analytic method, however, until the early 1960's. The publishing of Principles of Numerical Taxonomy by Sokal and Sneath (1963) ignited interest in clustering as a method of classification, but the spread of high-speed computers finally made the use of cluster analysis practical. In the 1960's, the fields primarily using cluster analysis were medicine, microbiology, zoology, and bacteriology (Blashfield and Aldenderfer 1978). In the following decade, use of clustering methods spread to the social sciences, such as anthropology and psychology.

Classification provides the conceptual basis for the basic theories within a given science. The issues concerning classification are quite different in the various fields (Blashfield and Aldenderfer 1978), and cluster analysis methods are inbred with the biases of the parent discipline. This makes selecting an appropriate cluster analysis technique challenging.

Currently there are many different cluster analysis methods available. Prior to 1980, most could be divided into one of two families: hierarchical agglomerative methods and iterative partitioning methods (Blashfield and Aldenderfer 1978). In the former group, the clustering process is started by forming a matrix to represent the pairwise similarities of all entities being clustered. Clusters are gradually built by putting the most similar entities together. Iterative partitioning methods use a predetermined initial classification and through iterative processes try to find a revised classification that will optimize homogeneity of objects in the clusters. Other cluster analysis methods that are used include density search, factor analytic, clumping, graph theoretic (Aldenderfer and Blashfield 1984), and the maximum likelihood estimation for mixtures (EM algorithm).

The study reported in this paper utilized the EM algorithm. This method of clustering, unlike most, yields overlapping clusters. In place of classifying each object into a cluster, the EM algorithm gives a probability of membership for each object in each cluster.

Regardless of the clustering method chosen, the process of cluster analysis usually follows the same course. First, a sample to be clustered is selected and a set of variables to be used in the analysis is determined. At this point a decision needs to be made as to whether or not the data should be standardized. Next, a measurement to determine similarity or dissimilarity is selected. A clustering method is chosen, and, if necessary, the appropriate number of clusters is selected. Finally, the resulting cluster analysis is interpreted (Milligan and Cooper 1987).

Cluster analysis permits classifications, based on multiple variables, which cannot be drawn using other statistical methods. However, clustering should be used with caution as its heuristic nature presents some problems. There is no single analysis technique based on a widely accepted statistical principle. Numerous definitions for the term "cluster" exist, and each may be valid within a particular application or framework. As a result, each method must try to find the optimal clustering by using its own definition of cluster structure (Milligan and Cooper 1987). Different clustering methods can, and do, generate different solutions to the same data set (Aldenderfer and Blashfield 1984).

The nutrition and food sciences have utilized cluster analysis in a variety of situations. Clustering has been used to determine weighting factors for the sensory evaluation of food (Molnar and Orsi 1982); determine changes in food consumption patterns between various nations (Blandford 1984); determine factors leading consumers to select organically grown foods over regular foods to project production needs (Alvensleben 1987); and classify grocery shoppers into categories allowing stores to target advertising and services to their clientele (Williams et al. 1978). One major contribution made possible by cluster analysis is the ability to group foods according to similar nutrient composition (Windham et al. 1985). This process allows the development of expanded food groups which incorporate both the concept of nutritional adequacy and the current emphasis on moderation of food components such as fat and sodium that are of nutritional concern.

Some recent studies have been conducted to determine eating patterns of individuals. Some investigators, like Kristeller and Rodin (1989), used data from questionnaires, applied factor analysis to reduce questionnaires to meaningful scales, and then used cluster analysis to determine distinct eating patterns. Other researchers (Akin et al. 1986; Boeing et al. 1989) utilized dietary intake records for the data bases and then applied cluster analysis to subjects' intakes of different food groups to determine eating patterns. The study reported in this dissertation took actual dietary intake records and clustered on total meat intake as percent of caloric intake, intake of specific meats as percent of caloric intake, and intake of specific nutrients (vitamin B_6, iron and zinc) to determine if meat intake patterns are associated with specific dietary intake excesses or deficits.

METHODOLOGY

Restatement of Study Objectives

There were two main goals of this study. The first was to develop a statement of the energy and nutrient contribution meats make to women's diets. Part of this goal included the assessment of what proportion of individuals currently consume diets that meet the NRC guidelines on protein, fats, and cholesterol intake, and what is the level and type of meat consumption in their diet. The second goal was to group women based on their current meat consumption patterns, thus allowing assessment of nutrient intake, and demographic and lifestyle characteristics associated with different intake patterns. This targeting mode will allow future nutrition education messages to be more accurately focused on the identified needs of specific subgroups of women.

Study Design

The study utilized data from the individual 3-day intake component of the basic, all-income sample of the 1987-88 Nationwide Food Consumption Survey. These data include information on over 3,200 nonpregnant, non-lactating women drawn from a multistage, stratified area probability sample of households in the 48 contiguous states. Data collection for the survey began in April 1987 and continued through August 1988. Individuals who took part in the survey were asked to provide 3 consecutive days of dietary data. The first day's data were collected in a personal in-home interview using a 1-day dietary recall. The second and third day's data were recorded by the respondent, using a self-administered 2-day dietary record. In addition to information on daily food and nutrient intake, demographic, socioeconomic, physiologic, and self-reported health-related characteristics were collected from each subject.

Subjects

Data from women aged 19 and older were utilized if subjects met the following criteria: nonpregnant, nonlactating and had three days of completed food intake records. The number of subjects meeting the study criteria was 3223. This sample was initially divided into three age groups that corresponded to the age categories for the RDAs: 19-24 years, 25-50 years, and 51 years and older. The last two categories were subdivided to allow identifying any patterns of consumption associated with more discrete older groups. The final age groupings were: 19-24; 25-34; 35-50; 51-64; 65-74; and 75 years or older.

Demographic Variables

The 1987-88 NFCS included a wide variety of self-reported demographic variables for each respondent. Several variables were utilized in this study, some because of known association with nutrient intake, and others to help determine the important characteristics associated with variations in meat intake. Previous NFCS, CSFII, and NHANES have demonstrated that several factors are associated with variations in energy and nutrient intake. Among these are demographic, personal, income and health-related variables.

Geographic location can reflect economic, cultural, and social variations which in turn may affect eating patterns. The NFCS classifies the 48 conterminous states into four regions: West, South, Northeast, and Midwest. Urbanization also reflects the interplay of several economic, cultural, and social variables that impact on food availability and intake. In central cities (population of 50,000 or more) the presence of homeless and poor individuals may be higher, the effects of mass media on food intake may be stronger, and the variety of foods available may be different than found in suburban or non-metropolitan areas. However, the latter locations may offer a greater opportunity for home production of foods.

Race has been found to play a role in caloric and nutrient intake, with minorities displaying lower overall nutrient intakes (USDHEW 1975). Part of this may be due to differences in cultural and ethnic backgrounds that impact food selection and preparation techniques. Racial membership may also be associated with educational attainment and socioeconomic status which, in turn, may significantly affect eating patterns.

As the ability to purchase food has been shown to be a major determining factor in caloric and nutrient intake (USDA 1972; 1984), this study examined NFCS questions that reflected the economics underlying food consumption. The most relevant information available was the household income, expressed as percent of the appropriate federal poverty level for household size (USBC 1987). Other demographic variables reviewed included participation in government food programs and current employment status.

Educational attainment may be linked to caloric and nutrient intake, with individuals having higher educational levels obtaining a higher energy and nutrient intake. In this study, the education level of female household heads was included to determine any relationship with meat intake patterns. In interpreting results, however, it is important to note that income levels tend to increase with increasing level of education, and may be confounded.

The study looked at the few physical indices of nutritional status available from the NFCS 1987-88, namely the subjects' self-reported height and weight.

These were used to compute a body mass index or BMI (weight in kilograms divided by height in meters squared) for each subject. There are obvious weaknesses in using self-reported data. Individuals may have a poor idea of their weight or may purposefully alter their report to appear to more closely meet cultural expectations. Reliability of self-reported height is especially of concern as it is seldom determined after an individual matures. Most individuals remember what their height was in school, but may not be aware if it has diminished with age. Finally, even a strong relationship between BMI and a particular eating pattern does not indicate the pattern caused the BMI.

Demographic variables pertaining to the subject's perceptions of her diet were obtained. These variables included subjects' self-classification on the healthfulness of diet and whether they used vitamin/mineral supplements. These were analyzed to determine any association with identified meat intake patterns.

Nutrient Data Base

Average nutrient intakes were provided on the survey data tape and had been calculated using the USDA Nutrient Data Base for Individual Food Intake Surveys (USDA 1985a), developed by the HNIS specifically for the 1987-88 NFCS. This Survey Data Base contains representative nutrient values for food energy and 29 nutrients and other dietary components found in the edible portion of about 6000 food items. The amount of each nutrient in each food eaten was calculated by the USDA using the weight (in grams) of the food reported as consumed and the nutritive value of the food (per 100 grams) from the data base. The nutrient values for most items containing two or more ingredients (recipes or mixed dishes) were calculated from the data for the ingredients using representative recipes contained in additional USDA files described below (Perloff 1989). The intake records of survey participants and the nutrient data base were linked by the same seven-digit code number for each food as consumed. Average daily nutrient intake totals in the survey reflect nutrients derived from food only; intakes from vitamin and mineral supplements were not included.

Food composition data in the Survey Data Base came from the USDA Nutrient Data Base for Standard Reference (USDA 1985b) which was compiled from the USDA Nutrient Data Bank. Nutrient values in these data bases were derived from laboratory analyses or, when actual composition data were not available for a food item, nutrient values were imputed either from data for other forms of the same food or from data for similar foods.

Because foods were reported as consumed, as part of mixed dishes or from home recipes, individual meat components had to be identified and their nutrient values added to each subject's food and nutrient intake record. This required the use of three additional data sets, contained in the USDA Nutrient Data Base for Individual Intake Surveys, in order to separate the nutrient and caloric content of meat from mixed dishes: the Primary Data Set (PDS), USDA Recipe File, and the Nutrient Retention File. The PDS contains "basic" foods, i.e., those consumed singly or as ingredients in the recipes contained in the recipe file. Each food in the PDS has associated nutrient values and is identified by a five-digit code. There are several "one-component" recipes that have identical descriptions and nutrient values in the PDS and a direct link from the five-digit PDS code to the seven-digit Survey Data Base code. An example would be "roast beef simmered with drippings."

Each recipe in the Recipe File contains the description and amounts of ingredients, with their corresponding PDS codes. In addition, the yield factor for the total recipe, associated with the cooking method, is included. This yield factor is composed of the sum of percent of water and fat gain or loss due to the cooking process, as well as the fat and water content which is used to calculate gram weight of the final cooked product. A PDS code number appears in the recipe file indicating the type of fat and associated nutrients (cholesterol, fat-soluble vitamins) lost or gained in the recipe. When dissembling a recipe food contained in a subject's food intake record into individual food components, the water plus fat and nutrients associated with fat are added back to the food ingredient, e.g., meat, from which the loss was derived when compiling the recipe. The Nutrient Retention File contains the retention values for 18 minerals and vitamins for different food groups and cooking methods and is used to adjust for nutrient losses due to leaching or heat.

Data Processing

Weighting

Although the 1987-88 survey sample was designed to be self-weighting, not all eligible households agreed to participate. Of those that did participate, not all interviews yielded complete information nor did all participants complete 3 full days of intake. Analysis of nonresponse was conducted using U.S. Bureau of Census data and a weighting approach was developed by HNIS in collaboration with the University of Iowa to adjust the data for the effect of non-response on food and nutrient intake. The analysis showed that differences in eating behavior between respondents and nonrespondents were predictable because they resulted from known socioeconomic variables (race, household income, geographic region) which can be adjusted by weighting, and were not due to unknown, nonrandom response (Guenther and Tippett 1993).

The USDA sample weights were used in the preliminary analyses, the clustering analyses and the testing. In each analysis performed, an individual made a contribution proportional to her USDA weight factor. For example, a weighted mean for caloric intake within an age group was derived by multiplying each individual's 3-day average energy intake by her individual USDA weighting factor and adding the individual weighted energy intakes. This number was then divided by the sum of the weights for the age group to yield the weighted mean caloric intake. This process was used to obtain weighted values for all nutrients and demographic variables. Additionally, in the cluster analyses, the EM method assigned to each individual a weight for each cluster, measuring the likelihood that the individual belonged to the cluster.

Determining Total Meat Consumption

The NFCS data tapes provided data on nutrient intake from the average of all foods ingested but not for the total meat intake or other individual food groups. For this study it was necessary to build a separate file which listed the meat codes and gram intake of all meats ingested, including those found in mixed dishes. The first step in determining total meat consumption was to survey the PDS to identify all meats and corresponding meat codes. The file listing is found in Appendix A with individuals food items color coded. The codes were used to classify meats into the meat categories determined for use in this study. The categories were beef; pork; poultry; seafoods (including mollusks, shell- and finfish); processed meat (including bacons, salt pork, and sausages); lamb,veal, and game (including game birds); and organ meats. The Recipe File was reviewed to determine every recipe containing a five-digit PDS meat code. An algorithm was developed to extract the meat components from other ingredient foods, with the water, fat, and fat-related nutrients, and all other nutrients ascribed to the appropriate ingredients. This involved steps as described below.

The recipe was examined to determine whether the meat used in the recipe was in a raw or cooked state. If the recipe called for cooked meat, the amount of meat (and its associated nutrients), proportional to the amount of the mixed dish consumed, was extracted.

If the recipe called for raw meat, however, the amount of meat was adjusted for water and fat changes using the yield factors retrieved from the Recipe file. Next, the Retention Factor File was used to compute adjustments in nutrients (fat and cholesterol) that were associated with fat gain or loss and to calculate the loss or gain of vitamins and minerals due to the cooking method. Finally, nutrient levels were adjusted for weight changes due to water or fat gains/losses from the raw to the cooked state for the amount of meat consumed. The amount of the meat portion of the recipe and the nutrient levels associated with the meat were added to the total consumption for each meat in each individual's consumption record.

Three-day average consumption levels for each of the meat categories and for the average intake of all meats were computed for every individual. These 3-day averages were computed by multiplying the 3-day average intake of each meat for each individual by the USDA weighting factor for the 3-day averages. The products were summed and divided by the sum of the weights. This provided weighted average daily intake of meat from each meat category within an age group. A small proportion of meat components could not be retrieved using these methods. The recipe file did not contain recipes for commercially canned, dehydrated, or ready-to-serve soups; pasta, and meat mixtures;

chili and other items that had no data concerning the proportion of meat in the mixtures. These products were excluded from the meat analysis in the study.

Mean intakes of the following food components were computed: calories, protein; total fat; saturated, monounsaturated, and polyunsaturated fatty acids; cholesterol; vitamin A; vitamin C; thiamin; niacin; riboflavin; vitamin B_{12}; folate; vitamin B_6; calcium; phosphorus; magnesium; iron; zinc; copper. For each subject the 3-day intake of each food component was totaled and divided by three to obtain daily average. Weighted age group means were computed by multiplying each individual's 3-day average intake by the USDA 3-day weighting factor, adding the individual weighted intakes, and dividing by the sum of the weights. Weighted mean intake was calculated for the level of nutrient coming from total of all foods consumed and nutrient intake derived from meats only.

The percent contribution of nutrients from "all meats" consumed and for each meat category were computed by multiplying each individual's 3-day nutrient intake from meat by the USDA three-day weighting factor, summing each individuals weighted nutrient intake from meat and dividing by the sum of the weights. Nutrient density was computed by dividing average daily intake of a specific nutrient (expressed in metric weight) by the total caloric intake and multiplying by 1000 for each individual and computed 3-day average weighted intakes.

Average daily nutrient intakes were divided by their respective RDAs and multiplied by 100 to obtain percents and weighted averages computed as above. Copper intake was divided by 1.5 mg/d, the low end of its ESADDI. The percentages of average daily kilocalories provided by the total fat and the fatty acids were computed by multiplying average fat intake (in grams) by a factor of acids were computed by multiplying average fat intake (in grams) by a factor of 9 (kcal/g) and dividing by total caloric intake for each individual and weighted averages computed.

Preliminary Analyses

Exploratory analyses were conducted to identify factors in this data set that may be associated with meat intake patterns of women. Some factors, in addition to age, hypothesized to have a relationship were caloric intake, especially low nutrient intakes, and high fat intakes. Another area of interest was the woman's ability to construct diets that meet recommendations for nutrients based on a varied diet while moderating intakes of other dietary components including protein, fats, and cholesterol.

Preliminary analyses were conducted to clarify some of these factors. The analyses were conducted using three data files. The first contained mean values for each subject's total meat, energy, and nutrient intakes. The second provided an individual's mean intake of energy and nutrients derived from the total intake of meat products. The third provided demographic data on each individual. The statistical package used was the 6.09 release of Statistical Analysis System (SAS) (1993) for VMS machines on AXP systems.

Two of the files used in the preliminary analyses were taken directly from the USDA Survey Data Base. These files provided demographic data (including age and weighting factors) and 3-day mean intakes of energy and nutrients (derived from all foods consumed) for each individual. A third file was generated which added the gram weight and associated energy and nutrients for all meats extracted from the mixed dishes to the individual's meat intake to provide a 3-day average of total meat intake.

Effects of Caloric Restriction

Due to the strong emphasis the American society places on being thin, women frequently practice restrained eating patterns which may eliminate specific foods or even whole food groups. Generally, weight-loss diets prescribed by health professionals for women range from 1,000 to 1,200 calories. Older women may also have low caloric intakes which arise from a variety of other factors associated with aging, e.g., voluntarily restricting energy intake as a result of decreased activity and appetite.

In order to gain insight into the potential impact of the cluster analysis of low caloric consumers, the mean intakes of women in the sample population who consumed ≤ 1200 calories daily were examined in a preliminary analysis. The subject population were divided into individuals aged 19-50 and 51+ years (ages selected due to 19-50 being values used in the 1985 and 1986 CSFII) and only women who consumed ≤ 1200 calories were selected using the SAS PROC SORT command. The three data files were combined using the MERGE command. For each age group, formulas were given to convert nutrient intakes into percentages of standards. Phosphorus intake for women aged 19-50 was 800 mg, rather than the 1200 set for women 19-24 years. Copper intakes were computed as percent of ESADDI; other mineral and all vitamin intakes were expressed as percent of RDA, and total fat and fat components were expressed as percent of NRC recommendations. Monounsaturated fatty acids (MFA) and polyunsaturated fatty acids (PFA), like saturated fatty acids (SFA), were determined by dividing the mean intake (expressed as percent of total calories) by 10, as the standard for each is 10% of total caloric intake. USDA weighted means within each age group were computed as well as standard deviations, standard errors, and coefficients of variation. The SAS MEANSOUT command was used to compute USDA weighted means, standard deviations, standard errors, and coefficients of variation for meat (g), energy, and nutrient intakes. Statistical testing of differences among means was not conducted, and the following discussion is descriptive only and does not imply any statistical differences.

In the study population, 29.6% of women aged 19-50 years and 34.4% of women over the age of 51 consumed diets providing 1200 calories or less daily. The USDA weighted mean nutrient intakes of these individuals are shown in Table 1.

For women aged 19-50 years, the mean energy intake was 909 calories. No vitamin met its respective RDA. Only phosphorus consumption exceeded 70% of the RDA, and other minerals failed to reach 50% of standards. Total fat and saturated fatty acid intakes, however, exceeded the NRC recommendations at 118% and 128%, respectively.

On the average, older women appeared to have somewhat higher intakes of vitamins and minerals although statistical significance was not determined. Clearly some differences, such as for calcium, are not of practical significance. This analysis implies that approximately one-third of the sample consumed ≤ 1200 calories and had associated low intakes of most nutrients along with a potential age-related difference in diet quality. The effect of a large proportion of the population practicing restrained energy intake patterns needs to be examined in relation to the meat consumption patterns identified in cluster analysis.

Table 1. Mean energy, meat and nutrient intakes (as % standards) of women consuming less than 1201 calories daily

Variable †	Age 19-50	Age 51+
N	581	434
% Pop.	30	34
Meat (g)	84	94
Energy (kcal/d)	909	967
Vitamin A *	73	97
Vitamin C	82	123
Thiamin	64	77
Niacin	75	102
Riboflavin	69	90
Vitamin B_6	51	67
Folate	67	91
Calcium	46	49
Copper	41	49
Iron	46	81
Magnesium	48	60
Phosphorus	74	84
Zinc	47	53
Total Fat **	118	114
Saturated Fat	128	118
Monounsaturated Fat	131	126
Polyunsaturated Fat	68	69
Cholesterol	50	59

† Population and nutrient values rounded to nearest %; meat intake rounded to nearest gram. * Vitamins and mineral intakes as % RDA/ESADDI. ** Fat component intakes as % NRC.

Identifying Nutrients at Risk of Low or Excess Consumption

The FDA, in designing current food labels, considered protein, vitamin A, vitamin C, iron, calcium, total fat, and saturated fatty acids as the most important nutrients in determining the quality of a diet. An analysis was performed to determine if women within the two age groups (19-50 and 51+ years) who consumed calories within a low intake range were at risk for inadequate or excessive consumption of these and other nutrients. The analysis was similar to the previous analysis for the two age groups with the exception that the caloric range of 1100 to 1300 was chosen to provide an approximate average energy intake of 1200 calories, a level not expected to provide adequate nutrient intake. USDA weighted means and other statistics were computed for energy and nutrient intakes (Table 2).

Table 2. Mean energy, meat and nutrient intakes (as % standards) of women consuming between 1100 and 1300 calories daily

Variable †	Age 19-50	Age 51+
N	439	381
% of Age Group	22	30
Meat (g)	104	108
Energy (kcal/d)	1260	1250
Vitamin A *	99	116
Vitamin C	128	147
Thiamin	85	98
Niacin	93	120
Riboflavin	91	113
Vitamin B_6	67	81
Folate	92	112
Calcium	64	65
Copper	51	59
Iron	59	105
Magnesium	61	72
Phosphorus	100	106
Zinc	61	72
Total Fat **	121	118
Saturated Fat	129	124
Cholesterol	67	74

† Population and nutrient values rounded to nearest %; meat intake rounded to nearest gram. * Vitamins and mineral intakes as % RDA/ESADDI. ** Fat component intakes as % NRC.

Women aged 19-50 years who consumed intakes in the 1100-1200 calorie range had mean intakes that exceeded 90% of respective RDAs for all vitamins except thiamin (85%) and vitamin B_6 (67%). The mean phosphorus intake met the RDA, while the intakes of all other minerals were low, ranging from 59%-64% of respective RDAs. Copper intake met only 51% of lower end of the ESADDI range. Total fat and saturated fatty acid intakes were 121% and 129% of NRC recommendations, respectively.

Women over the age of 50 appeared to have higher consumption levels of all nutrients than did those aged 19-50; however, statistical differences were not computed. Vitamin B_6 intake averaged 81% of the RDA. All other vitamin intakes reached at least 98% relative to respective RDAs. The only minerals to meet the RDA goals were iron and phosphorus.

The results implied that, with the exception of iron in premenopausal women and calcium for women of all ages, the RDAs for nutrients considered by the FDA as important for assessing adequacy of dietary intake (vitamin A and vitamin C) were met or exceeded when caloric consumption is low. However, intakes of other nutrients, not emphasized by the FDA, present a problem. In this study, average vitamin B_6 intakes were inadequate to meet the RDA. Magnesium, zinc, and copper intakes also appeared to be in low supply; however, intakes of total fat and saturated fatty acids exceeded guidelines. Given that on average, about 30% of women appear to have energy intakes $\leq$ 1200 calories, it is important to find food sources that provide a good supply of those nutrients most likely to be inadequate in low caloric intake patterns.

Because meat products are generally known to be good sources for vitamin B_6 and all minerals except calcium, the cluster analysis proposed for this study will evaluate meat consumption patterns that contribute to women's dietary intakes of vitamin B_6, iron, and zinc. Because women's intakes of magnesium and copper, though not strongly associated with meat intake, are also low, their contribution from meat will also be noted. Different types of meat, e.g., beef, pork, poultry, etc., will be studied to determine their contribution to overall intakes of the nutrients identified as at risk of inadequate consumption.

Intake of Women Meeting the NRC Fat Intake Guidelines

A major concern with meat consumption is the fact that meat is associated with high total fat and SFA intakes. This gave rise to several questions to be explored prior to conducting the cluster analysis: what proportion of the study population met the NRC guidelines for fat intake; what was their average intake of meat; for those that met NRC guidelines, did individuals with higher meat intakes have higher intakes of the nutrients in question than subjects with low meat intakes?

An analysis was conducted to determine the percentage of subjects in the study population that met both the NRC recommendations for total fat and SFA intakes and the RDAs and ESADDIs for specific nutrients discussed above. The analysis followed the general procedures outlined previously for comparing women in two age group categories (19-50 and 51+ years) using the PROC SOFT command to sort the sample by fat intake using the criteria: if total fat ≤30 and SFAs ≤10, then lowfat = 1. The MEANSOUT command was used to compute USDA weighted means, standard errors, and coefficients of variation.

Approximately 11% of all women, 9.4% of those age 19-50 years and 13.3% of those over the age of 51 years, had fat intakes that met or were below the NRC limits. Nutrient intake data for this low-fat consuming subgroup was analyzed to determine if subjects met ≥ 100% of the RDAs for all vitamins and minerals. No one did. Table 3 shows the USDA weighted mean nutrient intakes for women aged 19-50 and 51+ years that met NRC fat guidelines.

Table 3. Mean energy, meat and nutrient intakes (as % standards) of women meeting the NRC guidelines for total fat and SFA intakes

Nutrient †	Age 19-50	Age 51+
N	185	168
% Pop	9	13
Meat (g)	94	97
Energy (kcal/d)	1312	1207
Vitamin A *	101	132
Vitamin C	186	191
Thiamin	90	97
Niacin	97	120
Riboflavin	88	112
Vitamin B_6	73	91
Folate	113	126
Calcium	58	63
Copper	59	71
Iron	64	102
Magnesium	67	81
Phosphorus	97	106
Zinc	55	60
Total Fat **	81	82
Saturated Fat	78	78
Cholesterol	53	54

† Population and nutrient values rounded to nearest %; meat intake rounded to nearest gram. * Vitamins and mineral intakes as % RDA/ESADDI. ** Fat component intakes as % NRC.

Vitamin B_6 intake was low (73% of RDA) for individuals aged 19-50. Mineral intakes, with the exception of phosphorus (97% RDA), ranged from 54% to 67% of respective standards. In women over the age of 50, vitamin B_6 met 91% of the RDA. Iron and phosphorus intakes met their respective RDAs; however, intakes of other minerals ranged from 60% to 81% of RDAs/ESADDI.

A second analysis of this subsample was conducted to determine the proportion of subjects meeting the NRC fat recommendations who consumed at least 140 grams of meat daily (5 ounces), the lower end of the intake range recommended by the USDA Food Guide Pyramid (USDA, 1992b). In this analysis subjects were sorted into two files: those who met NRC fat guidelines and consumed less than 140 g meat and those who consumed 140 g meat. The MEANSOUT command provided the USDA weighted mean intakes (shown in Table 4) and variance estimates for energy and nutrients in each category.

Only 1.8% of the study population aged 19-50, and 2.3% of those over the age of 51 years who consumed $\geq$ 140 grams of meat met the NRC fat intake criteria. This represented 17.8% of the low-fat consuming subsample. The mean intakes of those that consumed greater than 140 grams of meat, although based on small counts, appeared to better approach the recommended nutrient intake levels. The large difference in energy intake (680 calories) seen below and above the 140 g meat intake cutoff in the younger age group confounds the impact of meat versus caloric contribution to fat and nutrient intakes.

The difference seen in energy intake between the two meat intake groups for individuals over age 51 was much smaller, only 123 calories. Mean vitamin B_6 intake of individuals in this group met the RDA and was 29% higher than found in those in the lower meat intake category. Zinc and iron mean intakes were 33% and 36% higher, respectively, than mean intakes of individuals in the low meat intake group. Statistical tests were not conducted for any comparisons in this analysis. Even at the higher meat intake level, zinc intake failed to meet the RDA.

The results of this analysis demonstrated that some women met the NRC fat intake guidelines while consuming meat intakes in line with the USDA recommendations. The sample sizes of these groups were too small for valid comparison; however, these individuals appeared to have higher intakes of vitamin B6, iron, and zinc when compared to those that had lower mean intakes of meat.

Table 4. Mean energy, meat and nutrient intakes (as % standards) of women meeting NRC fat guidelines by meat intake level

Variable †	Age 19-50		Age 51+	
	< 140 g Meat	>140 g Meat	< 140 g Meat	> 140 g Meat
N	150	35	139	29
% Age Group	8	2	11	2
Meat (g)	74	182	83	178
Energy (kcal)	1191	1871	1191	1314
Niacin *	85	149	113	163
Vitamin B_6	66	102	87	112
Copper	56	73	70	79
Iron	60	83	98	133
Magnesium	63	86	81	84
Zinc	49	80	58	77
Total Fat **	80	85	81	90
Saturated Fat	78	82	77	83
Cholesterol	47	81	51	80

†Population and nutrient values rounded to nearest %; meat intake rounded to nearest gram. * Vitamins and mineral intakes as % RDA/ESADDI. ** Fat component intakes as % NRC.

The preceding analyses used only two age categories; some concerns were raised that this was not sensitive to capture differences in intake that may exist between women in more discrete age groupings. Following the RDA age breakdowns of 19-24, 25-50, and 51+ years allowed for a third age grouping to be added; this, however, did not allow identifying any patterns of consumption that may be associated with smaller age groupings for older subjects. It was decided to analyze mean intakes of individuals using the following age groupings: 19-24, 25-34, 35-50, 51-64, 65-74, and 75 years or older.

The analysis was conducted as follows: The six age group categories were described, and the SAS PROC SORT command was used to sort individuals into age groups. The MEANSOUT command was used to compute USDA weighted means for each age group, found in Table 5. Calculated estimates of vitamin B_6 needs relative to protein intake (computed by multiplying mean dietary protein intake of each age group by 0.016 mg of vitamin B_6) were included. Statistical testing of differences among means was not conducted, and data in Table 5 are descriptive only. Therefore, no statistically-based inferences regarding differences in intakes between age groups can be made.

Women in the 19-24 year age category appeared to have the lowest mean intakes for most vitamins and minerals. With the exception of zinc intakes, which were identical, women over the age of 75 appeared to have lower intakes of all vitamins and minerals than did women in the 65-74 year group although statistical significance was not computed. Despite lower caloric intake, the mean intakes of vitamins and minerals (with the exception of copper and phosphorus) for women in the 75+ age group appeared equivalent to, or higher than, the intakes of women in the three youngest age categories. In all age groups, mean total fat and SFA intakes exceeded the limits set by the NRC. The range of mean total fat intakes across the age groups was 118% to 124 % of NRC goals, while SFA intakes were 124% to 134% of guidelines.

Table 5. Women's mean energy and nutrient intakes (as % standards) by age group

Variable †	Age in Years 19-24	25-34	35-50	51-64	65-74	75+
N	302	753	906	639	387	236
Energy (kcal/d)	1489	1518	1430	1422	1396	1343 ††
Vitamin A *	92	109	109	125	132	129
Vitamin C	132	119	136	153	160	138
Thiamin	97	100	97	115	118	112
Niacin	101	108	107	131	126	117
Riboflavin	106	110	104	122	122	122
Vitamin B_6	70	77	77	83	90	83
Vitamin B_6 (calc.)•	119	127	129	132	149	150
Folate	98	105	102	115	124	114
Calcium	51	77	69	71	73	72
Copper	58	59	62	67	67	58
Iron	66	69	68	112	109	107
Magnesium	63	70	73	78	79	70
Phosphorus	78	120	113	118	116	108
Zinc	68	70	69	73	71	71
Total Fat **	120	124	122	121	120	118
Saturated Fat	131	134	129	126	124	130
Cholesterol	80	79	79	83	77	75

†Population and nutrient values rounded to nearest %; meat intake rounded to nearest gram. †† Lowest nutrient value is underlined. * Vitamins and mineral intakes as % RDA/ESADDI. • Vitamin B_6 intake as % of calculated need (0.016 mg B_6/g protein). ** Fat component intakes as % NRC.

Mean vitamin B_6 intakes ranged from 70% to 90% of the RDA, with the three younger groups consuming 70% to 77% of the RDA compared to 83% to 90% among the three older groups. When the ratio of 0.016 mg vitamin B_6 to 1 g protein was utilized as a criterion for adequacy, however, each age group exceeded the requirement (119% to 150%). Mean intakes of copper, magnesium, and zinc were inadequate in all age groups, ranging from 58% to 79% of respective standards. Only women in age groups over the age of 50 years met the RDA for iron intake.

Results of this analysis indicate that women may differ with respect to dietary quality (nutrients as percent of standards) at different age-related life cycle stages. Thus, in order to identify clear patterns of nutrient intakes related to meat consumption, the cluster analysis needs to be conducted within discrete life-cycle-related age groups rather than for all adult women.

General Conclusions from Preliminary Analyses

Preliminary analyses have shown that the mean nutrient intakes of women appear to differ with age, and are perhaps higher in subjects in the older age groups. About one-third of women in the study population had low energy intakes (≤1200 calories) which were associated with low intakes of vitamin B_6, calcium, copper, iron, magnesium, and zinc. With the exception of calcium, meat is good source of all these nutrients. Meat also contributes dietary fat and saturated fatty acids which are found in excess of recommended intakes in the diets of most women, and make it difficult to meet nutrient allowances within fat recommendations. However, it appeared that individuals having meat intakes that met at least the minimum intake recommended by the USDA were better able to approach recommended levels of vitamin B_6, copper, iron, magnesium, and zinc.

The preliminary findings based on these exploratory analyses suggest that women in the U.S. are at risk for inadequate intake of a significant number of nutrients, several of which are supplied in generous amounts by meats generally or by certain categories of meats in particular. However, it also appears that meats, when consumed in amounts suggested by the USDA, may also contribute significant fat and SFAs resulting in total dietary intakes above recommended levels. The preliminary analyses also suggest that women with relatively low caloric intakes may be unable to meet nutrient recommendations, but they may be able to meet recommendations with a very carefully selected diet that contains some meat.

The purpose of this study was to use cluster analysis to classify women within six age categories into groups based on patterns of their average daily intakes of total dietary meat and intakes of beef, pork, poultry, processed meats, and seafoods. Results will be used to identify and describe consumption patterns that include meat and satisfy dietary recommendations for nutrients and fat and to characterize the groups using personal, income, demographic, and health-related variables.

Cluster Analysis

The EM algorithm (Redner and Walker 1984) was used to estimate parameters of a mixture of normal distributions for each of one to eight clusters. The optimal number of clusters was chosen using the Minimum Information Ratio (MIR) (Windham and Cutler 1992). Any cluster solution that required more than 2000 iterations of the EM algorithm was rejected. Separate cluster analyses were conducted on the following variable sets:

a) percent of total caloric intake coming from total meat consumption;

b) percent of total caloric intake for each separate meat group: beef, pork, poultry, seafood, and processed meat; and

c) intake of specific nutrients (in terms of RDA) found to be marginal in women's diets, namely, vitamin B-6, copper, iron, magnesium, and zinc.

Initial clustering trials showed that the intakes of foods from the lamb, veal, and game group and the organ meat group were very low, averaging less than 2-4 grams per day. Due to this low intake, cluster analysis was not performed for these groups; however, the intake levels of LVG and organ meats, in terms of grams and percentage of total calories, are included in every cluster analysis.

Counts

There are two types of "counts" determined by the cluster analysis and listed in the printouts as shown in Table 6. The first row shows the estimated number of people in thousands in the U.S. population that would fall within the cluster. In Table 6, 13,168,000 people are estimated to belong to cluster one. The second row is the corresponding percent of individuals belonging to each cluster. The third row is the weighted sample counts which give the corresponding proportion of the actual sample. These numbers are not real counts of actual people. For example, if a sample consisted of 933 interviewees, a count of 434 for cluster 1 would be the number of people that would be expected to belong to cluster 1. In mixture analysis, the clustering method used in this study, the probabilities of membership in each cluster are estimated for each individual. These probabilities are weighted, using USDA weights, summed and divided by the total weights to yield the expected size of the cluster. All counts in the results are obtained in the same way, i.e., in contingency tables, the counts are the expected numbers of the sample in each cell.

Statistical Output

For the output from the clustering three variables were computed for each nutrient: mean daily intake in standard units, intake per 1000 calories, and intake as percent of standard. These variables were computed for both sum of all foods consumed and sum of all meats consumed. Total fat and fatty acid components were expressed as percent of total caloric intake derived from all foods and from meats.

The readouts for each clustering solution included the data for the amount consumed from each meat group, total of all meat groups expressed in average daily gram intake, and the percent of total daily calories. The average caloric consumption for each cluster was given as well as the energy contribution coming from meat. The protein, vitamins, and minerals derived from all foods and from meats only were expressed in terms of metric weight intake, nutrient density, and percent of RDA/ESADDI. Cholesterol intakes were expressed in milligrams and in nutrient density. Total fat and fatty acids consumption were expressed as gram weight and percent of total caloric intake.

Table 6. Example of counts found in cluster printouts

Clusters	1	2	3	4	NC	All
People/1000	13168	1188	1251	44	116	28316
Percent	47	4	4	44	0	100
Weighted Counts	434	39	41	415	4	933

USDA weighting factors were used in all analyses. The use of these weighting factors was designed to decrease the magnitude of nonresponse bias, but may result in an increase in the variance of the estimates. Both standard errors (se) and coefficients of variation (cv) were computed for all variables in the analysis. When the mean intakes are associated with a cv between 25 and 50%, this is noted in the discussion of results. Mean intake estimates with cv's greater than 50% are not discussed due to the difficulty in accurate interpretation.

Continuous demographic variables analyzed in the study were weight, height, BMI, household income as percentage of Federal poverty level, and female household head education level. These variables, plus meat, energy, and nutrient intakes, were tested for differences from the average for each variable for the age group. If a mean value in a given cluster were zero or missing, the cluster was excluded from the testing.

Heuristic chi-square tests were used to test the hypothesis that a cluster mean was the same as the population mean, and a p-value computed and considered significant at $p \leq 0.05$ was determined. Testing of the weighted continuous variables was based on a likelihood ratio test for equality of the means with no constraints on the variances. The test statistic was -2 log l, where l is the likelihood ratio. A chi-squared distribution with k-1 degrees of freedom (k = number of clusters) was used to obtain the p-value.

Categorical variables, such as race or region, were tested with the chi-square tests for contingency tables using USDA weighted counts. Three different p-values were given for each categorical variable. These p-values tested: independence of the demographic variable and the cluster membership; differences in proportions of people in clusters for the category and the population proportions in the clusters; and differences in the proportions of people in the categories for the cluster from the expected proportion.

Tables (found in Appendices B through H) were generated that provided a simplified representation of the relative attributes of each cluster when compared to the mean values generated for the entire age group. These tables used "+" and "-" signs to indicate relative differences among the clusters and absolute differences from the age group means. If, for example, cluster one showed a "+" after All Meat (%Kc), this indicated the mean value for meat as percent of caloric intake was significantly ($p < 0.05$) higher than the age group average. When applied to demographic variables, such as urbanization in a given cluster, a "+" after "suburbs" indicated living in the suburbs was more characteristic of individuals in this cluster than for the age group as a whole. A "-" by a variable indicated it was significantly lower than the age group average. If a variable did not appear on the table, it indicated that it was not significantly different from the mean value for the age group. Values from these tables are included in tables reporting mean energy and nutrient intakes from each of the clustering solutions.

Supplementary Analyses

Adequacy of iron intake is not simply a matter of ingesting the RDA for iron, but of assuring the iron ingested is absorbed by the body. The amount of absorbable iron can be estimated if an individual's total daily food intake is known. Black and coworkers (1988) developed a model to estimate bioavailable iron from nutrition survey data which is based on daily food intake. This model treats all food intake within a day as one large meal (OLM) and determines the nonheme iron availability based on a modification of what has become known as the Monsen Model (Monsen and Balintfy 1982; Monsen et al. 1978). It has been shown to work for many diets of differing iron density.

The OLM model for determining nonheme iron bioavailability was used in this study. Heme iron was determined by multiplying total iron coming from meat by 0.45. Values for bioavailability of heme and non-heme iron were calculated for two levels of physiologic iron stores, zero stores and 250 mg of stores. These levels were chosen because NHANES II data indicated > 20% of menstruating women had no iron stores and the remainder averaged somewhat less than 300 mg (Carpenter and Mahoney 1992). Percent bioavailability for heme and non-heme iron at various iron storage levels (taken from Carpenter and Mahoney 1992) is shown in Appendix I.

RESULTS AND DISCUSSION

Results of Cluster Analysis Based on Total Meat Consumption

Women's Intake of Meat Products

Cluster analysis was conducted for each of the six age groups using total meat intake as percent of total calories (% kcal) as the variable of interest. In each age group there was a "non-consumer" group, those who reported no meat intake during the 3-day survey period. Between one and five "meat-consuming" clusters were generated per age category for a total of 20. The percentages of each age group with the average meat intake, both as grams and percent of calories for each cluster within each age group, are displayed in Table 7. Note that women aged 35-50 formed two clusters with mean meat intakes providing between 30% and 33% of total calories. All of the No-Meat intake groups and four meat clusters, representing meat intakes of greater than 36% of calories, had fewer than 20 counts. Their results cannot be considered reliable and are not reported. Table 8 displays by age level and cluster, mean energy and nutrient intakes. Values in Table 8 that vary significantly from age group means are marked by a "+" if above or a "-" if below group norms. These values, plus demographic variables that differ significantly from respective age group norms, are derived tables found in Appendix B.

Cluster Results of Women 19-24

There were 302 individuals in this age category, and the analyses produced three clusters, not including 3% who did not report consuming meat in the 3-day record-keeping period. About one-third of the sample formed a cluster that had a mean intake of 12.5% of calories from meat. A second cluster with slightly over half of the sample consumed about 22% of total calories from meat. The remaining individuals formed a cluster that had a mean intake of 30% of energy coming from meats.

Table 7. Age group proportions and mean meat intake (g; % kcal) by total meat clusters

Variable by age (y)	Meat Intake by % of Total Caloric Intake: Less Than 10%	12% to 18%	21% to 25%	30% to 33%
Age Group (%) *				
19-24	----	35	52	11
25-34	23	36	36	----
35-50	----	77	----	6 / 16
51-64	----	----	98	----
65-74	21	14	48	14
75+	----	45	48	----
Meat (% kcal)				
19-24	----	12.5	21.6	30.3
25-34	9.5	17.3	25.0	----
35-50	----	16.7	----	31.0 / 33.0
51-64	----	----	21.3	----
65-74	8.5	14.3	20.9	33.2
75+	----	12.9	22.7	----
Meat (g) **				
19-24	----	81	124	159
25-34	67	113	141	----
35-50	----	103	----	164 / 161
51-64	----	----	126	----
65-74	60	90	128	159
75+	----	74	118	----

* Proportions rounded to nearest %

** Meat intakes rounded to nearest g

Table 8. Mean energy and nutrient intakes as % standards: from meats and all foods by meat intake (% kcal) - significant variances marked

Variable by age (y)		Meat Intake by % of Total Caloric Intake ≤ 10%	12% to 18%	21% to 25%	30% to 33%
Energy (kcal)					
19-24	All Foods	----	1527	1494	1375
	Meats	----	194 -	317 +	413 +
25-34	All Foods	1580	1582 +	1462 -	----
	Meats	151 -	272	360 +	----
35-50	All Foods	----	1476 +	----	1311 - / 1279 -
	Meats	----	243 -	----	405 + / 406 +
51-64	All Foods	----	----	1423	----
	Meats	----	----	296	----
65-74	All Foods	1492	1462	1400	1252
	Meats	128	208	292	416
75+	All Foods	----	1400	1306	----
	Meats	----	183	293	----
Vitamin B_6 (% RDA)					
19-24	All Foods	----	71	71	70
	Meats	----	16 -	26 +	33 +
25-34	All Foods	76	77	80	----
	Meats	13 -	23	30 +	----
35-50	All Foods	----	78	----	75 / 75
	Meats	----	21 -	----	34 + / 34 +
51-64	All Foods	----	----	83	----
	Meats	----	----	26	----
65-74	All Foods	94	95	89	81
	Meats	12 -	19	26 +	34 +
75+	All Foods	----	90 +	78 -	----
	Meats	----	15 -	23 +	----
Calcium (% RDA)					
19-24	All Foods	----	58 +	49	39
	Meats	----	1 -	2 +	2 +
25-34	All Foods	91 +	80 +	68 -	----
	Meats	2 -	2	3 +	----
35-50	All Foods	----	74 +	----	56 - / 53 -
	Meats	----	2	----	3 + / 4 +
51-64	All Foods	----	----	71	----
	Meats	----	----	3	----
65-74	All Foods	98 +	83 +	68	53 -
	Meats	2 -	2	3 +	3 +
75+	All Foods	----	82 +	61 -	----
	Meats	----	2 -	2 +	----

Table 8. (Continued)

Variable by age (y)		Meat Intake by % of Total Caloric Intake < 10%	12% to 18%	21% to 25%	30% to 33%
Copper (% ESADDI)					
19-24	All Foods	----	57	59	56
	Meats	----	6	14 +	18
25-34	All Foods	63	60	57	----
	Meats	5 -	9	12 +	----
35-50	All Foods	----	63	----	53 - / 58
	Meats	----	8	----	11 / 16 +
51-64	All Foods	----	----	66	----
	Meats	----	----	12	----
65-74	All Foods	73 +	66	68	52 -
	Meats	5 -	9	14 +	11
75+	All Foods	----	60 +	55 -	----
	Meats	----	6	10	----
Iron (% RDA)					
19-24	All Foods	----	66	68	64
	Meats	----	10 -	16 +	20 +
25-34	All Foods	71	68	69	----
	Meats	9 -	14	18 +	----
35-50	All Foods	----	69	----	62 / 64
	Meats	----	13 -	----	20 + / 21 +
51-64	All Foods	----	----	112	----
	Meats	----	----	25	----
65-74	All Foods	115	113	110	100
	Meats	10 -	16	22 +	31 +
75+	All Foods	----	116 +	101 -	----
	Meats	----	14 -	22 +	----
Magnesium (% RDA)					
19-24	All Foods	----	67 +	61	55 -
	Meats	----	7 -	11 +	13 +
25-34	All Foods	77 +	72	66 -	----
	Meats	6 -	10	12 +	----
35-50	All Foods	----	75 +	----	65 - / 63 -
	Meats	----	19 -	----	14 + / 13 +
51-64	All Foods	----	----	78	----
	Meats	----	----	11	----
65-74	All Foods	90 +	80	78	69 -
	Meats	6 -	8	11 +	13 +
75+	All Foods	----	74 +	67 -	----
	Meats	----	6 -	10 +	----

Table 8. (Continued)

Variable by age (y)		Meat Intake by % of Total Caloric Intake			
		≤ 10%	12% to 18%	21% to 25%	30% to 33%
Zinc (% RDA)					
19-24	All Foods	----	63	70	74
	Meats	----	22 -	36 +	46 +
25-34	All Foods	62 -	69	76 +	----
	Meats	17 -	31	41 +	----
35-50	All Foods	----	67	----	77 + / 76 +
	Meats	----	29 -	----	49 + / 47 +
51-64	All Foods	----	----	73	----
	Meats	----	----	35	----
65-74	All Foods	68	69	71	77
	Meats	17 -	25	34 +	49 +
75+	All Foods	----	69	73	----
	Meats	----	25 -	41 +	----
Total Fat (% NRC)					
19-24	All Foods	----	116 -	122	131 +
	Meats	----	23 -	41 +	59 +
25-34	All Foods	119 -	123	128 +	----
	Meats	16 -	31	47 +	----
35-50	All Foods	----	119 -	----	133 + / 130 +
	Meats	----	29 -	----	57 + / 62 +
51-64	All Foods	----	----	121	----
	Meats	----	----	37	----
65-74	All Foods	113 -	117	120	136 +
	Meats	14 -	25 -	37 +	64 +
75+	All Foods	----	115 -	122 +	----
	Meats	----	24 -	43 +	----
Saturated Fatty Acids (% NRC)					
19-24	All Foods	----	129	132	140
	Meats	----	24 -	44 +	63 +
25-34	All Foods	130	132	138 +	----
	Meats	17 -	33	51 +	----
35-50	All Foods	----	127 -	----	142 + / 137 +
	Meats	----	31 -	----	61 + / 65 +
51-64	All Foods	----	----	125	----
	Meats	----	----	40	----
65-74	All Foods	120	127	122	137 +
	Meats	14 -	26 -	39	68 +
75+	All Foods	----	128 -	134 +	----
	Meats	----	25 -	46 +	----

Table 8. (Continued)

Variable by age (y)		Meat Intake by % of Total Caloric Intake ≤ 10%	12% to 18%	21% to 25%	30% to 33%
Cholesterol (% NRC)					
19-24	All Foods	----	72	87 +	84
	Meat Only	----	22 -	36 +	46 +
25-34	All Foods	70 -	80	85 +	----
	Meat Only	18 -	32	41 +	----
35-50	All Foods	----	77	----	87 / 88 +
	Meat Only	----	29 -	----	45 + / 48 +
51-64	All Foods	----	----	83	----
	Meat Only	----	----	36	----
65-74	All Foods	65 -	81	77	98 +
	Meat Only	17 -	26 -	36 +	45 +
75+	All Foods	----	74 -	77 +	----
	Meat Only	----	21 -	33 +	----

For the entire age group, the mean intakes of vitamin B_6, iron, magnesium, and zinc were low and ranged from 65% to 70% of respective RDAs, but calcium and copper intakes met only 51% and 58% of their respective standards. Vitamin B_6 intake did meet needs when calculated by the ratio of 0.016 mg/g dietary protein. Group average intakes of total fat and SFA intakes exceeded NRC standards by 20% and 31%, respectively.

Mean meat intakes of subjects in the 12.5% meat cluster, the group with the lowest proportion of calories coming from meat in their diets (other than the no-meat group), were characterized by total meat, beef, and poultry consumption (as % of calories and as gram intake) significantly below the group average. Total pork and processed meat consumption (as % kcal) were also low. The SFA, cholesterol, vitamin B_6, phosphorus, iron, and zinc intakes provided by meat products were significantly lower than the group means although the total intakes (provided from all foods) were not significantly different. Total fat intakes, from all foods and from meats only, were low. Calcium intake was higher than the group average although the amount provided by meat was significantly less than meats' contribution of calcium to the average diet of this age group. There were no demographic variables that were significantly different from the sample proportions.

The majority of individuals in the 19-24 age group (52%) were found in the cluster providing 21.6% of total calories from meats. All meat, beef, and pork intakes were significantly higher than the group averages for both percent of calories and gram amounts ingested. Although the mean energy, total fat, and SFA intakes from all foods did not differ from group norms, the amount of these nutrients supplied by meat was significantly higher. This implies that individuals consuming relatively higher proportions of their calories from meat may be making adjustments in their diets that reduce intakes of energy and fats from other dietary sources. Cholesterol intakes from all foods and from meats only were higher than group norms. Vitamin B_6, calcium, copper, iron, magnesium, phosphorus, and zinc intakes derived from all foods were not significantly different from the group averages, but the amounts coming from meat products were higher than the group norms. This indicated that, compared to average intakes of this age group, meat supplied greater amounts of these essential nutrients. There were no significant demographic variables that distinguished this cluster from the overall demographics of the age category.

The smallest cluster (11%) of individuals, having a mean intake of 30% of calories from meat, was noted for having intakes of total meat, beef, processed meat, and poultry (as % calories and grams) that were higher than age group norms. Mean energy, protein, SFA, and cholesterol intakes derived from all foods did not differ significantly from the age group averages; however, the amounts provided by meats were notably higher. Average intakes of total fat from all foods and from meat only were higher than norms. Note that in this group, which derived the highest proportion of calories from meats, SFA and cholesterol (two dietary components of particular health concern) derived from meats were higher than average without affecting the total dietary intake compared to the age group norm. However, the fact that total fat from both the meat component and the total diet increased with an increase in the percent of calories derived from meat is a concern and may need to be addressed with nutrition education messages regarding low fat meat products and preparation techniques. Mean intakes of vitamin B_6, iron, phosphorus, and zinc were similar to group norms, but the amounts coming from meats were significantly higher. The average intakes of calcium and magnesium from all foods were low, but the amounts derived from meat were higher than age group means. This suggests that, offsetting the increased amounts derived from meat, other dietary sources of these nutrients decreased.

Cluster Results of Women 25-34

This age group contained 753 individuals. Two percent of the sample did not consume meat. The remaining 98% were classified into five meat-consuming clusters. Two clusters were of equal size, 36% each; one represented 23% of the subjects, and the remaining 4% of the sample formed two small clusters. The mean nutrient intakes for women in this age group for copper and iron were 60%-69%, respectively, of standards. Average intakes of vitamin B_6, calcium, magnesium, and zinc were low and ranged from 70%-77% of their RDAs. Total fat and SFA mean intakes were 24% and 31% above their respective standards.

Mean meat intakes of individuals in the 9.5% meat cluster, which had the lowest percent of meat calories in the diet, were low for both total meat and all specific meats (with the exception of seafoods). Total energy intake did not differ significantly from the age group norm; however, the caloric contribution from meat was lower than the group average. Total fat and cholesterol intakes from all foods and from meats only were low compared to the age group's mean intake. The amount of SFAs contributed by meat was low although the SFA intake from all foods was similar to group average intake. This suggests that individuals may make dietary choices resulting in increased SFA intakes from other foods when SFA intake provided by meat products is low. Vitamin B_6, iron, and copper intakes from meat were low, but their intake from all foods did not different from group averages. Total zinc in the diet and zinc intake derived from meats only were lower than age group norms, reinforcing that meats are an essential source of zinc and low intakes of meat can negatively impact total zinc intake. Total dietary intakes of magnesium and calcium were higher, but the amount derived from meats lower, than mean intakes for women aged 25-34. It is known that dietary sources other than meats are major contributors of these nutrients to women's diets. This may be the result of individuals consuming foods high in these nutrients in place of meats.

Several demographic variables were associated with the 9.5% cluster. Cluster members averaged a Body Mass Index (BMI) that was significantly lower than the age group mean. The education level of the female head of house was higher than average for this age group. There were significantly fewer than expected African-Americans in this cluster. A smaller percentage of women in this cluster lived in the Southern region of the United States. A smaller than expected proportion of subjects characterized their diet as "excellent" and were more likely to answer "yes" when asked if they were on a special diet.

The cluster having a mean intake of 17.3% calories from meat represented 36% of the age group. Individuals in this cluster had gram intakes of poultry that were higher than the group average, and their intakes of beef and pork (as % calories) were lower. Total dietary energy intake was higher than typical for the age group, but the number of calories provided by meat did not differ significantly. The total dietary calcium intake was higher, but intake from meats was lower than mean age group intakes suggesting that foods high in calcium may be consumed in place of meats. The mean height of individuals in this cluster was significantly above the group norm.

The second cluster, 36% of the age group, had a mean intake of 25% of calories derived from meats. The cluster was characterized by total meat, beef, processed meat, poultry, and pork intakes (as % calories and as grams) above age group norms. The caloric intake from all foods was significantly lower, and the amount of calories derived from meat was higher than the age group means. This suggests that when meat intake (as % kcal) is high, the individual may alter food intake patterns, resulting in a decreased intake of foods from other food groups. The converse may also be true. The intakes of total fat, SFA, and cholesterol, both from total food intake and from meat intake only, were significantly higher than age group means. The increase in all three fat components is of concern and indicates provision of nutrition education messages on low-fat meat selection and preparation techniques to individuals exhibiting this meat intake pattern may be of benefit.

Total dietary vitamin B_6, copper, and iron intakes in the 25% meat cluster were similar to group norms, but the amounts contributed by meat were higher than the average for those aged 25-34 years. Zinc intakes, both from all foods and from meats only, were significantly higher than norms, reflecting the fact that meats are a major dietary source of zinc. However, zinc intake only reached 76% of the RDA. The total dietary mean intakes for calcium and magnesium were lower, and the intakes from meats were higher than the mean intakes for women of this age group. The implication is that meats may have replaced intakes of some foods which were better sources for these minerals. Individuals in this cluster weighed more and had higher BMIs when compared to the means for this age population.

Two small clusters were formed, one providing 36.7% (only 22 counts) and the second cluster providing 45.5% of calories from meat (only 8 counts). Due to the small number of estimated counts, the results derived from these clusters cannot be applied to the population in general and, therefore, will not be discussed.

Cluster Results of Women 35-50

Of the 906 women in this age category, only 1% did not consume meat. Three meat-consuming clusters were formed; the smallest representing 6%, and the largest representing 77% of the age group. Mean intakes for the women aged 35-50 years were low for calcium, copper, iron, and zinc, all of which were less than 77% of respective standards. Vitamin B_6 and magnesium intakes were 77% and 73% of respective RDAs. Total fat and SFA intakes were 22% and 29% above respective standards.

The largest proportion of the population (77%) consumed an average of 16.7% of their energy intake in the form of meats. This cluster demonstrated a low intake of total meat compared to the age group average. Additionally, the intakes of beef (as % kcal) and poultry (in grams) were significantly lower than average for women of this age. Total energy intake for the cluster was higher, but the amount of energy derived from meat was significantly lower than age group averages. Mean consumption of total fat and SFAs was low when looking at both intakes from all foods and intakes from meats only. Total dietary cholesterol intake did not differ from the age group norm, but the amount derived from meat was significantly lower, suggesting that for women in this cluster, meats were not as significant source of cholesterol as other foods. Vitamin B_6, iron, and zinc intakes were also lower from meat, but total dietary intakes were similar to age group norms. Calcium intake from all foods was higher than expected. Magnesium intake from all foods was higher than expected as well, but the amount derived from meat was significantly lower than the group mean which suggests that foods high in magnesium were consumed in place of meats. The only demographic variable that was significant for this cluster was that members had higher incomes than typical for the age group.

Six percent of women aged 35-50 years fell within the cluster typified by a meat intake that represented 31%of total energy consumption. Women in this cluster had intakes of total meat, beef, poultry, and LVG that were above the age group norms for both percent of calories coming from meat and for gram intake. Subjects also had higher intakes of processed meat when expressed as percent of caloric intake; however, intakes of pork and seafood were similar to age group norms. In this cluster, total dietary energy intake was lower than the age group mean, but the intake of calories from meat was significantly higher, suggesting an exchange of high meat intakes for items from other food groups, but not in an isocaloric fashion. The amounts of total fat and SFAs ingested (as % NRC) were above group norms for both meat intake and total dietary intake. Cholesterol intake from meat was high, but this did not cause a significant difference in total dietary cholesterol intake. The increase in total fat and SFAs is of concern. It could be due to the fat content of meats or to a decreased intake of nonmeat foods that have a lower fat density than meats. Delivery of nutrition education on development of a balanced diet, containing adequate servings from each food group and on low-fat meat selection and preparation techniques, would be appropriate for individuals with this meat intake pattern.

In this cluster, with 31% of calories coming from meat, total dietary copper intake was lower than the group norm; the amount coming from meats did not differ significantly. Vitamin B_6 and iron intakes from the total diet were both similar to the age group norms, but the amount derived from meat was significantly higher. When compared to the mean intake for women aged 35-50, these results indicate meat provides strong amounts of these essential nutrients. Zinc intake from all foods and from meats only was significantly higher than typical for the age group underlining the importance of meats as a source of dietary zinc. Calcium and magnesium intakes from all foods were significantly lower than the means for the age group, but the amounts provided by meat products were significantly higher, suggesting that meat intake replaced, to some extent, the intakes of other foods high in calcium and magnesium. There were fewer women in this cluster located in the Northeastern region of the United States.

The last of the meat-consuming clusters represented 16% of women aged 35-50 years. The average meat intake provided 33% of total energy consumption. Women in this cluster consumed more meat overall, particularly more beef, poultry, and pork both as percent of calories and as gram intakes, than was typical for the age group. In addition, there was a significantly larger gram intake of LVG products. Total dietary energy intake was low; however, the contribution from meats was higher than normal for the age group. Total fat, SFA, and cholesterol intakes were all above their respective age group means, whether from total food intake or from meat products only. Vitamin B_6, copper, and iron intakes did not differ significantly from the mean intakes of the age group, but the amount contributed by meats was significantly higher. The role of meat as an extremely important source of zinc intake was underlined as zinc intakes of individuals in this cluster, both from total diet and from meats only, were significantly higher than typical for women of this age. Calcium and magnesium intakes from all foods were lower than the norms for the age groups, although the amounts contributed by meat products were significantly higher, implying that meat products replaced the intakes of foods that were better sources of these minerals. Women in this cluster had higher body weights and BMIs than typical for women aged 35-50 years. The proportion of African-American women was higher compared to norms for the entire age group. Subjects within this cluster were more highly represented in the Southern region of the United States. Income levels for women in this cluster were lower than normal for the age group, and proportionately more women stated using food stamps.

Cluster Results of Women 51-64

There were 649 women in this age group. Two percent of them did not consume meat during the 3 days of food records. The remaining 98% formed one large cluster that had a mean intake of 21.3% of calories derived from meat . The formation of only one cluster was unique to this age group, and it would be of interest to see if further studies report the same similarity of meat intakes within this age category. The mean total fat and SFA intakes of women in this age group were 21% and 26% above NRC standards. Vitamin B_6 intake met 83% of the RDA. Iron intake, due to the decrease in the RDA occurring at age 51, met 112% of that standard, but did not denote a strong increase in actual intake of mg of iron. Copper intake was 67% of the lower value of its ESADDI. Mean calcium, magnesium, and zinc intakes were 71%, 78%, and 73% of respective RDAs. Because the vast majority of individuals were contained in the one cluster, there were no significant nutrient or demographic variables noted. This group was representative of the norm.

Cluster Results for Women 65-74

The study population contained 387 women aged 65-74 years. Only 1% of these individuals did not consume meat. The remainder were separated into five meat consumption clusters. Unlike those aged 25-50 (the only other age group to have five clusters) who had average intakes of meat ranging between 8% and 25% of their calories for 95% of their population, 14% of women aged 65-74 consumed approximately 33% of their calories from meat. The lowest meat intakes were found in the 8.5% cluster, representing 21% of the age group. Fourteen percent consumed diets having meat intakes representing 14.3% of calories; 48% had a mean intake of 20.9% of calories from meat. The last cluster, representing only 2% of the age group, had a mean intake of 49.3% of calories coming from meat. Mean intakes of vitamin B_6 and iron were higher than the mean intakes found in the three youngest age groups and were similar to the values seen in the 51-64 age category, at 80% and 109% of respective RDAs. Copper intake was 67% of ESADDI. Mean intakes of magnesium and zinc were 79 and 71% of respective RDAs. Total fat and SFA intakes were 20% and 24% above respective NRC guidelines.

A significant proportion of women aged 65-74 (21%) had very low meat intakes, averaging only 8.5% of total caloric intake. Individuals in this cluster were characterized by a low intake of all meats, except seafoods, which had an intake similar to age group norms. Women's total caloric intake was significantly higher and their energy intake from meat lower than normal for the age group. Both total fat and cholesterol intakes from all food sources and from meat sources only were significantly low. Cholesterol intake from meats was low, but total dietary cholesterol was similar to group means. The total dietary intakes of vitamin B_6, iron, and zinc were similar to the age group norms; however, the amounts coming from meats were low. Copper, calcium, and magnesium intakes from all foods were significantly above mean age group intakes, but the amounts contributed by meats were low. This suggests that there are better sources of these nutrients than in meat products. Women in this cluster tended to live in the Western portion of the United States. They had incomes and education levels significantly above those typical for the entire age group. Additionally, cluster members tended to state they were following a low-fat, low-cholesterol diet.

Fourteen percent of those aged 65-74 consumed diets with a mean caloric intake from meats representing 14.3% of total caloric intake. Although their overall intake of meats was lower than the age group norm, there were no particular meats having low intakes. Total caloric intake was similar to mean intake for the age group, but the amount of calories coming from meat was lower. Intakes of total fat, SFAs, and cholesterol were all within normal range; the portion derived from meats was low. This suggests that reduced intakes of one food group associated with high fat intake, i.e., meats, does not automatically result in lower fat intakes. Total dietary calcium intake was significantly above the age group mean. There were no significant demographic variables noted.

Almost half of the age group had a mean intake level of 20.9% of calories coming from meat. The overall intake of meat and the intakes of each specific meat (with the exception of LVG and seafood) were significantly above normal for the age population. The intakes, from all foods, of energy, total fat, SFAs, and cholesterol were similar to their respective age group norms, although the amounts contributed by meat were significantly higher. This indicated that for women in this cluster, individuals consuming a relatively higher proportion of calories and fat from meats may be making some dietary adjustments that reduce the intakes of energy and fats from other dietary sources. Total dietary intakes of vitamin B_6 and all minerals of interest were similar to age group norms, but the amounts contributed by meats were significantly higher. Women in this cluster had incomes substantially below those typical of their age group.

The cluster representing a mean intake of 33.2% of calories from meat contained about 14% of women aged 65-74 years. Overall intake of meat and intakes of beef, poultry and pork were significantly higher that normal for the age group. Total energy intake was low, although the amount derived from meats was significantly higher than typical for the age group. Total fat, SFA, and cholesterol intakes were uniformly higher than normal for the age group. This is of concern. Although it is not known if the high fat intakes are the direct result of fats associated with the meat intake or an indirect effect of individuals consuming less low-fat non-meat foods, it is a problem that needs to be addressed. Nutrition education messages, emphasizing how to plan and execute well-balanced meats, containing appropriate amounts of foods from all food groups and how to use skills dealing with the selection and preparation of low-fat meats, would appear to be appropriate for individuals with this meat intake pattern. Vitamin B_6, iron, and zinc intakes from all foods were similar to the means for the age group, but the amounts derived from meats were significantly higher, suggesting that compared to mean intakes, meat supplies significantly greater amounts of these nutrients. Calcium and magnesium intakes suggest that meat intake may have replaced the intake of some high-calcium and high-magnesium foods as their intake from meats were high, but total dietary intake was significantly lower than typical for the age group. Total copper intake was low, and the amount derived from meat was similar to the age group mean. There were no significant demographics associated with this cluster.

The last meat consumption cluster represented only 2% of the population with a mean intake of 49.3% of caloric intake derived from meats. The small number of counts (8) in this cluster make results unreliable; hence, results will not be presented.

Cluster Results of Women 75+

Women over the age of 75 years constituted the smallest age group, only 236 individuals. One percent of the population did not consume meat. The remaining 99% were divided into three meat consumption clusters, two of approximately equal size (45% and 48%) and a smaller (6%) third one. Women in this age category had a lower mean energy intake than did any of the other age groups. Their total fat and SFA intakes were 18% and 30% above the NRC guidelines. Vitamin B_6 and iron intakes were 83% and 108%, respectively, of their RDAs. Copper intake was only 58% of the ESADDI. Calcium, magnesium, and zinc intakes ranged between 70% and 72% of their respective RDAs.

A large proportion (45%) of the women in this age group had a low intake of meat, averaging 12.9% of total calories. Intakes of total meat and beef were low, as was the intake of poultry (as % kcal). Total fat and cholesterol intakes were low, both in the overall diet and from meat products. Energy and SFA intakes were similar to the norms for the age group; however, the amounts provided by meat were low, suggesting that individuals somehow balance energy and SFA intakes to stay within a certain range regardless of food sources. The intakes of vitamin B_6, calcium, magnesium, and iron for all foods were similar to means for the age group, but the amounts coming from meat were low.

Almost half of the sample was contained in the cluster with a mean meat intake of 22.7% of energy intake. These individuals had higher intakes of beef, poultry, and LVG. Their intakes of processed meat and pork were similar to age group norms, but their intake of seafood (as % kcal) was high. Energy and SFA intakes were within normal ranges, but the amounts derived from meats were high. Total fat and cholesterol intakes were high whether from all foods or from meats only. This was not expected and suggests that perhaps individuals in this age group either tend to select higher-fat meats (which also tend to be lower in cost) or use higher-fat preparation techniques, or both. Vitamin B_6, calcium, magnesium, and iron intakes were similar to the means for the age group, but the amounts derived from meats were significantly higher. There were no significant demographic characteristics in this cluster.

The smallest cluster (6% of population) represented individuals with a mean intake of meat products representing 37.3% of energy intake. There were only 13 counts in this cluster, so results cannot be considered representative and will not be discussed.

Individuals Who Did Not Consume Meat

Even though the number of individuals in the no-meat intake groups were small for each age group (n=8, 12, 9, 11, 4, and 3 by increasing age group), it is of interest to determine if there were similarities between the groups in nutrient intake or demographic characteristics. Three age groups (25-34, 35-50, and

65-74 years, with energy intakes of 1074, 946, and 953 calories, respectively) had energy intakes that were significantly lower than their respective age group norms, and those over 75+ had a higher caloric intake than average for their age group. Total fat intakes were similar to group norms in three age categories, but fat intakes were below normal for those aged 25-34, 65-74, and 75+ years. Saturated fatty acid intakes varied but were similar to respective group means for two age categories (19-24; 25-34), low in those aged 35-50 and 65+ and high in those aged 51-64. In all age groups, individuals had significantly lower total intakes of cholesterol.

The three age groups, comprising those aged 19 to 50 years, had vitamin B_6 intakes that were significantly lower than the age group norms and ranged from 41% to 50% of the RDA. Intakes in those aged 51-74 years ranged from 70% to 83% of the RDA and did not differ significantly from the respective group means. Women over the age of 75 had a low intake of vitamin B_6 (58% of RDA), but this was not significantly different from the age group mean. Total iron consumption was lower than the respective age group norms for individuals aged 19-24 and women over 35, but similar to the age group mean for those aged 25-34. Zinc intake was significantly lower than mean intakes for individuals aged 19-74 and ranged from 27% to 52% of the RDA. Women over the age of 75 years had an intake of 66% of RDA.

Individuals who did not consume meat during the 3 days of record collection cannot be said to be vegetarians, but they may share some characteristics of those that typically abstain from meat intake. Body mass indexes (BMI) were significantly lower that the respective age group norms for all women over the age of 25. The amount of education received by individuals in the nonconsumption groups appeared to be quite different from that of meat consumers. Subjects aged 19-35 and 51-64 had received significantly more schooling than typical for their age groups; however those aged 65-74 had received significantly less. The mean education level of those aged 19-24 was 14 years, and for those aged 25-34 it was 15 years, indicating most women in these age groups had at least some college education. As the 1987-88 NFCS did not gather data from individuals living in university housing, conclusions cannot be drawn concerning their dietary intakes. It is not uncommon for college students to avoid meats for a variety of reasons; it may be health, economic, or environmental. However, the poor nutrient intakes that were associated with no-meat intake suggest the strong need to provide university women living off campus with nutrition education messages concerning the benefits of a well balanced meal plan, including meat, for maintaining health. Studies comparing dietary intakes of college women living on campus vs those living off campus would help determine their specific nutrition education needs.

For women in the age groups between 35 and 74 years, the absence of meat intake was associated with a lack of economic resources. This was demonstrated by low incomes, when expressed as percent of Federal Poverty guidelines (age groups 35-50 and 65-74), and increased food stamp use (age group 51-64 years). Individuals that did not consume meat tended to be located more heavily in the Northeast (age groups 25-34 and 51-64 years) and the Midwest (age group 65-74 years).

Trends in Nutrient Intake Seen with Increasing Caloric Density of Meat

Mean energy and specific nutrient values from each cluster were compared to determine what, if any, change could be seen between low and high meat intakes (as % kcal). Total caloric intakes that were significantly below respective age group average intakes were associated with two groups of clusters. Total energy intake was low and the energy derived from meats was similar to the age group mean in the 12.5% cluster and nonexistent in the no-meat intake groups for women aged 25-34, 35-50, 51-64, and 65-74. Caloric intakes significantly lower than respective age group intakes were found in all-meat clusters providing a high proportion of calories from meat: 25.0%, 31.0%, 33.0%, and 33.2%. Results suggest that women who either do not consume meat or have a high proportion of their caloric intake derived from meat may have total energy intakes that are significantly lower than typical for their age group.

Meat and Fat Intakes

Total fat intakes that were significantly lower than respective age group norms were found only in the low meat clusters that averaged 8.5% to 16.7% of calories from meat. These clusters also had caloric intakes from meat that were significantly lower than the age group means. Total fat intakes that were similar to age group means were associated with clusters in the middle range of meat consumption, i.e., those providing mean intakes of 14.3% to 21.6% of calories from meat. Intakes of total fat significantly above the age group means were associated with clusters that provided 22.7% to 33.2% of caloric intake from meat products. Each of the high meat clusters also had total fat intakes from meats that were significantly higher than age group means. Therefore, total fat intakes that were significantly above age group norms were found only in clusters where the mean energy intake from meats ranged from 23% to 33% of total caloric intake. This represented approximately 21% of the total study population.

Only five meat-consuming clusters had total mean saturated fatty acid intakes that were significantly above the respective age group means. Individuals who had low intakes of SFAs were found in the clusters averaging 12.5% and 16.7% of calories from meat. High intakes of SFAs were associated with the clusters where meat intakes were high (22.7%, 25%, 31%, 33%, and 33.2% of total calories). Total SFA intakes were similar to age group averages, but the amounts derived from meats were low in the clusters where meat intake was low: 8.5%, 9.5%, 12.9%, and 14.3%. Of the seven clusters that had high SFA intakes from meat, five also showed a high SFA intake from all foods. These results seem to indicate that the caloric density of meat in the diet may be only weakly associated with total SFA intakes. Further statistical analyses are necessary to determine actual degree of relationship between SFAs and total meat intake.

Cholesterol intakes significantly below respective age group averages, both from meats and from all foods, were associated with the clusters having a low mean intake of calories from meat (8.5%, 9.5%, 12.5%, and 12.9%). High intakes of cholesterol, both from meats and from total food consumption, were found in the clusters which had mean intakes of 22.7%, 25%, 30.3%, 33%, and 33.2% of calories provided by meat. Cholesterol intakes appeared to be higher with higher meat caloric intake; however, in no cluster did the mean intake exceed 98% of NRC guidelines.

Meat and Vitamin B_6 Intake

The only groups associated with overall vitamin B_6 intakes lower than respective age group norms were women aged 19-50 who did not consume meat. All meat-consuming clusters had mean vitamin B_6 intakes that were similar to the age group norms. Younger women (aged 19-50) had lower mean intakes of vitamin B_6 than did those aged 51-74 (70%-77% vs. 85%-90% of RDA). When vitamin B_6 needs were calculated using the ratio of 0.016 mg per gram dietary protein, all clusters demonstrated mean intakes adequate to meet the calculated needs, with the exception of non-consumers over the age of 75. Although the calculated needs were met, there is concern arising from the bioavailability of vitamin B_6 from non-meat foods. As absorption of the vitamin is high from animal sources and may be as low as 20% when derived from plant sources (Kabir et al. 1983; Reynolds 1988), nutrition education messages revealing this fact should be presented to women who have little or no meat in their diet. Older women especially should be targeted for this information as they tend to obtain a higher proportion of their vitamin B_6 intakes from plant sources (Manore et al. 1990) and may have an increased need for the vitamin due to decreased absorption or interference by medications (Kant et al., 1988; Lowik et al. 1989; Ribaya-Mercado et al. 1991).

Meat and Mineral Intake

Although meats provide only about 3% of the total dietary intakes of calcium, the caloric density of meat in the diet appeared to affect total calcium consumption indirectly. Low calcium intakes from all foods were associated with the clusters containing the following percentages of calories from meat: 25%, 30.3%, 31%, 33%, and 33.2%. Total calcium intakes were high, but the amounts provided by meats were low in the clusters having 8.5%, 9.5%, and 12.5% of total calories derived from meat. Total calcium intakes were also high in the 14.3%, 16.7%, and 17.3% meat clusters although the amounts provided by meats did not differ significantly from the group means. The level of calcium provided by meats was significantly higher than respective age group means in meat clusters providing 25.0% to 33.2% of calories from meats. Thus there may be an inverse relationship between calcium intake and the density of meat in the diet. It may be that women recognize both the sources and the need for high biological value protein in the diet. Evidently, subjects tended to select either dairy products or meats, rather than a balance of both, to supply protein.

Magnesium intakes shared some of the characteristics of calcium intakes in that they were lower than age group averages for clusters that had high caloric densities of meat (25%, 30.3%, 31%, 33%, and 33.2%). With the exception of one cluster (30.3%), these are the same clusters that are found when total energy intake is low and energy intake from meat is high. Total dietary magnesium intakes that were significantly above respective age group norms were found in the clusters that provided low intakes of meat (8.5%, 9.5% 12.5%, and 16.7%). These results suggest that the intakes of both calcium and magnesium were more strongly associated with caloric intake than with the intake of meat (as % kcal).

Age group means for copper intakes ranged from 58% to 67% of the lower value of the ESADDI, substantially underneath desirable consumption levels. The mean copper intakes within the meat consumption clusters tended to be similar to respective age group means. Clusters providing high meat intakes (31% and 33.2% of total calories from meat) were the only ones having copper intakes lower than age group means. The only cases where copper intakes were significantly higher than sample averages were found in those aged 65-74 years who did not consume meat and those represented by a cluster providing 8.5% of total calories from meat. As low meat intakes and high meat intakes were both found within the normal range of overall copper intake, it does not appear that copper and the caloric density of meat in the diet are strongly linked. Further analysis of cluster results will omit calcium, copper, and magnesium and concentrate on the intakes of iron and zinc.

Iron. With the exception of three nonconsumption groups, those aged 19-24, 35-50, and 51-64 years, all clusters had mean total iron intakes that were similar to their respective age group norms. For individuals aged 19-50, these age group means ranged from 66% to 69% of the RDA (15 mg/d), and no cluster had an iron intake that exceeded 71% of RDA. These results indicate that low iron intake is still a major nutritional concern of premenopausal women in the United States. The age group mean intakes of iron for women over the age of 51 years ranged from 107%-112% of their RDA (10 mg/d).

For each nonconsumption group and meat cluster formed by women aged 19-50 years, the amount of absorbable iron was computed to determine if it increased as the density of meat intake in the diet increased. Appendix C shows percent of dietary availability of heme and nonheme iron, based on body stores. The bioavailability determinations, based on the model outlined by Black and coworkers (1988), were conducted twice. The first determination was based on the hypothesis that no body iron stores were present, and the second, on the assumption that body iron stores equaled 250 mg. Heme and nonheme iron content for each of the meat intake categories in women aged 19-50 years is shown in Table 9.

The < 10% and the > 36% categories were comprised only of women aged 25-34 years and represented 23% and 3%, respectively, of the age group, hence the values in the > 36% level may be biased. As discussed previously, clusters with high meat intakes (> 26% kcal) had energy intakes that were low compared to respective age group norms. This suggests that the intake of non-meat foods was low. In this cluster analysis, meat intakes providing greater than 25% of total caloric intake, appeared to have somewhat lower amounts of bioavailable iron than found in clusters where meats provided less caloric intake. However, statistical testing was not performed to determine if the differences were significant. It appears that although heme iron continued to increase with increased caloric density of meat, these increases were offset by the decrease in nonheme iron due to decreased intake of non-meat foods.

Given the hypothesis of zero iron stores, the intakes of bioavailable iron ranged from 1.26 to 1.44 mg/d in individuals that consumed meat. Only one meat intake cluster met the recommended intake of absorbable iron (1.4 mg/d). When the analysis was conducted assuming 250 mg iron stores, the range of intakes of absorbable iron decreased to 0.85 to 0.99 mg/d. Subjects who consumed no meat (1.6% of those aged 19-50 years) had extremely low intakes of absorbable iron, ranging from 0.27 to 0.45 mg/d for zero iron stores and 0.21 - 0.36 mg/d for 250 mg iron stores. These results emphasize the necessity to provide younger women with strong nutrition education messages on the role of meats, especially red meat, in providing highly bioavailable iron.

Table 9. Average intakes of women aged 19-50 years of heme, nonheme, and bioavailable iron by meat consumption level

% kcal from Meat	Heme Iron Intake (mg)	Nonheme Iron Intake (mg)	Bioavailable Iron @ Body Iron Stores	
			None (mg)	250 mg (mg)
< 10%	0.60	10.09	1.32	0.88
12%-18%	0.70-0.95	9.20-9.53	1.26-1.34	0.85-0.91
21%-25%	1.08-1.24	9.06-9.18	1.38-1.44	0.93-0.99
30-33%	1.36-1.39	7.95-8.19	1.35-1.39	0.95-0.96
> 36%	1.53	7.49	1.36	0.95

Zinc. The mean intakes of zinc ranged from 68%-70% of RDA for those aged 19-50 and 71%-73% of RDA for those over the age of 50. With the exception of those over the age of 75, the mean zinc intakes for all non-meat consumers were significantly lower than the age group norms; however, the sample sizes were too small for definitive statements. Only one cluster, containing 9.5% of calories from meat, fell into the category of low zinc intakes both from all foods and from meat. Three clusters (25%, 31%, and 33% of calories from meat) had high zinc intakes from both meats and all foods. The presence of only nonconsumption groups and the 9.5% cluster in the low total zinc intake category suggests that meat's contribution to overall zinc intake is significant. The fact that zinc intakes only exceed age group norms in clusters having the highest amounts of calories coming from meat suggests that increasing meat in the diet substantially enhances total zinc intake. Zinc was the only mineral to demonstrate this positive association with meat intake.

Unfortunately, in no cluster did zinc intake exceed 81% of RDA. Zinc deficiency impairs both humoral and cellular immune functions (Bogden et al. 1988; Chandra 1992) and is an essential component of more than 70 enzymes required for growth and maintenance of body tissues. Low zinc consumption is of concern for women of all ages. In younger women, zinc is of especial concern during pregnancy, as low intakes may compromise fetal growth and development (Dawson et al. 1989; Repke 1991). Zinc absorption in older individuals has been shown to be significantly less than displayed by younger subjects, 21% vs. 39% (Wisker et al. 1991). Up to this date, there have been few nutrition education messages targeted toward women on dietary zinc sources and the importance of adequate zinc ingestion for health promotion and maintenance. These study results indicate that women in general have inadequate intakes of zinc and that increasing the intake of meats, especially red meat which has zinc concentrations 2-5 times higher than found in poultry, pork, or seafoods, would result in zinc intakes that more closely approached the RDA. Special care needs to be given in developing these messages so that individuals will select food sources of zinc rather than take dietary supplements. Use of supplements would provide zinc in a less bioavailable form and, given the tendency of individuals to take more of a supplement than required, may result in an imbalance of zinc relative to iron and copper intakes. This could have adverse results as these minerals appear to compete for the same absorption sites in the body (Bogden et al. 1988; Crofton et al. 1989).

Demographic Variables

Race was significant for only two clusters that had a reliable cell size. African-Americans were found in smaller than expected proportions in the 9.5% cluster. The 33% cluster had a higher proportion of African-Americans than typical for the age group. Not enough data was found to suggest an association of race with meat intake levels.

Women with high levels of meat intake (as % kcal) were more likely to be found in the South (32.6% cluster) and less likely to be found in the Northeast (31% cluster). Nutrition education goals designed for women in the South should stress a balanced intake of all foods.

Individuals having BMIs significantly higher than their respective age group norms were associated with the clusters having 25% and 33% of total calories derived from meat. Women in the 9.5% cluster had a mean BMI significantly beneath the age group norm, as did individuals aged 25-74 years that did not consume meat. This suggests that there may be a positive relationship between BMI and the percent of calories coming from meat in the diet. There did not appear to be a relationship between BMI and energy intake.

Household income, as percent of federal poverty levels, differed significantly from respective age group norms in four meat clusters. Subjects having a mean intake of 8.5% and 16.7 % of calories from meat had high incomes, and women consuming high mean intakes of meat (20.9% and 33% of calories) had incomes that were significantly lower than typical for their age groups. Individuals in the cluster providing 33% of calories from meat also were more likely to use food stamps than their peers. These results tend to suggest that lower meat intake is more likely to be found in individuals with higher incomes while those with incomes below the norm are more likely to have a diet that contains higher levels of meat.

The level of education for the female head of the house also appeared to be linked to meat intake. Individuals aged 19-50 who did not consume meat had an average of 2 years more schooling than typical for their age group. Except for those aged 25-34 this increase was not statistically significant due to the small cell size. The nonconsumption groups, with very low cell sizes, for individuals aged 25-34 and 51-64 years had mean education levels that were significantly higher than their respective group norms as did individuals in the clusters providing 8.5% and 9.5% calories from meat. This suggests that subjects aged 19-64 who consume little or no meat have higher education levels. Although the mean total fat and SFA intakes for these groups were lower than respective age group norms, intakes of other nutrients, especially those linked with meat intake, were poor. Nutrition education messages to individuals consuming little or no meat should emphasize the facts that overall intake from all food groups should be balanced and that focusing on decreasing total fat or SFA intakes by reducing meat intake is unlikely to achieve or maintain health.

Some personal and health-related variables were reviewed and not reported because of lack of significant response. These included urbanization; whether the individual was on a special diet and if so, what type; and whether the individual took vitamin/mineral supplements.

Results of Cluster Analysis Based on Specific Meat Intake

For this study the researchers extracted meat from meat mixtures. This allowed a more accurate portrait of the consumption of total meat, specific meats, and their accompanying nutrient intakes. The average daily gram intake of each specific meat category, across the different age groups, is shown in Table 10. The contribution provided by each meat to the total meat consumption was Beef, 37.8%; Poultry, 22.9%; Processed Meat, 19.9%; Pork, 10.1%; Seafood, 7.2%; Lamb, Veal, Game, 1.3%; and Organ Meats, less than 1%.

Table 10. Women's mean intake (g) of specific meats by age group

Age (y)	Beef (g) †	Poultry (g)	Processed Meat (g)	Pork (g)	Seafood (g)
19-24	41	27	18	10	12
25-34	41	27	23	8	12
35-50	42	29	20	8	14
51-64	39	30	20	10	20
65-74	34	33	19	9	16
75+	37	24	18	7	10

† Intakes rounded to nearest g.

Proportion of Age Groups Consuming Specific Meats

Initial analysis showed that meat items contained in the Organ Meats and Lamb, Veal, Game (LVG) categories were consumed by a small proportion of the survey population. Of all adults aged 19-50 in the 1987-88 NFCS, only 3% reported consuming Organ Meats and 4% reported consuming LVG. Adults aged 51 and older were only slightly more likely to consume these foods (5% each). Due to the high levels on nonconsumption, it was determined to omit further analysis on Organ Meats and LVG categories and cluster on the intakes of Beef, Poultry, Processed Meat, Pork, and Seafood only. Table 11 shows, within each age group, the percentage of individuals who consumed foods from each of these meat categories.

Table 11. Proportion of age groups consuming specific meats

	Percent of Age Group Population †				
Age (y)	Beef	Poultry	Processed Meat	Pork	Seafood
19-24	80	55	72	34	32
25-34	79	60	76	29	37
35-50	80	60	68	32	39
51-64	74	59	67	35	43
65-74	69	62	64	30	41
75+	69	60	70	29	28

† Proportions rounded to nearest %.

Beef products were consumed by the largest proportion of individuals in each age group, and the mean gram intakes were higher than for any other meat category. For this reason, each beef cluster within an age group is fully described. After reviewing the results of cluster analysis on poultry, processed meat, pork and seafoods, it was found that there were limited differences noted in nutrient intakes and demographic variables; therefore, individual clusters will not be discussed in detail. However, the relationships noted between intakes of a specific meat, energy and nutrient intakes will be outlined, and significant demographic variables will be identified.

Results of Clustering on Beef Intake

Using the same clustering methods as described for total meat consumption, this researcher classified individuals in the six different age levels into groups based upon their consumption of beef as percent of total calories. Across the ages, there were 23 beef-consuming clusters and six groups that did not consume beef. Information on the proportions of each age group in each cluster, as well as mean beef (g and % kcal) and total meat (g) intakes, is found in Table 12. Five clusters with high beef intakes (16.1%,18.5%, 28.9%, 31.6%, and 51.0%) contained fewer than 20 counts. Their results are considered unreliable and are not reported other than to identify the proportion of individuals in the age group falling within the clusters. Table 13 displays, by age level and cluster, the mean intakes of energy and nutrients (as % of standards). Values in Table 13 that vary significantly from age group means are marked by a "+" if above or a "-" if below group norms. These values, plus demographic variables that differ significantly from respective age group norms, are derived tables found in Appendix C.

Cluster Results: Women Aged 19-24

Twenty percent of women in this age category did not eat beef during the 3 days of record keeping. The intake of total meat (as % kcal) was significantly lower than the age group norm; however, intakes of poultry, pork, and seafood were significantly above group norms when considered either as gram intake or as percent of caloric intake. Energy intake, total fat, and SFA intakes were lower than typical for the age group as was mean zinc intake. Individuals in no-beef groups had a higher BMI than expected.

Four beef-consumption clusters were formed. The largest, containing 37% of the population, had a mean intake of 4.1% of calories coming from beef. Although the intakes of beef and total meat were significantly lower than the age group averages, the gram intakes of poultry and pork were high. Energy, total fat, SFA, and cholesterol intakes were similar to group norms although the amount derived from beef was significantly low. Total dietary intakes of vitamin B_6, iron, and zinc were also similar to mean age group intakes. The only variable of note was that individuals in this group tended to state "never" when asked if they consumed vitamin/mineral supplements.

Almost one-quarter of the age group (22%) had a mean consumption of beef that provided 10.5% of their total energy intake. Their intakes of total meat and beef were high both in grams and as percent of caloric intake. Total cholesterol intake was significantly high, but the amounts derived from beef were similar to the age group norm. The total fat, SFA, and zinc intakes contributed from all foods as well as from beef were significantly high. Vitamin B_6 and iron intakes from all foods were similar to the age group norms. The proportions derived from beef were high. There were no significant demographic variables noted in this cluster.

Table 12. Age group proportions and mean beef intake (g; % kcal) by beef clusters

Variable	Beef Intake as % of Total Caloric Intake				
	No Beef	2.5% to 7.0%	9% to 12%	14% to 20%	> 30%
Age Group (%)					
19-24	20	37	22	6 / 15	----
25-34	21	23	39	17	----
35-50	20	45	26	10	----
51-64	26	52	---	22	<1*
65-74	31	27 / 6	10	24	2*
75+	31	17 / 11	33	3*	5*
Beef (% kcal)					
19-24	0	4.1	10.5	16.1 / 8.3	----
25-34	0	2.8	9.1	18.6	----
35-50	0	5.6	12.4	19.8	----
51-64	0	6.6	---	16.5	51.0
65-74	0	3.4 / 6.9	9.3	14.7	31.5
75+	0	3.1 / 6.2	11.7	18.5	28.9
Beef (g) †					
19-24	0	27	63	(NS)** / 86	----
25-34	0	18	54	92	----
35-50	0	34	66	98	----
51-64	0	38	66	88	(NS)
65-74	0	20 / 42	59	76	(NS)
75+	0	19 / 31	60	(NS)	(NS)
Meat (g) †					
19-24	94	102	127	(NS) / 126	----
25-34	90	108	121	134	----
35-50	93	111	126	145	----
51-64	107	122	----	147	(NS)
65-74	99	102 /100	146	134	(NS)
75+	90	87 / 86	106	(NS)	(NS)

† Meat intakes rounded to nearest g. * Clusters containing < 20 counts.
** (NS) - Values omitted due to unreliability caused by small cell count.

Table 13. Mean energy and nutrient intakes as % standards: from beef and all foods by beef intake (% kcal) - significant variances marked

Variable by age (y)		Meat Intake by % of Total Caloric Intake			
		No Beef	2.5% to 7%	9% to 12%	14% to 20%
Energy (kcal)					
19-24	All Foods	1382	1558	1576	1353
	Beef	0	67 -	164 +	239 +
25-34	All Foods	1424 -	1650 +	1552	1374 -
	Beef	0	47 -	138 +	243 +
35-50	All Foods	1240 -	1555 +	1407	1301 -
	Beef	0	85 -	170 +	252 +
51-64	All Foods	1351 -	1477 +	----	1381
	Beef	0	96 -	----	227 +
65-74	All Foods	1274 -	1517 + / 1526	1591 +	1361
	Beef	0	51 - / 105 +	149 +	193 +
75+	All Foods	1192 -	1491 + / 1277	1395	----
	Beef	0	48 - / 79+	162 +	----
Vitamin B_6 (% RDA)					
19-24	All Foods	67	72	76	63
	Beef	0	5 -	13 +	17 +
25-34	All Foods	75	80	78	74
	Beef	0	4 -	10 +	18 +
35-50	All Foods	67 -	81 +	78	75
	Beef	0	7 -	13 +	19 +
51-64	All Foods	87	82	----	81
	Beef	0	7 -	----	17 +
65-74	All Foods	86	86 / 110 +	102 +	91
	Beef	0	4 - / 8 +	12 +	15 +
75+	All Foods	77	98 + / 75	86	----
	Beef	0	4 - / 7 +	11 +	----
Iron (% RDA)					
19-24	All Foods	61	68	71	61
	Beef	0	5 -	11 +	15 +
25-34	All Foods	63	72	70	68
	Beef	0	3 -	9 +	16 +
35-50	All Foods	54 -	73 +	70	65
	Beef	0	6 -	11 +	17 +
51-64	All Foods	110	113	----	110
	Beef	0	10 -	----	23 +
65-74	All Foods	98 -	111 / 123	128	113
	Beef	0	5- / 11 +	15 +	20 +
75+	All Foods	96	118 / 98	120	----
	Beef	0	5 - / 8 +	16 +	----

Table 13. (Continued)

Variable by age (y)		No Beef	2.5% to 7%	9% to 12%	14% to 20%
		Meat Intake by % of Total Caloric Intake			
Zinc (% RDA)					
19-24	All Foods	54 -	64	79 +	76 +
	Beef	0	12 -	29 +	40 +
25-34	All Foods	57 -	66	74 +	82 +
	Beef	0	8 -	25 +	43 +
35-50	All Foods	48 -	70	77 +	84 +
	Beef	0	16 -	30 +	46 +
51-64	All Foods	62 -	72	----	87 +
	Beef	0	18 -	----	41 +
65-74	All Foods	56 -	71 / 75	83 +	85 +
	Beef	0	9 - / 20 +	27 +	37 +
75+	All Foods	55 -	71 / 73	81	----
	Beef	0	9 - / 14 +	29 +	----
Total Fat (% NRC)					
19-24	All Foods	113 -	118	129 +	126
	Beef	0	8 -	20 +	36 +
25-34	All Foods	119 -	122	125	127
	Beef	0	5 -	17 +	35 +
35-50	All Foods	117 -	122	124	125
	Beef	0	10 -	23 +	36 +
51-64	All Foods	117 -	122	----	126
	Beef	0	12 -	----	31 +
65-74	All Foods	114	122 / 122	124	121
	Beef	0	6 - / 13 +	17 +	27 +
75+	All Foods	115	110 - / 119	121	----
	Beef	0	6 - / 11 +	23 +	----
Saturated Fatty Acids (% NRC)					
19-24	All Foods	115 -	130	143 +	139
	Beef	0	9 -	23 +	42 +
25-34	All Foods	127 -	131 -	137	142 +
	Beef	0	6 -	20 +	42 +
35-50	All Foods	117 -	130	134 +	138 +
	Beef	0	12 -	27 +	43 +
51-64	All Foods	118 -	125	----	136 +
	Beef	0	14 -	----	36 +
65-74	All Foods	110 -	132 + / 133	128	124
	Beef	0	7 - / 15 +	20 +	31 +
75+	All Foods	123	114 - / 130	134	----
	Beef	0	7 - / 13	26 +	----

One cluster represented individuals having a mean intake of 16.1% of calories from beef. This cluster contained only 17 counts; hence, the data are not considered reliable and are not reported. The final cluster in the 19-24 year age group contained 15% of the population and represented those having a mean intake of 18.3% of calories from beef. The amount of beef in the diet was higher than the age group mean; however, the intake of poultry was significantly low. Energy, total fat, SFA, vitamin B_6, and iron intakes were similar to age group norms, while the proportions of these components provided by beef was high. Zinc intakes, from all foods and from beef products only, were high.

Cluster Results: Women Aged 25-34

In this age category, 21% of the women did not consume beef during the record-keeping period. Mean total meat intake was low; however, the intakes of poultry and LVG were significantly high, whether considered as percent of caloric intake or as gram intake. The gram intakes of processed meats and organ meats were also high. Total energy, fat, SFA, and zinc intakes were similar to age group norms. Members of the no-beef intake group tended to have had more schooling than typical and were more likely to live in central cities. They also reported they were following a special diet.

Individuals aged 25-34 formed only three beef-intake clusters. The cluster having a mean intake of 2.8% of calories from beef represented 23% of the age group. The mean intakes of poultry, seafood, and organ meats were high although intakes of beef and total meats were lower than typical for the age group. Total energy intake was higher than average for the age category. The mean intakes of total fat, vitamin B_6, iron, and zinc derived from beef products were low; however, the intakes from all foods were similar to age group norms. SFA intakes from beef and from all foods were lower than the age group means.

The largest proportion of those aged 25-35 years (39%) consumed diets providing a mean intake of 9.1% of calories from beef. The intakes of beef and total meats were significantly higher than age group norms. Energy, total fat, and SFA intakes were not dissimilar to mean intakes for the age group. Zinc consumption, both from beef and from all foods, was significantly higher than average for women of this age. A higher proportion of women than normal stated living in central cities.

The last cluster represented 17% of the population and had a mean intake of 18.6% of calories from beef. Poultry and seafood intakes, whether expressed as percent of calories or as gram intakes, were low. Total caloric intake was low, but the amount provided by beef was higher than expected. The intakes of SFAs and zinc, however, were high both from beef and from all foods. The only demographic variable of note was that women in this cluster tended to have significantly less schooling than typical for the age group.

Cluster Results: Women Aged 35-50

Women in this age category formed three beef-consuming clusters and one nonconsumption group. Those who did not eat beef during the record-keeping period accounted for 20% of the population. Although their total intake of meat was significantly lower than normal for the age group, the amounts of poultry, pork, and seafood consumed were high, whether considered as percent of total caloric intake or as gram intake. Their mean intakes of energy, fat components, vitamin B_6, iron, and zinc were significantly lower than typical for the age group. Higher than expected proportions of women in this group were African-Americans and lived in the West. Subjects also were more likely to state being on a special diet.

The largest proportion of the age group (45%) consumed 5.6% of their calories from beef. When compared to age group norms, their intakes of beef, and total meat were significantly low; however, their gram intakes of poultry and seafood were high. Energy, vitamin B_6, and iron intakes from all foods were high, although the proportions contributed by beef products were lower than age group norms. Total SFA and zinc intakes were similar to the age group norms. There were no demographic variables that differed significantly from the age group averages.

Slightly more than one-fourth of the population consumed diets having a mean intake of 12.4% of calories from beef. Total meat and beef intakes were high, but all other meat intakes were similar to the age group norms. The proportions of energy, total fat, vitamin B_6, and iron derived from beef were high, but the total dietary intakes did not differ strongly from age group norms. Intakes of SFAs and zinc were significantly high, both from beef only and from all foods.

The last cluster comprised 10% of the population and averaged an intake of 19.8% of calories from beef. Intakes of total meat and beef were high; the gram intakes of processed meat, poultry, pork, and seafood were lower than average for the age group. Total caloric intake was low, and the proportion derived from beef was high. Total fat, vitamin B_6, and iron intakes from all foods were similar to age group norms though the proportions provided by beef were high. Both zinc and SFA intakes were high whether from beef only or from all foods. The only demographic variable of note was that women in this cluster tended to have a high BMI when compared to the age group norm.

Beef Cluster Results: Women 51-64

Twenty-six percent of women aged 51-64 did not report eating beef during the 3 days of food intake records. Their intakes of poultry and seafoods were significantly high although total meat intake was lower than normal for the age group. The intakes of energy, total fat, and zinc were significantly low. Women who did not consume beef tended to live in the Northeast rather than in the Midwestern portions of the United States. Their income level was significantly higher than typical of those aged 51-64 years.

Over one-half of the population (52%) consumed diets providing a mean intake of 6.6% of calories from beef. Total caloric intake was significantly higher than normal for the group. The intakes of energy, fat components, vitamin B_6, iron, and zinc were similar to age group norms, although the amounts provided by beef were low. No demographic variables differed significantly from age group norms.

A second beef consumption cluster represented 22% of the age group and had a mean intake of 16.5% of calories from beef. The mean intakes of beef and total meat were high, and the intakes of poultry and seafood were low, whether expressed as percent of calories or as gram intake. The gram intake of processed meat was also low. Intakes of energy, vitamin B_6, and iron were similar to age group averages although the amounts provided by beef were low. Total fat, SFA, and zinc intakes from beef and from all foods were significantly higher than typical for the age group. A larger than expected proportion of individuals in this group tended to live in the Mountain states. One final cluster was generated containing only two counts and representing a mean intake of 51% of calories from beef. Due to the small size, this cluster will not be discussed.

Beef Cluster Results: Women 65-74

Women in this age group were less likely to consume beef than those aged 19-50 (31% vs. 20% to 21%). Total meat intake was low, although the intakes of poultry and seafoods, both as percent of calories and gram intakes, were significantly higher than typical for the population. Total intakes of energy, SFAs, iron, and zinc were below norms for the age group. Higher than expected percentages of nonconsumers were African-American.

Women who consumed a mean intake of 3.4% of calories from beef (27% of the population) had low total meat intakes. Their gram intake of pork was higher than expected. Total energy and SFA intakes were higher than average for the age groups, but the amounts derived from beef were low. Total fat, vitamin B_6, iron, and zinc intakes from beef were lower than the age group norms, but the amounts from all foods were similar to average intakes. Women in this cluster tended to categorize their diet as "poor."

Six percent of the age group formed a cluster having a mean intake of 6.9% of calories from beef. Pork intake was low compared to the age group mean. Energy intake from beef was also low though the amount from all foods was similar to the norm. Total mean intakes of fats, iron, and zinc were similar to age group means, but the amounts derived from beef were high. Vitamin B_6 intakes from all foods and from beef only were higher than typical for the age group. There were no demographic or descriptive variables that differed significantly from the age group norms.

The third beef intake cluster contained 10% of the population and had a mean intake of 9.3% of calories from beef. Total meat and beef intakes were high; however, the intakes of all other meats were not significantly different from age group means. The average intakes of energy, vitamin B_6, iron, and zinc were high, both from beef and from all foods. Total fat and SFA intakes were high from beef, but their intakes from all foods did not differ significantly from the age group norms.

Nearly one-fourth of the population consumed diets having a mean intake of 14.8% of calories from beef. Poultry and seafood intakes (grams) were significantly lower than the age group norms. Zinc was the only nutrient having intakes, from beef and from all foods, that were significantly higher than typical for the age group. The intakes of energy, fat components, vitamin B_6, and iron derived from beef were high, but the total intakes from all foods did not differ strongly from age group averages.

A final cluster was formed. It represented only seven counts and had a mean intake of 31.6% of calories from beef. Due to the high probability of bias, the results will not be discussed.

Beef Cluster Results: Women 75+

Women in this age category formed one no-beef intake group and five beef clusters. Two of these clusters (18.5% and 28.9%) had very small counts (8 and 11), and the results cannot be considered reliable and will not be discussed. Individuals who did not consume beef comprised 31% of the age group. Their intakes of processed meat and poultry products were significantly higher than expected, both when considered as percent of calories and as gram intake. Total energy and zinc intakes were low when compared to the age group norms. Intakes of fat components, vitamin B_6 and iron, however, were similar to the mean intakes for women aged 75+ years. Women who did not consume beef were more likely to have a high BMI, and a larger proportion than expected were African-American.

About 17% of the age group consumed diets having low beef intakes (3.1% of kcal). Individuals in this cluster had high total intakes of energy and vitamin B_6. SFA intakes were low compared to age group norms. Total iron and zinc intakes did not differ significantly from average intakes for the age group. Women belonging to this cluster tended to live in central cities.

Eleven percent of the population were members of a cluster that provided 6.2% of caloric intake from beef. There were no meat or nutrient intakes in this cluster than varied significantly from the age group norms. Women with this beef intake level tended to live in suburban areas and to classify their diet as "fair."

The last cluster contained 33% of women over the age of 75 years and had a mean intake of beef that provided approximately 11.7% of total caloric intake. Beef intake was higher than the age group norm although intakes of total meat and other specific meats did not differ significantly. Beef provided a high proportion of energy, total fat, SFAs, vitamin B_6, and zinc intakes; however, the total intakes of these nutrients did not differ significantly from age group averages. Iron intakes were higher than average, both from beef and from all foods. No demographic variables showed a significant variation from the age group averages.

Relationship of Beef Intake to Intakes of Other Meats

Total meat intakes, as percent of caloric intake, were significantly lower than respective age group norms for individuals aged 19-74 who did not consume beef and for those found in clusters providing very low intakes of beef (2.8%, 3.1%, 4.1%, and 5.6%). Total meat intakes that were higher than typical for the age groups were found in the clusters that represented moderate to high intakes of beef (9.1%, 9.3%, 10.5%, 12.4%, 14.8%, 16.5%, 18.3%, 18.6%, and 19.8%). It would appear that total meat intakes (as % kcal) are high when beef intakes (as % kcal) are high, and low when beef intakes are low or absent. In this survey, beef comprised approximately 38% of the study population's total meat intake.

Women over the age of 75 who did not consume beef had an intake of processed meats that was above normal for their age group. In general, however, processed meat intake, as percent of calories, was close to respective age group norms regardless of the level of caloric density of beef in the diet.

Poultry intakes, both as percent of calories and as gram intakes, were significantly higher than typical in all of the no-beef intake groups and the cluster providing 2.8% of calories from beef. Intakes of poultry products that were significantly lower than age group norms were associated in three of the six clusters that provided high levels of beef intake (16.5%, 18.3%, and 18.6%). In most beef clusters, poultry consumption did not significantly differ from the age group norms. However, high gram intakes of poultry were associated with two low beef clusters (4.1% and 5.6%), and low gram intakes were associated with the 12.4%, 14.8%, and 19.8% beef clusters. Results suggest there may be an inverse relationship between beef and poultry consumption.

Pork intakes, as percent of calories, appeared to have a weak relationship with beef density in the diet. The only instance of an intake of pork significantly lower than the age group mean was associated with a low beef intake cluster (6.9%). Pork intakes were significantly higher than age group norms in the no-beef intake groups aged 19-24 and 35-50 years. A low gram intake of pork was associated with two high beef intake clusters (18.6% and 19.8%), and high gram pork intakes were found in two low beef intake clusters (3.4% and 4.1%).

The results would suggest that, at the extremes of beef intake, there may be a weak inverse relationship with the intake of pork whether the intake is considered in grams or as percent of total caloric intake.

Low intakes of seafoods, both as grams and as percent of calories, were associated with three high beef intake clusters (16.5%, 18.6%, and 19.8%). High seafood intakes, compared to age group norms, were associated with all but one of no-beef intake group (25-34) and the 2.8% beef intake cluster. In the majority of beef clusters, the intake of seafoods, as percent of calories, did not differ significantly from the respective age group norms. However, it would appear there may be a weak inverse relationship between seafood and beef when beef intakes are either very low or very high compared to typical intakes for the age group.

Nutrient Intakes in No-Beef Consumption Groups

Energy intakes in the no-beef groups were significantly lower than the respective age group norms. Low caloric intakes have been linked to poor nutrient intakes in previous government surveys (USDA 1972; 1984; 1987a), and the results of this survey confirm the adverse effect that low caloric intakes have on overall nutrient status. Individuals aged 19-65 who did not consume beef had total fat and SFA intakes that were significantly lower than the age group norms. Total fat intakes of those over 65 years of age, and SFA intakes of individuals over 75 years who did not consume beef were similar to respective age group norms. Although younger women did have lower fat intakes, the intakes were still 13% to 19% above the NRC recommendations. Mean SFA intakes of no-beef intake groups were 10% to 27% above NRC standards.

Women who avoided beef intake had mean vitamin B_6 intakes that were similar to age group norms in all age levels except for those aged 35-50 whose intakes were low compared to their age group average. Mean total iron intakes for women who did not consume beef were low in those aged 35-50 and 65-74 years when compared to respective age group mean intakes. The mean intakes of women aged 19-50 were 54% to 63% of the RDA while women over the age of 51 had mean intakes ranging from 96% to 110% of the RDA. Zinc intakes, compared to age group means, were significantly low in all no-beef intake groups and ranged from 48% to 62% of the RDA. Nutrition education messages should be developed for women who do not consume beef in order to emphasize the role of iron and zinc in health promotion and maintenance. Research should be conducted to determine the reasons for beef avoidance. Low-fat beef selection and preparation techniques should be emphasized in education messages directed at women who are willing to consume beef products to ensure that beef consumption does not result in increased total fat and SFA intakes.

Nutrient Intakes Associated with Changes in Beef Density

Caloric intakes that were significantly above age group norms, but had low proportions of calories derived from beef, were associated with the clusters providing 2.8%, 3.1%, 3.4%, 5.6%, and 6.6% of calories from beef. In general, although the absence of beef resulted in low caloric intakes, small amounts of beef were associated with higher than average intakes of energy. Clusters having beef intakes ranging from 9.1% to 18.3% of caloric intake were associated with caloric intakes similar to age group means. Clusters representing mean intakes of 18.6% and 19.8% calories from beef were associated with low energy intakes. These results suggest that, similar to total meat intake results, there may be an inverse relationship between calories and levels of beef intake (as % kcal).

Low total intakes of vitamin B_6 were associated with women aged 35-50 who did not consume beef. Intakes of vitamin B_6 significantly above age group norms were associated with clusters providing 3.1%, 5.6%, and 9.5% of calories from beef. The remaining no-beef groups and clusters had mean total intakes of vitamin B_6 that were similar to age group norms. Increasing the amount of beef in the diet did not result in overall vitamin B_6 intakes' increasing significantly. Results suggest beef is not an exceptional source of vitamin B_6. The three beef consumption clusters that were associated with a high level of vitamin B_6 intake also had caloric intakes that were significantly higher than the group norms, suggesting that enhanced energy content, not beef content, may be responsible for the higher intakes.

Intakes of total iron that were significantly lower than respective age group mean intakes were associated with the women aged 35-50 and 65-74 years who did not consume beef. Total iron intakes that were higher than group norms were associated with the 5.6%, 9.3%, and 11.7% beef clusters. The lack of consistency in no-beef consumption group intakes, coupled with the fact that highest intakes of iron occurred in clusters having high caloric intakes, suggests that beef intake plays a relatively minor role in total iron intake. This does not mean, however, that the iron contribution of beef is insignificant. As discussed previously, beef contributes from two to five times the amount of total iron found in equivalent weights of other meats. About 45% of iron from meats is in the form of highly bioavailable heme-iron. Individuals consuming high proportions of calories from beef will have higher intakes of absorbable iron than individuals that consume no or low amounts of beef. However, the tendency of women to decrease total caloric intake as the percent of calories from beef increases, reduces the intake of non-heme iron and results in total iron intakes that are similar to or lower than those derived from diets that have lower beef caloric densities.

Individuals that did not consume beef, regardless of age, had mean intakes of zinc that were significantly lower than their respective age group norms. Clusters that provided moderate to high amounts of calories from beef, 9.1%, 9.3%, 10.5%, 12.4%, 14.8%, 16.5% 18.6%, and 19.8%, had mean zinc intakes that were higher than typical for respective age groups. Despite the fact that zinc intakes (as % RDA) continued to increase as density of beef in the diet increased, the highest zinc intake met only 87% of the RDA. These results confirm the fact that zinc and beef intakes are strongly and positively related. Indeed, outside of oysters, beef products are the single most concentrated source of dietary zinc, providing 3-5 mg of zinc per 3-ounce serving.

Total fat intakes (from all foods) were significantly low in women aged 19-64 years who did not consume beef. Only two beef clusters (10.5% and 16.5%) were associated with high total fat intakes. For the majority of beef clusters, total fat intakes did not differ significantly from the respective age group norms. Clusters that had a high percent of calories from beef were not associated with higher than normal total fat intakes. The results suggest that beef intake and total fat intake may not have a positive correlation, and, therefore, increasing beef intake in the diet may not result in a high fat intake. The reasons behind the age differences in fat intake in individuals who consumed beef should be explored further.

Total saturated fatty acid intakes lower than normal for respective age groups were associated with the individuals under the age of 75 who did not consume beef and those in the 3.1% beef cluster. Total SFA intakes that were higher than the norms were associated with the clusters providing 3.4% 10.5%,12.4%, 16.5%, and 19.8% of calories from beef. Women over the age of 75 with no beef intake and individuals in the remaining clusters (ranging from 2.8% to 18.6% of total calories from beef) had total SFA intakes that were similar to mean intakes for the respective age groups. These results suggest that although absence of beef in the diet results in intakes of SFAs that are lower than average in younger women, there is not a strong linear relationship between total SFA intake and beef intake.

Demographic Variables Associated with Beef Intake

African-Americans were found in significant proportions in all but two of the no-beef intake groups (25-34 and 51-64 years). Although the no-beef groups had low intakes of total fat and SFAs when compared to respective age group norms, they also had significantly low intakes of zinc. It would appear that the nutrition education messages targeted to African-Americans should emphasize the importance and food sources of zinc in the diet.

Only a few groups were associated with specific regions of the United States. Individuals in the 19-24 and 35-50 no-beef groups were more likely to live in the West, while women in the 51-64 no-beef group were found more often in the Northeast. One no-beef group (aged 25-34) and three beef consumption groups (3.1%, 6.2%, and 9.1%) were composed of individuals who tended to live in central cities. These groups represented only two age levels, women aged 25-34 and those over the age of 75 years.

Health-related variables were not strongly related to changes in dietary beef density. Individuals aged 25-50 who did not consume beef were more likely to state being on a special diet. Only individuals over the age of 65+ had ideas about the healthfulness of their diet that were significantly different from age group norms. Those aged 65+ in the 3.4% beef intake cluster were less likely to classify their diet as "poor." Individuals over the age of 75 in the 6.2% cluster were more likely to classify their diet as "fair" and in the 18.5% cluster to classify diet as " very good." Apparently, individuals over the age of 75 have more positive feelings about diets that are high in beef.

No cluster had a significant association with female head employment or food stamp use. For individuals aged 51-64 years, income as percent of poverty was high in those who did not consume beef and low in those consuming 16.5% of calories from beef. The education level of women was significantly higher than age group norms in those aged 25-34 who did not consume beef and significantly low in those aged 25-34 who consumed 18.6% of calories from beef, suggesting that beef intake may be related to the amount of education a woman has achieved.

Results of Clustering on Poultry Intake

Poultry products were consumed by 59.7% of women during the record-keeping period. In addition to the six nonconsumption groups, twenty clusters were formed by cluster analysis. Of these, four clusters contained less than 10 counts each and represented very high levels of poultry intakes (16.8%, 31.3%, 35.1%, and 53.7% of calories). The results from these clusters are questionable and are not reported due to the high potential for bias arising from the small cell counts. The mean intakes from the remaining 16 clusters ranged from 0.4% to 17.7% of energy derived from poultry. The mean intakes of poultry (in grams and as % kcal) and total meats (in grams) plus the percentage of each age group found within a given cluster are shown in Table 14. The mean energy and nutrient intakes provided by each cluster, with those differing significantly from age group norms being marked, are shown in Table 15. These differences, plus demographic variables that differed significantly from respective age group norms, are derived tables found in Appendix D.

Mean Poultry and Nutrient Intakes
Across Age Groups

About 45% of women aged 19-24 did not eat poultry products during the 3 days of record keeping. The remaining 55% of the population formed two poultry consumption clusters. One contained 25% of the population and had a mean poultry intake level of 3.5% of calories. The second cluster contained 29% of the age group and provided a mean intake of poultry representing 11% of caloric intake. Individuals represented in the no-poultry group had average intakes of vitamin B_6, iron, and zinc that ranged from 62% to 66% of respective RDAs. Their mean intakes of total fat and SFAs were 24% and 38%, respectively, above the NRC fat intake guidelines. Within the clusters, vitamin B_6 intakes ranged from 75% to 79% of the RDA while iron and zinc intakes met between 64% and 76% of respective RDAs. Intakes of total fat and SFAs ranged from 24% to 38% above NRC guidelines.

Women aged 25-34 years formed five poultry consumption clusters. The cluster having the lowest poultry consumption (0.4% of calories) also had the smallest proportion of individuals, only 24 counts. The largest poultry intake, 17.7% of calories, also represented a small proportion of the age group, with only 32 counts. Forty percent of the women in this age group did not consume poultry products. Their intakes of vitamin B_6, iron, and zinc ranged from 65% to

Table 14. Age group proportions and mean meat intake (g; % kcal) by poultry clusters

		Poultry Intake as % of Total Caloric Intake				
Variable	No Poultry	2% to 5%	7% to 10%	11% to 13%	16% to 18%	Over 30%
% Population						
19-24	45	25	----	29	----	----
25-34	40	3 /12 /21	20	----	4	----
35-50	40	42	----	18	----	<1 *
51-64	41	26	14 / 9	----	10	----
65-74	38	----	60	----	----	2 *
75+	40	36	18	----	4 *	1 *
Poultry (% kcal)						
19-24	0	3.5	----	11.0	----	----
25-34	0	0.4 /2.0 /4.9	9.4	----	17.7	----
35-50	0	4.9	----	12.8	----	53.7
51-64	0	3.5	8.2 / 8.4	----	16.8	----
65-74	0	----	7.5	----	----	31.3
75+	0	3.7	9.9	----	16.8	35.1
Poultry (g) †						
19-24	0	27	----	68	----	----
25-34	0	4 /18 /38	64	----	99	----
35-50	0	35	----	78	----	(NR) **
51-64	0	26	56 / 58	----	98	----
65-74	0	----	49	----	----	(NR)
75+	0	25	54	----	(NR)	(NR)
Total Meat (g) †						
19-24	91	118	----	133	----	----
25-34	97	79 /116 /124	132	----	154	----
35-50	93	122	----	151	----	(NR)
51-64	108	117	140 /141	----	162	----
65-74	84	----	127	----	----	(NR)
75+	89	93	125	----	(NR)	(NR)

† Meat intakes rounded to nearest g. * Clusters containing < 20 counts. ** (NS) - Values omitted due to unreliability caused by small cell count.

Table 15. Mean energy and nutrient intakes as % standards: from poultry and all foods by poultry intake (% kcal) - significant variances marked

Variable by age (y)		Meat Intake by % of Total Caloric Intake: No Poultry	2%-5%	7%-10%	11%-13%	16%-18%
Energy (kcal)						
19-24	All Foods	1458	1620 +	----	1424	----
	Poultry	0	57 -	----	149 +	----
25-34	All Foods	1436 -	1459 / 1794 + /1634 +	1462	----	1273 -
	Poultry	0	6- / 35 - / 79 +	135 +	----	200 +
35-50	All Foods	1378 -	1527 +	----	1346 -	----
	Poultry	0	74+	----	165 +	----
51-64	All Foods	1400	1506 +	1419 / 1421	----	1305 -
	Poultry	0	52 -	116 + / 120 +	----	214 +
65-74	All Foods	1310	----	1457 +	----	----
	Poultry	0	----	105	----	----
75+	All Foods	1392 +	1415 +	1202 -	----	----
	Poultry	0	51 +	118 +	----	----
Vitamin B_6 (% RDA)						
19-24	All Foods	62 -	79 +	----	75 +	----
	Poultry	0	7 +	----	19 +	----
25-34	All Foods	67 -	85 / 86 + / 85 +	82 +	----	79
	Poultry	0	1 - / 5 - / 11 +	17 +	----	28 +
35-50	All Foods	69 -	82 +	----	84 +	----
	Poultry	0	10 +	----	21 +	----
51-64	All Foods	75 -	84	92 + / 93 +	----	93+
	Poultry	0	7 -	15 + / 16 +	----	25 +
65-74	All Foods	81 -	----	95 +	----	----
	Poultry	0	----	13	----	----
75+	All Foods	80 -	93 +	76 -	----	----
	Poultry	0	7 +	13 +	----	----
Iron (% RDA)						
19-24	All Foods	62	76 +	----	65	----
	Poultry	0	3 +	----	6 +	----
25-34	All Foods	65 -	74 / 76 + / 75 +	67	----	56 -
	Poultry	0	<1 - / 2 - / 3 +	5 +	----	8 +
35-50	All Foods	66 -	71 +	----	65 -	----
	Poultry	0	3 +	----	7 +	----
51-64	All Foods	110	114	113 / 114	----	106
	Poultry	0	3 -	7+ / 7+	----	14 +
65-74	All Foods	104	----	113	----	----
	Poultry	0	----	7	----	----
75+	All Foods	108	114	97	----	----
	Poultry	0	3	7	----	----

Table 15. (Continued)

Variable by age (y)		Meat Intake by % of Total Caloric Intake: No Poultry	2%-5%	7%-10%	11%-13%	16%-18%
Zinc (% RDA)						
19-24	All Foods	66	74	----	64	----
	Poultry	0	4 +	----	3 +	----
25-34	All Foods	69	72 / 80 + / 73	67	----	59
	Poultry	0	<1 - / 3 - / 6 +	10 +	----	16 +
35-50	All Foods	67 -	72 +	----	69 -	----
	Poultry	0	6 +	----	13 +	----
51-64	All Foods	73	74	71 / 71	----	74
	Poultry	0	4 -	9 + / 9 +	----	18 +
65-74	All Foods	71	----	71	----	----
	Poultry	0	----	8	----	----
75+	All Foods	75 +	70 -	64	----	----
	Poultry	0	4 -	10 +	----	----
Total Fat (% NRC)						
19-24	All Foods	124 +	120	----	115 -	----
	Poultry	0	5 -	----	16 +	----
25-34	All Foods	123	117 / 127 / 125	123	----	124
	Poultry	0	<1 - / 3 - / 6 +	13 +	----	26 +
35-50	All Foods	122 -	121 -	----	124 +	----
	Poultry	0	7 +	----	18 +	----
51-64	All Foods	124	121	120 / 20	----	115
	Poultry	0	4 -	11 + / 11 +	----	25 +
65-74	All Foods	119	----	120	----	----
	Poultry	0	----	11	----	----
75+	All Foods	124 +	118 -	114 -	----	----
	Poultry	0	5 -	15 +	----	----
Saturated Fatty Acids (% NRC)						
19-24	All Foods	138 +	130	----	121 -	----
	Poultry	0	4 -	----	13 +	----
25-34	All Foods	140 +	138 / 135 / 133	127 -	----	117 -
	Poultry	0	0 / 2 - / 5 +	11 +	----	22 +
35-50	All Foods	132 +	128 -	----	126 -	----
	Poultry	0	6 +	----	15 +	----
51-64	All Foods	132 +	124	123 / 123	----	113 -
	Poultry	0	4 -	9 + / 10 +	----	21 +
65-74	All Foods	128 +	----	122	----	----
	Poultry	0	----	9	----	----
75+	All Foods	144 +	128 -	115 -	----	----
	Poultry	0	4 -	13 +	----	----

67% of the RDAs while total fat and SFA intakes were 23% and 40% above NRC goals. Mean intakes of vitamin B_6 within the clusters ranged from 79% to 86% of the RDA. Iron and zinc intakes across the clusters ranged from 56% to 80% of respective RDAs. Total fat and SFA intakes ranged from 17% to 40% above goals. Energy intake was lowest in the cluster containing the highest percent of calories from poultry.

Women aged 35-50 formed one no-poultry group and three clusters. One cluster provided a mean intake of 53.7% of calories from poultry and had only three counts; therefore, the results will not be discussed. The largest cluster, containing 42% of the population, had a mean intake of 4.9% of calories from poultry. The last cluster demonstrated a higher intake of poultry, 12.8% of total energy intake, and represented 18% of the age group. Vitamin B_6 intakes across the clusters reached from 82% to 84% of the RDA but iron and zinc intakes only reached from 65% to 72% of respective goals. Total fat and SFA intakes were high and exceeded NRC goals by 21% to 28%

Forty-one percent of women aged 51-64 did not consume poultry during the 3 days of record collection. The remaining individuals belonged to one of four poultry intake clusters. The cluster representing the smallest mean intake of poultry (3.5% of calories) represented 26% of the population. Two clusters had very similar intakes of energy and nutrients; these were 8.2% and 8.4% clusters and represented 14% and 9%, respectively, of the population. The last cluster had a mean intake of 16.8% of calories from poultry and represented 10% of the population. Similar to results seen in the previous age groups, intakes of vitamin B_6 across the clusters were higher than intakes of zinc 84% to 93% vs 71% to 74%, respectively. Iron intakes exceeded RDA goals.

Of all women aged 65-74 years, 38% did not consume poultry during the record-keeping period. Only two poultry-consuming clusters were formed in this age category. One contained only 2% of the population and represented a mean intake of 31.3% of calories from poultry. The results of this cluster are unreliable due to low counts (7). The larger cluster, representing 60% of the age group, provided a mean intake of 7.5% of calories from poultry. Although the mean intakes from this cluster for iron and vitamin B_6 were close to or exceeded their respective RDAs, zinc intake met only 71% of its RDA.

In addition to the no-poultry group (40% of the population), women over the age of 75 years formed four clusters. Two clusters reported mean intakes of 16.8% and 35.1% of calories from poultry but had very small counts (9 and 3, respectively), and the results have a high potential for bias. A relatively low mean intake of poultry, 3.7% of total calories, was found in the cluster representing 36% of the age group while the remaining 18% formed a cluster that had a mean intake of 9.9% of calories from poultry. Mean intakes across the clusters for these women tended to be slightly lower than those seen for individuals in the other age groups. Vitamin B_6 intakes met 76% to 93% of their RDA, but zinc intakes met only 64% to 70%. Total fat intakes ranged from 14% to 18% above NRC goals while SFA intakes exceeded the recommended levels by 15% to 28%.

Relationship of Poultry Intake to Intakes of Other Meats

The six no-poultry intake groups and the 3.7% poultry cluster provided mean intakes of total meat that were significantly lower than typical for the respective age groups. High total meat intakes were associated with all clusters where poultry provided $\geq$ 7.5% of total calories.

The intake of beef appeared to be inversely related to poultry intake. Beef intakes significantly above group norms were found in each of the no-poultry intake groups. Low beef intakes were associated with 8 poultry clusters, all but one of which had greater than 9.9% of calories derived from poultry.

Mean intakes of processed meat were higher than expected in four of the six no-poultry groups. Only 5 clusters were associated with a low intake of processed meats; these provided 3.7%, 4.9%, 7.5% 11.0%, and 12.8% of calories from poultry. The large range of intakes suggest that there is no relationship between processed meat intake and poultry intake; however, it does appear that a higher than average intake of processed meat is not uncommon when poultry products are not consumed.

It appeared that a high intake of pork was also related to an absence of poultry products in the diet as four of the six no-poultry groups had significantly higher intakes than typical for the respective age groups. The converse, however, was not true. Very low intakes of pork were associated with clusters providing both low and high proportion of calories from poultry (3.7%, 4.9%, and 12.8%).

Seafood intakes did not appear to increase or decrease with changes in poultry intake, probably due to the fact that less than 35% of the population reported consuming seafood products during the record-keeping period. Very low intakes of seafoods were found in the no-poultry groups aged 35-50 and 75+ years as well as the 0.4% and 3.7% clusters. Very high intakes were associated with the 4.9, 7.5%, and 9.9% intake groups.

There was no apparent relationship between organ meats and poultry intake. In half of the age groups, all poultry clusters had mean intakes of LVG that were similar to age group norms. No relationship was seen between poultry intake and LVG intake in the other three groups.

Nutrient Intake Associated with Variations in Poultry Consumption

Lower than normal caloric intakes were associated with three no-poultry groups (25-34, 35-50 and 65-74) and with clusters containing high levels of caloric intake from poultry (9.9%, 12.8%, 16.8%, and 17.7%). Higher than normal energy intakes were associated with clusters having a low to moderate intake of calories from poultry (2.0%, 3.5%, 3.5%,3.7%, 4.9%, 4.9%, and 7.5%). It appears that high energy intakes are associated with poultry intakes ranging from 3%-8% of total calories while low intakes of energy are associated with extremes of intake, either no poultry or very high intakes (clusters containing 10% to 18% of calories from poultry).

Poultry products are known to be a good meat source of vitamin B_6. Total vitamin B_6 intakes and intakes from poultry products only were significantly higher than age group norms in all but one cluster (17.7%) that provided at least 3.5% of calories from poultry products. At all age levels, individuals that did not consume poultry had intakes of vitamin B-6 that were significantly lower than normal for respective age groups.

Iron intakes did not appear to be linked to changes in poultry consumption as the majority of the no-intake groups and poultry clusters had mean iron values similar to respective age group norms. Higher than average iron intakes were found only in the 2.0%, 3.5%, and both 4.9% clusters. These clusters each had energy intakes significantly above average for the age groups. Low iron intakes were associated with the 12.8% and 17.7% clusters and women aged 25-50 years who did not consume poultry. Each of these groups had significantly low energy intakes when compared to norms. The results suggest that when looking at the role of dietary poultry alone, iron intake may be more related to caloric intake than to poultry intake.

Zinc intake did not appear to increase or decrease with changes in the level of calories coming from poultry in the diet. Almost all clusters provided mean zinc intakes similar to the respective age group norms. High levels of zinc intake were found in the 2.0% and 4.5% clusters and in women over the age of 75 years who did not consume poultry. Zinc intakes substantially lower than age group norms were found in the 3.7% and 12.8% clusters and in individuals aged 35-50 who did not eat poultry products.

The majority of clusters had intakes of total fat that were similar to their respective age group norms. Total fat did not appear to be strongly linked to poultry intake (as % kcal). A high fat intake was associated with no-poultry intake in women aged 19-35 and 75+ years and with the 12.8% cluster. An intake of total fat significantly lower than respective age group norms was found in the women aged 35-50 who did not eat poultry and in the 3.7%, 4.9%, 9.9%, and 11.0% clusters.

Saturated fatty acid intakes appeared to have a relationship with poultry intake. Every no-poultry group had high intakes of SFAs, suggesting that lack of poultry intake in the diet may result in SFA intakes that are higher than average from the age group. However, in individuals that did consume poultry products, there did not appear to be a relationship between the percent of calories coming from poultry intake and SFA intake. SFA intakes similar to age group averages were associated with clusters having low to moderate intakes of poultry (0.4%, 2.0%, 3.5%, 4.9%, 7.5%, 8.2%, and 8.9%). Low SFA intakes were associated with clusters representing both low and high poultry intakes (3.7%, 4.9%, 9.4%, 9.9%, 11.0%, 12.8%, 16.8%, and 17.7% clusters).

Demographic Variables Associated with Varying Poultry Intakes

There were few demographic variables that showed a relationship with changes in poultry intake. Each of the four highest poultry intakes group had a significantly higher than expected proportion of African-Americans; however, due to the small number of counts, these data are questionable. Lower than expected proportions of African-Americans were found in the 3.7% cluster and among women aged 35-50 who did not eat poultry. Region of the country was not strongly tied to poultry intake, with only four of the 20 clusters being associated with a specific region.

Women's BMI did not appear to have a connection with poultry intake; both low and high BMIs were associated with no-poultry intake groups. Poultry clusters ranging from 3.5% to 9.9% were associated with high BMI; clusters ranging from 3.7% to 12.8% were associated with low BMIs.

Low income, as percent of federal poverty guidelines, was associated with the no-poultry intake groups aged 19-24 and 75+ years and the four clusters with extremely low counts (16.8%, 31.3%, 35.1%, and 53.7%). Although high incomes were associated with six poultry intake clusters, these ranged from 2.0% to 12.8% of caloric intake and did not appear to have any pattern or discernable relationship.

Education levels of the female household head were lower than respective age group norms for women aged 35-50 and over 75 years who did not eat poultry and in the four very low count clusters. Education levels higher than respective age group norms were associated with 7 of the 20 poultry clusters and the subjects aged 65-74 years who did not consume poultry. While it appeared possible that a low level of education may be associated with very high intakes of poultry, the reverse could not be stated.

Results of Clustering on Processed Meats

Women's intakes of processed meat products varied by their age group membership. Of women aged 25-34, 76% consumed a mean intake of 23 g/d of processed meat. Only 64% of women aged 65-74 consumed processed meats, while 67% to 72% of individuals in remaining age groups had processed meat product intakes ranging from 18 to 20 g/d. The application of clustering techniques resulted in the formation of 16 clusters across the six age categories. In addition, there were six groups (one per age category) that did not consume processed meat during the study record-keeping period. One cluster (18.6%) had fewer than 20 counts and its results are not reported. Mean intakes of processed meat across the clusters ranged from 1.8% to 20.5% of calories. The mean intakes of processed meat, in grams and as % calories, and total meat in grams are reported in Table 16 along with the percentage of each age group within a given cluster. Mean energy and nutrient intakes, as percent of standards, are shown by age group and cluster in Table 17. Values that differ significantly from the respective age group norms are marked with a "+" or a "-". Appendix E contains tables denoting significant differences in nutrient intake as well as in demographic variables.

Table 16. Age group proportions and mean meat intake (g; % kcal) by processed meat (PM) clusters

Variable	No Processed Meat	Processed Meat Intake as Percent (%) of Calories			
		1.0% to 3.0%	4.0% to 8.0%	9.0% to 10.0%	Over >15%
% Age Group					
19-24	28	25	40	----	7
25-34	24	41	----	35	----
35-50	32	26	39	----	3
51-64	33	----	43	24	----
65-74	36	29	5	30	----
75+	30	36	28	----	5 *
Processed Meat (% kcal)					
19-24	0	1.8	5.8	----	15.4
25-34	0	3.0	----	9.0	----
35-50	0	2.3	7.4	----	20.5
51-64	0	----	4.1	10.0	----
65-74	0	2.8	5.9	9.5	----
75+	0	2.5	7.6	----	18.6
Processed Meat (g) †					
19-24	0	10	29	----	57
25-34	0	17	----	44	----
35-50	0	12	36	----	74
51-64	0	----	21	45	----
65-74	0	15	34	43	----
75+	0	12	35	----	(NS)**
Total Meat (g) †					
19-24	93	113	119	----	117
25-34	92	113	----	130	----
35-50	99	114	126	----	152
51-64	107	----	135	127	----
65-74	100	113	151	121	----
75+	90	98	111	----	(NS)

† Meat intakes rounded to nearest g. * Cluster contained < 20 counts.
** (NS) - Values omitted due to unreliability caused by small cell count.

Table 17. Mean energy and nutrient intakes as % standards: from PM and all foods by PM intake (% kcal) - significant variances marked

Variable by age (y)		Meat Intake by % of Total Caloric Intake: No PM	1%-3%	4%-8%	9%-10%	> 15%
Energy (kcal)						
19-24	All Foods	1336	1622 +	1546	----	1300 -
	PM	0	30 -	89 +	----	182 +
25-34	All Foods	1254 -	1653 +	----	1538	----
	PM	0	50 -	----	134 +	----
35-50	All Foods	1318 -	1504 +	1489 +	----	1224 -
	PM	0	34 -	1088 +	----	231 +
51-64	All Foods	1299 -	----	1518 +	1418	----
	PM	0	----	62 +	137 +	----
65-74	All Foods	1308 -	1541 +	1539 +	1340 -	----
	PM	0	42 -	91 +	123 +	----
75+	All Foods	1262	1474 +	1294	----	----
	PM	0	34 +	99 +	----	----
Vitamin B_6 (% RDA)						
19-24	All Foods	64	79 +	70	----	61
	PM	0	2 -	4 +	----	7 +
25-34	All Foods	66 -	83 +	----	78	----
	PM	0	3 -	----	7 +	----
35-50	All Foods	78	79	75	----	69
	PM	0	2 -	6 +	-----	11 +
51-64	All Foods	85	----	85	77 -	----
	PM	0	----	4 +	7 +	----
65-74	All Foods	96 +	94 +	90	76 -	----
	PM	0	3 -	7 +	7 +	----
75+	All Foods	76	90	83	----	----
	PM	0	2 -	5 +	----	----
Iron (% RDA)						
19-24	All Foods	58 -	74 +	67	----	65
	PM	0	1 -	3 +	----	5 +
25-34	All Foods	59 -	74 +	----	69	----
	PM	0	2 -	----	5 +	----
35-50	All Foods	64	69	70	----	64
	PM	0	1 -	3 +	----	7 +
51-64	All Foods	103 -	----	118 +	112	----
	PM	0	----	4 +	7 +	----
65-74	All Foods	111	117 +	107	100 -	----
	PM	0	2 -	4 +	6 +	----
75+	All Foods	100	114	110	----	----
	PM	0	2-	5+	----	----

Table 17. (Continued)

Variable by age (y)		Meat Intake by % of Total Caloric Intake: No PM	1%-3%	4%-8%	9%-10%	> 15%
Zinc (% RDA)						
19-24	All Foods	61 -	74 +	70	----	61
	PM	0	2 -	6 +	----	10 +
25-34	All Foods	59 -	74 +	----	73	----
	PM	0	3 -	----	9 +	----
35-50	All Foods	65	71	70	----	74
	PM	0	3 -	7 +	----	14 +
51-64	All Foods	66 -	----	79 +	71	----
	PM	0	----	4 +	9 +	----
65-74	All Foods	68	77	75	67	----
	PM	0	3 -	6 +	8 +	----
75+	All Foods	69	80	66	----	----
	PM	0	3 -	7 +	----	----
Total Fat (% NRC)						
19-24	All Foods	115 -	115	124 +	----	139 +
	PM	0	4 -	14 +	----	40 +
25-34	All Foods	120 -	121 -	----	129 +	----
	PM	0	7 -	----	22 +	----
35-50	All Foods	116 -	119 -	127 +	----	133 +
	PM	0	5 -	18 +	----	51 +
51-64	All Foods	105 -	----	122	128 +	----
	PM	0	----	10 -	24 +	----
65-74	All Foods	113 -	118	131 +	127 +	----
	PM	0	7 -	13 +	23 +	----
75+	All Foods	108 -	122	122	----	----
	PM	0	6	18 +	----	----
Saturated Fatty Acids (% NRC)						
19-24	All Foods	121 -	128	135 +	----	156 +
	PM	0	5 -	15 +	----	46 +
25-34	All Foods	128 -	131 -	----	142 +	----
	PM	0	8 -	----	24 +	----
35-50	All Foods	123 -	128	133 +	----	140 +
	PM	0	5 -	19 +	----	55 +
51-64	All Foods	117 -	----	126	133 +	----
	PM	0	----	10 -	27 +	----
65-74	All Foods	116 -	121	136 +	133 +	----
	PM	0	7 -	14 +	25 +	----
75+	All Foods	120 -	136	130	----	----
	PM	0	6	20 +	---	----

Processed Meat Intakes Within
Age Groups

Women aged 19-24 formed a no-processed meat group and three clusters. Twenty-eight percent of subjects did not consume processed meat. Their gram intake of total meat was low, as were mean intakes of energy, fats, iron, and zinc. The cluster representing the smallest proportion of subjects, 7%, had a high mean intake of processed meats (15.4% of calories) compared to the age group average. Individuals in this group had high intakes of total meat (as % kcal) and total fat, and SFA intakes were high, but other nutrient intakes were similar to age group norms. There were only 22 counts in this cluster, so results may not be fully applicable to the population at large. About 25% of women in this age group belonged to a cluster that provided 1.8% of caloric intake in the form of processed meat. This cluster was significant in having a higher intake of pork (as % kcal) and a high gram intake of poultry. The intakes of energy, vitamin B_6, iron, and zinc were high when compared to averages for this age group. Total fat and SFA intakes were similar to age group norms. The last cluster represented 40% of the population and provided a mean intake of 5.8% of calories from processed meat. Although total fat and SFA intakes were high, the mean intake of energy and other nutrients did not vary significantly from age group norms.

Only two processed meat clusters were formed for women aged 25-34. The first cluster included 41% of the population and provided a mean intake of 3.1% of calories from processed meat. The intake of total meat (as % kcal) was low, and the gram intake of beef was high compared to average age group intakes. The mean intakes of energy, vitamin B_6, iron, and zinc were high, and the intakes of total fat and SFAs were low in relationship to age group means. The second cluster represented 35% of the population and had a mean intake of

9.0% of calories from processed meat. The intakes of total meat, beef, organ meats, total fat, and SFAs were high when compared to age group norms. The intakes of energy, vitamin B_6, iron, and zinc did not differ significantly from expected levels for women in this age group. The remaining 24% of the population did not consume processed meat. Their total meat intake was low, as were mean intakes of energy, fats, and all nutrients.

Three clusters were formed in the 35-50 year age group. The first, representing 26% of the subjects, had a mean intake of 2.3% of calories from processed meat. Total meat intake was low, as was mean total fat intake, compared to the age group average. The mean intake of energy was high; however, intakes of all other nutrients were similar to age group norms. The second cluster represented 39% of the group and provided 7.4% of calories from processed meat. Total meat intake compared to the group norm was high, as were mean intakes of energy, total fat, and SFAs. Other nutrient intakes did not differ significantly from age group means. The last cluster represented only 3% of the population and had a mean intake of 20.5% of calories from processed meats. Total meat intake was high, but beef intake (as % calories) and gram intake of pork were low. Although total fat and SFA intakes were higher than typical for the age group, energy intake was low. Vitamin B_6, iron, and zinc intakes did not differ significantly from age group norms. Individuals that did not consume processed meat represented 32% of the age group. Their intakes of poultry and seafoods (as % of calories) were high, but total meat intake was low compared to age group norms. The mean intakes of energy and fats were low; however, intakes of other nutrients were similar to age group means.

Women aged 51-64 formed two clusters. The first represented 43% of the population and had a mean intake of 4.1% of calories from processed meat. Gram intakes of beef, pork, and processed meat were high. Mean intakes of energy, iron, and zinc were high although consumption of fats and vitamin B_6 was similar to age group norms. The second cluster provided 10.0% of calories from processed meat and represented 24% of the age group. In this cluster total meat intake was high, but the intakes of beef, poultry, and seafoods were significantly lower than age group norms. The mean intakes of total fat and SFAs were high compared to mean intakes for the age group. Vitamin B_6 intake was low, while the mean intakes of energy, iron, and zinc were similar to age group norms. Women who did not consume processed meat represented one-third of the population. Their diets were lower than typical for the age group in total meat intake, but intakes of poultry and seafoods were high. Mean intakes of energy, fats, iron, and zinc were low, and vitamin B_6 intake was similar to age group means.

Three processed meat intake clusters were formed for women aged 65-74 years. The first, representing 29% of the population, had a mean intake of 2.8% of calories from processed meats. Gram intakes of pork products were high although total meat intake (as % kcal) was low when compared to norms for the age group. Intakes of fats were similar to group means; however, the average intakes of energy, vitamin B_6, and iron were high. Five percent of the age group consumed diets having a mean intake of 5.9% of calories from meats in this category. Intakes of pork and total meat were high, and the mean gram intake of seafoods was low. Mean energy, total fat, and SFA intakes were also higher than age group averages. The last cluster had a mean intake of 9.5% of calories from processed meats and represented 30% of the age group. Overall intakes of total meat and pork were high, but gram intake of poultry was lower than typical for the age group. Total fat and SFA intakes were high, compared to age group means, but energy, vitamin B_6, and iron intakes were low. Individuals that did not consume processed meat represented 36% of the age group. Their intakes of total meats and pork were lower than typical; however, intakes of poultry and seafoods (as % kcal) were high. Mean intakes of energy, total fat, and SFAs were low compared to age group norms.

Women over the age of 75 years formed three clusters. The group representing the smallest proportion of the subjects (5%) had the highest intake of calories from processed meat, 18.6%. There were only 12 counts in this cluster, so results will not be reported due to high potential for bias. Of the two remaining clusters, the largest, representing 36% of the population, provided a mean intake of 2.5% of calories from processed meat. Overall meat intake was lower than typical of women over the age of 75, but gram intake of beef was higher. Energy intake was also high when compared to the age group mean. The remaining cluster, representing 28% of the subjects, provided 7.6% of total caloric intake from processed meats. Mean beef intake in this cluster was lower and total meat intake was higher than expected compared to age group means. Energy and all nutrient intakes did not differ significantly from the age group means. Thirty percent of women in this age level did not consume processed meat products during the record-keeping period. Their diet was characterized by a higher than average level of beef intake and low intakes of total fat and SFAs when compared to age group averages.

Relationship of Processed Meat Intake to Intakes of Other Meats

Total meat intakes that were lower than normal for the respective age groups were associated with individuals aged 25-74 who did not consume processed meat products and with the clusters that provided very low intakes of processed meats (2.3%, 2.5%, 2.8%, and 3.1%). Total meat intakes that significantly exceeded respective age group norms were found in clusters that had high intakes of processed meat (7.4%, 7.6%, 9.0%, 9.5%, 10.0%, 15.4%, and 20.5%). Processed meat intake appeared to have a positive relationship with total meat intake.

Neither beef nor pork showed any consistent relationship with processed meat intake. Only four clusters and one no-processed meat intake group had mean intakes of beef that differed substantially from age group norms. High beef intakes were found in the 4.1% and 9.0% clusters and with the 75+ no-processed meat intake group. Low intakes of beef, compared to respective age group means, were found in clusters providing 7.6% and 10.0% of calories from processed meat. Pork intakes also failed to show a consistent relationship, with high pork intakes found in the 5.9% and 9.5% clusters and a lower than typical intake in the 65-74 no-processed meat intake group.

Both poultry and seafood intakes were significantly higher than age group norms for women aged 25-74 who did not consume processed meat. Only one cluster (10.0%) had lower than average mean intakes of poultry and seafood. The results suggest that poultry and seafood, unlike beef and pork, may be used in place of processed meat intakes. Only three clusters were associated with mean intakes of organ meats above age group norms. These clusters, from women aged 25-50, provided 7.4%, 9.0%, and 20.5% of calories from processed meat. Results suggest that for the age groups mentioned, there may be a slight positive relationship of organ meats with processed meat intake.

Nutrient Intakes Associated with Changes in Processed Meat Consumption

Energy intakes lower than age group norms were found in individuals aged 19-74 who did not consume processed meat and in two clusters, providing 9.5% and 20.5% of calories. Caloric intakes higher than age group norms were found in eight of the nine clusters that provided the lowest percent of calories from processed meat. It appears that energy intake may be related with processed meat consumption, being high when processed meat intake is low, and low when there is no intake of processed meat products.

Vitamin B_6 intakes were within normal levels in all but four clusters and two no-processed meat groups. Low intakes were noted in the 9.5% and 10.0% clusters and women aged 25-34 that did not consume processed meat. Except for the 10.0% cluster, these groups also had significantly low energy intakes. Vitamin B_6 intakes above age groups norms were found in the 1.8%, 2.8%, and 3.1% clusters, as well as those aged 65-74 who did not consume the meat. Each of the clusters had caloric intakes that were significantly above the norms. It appears that although there may be a tendency for intakes of vitamin B_6 to be high when intakes of processed meat are quite low, the converse cannot be stated. Caloric intake seemed to play a more consistent role in vitamin B_6 intake than did processed meat.

Iron and zinc intakes exhibited almost identical patterns of significance. Low intakes were associated with women aged 19-34 and 51-64 who did not consume processed meat and with the 9.5% cluster, all of whom had significantly low energy intakes when compared to norms for the age groups.

High intakes of iron and zinc were associated with very low intakes of processed meat (1.8%, 2.8%, 3.1%, and 4.1%); these clusters provided energy intakes above the respective age group norms. It appears that iron and zinc intakes may be related more to caloric intakes than to increasing amounts of processed meat.

Processed meats have the highest caloric content per gram of any of the meats studied. This was reflected in the fact that fat intakes appeared to be strongly linked with processed meat. Low total fat intakes were found in each of the six no-processed meat groups and in two very low intake clusters: 2.3% and 3.1%. In all but 2 of the 10 clusters having the highest proportion of calories coming from processed meat, the intakes of total fat were significantly higher than the respective age group means. Saturated fatty acid intakes followed the same pattern as total fat intakes, the only difference being that low SFA intakes were not associated with the 2.3% cluster.

Demographic Variables Associated with Processed Meat Intake

Only a few variables, concerning region, income, and education levels, differed significantly from age group norms. Higher than expected proportions of individuals who did not consume processed meat resided in the Northeast (25-34 and 51-64) and in the West (19-64), with fewer than expected living in the South.

Two of the three clusters providing the lowest amounts of processed meat, 2.3% and 2.5%, were associated with education levels of the female household head that were significantly higher than those of their age group peers. It appears that individuals consuming higher levels of processed meat are more likely to have less money available to the household, as evidenced by income levels and food stamp usage. Two of the three clusters having the highest proportion of calories coming from processed meat, 15.4% and 20.5%, were associated with low income levels, as was the 7.4% cluster. High food stamp usage was found in the 9.0% and 15.4% clusters.

Results of Clustering on Pork Intake

Pork products were consumed by only 29-35% of individuals within each of the six age groups, and the mean gram intakes were low, ranging from 7 to 10 g/d. Application of clustering techniques using pork intake (as % kcal) as the variable of interest resulted in the formation of 20 clusters, in addition to the six groups that did not consume pork. Five of the clusters (0.8%, 0.9%, 1.1%, 4.7% and 23.4%) contained fewer than 20 counts; their results are considered unreliable and are not reported. Intakes from the 15 reliable clusters ranged from 2.0% to 16.2% of calories. The mean intakes of pork and total meat, as well as proportions of age groups within each cluster, are found in Table 18 . Table 19 displays, by age level and cluster, mean energy and nutrient intakes. Values that differ significantly from the respective age group averages are marked with a "+" or a "-" if above or below norms. These values, plus demographic variables that differ significantly from respective age group norms, are derived tables found in Appendix F.

Due to the low proportions of individuals who consumed pork products and the low levels of consumption, few clusters provided intakes of meats, energy or nutrients that were significantly different from the age group averages. For this reason, specific clusters will not be described. Relationships between pork intake levels and intakes of meats, energy, and nutrients, where found, will be summarized.

Table 18. Age group proportions and mean meat intake (g; % kcal) by pork clusters

Variable	Pork Intake as % of Caloric Intake			
	No Pork Intake	0.0% to 3.0%	3.7% to 8.0%	11.0% to 16.0%
Age Group (%)				
19-24	66	6 *	15	13
25-34	71	2 */ 10	12	4
35-50	68	----	26	5
51-64	65	12	16	7
65-74	70	15	7	8
75+	71	1 */ 9	2 * / 15	< 1 *
Pork (% kcal)				
19-24	0	0.9	3.7	10.8
25-34	0	0.8 / 2.1	6.5	16.2
35-50	0	----	4.0	15.1
51-64	0	2.0	6.0	15.5
65-74	0	3.0	7.6	13.4
75+	0	1.1 / 2.8	4.7 / 7.9	23.4
Pork (g) †				
19-24	0	(NS) **	18	53
25-34	0	(NS) / 10	33	73
35-50	0	----	19	62
51-64	0	9	29	64
65-74	0	15	33	53
75+	0	(NS) / 13	(NS) / 31	(NS)
Total Meat (g) †				
19-24	103	(NS)	117	140
25-34	106	(NS) / 127	140	156
35-50	111	----	120	138
51-64	117	123	140	155
65-74	107	118	134	128
75+	97	(NS) / 105	(NS) / 109	(NS)

† Meat intakes rounded to nearest g. * Clusters containing < 20 counts.
** (NS) - Values omitted due to unreliability caused by small cell count.

Table 19. Mean energy and nutrient intakes as % standards: from pork and all foods by pork intake (% kcal) - significant variances marked

Variable by age (y)		Pork Intake by % of Total Caloric Intake: No Pork	0.5%-3%	3.5%-8%	11%-16%
Energy (kcal)					
19-24	All Foods	1423 -	----	1636 +	1574
	Pork	0	----	58 +	177 +
25-34	All Foods	1476	1582	1715 +	1550
	Pork	0	34 -	111 +	243 +
35-50	All Foods	1374 -	----	1577 +	1420
	Pork	0	----	62	208 +
51-64	All Foods	1371 -	1598 +	1515 +	1407
	Pork	0	30 -	90 +	213 +
65-74	All Foods	1367	1546	1405	1373
	Pork	0	46 +	107 +	186 +
75+	All Foods	1305 -	1480 +	1357 +	----
	Pork	0	41 +	105 +	----
Vitamin B_6 (% RDA)					
19-24	All Foods	68	----	77	73
	Pork	0	----	4 +	13 +
25-34	All Foods	75	80	86	78
	Pork	0	2 -	8 +	18 +
35-50	All Foods	76	----	81	73
	Pork	0	----	5	15 +
51-64	All Foods	83	81	87	82
	Pork	0	2 -	7 +	15 +
65-74	All Foods	91	90	90	78
	Pork	0	4 +	8 +	12 +
75+	All Foods	81 -	91 +	85 +	----
	Pork	0	3 +	7 +	----
Iron (% RDA)					
19-24	All Foods	65	----	70	69
	Pork	0	----	1 +	4 +
25-34	All Foods	69	69	72	62
	Pork	0	1 -	2 +	6 +
35-50	All Foods	67	----	71	61
	Pork	0	----	1	4 +
51-64	All Foods	111	116	116	101
	Pork	0	1 +	3 +	7 +
65-74	All Foods	111	110	113	93 -
	Pork	0	2 +	4 +	6 +
75+	All Foods	103 -	147	103 -	----
	Pork	0	2 +	3 +	----

Table 19. (Continued)

Variable by age (y)		No Pork	0.5%-3%	3.5%-8%	11%-16%
		Pork Intake by % of Total Caloric Intake			
Zinc (% RDA)					
19-24	All Foods	64	----	74	72
	Pork	0	----	4 +	12 +
25-34	All Foods	68	74	78 +	76
	Pork	0	3 -	7 +	18 +
35-50	All Foods	68	----	71	69
	Pork	0	----	5	14 +
51-64	All Foods	71	77	76	75
	Pork	0	2 -	7 +	16 +
65-74	All Foods	69	79	78	64
	Pork	0	4 -	8 +	13 +
75+	All Foods	71 -	80 +	65 -	----
	Pork	0	3 -	6 +	----
Total Fat (% NRC)					
19-24	All Foods	119	----	124	121
	Pork	0	----	8 +	24 +
25-34	All Foods	122 -	129 +	126	136 +
	Pork	0	5 -	15 +	36 +
35-50	All Foods	121	----	122	131
	Pork	0	----	9	35 +
51-64	All Foods	117 -	128 +	126 +	134 +
	Pork	0	4 -	13 +	34 +
65-74	All Foods	117 -	122	125	134 +
	Pork	0	7 +	17 +	31 +
75+	All Foods	117 -	124 +	119 +	----
	Pork	0	6 +	18 +	----
Saturated Fatty Acids (% NRC)					
19-24	All Foods	131	----	128	128
	Pork	0	----	9 +	26 +
25-34	All Foods	133	137	135	147 +
	Pork	0	5 -	16 +	39 +
35-50	All Foods	128	----	129	137
	Pork	0	----	9	37 +
51-64	All Foods	123 -	131	128	141 +
	Pork	0	5 -	14 +	37 +
65-74	All Foods	121	122	128	141 +
	Pork	0	7 +	18+	34 +
75+	All Foods	129 -	133	128	----
	Pork	0	7 +	19 +	----

Relationship of Pork Intake to
Intake of Other Meats

The majority of clusters and no-pork intake groups had mean intakes of beef and processed meats similar to respective age group norms. High beef intakes were found in the 2.8% cluster and in those aged 75+ years who did not eat pork. Low beef intakes were found in two of the four clusters providing the highest concentrations of pork (13.4% and 15.1%), suggesting that at extremes of pork intakes, there may be a slight reverse relationship with beef intake. There did not appear to be any relationship between pork and processed meat intake.

Poultry and seafood intakes followed similar patterns of significance. High intakes of poultry were found in individuals aged 35-50, 51-64, and 75+ who did not consume pork. High seafood intakes were found in the 2.8% cluster and in women aged 35-50 and 75+ years who did not consume pork products. This strongly suggests that both poultry and seafood may be substituted for pork intake; however, when pork products were consumed, poultry and seafood intakes did not appear to to be related positively or negatively to different levels of pork intake. Low intakes of poultry intake were found in three clusters representing widely varying amounts of calories from pork (2.8%, 4.0%, and 15.5%). Low seafood intakes were also found in clusters that represented both low and high intakes of pork (4.0%, 7.6%, 7.9%, and 15.5%).

Intakes of lamb, veal and game (LVG) higher than age group norms were found in the 19-34, 51-64, and 75+ no-pork groups, as well as in the 2.1% and 10.8% clusters. Low intakes of LVG were found in the 0.9%, 3.7%, and all clusters found in the age group 75+ years. This suggests that an absence or low intake of pork may result in higher intakes of LVG, but if an individual consumed pork, LVG intake varied without relationship to level of pork intake.

There did not appear to be a relationship between pork and organ meat intake.

Total meat intake did show some relationship with pork consumption. Low intakes of total meat were found in the 2.0% and 2.8% clusters and in women aged 25-34, 51-64, and 75+ who did not consume pork, suggesting that low pork intake is associated with low total meat intake. Intakes of total meat higher than respective group norms were found in eight of the nine clusters that contained the highest percent of calories from pork.

Mean Intake of Energy and
Nutrients in Pork Clusters

Energy intakes lower than age group norms were found in four of the six no-pork intake groups (19-24, 35-64, and 75+ years). Caloric intakes higher than age group means were associated with 8 of the 12 clusters that provided the lowest proportions of calories from pork.

Vitamin B_6, iron, and zinc intakes did not appear to be related to different caloric concentrations of pork intake. A low intake of vitamin B_6 was noted for women over the age of 75 years who did not eat pork, and high intakes were found in the 2.8% and 7.9% clusters. Only two clusters, 7.9% and 13.4%, and women over the age of 75 years who did not eat pork had mean intakes of iron that were low when compared to age group norms. Mean intakes of zinc in the 7.9% cluster and the no-pork group aged 75+ were also low while zinc intakes higher than group averages were found in the 2.8% and 6.5% clusters. Results do not suggest the intake of pork products significantly affects the intake of vitamin B_6, iron, or zinc.

Total fat intakes were low in four of the six no-pork groups (all but 25-34 and 65-74 years). With the exception of two clusters in the center of the pork consumption range (6.0% and 7.9%), high fat intakes were found in clusters containing either low intakes of pork (0.9%, 2.0%, 2.1%, and 2.8%) or very high intakes (13.4%, 15.1%, 15.5%, and 16.2%). Results suggest that high intakes of pork may have high fat intakes as a result of pork fat content; however, low intakes of pork may have high fat contents as a result of intake of other foods.

Only two no-pork groups and three pork clusters had SFA intakes that varied significantly from age group norms. Low SFA intakes were noted in women aged 51-64 and 75+ who did not consume pork. Intakes of SFA that were higher than expected were found in clusters providing 13.4%, 15.5%, and 16.2% of calories from pork, suggesting that only in extremely high pork intakes did the increased SFA coming from pork increase total SFA consumption.

Demographic Variables Associated with Pork Consumption

Although several variables had values differing significantly from respective age group norms in one or two clusters, few appeared to suggest any strong relationship. High income levels were found in the 0.9% and 0.8% clusters and in no-pork consumers aged 51-64 and 75+, suggesting that no or very low pork intakes are related to higher economic status. Several clusters, representing low, moderate, and high pork intakes, had mean incomes that were significantly lower than age group averages.

The education levels of the female household head differed from age group norms in only four cases. Women in the 2.8%, 7.9%, and 15.5% clusters had low education levels while those over the age of 75 years who did not consume pork had a higher than expected education status. There appears to be no relationship between education level and pork intake.

Significant differences in racial composition were found in three clusters. The proportions of African-Americans in the 6.5% and 15.1% clusters were high. Asian / Polynesians were found in higher numbers than expected in the 3.7% and 15.1% clusters.

Where individuals lived did not appear to have a strong impact on pork intake. Women who had a very low pork intake (0.9%) were less likely to live in the Southern portion of the United States and tended to live in the suburbs, while those members of the 2.8% and 13.4% clusters were more likely to live in the South. Women associated with the 10.8% and 13.4% clusters were less likely to live in the suburbs.

Results of Clustering on Seafood Intake

While 43% of individuals aged 51-64 consumed seafood products, the proportion decreased to only 28% in women over the age of 75. The proportions of women who consumed seafoods in the other age categories ranged from 32% to 41%. Mean gram intakes of seafoods for women aged 19-74 ranged from 8-10 g/d while those over age 75 had a mean intake of 7 g/d. Application of clustering techniques to the intake of seafood products (as % of kcals) as the variable of interest resulted in the formation of 19 clusters, in addition to the six no-seafood intake groups. Five of the clusters (1.0%, 2.3%, 3.3%, 11.9%, and 15.2%) contained fewer than 20 counts; their results are considered unreliable and will not be reported. The range of intakes for the 15 clusters that will be discussed was 0.5% to 14.8% of calories from seafoods. The mean intakes of seafoods and total meats, along with the proportions of each age group within a given cluster are found in Table 20. Mean energy and nutrients intakes for each cluster are shown in Table 21. Values that differed significantly from respective age group norms are marked and were derived from data in Appendix G. Zinc values within the seafood clusters had very high coefficients of variation; as a result, mean zinc intakes are not reported.

Table 20. Age group proportions and mean meat intake (g; % kcal) by seafood clusters

Variable	No Seafood	Seafood Intake as % of Calories: Under 3.5%	5.0% to 8.0%	Over 10%
Age Group (%)				
19-24	68	12 / 6 *	12	3 *
25-34	63	27	10	----
35-50	61	5 / 24	9	----
51-64	57	18	22	3
65-74	59	28	13	----
75+	72	3 / 12 * / 3 *	10	<1 *
Seafood (% kcal)				
19-24	0	0.8 / 2.3	4.9	11.9
25-34	0	1.7	5.6	----
35-50	0	0.5 / 2.6	7.7	----
51-64	0	1.6	5.7	14.8
65-74	0	2.2	6.1	----
75+	0	1.9 / 3.3 / 1.0	6.7	15.2
Seafood (g) †				
19-24	0	10 / (NS) **	49	(NS)
25-34	0	22	59	----
35-50	0	7 / 29	70	----
51-64	0	21	59	100
65-74	0	27	64	----
75+	0	23 / (NS) / (NS)	61	(NS)
Total Meat (g) †				
19-24	104	105 / (NS)	115	(NS)
25-34	107	124	130	----
35-50	109	110 / 119	143	----
51-64	113	135	137	161
65-74	98	126	148	----
75+	88	113 / (NS) / (NS)	139	(NS)

† Meat intakes rounded to nearest g. * Clusters containing < 20 counts.
** (NS) - Values omitted due to unreliability caused by small cell count.

Table 21. Mean energy and nutrient intakes as % standards: from seafood and all foods by seafood intake (% kcal) - significant variances marked

Variable by age (y)		Seafood Intake by % of Total Caloric Intake: No Seafood	0.5%-3%	3.5%-8%	11%-16%
Energy (kcal/d)					
19-24	All Foods	1481	1535	1407	----
	Seafoods	0	12	67 +	----
25-34	All Foods	1486	1619 +	1453	----
	Seafoods	0	27	77 +	----
35-50	All Foods	1421	1659 + / 1456	1283 -	----
	Seafoods	0	9 - / 37	93 +	----
51-64	All Foods	1413	1576 +	1379	1046 -
	Seafoods	0	25 -	76 +	142 +
65-74	All Foods	1359	1487 +	1368	----
	Seafoods	0	31	80 +	----
75+	All Foods	1296 -	1523 +	1276 -	----
	Seafoods	0	29 +	84 +	----
Vitamin B_6 (% RDA)					
19-24	All Foods	70	68	64	----
	Seafoods	0	1 -	5 +	----
25-34	All Foods	75	83 +	77	----
	Seafoods	0	2	6 +	----
35-50	All Foods	76	84 / 79	74	----
	Seafoods	0	1 - / 4 +	8 +	----
51-64	All Foods	80	89	86	81
	Seafoods	0	2 -	7 +	16 +
65-74	All Foods	86	97	90	----
	Seafoods	0	3	10 +	----
75+	All Foods	82 -	87 +	82 -	----
	Seafoods	0	3 +	9 +	----
Iron (% RDA)					
19-24	All Foods	66	57 -	65	----
	Seafoods	0	1	8 +	----
25-34	All Foods	65 -	76 +	71	----
	Seafoods	0	3	6 +	----
35-50	All Foods	67	72 / 71	63	----
	Seafoods	0	1 - / 3 +	8 +	----
51-64	All Foods	109	126 +	111	89 -
	Seafoods	0	3	12 +	18 +
65-74	All Foods	110	113	99	----
	Seafoods	0	4 +	8 +	----
75+	All Foods	106 -	118 +	107 -	----
	Seafoods	0	4 -	9 +*	----

Table 21. (Continued)

Variable by age (y)		No Seafood	Seafood Intake by % of Total Caloric Intake 0.5%-3%	3.5%-8%	11%-16%
Total Fat (% NRC)					
19-24	All Foods	120	115	128	----
	Seafoods	0	<1	8 +	----
25-34	All Foods	125	123	119	----
	Seafoods	0	1	3 +	----
35-50	All Foods	122	124 / 121	122	----
	Seafoods	0	0 - / 1 +	4 +	----
51-64	All Foods	124 +	123	115 -	110 -
	Seafoods	0	1	3 +	9 +
65-74	All Foods	122 +	115 -	117	----
	Seafoods	0	1	7 +	----
75+	All Foods	116 -	126	119	----
	Seafoods	0	1 +	5 +	----
Saturated Fatty Acids (% NRC)					
19-24	All Foods	134	122	127	----
	Seafoods	0	0 -	4 +	----
25-34	All Foods	137 +	131	126 -	----
	Seafoods	0	0	2 +	----
35-50	All Foods	130	131 / 129	121	----
	Seafoods	0	0 - / 1 +	3 +	----
51-64	All Foods	131 -	129	115 -	90 -
	Seafoods	0	0	2 +	7 +
65-74	All Foods	129 +	118 -	114 -	----
	Seafoods	0	1	2 +	----
75+	All Foods	127 -	137 +	123 -	----
	Seafoods	0	1 +	3 +	----

Due to the low proportions of individuals that consumed seafood products, and the low levels of consumption, few clusters provided intakes of meats, energy, or nutrients that were significantly different from age group norms. For this reason, specific clusters will not be described. Relationships between seafood intake levels and intakes of meats, energy and nutrients, where found, will be summarized.

Seafood Intake in Relationship to Intakes of Other Meats

Total meat intake was low in only one of the six no-seafood groups and in three of the eight clusters providing fewest calories from seafood (0.5%, 1.9%, and 2.6%). High intakes of all meat were found in clusters providing 2.3%, 6.7%, and 14.8% of calories from seafoods. Although there exists a small tendency for low meat intakes to be associated with low seafood intakes, the reverse did not appear to be true.

Beef intakes, compared to age group norms, were higher than expected in five of the six no-seafood groups as well as in the clusters providing 1.9% and 2.3% of calories. Intakes of beef lower than group norms were found in nine clusters that ranged across all levels of seafood intake. Pork intakes above age group norms were found in two no-seafood groups (25-34 and 65-74) and in two of the 5 clusters providing the lowest seafood intakes. Low pork intakes were associated with one no-seafood group (75+) and three clusters providing a moderate level of seafood intake (5.7%, 6.1%, and 6.7%). The results suggest that no- or low-seafood intakes may be associated with higher than average intakes of beef and pork, but the reverse cannot be stated.

For individuals aged 35-74 years, all intakes of poultry were similar to age group norms, regardless of amount of seafood consumed. Processed meat intakes were higher than age group norms for women aged 19-64 who did not consume seafoods. Low processed meat intakes were associated with seven seafood clusters providing mean intakes of 0.5% to 14.8% of calories form seafoods. LVG and organ meat intakes did not appear to be associated with either lack of seafood intake or varying levels of consumption.

Nutrient Intakes Associated with Different
Levels of Seafood Consumption

High energy intakes were associated with low intakes of seafoods (0.5%, 1.6%, 1.7%, 1.9%, and 2.2% clusters). Low energy intakes were found in three clusters (representing the highest intakes of seafoods: 6.7%, 7.7%, and 14.8%) and in one no-seafood group (aged 75+). Apparently, for the small proportion of individuals who consumed seafoods, there may be an inverse association between energy and seafood intake.

Total vitamin B_6 consumption did not appear to be related to seafood consumption as the majority of no-seafood groups and clusters had total intakes that were similar to respective age group means. Two clusters, 1.7% and 1.9%, were associated with high vitamin B_6 intakes and only one (6.7%) with a low intake. Although these clusters represent the low and high ends of seafood intake, it cannot be concluded that there is an inverse relationship between vitamin B_6 and seafood intake. It is of value to note that the 1.7% and 1.9% clusters have significantly higher energy intakes than typical for the age groups while that of the 6.7% cluster is lower.

High iron intakes were found in only four clusters, 1.6%, 1.7%, 1.9%, and 2.3%; these represented four of the seven lowest seafood intakes. Low iron intakes were found in individuals aged 25-34 and 75+ who did not eat seafoods and in three clusters that represented both ends of the seafood intake span, 0.8%, 6.7% and 14.8%. The results suggest that diets providing low intakes of seafood may result in higher total iron intakes. Generally speaking, seafood products are a poor source of iron, and it does not appear that low iron intakes were associated with seafood consumption in this study.

Zinc content is known to be low in most finfish, but is high in some isolated foods such as oysters. In this study, high intakes of zinc were associated with the 1.6%, 1.7%, 2.3%, and 6.7% clusters. Low intakes were noted in the 4.9% and 14.8% clusters and in women over the age of 75 years that did not consume seafoods. There did not appear to be a consistent relationship between seafood consumption and zinc intake.

Total fat intakes did not appear to be related to the intake of seafood products. High intakes of total fat were seen in two no-seafood groups in the older population (aged 51-64 and 65-74); however, individuals over the age of 75 years who did not consume seafood products had a mean intake of fat that was significantly lower than their age group average. Low fat intakes were also associated with three clusters that had intakes representing both ends of the seafood consumption spectrum (2.2%, 5.7%, and 14.8%). SFA intakes in individuals who did not consume seafoods were similar to the pattern seen with total fat intake, the only difference being that individuals 25-34 had high intakes of SFAs. Low intakes of SFAs were noted in the following clusters: 2.2%, 5.6%, 5.7%, 6.1%, 6.7%, and 14.8%. The last five clusters represent five of the six highest seafood intakes. This suggests that a lower than typical intake of SFA may be associated with diets that provide a relatively high proportion of energy from seafoods.

Demographic Variables Related to Seafood Consumption

Of all the demographic variables reviewed, only household income appeared to be associated with seafood intake. Individuals aged 19-74 years who did not consume seafoods had household incomes that were lower than their age group norms, although this reached significance only in the 35-50 and 51-64 groups. Older women (75+) who did not consume seafood products had incomes higher than their peers, suggesting for them that the decision to avoid seafoods was not based on economics. High income levels were associated with 6 of the 15 seafood intake clusters and mean intakes from these clusters ranged from 1.6% to 14.8% of calories. The results suggest that, with the exception of older women, the individuals who did not consume seafood may have done so for an economic reason.

Analysis of Meat's Contribution of Women's Nutrient Intake

As noted in the clustering solutions for total meat consumption, a high gram intake of meat was associated with higher energy and nutrient intakes, raising the question, were the increases in nutrients due to increased meat intake or increased intake of calories? An analysis was conducted to determine what amount of the increase seen in a specific nutrient could be attributed to the contribution of meat products and what amount to consumption of other foods. The study group included all nonpregnant, nonlactating women aged 35-50, for which 3-day averages of food intakes were available. This age category was selected to provide the largest possible number of subjects and to avoid the extremes of intake seen in the youngest and oldest age levels. Subjects having no meat in their diet were eliminated from the study, resulting in a sample population of 846.

Subjects were sorted into four groups based on the following average daily meat consumption levels: 1-56 g, 57-112 g, 113-169 g, and 170 g or more using the SAS PROC SORT Command. The groups were labeled baseline, low intake, moderate intake, and high intake, respectively. The three data files (total energy and nutrient intake from all foods, energy and nutrient data from meat products only, and demographic data) were combined using the MERGE command. Formulas were given to convert nutrient intakes into percentages of standards. Copper intakes were computed as percent of ESADDI; other mineral and all vitamin intakes were expressed as percent of RDA, and fat components were expressed as percent of NRC recommendations. The SAS MEANSOUT command was used to compute USDA weighted means, standard deviations, standard errors, and coefficients of variation for meat (g), energy, and nutrient intakes. Statistical testing of differences among means was not conducted, and the following discussion is descriptive only and does not imply any statistical differences. Table 22 shows the average nutrient intake for each of the four meat consumption levels.

Table 22. Average nutrient intake (as % standards) of women aged 35-50 by meat consumption level

Variable	Baseline 1-56 g	Low 57-112 g	Moderate 113-169g	High 170+g
N	102	333	272	139
Energy (kcal)	1126	1318	1527	1784
Meat (g)	37	85	136	218
Protein †	78	102	131	175
Niacin	68	94	115	151
Vitamin B_6	52	69	80	104
Copper	47	58	62	79
Iron	52	61	74	83
Magnesium	58	69	75	85
Phosphorus	91	101	121	144
Zinc	43	60	76	100
Total Fat	115	119	127	127
Saturated Fat	126	127	134	134
Cholesterol	57	64	87	117

† Nutrient values rounded to nearest %.

The overall percent of increase seen in a specific nutrient (derived from total food intake) was determined by dividing the nutrient value in the high intake group by the nutrient value in the baseline group. The amount of this increase that was obtained from meat was determined by subtracting meat nutrient intake from total nutrient intake in each meat group. The remainder (the amount of nutrient coming from all other foods) was labeled "other." For each nutrient, both "meat" and "other" values in the baseline group were subtracted from respective values in the high intake group. A table of the results is found in Appendix J. The "meat" and "other" categories were compared to determine relative contribution to the total increase of the nutrient.

Individuals in the baseline group, 12% of subjects, failed to meet RDAs for protein, niacin, and vitamin B_6. Mineral intakes, with the exception of phosphorus, were all under 60% of RDA / ESADDIs. Individuals in the moderate intake group, 32% of the population, had an average meat intake of 4.9 ounces, close to the low end of the meat intake range (5 to 7 ounces) suggested by the USDA in the new food pyramid guide (USDA, 1992a). Subjects in this group met 80% or less of the RDAs for vitamin B_6, copper, iron, magnesium, and zinc. Individuals in the high meat intake group (16% of population) had an average daily intake of 7.8 ounces of meat and met the RDAs for vitamin B_6 and zinc but did not meet copper, iron, and magnesium requirements.

All meat intake groups exceeded the NRC recommendations for total fat and SFA intakes. No increases in total fat or SFA intakes were seen when meat consumption increased from moderate to high groups (4.9 to 7.8 ounces). The intake of fat (as % NRC) increased by 12% while SFA intake increased 8% between the baseline and the moderate and the high meat intake groups.

As shown in Figures 1 and 2, all of the increases seen in total fat and SFAs were contributed by meat. The contribution of fats from non-meat foods declined as the amount of meat in the diet increased, suggesting women altered their diets to maintain approximately similar fat and SFA intakes, regardless of the foods consumed.

Cholesterol intake in the baseline group was 57% of the NRC recommendation while the intake in the high group reached 117%. Meat contributed 91% of the increase.

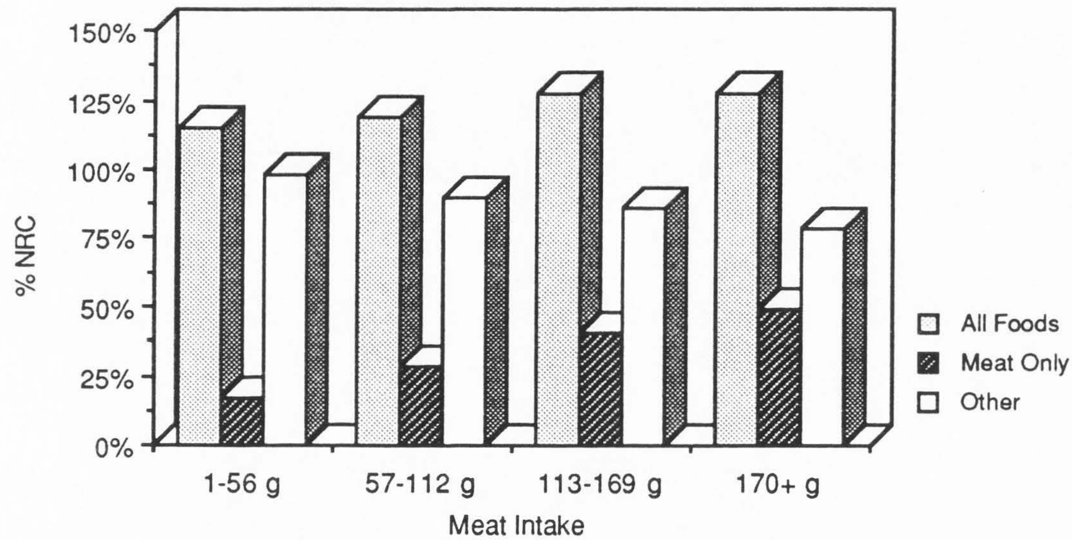

Figure 1. Women's intake of total fat (% NRC) derived from "meat" and "other" foods.

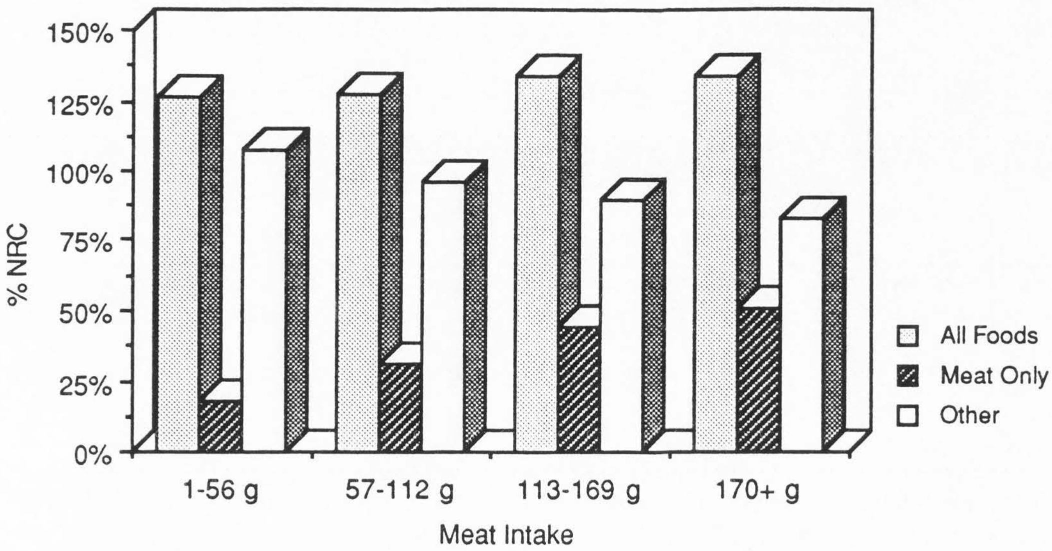

Figure 2. Women's intake of saturated fat (% NRC) derived from "meat" and "other" foods.

In Figure 3, energy intake is shown next to the nutrients that demonstrated the largest gains between the baseline and the high meat intake groups, i.e., protein, cholesterol, niacin, vitamin B_6, and zinc, which increased 125%, 105%, 123%, 100%, and 132%, respectively, from the baseline values. Meat contributed 94%, 91%, 87%, 77%, and 90% of the respective increases. Of these nutrients, only zinc is currently at risk of inadequate consumption by the majority of American women, although vitamin B_6 intake may be problematic due to concerns about bioavailability and increased needs in the elderly.

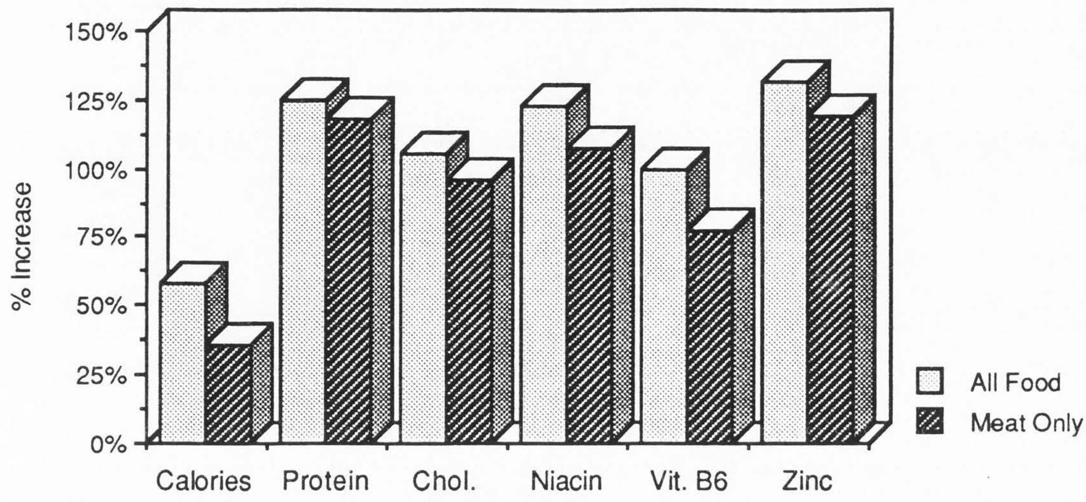

Figure 3. Proportion of nutrient increases (derived from all foods and from meat products only) seen between low and high meat intakes.

Figure 4 displays the increases seen in mineral intake compared to caloric intake. Phosphorus was not included in this figure as it is not at risk of low consumption in adult women's diets. With the exception of zinc, the total increases seen in the minerals closely resembled the changes seen in energy consumption. Copper and magnesium intakes failed to meet recommended levels in all meat groups. Magnesium reached 85% of RDA in the high meat intake group with meat contributing 58% of the increase from baseline. Copper intake in the high meat intake group reached 79% of ESADDI while meat contributed 64% of the increase. Although meat is not an exceptional source of copper or magnesium, in the dietary patterns represented by the 1987-1988 NFCS subjects, higher levels of meat intake appeared to contribute toward more adequate intakes.

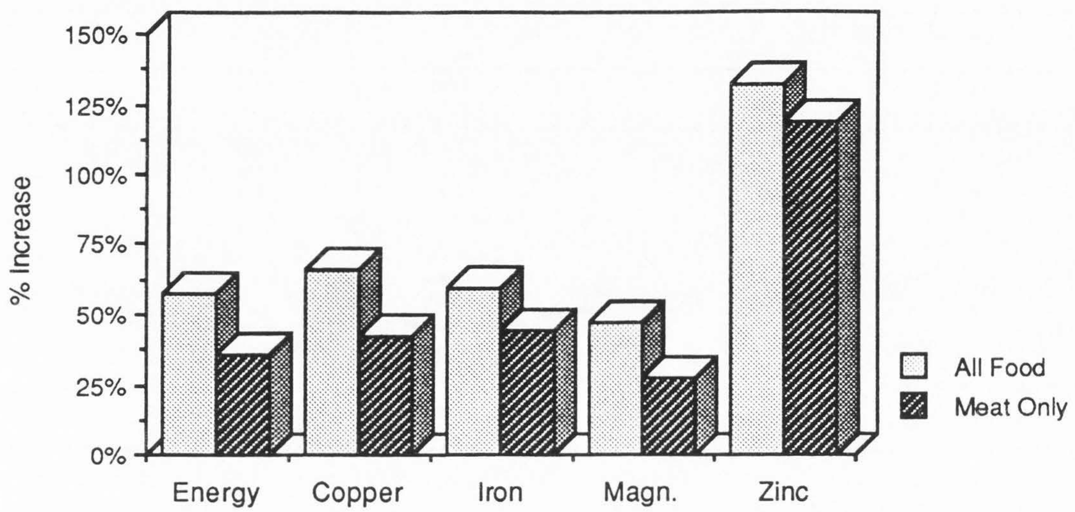

Figure 4. Proportion of mineral increases (derived from all foods and from meat products only) seen between low and high meat intakes.

Phosphorus intake in the baseline group was 91% of RDA and increased to 144% in the high intake group; 88% of this increase came from meat. Although the study population (women aged 35-50) met the RDA for phosphorus in all but the lowest meat intake level, there is concern that women aged 19-24 with their higher RDA for phosphorus (1200 mg/d vs. 800 mg/d) may have inadequate intakes. For women in this age group, meat may provide a significant source of phosphorus.

Iron intake failed to meet RDA in all groups, with the moderate and high intake groups achieving 74% and 83% of the RDA, respectively. Meat provided 74% of the increase seen between baseline and the high intake group. The increase in iron intake was not large and was similar to the level of increase seen in caloric intake.

Zinc intake in the moderate group averaged 76% of the RDA and increased to 100% in the high intake group. Zinc was the only mineral that both experienced a very large increase in intake (132%) and had a high percentage of that increase (90%) coming from meat, demonstrating the fact that meat products are the single most important source of dietary zinc. Zinc is also more bioavailable when consumed as part of animal products.

The results of this analysis strongly suggest the the amount of meat in the diet directly affects the total dietary intakes of cholesterol, SFAs, total fat, and zinc. Each of these nutrients experienced at least a 100% increase in total intake between the baseline and high meat intakes groups, and meat products contributed approximately 90% to 100% of the respective increases. Vitamin B_6 intake also appeared to be strongly linked to meat consumption, with meat products providing about 75% of the increase seen between the baseline and the high meat intake groups.

The total increase of iron seen between the two meat consumption groups was similar to the increase found in energy intake (59% vs 58%). Meat products contributed a larger proportion of the total increase seen in iron intake than the increase in energy (74% vs 62%). Although the results indicate that total dietary iron intake may not be strongly affected by an increase of meat products, this is not true of the amount of absorbable iron. Due to the presence of highly bioavailable heme-iron, as gram intake of meat products increases, so does the amount of absorbable iron from meat. In the future, all studies that look at the contribution of meat to dietary intake of iron should focus on the presence of bioavailable iron, not total iron intake.

Copper and magnesium intakes did not appear to be strongly linked to meat intake. The amount of increase seen in each nutrient between the baseline and high meat intake groups was similar to the magnitude of increase found with energy consumption (58%) with copper increasing 66% and magnesium only increasing 47%. In addition, only 64% of the increase in copper and 58% of the increase in magnesium were contributed by meat products. Although higher intakes of meat in the diet may enhance the intakes of copper and magnesium, there are more concentrated food sources of these nutrients. These should be identified to consumers, and the importance of these nutrients to health should be explained. Presently, women's consumption of them is inadequate to meet NRC recommendations.

Results of Clustering on Vitamin B_6, Iron, and Zinc Intakes

Originally it was determined to perform a cluster analysis using the variables vitamin B_6, iron, zinc, copper, and magnesium, all nutrients associated with meat intake and found to be low in the diets of American women. A review of the study results noted that the populations' intakes of copper and magnesium were not as strongly linked to meat consumption as to the intakes of other food groups. As a consequence, a cluster analysis was performed using only vitamin B_6, iron, and zinc intakes of women. The goal was to determine what relationship, if any, exists between the intakes of these nutrients and meat consumption.

One cluster analysis was performed for each of the six age groups, 18 clusters were defined. Four clusters contained fewer than 10 counts, and their results are not considered reliable. Clusters were grouped into one of four categories according to the intake of the three nutrients, with the nutrient having the lowest intake (as % RDA) determining the classification for the cluster. The classifications were less than 60% of RDA; 60% to 80% of RDA; 80% to 99% of RDA; and ≥ 100% of RDA. These classifications were established for convenience in presenting results and do not indicate any judgments on the overall quality of diets represented by individual clusters. The proportion of women in each age group, plus the mean intakes of total meat, beef and selected nutrients are shown in Table 23. Variables that were significantly above or below the norms for the respective age groups are marked.

Cluster Results: Women Aged 19-24

Women in this age category formed three clusters. The majority of subjects (68%) consumed diets with low mean intakes of vitamin B_6, iron, and zinc (54%, 51%, and 54% of respective RDAs). Their diets provided a mean intake of 89 g of meat. Energy intake (1281 kcal) was lower than the age group average.

The second cluster formed by women aged 19-24 represented 28% of the population. Mean intakes of vitamin B_6, iron, and zinc met 97%, 89%, and 91% of respective RDAs. The mean energy intake of women in this cluster (1889 kcal) was significantly higher than the age group average. Total fat intake was similar to the age group average, but SFA intakes were significantly lower, suggesting for these women a high level of meat in the diet did not result in an overall increase in either total fat or SFAs. Women in this cluster tended to have a BMI that was higher than typical for the age group. The last cluster for women aged 19-24 represented only 4% of the population (12 counts), and results are unreliable.

Table 23. Mean energy and nutrient intakes as % of standards from clusters based on vitamin B6, iron, and zinc intakes - significant variances marked

Variable	Vitamin B6, Iron & Zinc Clusters, arranged by RDA Level of Lowest Nutrient			
	<60%	60%-80%	80%-99%	≥ 100%
Age Group (%)				
19-24	68	---	28	4*
25-34	63 / 8	---	26	2* / 1*
35-50	---	88	---	12
51-64	---	80	---	20
65-74	---	73 / 25	---	2*
75+	69	16	11 <1*	4*
Total Meat (% kcal)				
19-24	18.4	---	20.0	18.6
25-34	19.3 / 15.8 -	---	19.2	15.6 / 26.6
35-50	---	19.9	---	20.2
51-64	---	20.6	---	21.9
65-74	---	20.6 + / 5.9 -	---	19.0
75+	19.0	20.9	16.2 - / 19.8	13.2
Total Meat (g) †				
19-24	89 -	---	155 +	(NS)
25-34	101 - / 105	---	145 +	(NS) / (NS)
35-50	---	110	---	147 +
51-64	---	115 -	---	159 +
65-74	---	115 / 102	---	(NS)
75+	90	130 +	114 + / (NS)	(NS)
Beef (g) †				
19-24	34	---	55 +	(NS)
25-34	39 / 18 -	---	52 +	(NS) / (NS)
35-50	---	39	---	63 +
51-64	---	36	---	55 +
65-74	---	36 / 25 -	---	(NS)
75+	31	46	57 + / (NS)	(NS)
Energy (kcal/d)				
19-24	1281 -	---	1889 +	(NS)
25-34	1359 - / 1413	---	1897 +	(NS) / (NS)
35-50	---	1387 -	---	1730 +
51-64	---	1352 -	---	1702 +
65-74	---	1375 / 1435	---	(NS)
75+	1187 -	1569 +	1795 + / (NS)	(NS)

Table 23. (Continued)

Variable	Vitamin B6, Iron & Zinc Clusters, arranged by RDA Level of Lowest Nutrient			
	<60%	60%-80%	80%-99%	≥ 100%
Vitamin B_6 (%RDA)				
19-24	54 -	----	97 +	(NS)
25-34	60 - / 83 +	----	104 +	(NS) / (NS)
35-50	----	70	---	123 +
51-64	----	72 -	----	128 +
65-74	----	79 -/ 115 +	----	(NS)
75+	69	93 +	131 + / (NS)	(NS)
Iron (%RDA)				
19-24	51 -	----	89 +	(NS)
25-34	54 - / 67 -	----	96 +	(NS) / (NS)
35-50	----	61	----	115 +
51-64	----	95	----	177 +
65-74	----	93 / 148 +	----	(NS)
75+	82	127 +	166 + / (NS)	(NS)
Zinc (%RDA)				
19-24	54 -	----	91 +	(NS)
25-34	61 - / 57 -	----	90 +	(NS) / (NS)
35-50	----	64	----	103 +
51-64	----	65	----	105 +
65-74	----	70 / 70	----	(NS)
75+	55	78 +	98 + / (NS)	(NS)
Total Fat (%NRC)				
19-24	121	----	119	(NS)
25-34	126 + / 115 -	----	121	(NS) / (NS)
35-50	----	123	----	115 -
51-64	----	122	----	118
65-74	----	123 + / 110 -	----	(NS)
75+	117	120	128 / (NS)	(NS)
Saturated Fat (%NRC)				
19-24	133	----	124 -	(NS)
25-34	136 / 128	----	132	(NS) / (NS)
35-50	----	130	----	122 -
51-64	----	127	----	122
65-74	----	127 + / 113 -	----	(NS)
75+	126	127	157 / (NS)	(NS)

† Meat intakes (g) rounded to nearest g. * Clusters contain < 20 counts. †† Nutrient values rounded to nearest %. ** (NS) - Values not reliable due to low cell count.

Cluster Results: Women Aged 25-34

This age grouping provided five clusters. The first cluster, representing 63% of the population, had mean intakes of 60%, 54%, and 61% of RDA from vitamin B_6, iron, and zinc, respectively. These low values were associated with energy (1359 kcal) and meat (101 g) intakes that were substantially lower than the average for women of that age. Total fat and SFA intakes were similar to age group norms. Women associated with this category had significantly less schooling than typical for the age group.

The second cluster also provided low intakes of vitamin B_6, iron, and zinc, 83%, 67%, and 57%, respectively, but represented only 8% of the population. Energy intake was similar to age group average at 1413 calories, but meat intake as percent of calories was significantly lower than typical for women 25-34. Beef intake, both as percent of calories and as gram intake, was lower than age group norms, but gram intake of poultry was high. Both meats may have contributed to the high intake of vitamin B_6 and low intake of zinc found when intakes were compared to age group means. Total fat and SFA intakes were similar to age group norms. The BMI for women in this cluster was lower than the age group average. Education levels were higher. Subjects were less likely to live in the Southern portions of the United States and tended to be found living in central cities.

The third cluster represented 28% of the age group and had mean intakes of vitamin B_6, iron, and zinc that met 104%, 96%, and 90% of respective RDAs. The diet provided gram intakes of beef, poultry, and seafood that were higher than the age group means. Energy intake was also significantly higher although total fat and SFA intakes were similar to age group norms. Individuals in this cluster averaged a BMI higher than typical for the age group.

Clusters four and five, with high mean intakes of vitamin B_6, iron, and zinc had very small cell counts (14 and 4, respectively). Data from these clusters cannot be considered reliable and will not be reported.

Cluster Results: Women Aged 35-50

Only two clusters were formed for women in this age category. The first contained 88% of the population and provided mean intakes of 70%, 61% and 64% for vitamin B_6, iron, and zinc, respectively. Energy intake was lower than the age group mean. Due to the large proportion of the population within this group, there were no other intake values or demographic variables that differed significantly from the norms for the group.

The second cluster, representing 12% of the population, provided higher intakes of vitamin B_6, iron, and zinc (123%, 115%, and 103%, respectively). Intakes of total meat, both as percent of calories and gram intakes, were high as were gram intakes of beef and poultry when compared to age group averages. The intakes of total fat and saturated fatty acids were significantly lower than typical for the age group, suggesting that higher meat intakes do not necessarily correlate with higher intakes of fats.

Cluster Results: Women Aged 51-64

Similar to results seen in women aged 35-50, women in this age category formed only two clusters. The largest, containing 80% of the population, had mean intakes of vitamin B_6, iron, and zinc that met 72%, 95%, and 65% of the respective RDAs. At age 50, the RDA for iron is reduced one-third, so the relatively high iron intake (as % RDA) is not indicative of an improved nutrient intake, but rather the reduced requirement. The energy and gram meat intakes of these women were significantly lower than the age group norms, despite the large proportion of individuals in the cluster. Total fat and SFA intakes, however, did not significantly differ from mean intakes for the age group.

The second cluster, with only 20% of the population, had significantly higher intakes of vitamin B_6, iron, and zinc (128%, 177%, and 105%, respectively). Mean energy intake was high, but total and SFA intakes were similar to age group means. The gram intakes of beef, poultry, organ meats, and total meats were high compared to age group means. Women in this cluster were less likely to live in the Western portions of the United States.

Cluster Results: Women Aged 65-74

Three clusters were formed for women aged 65-74. The largest cluster (73% of the population) provided diets having mean intakes of vitamin B_6, iron, and zinc that met 79%, 93%, and 70% of respective RDAs. Total meat, beef, and processed meat intakes (as % of kcal) were significantly higher than typical for the age group. Total fat and saturated fat intakes were also high compared to age group norms.

The second cluster, representing 25% of the age group, provided a diet with mean intakes of vitamin B_6 and iron that were significantly higher than typical for the age group (115% and 148%, respectively). Zinc intake, at 70% of RDA, was similar to the age group average. This cluster had a diet typified by low intakes (as % of kcal) of total meat, beef, and processed meats. Total fat and SFA intakes were lower than the means for the age group.

The smallest cluster represented only 2% of the population (eight counts). Due to the small cell size, results cannot be considered reliable and will not be reported.

Cluster Results: Women Age 75+

Similar to the pattern found in women aged 25-34, subjects in this age category formed five clusters. The two clusters representing the highest intakes of the variables represented only a few individuals (2 and 10 counts) and will not be discussed. The cluster representing the largest proportion of the population (69%) provided mean intakes of vitamin B_6, iron, and zinc that met 69%, 82%, and 55% of respective RDAs. The low intakes, each significantly lower than typical for the age group, were echoed by a low mean energy intake.

The next largest cluster (16% of population) had intakes of vitamin B_6, iron, and zinc that were significantly higher than average for the age group, at 93%, 127%, and 78% of respective RDAs. The diet was characterized by mean energy and total meat (g) intakes that were higher than age group means. Fat intakes were not significantly different from age group means.

Eleven percent of the population were represented by the third cluster which provided mean intakes of vitamin B_6, iron, and zinc that met 131%, 166%, and 98% of respective RDAs. This diet was typified by a high energy intake (compared to age group mean), a high intake of beef and total meat (in grams), and a low gram intake of poultry. Fat values did not differ significantly from age group means. Women in this cluster had a higher education level than typical for the age group.

Meat Intakes in Relationship to Vitamin B_6, Iron, and Zinc Intakes

Gram intakes of meat that were significantly higher than typical for the respective age groups were associated with eight of the nine clusters where all three nutrients met a minimum of 80% of their respective RDAs. The results suggest that higher intakes of the specific variables are associated with higher meat intakes and vice versa. Meat intake, as percent of calories, did not appear to be strongly related to vitamin B_6, iron, and zinc intakes. Only four clusters, one from each category shown on the table, were associated with low meat (% kcal) intakes. Two clusters, one representing a minimum intake of 60% to 80% and the second representing intakes of over 100% of all three variables, were associated with higher intakes of meat (as % kcal).

There did not appear to be any relationship between the intake of most meat categories and the intakes of the three variables. Intakes of LVG and organ meats were similar to age group norms in all but one cluster. The intakes of pork and seafoods were also similar to age group mean intakes although a low gram intake of pork was noted in the cluster representing 25% of women aged 65-74. Two clusters were associated with a low intake of poultry. Both clusters were found in the 75+ age group and represented diets that were grouped in the categories containing > 80% of RDAs for each variable. A high poultry intake was associated with women over the age of 75 who had intakes of vitamin B_6, iron, and zinc that were low. However, in subjects aged 19-24, a high intake of poultry (as % kcal) was noted in the clusters that fell into the two highest intake levels.

Of all the meat categories, beef was the only one that was strongly linked to the intake of the variables. Diets that had a high gram intake of beef products were found in six of the nine clusters that provided a minimum of 80% of RDA for both iron and zinc. Beef intakes that were lower than average for the age groups were associated with the 25-34 cluster that provided 57% of the RDA for zinc and the cluster of women aged 65-74 who had a mean intake of zinc that met only 70% of the RDA. The results support the fact that beef products, as a group, are the best dietary source of zinc.

Patterns of Energy and Fat Intakes in Cluster Results

Previous government surveys have noted the relationship of energy intake of the adequacy of nutrient intake (USDA, 1972; 1987a; 1988a). This cluster analysis reaffirms that relationship. When compared to age group means, low caloric intakes were associated with six of the nine clusters in which at least one nutrient failed to meet 80% of its RDA. Energy intakes that were significantly higher than the respective age group norms were found in eight of the nine clusters that provided intakes of at least 80% of RDA for all three variables.

Total fat intakes in only three clusters varied significantly from age group averages. These clusters provided widely varying intakes of the three variables and it does not appear that total fat intake is related to the intakes of vitamin B_6, iron, and zinc. SFA intakes were significantly low in three clusters and high in two others. However, as found with total fat intakes, both low and high intakes of SFA were associated with a range of intakes of the variables, so that no pattern or relationship between SFA and vitamin B_6, iron, or zinc intake could be detected.

CONCLUSIONS

Age Groupings

Dividing the study population into six age groups provided insights that would have not been possible with larger groupings. Some results were expected, i.e., mean intakes of women over the age of 75 years were lower than found in the preceding age group; however no statistical tests were applied to determine the significance levels of these results. It was not anticipated that, despite lower mean caloric intake, women over the age of 75+ would have higher intakes of all nutrients, except fats, than those aged 19-24.

Other results, concerning the variety of intake patterns found within an age group, were surprising. It is of note that women over the age of 75 years formed 30 clusters over the seven different analyses, while women 25-34 formed 26 clusters. Subjects aged 35-50 and 51-64 formed the fewest number of clusters (18-19), indicating that food intake patterns within these groups tended to have a smaller range of intakes. The fact that women aged 51-64 formed only one cluster in the all-meat analyses was unique and suggests a hitherto unsuspected uniformity of meat intakes in women of this age range.

Preliminary Analyses

The initial analyses of the data confirmed results found in previous government surveys (USDA 1972; 1984; 1987a) that women's intakes of iron, zinc, and vitamin B_6 fail to meet their respective RDAs and that the intakes of iron (for premenopausal women) and zinc fail to reach 70% of goals. The study also confirms that intakes of total fat and SFAs were above current NRC guidelines. Across the age groups, mean total meat intakes (96-119g/d) were lower than recommended by the USDA in the new food guide pyramid.

Within the population, only 12% of women were able to meet the NRC fat guidelines, and their mean intakes of vitamin B_6, iron, and zinc were low. Of those who did meet the NRC fat guidelines, women with higher meat intakes had intakes of these nutrients that more closely approached the RDAs.

One analysis confirmed the close relationship of specific nutrients to meat intake. Gram meat intake was shown to be tied to total fat and saturated fatty acid intakes, causing 100% of the relatively small increases of 12% and 8%, respectively, seen between low and high meat intake levels. The effect of increased meat intake on vitamin B_6 caused a 100% increase in the nutrient, of which 77% was due to meat intake. Total iron intake increased somewhat between low and high intakes, but the increase in bioavailable iron was of more importance. Finally, the nutrient that showed the largest increase (132%) with the highest proportion coming from meat (90%) was zinc.

The analyses show that the nutrients contained in meat that are currently low in the diets of women, vitamin B_6, iron, and zinc, can achieve intakes that come closer to meeting their respective RDAs if meat intakes in the diet increase to meet the range proposed by the USDA food guide pyramid. The intakes of total fat and saturated fat were tied to meat intake; however, the amount of the increases was low and suggests that by selecting low-fat meats and using low-fat preparation techniques, higher meat intakes need not increase the intakes of fats.

All Meat Cluster Analysis

The analysis that classified women according to intakes of all meats (by % of kcal) provided the greatest number of significant differences in types of meat eaten, nutrient intakes, and demographic variables. This was of great value as a heuristic tool as it identified some areas of potential relationship that had not been previously shown, i.e., the inverse relationship that appears to exist between meat intake and calcium intake, and a potential direct relationship between BMI and meat intake. Now these hypothesized relationships can be tested using other statistical methods.

The inverse relationship seen between meat intake (as % kcal) and total caloric intake may arise from several causes. Individuals with high meat intakes may have followed a high-protein diet and purposefully eliminated servings from other food groups to reduce total caloric intake. It is also possible that the increased protein and fat content associated with high meat intakes increased feelings of satiety and thus reduced intakes of other foods.

Total fat and SFA intakes were higher than age group norms only when meat intakes (as % kcal) were higher than 22% of calories. Further study needs to be done to determine if excess meat intake is the element of concern, or if the high fat intakes resulted from decreased intakes of non-meat foods which may be less fat-dense. Caloric density of meat did not appear to be strongly associated with SFA intakes.

The results suggested that individuals with the highest education and income levels had the lowest intakes of meats. This is of concern, as their intakes of iron and zinc were low. In the past, high education and high incomes were linked to better nutrient status (USDA 1972; 1984; 1987a). This study suggests this trend may have reversed.

Cluster Analysis on Specific Meats

Classifying women according to their intakes of specific meats provided clusters which had fewer meat and nutrient intakes that varied significantly from the age group norms. In addition, there were few dissimilar demographic variables. In general, the results confirmed relationships between specific meats and nutrients, i.e., high zinc intakes in beef and high vitamin B_6 intakes in poultry products. However, these cluster analyses suggested areas where further statistical testing would be of value to determine the strength of hypothesized relationships; e.g., relationship of seafood intake to income.

Cluster Analysis on Vitamin B_6, Iron, and Zinc

This analysis provided the fewest areas of significant differences from the means for the age group. Demographic variables were seldom different from age group norms; however, there were three findings that emerged from this cluster analysis. First, higher gram intakes of meat, rather than meat as percent of caloric intake, were associated with higher intakes of the variables. Second, beef was the only specific meat that was associated to higher intakes of the three variables. Finally, total caloric intake had a strong, positive association with the variables, being low when inadequate intakes were present, and high when intakes of variables met or exceeded the RDA goals. It may be of value in the future to cluster on these variables and to look at the resulting intakes of foods from all food groups, not just meats.

Analysis Tools

Using cluster analysis techniques allowed a heuristic treatment of the data and suggested several areas where further statistical analyses could be applied to the original data base to establish the degree of relationships hinted at in the clusters. A major question throughout the study was how to determine whether the increased intakes of specific nutrients seen with increased meat intake were due to the meat or to the increased intake of other foods which usually accompanied a higher meat intake. The use of simple and multiple regression analysis did not adequately answer the question. A potential solution might be to perform a cluster analysis that used total caloric intake as the variable of interest while using the data bases containing nutrient intake from all foods and nutrient intakes from meats only.

The ability to separate meat components out of mixed dishes allowed for a more complete assessment of the role of meat products in nutrient intake. Hopefully, future government surveys will apply this technique to their data bases so that nutrient contributions of all foods may be correctly interpreted.

Determining the intake of bioavailable iron by the use of the OLM model was most helpful in obtaining a picture of the role of meat intake. Due to the large difference in bioavailability found between plant and animal products, it would be beneficial if this technique were used in future surveys to estimate mean absorbable iron intakes.

Nutrition Education Focus

Nutrition education messages have recently emphasized eliminating specific foods, such as meats, in order to reduce total dietary fat intake. This approach is not well conceived as it results in reduced intake of several nutrients that are at risk of inadequate consumption in the diets of American women. A more valid approach would be to demonstrate how to select a well-balanced diet using a variety of foods from all food groups. The nutritional status of older women is of especial concern. In addition to lower energy intakes, older individuals may have a compromised ability to absorb and metabolize foods (Posner et al. 1987). In light of the results from this study, it appears that some remedial education messages need to be formulated and distributed to women. These focus on the role and sources of iron, zinc, and vitamin B_6.

Iron intake has been an issue of concern in women's diets for several decades, and the increased use of iron-fortified grain products has not resulted in total iron intakes that meet the RDAs. The role of red meats in providing iron in the diet has been passed over lightly. Future nutrition education messages must emphasize that dietary adequacy of iron is not simply a matter of meeting the RDA but of how bioavailable iron is to the body. Currently, women consuming an iron-fortified product may assume that iron is absorbed in the same proportion as iron from meats. The fact that iron from meats may be 3 to 10 times better absorbed is not being taught.

Women of all ages have intakes of zinc that are low. Past nutrition messages to women have not discussed the role or importance of zinc in maintaining health. Women are not familiar with the food sources of zinc. These topics need to be thoroughly discussed. Women before, and during, pregnancy are uniquely at risk as low zinc intakes may increase risks to mother and fetus. This survey demonstrated mean intakes for women over the age of 65 met approximately 70% of the RDA for zinc. If their ability to metabolize zinc is lower than for younger individuals, as found in some studies (Bogden et al.

1988; Wisker et al. 1991), this age group is at risk of developing zinc deficiencies, which are associated with poor wound healing and immune system function (Chandra 1992; Sherman 1992).

Vitamin B_6, although not currently listed as a nutrient at risk of poor intake, is of concern to older women. Mean intakes in women over 65 met 83% to 90% of the RDA; however, some concerns exist that this level is too low for the elderly and should be increased (Kant et al. 1988; Lowik et al. 1989; Ribaya-Mercado et al. 1991). Additionally, with the emphasis currently being placed on the intake of fresh fruits and vegetables, especially crucifers, the bioavailability of vitamin B_6 should be addressed.

In addition to the information suggested above, more attention should be given on how to select and prepare low-fat meat dishes. The newly developed lower-fat meat products should be discussed. The emerging view of stearic acid having a benign effect on serum lipids needs to be evaluated and the results broadcast to the public. Future versions of the USDA computer data base should be expanded to provide breakdowns on amounts of specific fatty acids. And finally, emphasis should be placed on showing women how to select an appropriate diet from food sources and telling them not to rely on dietary supplements.

Within the nutrition profession, more attention needs to be placed on developing a method to quantify bioavailability of vitamins in foods containing pyridoxine glucosides. This information needs to be placed into data bases. Hopefully, the intake requirements for zinc and vitamin B_6 in the elderly will be addressed by the National Research Council in the next review of the RDAs.

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APPENDICES

Appendix A

Primary Data Set (PDS) File

03171 BABYFOOD; JUICE, APPLE&PRUNE
03172 BABYFOOD; JUICE, ORANGE
03174 BABYFOOD; JUICE, ORANGE&APPLE&BANANA
03175 BABYFOOD; JUICE, ORANGE&APRICOT
03177 BABYFOOD; JUICE, ORANGE&PINEAPPLE
03179 BABYFOOD; JUICE, MIXED FRUIT
03181 BABYFOOD; CEREAL, BARLEY, DRY
03182 BABYFOOD; CEREAL, HI-PROT, DRY
03185 BABYFOOD; CEREAL, MIXED, DRY
03186 BABYFOOD; CEREAL, MIXED, W/BANANAS, DRY
03187 BABYFOOD; CEREAL, MIXED, W/APPLESAUCE & BANANAS, STRAINED
03188 BABYFOOD; CEREAL, MIXED, W/APPLESAUCE & BANANAS, JUNIOR
03189 BABYFOOD; CEREAL, OATMEAL, DRY
03190 BABYFOOD; CEREAL, OATMEAL, W/BANANAS, DRY
03191 BABYFOOD; CEREAL, OATMEAL, W/APPLESAUCE & BANANAS, STRAINED
03192 BABYFOOD; CEREAL, OATMEAL, W/APPLESAUCE & BANANAS, JUNIOR
03194 BABYFOOD; CEREAL, RICE, DRY
03195 BABYFOOD; CEREAL, RICE, W/APPLESAUCE & BANANAS, STRAINED
03197 BABYFOOD; CEREAL, W/EGG YOLKS, STRAINED
03198 BABYFOOD; CEREAL, W/EGG YOLKS, JUNIOR
03201 BABYFOOD; CEREAL, EGG YOLKS AND BACON, JNR
03202 BABYFOOD; CEREAL, EGG YOLKS AND BACON, STR
03210 BABYFOOD; CEREAL, RICE, W/MIXED FRUIT, JUNIOR
03211 BABYFOOD; CEREAL, HI-PROT, W/APPLE & ORANGE, DRY
03212 BABYFOOD; CEREAL, RICE, W/BANANAS, DRY
03213 BABYFOOD; COOKIES
03214 BABYFOOD; COOKIES, ARROWROOT
03215 BABYFOOD; PRETZELS
03216 BABYFOOD; TEETHING BISCUITS
03217 ZWIEBACK
03218 BABYFOOD; DESSERT, APPLE BETTY, STRAINED
03219 BABYFOOD; DESSERT, APPLE BETTY, JUNIOR
03220 BABYFOOD; DESSERT, DUTCH APPLE, STRAINED
03221 BABYFOOD; DESSERT, DUTCH APPLE, JUNIOR
03224 BABYFOOD; DESSERT, CHERRY VANILLA PUDDING, STRAINED
03225 BABYFOOD; DESSERT, CHERRY VANILLA PUDDING, JUNIOR
03226 BABYFOOD; DESSERT, FRUIT PUDDING, ORANGE, STR
03227 BABYFOOD; DESSERT, PEACH COBBLER, STRAINED
03228 BABYFOOD; DESSERT, PEACH COBBLER, JUNIOR
03231 BABYFOOD; DESSERT, PINEAPPLE ORANGE, STRAINED
03233 BABYFOOD; DESSERT, FRUIT PUDDING, PINEAPPLE, STR
03234 BABYFOOD; DESSERT, FRUIT PUDDING, PINEAPPLE, JNR
03235 BABYFOOD; DESSERT, FRUIT DESSERT, WO/ASCORBIC ACID, STR
03236 BABYFOOD; DESSERT, FRUIT DESSERT, WO/ASCORBIC ACID, JNR
03243 BABYFOOD; DESSERT, CUSTARD PUDDING, CHOCOLATE, STR
03244 BABYFOOD; DESSERT, CUSTARD PUDDING, CHOCOLATE, JNR
03245 BABYFOOD; DESSERT, CUSTARD PUDDING, VANILLA, STR
03246 BABYFOOD; DESSERT, CUSTARD PUDDING, VANILLA, JNR
03265 BABYFOOD; JUICE, APPLE&GRAPE
03268 BABYFOOD; JUICE, APPLE&CHERRY
03274 BABYFOOD; DINNER, VEG & CHICKEN, JNR
03280 BABYFOOD; FRUIT, BANANAS WITH TAPIOCA, JNR
03282 BABYFOOD; VEGETABLES, MIX VEG, JNR
03283 BABYFOOD; VEGETABLES, GARDEN VEGETABLE, STRAINED
03286 BABYFOOD; VEGETABLES, MIX VEG, STR
03287 BABYFOOD; DINNER, BEEF NOODLE, JNR
04001 FAT; BEEF TALLOW
04002 LARD
04015 SALAD DRESSING; RUSSIAN, W/SALT
04017 SALAD DRESSING; THOUSAND ISLAND, COMM, REGULAR, W/SALT
04018 SALAD DRESSING; MAYONNAISE TYPE, REGULAR, W/SALT
04020 SALAD DRESSING; FRENCH, DIET, LO FAT, 5 CAL/TSP, W/SALT
04021 SALAD DRESSING; ITALIAN, COMM, DIET, 2 CAL/TSP, W/SALT
04022 SALAD DRESSING; RUSSIAN, LOW CALORIE, , W/SALT
04023 SALAD DRESSING; THOUSAND ISLAND, DIET, LO CAL, 10 CAL/TSP, W/SALT
04025 SALAD DRESSING; MAYONNAISE, SOYBEAN OIL, W/SALT
04026 SALAD DRESSING; MAYONNAISE, SOYBEAN & SAFFLOWER OIL, W/SALT
04027 SALAD DRESSING; MAYONNAISE, IMITATION, SOYBEAN
04029 SALAD DRESSING; MAYONNAISE, IMITATION, SOYBEAN WO/CHOLESTEROL
04030 SANDWICH SPREAD; W/CHOPPED PICKLE, REGULAR, UNSPECIFIED OILS
04031 SHORTENING; HOUSEHOLD, SYBN(HYDR)-CTTNSD(HYDR)
04034 OIL; SOYBEAN, SALAD OR COOKING, (HYDR)
04037 OIL; VEGETABLE, RICE BRAN
04038 OIL; WHEAT GERM
04042 OIL; PEANUT, SALAD OR COOKING
04044 OIL; SOYBEAN, SALAD OR COOKING
04047 VEGETABLE OIL; COCONUT
04053 OIL; OLIVE, SALAD OR COOKING
04055 OIL; VEGETABLE, PALM
04058 OIL; SESAME, SALAD OR COOKING
04105 MARGARINE; REGULAR, LIQUID, SYBN(HYDR&REG)&CTTNSD
04114 SALAD DRESSING; ITALIAN, COMM, REG, W/SALT
04120 SALAD DRESSING; FRENCH, COMM, REG, W/SALT
04128 MARGARINE; IMITATION(APPX 40% FAT), UNSPECIFIED OILS
04129 MARGARINE; SOFT, UNSPECIFIED OILS, WO/ADDED SALT
04130 MARGARINE; SOFT, UNSPECIFIED OILS, W/SALT ADDED
04131 MARGARINE; REGULAR, UNSPECIFIED OILS, WO/ADDED SALT
04132 MARGARINE; REGULAR, UNSPECIFIED OILS, W/SALT ADDED
04134 SALAD DRESSING; HOME RECIPE, CKD
04135 SALAD DRESSING; HOME RECIPE, VINEGAR & OIL
04137 BUTTER OIL; ANHYDROUS
04502 OIL; VEGETABLE, COTTONSEED, SALAD OR COOKING
04503 OIL; VEGETABLE, RAPESEED, ZERO ERUCIC ACID
04506 OIL; VEGETABLE, SUNFLOWER, LINOLEIC, (60% & OVER)
04510 OIL; VEGETABLE SAFFLOWER, SALAD OR COOKING, LINOLEIC, (OVER 70%)
04513 VEGETABLE OIL; PALM KERNEL
04518 OIL; VEGETABLE CORN, SALAD OR COOKING
04520 FAT; MUTTON TALLOW
04521 MARGARINE; REGULAR, HARD, SNFLWR&SYBN(HYDR)&CTTNSD(HYDR)
04528 OIL; VEGETABLE, WALNUT
04529 OIL; VEGETABLE, ALMOND
04530 OIL; VEGETABLE, APRICOT KERNEL
04531 VEGETABLE OIL; SOYBEAN LECITHIN
04539 SALAD DRESSING; BLUE+ROQUEFORT CHEESE, COMMER, REGULAR, W/SALT
04542 FAT; CHICKEN
04543 OIL; SOYBEAN, SALAD OR COOKING, (HYDR)&CTTNSD
04544 SHORTENING; HOUSEHOLD, LARD&VEGETABLE OIL
04548 SHORTENING; CAKE MIX, SYBN(HYDR)&CTTNSD(HYDR)
04551 SHORTENING; CONFECTIONERY, COCNT(HYDR)&/OR PALM KERNEL(HYDR)
04554 SHORTENING; INDUSTRIAL, SYBN(HYDR)&CTTNSD
04561 MARGARINE-LIKE SPREAD; APPX 60% FAT, TUB, UNSPECIFIED OILS
04574 FAT; DUCK
04575 FAT; TURKEY
05001 CHICKEN; BROILERS OR FRYERS, MEAT&SKIN&GIBLETS&NECK, RAW
05004 CHICKEN; BRIOLERS OR FRYERS, MEAT&SKIN&GIBLETS&NECK, ROASTED
05006 CHICKEN; BROILERS OR FRYERS, MEAT&SKIN, RAW
05007 CHICKEN; BROILERS OR FRYERS, MEAT&SKIN, COOKED, FRIED, BATTER
05008 CHICKEN; BROILERS OR FRYERS, MEAT&SKIN, CKD, FRIED, FLR
05009 CHICKEN; BROILERS OR FRYERS, MEAT&SKIN, COOKED, ROASTED
05010 CHICKEN; BROILERS OR FRYERS, MEAT&SKIN, COOKED, STEWED
05011 CHICKEN; BROILERS OR FRYERS, MEAT ONLY, RAW
05012 CHICKEN; BROILERS OR FRYERS, MEAT ONLY, CKD, FRIED
05013 CHICKEN; BROILERS OR FRYERS, MEAT ONLY, ROASTED
05014 CHICKEN; BROILERS OR FRYERS, MEAT ONLY, STEWED
05018 CHICKEN; BROILERS OR FRYERS, SKIN ONLY, COOKED, ROASTED
05020 CHICKEN; BROILERS OR FRYERS, GIBLETS, RAW
05022 CHICKEN; BROILERS OR FRYERS, GIBLETS, COOKED, SIMMERED
05023 CHICKEN; GIZZARD, ALL CLASSES, RAW
05024 CHICKEN; GIZZARD, ALL CLASSES, CKD, SIMMERED
05025 CHICKEN; HEART, (ALL CLASSES), RAW
05027 CHICKEN; LIVER, ALL CLASSES, RAW
05028 CHICKEN; LIVER, ALL CLASSES, CKD, SIMMERED
05031 CHICKEN; BROILERS OR FRYERS, LIGHT MEAT, MEAT&SKIN
05033 CHICKEN; BROILERS OR FRYERS, LIGHT MEAT, MEAT&SKIN
05041 CHICKEN; BROILERS OR FRYERS, LIGHT MEAT, MEAT ONLY
05042 CHICKEN; BROILERS OR FRYERS, LIGHT MEAT, MEAT ONLY
05045 CHICKEN; BROILERS OR FRYERS, DARK MEAT, MEAT ONLY
05046 CHICKEN; BROILERS OR FRYERS, DARK MEAT, MEAT ONLY
05047 CHICKEN; BROILERS OR FRYERS, SEPARABLE FAT, RAW
05048 CHICKEN; BROILERS OR FRYERS, BACK, MEAT&SKIN, RAW
05051 CHICKEN; BROILERS OR FRYERS, BACK, MEAT&SKIN, COOKED
05052 CHICKEN; BROILERS OR FRYERS, BACK, MEAT&SKIN, COOKED
05053 CHICKEN; BROILERS OR FRYERS, BACK, MEAT ONLY, RAW
05055 CHICKEN; BROILERS OR FRYERS, BACK, MEAT ONLY, COOKED
05056 CHICKEN; BROILERS OR FRYERS, BACK, MEAT ONLY, COOKED
05057 CHICKEN; BROILERS OR FRYERS, BREAST, MEAT&SKIN, RAW
05058 CHICKEN; BROILERS OR FRYERS, BREAST, MEAT&SKIN, COOKED
05060 CHICKEN; BROILERS OR FRYERS, BREAST, MEAT&SKIN, COOKED
05061 CHICKEN; BROILERS OR FRYERS, BREAST, MEAT&SKIN, COOKED
05062 CHICKEN; BROILERS OR FRYERS, BREAST, MEAT ONLY, RAW
05063 CHICKEN; BROILERS OR FRYERS, BREAST, MEAT ONLY, COOKED
05064 CHICKEN; BROILERS OR FRYERS, BREAST, MEAT ONLY, COOKED
05065 CHICKEN; BROILERS OR FRYERS, BREAST, MEAT ONLY, COOKED
05066 CHICKEN; BROILERS OR FRYERS, DRUMSTICK, MEAT&SKIN, RAW
05069 CHICKEN; BROILERS OR FRYERS, DRUMSTICK, MEAT&SKIN
05070 CHICKEN; BROILERS OR FRYERS, DRUMSTICK, MEAT&SKIN
05073 CHICKEN; BROILERS OR FRYERS, DRUMSTICK, MEAT ONLY
05074 CHICKEN; BROILERS OR FRYERS, DRUMSTICK, MEAT ONLY
05075 CHICKEN; BROILERS OR FRYERS, LEG, MEAT&SKIN, RAW
05078 CHICKEN; BROILERS OR FRYERS, LEG, MEAT&SKIN, COOKED
05079 CHICKEN; BROILERS OR FRYERS, LEG, MEAT&SKIN, COOKED
05082 CHICKEN; BROILERS OR FRYERS, LEG, MEAT ONLY, COOKED
05083 CHICKEN; BROILERS OR FRYERS, LEG, MEAT ONLY, COOKED
05084 CHICKEN; BROILERS OR FRYERS, NECK, MEAT&SKIN, RAW
05087 CHICKEN; BROILERS OR FRYERS, NECK, MEAT&SKIN, COOKED
05090 CHICKEN; BROILERS OR FRYERS, NECK, MEAT ONLY, COOKED
05091 CHICKEN; BROILERS OR FRYERS, THIGH, MEAT&SKIN, RAW
05094 CHICKEN; BROILERS OR FRYERS, THIGH, MEAT&SKIN, COOKED
05095 CHICKEN; BROILERS OR FRYERS, THIGH, MEAT&SKIN, COOKED
05098 CHICKEN; BROILERS OR FRYERS, THIGH, MEAT ONLY, COOKED
05099 CHICKEN; BROILERS OR FRYERS, THIGH, MEAT ONLY, COOKED
05100 CHICKEN; BROILERS OR FRYERS, WING, MEAT&SKIN, RAW
05103 CHICKEN; BROILERS OR FRYERS, WING, MEAT&SKIN, COOKED
05104 CHICKEN; BROILERS OR FRYERS, WING, MEAT&SKIN, COOKED
05107 CHICKEN; BROILERS OR FRYERS, WING, MEAT ONLY, COOKED
05108 CHICKEN; BROILERS OR FRYERS, WING, MEAT ONLY, COOKED
05109 CHICKEN; ROASTING, MEAT&SKIN&GIBLETS&NECK, RAW
05111 CHICKEN; ROASTING, MEAT&SKIN, RAW
05118 CHICKEN; ROASTING, LIGHT MEAT, MEAT ONLY, CKD, ROASTED
05121 CHICKEN; STEWING, MEAT, SKIN, & GIBLETS&NECK, RAW
05122 CHICKEN; STEWING, MEAT&SKIN&GIBLETS, CKD, STEWED
05133 CHICKEN; CAPONS, RAW, TOT EDIBLE
05139 DUCK; DOMESTICATED, MEAT&SKIN, RAW
05140 DUCK; DOMESTICATED, MEAT&SKIN, COOKED, ROASTED
05141 DUCK; DOMESTICATED, MEAT ONLY, RAW
05142 DUCK; DOMESTICATED, MEAT ONLY, COOKED, ROASTED
05144 DUCK; WILD, MEAT&SKIN, RAW
05146 GOOSE; DOMESTICATED, MEAT&SKIN, RAW
05147 GOOSE; DOMESTICATED, MEAT&SKIN, CKD, ROASTED
05150 GOOSE; LIVER, RAW
05151 GUINEA HEN; MEAT AND SKIN, RAW
05153 PHEASANT; RAW, MEAT&SKIN
05157 QUAIL; MEAT&SKIN, RAW
05160 SQUAB; (PIGEON), MEAT&SKIN, RAW
05163 TURKEY; ALL CLASSES, RAW, MEAT&SKIN&GIBLETS&NECK
05165 TURKEY; ALL CLASSES, MEAT&SKIN, RAW
05166 TURKEY; ALL CLASSES, MEAT&SKIN, CKD, ROASTED
05167 TURKEY; ALL CLASSES, MEAT ONLY, RAW
05168 TURKEY; ALL CLASSES, MEAT ONLY, CKD, ROASTED
05169 TURKEY; ALL CLASSES, SKIN ONLY, RAW
05172 TURKEY; ALL CLASSES, GIBLETS, CKD, SIMMERED, SOME GIBLET
05173 TURKEY; GIZZARD, ALL CLASSES, RAW
05174 TURKEY; GIZZARD, ALL CLASSES, CKD, SIMMERED
05175 TURKEY; HEART, (ALL CLASSES), RAW
05176 TURKEY; HEART, (ALL CLASSES), CKD, SIMMERED
05177 TURKEY; LIVER, ALL CLASSES, RAW
05178 TURKEY; LIVER, ALL CLASSES, CKD, SIMMERED
05179 TURKEY; ALL CLASSES, NECK, MEAT ONLY, RAW
05180 TURKEY; ALL CLASSES, NECK, MEAT ONLY, COOKED, SIMMERED
05182 TURKEY; ALL CLASSES, LIGHT MEAT, MEAT&SKIN, COOKED
05184 TURKEY; ALL CLASSES, DARK MEAT, MEAT&SKIN, COOKED
05186 TURKEY; ALL CLASSES, LIGHT MEAT, CKD, ROASTED
05188 TURKEY; ALL CLASSES, DARK MEAT, CKD, ROASTED
05189 TURKEY; ALL CLASSES, BACK, MEAT&SKIN, RAW
05190 TURKEY; ALL CLASSES, BACK, MEAT&SKIN, COOKED, ROASTED
05191 TURKEY; ALL CLASSES, BREAST, MEAT&SKIN, RAW
05193 TURKEY; ALL CLASSES, LEG, MEAT&SKIN, RAW
05194 TURKEY; ALL CLASSES, LEG, MEAT&SKIN, COOKED, ROASTED
05195 TURKEY; ALL CLASSES, WING, MEAT&SKIN, RAW
05196 TURKEY; ALL CLASSES, WING, MEAT&SKIN, COOKED, ROASTED
05200 TURKEY; FRYER-ROASTERS, MEAT&SKIN, COOKED, ROASTED
05202 TURKEY; FRYER-ROASTERS, MEAT ONLY, COOKED, ROASTED
05277 CHICKEN; CND, MEAT ONLY, BONED, W/BROTH
05279 PATE; CHICKEN LIVER, CANNED
05280 CHICKEN ROLL; LIGHT MEAT
05284 TURKEY; CND, MEAT ONLY, W/BROTH
05287 TURKEY LUNCHEON MEAT; HAM, CURED TURKEY THIGH MEAT
05288 TURKEY LUNCHEON MEAT; LOAF, BREAST MEAT
05289 TURKEY PASTRAMI
05291 TURKEY ROLL; LIGHT & DARK MEAT
05292 TURKEY PATTIES; BREADED, BATTERED, FRIED
05295 TURKEY ROAST; BONELESS, FROZEN, SEASONED, LIGHT & DARK
05296 TURKEY ROAST; BONELESS, FROZEN, SEASONED, LIGHT & DARK
05306 POULTRY FOOD PRODUCTS, GROUND TURKEY, COOKED
06001 SOUP; CREAM OF ASPARAGUS, CANNED, CONDENSED, COMMER
06002 SOUP; BLACK BEAN, CANNED, CONDENSED, COMMER
06004 SOUP; BEAN W/PORK, CANNED, CONDENSED, COMMERCIAL
06006 SOUP; BEAN W/FRANKFURTERS, CANNED, CONDENSED, COMMER
06007 SOUP; BEAN W/HAM, CANNED, CHUNKY, READY-TO-SERVE, COMMER
06008 SOUP; BEEF BROTH OR BOULLION, CANNED, READY-TO-SERVE
06009 SOUP; BEEF NOODLE, CANNED, CONDENSED, COMMERCIAL
06010 SOUP; CREAM OF CELERY, CANNED, CONDENSED, COMMERCIAL
06011 SOUP; CHEESE, CANNED, CONDENSED, COMMER
06013 SOUP; CHICKEN BROTH, CANNED, CONDENSED, COMMERCIAL
06015 SOUP; CHICKEN, CANNED, CHUNKY, READY-TO-SERVE, COMMER
06016 SOUP; CREAM OF CHICKEN, CANNED, CONDENSED, COMMERCIAL
06017 SOUP; CHICKEN GUMBO, CANNED, CONDENSED, COMMERCIAL
06018 SOUP; CHICKEN NOODLE, CANNED, CHUNKY, READY-TO-SERVE
06019 SOUP; CHICKEN NOODLE, CANNED, CONDENSED, COMMERCIAL
06022 SOUP; CHICKEN RICE, CANNED, CHUNKY, READY-TO-SERVE
06023 SOUP; CHICKEN W/RICE, CANNED, CONDENSED, COMMERCIAL
06025 SOUP; CHICKEN VEGETABLE, CANNED, CONDENSED, COMMERCIAL
06027 SOUP; CLAM CHOWDER, MANHATTAN STYLE, CANNED, CHUNKY
06028 SOUP; CLAM CHOWDER, MANHATTAN, CND, W/TOMATO WO/MILK
06030 SOUP; CLAM CHOWDER, CND, NEW ENGLAND, W/MILK, CONDENSED
06032 SOUP; BEEF BROTH BOUILLON & CONSOMME, CANNED, CONDENSED
06034 SOUP; CRAB, CANNED, READY-TO-SERVE
06036 SOUP; GAZPACHO, CANNED, READY-TO-SERVE
06039 SOUP; MINISTRONE, CANNED, CHUNKY, READY-TO-SERVE
06040 SOUP; MINESTRONE, CANNED, CONDENSED, COMMERCIAL
06043 SOUP; CREAM OF MUSHROOM, CND, CONDENSED, COMMERCIAL
06044 SOUP; MUSHROOM W/BEEF STOCK, CANNED, CONDENSED, COMMER
06045 SOUP; ONION, CANNED, CONDENSED, COMMERCIAL
06046 SOUP; CREAM OF ONION, CANNED, CONDENSED, COMMER

06048 SOUP; OYSTER STEW, CANNED, CONDENSED, COMMER
06049 SOUP; PEA, GREEN, CND, CONDENSED, COMMERCIAL
06050 SOUP; PEA, SPLIT W/HAM, CANNED, CHUNKY, READY-TO-SERVE
06051 SOUP; PEA, SPLIT W/HAM, CND, CONDENSED, COMMERCIAL
06053 SOUP; CREAM OF POTATO, CND, CONDENSED
06056 SOUP; CREAM OF SHRIMP, CND, CONDENSED
06063 SOUP; TOMATO RICE, CANNED, CONDENSED, COMMER
06065 SOUP; TURKEY NOODLE, CND, CONDENSED, COMMERCIAL
06066 SOUP; TURKEY VEGETABLE, CANNED, CONDENSED, COMMER
06067 SOUP; VEGETABLE, CANNED, CHUNKY, READY-TO-SERVE, COMMER
06068 SOUP; VEGETARIAN VEGETABLE, CND, CONDENSED, COMMERCIAL
06070 SOUP; BEEF, CANNED, CHUNKY, READY-TO-SERVE
06071 SOUP; VEGETABLE BEEF, CND, CONDENSED, COMMERCIAL
06072 SOUP; VEGETABLE W/BEEF BROTH, CANNED, CONDENSED, COMMER
06073 SOUP; CREAM OF ASPARAGUS, DEHYDRATED, DRY MIX
06074 SOUP; BEAN W/BACON, DEHYDRATED, DRY MIX
06075 SOUP; BEEF BROTH OR BOUILLON, POWDER, DRY
06076 SOUP; BEEF BROTH, CUBED, DRY
06077 SOUP; BEEF NOODLE MIX, DEHYDRATED, DRY FORM
06079 SOUP; CREAM OF CELERY, DEHYDRATED, DRY
06080 SOUP; CHICKEN BROTH OR BOUILLON, DEHYDRATED, DRY
06081 SOUP; CHICKEN BROTH CUBES, DEHYDRATED, DRY
06083 SOUP; CREAM OF CHICKEN, DEHYDRATED, DRY
06085 SOUP; CHICKEN RICE MIX, DEHYDRATED, DRY FORM
06086 SOUP; CHICKEN VEGETABLE, DEHYDRATED, DRY
06088 SOUP; CLAM CHOWDER, NEW ENGLAND, DEHYDRATED, DRY
06090 SOUP; LEEK, DEHYDRATED, DRY
06092 SOUP; MINISTRONE, DEHYDRATED, DRY
06094 SOUP; ONION MIX, DEHYDRATED, DRY FORM
06095 SOUP; OXTAIL, DEHYDRATED, DRY
06096 SOUP; PEA, GREEN, MIX, DEHYDRATED, DRY FORM
06098 SOUP; TOMATO, DEHYDRATED, DRY
06099 SOUP; TOMATO VEGETABLE MIX, DEHYDRATED, DRY FORM
06100 SOUP; VEGETABLE BEEF, DEHYDRATED, DRY
06101 SOUP; CREAM OF VEGETABLE, DEHYDRATED, DRY
06103 SAUCE; CHEESE, DEHYDRATED, DRY
06107 SAUCE; SPAGHETTI, DEHYDRATED, DRY
06109 SAUCE; STROGANOFF, DEHYDRATED, DRY
06110 SAUCE; SWEET & SOUR, DEHYDRATED, DRY
06111 SAUCE; TERIYAKI, DEHYDRATED, DRY
06112 SAUCE; TERIYAKI, READY-TO-SERVE
06113 SAUCE; WHITE, DEHYDRATED, DRY
06116 GRAVY; BEEF, CANNED
06119 GRAVY; CHICKEN, CANNED
06121 GRAVY; MUSHROOM, CANNED
06123 GRAVY; ONION, DEHYDRATED, DRY
06125 GRAVY; TURKEY, CANNED
06128 SOUP; CHICKEN NOODLE MIX, DEHYDRATED, DRY FORM
06134 SAUCE; SOY SAUCE
06149 SOUP; CHICKEN MUSHROOM, CANNED, CONDENSED, COMMER
06150 SAUCE; BARBECUE SAUCE
06155 SAUCE; HOLLANDAISE, W/BUTTERFAT, DEHYDRATED, DRY
06158 SOUP; TOMATO BISQUE, CANNED, CONDENSED, COMMER
06159 SOUP; TOMATO, CND, CONDENSED, COMMERCIAL
06201 SOUP; CREAM OF ASPARAGUS, CANNED, PREP W/EQ VOL MILK, COMMER
06210 SOUP; CREAM OF CELERY, CND, PREP W/EQ VOL MILK, COMMERCIAL
06211 SOUP; CHEESE, CANNED, PREP W/EQ VOL MILK, COMMER
06216 SOUP; CREAM OF CHICKEN, PREP W/EQ VOL MILK, COMMERCIAL
06230 SOUP; CLAM CHOWDER, CND, NEW ENGLAND, W/MLK, PREP W/EQ VOL MILK, COMMER
06243 SOUP; CREAM OF MUSHROOM, CND, PREP W/EQ VOL MILK, COMMERCIAL
06246 SOUP; CREAM OF ONION, CANNED, PREP W/EQ VOL MILK, COMMER
06248 SOUP; OYSTER STEW, CANNED, PREPARED W/EQ VOL MILK, COMMER
06249 SOUP; PEA, GREEN, CND, PREP W/EQ VOL MILK, COMMERCIAL
06253 SOUP; CREAM OF POTATO, CND, PREP W/EQ VOL MILK, COMMERCIAL
06256 SOUP; CREAM OF SHRIMP, CND, PREP W/EQ VOL MILK, COMMERCIAL
06303 SAUCE; CHEESE, DEHYDRATED, PREP W/MILK
06348 SAUCE; SOUR CREAM, DEHYDRATED, PREP W/MILK
06359 SOUP; TOMATO, CND, PREP W/EQ VOL MILK, COMMERCIAL
06401 SOUP; CREAM OF ASPARAGUS, CANNED, PREP W/EQ VOL WATER, COMMER
06402 SOUP; BLACK BEAN, CANNED, PREP W/EQ VOL WATER, COMMER
06404 SOUP; BEAN W/PORK, CANNED, PREP W/EQ VOL WATER, COMMERCIAL
06409 SOUP; BEEF NOODLE, CANNED, PREP W/EQ VOL WATER, COMMERCIAL
06410 SOUP; CREAM OF CELERY, CND, PREP W/EQ VOL WATER, COMMERCIAL
06412 SOUP; CHICKEN W/DUMPLINGS, CANNED, PREP W/EQ VOL WATER, COMMER
06413 SOUP; CHICKEN BROTH, CANNED, PREP W/EQ VOL WATER, COMMERCIAL
06416 SOUP; CREAM OF CHICKEN, CND, PREP W/EQ VOL WATER, COMMERCIAL
06417 SOUP; CHICKEN GUMBO, CANNED, PREP W/EQ VOL WATER, COMMERCIAL
06419 SOUP; CHICKEN NOODLE, CANNED, PREP W/EQ VOL WATER, COMMERCIAL
06423 SOUP; CHICKEN W/RICE, CANNED, PREP W/EQ VOL WATER, COMMERCIAL
06425 SOUP; CHICKEN VEGETABLE, CANNED, PREP W/EQ VOL WATER, COMMERCIAL
06426 SOUP; CHILI BEEF, CANNED, PREP W/EQ VOL WATER, COMMER
06428 SOUP; CLAM CHOWDER, MANHATTAN, CND, W/TOMATO WO/MLK, PREP W/EQ VOL WTR
06430 SOUP; CLAM CHOWDER, CND, NEW ENGLAND, W/MLK, PREP W/EQ VOL WATER, COMMER
06440 SOUP; MINESTRONE, CANNED, PREP W/EQ VOL WATER, COMMERCIAL
06442 SOUP; MUSHROOM BARLEY, CANNED, PREP W/EQ VOL WATER, COMMER
06443 SOUP; CREAM OF MUSHROOM, CND, PREP W/EQ VOL WATER, COMMERCIAL
06444 SOUP; MUSHROOM W/BEEF STOCK, CANNED, PREP W/EQ VOL WATER, COMMER
06445 SOUP; ONION, CANNED, PREP W/EQ VOL WATER, COMMERCIAL
06449 SOUP; PEA, GREEN, CND, PREP W/EQ VOL WATER, COMMERCIAL
06452 SOUP; PEPPERPOT, CANNED, PREP W/EQ VOL WATER, COMMER
06453 SOUP; CREAM OF POTATO, CND, PREP W/EQ VOL WATER, COMMERCIAL
06455 SOUP; SCOTCH BROTH, CANNED, PREP W/EQ VOL WATER, COMMER
06456 SOUP; CREAM OF SHRIMP, CND, PREP W/EQ VOL WATER, COMMERCIAL
06461 SOUP; TOMATO BEEF W/NOODLE, CANNED, PREP W/EQ VOL WATER, COMMER
06463 SOUP; TOMATO RICE, CANNED, PREP W/EQ VOL WATER, COMMER
06465 SOUP; TURKEY NOODLE, CND, PREP W/EQ VOL WATER, COMMERCIAL
06466 SOUP; TURKEY VEGETABLE, CANNED, PREP W/EQ VOL WATER, COMMER
06468 SOUP; VEGETARIAN VEGETABLE, CND, PREP W/EQ VOL WATER, COMMERCIAL
06471 SOUP; VEGETABLE BEEF, PREP W/EQ VOL WATER, COMMERCIAL
06472 SOUP; VEGETABLE W/BEEF BROTH, CND, PREP W/EQ VOL WATER, COMMER
06474 SOUP; BEAN W/BACON, DEHYDRATED, PREP W/WATER
06475 SOUP; BEEF BROTH OR BOUILLON, POWDER, PREP W/WATER
06476 SOUP; BEEF BROTH, CUBED, PREP W/WATER
06477 SOUP; BEEF NOODLE, DEHYDRATED, PREP W/WATER
06480 SOUP; CHICKEN BROTH OR BOUILLON, DEHYDRATED, PREP W/WATER
06483 SOUP; CREAM OF CHICKEN, DEHYDRATED, PREP W/WATER
06485 SOUP; CHICKEN RICE, DEHYDRATED, PREP W/WATER
06489 SOUP; CONSOMME W/GELATIN, DEHYDRATED, PREP W/WATER
06490 SOUP; LEEK, DEHYDRATED, PREP W/WATER
06493 SOUP; MUSHROOM, DEHYDRATED, PREP W/WATER
06494 SOUP; ONION, DEHYDRATED, PREP W/WATER
06495 SOUP; OXTAIL, DEHYDRATED, PREP W/WATER
06496 SOUP; PEA, GREEN, MIX, DEHYDRATED, PREP W/WATER
06498 SOUP; TOMATO, DEHYDRATED, PREP W/WATER
06499 SOUP; TOMATO VEGETABLE, DEHYDRATED, PREP W/WATER
06500 SOUP; VEGETABLE BEEF, DEHYDRATED, PREP W/WATER
06501 SOUP; CREAM OF VEGETABLE, DEHYDRATED, PREP W/WATER
06510 SAUCE; SWEET & SOUR, DEHYDRATED, PREP W/WATER & VINEGAR
06522 GRAVY; MUSHROOM, DEHYDRATED, PREP W/WATER
06524 GRAVY; PORK, DEHYDRATED, PREP W/WATER
06526 GRAVY; TURKEY, DEHYDRATED, PREP W/WATER
06528 SOUP; CHICKEN NOODLE, DEHYDRATED, PREP W/WATER
06555 SAUCE; HOLLANDAISE, W/BUTTERFAT, DEHYDRATED, PREP W/WATER
06559 SOUP; TOMATO, CND, PREP W/EQ VOL WATER, COMMERCIAL
07002 BEERWURST, BEER SALAMI, BEEF
07003 SAUSAGE; BEERWURST(BEER SALAMI), PORK
07005 SAUSAGE; BLOOD SAUSAGE OR BLOOD PUDDING
07006 SAUSAGE; BOCKWURST
07007 BOLOGNA, BEEF
07008 SAUSAGE; BOLOGNA, BEEF & PORK
07011 SAUSAGE; BOLOGNA, TURKEY
07013 SAUSAGE; BRATWURST

07014 SAUSAGE; BRAUNSCHWEIGER (LIVER SAUSAGE), SMOKED
07016 SAUSAGE; CHEESEFURTER, CHEESE SMOKIE
07017 CHICKEN ROLL; LIGHT MEAT
07018 CHICKEN SPREAD; CANNED
07019 SAUSAGE; CHORIZO
07020 CORNED BEEF LOAF, JELLIED
07021 LUNCHEON MEAT; DUTCH BRAND LOAF
07022 FRANKFURTER, BEEF
07023 FRANKFURTERS; RAW, BEEF & PORK
07024 FRANKFURTER; CHICKEN
07025 FRANKFURTER; TURKEY
07026 LUNCHEON MEAT; HAM, CHOPPED, SPICED, CND
07028 LUNCHEON MEAT; HAM, EXTRA LEAN, APPROX 5% FAT, SLICED
07029 LUNCHEON MEAT; HAM, APPROX 11% FAT, SLICED
07031 LUNCHEON MEAT; HAM SALAD SPREAD
07032 LUNCHEON MEAT; HAM & CHEESE LOAF(OR ROLL)
07034 HEADCHEESE, PORK
07035 LUNCHEON MEAT; HONEY LOAF
07037 SAUSAGE; KIELBASA, KOLBASSY
07038 SAUSAGE; KNOCKWURST
07039 LEBANON BOLOGNA, BEEF
07042 LUNCHEON MEAT, BEEF, LOAVED
07043 LUNCHEON MEAT; BEEF, THIN SLICED
07047 LUNCHEON MEAT; PORK AND BEEF CHOPPED TOGETHER
07050 SAUSAGE; MORTADELLA
07051 OLIVE LOAF, PORK
07052 PASTRAMI; TURKEY
07056 LUNCHEON MEAT; PEPPERED LOAF
07057 SAUSAGE; PEPPERONI
07058 PICKLE AND PIMIENTO LOAF, PORK
07063 SAUSAGE; PORK, LINKS OR BULK, RAW
07064 SAUSAGE; PORK, LINKS OR BULK, CKD
07065 SAUSAGE; PORK & BEEF, FRESH, COOKED
07067 POULTRY SALAD SANDWICH SPREAD
07068 SAUSAGE; SALAMI, BEEF, COOKED
07069 SAUSAGE; SALAMI, BEEF & PORK, CKD
07070 SALAMI; TURKEY, COOKED
07071 SAUSAGE; SALAMI, PORK, DRY OR HARD
07072 SAUSAGE; SALAMI, BEEF & PORK, DRY
07073 SANDWICH SPREAD; PORK, BEEF
07074 SMOKED LINK SAUSAGE, PORK
07075 SAUSAGE; SMOKED LINK SAUSAGE, PORK & BEEF
07078 SAUSAGE; THURINGER
07080 TURKEY HAM; CURED TURKEY THIGH MEAT
07081 TURKEY ROLL; LIGHT MEAT
07083 SAUSAGE; VIENNA, CND
07088 SAUSAGE; HONEY ROLL SAUSAGE
07089 SAUSAGE; ITALIAN, COOKED
07091 SAUSAGE; NEW ENGLAND BRAND SAUSAGE
08001 CEREALS READY-TO-EAT; ALL-BRAN, (WHEAT BRAN)
08002 CEREALS READY-TO-EAT; ALPHA-BITS, (OAT W/OTHER GRNS)
08003 CEREALS READY-TO-EAT; APPLE JACKS, (CORN W/OTHER GRNS)
08005 CEREALS READY-TO-EAT; BRAN BUDS, (WHEAT BRAN)
08006 CEREALS READY-TO-EAT; BRAN CHEX, (WHEAT BRAN,CORN)
08008 CEREALS READY-TO-EAT; C.W. POST, PLAIN,
08009 CEREALS READY-TO-EAT; C.W. POST, W/RAISINS,
08010 CEREALS READY-TO-EAT; CAP'N CRUNCH, (CORN W/OTHER GRNS)
08011 CEREALS READY-TO-EAT; CAP'N CRUNCH'S CRUNCHBERRIES,
08012 CEREALS READY-TO-EAT; CAP'N CRUNCH'S PEANUT BUTTER,
08013 CEREALS READY-TO-EAT; CHEERIOS, (OAT,WHEAT)
08014 CEREALS READY-TO-EAT; COCOA KRISPIES, (RICE)
08015 CEREALS READY-TO-EAT; COCOA PEBBLES, (RICE)
08017 CEREALS READY-TO-EAT; COOKIE-CRISP, CHOC CHIP & VAN,
08018 CEREALS READY-TO-EAT; CORN BRAN (CORN BRAN W/OTHER GRNS)
08019 CEREALS READY-TO-EAT; CORN CHEX, (CORN)
08020 CEREALS READY-TO-EAT; CORN FLAKES, KELLOGG'S, (CORN)
08021 CEREALS READY-TO-EAT; CORN FLAKES, RALSTON PURINA, (CORN)
08022 CEREALS READY-TO-EAT; CORN FLAKES, LOW SODIUM, (CORN)
08023 CEREALS READY-TO-EAT; CRACKLIN' BRAN,
08025 CEREALS READY-TO-EAT; CRISPY RICE, (RICE)
08026 CEREALS READY-TO-EAT; CRISPY WHEATS 'N RAISINS,
08027 CEREALS READY-TO-EAT; FORTIFIED OAT FLAKES,
08028 CEREALS READY-TO-EAT; 40% BRAN FLAKES, KELLOGG'S
08029 CEREALS READY-TO-EAT; 40% BRAN FLAKES, POST, (WHEAT BRAN)
08030 CEREALS READY-TO-EAT; FROOT LOOPS, (CORN W/OTHER GRNS
08031 CEREALS READY-TO-EAT; FROSTED MINI-WHEATS, SUG-FRSTD
08032 CEREALS READY-TO-EAT; FROSTED RICE KRISPIES, (RICE)
08033 CEREALS READY-TO-EAT; FROSTED RICE KRINKLES, (RICE)
08034 CEREALS READY-TO-EAT; FRUITY PEBBLES, (RICE)
08035 CEREALS READY-TO-EAT; GOLDEN GRAHAMS, (CORN,WHEAT)
08036 CEREALS READY-TO-EAT; GRAHAM CRACKOS, (WHEAT)
08037 CEREALS READY-TO-EAT; GRANOLA, HOMEMADE, (OATS,WHEAT GERM)
08038 CEREALS READY-TO-EAT; GRAPE-NUTS, (WHEAT,BARLEY)
08039 CEREALS READY-TO-EAT; GRAPE-NUTS FLAKES, (WHEAT,BARLEY)
08040 CEREALS READY-TO-EAT; HEARTLAND NATURAL CEREAL, PLAIN,
08041 CEREALS READY-TO-EAT; HEARTLAND NATURAL CEREAL, W/COCNT
08042 CEREALS READY-TO-EAT; HEARTLAND NATURAL CEREAL, W/RAISNS
08043 CEREALS READY-TO-EAT; HONEY & NUT CORN FLAKES, (CORN)
08044 CEREALS READY-TO-EAT; HONEYBRAN, (WHEAT)
08045 CEREALS READY-TO-EAT; HONEY NUT CHEERIOS, (OAT,WHEAT)
08046 CEREALS READY-TO-EAT; HONEYCOMB, (CORN,OATS)
08047 CEREALS READY-TO-EAT; KING VITAMAN, (CORN W/OTHER GRNS)
08048 CEREALS READY-TO-EAT; KIX, (CORN W/OTHER GRNS)
08049 CEREALS READY-TO-EAT; LIFE, PLAIN & CINN PRODUCTS,
08050 CEREALS READY-TO-EAT; LUCKY CHARMS, (OAT W/OTHER GRNS)
08051 CEREALS READY-TO-EAT; MOST, (WHEAT BRAN,WHEAT)
08052 CEREALS READY-TO-EAT; NATURE VALLEY GRANOLA, TSTD OAT
08053 CEREALS READY-TO-EAT; 100% BRAN, (WHEAT BRAN,BARLEY)
08054 CEREALS READY-TO-EAT; 100% NATURAL CEREAL, PLAIN,
08055 CEREALS READY-TO-EAT; 100% NATURAL CEREAL, W/APPLE
08056 CEREALS READY-TO-EAT; 100% NATURAL CEREAL, W/RAISINS
08058 CEREALS READY-TO-EAT; PRODUCT 19, (CORN W/OTHER GRNS)
08059 CEREALS READY-TO-EAT; QUISP, (CORN,OAT)
08060 CEREALS READY-TO-EAT; RAISIN BRAN, KELLOGG'S, (WHEAT)
08061 CEREALS READY-TO-EAT; RAISIN BRAN, POST, (WHEAT)
08062 CEREALS READY-TO-EAT; RAISIN BRAN, RALSTON PURINA
08063 CEREALS READY-TO-EAT; RAISINS, RICE & RYE
08064 CEREALS READY-TO-EAT; RICE CHEX, (RICE)
08065 CEREALS READY-TO-EAT; RICE KRISPIES, (RICE)
08066 CEREALS READY-TO-EAT; RICE, PUFFED, LOWER FORTIFICATION
08067 CEREALS READY-TO-EAT; SPECIAL K, (RICE,WHEAT)
08068 CEREALS READY-TO-EAT; SUGAR CORN POPS, (CORN)
08069 CEREALS READY-TO-EAT; SUGAR FROSTED FLAKES, KELLOGG'S
08070 CEREALS READY-TO-EAT; SUGAR FROSTED FLAKES, RALSTON
08071 CEREALS READY-TO-EAT; SUGAR SMACKS, (WHEAT)
08072 CEREALS READY-TO-EAT; SUGAR SPARKLED FLAKES, (CORN)
08073 CEREALS READY-TO-EAT; SUPER SUGAR CRISP, (WHEAT)
08074 CEREALS READY-TO-EAT; TASTEEOS, (OAT W/OTHER GRNS)
08075 CEREALS READY-TO-EAT; TEAM, (RICE W/OTHER GRNS)
08076 CEREALS READY-TO-EAT; TOASTIES, (CORN)
08077 CEREALS READY-TO-EAT; TOTAL, (WHEAT)
08078 CEREALS READY-TO-EAT; TRIX, (CORN W/OTHER GRNS)
08080 CEREALS READY-TO-EAT; WHEAT 'N RAISIN CHEX, (WHEAT)
08082 CEREALS READY-TO-EAT; WHEAT CHEX, (WHEAT)
08084 CEREALS READY-TO-EAT; WHEAT GERM, TOASTED, PLAIN
08085 CEREALS READY-TO-EAT; WHEAT GERM, TSTD, W/BRN SUG
08089 CEREALS READY-TO-EAT; WHEATIES, (WHEAT)
08090 CEREALS; CORN GRITS, WHITE, REG&QUICK, ENR, DRY, (CORN)
08091 CEREALS; CORN GRITS, WHITE, REG&QUICK, ENR, CKD W/WATER
08092 CEREALS; CORN GRITS, INSTANT, PLAIN, DRY, (CORN)
08093 CEREALS; CORN GRITS, INSTANT, PLAIN, PREP W/WATER, (CORN)
08095 CEREALS; CORN GRITS, INSTANT, W/ART CHEESE FLAVOR

08097 CEREALS; CORN GRITS, INSTANT, W/IMITN BACON BITS, PREP W/WATER, (CORN)
08099 CEREALS; CORN GRITS, INSTANT, W/IMITN HAM BITS, PREP W/WATER, (CORN,SOY)
08100 CEREALS; CREAM OF RICE, DRY, (RICE)
08101 CEREALS; CREAM OF RICE, CKD W/WATER, WO/SALT, (RICE)
08102 CEREALS; CREAM OF WHEAT, REGULAR, DRY, (WHEAT)
08103 CEREALS; CREAM OF WHEAT, REGULAR, CKD W/WATER, WO/SALT, (WHEAT)
08104 CEREALS; CREAM OF WHEAT, QUICK, DRY, (WHEAT)
08105 CEREALS; CREAM OF WHEAT, QUICK, CKD W/WATER, WO/SALT, (WHEAT)
08106 CEREALS; CREAM OF WHEAT, INSTANT, DRY, (WHEAT)
08107 CEREALS; CREAM OF WHEAT, INSTANT, PREP W/WATER, WO/SALT, (WHEAT)
08108 CEREALS; CREAM OF WHEAT, MIX'N EAT; PLAIN, DRY, (WHEAT,CORN)
08109 CEREALS; CREAM OF WHEAT, MIX'N EAT; PLAIN, PREP W/WATER, (WHEAT,CORN)
08110 CEREALS; CREAM OF WHEAT, MIX'N EAT; APPL,BAN&MAPL FLAV, DRY, (WHEAT,CORN)
08112 CEREALS; FARINA, ENR, DRY, (WHEAT)
08113 CEREALS; FARINA, ENR, CKD W/WATER, WO/SALT, (WHEAT)
08114 CEREALS; MALTEX, DRY, (WHEAT)
08115 CEREALS; MALTEX, CKD W/WATER, WO/SALT, (WHEAT)
08117 CEREALS; MALT-O-MEAL, PLAIN & CHOC, CKD W/WATER, WO/SLT, (WHEAT,BARLEY)
08118 CEREALS; MAYPO, DRY, (OATS W/OTHER GRNS)
08119 CEREALS; MAYPO, CKD W/WATER, WO/SALT, (OATS W/OTHER GRNS)
08120 CEREALS; OATS, REG & QUICK & INSTANT, WO/FORT, DRY, (OATS)
08121 CEREALS; OATS, REG & QUICK & INSTANT, WO/FORT, CKD W/WATER, WO/SLT, (OATS)
08122 CEREALS; OATS, INSTANT, FORT, PLAIN, DRY, (OATS)
08123 CEREALS; OATS, INSTANT, FORT, PLAIN, PREP W/WATER, (OATS)
08129 CEREALS; OATS, INSTANT, FORT, W/CINN & SPICE, PREP W/WATER, (OATS)
08133 CEREALS; OATS, INSTANT, FORT, W/RAISINS & SPICE, PREP W/WATER, (OATS)
08134 CEREALS; RALSTON, DRY, (WHEAT)
08135 CEREALS; RALSTON, CKD W/WATER, WO/SALT, (WHEAT)
08136 CEREALS; ROMAN MEAL, PLAIN, DRY, (WHEAT W/OTHER GRNS)
08143 CEREALS; WHEATENA, CKD W/WATER, (WHEAT)
08144 CEREALS; WHOLE WHEAT HOT NATURAL CEREAL, DRY, (WHEAT)
08145 CEREALS; WHOLE WHEAT HOT NATURAL CEREAL, CKD W/WATER, WO/SALT, (WHEAT)
08146 CEREALS READY-TO-EAT; WHEAT, PUFFED, LOWER FORT (<2% RDA), (WHEAT)
08147 CEREALS READY-TO-EAT; WHEAT, SHREDDED, LARGE BISCUIT, (WHEAT)
08148 CEREALS READY-TO-EAT; WHEAT, SHREDDED, SMALL BISCUIT, (WHEAT)
08149 CEREALS READY-TO-EAT; NUTRI-GRAIN, BARLEY, (BARLEY)
08150 CEREALS READY-TO-EAT; NUTRI-GRAIN, CORN, (CORN)
08151 CEREALS READY-TO-EAT; NUTRI-GRAIN, RYE, (RYE)
08152 CEREALS READY-TO-EAT; NUTRI-GRAIN, WHEAT, (WHEAT)
08153 CEREALS READY-TO-EAT; 40% BRAN FLAKES, RALSTON PURINA, (WHEAT BRAN)
09001 ACEROLA; (W. IND CHERRY), RAW
09002 ACEROLA JUICE; RAW
09003 APPLES; RAW, W/SKIN
09004 APPLES; RAW, WO/SKIN
09005 APPLES; RAW, WO/SKIN, COOKED, BOILED
09006 APPLES; RAW, WO/SKIN, COOKED, MICROWAVE
09007 APPLES; CANNED, SWEETENED, SLICED, DRAINED, UNHEATED
09008 APPLES; CANNED, SWEETENED, SLICED, DRAINED, HEATED
09009 APPLES; DEHYDRATED (LOW MOISTURE), SULFURED, UNCOOKED
09011 APPLES; DRIED, SULFURED, UNCOOKED
09012 APPLES; DRIED, SULFURED, STEWED, WO/ADDED SUGAR
09014 APPLES; FROZEN, UNSWEETENED, UNHEATED
09016 APPLE JUICE; CANNED OR BOTTLED, UNSWEETENED, WO/ADDED ASC ACID
09017 APPLE JUICE; FRZ CONC, UNSWEETENED, UNDILUTED, WO/ADDED ASC ACID
09018 APPLE JUICE; FRZ CONC, UNSWEETENED, DIL W/3 VOL WATER WO/ADDED ASC ACID
09019 APPLESAUCE; CANNED, UNSWEETENED, WO/ADDED ASC ACID
09020 APPLESAUCE; CANNED, SWEETENED, WO/SALT
09021 APRICOTS; RAW
09022 APRICOTS; CANNED, WATER PACK, W/SKIN, SOL&LIQ
09024 APRICOTS; CANNED, JUICE PACK, W/SKIN, SOL&LIQ
09026 APRICOTS; CANNED, LIGHT SIRUP PACK, W/SKIN, SOL&LIQ
09027 APRICOTS; CANNED, HEAVY SIRUP PACK, W/SKIN, SOL&LIQ
09032 APRICOTS; DRIED, SULFURED, UNCOOKED
09033 APRICOTS; DRIED, SULFURED, STEWED, WO/ADDED SUGAR
09035 APRICOTS; FROZEN, SWEETENED, UNTHAWED
09036 APRICOT NECTAR; CANNED, WO/ADDED ASC ACID

09149 KUMQUATS; RAW
09150 LEMONS; RAW, WO/PEEL
09152 LEMON JUICE; RAW
09153 LEMON JUICE; CANNED OR BOTTLED
09154 LEMON JUICE; FROZEN, UNSWEETENED, SINGLE STRENGTH
09156 LEMON PEEL; RAW
09159 LIMES; RAW
09160 LIME JUICE; RAW
09161 LIME JUICE; CANNED OR BOTTLED, UNSWEETENED
09164 LITCHIS; RAW
09165 LITCHIS; DRIED
09167 LOGANBERRIES; FROZEN, UNTHAWED
09172 LONGANS; RAW
09174 LOQUATS; RAW
09175 MAMMY-APPLE; (MAMEY), RAW
09176 MANGOS; RAW
09181 MELONS; CANTALOUP, RAW
09183 MELONS; CASABA, RAW
09184 MELONS; HONEYDEW, RAW
09185 MELON BALLS; FROZEN, UNTHAWED
09189 FRUIT, MIXED; (PEACH&CHERR-SWT&SR-RASPB&GRAPE&BOYSENB)
09190 MULBERRIES; RAW
09191 NECTARINES; RAW
09200 ORANGES; RAW, ALL COMMER VARIETIES
09203 ORANGES; RAW, FLORIDA
09205 ORANGES; RAW, W/PEEL
09206 ORANGE JUICE; RAW
09207 ORANGE JUICE; CANNED, UNSWEETENED
09209 ORANGE JUICE; CHILLED, INCLUDES FROM CONCENTRATE
09214 ORANGE JUICE; FROZEN CONCENTRATE, UNSWEETENED, UNDILUTED
09215 ORANGE JUICE; FROZEN CONCENTRATE, UNSWEETENED, DILUTED
09216 ORANGE PEEL; RAW
09217 ORANGE-GRAPEFRUIT JUICE; CANNED, UNSWEETENED
09218 TANGERINES; (MANDARIN ORANGE), RAW
09219 TANGERINES; (MANDARIN ORANGE), CANNED, JUICE PACK
09220 TANGERINES; (MANDARIN ORANGE), CANNED, LIGHT SIRUP PACK
09221 TANGERINE JUICE; RAW
09223 TANGERINE JUICE; CANNED, SWEETENED
09224 TANGERINE JUICE; FROZEN CONCENTRATE, SWEETENED
09226 PAPAYAS; RAW
09229 PAPAYA NECTAR; CANNED
09231 PASSION-FRUIT; (GRANADILLA), PURPLE, RAW
09232 PASSION-FRUIT JUICE; PURPLE, RAW
09233 PASSION-FRUIT JUICE; YELLOW, RAW
09236 PEACHES; RAW
09237 PEACHES; CANNED, WATER PACK, SOL&LIQ
09238 PEACHES; CANNED, JUICE PACK, SOL&LIQ
09240 PEACHES; CANNED, LIGHT SIRUP PACK, SOL&LIQ
09241 PEACHES; CANNED, HEAVY SIRUP PACK, SOL&LIQ
09243 PEACHES; SPICED, CANNED, HEAVY SIRUP PACK, SOL&LIQ
09246 PEACHES; DRIED, SULFURED, UNCOOKED
09247 PEACHES; DRIED, SULFURED, STEWED, WO/ADDED SUGAR
09248 PEACHES; DRIED, SULFURED, STEWED, W/ADDED SUGAR
09250 PEACHES; FROZEN, SLICED, SWEETENED, UNTHAWED
09251 PEACH NECTAR; CANNED, WO/ADDED ASC ACID
09252 PEARS; RAW
09253 PEARS; CANNED, WATER PACK, SOL&LIQ
09254 PEARS; CANNED, JUICE PACK, SOL&LIQ
09256 PEARS; CANNED, LIGHT SIRUP PACK, SOL&LIQ
09257 PEARS; CANNED, HEAVY SIRUP PACK, SOL&LIQ
09259 PEARS; DRIED, SULFURED, UNCOOKED
09260 PEARS; DRIED, SULFURED, STEWED, WO/ADDED SUGAR
09261 PEARS; DRIED, SULFURED, STEWED, W/ADDED SUGAR
09262 PEAR NECTAR; CANNED, WO/ADDED ASC ACID
09263 PERSIMMONS; JAPANESE, RAW
09266 PINEAPPLE; RAW

09037 AVOCADOS; RAW, ALL COMMER VARIETIES
09040 BANANAS; RAW
09041 BANANAS; DEHYDRATED, OR BANANA POWDER
09042 BLACKBERRIES; RAW
09046 BLACKBERRIES; CANNED, HEAVY SIRUP, SOL&LIQ
09048 BLACKBERRIES; FROZEN, UNSWEETENED, UNTHAWED
09050 BLUEBERRIES; RAW
09052 BLUEBERRIES; CANNED, HEAVY SIRUP, SOL&LIQ
09054 BLUEBERRIES; FROZEN, UNSWEETENED, UNTHAWED
09055 BLUEBERRIES; FROZEN, SWEETENED, UNTHAWED
09056 BOYSENBERRIES; CANNED, HEAVY SIRUP
09057 BOYSENBERRIES; FROZEN, UNSWEETENED, UNTHAWED
09059 BREADFRUIT; RAW
09060 CARAMBOLA; (STARFRUIT), RAW
09062 CHERIMOYA; RAW
09063 CHERRIES; SOUR, RED, RAW
09064 CHERRIES; SOUR, RED, CANNED, WATER PACK, SOL&LIQ
09066 CHERRIES; SOUR, RED, CANNED, HEAVY SIRUP PACK, SOL&LIQ
09068 CHERRIES; SOUR, RED, FROZEN, UNSWEETENED, UNTHAWED
09070 CHERRIES; SWEET, RAW
09071 CHERRIES; SWEET, CANNED, WATER PACK, SOL&LIQ
09072 CHERRIES; SWEET, CANNED, JUICE PACK, SOL&LIQ
09073 CHERRIES; SWEET, CANNED, LIGHT SIRUP PACK, SOL&LIQ
09074 CHERRIES; SWEET, CANNED, HEAVY SIRUP PACK, SOL&LIQ
09076 CHERRIES; SWEET, FROZEN, SWEETENED, THAWED
09078 CRANBERRIES; RAW
09081 CRANBERRY SAUCE; CANNED, SWEETENED
09084 CURRANTS; RED AND WHITE, RAW
09085 CURRANTS; ZANTE, DRIED
09087 DATES; DOMESTIC, NATURAL AND DRY
09088 ELDERBERRIES; RAW
09089 FIGS; RAW
09090 FIGS; CANNED, WATER PACK, SOL&LIQ
09091 FIGS; CANNED, LIGHT SIRUP PACK, SOL&LIQ
09092 FIGS; CANNED, HEAVY SIRUP PACK, SOL&LIQ
09094 FIGS; DRIED, UNCOOKED
09095 FIGS; DRIED, STEWED
09096 FRUIT COCKTAIL; (PEACH&PNAPPL&PEAR&GRPE&CHERR), CND, WATER PACK, SOL&LIQ
09097 FRUIT COCKTAIL; (PEACH&PNAPPL&PEAR&GRPE&CHERR), CND, JUICE PACK, SOL&LIQ
09099 FRUIT COCKTAIL; (PEACH&PNAPPL&PEAR&GRPE&CHERR), CND, LT SIRUP, SOL&LIQ
09100 FRUIT COCKTAIL; (PEACH&PNAPPL&PEAR&GRPE&CHERR), CND, HVY SIRUP, SOL&LIQ
09105 FRUIT SALAD; (PEACH&PEAR&APRCT&PNAPPL&CHERR), CND, HVY SIRUP, SOL&LIQ
09107 GOOSEBERRIES; RAW
09109 GOOSEBERRIES; CANNED, LIGHT SIRUP PACK, SOL&LIQ
09111 GRAPEFRUIT; RAW, PINK&RED&WHITE, ALL AREAS
09114 GRAPEFRUIT; RAW, PINK&RED, FLORIDA
09116 GRAPEFRUIT; RAW, WHITE, ALL AREAS
09119 GRAPEFRUIT; SECTIONS, CANNED, WATER PACK, SOL&LIQ
09120 GRAPEFRUIT; SECTIONS, CANNED, JUICE PACK, SOL&LIQ
09121 GRAPEFRUIT; SECTIONS, CANNED, LIGHT SIRUP PACK, SOL&LIQ
09123 GRAPEFRUIT JUICE; CANNED, UNSWEETENED
09124 GRAPEFRUIT JUICE; CANNED, SWEETENED
09125 GRAPEFRUIT JUICE; FROZEN CONCENTRATE, UNSWEETENED, UNDILUTED
09126 GRAPEFRUIT JUICE; FROZEN CONCENTRATE, UNSWEETENED, DILUTED W/3 VOL WATER
09128 GRAPEFRUIT JUICE; WHITE, RAW
09131 GRAPES; AMERICAN TYPE (SLIP SKIN), RAW
09132 GRAPES; EUROPEAN TYPE (ADHERENT SKIN), RAW
09133 GRAPES; CANNED, THOMPSON SEEDLESS, WATER PACK, SOL&LIQ
09134 GRAPES; CANNED, THOMPSON SEEDLESS, HEAVY SIRUP PACK, SOL&LIQ
09135 GRAPE JUICE; CANNED OR BOTTLED, UNSWEETENED
09136 GRAPE JUICE; FROZEN CONCENTRATE, SWEETENED, UNDILUTED
09137 GRAPE JUICE; FROZEN CONCENTRATE, SWEETENED, DILUTED W/3 VOL WATER
09139 GUAVAS; COMMOM, RAW
09143 GUAVA SAUCE; COOKED
09144 JACKFRUIT; RAW
09148 KIWIFRUIT; (CHINESE GOOSEBERRIES), FRESH, RAW

09267 PINEAPPLE; CANNED, WATER PACK, SOL&LIQ
09268 PINEAPPLE; CANNED, JUICE PACK, SOL&LIQ
09269 PINEAPPLE; CANNED, LIGHT SIRUP PACK, SOL&LIQ
09270 PINEAPPLE; CANNED, HEAVY SIRUP PACK, SOL&LIQ
09272 PINEAPPLE; FROZEN, CHUNKS, SWEETENED, UNTHAWED
09273 PINEAPPLE JUICE; CANNED, UNSWEETENED, WO/ADDED ASC ACID
09274 PINEAPPLE JUICE; FROZEN CONCENTRATE, UNSWTND, UNDILUTED
09275 PINEAPPLE JUICE; FROZEN CONCENTRATE, UNSWTND, DILUTED
09277 PLANTAIN; RAW
09278 PLANTAIN; COOKED
09279 PLUMS; RAW
09281 PLUMS; CANNED, PURPLE, WATER PACK, SOL&LIQ
09282 PLUMS; CANNED, PURPLE, JUICE PACK, SOL&LIQ
09283 PLUMS; CANNED, PURPLE, LIGHT SIRUP PACK, SOL&LIQ
09284 PLUMS; CANNED, PURPLE, HEAVY SIRUP PACK, SOL&LIQ
09286 POMEGRANATE; RAW
09287 PRICKLYPEARS; RAW
09288 PRUNES; CANNED, HEAVY SIRUP PACK, SOL&LIQ
09291 PRUNES; DRIED, UNCOOKED
09292 PRUNES; DRIED, STEWED, WO/ADDED SUGAR
09293 PRUNES; DRIED, STEWED, W/ADDED SUGAR
09294 PRUNE JUICE; CANNED
09296 QUINCES; RAW
09297 RAISINS; GOLDEN SEEDLESS
09298 RAISINS; SEEDLESS
09299 RAISINS; SEEDED
09302 RASPBERRIES; RAW
09304 RASPBERRIES; CANNED, RED, HEAVY SIRUP PACK, SOL&LIQ
09306 RASPBERRIES; FROZEN, RED, SWEETENED, UNTHAWED
09307 RHUBARB; RAW
09309 RHUBARB; FROZEN, UNCOOKED, UNTHAWED
09310 RHUBARB; FROZEN, COOKED, W/SUGAR
09313 SAPODILLA; RAW
09314 SAPOTES; (MARMALADE PLUM), RAW
09315 SOURSOP; RAW
09316 STRAWBERRIES; RAW
09317 STRAWBERRIES; CANNED, HEAVY SIRUP PACK, SOL&LIQ
09318 STRAWBERRIES; FROZEN, UNSWEETENED, UNTHAWED
09319 STRAWBERRIES; FROZEN, SWEETENED, WHOLE, UNTHAWED
09320 STRAWBERRIES; FROZEN, SWEETENED, SLICED, UNTHAWED
09321 SUGAR-APPLES; (SWEETSOP), RAW
09322 TAMARINDS; RAW
09325 FRUIT SALAD; (PNAPPL&PAPYA&BAN&GUAV), TROPICAL, CND
09326 WATERMELON; RAW
10001 PORK; FRESH, CARCASS, SEPARABLE LEAN AND FAT, RAW
10002 PORK; FRESH, COMPOSITE CUTS, SEPARABLE LEAN ONLY, RAW
10003 PORK; FRESH, COMPOSITE CUTS, SEPARABLE LEAN AND FAT, RAW
10005 PORK; FRESH, WHOLESALE CUTS, BELLY, RAW
10006 PORK; FRESH, SEPARABLE FAT, RAW
10007 PORK; FRESH, SEPARABLE FAT, CKD
10008 PORK; FRESH, LEG (HAM), WHOLE, SEPARABLE LEAN AND FAT,
10009 PORK; FRESH, LEG (HAM), WHOLE, SEPARABLE LEAN AND FAT,
10010 PORK; FRESH, LEG (HAM), WHOLE, SEPARABLE LEAN ONLY, RAW
10011 PORK; FRESH, LEG (HAM), WHOLE, SEPARABLE LEAN ONLY, CKD
10013 PORK; FRESH, LEG (HAM), RUMP HALF, SEPARABLE LEAN AND FAT
10020 PORK; FRESH, LOIN, WHOLE, SEPARABLE LEAN AND FAT, RAW
10021 PORK; FRESH, LOIN, WHOLE, SEPARABLE LEAN AND FAT, CKD
10022 PORK; FRESH, LOIN, WHOLE, SEPARABLE LEAN AND FAT, CKD
10023 PORK; FRESH, LOIN, WHOLE, SEPARABLE LEAN AND FAT, CKD
10024 PORK; FRESH, LOIN, WHOLE, SEPARABLE LEAN ONLY, RAW
10025 PORK; FRESH, LOIN, WHOLE, SEPARABLE LEAN ONLY, CKD
10026 PORK; FRESH, LOIN, WHOLE, SEPARABLE LEAN ONLY, CKD
10027 PORK; FRESH, LOIN, WHOLE, SEPARABLE LEAN ONLY, CKD
10029 PORK; FRESH, LOIN, BLADE, SEPARABLE LEAN AND FAT, CKD
10036 PORK; FRESH, LOIN, CENTER LOIN, SEPARABLE LEAN AND FAT
10039 PORK; FRESH, LOIN, CENTER LOIN, SEPARABLE LEAN AND FAT

10042 PORK; FRESH, LOIN, CENTER LOIN, SEPARABLE LEAN ONLY, CKD, BROILED
10044 PORK; FRESH, LOIN, CENTER RIB, SEPARABLE LEAN AND FAT, RAW
10049 PORK; FRESH, LOIN, CENTER RIB, SEPARABLE LEAN ONLY, CKD, BRAISED
10054 PORK; FRESH, LOIN, SIRLOIN, SEPARABLE LEAN AND FAT, CKD, BROILED
10058 PORK; FRESH, LOIN, SIRLOIN, SEPARABLE LEAN ONLY, CKD, BROILED
10060 PORK; FRESH, LOIN, TENDERLOIN, SEPARABLE LEAN ONLY, RAW
10061 PORK; FRESH, LOIN, TENDERLOIN, SEPARABLE LEAN ONLY, CKD, ROASTED
10070 PORK; FRESH, SHOULDER, WHOLE, SEPARABLE LEAN AND FAT, RAW
10071 PORK; FRESH, SHOULDER, WHOLE, SEPARABLE LEAN AND FAT, CKD, ROASTED
10073 PORK; FRESH, SHOULDER, WHOLE, SEPARABLE LEAN ONLY, CKD, ROASTED
10075 PORK; FRESH, SHOULDER, ARM PICNIC, SEPARABLE LEAN AND FAT, CKD, BRAISED
10078 PORK; FRESH, SHOULDER, ARM PICNIC, SEPARABLE LEAN ONLY, CKD, BRAISED
10080 PORK; FRESH, SHOULDER, BLADE, BOSTON, SEPARABLE LEAN AND FAT, RAW
10081 PORK; FRESH, SHOULDER, BLADE, BOSTON, SEPARABLE LEAN AND FAT, CKD, BRSD
10082 PORK; FRESH, SHOULDER, BLADE, BOSTON, SEPARABLE LEAN AND FAT, CKD, BRLD
10083 PORK; FRESH, SHOULDER, BLADE, BOSTON, SEPARABLE LEAN AND FAT, CKD, RSTD
10084 PORK; FRESH, SHOULDER, BLADE, BOSTON, SEPARABLE LEAN ONLY, RAW
10085 PORK; FRESH, SHOULDER, BLADE, BOSTON, SEPARABLE LEAN ONLY, CKD, BRAISED
10086 PORK; FRESH, SHOULDER, BLADE, BOSTON, SEPARABLE LEAN ONLY, CKD, BROILED
10088 PORK; FRESH, SPARERIBS, SEPARABLE LEAN AND FAT, RAW
10089 PORK; FRESH, SPARERIBS, SEPARABLE LEAN AND FAT, CKD, BRAISED
10093 PORK; FRESH, COMPOSITE CUTS, SEPARABLE LEAN ONLY, CKD, ROASTED
10095 PORK; FRESH, PORK SAUSAGE OR COUNTRY-STYLE PORK SAUSAGE, COOKED
10096 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, BRAINS, RAW
10097 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, BRAINS, CKD, BRAISED
10098 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, CHITTERLINGS, RAW
10099 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, CHITTERLINGS, CKD, SIMMERED
10100 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, EARS, FROZEN, RAW
10101 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, EARS, FROZEN, CKD, SIMMERED
10102 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, FEET, RAW
10103 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, HEART, RAW
10105 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, JOWL, RAW
10106 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, KIDNEYS, RAW
10110 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, LIVER, RAW
10111 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, LIVER, CKD, BRAISED
10112 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, LUNGS, RAW
10113 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, LUNGS, CKD, BRAISED
10119 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, STOMACH, RAW
10120 PORK; FRESH, LOIN, BLADE, SEPARABLE LEAN ONLY, CKD, PAN-FRIED
10121 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, TONGUE, RAW
10123 PORK PRODUCTS; CURED, BACON, RAW
10124 PORK PRODUCTS; CURED, BACON, CKD, BROILED, PAN-FRIED, OR ROASTED
10126 PORK; CURED, BOLOGNA
10128 PORK PRODUCTS; CURED, BREAKFAST STRIPS, RAW OR UNHEATED
10129 PORK PRODUCTS; CURED, BREAKFAST STRIPS, CKD
10130 PORK PRODUCTS; CURED, CANADIAN-STYLE BACON, UNHEATED
10131 PORK PRODUCTS; CURED, CANADIAN-STYLE BACON, GRILLED
10132 PORK PRODUCTS; CURED, FEET, PICKLED
10133 PORK PRODUCTS; CURED, HAM, BONELESS, EXTRA LEAN (APPROX 5% FAT), UNHEATED
10134 PORK PRODUCTS; CURED, HAM, BONELESS, EXTRA LEAN (APPROX 5% FAT), ROASTED
10135 PORK PRODUCTS; CURED, HAM, BONELESS, REGULAR (APPROX 11% FAT), UNHEATED
10136 PORK PRODUCTS; CURED, HAM, BONELESS, REGULAR (APPROX 11% FAT), ROASTED
10137 PORK PRODUCTS; CURED, HAM, CANNED, EXTRA LEAN (APPROX 4% FAT), UNHEATED
10138 PORK PRODUCTS; CURED, HAM, CANNED, EXTRA LEAN (APPROX 4% FAT), ROASTED
10139 PORK PRODUCTS; CURED, HAM, CANNED, REGULAR (APPROX 13% FAT), UNHEATED
10141 PORK PRODUCTS; CURED, HAM, CENTER SLICE, COUNTRY-STYLE, SEP LEAN ONLY, RAW
10144 PORK; CURED, HAM, CHOPPED, NOT CANNED
10145 PORK; CURED, HAM, MINCED
10146 PORK PRODUCTS; CURED, HAM PATTIES, UNHEATED
10147 PORK PRODUCTS; CURED, HAM PATTIES, GRILLED
10150 PORK PRODUCTS; CURED, HAM, WHOLE, FULLY COOKED, SEP LEAN & FAT, UNHEATED
10151 PORK PRODUCTS; CURED, HAM, WHOLE, FULLY COOKED, SEP LEAN & FAT, ROASTED
10152 PORK PRODUCTS; CURED, HAM, WHOLE, FULLY COOKED, SEP LEAN ONLY, UNHEATED
10153 PORK PRODUCTS; CURED, HAM, WHOLE, FULLY COOKED, SEP LEAN ONLY, ROASTED
10159 PORK; CURED, LUNCHEON MEAT, CANNED
10165 PORK PRODUCTS; CURED, SALT PORK, RAW

10166 PORK PRODUCTS; CURED, SEPARABLE FAT FROM HAM AND ARM PICNIC, UNHEATED
10168 PORK PRODUCTS; CURED, SHOULDER, ARM PICNIC, SEP LEAN & FAT, ROASTED
10169 PORK PRODUCTS; CURED, SHOULDER, ARM PICNIC, SEP LEAN ONLY, ROASTED
10170 PORK PRODUCTS; CURED, BLADE ROLL, BONELESS, SEPARABLE LEAN & FAT, UNHEATED
10171 PORK PRODUCTS; CURED, BLADE ROLL, BONELESS, SEPARABLE LEAN & FAT, ROASTED
10172 PORK; CURED, SMOKED LINK SAUSAGE, GRILLED
10173 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, FEET, CKD, SIMMERED
10174 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, TAIL, RAW
10175 PORK; FRESH, VARIETY MEATS AND BYPRODUCTS, TAIL, CKD, SIMMERED
10176 PORK; FRESH, LOIN, CENTER LOIN, SEPARABLE LEAN ONLY, CKD, PAN-FRIED
10177 PORK; FRESH, LOIN, CENTER RIB, SEPARABLE LEAN ONLY, CKD, PAN-FRIED
10178 PORK; FRESH, LOIN, BLADE, SEPARABLE LEAN AND FAT, CKD, PAN-FRIED
10179 PORK; FRESH, LOIN, CENTER LOIN, SEPARABLE LEAN AND FAT, CKD, PAN-FRIED
10180 PORK; FRESH, LOIN, CENTER RIB, SEPARABLE LEAN AND FAT, CKD, PAN-FRIED
10181 PORK; FRESH, LOIN, TOP LOIN, SEPARABLE LEAN ONLY, CKD, PAN-FRIED
10182 PORK PRODUCTS; CURED, HAM, BONELESS, EXTRA LEAN & REG, UNHEATED
10183 PORK PRODUCTS; CURED, HAM, BONELESS, EXTRA LEAN & REG, ROASTED
10184 PORK PRODUCTS; CURED, HAM, CANNED, EXTRA LEAN & REG, UNHEATED
10185 PORK PRODUCTS; CURED, HAM, CANNED, EXTRA LEAN & REG, ROASTED
10186 PORK; FRESH, LOIN, TOP LOIN, SEPARABLE LEAN AND FAT, CKD, PAN-FRIED
11001 ALFALFA SEEDS; SPROUTED, RAW
11007 ARTICHOKES; (GLOBE OR FRENCH), RAW
11008 ARTICHOKES; (GLOBE OR FRENCH), CKD, BOILED, DRAINED, WO/SALT
11009 ARTICHOKES; (GLOBE OR FRENCH), FRZ, UNPREPARED
11011 ASPARAGUS, RAW
11012 ASPARAGUS, COOKED, BOILED, DRAINED
11013 ASPARAGUS; CND, REG PK, SOL&LIQ
11018 ASPARAGUS; FRZ, UNPREPARED
11023 BALSAM-PEAR; LEAFY TIPS, CKD, BOILED, DRAINED, WO/SALT
11024 BALSAM-PEAR; PODS, RAW
11025 BALSAM-PEAR; PODS, CKD, BOILED, DRAINED, WO/SALT
11026 BAMBOO SHOOTS; RAW
11028 BAMBOO SHOOTS; CND, DRAINED SOLIDS
11031 BEANS; LIMA, IMMATURE SEEDS, RAW
11032 BEANS; LIMA, IMMATURE SEEDS, CKD, BOILED, DRAINED, WO/SALT
11033 BEANS; LIMA, IMMATURE SEEDS, CND, REG PK, SOL&LIQ
11037 BEANS; LIMA, IMMATURE SEEDS, FRZ, FORDHOOK, UNPREPARED
11038 BEANS; LIMA, IMMATURE SEEDS, FRZ, FORDHOOK, CKD, BOILED, DRAINED, WO/SALT
11039 BEANS; LIMA, IMMATURE SEEDS, FRZ, BABY, UNPREPARED
11043 BEANS; MUNG, MATURE SEEDS, SPROUTED, RAW
11044 BEANS; MUNG, MATURE SEEDS, SPROUTED, CKD, BOILED, DRAINED, WO/SALT
11048 BEANS; PINTO, IMMATURE SEEDS, FRZ, UNPREPARED
11050 BEANS; SHELLIE, CND, SOL&LIQ
11052 BEANS; SNAP, GREEN VAR, RAW
11053 BEANS; SNAP, GREEN VAR, CKD, BOILED, DRAINED, WO/SALT
11054 BEANS; SNAP, GREEN VAR, CND, REG PK, SOL&LIQ
11056 BEANS; SNAP, GREEN VAR, CND, REG PK, DRAINED SOLIDS
11060 BEANS; SNAP, GREEN VAR, FRZ, ALL STYLES, UNPREPARED
11061 BEANS; SNAP, GREEN VAR, FRZ, ALL STYLES, CKD, BOILED, DRAINED WO/SALT
11080 BEETS, RAW
11081 BEETS, COOKED, BOILED, DRAINED
11082 BEETS; CND, REG PK, SOL&LIQ
11086 BEET GREENS; RAW
11087 BEET GREENS; CKD, BOILED, DRAINED, WO/SALT
11088 BROADBEANS; IMMATURE SEEDS, RAW
11090 BROCCOLI; RAW
11091 BROCCOLI; CKD, BOILED, DRAINED, WO/SALT
11092 BROCCOLI; FRZ, CHOPPED, UNPREPARED
11093 BROCCOLI; FRZ, CHOPPED, CKD, BOILED, DRAINED, WO/SALT
11094 BROCCOLI; FRZ, SPEARS, UNPREPARED
11095 BROCCOLI; FRZ, SPEARS, CKD, BOILED, DRAINED, WO/SALT
11098 BRUSSELS SPROUTS; RAW
11099 BRUSSELS SPROUTS; CKD, BOILED, DRAINED, WO/SALT
11100 BRUSSELS SPROUTS; FRZ, UNPREPARED
11104 BURDOCK ROOT; RAW
11105 BURDOCK ROOT; CKD, BOILED, DRAINED, WO/SALT

11109 CABBAGE, RAW
11110 CABBAGE, COOKED, BOILED, DRAINED
11112 CABBAGE; RED, RAW
11113 CABBAGE; RED, CKD, BOILED, DRAINED, WO/SALT
11114 CABBAGE; SAVOY, RAW
11116 CABBAGE; CHINESE (PAK-CHOI), RAW
11117 CABBAGE; CHINESE (PAK-CHOI), CKD, BOILED, DRAINED
11119 CABBAGE; CHINESE (PE-TSAI), RAW
11124 CARROTS; RAW
11125 CARROTS; CKD, BOILED, DRAINED, WO/SALT
11126 CARROTS; CND, REG PK, SOL&LIQ
11130 CARROTS; FRZ, UNPREPARED
11131 CARROTS; FRZ, CKD, BOILED, DRAINED, WO/SALT
11134 CASSAVA; RAW
11135 CAULIFLOWER, RAW
11136 CAULIFLOWER, COOKED, BOILED, DRAINED
11137 CAULIFLOWER; FRZ, UNPREPARED
11138 CAULIFLOWER; FRZ, CKD, BOILED, DRAINED, WO/SALT
11141 CELERIAC; RAW
11143 CELERY; RAW
11144 CELERY; CKD, BOILED, DRAINED, WO/SALT
11147 CHARD; SWISS, RAW
11148 CHARD; SWISS, CKD, BOILED, DRAINED, WO/SALT
11149 CHAYOTE; FRUIT, RAW (PEAR-SHAPED VEG, SQUASH FAMILY)
11151 CHICORY, WITLOOF, RAW
11152 CHICORY; GREENS, RAW
11156 CHIVES, RAW
11157 CHRYSANTHEMUM, GARLAND; RAW
11158 CHRYSANTHEMUM, GARLAND; CKD, BOILED, DRAINED, WO/SALT
11161 COLLARDS; RAW
11162 COLLARDS; CKD, BOILED, DRAINED, WO/SALT
11163 COLLARDS; FRZ, CHOPPED, UNPREPARED
11165 CORIANDER; RAW
11167 CORN; SWEET, YELLOW, RAW
11168 CORN; SWEET, YELLOW, CKD, BOILED, DRAINED, WO/SALT
11170 CORN; SWEET, YELLOW, CND, BRINE PK, REG PK, SOL&LIQ
11172 CORN; SWEET, YELLOW, CND, BRINE PK, DRAINED SOLIDS
11174 CORN; SWEET, YELLOW, CND, CREAM STYLE, REG PK
11176 CORN; SWEET, YELLOW, CND, VACUUM PK, REG PK
11178 CORN; SWEET, YELLOW, FRZ, KERNELS CUT OFF COB, UNPREPARED
11179 CORN; SWEET, YELLOW, FRZ, KERNELS CUT OFF COB, CKD
11180 CORN; SWEET, YELLOW, FRZ, KERNELS ON COB, UNPREPARED
11191 COWPEAS; IMMATURE SEEDS, RAW
11192 COWPEAS; IMMATURE SEEDS, CKD, BOILED, DRAINED, WO/SALT
11195 COWPEAS; IMMATURE SEEDS, FRZ, UNPREPARED
11203 CRESS; GARDEN, RAW
11204 CRESS; GARDEN, CKD, BOILED, DRAINED, WO/SALT
11205 CUCUMBER, RAW
11207 DANDELION GREENS; RAW
11208 DANDELION GREENS; CKD, BOILED, DRAINED, WO/SALT
11209 EGGPLANT, RAW
11210 EGGPLANT; CKD, BOILED, DRAINED, WO/SALT
11213 ENDIVE; RAW
11215 GARLIC; RAW
11216 GINGER ROOT; RAW
11222 HORSERADISH-TREE; LEAFY TIPS, RAW
11223 HORSERADISH-TREE; LEAFY TIPS, CKD, BOILED, DRAINED
11226 JERUSALEM-ARTICHOKES; RAW
11232 JUTE, POTHERB; CKD, BOILED, DRAINED, WO/SALT
11233 KALE; RAW
11234 KALE; CKD, BOILED, DRAINED, WO/SALT
11235 KALE; FRZ, UNPREPARED
11241 KOHLRABI; (THICKENED BULB-LIKE STEMS); RAW
11242 KOHLRABI; CKD, BOILED, DRAINED, WO/SALT
11244 LAMBSQUARTERS; RAW
11245 LAMBSQUARTERS; CKD, BOILED, DRAINED, WO/SALT

11246 LEEKS; (BULB AND LOWER LEAF-PORTION), RAW
11250 LETTUCE; BUTTERHEAD (INCLUDES BOSTON AND BIBB TYPES)
11251 LETTUCE; COS OR ROMAINE, RAW
11252 LETTUCE; ICEBERG (INCLUDES CRISPHEAD TYPES), RAW
11253 LETTUCE; LOOSELEAF, RAW
11254 LOTUS ROOT; RAW
11255 LOTUS ROOT; CKD, BOILED, DRAINED, WO/SALT
11260 MUSHROOMS; RAW
11261 MUSHROOMS; CKD, BOILED, DRAINED, WO/SALT
11264 MUSHROOMS; CND, DRAINED SOLIDS
11268 MUSHROOMS; SHIITAKE, DRIED
11269 MUSHROOMS; SHIITAKE, COOKED, WO/SALT
11270 MUSTARD GREENS; RAW
11271 MUSTARD GREENS; CKD, BOILED, DRAINED, WO/SALT
11272 MUSTARD GREENS; FRZ, UNPREPARED
11278 OKRA; RAW
11279 OKRA; CKD, BOILED, DRAINED, WO/SALT
11280 OKRA; FRZ, UNPREPARED
11281 OKRA; FRZ, CKD, BOILED, DRAINED, WO/SALT
11282 ONIONS; RAW
11283 ONIONS; CKD, BOILED, DRAINED, WO/SALT
11284 ONIONS; DEHYDRATED FLAKES
11285 ONIONS; CND, SOL&LIQ
11287 ONIONS; FRZ, CHOPPED, UNPREPARED
11288 ONIONS; FRZ, CHOPPED, CKD, BOILED, DRAINED, WO/SALT
11289 ONIONS; FRZ, WHOLE, UNPREPARED
11291 ONIONS; SPRING (INCLUDES TOPS AND BULB), RAW
11295 ONION RINGS; BREADED, PAR-FRIED, FRZ, UNPREPARED
11297 PARSLEY, RAW
11298 PARSNIPS; RAW
11299 PARSNIPS; CKD, BOILED, DRAINED, WO/SALT
11300 PEAS; EDIBLE-PODDED, RAW
11301 PEAS; EDIBLE-PODDED, CKD, BOILED, DRAINED, WO/SALT
11302 PEAS; EDIBLE-PODDED, FRZ, UNPREPARED
11304 PEAS; GREEN, RAW
11305 PEAS; GREEN, CKD, BOILED, DRAINED, WO/SALT
11306 PEAS; GREEN, CND, REG PK, SOL&LIQ
11308 PEAS; GREEN, CND, REG PK, DRAINED SOLIDS
11312 PEAS; GREEN, FRZ, UNPREPARED
11313 PEAS; GREEN, FRZ, CKD, BOILED, DRAINED, WO/SALT
11318 PEAS AND CARROTS; CND, REG PK, SOL&LIQ
11322 PEAS AND CARROTS; FRZ, UNPREPARED
11323 PEAS AND CARROTS; FRZ, CKD, BOILED, DRAINED, WO/SALT
11326 PEAS AND ONIONS; FRZ, UNPREPARED
11327 PEAS AND ONIONS; FRZ, CKD, BOILED, DRAINED, WO/SALT
11329 PEPPERS; HOT CHILI, GREEN, CND, PODS, EXCLUDING SEEDS
11333 PEPPERS; SWEET, GREEN, RAW
11334 PEPPERS; SWEET, GREEN, CKD, BOILED, DRAINED, WO/SALT
11335 PEPPERS; SWEET, GREEN, CND, SOL&LIQ
11337 PEPPERS; SWEET, GREEN, FRZ, CHOPPED, UNPREPARED
11344 PIGEONPEAS; IMMATURE SEEDS, RAW
11345 PIGEONPEAS; IMMATURE SEEDS, CKD, BOILED, DRAINEC
11349 POI
11350 POKEBERRY SHOOTS; (POKE), RAW
11351 POKEBERRY SHOOTS; (POKE), CKD, BOILED, DRAINED
11352 POTATOES; RAW, FLESH
11363 POTATOES; BAKED, FLESH, WO/SALT
11364 POTATOES; BAKED, SKIN, WO/SALT
11365 POTATOES; BOILED, CKD IN SKIN, FLESH, WO/SALT
11367 POTATOES; BOILED, CKD WO/SKIN, FLESH, WO/SALT
11370 POTATOES; HASHED BROWN, HOME-PREPARED
11371 POTATOES; MASHED, HOME-PREPARED, WHOLE MILK AND MARGARINE
11372 POTATOES; SCALLOPED, HOME-PREPARED WITH BUTTER
11373 POTATOES; AU GRATIN, HOME-PREPARED FROM RECIPE
11374 POTATOES; CND, SOL&LIQ
11378 POTATOES; MASHED, DEHYDRATED, FLAKES WO/MILK, DRY FORM

11379 POTATOES; MASHED, DEHYD, PREP FROM FLAKES WO/MILK, WHOLE MILK & BUTTER ADD
11384 POTATOES; AU GRATIN, DRY MIX, UNPREPARED
11386 POTATOES; SCALLOPED, DRY MIX, UNPREPARED
11387 POTATOES; SCALLOPED, DRY MIX, PREPARED WITH WATER, WHOLE MILK AND BUTTER
11390 POTATOES; HASHED BROWN, FRZ, PLAIN, UNPREPARED
11391 POTATOES; HASHED BROWN, FRZ, PLAIN, PREPARED
11392 POTATOES; HASHED BROWN, FRZ, W/BUTTER SAUCE, UNPREPARED
11396 POTATOES; O'BRIEN, FRZ, UNPREPARED
11398 POTATO PUFFS; FRZ, UNPREPARED
11399 POTATO PUFFS; FRZ, PREPARED
11400 POTATOES; FRZ, WHOLE, UNPREPARED
11402 POTATOES; FRZ, FRENCH-FRIED, PAR-FRIED, UNPREPARED
11403 POTATOES; FRZ, FRENCH-FRIED, PAR-FRIED, HOME-PREP, HEATED IN OVEN, WO/SALT
11404 POTATOES; FRZ, FRENCH-FRIED, PAR-FRIED, RESTAURANT-PREP, FRIED IN VEG OIL
11405 POTATOES; FRZ, FRENCH-FRIED, PAR-FRIED, RESTAUR-PREP, FRIED/ANIM FT&VEGOIL
11410 POTATO CHIPS; MADE FROM DRIED POTATOES
11411 POTATO CHIPS; WITH SALT ADDED
11413 POTATO FLOUR
11415 POTATO STICKS
11417 PUMPKIN; FLOWERS, CKD, BOILED, DRAINED, WO/SALT
11419 PUMPKIN; LEAVES, CKD, BOILED, DRAINED, WO/SALT
11422 PUMPKIN; RAW
11424 PUMPKIN; CND, WO/SALT
11429 RADISHES; RAW
11430 RADISHES; ORIENTAL, RAW
11431 RADISHES; ORIENTAL, CKD, BOILED, DRAINED, WO/SALT
11435 RUTABAGAS, RAW
11436 RUTABAGAS, COOKED, BOILED, DRAINED
11437 SALSIFY; (VEGETABLE OYSTER), RAW
11438 SALSIFY; CKD, BOILED, DRAINED, WO/SALT
11439 SAUERKRAUT; CND, SOL&LIQ
11442 SEAWEED; AGAR, RAW
11444 SEAWEED; IRISHMOSS, RAW
11445 SEAWEED; KELP, RAW
11446 SEAWEED; LAVER, RAW
11450 SOYBEANS, GREEN, RAW
11451 SOYBEANS, GREEN, COOKED, BOILED, DRAINED
11453 SOYBEANS, MATURE SEEDS, SPROUTED, COOKED, STEAMED
11455 TOMATO PRODUCTS, CANNED; SPAGHETTI SAUCE
11457 SPINACH; RAW
11458 SPINACH; CKD, BOILED, DRAINED, WO/SALT
11459 SPINACH; CND, REG PK, SOL&LIQ
11463 SPINACH; FRZ, CHOPPED OR LEAF, UNPREPARED
11464 SPINACH; FRZ, CHOPPED OR LEAF, CKD, BOILED, DRAINED, WO/SALT
11468 SQUASH; SUMMER, CROOKNECK AND STRAIGHTNECK, CKD, BLD, DRND, WO/SALT
11473 SQUASH; SUMMER, CROOKNECK AND STRAIGHTNECK, FRZ, UNPREPARED
11476 SQUASH; SUMMER, SCALLOP, CKD, BOILED, DRAINED, WO/SALT
11477 SQUASH; SUMMER, ZUCCHINI, INCL SKIN, RAW
11478 SQUASH; SUMMER, ZUCCHINI, INCL SKIN, CKD, BOILED, DRAINED, WO/SALT
11479 SQUASH; SUMMER, ZUCCHINI, INCL SKIN, FRZ, UNPREPARED
11487 SQUASH; WINTER, BUTTERNUT, FRZ, UNPREPARED
11491 SQUASH; WINTER, HUBBARD, CKD, BOILED, MASHED, WO/SALT
11493 SQUASH; WINTER, SPAGHETTI, CKD, BOILED, DRAINED, OR BAKED, WO/SALT
11499 SUCCOTASH; (CORN AND LIMAS), CND, WITH WHOLE KERNEL CORN, SOL&LIQ
11502 SUCCOTASH; (CORN AND LIMAS), FRZ, CKD, BOILED, DRAINED, WO/SALT
11503 SWAMP CABBAGE; (SKUNK CABBAGE), RAW
11504 SWAMP CABBAGE; CKD, BOILED, DRAINED, WO/SALT
11506 SWEETPOTATO LEAVES; CKD, STEAMED, WO/SALT
11507 SWEETPOTATOES; RAW
11508 SWEETPOTATOES; CKD, BAKED IN SKIN, WO/SALT
11510 SWEETPOTATOES; CKD, BOILED, WO/SKIN, WO/SALT
11512 SWEETPOTATOES; CND, VACUUM PK
11517 SWEETPOTATOES; FRZ, CKD, BAKED, WO/SALT
11518 TARO; RAW
11519 TARO; CKD, WO/SALT
11520 TARO; LEAVES, RAW

11812 PEAS; GREEN, CND, SPEC DIETARY PK, SOL&LIQ
11816 PEAS AND CARROTS; CND, SPEC DIETARY PK, SOL&LIQ
11819 PEPPERS; HOT CHILI, RED, RAW
11820 PEPPERS; HOT CHILI, RED, CND, EXCLUDING SEEDS, SOL&LIQ
11821 PEPPERS; SWEET, RED, RAW
11823 PEPPERS; SWEET, RED, CKD, BOILED, DRAINED, WO/SALT
11831 POTATOES; BOILED, CKD IN SKIN, FLESH, W/SALT
11833 POTATOES; BOILED, CKD WO/SKIN, FLESH, W/SALT
11855 SPINACH; CND, SPEC DIETARY PK, SOL&LIQ
11885 TOMATOES; RED, RIPE, CND, WHOLE; SPEC DIETARY PK
11886 TOMATO JUICE; CND, WO/SALT ADDED
11887 TOMATO PRODUCTS, CANNED; PASTE, W/SALT ADDED
11888 TOMATO PRODUCTS, CANNED; PUREE, W/SALT ADDED
11897 YAM; CKD, BOILED, DRAINED, OR BAKED, W/SALT
11900 CORN; SWEET, WHITE, RAW
11901 CORN; SWEET, WHITE, CKD, BOILED, DRAINED, WO/SALT
11905 CORN; SWEET, WHITE, CND, BRINE PK, DRAINED SOLIDS
11906 CORN; SWEET, WHITE, CND, CREAM STYLE, REG PK
11910 CORN; SWEET, WHITE, FRZ, KERNELS CUT OFF COB, UNPREPARED
11913 CORN; SWEET, WHITE, FRZ, KERNELS ON COB, UNPREPARED
11914 CORN; SWEET, WHITE, FRZ, KERNELS ON COB, CKD, BLD, DRND
11917 PEPPERS; SWEET, RED, FRZ, CHOPPED, UNPREPARED
11920 POTATO CHIPS; WO/SALT ADDED
11932 BEANS; SNAP, YELLOW VAR, CND, REG PK, DRAINED SOLIDS
12005 SEEDS; BREADNUTTREE SEEDS, DRIED
12007 SEEDS; COTTONSEED FLOUR, PARTIALLY DEFATTED
12014 SEEDS; PUMPKIN AND SQUASH SEED KERNELS, DRIED
12023 SEEDS; SESAME SEEDS, WHOLE, DRIED
12029 SEEDS; SESAME SEED KERNELS, TOASTED, WO/SALT ADDED
12036 SEEDS; SUNFLOWER SEED KERNELS, DRIED
12037 SEEDS; SUNFLOWER SEED KERNELS, DRY ROASTED, WO/SALT
12038 SEEDS; SUNFLOWER SEED KERNELS, OIL ROASTED, WO/SALT
12041 SEEDS; SUNFLOWER SEED FLOUR, PARTIALLY DEFATTED
12061 NUTS; ALMONDS, DRIED, UNBLANCHED
12062 NUTS; ALMONDS, DRIED, BLANCHED
12063 NUTS; ALMONDS, DRY ROASTED, UNBLANCHED, WO/SALT ADDED
12065 NUTS; ALMONDS, OIL ROASTED, UNBLANCHED, WO/SALT ADDED
12066 NUTS; ALMONDS, OIL ROASTED, BLANCHED, WO/SALT ADDED
12067 NUTS; ALMONDS, TOASTED, UNBLANCHED
12071 NUTS; ALMOND PASTE
12078 NUTS; BRAZILNUTS, DRIED, UNBLANCHED
12084 NUTS; BUTTERNUTS, DRIED
12085 NUTS; CASHEW NUTS, DRY ROASTED, WO/SALT ADDED
12086 NUTS; CASHEW NUTS, OIL ROASTED, WO/SALT ADDED
12088 NUTS; CASHEW BUTTER, PLAIN, WO/SALT ADDED
12097 NUTS; CHESTNUTS, EUROPEAN, RAW, UNPEELED
12099 NUTS; CHESTNUTS, EUROPEAN, DRIED, UNPEELED
12104 NUTS; COCONUT MEAT, RAW
12108 NUTS; COCONUT MEAT, DRIED (DESICCATED), NOT SWEETENED
12109 NUTS; COCONUT MEAT, DRIED (DESICCATED), SWEETENED, FLAKED
12110 NUTS; COCONUT MEAT, DRIED (DESICCATED), SWEETENED, FLAKED
12115 NUTS; COCONUT CREAM, RAW (LIQUID EXPRESSED FROM GRATED
12116 NUTS; COCONUT CREAM, CANNED (LIQUID EXPRESSED
12117 NUTS; COCONUT MILK, RAW (LIQUID EXPRESSED FROM
12118 NUTS; COCONUT MILK, CANNED (LIQUID EXPRESSED FROM
12119 NUTS; COCONUT WATER (LIQUID FROM COCONUTS)
12120 NUTS; FILBERTS OR HAZELNUTS, DRIED, UNBLANCHED
12129 NUTS; GINKGO NUTS, CANNED
12130 NUTS; HICKORYNUTS, DRIED
12131 NUTS; MACADAMIA NUTS, DRIED
12135 NUTS; MIXED NUTS, WITH PEANUTS, DRY ROASTED, WO/SALT
12137 NUTS; MIXED NUTS, WITH PEANUTS, OIL ROASTED, WO/SALT
12139 SOYBEANS; KERNELS, ROASTED AND TOASTED, WO/SALT
12140 NUTS; FORMULATED, WHEAT-BASED, UNFLAVORED, W/SALT ADDED
12142 NUTS; PECANS, DRIED
12147 NUTS; PINE NUTS, PIGNOLIA, DRIED

11524 TARO CHIPS
11527 TOMATOES; GREEN, RAW
11529 TOMATOES; RED, RIPE, RAW, YR ROUND AVERAGE
11530 TOMATOES; RED, RIPE, CKD, BOILED, WO/SALT
11531 TOMATOES; RED, RIPE, CND, WHOLE, REG PK
11540 TOMATO JUICE; CND, W/SALT ADDED
11546 TOMATO PRODUCTS, CANNED; PASTE, WO/SALT ADDED
11547 TOMATO PRODUCTS, CANNED; PUREE, WO/SALT ADDED
11549 TOMATO PRODUCTS, CANNED; SAUCE
11557 TOMATO PRODUCTS, CANNED; SAUCE, WITH ONIONS, GREEN PEPPERS, AND CELERY
11563 TREE FERN; CKD, WO/SALT
11564 TURNIPS; RAW
11565 TURNIPS; CKD, BOILED, DRAINED, WO/SALT
11566 TURNIPS; FRZ, UNPREPARED
11568 TURNIP GREENS; RAW
11569 TURNIP GREENS; CKD, BOILED, DRAINED, WO/SALT
11570 TURNIP GREENS; CND, SOL&LIQ
11574 TURNIP GREENS; FRZ, UNPREPARED
11576 TURNIP GREENS AND TURNIPS; FRZ, UNPREPARED
11577 TURNIP GREENS AND TURNIPS; FRZ, CKD, BOILED, DRAINED, WO/SALT
11578 VEGETABLE JUICE COCKTAIL; CANNED
11579 VEGETABLES; MIXED, CND, SOL&LIQ
11583 VEGETABLES; MIXED, FRZ, UNPREPARED
11584 VEGETABLES; MIXED, FRZ, CKD, BOILED, DRAINED, WO/SALT
11588 WATERCHESTNUTS; CHINESE, (MATAI), RAW
11590 WATERCHESTNUTS, CHINESE, CND, SOL&LIQ
11591 WATERCRESS; RAW
11593 WAXGOURD; (CHINESE PRESERVING MELON), RAW
11594 WAXGOURD; (CHINESE PRESERVING MELON), CKD, BOILED, DRAINED, WO/SALT
11601 YAM; RAW
11602 YAM; CKD, BOILED, DRAINED, OR BAKED, WO/SALT
11603 YAMBEAN, RAW
11616 DOCK; RAW
11620 HORSERADISH-TREE; PODS, RAW
11621 HORSERADISH-TREE; PODS, CKD, BOILED, DRAINED, WO/SALT
11626 BEANS; MUNG, MATURE SEEDS, SPROUTED, CND, DRAINED SOLIDS
11634 PEPPERS; SWEET, GREEN, FREEZE-DRIED
11641 SQUASH; SUMMER, ALL VARIETIES, RAW
11642 SQUASH; SUMMER, ALL VARIETIES, CKD, BOILED, DRAINED, WO/SALT
11643 SQUASH; WINTER, ALL VARIETIES, RAW
11644 SQUASH; WINTER, ALL VARIETIES, CKD, BAKED, WO/SALT
11645 SWEETPOTATOES; CND, SIRUP PK, SOL&LIQ
11655 CARROT JUICE; CANNED
11657 POTATOES; MASHED, HOME-PREPARED, WHOLE MILK ADDED
11660 TOMATOES; RED, RIPE, CKD, STEWED
11663 SEAWEED; AGAR, DRIED
11667 SEAWEED; SPIRULINA, DRIED
11669 SEAWEED; WAKAME, RAW
11670 PEPPERS; HOT CHILI, GREEN, RAW
11672 POTATO PANCAKES; HOME-PREPARED
11674 POTATOES; BAKED, FLESH AND SKIN, WO/SALT
11707 ASPARAGUS; CND, SPEC DIETARY PK, SOL&LIQ
11715 BEANS; LIMA, IMMATURE SEEDS, CND, SPEC DIETARY PK, SOL&LIQ
11718 BEANS; MUNG, MATURE SEEDS, SPROUTED, CKD, BOILED, DRAINED, W/SALT
11722 BEANS; SNAP, YELLOW VAR, RAW
11724 BEANS; SNAP, YELLOW VAR, CKD, BOILED, DRAINED, WO/SALT
11726 BEANS;. SNAP, GREEN VAR, CND, SPEC DIETARY PK, SOL&LIQ
11727 BEANS; SNAP, YELLOW VAR, CND, REG PK, SOL&LIQ
11728 BEANS; SNAP, YELLOW VAR, CND, SPEC DIETARY PK, SOL&LIQ
11729 BEANS; SNAP, GREEN VAR, CND, SPEC DIETARY PK, DRAINED SOLIDS
11730 BEANS; SNAP, YELLOW VAR, FRZ, ALL STYLES, UNPREPARED
11735 BEETS; CND, SPEC DIETARY PK, SOL&LIQ
11758 CARROTS; CND, SPEC DIETARY PK, SOL&LIQ
11771 CORN; SWEET, YELLOW, CND, BRINE PK TYPE, SPEC DIETARY PK, SOL&LIQ
11772 CORN; SWEET, YELLOW, CND, CREAM STYLE, SPEC DIETARY PK
11805 ONIONS; CKD, BOILED, DRAINED, W/SALT

12149 NUTS; PINE NUTS, PINYON, DRIED
12151 NUTS; PISTACHIO NUTS, DRIED
12152 NUTS; PISTACHIO NUTS, DRY ROASTED, WO/SALT ADDED
12154 NUTS; WALNUTS, BLACK, DRIED
12155 NUTS; WALNUTS, ENGLISH OR PERSIAN, DRIED
12167 NUTS; CHESTNUTS, EUROPEAN, ROASTED
12169 SEEDS; SESAME BUTTER, PASTE
12179 NUTS; COCONUT MEAT, DRIED (DESICCATED), SWEETENED
12180 NUTS; PEANUT KERNELS, DRIED
12181 NUTS; PEANUT KERNELS, OIL ROASTED, WO/SALT ADDED
12190 NUTS; PEANUT FLOUR, DEFATTED, WO/SALT ADDED
12192 NUTS; PEANUT BUTTER, WO/SALT ADDED
12195 NUTS; ALMOND BUTTER, PLAIN, WO/SALT ADDED
12199 NUTS; FORMULATED, WHEAT-BASED, FLAVORED, MACADAMIA
12200 NUTS; FORMULATED, WHEAT-BASED, ALL FLAVORS
12516 SEEDS; PUMPKIN AND SQUASH SEED KERNELS, ROASTED,
12529 SEEDS; SESAME SEED KERNELS, TOASTED, W/SALT ADDED
12537 SEEDS; SUNFLOWER SEED KERNELS, DRY ROASTED, W/SALT ADDED
12538 SEEDS; SUNFLOWER SEED KERNELS, OIL ROASTED, W/SALT ADDED
12563 NUTS; ALMONDS, DRY ROASTED, UNBLANCHED, W/SALT ADDED
12565 NUTS; ALMONDS, OIL ROASTED, UNBLANCHED, W/SALT ADDED
12566 NUTS; ALMONDS, OIL ROASTED, BLANCHED, W/SALT ADDED
12585 NUTS; CASHEW NUTS, DRY ROASTED, W/SALT ADDED
12586 NUTS; CASHEW NUTS, OIL ROASTED, W/SALT ADDED
12588 NUTS; CASHEW BUTTER, PLAIN, W/SALT ADDED
12623 NUTS; FILBERTS OR HAZELNUTS, OIL ROASTED, UNBLANCHED
12633 NUTS; MACADAMIA NUTS, OIL ROASTED, W/SALT ADDED
12635 NUTS; MIXED NUTS, WITH PEANUTS, DRY ROASTED, W/SALT ADDED
12637 NUTS; MIXED NUTS, WITH PEANUTS, OIL ROASTED, W/SALT ADDED
12638 NUTS; MIXED NUTS, WITHOUT PEANUTS, OIL ROASTED,
12643 NUTS; PECANS, DRY ROASTED, W/SALT ADDED
12644 NUTS; PECANS, OIL ROASTED, W/SALT ADDED
12652 NUTS; PISTACHIO NUTS, DRY ROASTED, W/SALT ADDED
12681 NUTS; PEANUT KERNELS, OIL ROASTED, W/SALT ADDED
12692 NUTS; PEANUT BUTTER, W/SALT ADDED
12695 NUTS; ALMOND BUTTER, PLAIN, W/SALT ADDED
12696 NUTS; ALMOND BUTTER, HONEY AND CINNAMON, W/SALT ADDED
12698 SEEDS; SESAME BUTTER, TAHINI
13004 BEEF; COMPOSITE OF TRIMMED RETAIL CUTS, ALL GRDS,
13012 BEEF; COMPOSITE OF TRIMMED RETAIL CUTS, ALL GRADES
13019 BEEF; RETAIL CUTS, SEP FAT, RAW
13020 BEEF; RETAIL CUTS, SEP FAT, CKD
13022 BEEF; BRISKET, WHOLE, ALL GRADES, SEP LN+FT, CKD, BRSD
13023 BEEF; BRISKET, WHOLE, ALL GRADES, SEP LEAN, RAW
13024 BEEF; BRISKET, WHOLE, ALL GRADES, SEP LEAN, CKD, BRAISED
13033 BEEF; CHUCK, ARM POT ROAST, ALL GRADES, SEP LN+FT, RAW
13034 BEEF; CHUCK, ARM POT ROAST, ALL GRADES, SEP LN+FT, CKD
13036 BEEF; CHUCK, ARM POT ROAST, CHOICE, SEP LN+FT, CKD
13038 BEEF; CHUCK, ARM POT ROAST, SELECT, SEP LN+FT, CKD
13041 BEEF; CHUCK, ARM POT ROAST, ALL GRADES, SEP LEAN, RAW
13042 BEEF; CHUCK, ARM POT ROAST, ALL GRADES, SEP LEAN, CKD
13043 BEEF; CHUCK, ARM POT ROAST, CHOICE, SEP LEAN, RAW
13044 BEEF; CHUCK, ARM POT ROAST, CHOICE, SEP LEAN, CKD, BRSD
13046 BEEF; CHUCK, ARM POT ROAST, SELECT, SEP LEAN, CKD, BRSD
13049 BEEF; CHUCK, BLADE ROAST, ALL GRADES, SEP LN+FT, RAW
13050 BEEF; CHUCK, BLADE ROAST, ALL GRADES, SEP LN+FT, CKD
13052 BEEF; CHUCK, BLADE ROAST, CHOICE, SEP LN+FT, CKD, BRAISED
13057 BEEF; CHUCK, BLADE ROAST, ALL GRADES, SEP LEAN, RAW
13058 BEEF; CHUCK, BLADE ROAST, ALL GRADES, SEP LEAN, CKD, BRSD
13059 BEEF; CHUCK, BLADE ROAST, CHOICE, SEP LEAN, RAW
13060 BEEF; CHUCK, BLADE ROAST, CHOICE, SEP LEAN, CKD, BRSD
13061 BEEF; CHUCK, BLADE ROAST, SELECT, SEP LEAN, RAW
13062 BEEF; CHUCK, BLADE ROAST, SELECT, SEP LEAN, CKD, BRAISED
13065 BEEF; FLANK, CHOICE, SEP LN+FT, RAW, 0" FAT
13068 BEEF; FLANK, ALL GRADES, SEP LEAN, RAW
13069 BEEF; FLANK, CHOICE, SEP LEAN, CKD, BRAISED, 0" FAT

13072 BEEF; RIB, WHOLE (RIBS 6-12), ALL GRADES, SEP LN+FT, CKD, BRLD, 1/4" FAT
13083 BEEF; RIB, WHOLE (RIBS 6-12), ALL GRADES, SEP LEAN, RAW
13088 BEEF; RIB, WHOLE (RIBS 6-12), CHOICE, SEP LEAN, CKD, RSTD, 1/4" FAT
13097 BEEF; RIB, EYE, SML END (RIBS 10-12), CHOICE, SEP LN, RAW
13099 BEEF; RIB, LRG END (RIBS 6-9), ALL GRADES, SEP LN+FT, RAW, 1/4" FAT
13101 BEEF; RIB, LRG END (RIBS 6-9), ALL GRADES, SEP LN+FT, CKD, RSTD, 1/4" FAT
13113 BEEF; RIB, LRG END (RIBS 6-9), ALL GRADES, SEP LN, CKD, RSTD, 1/4" FAT
13124 BEEF; RIB, SML END (RIBS 10-12), ALL GRDS, SEP LN+FT, CKD, BRLD, 1/4" FAT
13136 BEEF; RIB, SML END (RIBS 10-12), ALL GRDS, SEP LN, CKD, BRLD, 1/4" FAT
13143 BEEF; RIB, SML END (RIBS 10-12), SELECT, SEP LEAN, CKD, RSTD, 1/4" FAT
13148 BEEF; RIB, SHORTRIBS, CHOICE, SEP LN+FT, CKD, BRAISED
13149 BEEF; RIB, SHORTRIBS, CHOICE, SEP LEAN, RAW
13150 BEEF; RIB, SHORTRIBS, CHOICE, SEP LEAN, CKD, BRAISED
13151 BEEF; ROUND, FULL CUT, CHOICE, SEP LN+FT, RAW, 1/4" FAT
13152 BEEF; ROUND, FULL CUT, CHOICE, SEP LN+FT, CKD, BROILED, 1/4" FAT
13155 BEEF; ROUND, FULL CUT, CHOICE, SEP LEAN, RAW
13156 BEEF; ROUND, FULL CUT, CHOICE, SEP LEAN, CKD, BROILED, 1/4" FAT
13157 BEEF; ROUND, FULL CUT, SELECT, SEP LEAN, RAW
13160 BEEF; ROUND, BOTTOM ROUND, ALL GRADES, SEP LN+FT, CKD, BRSD, 1/4" FAT
13161 BEEF; ROUND, BOTTOM ROUND, CHOICE, SEP LN+FT, RAW, 1/4" FAT
13162 BEEF; ROUND, BOTTOM ROUND, CHOICE, SEP LN+FT, CKD, BRAISED, 1/4" FAT
13167 BEEF; ROUND, BOTTOM ROUND, ALL GRADES, SEP LEAN, RAW
13168 BEEF; ROUND, BOTTOM ROUND, ALL GRADES, SEP LEAN, CKD, BRAISED, 1/4" FAT
13175 BEEF; ROUND, EYE OF ROUND, ALL GRADES, SEP LN+FT, RAW, 1/4" FAT
13176 BEEF; ROUND, EYE OF ROUND, ALL GRADES, SEP LN+FT, CKD, RSTD, 1/4" FAT
13177 BEEF; ROUND, EYE OF ROUND, CHOICE, SEP LN+FT, RAW, 1/4" FAT
13178 BEEF; ROUND, EYE OF ROUND, CHOICE, SEP LN+FT, CKD, RSTD, 1/4" FAT
13184 BEEF; ROUND, EYE OF ROUND, ALL GRADES, SEP LEAN, CKD, ROASTED, 1/4" FAT
13192 BEEF; ROUND, TIP ROUND, ALL GRADES, SEP LN+FT, CKD, ROASTED, 1/4" FAT
13193 BEEF; ROUND, TIP ROUND, CHOICE, SEP LN+FT, RAW, 1/4" FAT
13194 BEEF; ROUND, TIP ROUND, CHOICE, SEP LN+FT, CKD, ROASTED, 1/4" FAT
13196 BEEF; ROUND, TIP ROUND, SELECT, SEP LN+FT, CKD, ROASTED, 1/4" FAT
13200 BEEF; ROUND, TIP ROUND, ALL GRADES, SEP LEAN, CKD, ROASTED, 1/4" FAT
13202 BEEF; ROUND, TIP ROUND, CHOICE, SEP LEAN, CKD, ROASTED, 1/4" FAT
13204 BEEF; ROUND, TIP ROUND, SELECT, SEP LEAN, CKD, ROASTED, 1/4" FAT
13207 BEEF; ROUND, TOP ROUND, ALL GRADES, SEP LN+FT, RAW, 1/4" FAT
13208 BEEF; ROUND, TOP ROUND, ALL GRADES, SEP LN+FT, CKD, BRLD, 1/4" FAT
13217 BEEF; ROUND, TOP ROUND, ALL GRADES, SEP LEAN, CKD, BROILED, 1/4" FAT
13220 BEEF; ROUND, TOP ROUND, CHOICE, SEP LEAN, CKD, PAN-FRIED, 1/4" FAT
13225 BEEF; SHANK CROSSCUTS, CHOICE, SEP LN+FT, RAW, 1/4" FAT
13231 BEEF; SHORT LOIN, PORTERHOUSE STEAK, ALL GRADES, SEP LN, RAW
13235 BEEF; SHORT LOIN, T-BONE STEAK, ALL GRADES, SEP LEAN, RAW
13238 BEEF; SHORT LOIN, TENDERLOIN, ALL GRADES, SEP LN+FT, CKD, BRLD, 1/4" FAT
13249 BEEF; SHORT LOIN, TENDERLOIN, ALL GRADES, SEP LEAN, RAW
13250 BEEF; SHORT LOIN, TENDERLOIN, ALL GRADES, SEP LEAN, CKD, BRLD, 1/4" FAT
13260 BEEF; SHORT LOIN, TENDERLOIN, PRIME, SEP LEAN, CKD, ROASTED, 1/4" FAT
13262 BEEF; SHORT LOIN, TOP LOIN, ALL GRADES, SEP LN+FT, CKD, BRLD, 1/4" FAT
13269 BEEF; SHORT LOIN, TOP LOIN, ALL GRADES, SEP LEAN, RAW
13270 BEEF; SHORT LOIN, TOP LOIN, ALL GRADES, SEP LEAN, CKD, BRLD, 1/4" FAT
13278 BEEF; SHORT LOIN, TOP SIRLOIN, ALL GRADES, SEP LN+FT, CKD, BRLD, 1/4" FAT
13281 BEEF; SHORT LOIN, TOP SIRLOIN, CHOICE, SEP LN+FT, CKD, PAN-FRIED, 1/4" FAT
13286 BEEF; SHORT LOIN, TOP SIRLOIN, ALL GRADES, SEP LEAN, RAW
13287 BEEF; SHORT LOIN, TOP SIRLOIN, ALL GRADES, SEP LEAN, CKD, BRLD, 1/4" FAT
13288 BEEF; SHORT LOIN, TOP SIRLOIN, CHOICE, SEP LEAN, RAW
13289 BEEF; SHORT LOIN, TOP SIRLOIN, CHOICE, SEP LEAN, CKD, BROILED, 1/4" FAT
13290 BEEF; SHORT LOIN, TOP SIRLOIN, CHOICE, SEP LEAN, CKD, PAN-FRIED, 1/4" FAT
13291 BEEF; SHORT LOIN, TOP SIRLOIN, SELECT, SEP LEAN, RAW
13292 BEEF; SHORT LOIN, TOP SIRLOIN, SELECT, SEP LEAN, CKD, BROILED, 1/4" FAT
13295 BEEF; GROUND, EXTRA LEAN, RAW
13298 BEEF; GROUND, EXTRA LEAN, COOKED, BROILED, MEDIUM
13299 BEEF; GROUND, EXTRA LEAN, COOKED, BROILED, WELL DONE
13300 BEEF; GROUND, EXTRA LEAN, COOKED, PAN-FRIED, MEDIUM
13302 BEEF; GROUND, LEAN, RAW
13305 BEEF; GROUND, LEAN, COOKED, BROILED, MEDIUM
13306 BEEF; GROUND, LEAN, COOKED, BROILED, WELL DONE
13307 BEEF; GROUND, LEAN, COOKED, PAN-FRIED, MEDIUM

13309 BEEF; GROUND, REGULAR, RAW
13312 BEEF; GROUND, REGULAR, COOKED, BROILED, MEDIUM
13313 BEEF; GROUND, REGULAR, COOKED, BROILED, WELL DONE
13314 BEEF; GROUND, REGULAR, COOKED, PAN-FRIED, MEDIUM
13316 BEEF; GROUND, PATTIES, FROZEN, RAW
13318 BEEF; BRAIN, RAW
13320 BEEF; BRAIN, COOKED, SIMMERED
13321 BEEF; HEART, RAW
13322 BEEF; HEART, COOKED, SIMMERED
13323 BEEF; KIDNEYS, RAW
13324 BEEF; KIDNEYS, COOKED, SIMMERED
13325 BEEF; LIVER, RAW
13327 BEEF; LIVER, CKD, PAN-FRIED
13328 BEEF; LUNGS, RAW
13335 BEEF; SUET, RAW
13337 BEEF; THYMUS, RAW
13339 BEEF; TONGUE, RAW
13340 BEEF; TONGUE, COOKED, SIMMERED
13341 BEEF; TRIPE, RAW
13344 BEEF; CURED, BREAKFAST STRIPS, RAW OR UNHEATED
13345 BEEF; CURED, BREAKFAST STRIPS, COOKED
13346 BEEF; CURED, CORNED BEEF, BRISKET, RAW
13347 BEEF; CURED, CORNED BEEF, BRISKET, COOKED
13348 BEEF; CURED, CORNED BEEF, CANNED
13350 BEEF; CURED, DRIED BEEF
13355 BEEF; CURED, PASTRAMI
13358 BEEF; CURED, SMOKED, CHOPPED BEEF
13360 BEEF; CURED, THIN-SLICED BEEF
13361 BEEF; COMPOSITE OF TRIMMED RETAIL CUTS, ALL GRDS, SEP LN+FT, CKD, 0" FAT
13364 BEEF; COMPOSITE OF TRIMMED RETAIL CUTS, ALL GRADES, SEP LN, CKD, 0" FAT
13367 BEEF; BRISKET, WHOLE, ALL GRADES, SEP LN+FT, CKD, BRSD, 0" FAT
13368 BEEF; BRISKET, WHOLE, ALL GRADES, SEP LEAN, CKD, BRAISED, 0" FAT
13373 BEEF; CHUCK, ARM POT ROAST, ALL GRADES, SEP LN+FT, CKD, BRSD, 0" FAT
13376 BEEF; CHUCK, ARM POT ROAST, ALL GRADES, SEP LEAN, CKD, BRSD, 0" FAT
13379 BEEF; CHUCK, BLADE ROAST, ALL GRADES, SEP LN+FT, CKD, BRAISED, 0" FAT
13382 BEEF; CHUCK, BLADE ROAST, ALL GRADES, SEP LEAN, CKD, BRSD, 0" FAT
13385 BEEF; RIB, LRG END (RIBS 6-9), ALL GRADES, SEP LN+FT, CKD, RSTD, 0" FAT
13388 BEEF; RIB, LRG END (RIBS 6-9), ALL GRADES, SEP LN, CKD, RSTD, 0" FAT
13391 BEEF; RIB, SML END (RIBS 10-12), ALL GRDS, SEP LN+FT, CKD, BRLD, 0" FAT
13394 BEEF; RIB, SML END (RIBS 10-12), ALL GRDS, SEP LN, CKD, BRLD, 0" FAT
13398 BEEF; ROUND, BOTTOM ROUND, ALL GRADES, SEP LN+FT, CKD, BRSD, 0" FAT
13406 BEEF; ROUND, BOTTOM ROUND, ALL GRADES, SEP LEAN, CKD, ROASTED, 1/4" FAT
13407 BEEF; ROUND, BOTTOM ROUND, ALL GRADES, SEP LEAN, CKD, BRAISED, 0" FAT
13415 BEEF; ROUND, EYE OF ROUND, ALL GRADES, SEP LN+FT, CKD, RSTD, 0" FAT
13416 BEEF; ROUND, EYE OF ROUND, CHOICE, SEP LN+FT, CKD, RSTD, 0" FAT
13418 BEEF; ROUND, EYE OF ROUND, ALL GRADES, SEP LEAN, CKD, ROASTED, 0" FAT
13421 BEEF; ROUND, TIP ROUND, ALL GRADES, SEP LN+FT, CKD, ROASTED, 0" FAT
13422 BEEF; ROUND, TIP ROUND, CHOICE, SEP LN+FT, CKD, ROASTED, 0" FAT
13424 BEEF; ROUND, TIP ROUND, ALL GRADES, SEP LEAN, CKD, ROASTED, 0" FAT
13427 BEEF; ROUND, TOP ROUND, ALL GRADES, SEP LN+FT, CKD, BRAISED, 1/4" FAT
13428 BEEF; ROUND, TOP ROUND, ALL GRADES, SEP LN+FT, CKD, BRAISED, 0" FAT
13433 BEEF; ROUND, TOP ROUND, ALL GRADES, SEP LEAN, CKD, BRAISED, 1/4" FAT
13434 BEEF; ROUND, TOP ROUND, ALL GRADES, SEP LEAN, CKD, BRAISED, 0" FAT
13439 BEEF; SHORT LOIN, TENDERLOIN, ALL GRADES, SEP LN+FT, CKD, BRLD, 0" FAT
13442 BEEF; SHORT LOIN, TENDERLOIN, ALL GRADES, SEP LEAN, CKD, BRLD, 0" FAT
13445 BEEF; SHORT LOIN, TOP LOIN, ALL GRADES, SEP LN+FT, CKD, BRLD, 0" FAT
13448 BEEF; SHORT LOIN, TOP LOIN, ALL GRADES, SEP LEAN, CKD, BRLD, 0" FAT
13451 BEEF; SHORT LOIN, TOP SIRLOIN, ALL GRADES, SEP LN+FT, CKD, BRLD, 0" FAT
13454 BEEF; SHORT LOIN, TOP SIRLOIN, ALL GRADES, SEP LEAN, CKD, BRLD, 0" FAT
14003 ALCOHOLIC BEVERAGE; BEER, REGULAR
14006 ALCOHOLIC BEVERAGE; BEER, LIGHT
14009 ALCOHOLIC BEVERAGE; DAIQUIRI, CANNED
14015 ALCOHOLIC BEVERAGE; PINA COLADA, CANNED
14019 ALCOHOLIC BEVERAGE; TEQUILA SUNRISE, CANNED
14024 ALCOHOLIC BEVERAGE; WHISKEY SOUR MIX, POWDER
14027 ALCOHOLIC BEVERAGE; WHISKEY SOUR, CANNED

14028 ALCOHOLIC BEVERAGE; WHISKEY SOUR MIX, BOTTLED
14034 ALCOHOLIC BEVERAGE; CREME DE MENTHE, 72 PROOF
14037 ALCOHOLIC BEVERAGE; DISTILLED, ALL (GIN, RUM, VODKA
14049 ALCOHOLIC BEVERAGE; DISTILLED, GIN, 90 PROOF
14050 ALCOHOLIC BEVERAGE; DISTILLED, RUM, 80 PROOF
14057 ALCOHOLIC BEVERAGE; WINE, DESSERT, SWEET
14084 ALCOHOLIC BEVERAGE; WINE, TABLE, ALL
14121 CARBONATED BEVERAGE; CLUB SODA
14130 CARBONATED BEVERAGE; CREAM SODA
14136 CARBONATED BEVERAGE; GINGER ALE
14142 CARBONATED BEVERAGE; GRAPE SODA
14145 CARBONATED BEVERAGE; LEMON-LIME SODA
14150 CARBONATED BEVERAGE; ORANGE
14153 CARBONATED BEVERAGE; PEPPER TYPE
14155 CARBONATED BEVERAGE; TONIC WATER
14157 CARBONATED BEVERAGE; ROOT BEER
14166 CARBONATED BEVERAGE; LOW CAL, COLA OR PEPPER TYPES,
14175 CHOCOLATE FLAVOR BEVERAGE MIX; POWDER
14181 CHOCOLATE SYRUP; WITHOUT ADDED NUTRIENTS
14184 CHOCOLATE SYRUP; WITH ADDED NUTRIENTS
14192 COCOA MIX; NO ADDED NUTRIENTS, POWDER
14196 COCOA MIX; ASPARTAME SWEETENED, POWD, NO/ADDED CA OR P,
14209 COFFEE; BREWED, PREPARED WITH TAP WATER
14214 COFFEE; INSTANT, REGULAR, POWDER
14222 COFFEE; INSTANT, WITH CHICORY, POWDER
14224 COFFEE; INSTANT, WITH SUGAR, MOCHA FLAVOR, POWDER
14228 COFFEE; INSTANT, WITH SUGAR, CAPPUCCINO FLAVOR POWDER
14229 COFFEE; INSTANT, WITH SUGAR, FRENCH FLAVOR, POWDER
14236 COFFEE SUBSTITUTE; CEREAL GRAIN BEVERAGE, POWDER
14237 COFFEE SUBSTITUTE; CEREAL GRAIN BEVERAGF
14238 CRANBERRY-APPLE JUICE DRINK; BOTTLED
14240 CRANBERRY-APRICOT JUICE DRINK; BOTTLED
14241 CRANBERRY-GRAPE JUICE DRINK; BOTTLED
14242 CRANBERRY JUICE COCKTAIL; BOTTLED
14243 CRANBERRY JUICE COCKTAIL; BOTTLED, LOW CAI
14244 EGGNOG FLAVOR MIX; POWDER
14262 CITRUS FRUIT JUICE DRINK; FROZEN CONCENTRATE
14265 FRUIT PUNCH FLAVOR DRINK; POWDER, WITH ADDED SODIUM
14267 FRUIT PUNCH DRINK; CANNED
14268 FRUIT PUNCH DRINK; FROZEN CONCENTRATE
14277 GRAPE DRINK; CANNED
14282 GRAPE JUICE DRINK; CANNED
14287 LEMONADE; POWDER
14289 LEMONADE; LOW CALORIE, ASPARTAME SWEETENED, POWDER
14290 LEMONADE; LOW CALORIE, WITH ASPARTAME, POWDER, PREPARED
14292 LEMONADE; FROZEN CONCENTRATE, WHITE
14296 LEMONADE FLAVOR DRINK; POWDER
14302 LIMEADE; FROZEN CONCENTRATE
14305 MALT BEVERAGE
14309 MALTED MILK FLAVOR MIX; NATURAL, ADDED NUTRIENTS, POWDER
14315 MALTED MILK FLAVOR MIX; CHOCOLATE, ADDED NUTRIENTS
14323 ORANGE DRINK; CANNED
14327 ORANGE AND APRICOT JUICE DRINK; CANNED
14334 PINEAPPLE AND GRAPEFRUIT JUICE DRINK; CANNED
14341 PINEAPPLE AND ORANGE JUICE DRINK; CANNED
14350 STRAWBERRY FLAVOR BEVERAGE MIX; POWDER
14355 TEA; BREWED, PREPARED WITH TAP WATER
14366 TEA; INSTANT, UNSWEETENED, POWDER
14367 TEA; INSTANT, UNSWEETENED, PREPARED
14368 TEA; INSTANT, UNSWEETENED, LEMON FLAVORED, POWDER
14370 TEA; INSTANT, SWEETENED W/ SUGAR, LEMON FLAV,
14375 TEA; INSTANT, SWEETENED W/ NA SACCHARIN, LEMON FLAVORED
14376 TEA; INSTANT, SWEETENED W/ NA SACCHARIN, LEMON FLAVORED
14381 TEA; HERB, OTHER THAN CHAMOMILE, BREWED
14382 THRIST QUENCHER DRINK; BOTTLED
14384 WATER; BOTTLED, PERRIER

14385 WATER; BOTTLED, POLAND SPRING
14400 CARBONATED BEVERAGE; COLA
14405 FRUIT PUNCH JUICE DRINK; FROZEN CONCENTRATE
14407 ORANGE FLAVOR DRINK; BREAKFAST TYPE, POWDER
14408 ORANGE FLAVOR DRINK; BREAKFAST TYPE, PREPARED WITH WATER
14414 ALCOHOLIC BEVERAGE; LIQUEUR, COFFEE, 53 PROOF
14415 ALCOHOLIC BEVERAGE; LIQUEUR, COFFEE WITH CREAM, 34 PROOF
14416 CARBONATED BEVERAGE; LOW CAL, COLA, W/ ASPARTAME
14422 DAIRY DRINK MIX; CHOCOLATE, REDUCED CAL, W/ ASPARTAME
14424 ORANGE FLAVOR DRINK; BREAKFAST TYPE, W/ PULP, FROZEN
14426 ORANGE DRINK; BREAKFAST TYPE, W/ JUICE & PULP FROZEN
14429 WATER; MUNICIPAL
14430 CRANBERRY JUICE COCKTAIL; FROZEN CONCENTRATE
14536 ALCOHOLIC BEVERAGE; WINE, DESSERT, DRY
14537 CARBONATED BEVERAGE; LOW CAL, OTHER THAN COLA OR PEPPER
14538 COCOA MIX; ASPARTAME SWEETENED, POWD, W/ADDED CA & P
14545 TEA; HERB, CHAMOMILE, BREWED
14550 ALCOHOLIC BEVERAGE; DISTILLED, ALL (GIN, RUM, VODKA
14551 ALCOHOLIC BEVERAGE; DISTILLED, ALL (GIN, RUM, VODKA
15002 FISH/SHELLFISH; ANCHOVY, EUROPEAN, CANNED IN OIL
15008 FISH/SHELLFISH; CARP, RAW
15010 FINFISH; CATFISH, CHANNEL, WILD, RAW
15012 FISH/SHELLFISH; CAVIAR, BLACK AND RED, GRANULAR
15015 FISH/SHELLFISH; COD, ATLANTIC, RAW
15016 FISH/SHELLFISH; COD, ATLANTIC, COOKED, DRY HEAT
15017 FISH/SHELLFISH; COD, ATLANTIC, CANNED, SOLIDS AND LIQUID
15018 FISH/SHELLFISH; COD, ATLANTIC, DRIED AND SALTED
15020 FISH/SHELLFISH; CROAKER, ATLANTIC, RAW
15025 FISH/SHELLFISH; EEL, MIXED SPECIES, RAW
15028 FISH/SHELLFISH; FLATFISH (FLOUNDER AND SOLE SPECIES), RAW
15031 FISH/SHELLFISH; GROUPER, MIXED SPECIES, RAW
15033 FISH/SHELLFISH; HADDOCK, RAW
15035 FISH/SHELLFISH; HADDOCK, SMOKED
15036 FISH/SHELLFISH; HALIBUT, ATLANTIC AND PACIFIC, RAW
15038 FISH/SHELLFISH; HALIBUT, GREENLAND, RAW
15039 FISH/SHELLFISH; HERRING, ATLANTIC, RAW
15041 FISH/SHELLFISH; HERRING, ATLANTIC, PICKLED
15042 FISH/SHELLFISH; HERRING, ATLANTIC, KIPPERED
15044 FISH/SHELLFISH; LING, RAW
15046 FISH/SHELLFISH; MACKEREL, ATLANTIC, RAW
15048 FISH/SHELLFISH; MACKEREL, JACK, CANNED, DRAINED SOLIDS
15050 FINFISH; MACKEREL, PACIFIC AND JACK, MIXED SPECIES, RAW
15054 FISH/SHELLFISH; MONKFISH, RAW
15055 FISH/SHELLFISH; MULLET, STRIPED, RAW
15057 FISH/SHELLFISH; OCEAN PERCH, ATLANTIC, RAW
15060 FISH/SHELLFISH; PERCH, MIXED SPECIES, RAW
15062 FISH/SHELLFISH; PIKE, NORTHERN, RAW
15065 FISH/SHELLFISH; POLLOCK, ATLANTIC, RAW
15066 FISH/SHELLFISH; POLLOCK, WALLEYE, RAW
15068 FISH/SHELLFISH; POMPANO, FLORIDA, RAW
15070 FISH/SHELLFISH; ROCKFISH, PACIFIC, MIXED SPECIES, RAW
15072 FISH/SHELLFISH; ROE, MIXED SPECIES, RAW
15077 FISH/SHELLFISH; SALMON, CHINOOK, SMOKED
15080 FISH/SHELLFISH; SALMON, CHUM, DRAINED SOLIDS WITH BONE
15083 FISH/SHELLFISH; SALMON, PINK, RAW
15084 FISH/SHELLFISH; SALMON, PINK, CANNED, SOLIDS WITH BONE
15085 FINFISH; SALMON, SOCKEYE, RAW
15087 FISH/SHELLFISH; SALMON, SOCKEYE, CANNED,
15088 FISH/SHELLFISH; SARDINE, ATLANTIC, CANNED IN OIL
15089 FISH/SHELLFISH; SARDINE,PACIFIC,CND IN TOMATO SAUCE
15090 FISH/SHELLFISH; SCUP, RAW
15091 FISH/SHELLFISH; SEA BASS, MIXED SPECIES, RAW
15094 FISH/SHELLFISH; SHAD, AMERICAN, RAW
15095 FISH/SHELLFISH; SHARK, MIXED SPECIES, RAW
15099 FISH/SHELLFISH; SMELT, RAINBOW, RAW
15101 FISH/SHELLFISH; SNAPPER, MIXED SPECIES, RAW

15103 FISH/SHELLFISH; SPOT, RAW
15104 FISH/SHELLFISH; STURGEON, MIXED SPECIES, RAW
15105 FISH/SHELLFISH; STURGEON, MIXED SPECIES, COOKED, DRY HEAT
15110 FISH/SHELLFISH; SWORDFISH, RAW
15114 FINFISH; TROUT, MIXED SPECIES, RAW
15115 FINFISH; TROUT, RAINBOW, WILD, RAW
15119 FISH/SHELLFISH; TUNA, CANNED, DRAINED SOLIDS, LIGHT MEAT, CANNED IN OIL
15121 FINFISH; TUNA, LIGHT, CANNED IN WATER, DRAINED SOLIDS
15127 FISH/SHELLFISH; TUNA, FRESH, YELLOWFIN, RAW
15130 FISH/SHELLFISH; WHITEFISH, MIXED SPECIES, RAW
15131 FISH/SHELLFISH; WHITEFISH, MIXED SPECIES, SMOKED
15132 FISH/SHELLFISH; WHITING, MIXED SPECIES, RAW
15138 FISH/SHELLFISH; CRAB, ALASKA KING, IMITATION, MADE FROM SURIMI
15140 FISH/SHELLFISH; CRAB, BLUE, COOKED, MOIST HEAT
15141 FISH/SHELLFISH; CRAB, BLUE, CANNED
15145 CRUSTACEANS; CRAYFISH, MIXED SPECIES, WILD, RAW
15146 CRUSTACEANS; CRAYFISH, MIXED SPECIES, WILD, COOKED, MOIST HEAT
15147 FISH/SHELLFISH; LOBSTER, NORTHERN, RAW
15148 FISH/SHELLFISH; LOBSTER, NORTHERN, COOKED, MOIST HEAT
15149 FISH/SHELLFISH; SHRIMP, MIXED SPECIES, RAW
15151 FISH/SHELLFISH; SHRIMP, MIXED SPECIES, COOKED, MOIST HEAT
15152 FISH/SHELLFISH; SHRIMP, MIXED SPECIES, CANNED
15155 FISH/SHELLFISH; ABALONE, MIXED SPECIES, RAW
15157 FISH/SHELLFISH; CLAM, MIXED SPECIES, RAW
15160 FISH/SHELLFISH; CLAM, MIXED SPECIES, CANNED, DRAINED SOLIDS
15162 FISH/SHELLFISH; CLAM, MIXED SPECIES, CANNED, LIQUID
15164 FISH/SHELLFISH; MUSSEL, BLUE, RAW
15165 FISH/SHELLFISH; MUSSEL, BLUE, COOKED, MOIST HEAT
15166 FISH/SHELLFISH; OCTOPUS, COMMON, RAW
15167 MOLLUSKS; OYSTER, EASTERN, WILD, RAW
15170 FISH/SHELLFISH; OYSTER, EASTERN, CANNED
15172 FISH/SHELLFISH; SCALLOP, MIXED SPECIES, RAW
15175 FISH/SHELLFISH; SQUID, MIXED SPECIES, RAW
15183 FISH/SHELLFISH; TUNA, LIGHT MEAT, CANNED IN OIL, WO/SALT, DRAINED SOLIDS
15184 FISH/SHELLFISH; TUNA, LIGHT MEAT, CANNED IN WATER, WO/SALT, DRAINED SOLIDS
15186 FISH/SHELLFISH; TUNA, WHITE MEAT, CANNED IN WATER, WO/SALT, DRAINED SOLIDS
16001 BEANS; ADZUKI, MATURE SEEDS, RAW
16005 BEANS; BAKED, HOME PREPARED
16008 BEANS; BAKED, CANNED, W/FRANKS
16009 BEANS; BAKED, CANNED, W/PORK
16010 BEANS; BAKED, CANNED, W/PORK + SWEET SAUCE
16011 BEANS; BAKED, CANNED, W/PORK + TOMATO SAUCE
16014 BEANS; BLACK, MATURE SEEDS, RAW
16016 BEANS; BLACK TURTLE SOUP, MATURE SEEDS, RAW
16017 BEANS; BLACK TURTLE SOUP, MATURE SEEDS, COOKED, BOILED, WO/SALT
16027 BEANS; KIDNEY, ALL TYPES, MATURE SEEDS, RAW
16028 BEANS; KIDNEY, ALL TYPES, MATURE SEEDS, COOKED, BOILED, WO/SALT
16030 BEANS; KIDNEY, CALIFORNIA RED, MATURE SEEDS, RAW
16032 BEANS; KIDNEY, RED, MATURE SEEDS, RAW
16033 BEANS; KIDNEY, RED, MATURE SEEDS, COOKED, BOILED, WO/SALT
16034 BEANS; KIDNEY, RED, MATURE SEEDS, CANNED
16037 BEANS; NAVY, MATURE SEEDS, RAW
16039 BEANS; NAVY, MATURE SEEDS, CANNED
16040 BEANS; PINK, MATURE SEEDS, RAW
16041 BEANS; PINK, MATURE SEEDS, COOKED, BOILED, WO/SALT
16042 BEANS; PINTO, MATURE SEEDS, RAW
16043 BEANS; PINTO, MATURE SEEDS, COOKED, BOILED, WO/SALT
16044 BEANS; PINTO, MATURE SEEDS, CANNED
16049 BEANS; WHITE, MATURE SEEDS, RAW
16050 BEANS; WHITE, MATURE SEEDS, COOKED, BOILED, WO/SALT
16052 BROADBEANS (FAVA BEANS); MATURE SEEDS, RAW
16053 BROADBEANS (FAVA BEANS); MATURE SEEDS, COOKED, BOILED, WO/SALT
16055 CAROB FLOUR
16056 CHICKPEAS (GARBANZO BEANS, BENGAL GRAM); MATURE SEEDS, RAW
16059 CHILI WITH BEANS; CANNED
16062 COWPEAS; COMMON(BLACK-EYED, CROWDER, SOUTHERN), MATURE SEEDS, RAW
16063 COWPEAS; COMMON(BLACK-EYED, CROWDER, SOUTHERN), MATURE SEEDS, CKD, BLD, WO/SALT
16064 COWPEAS; COMMON(BLACK-EYED, CROWDER, SOUTHERN), MATURE SEEDS, CANNED, PLAIN
16065 COWPEAS; COMMON(BLACK-EYED, CROWDER, SOUTHERN), MATURE SEEDS, CANNED W/PORK
16069 LENTILS; MATURE SEEDS, RAW
16070 LENTILS; MATURE SEEDS, COOKED, BOILED, WO/SALT
16071 BEANS; LIMA, LARGE, MATURE SEEDS, RAW
16072 BEANS; LIMA, LARGE, MATURE SEEDS, COOKED, BOILED, WO/SALT
16073 BEANS; LIMA, LARGE, MATURE SEEDS, CANNED
16077 LUPINS; MATURE SEEDS, COOKED, BOILED, WO/SALT
16080 BEANS; MUNG, MATURE SEEDS, RAW
16082 BEANS; MUNG, LONG RICE, DEHYDRATED
16084 BEANS; MUNGO, MATURE SEEDS, COOKED, BOILED, WO/SALT
16085 PEAS; SPLIT, MATURE SEEDS, RAW
16086 PEAS; SPLIT, MATURE SEEDS, COOKED, BOILED, WO/SALT
16087 PEANUTS; ALL TYPES, RAW
16088 PEANUTS; ALL TYPES, COOKED, BOILED, W/SALT
16089 PEANUTS; ALL TYPES, OIL-ROASTED, W/SALT
16090 PEANUTS; ALL TYPES, DRY-ROASTED, W/SALT
16097 PEANUT BUTTER; CHUNK STYLE, W/SALT
16098 PEANUT BUTTER; SMOOTH STYLE, W/SALT
16101 PIGEON PEAS (RED GRAM); MATURE SEEDS, RAW
16103 BEANS; REFRIED, CANNED
16104 BACON; MEATLESS
16107 SAUSAGE; MEATLESS
16108 SOYBEANS; MATURE SEEDS, RAW
16109 SOYBEANS; MATURE COOKED, BOILED, WO/SALT
16111 SOYBEANS; MATURE SEEDS, DRY ROASTED
16112 MISO
16113 NATTO
16115 SOY FLOUR; FULL-FAT, RAW
16117 SOY FLOUR; DEFATTED
16118 SOY FLOUR; LOW-FAT
16120 SOY MILK; FLUID
16122 SOY PROTEIN ISOLATE
16123 SOY SAUCE MADE FROM SOY + WHEAT (SHOYU)
16124 SOY SAUCE MADE FROM SOY (TAMARI)
16125 SOY SAUCE MADE FROM HYDROLYZED VEGETABLE PROTEIN
16127 TOFU; RAW, REGULAR
16129 TOFU; FRIED
16137 HUMMUS; RAW
16389 PEANUTS; ALL TYPES, OIL-ROASTED, WO/SALT
16390 PEANUTS; ALL TYPES, DRY-ROASTED, WO/SALT
16397 PEANUT BUTTER; CHUNK STYLE, WO/SALT
16424 SOY SAUCE MADE FROM SOY + WHEAT (SHOYU); LOW SODIUM
17169 GOAT; COOKED, ROASTED
17186 BRAIN, LAMB; COOKED, BRAISED
17201 LIVER, LAMB; COOKED, PAN-FRIED
20055 RICE, WHITE, GLUTINOUS, COOKED
20060 RICE BRAN, CRUDE
20106 MACARONI, VEGETABLE, COOKED, ENRICHED
21009 FAST FOODS; BISCUIT, WITH SAUSAGE
21024 FAST FOODS; FRENCH TOAST STICKS
42001 RICE; LONG (INCLUDE TRANSPARENT NOODLES)
42002 WHEAT FLOURS; WHITE FLOUR, DRY WEIGHT BASIS (COOKED)
42003 BATTER COAT FOR FRIED CHICKEN, WITHOUT ABSORBED FAT
42004 CHICKEN; BROILERS OR FRYERS, BREAST, MEAT ONLY, FRIED WITHOUT ABSORBED F
42005 CHICKEN; BROILERS OR FRYERS, DRUMSTICK, MEAT ONLY, FRIED, W/O ABSORBED F
42006 CHICKEN; BROILERS OR FRYERS, THIGH, MEAT ONLY, FRIED, WITHOUT ABSORBED F
42007 CHICKEN; BROILERS OR FRYERS, WING, MEAT ONLY, FRIED, WITHOUT ABSORBED FA
42008 CHICKEN; BROILERS OR FRYERS, BACK, MEAT ONLY, FRIED, WITHOUT ABSORBED FA
42009 CHICKEN; BROILERS OR FRYERS, NECK, MEAT ONLY, FRIED, WITHOUT ABSORBED FA
42010 CHICKEN; SKIN, FRIED, WITHOUT ABSORBED FAT
42011 BREADING FOR BAKED OR FRIED CHICKEN
42012 BAKING SODA
42013 CREAM OF TARTAR
42014 WHEAT FLOURS; GLUTEN, PATENT (45% GLUTEN, 55% PATENT) ENRICHED
42016 WHEAT FLOURS; CAKE OR PASTRY, ENRICHED
42017 MATZOS
42019 BEVERAGE; COFFEE SUBSTITUTE, DRY (CEREAL GRAIN BEVERAGE)
42020 POPSICLE
42022 CAROB CHIPS
42023 CAROB COATED CANDY, WITH NUTS
42026 SHELLFISH; SEA URCHIN (ROE)
42033 SYRUP; CORN, HIGH FRUCTOSE
42035 PUDDING MIX; VANILLA, INSTANT, PREPARED WITH WHOLE MILK
42036 PUDDING MIX; VANILLA, DRY, INSTANT
42037 PUDDING MIX; VANILLA, REG, PREPARED WITH WHOLE MILK
42038 PUDDING MIX; VANILLA, DRY, REGULAR
42039 SYRUP; TABLE BLEND, CORN AND 2% MAPLE
42040 SYRUP; GRENADINE
42041 CANDY; MILK CHOCOLATE WITH CEREAL
42042 ASCORBIC ACID
42045 WATERMELON RIND
42046 PAPAYA; GREEN
42047 POPCORN; POPPED, CHEESE FLAVORED
42048 TORTILLA CHIPS
42049 PHYLLO DOUGH
42055 BEVERAGE; FRUIT FLAVORED DRINK, NONCARBONATED
42061 WINE, NON-ALCOHOLIC
42062 CALCIUM
42063 PECTIN, LIQUID
42064 PECTIN; DRY MIX, LIGHT
42065 PECTIN; DRY MIX
42066 CELLULOSE (ALPHA-CELLULOSE, POWDERED CELLULOSE
42068 DRIED SHRIMP
43001 JOBO; RAW
43002 LIME; GENIP, MAMONCILLA OR SPANISH
43003 BABYFOOD; FRUIT, APPLES AND CRANBERRIES WITH TAPIOCA
43004 BABYFOOD; DESSERT, BANANA PUDDING, STRAINED
43005 BABYFOOD; DESSERT, BANANA PUDDING, JR
43006 BABYFOOD; FRUIT, TUTTI FRUTTI, STRAINED
43007 BABYFOOD; FRUIT, TUTTI FRUTTI, JR.
43008 BABYFOOD; DINNER, CHICKEN AND RICE
43012 SAUCE; LEMON-BUTTER
43013 LARD; WITH ANNATTO
43014 ADOBO FRESCO
43015 SALAD DRESSING; CAESAR
43016 SALAD DRESSING; COLESLAW
43017 SALAD DRESSING; GREEN GODDESS, REGULAR
43018 SALAD DRESSING; BUTTERMILK AS MAIN INGREDIENT
43019 SALAD DRESSING; SWEET AND SOUR
43020 SALAD DRESSING; BLUE OR ROQUEFORT CHEESE, LOW CALORIE
43021 SALAD DRESSING; CAESAR, LOW CALORIE
43022 SALAD DRESSING; MAYONNAISE, WITH YOGURT
43023 BEVERAGE; MILKSHAKE MIX, CHOCOLATE, DRY MIX
43024 BEVERAGE; MILK BEVERAGE, POWDER, DRY
43026 SYRUP; DIETETIC
43027 JELLIES; DIETETIC (WITH NA SACCHARIN), ANY FLAVORS
43028 JAMS; PRESERVES, DIETETIC (WITH NA SACCHARIN)
43029 GELATIN; DESSERT, DIETETIC, PREPARED
43030 CANDY; BUTTERSCOTCH MORSELS
43031 CANDY; CHOCOLATE COVERED, CARAMEL WITH NUTS
43032 CANDY; ROLO
43033 CANDY; SUMMIT
43034 CANDY; TWIX CARAMEL
43035 CANDY; TWIX PEANUT BUTTER
43036 CANDY; WHATCHAMACALLIT
43037 CANDY; CHOCOLITE
43038 CANDY; KIT KAT
43039 CANDY; SPECIAL DARK
43040 CANDY; CHOCOLATE, WHITE
43041 CANDY; FUDGE, CHOCOLATE WITH NUTS
43042 CANDY; SNICKERS
43043 CANDY; BABY RUTH
43044 CANDY; $100,000 BAR
43045 CANDY; BUTTERFINGER
43046 CANDY; NOUGAT, NFS
43047 CANDY; MILKY WAY
43048 CANDY; MARS BAR
43049 CANDY; 3 MUSKETEERS
43050 CANDY; M + M PEANUT
43051 CANDY; PLANTER PEANUT BAR
43052 CANDY; REESE'S PEANUT BUTTER CUPS
43053 CANDY; REESE'S PIECES
43054 CANDY; SESAME CRUNCH
43055 CANDY; SKITTLES
43056 CANDY; ROYALS
43057 CANDY; GUM DROPS, DIETETIC OR LOW CALORIE (SORBITAL)
43058 CANDY; HARD, DIETETIC OR LOW CALORIE (SORBITAL)
43059 CANDY; CHOCOLATE COVERED, DIETETIC OR LOW CALORIE
43060 CHEWING GUM; UNCOATED, SUGARLESS WITH SORBITAL
43063 BEVERAGE; CHOCOLATE FLAVORED SODA
43065 BEVERAGE; APPLE DRINK
43068 BEVERAGE; FRUIT DRINK, LOW-CALORIE
43075 FLUID REPLACEMENT; ELECTROLYTE SOLUTION
43077 BEVERAGE; NEAR BEER
43078 BEVERAGE; MILKSHAKE MIX, DRY, NOT CHOCOLATE
43079 MELBA TOAST (INCLUDE FLAVORS)
43080 MELBA TOAST; WITH WHEAT GERM
43081 TORTILLAS; NFS
43082 TORTILLAS; CORN
43083 TORTILLAS; FLOUR, WHEAT
43084 TORTILLAS; WHOLE WHEAT (INCLUDE CHAPATI AND PURI)
43085 TACO SHELL
43086 COOKIES; CONE SHELL, ICE CREAM TYPE, BROWN SUGAR
43087 COOKIES; GRANOLA
43088 COOKIES; DIETETIC, COCONUT
43089 COOKIES; DIETETIC, APPLE PASTRY
43090 COOKIES; DIETETIC, CHOCOLATE CHIP
43091 COOKIES; DIETETIC, CHOCOLATE FLAVORED
43092 COOKIES; DIETETIC, FRUIT TYPES
43093 COOKIES; DIETETIC, OATMEAL WITH RAISINS
43094 COOKIES; DIETETIC, SANDWICH TYPE
43095 COOKIES; DIETETIC, SUGAR OR PLAIN
43096 BREAKFAST TARTS; POPTARTS, TOASTER PASTRIES
43097 BREAKFAST BARS
43098 PIE FILLING, CHERRY, LOW CALORIE
43099 BREAKFAST BARS; DIET MEAL TYPE
43100 BREAKFAST BARS; OATS, SUGAR, RAISINS, COCONUT
43101 BREAKFAST BARS; PEANUTS, OATS, SUGAR, WHEAT GERM
43102 CRACKERS; MILK
43103 CRACKERS; TOAST THINS (RYE, WHEAT, WHITE FLOUR)
43104 SALTY SNACKS; CORN OR CORNMEAL BASED, CORN TOASTED
43105 SALTY SNACKS; CORN OR CORNMEAL BASED, CORN CHIPS
43106 SALTY SNACKS; CORN OR CORNMEAL BASED, CORN PUFFS
43107 ONION-FLAVORED RINGS; FOOD STARCH BASED
43108 RICE CAKE; MOCHI
43109 PRETZELS; SOFT
43110 WHEAT STICKS; 100% WHOLE WHEAT WITH SESAME SEEDS
43112 BEANS; CHILI (BARBEQUE, RANCH STYLE) CKD
43114 VERMICELLI; MADE FROM SOY
43115 PROTEIN POWDER
43116 PROTEIN SUPPLEMENT
43117 PROTEIN SUPPLEMENT; TABLET
43118 PROTEIN POWDER; DIET WITH SOY AND CASEIN
43119 PROTEIN SUPPLEMENT; HIGH PROTEIN BAR, SOY BASE
43120 PROTEIN SUPPLEMENT; HIGH PROTEIN BAR, CANDY-LIKE
43121 MEAL REPLACEMENT OR SUPPLEMENT; LIQUID HIGH PROTEIN

43122 CEREALS READY-TO-EAT; FRUIT'N FIBER HARVEST MEDLEY
43123 MEAL REPLACEMENT OR SUPPLEMENT; PRE-DIGESTED PROTEIN
43124 WAFERS; HI PROTEIN
43125 BEANS; LIQUID FROM STEWED KIDNEY BEANS
43126 CHICKEN; MEATLESS
43129 FISH STICKS; MEATLESS
43130 FRANKFURTER; MEATLESS
43131 LUNCHEON SLICES; MEATLESS
43132 MEATBALLS; MEATLESS
43133 SOYBURGER
43134 VEGETARIAN FILLETS
43135 SANDWICH SPREAD; MEATLESS
43136 VEGETARIAN STEW
43137 VEGETARIAN MEATLOAF OR PATTIES
43140 POTATO CHIPS; BARBECUED
43141 HOMINY
43142 RADISHES; HAWAIIAN STYLE, PICKLED
43143 CABBAGE; JAPANESE STYLE, FRESH, PICKLED
43144 CABBAGE; MUSTARD, SALTED
43145 CUCUMBER; KIM CHEE
43146 EGGPLANT; PICKLED
43151 PORK; SKIN, RINDS (SNACK TYPE)
43152 SOUP; FISH BROTH
43154 BEVERAGE; WINE, COOKING
43155 BEVERAGE; WINE, LIGHT
43156 SUGARS AND SWEETS; SPRINKLES
43157 SUGAR TWIN
43158 SWEETENER; SACCHARIN WITH CARBOHYDRATE CARRIER
43159 SWEETENER; ASPARTAME (INCLUDE EQUAL, NUTRASWEET)
43160 CANDY; APPLAUSE
43161 CEREALS READY-TO-EAT; G.I.JOE ACTION STARS
43162 CANDY; M + M'S, PLAIN
43163 BABYFOOD; ENFAMIL MILK-BASED FORMULAS
43164 BABYFOOD; SIMILAC, MILK-BASED FORMULA
43165 BABYFOOD; SIMILAC WITH WHEY, MILK-BASED FORMULA
43166 BABYFOOD; SIMILAC ADVANCE MILK-BASED FORMULA
43167 BABYFOOD; SIMILAC WITH IRON, MILK-BASED FORMULA
43168 BABYFOOD; SIMILAC WITH WHEY AND IRON, MILK-BASED FORMULA
43169 BABYFOOD; SMA WITH IRON, MILK-BASED FORMULA
43170 BABYFOOD; ENFAMIL WITH IRON, MILK-BASED FORMULAS
43171 BABYFOOD; MULUMIL, MILK-BASED FORMULA
43172 BABYFOOD; NURSOY, SOY-BASED FORMULA
43173 BABYFOOD; PROSABEE, SOY-BASED FORMULA
43174 BABYFOOD; ISOMIL, SOY-BASED FORMULA
43175 BABYFOOD; ISOMIL SF, SOY-BASED FORMULAS
43176 BABYFOOD; SOYALAC, SOY-BASED FORMULA
43177 BABYFOOD; I-SOYALAC, SOY-BASED FORMULAS
43178 BABYFOOD; INFANT FORMULA, MEAT-BASED, GERBER
43179 BABYFOOD; LOFENALAC, THERAPEUTIC FORMULA
43180 BABYFOOD; NUTRAMIGEN, THERAPEUTIC FORMULA
43181 BABYFOOD; PREGESTIMIL, THERAPEUTIC FORMULA
43182 BABYFOOD; SIMILAC PM 60/40, THERAPEUTIC FORMULA
43183 BABYFOOD; PORTAGEN, THERAPEUTIC FORMULA
43184 BABYFOOD; RSF THERAPEUTIC FORMULA
43186 BEVERAGE; MILK, MALTED, DRY MIX, FORTIFIED, FLAVORS OTHER THAN CHOCOLATE
43187 BEVERAGE; MILK, MALTED, DRY MIX, FORTIFIED, CHOCOLATE
43189 PUDDING, CORNSTARCH,DIET
43191 PUDDING; COCONUT
43192 PUDDING; FLAVORS OTHER THAN CHOCOLATE, CANNED
43193 PUDDING; CHOCOLATE, CANNED
43194 SYRUP; REDUCED CALORIE
43195 FRUIT LEATHER
43196 NUTS; PEANUTS, YOGURT COVERED
43197 FOOD STICKS; FORTIFIED
43200 YOGURT; FROZEN
43201 BEE POLLEN

43202 PEANUT BUTTER MORSELS
43204 BEVERAGE; LEMONADE, LOW CALORIE (INCLUDE UNSWEETENED)
43205 BEVERAGE; INSTANT BREAKFAST POWDER, NOT RECONSTITUTED
43206 NUTRIENT SUPPLEMENT; LOW CALORIE, POWDER
43207 MEAL REPLACEMENT; PROTEIN TYPE, MILK BASE, POWDERED
43208 CAMBRIDGE DIET MEAL, DRY, NOT RECONSTITUTED
43209 BEVERAGE; ALOE VERA JUICE
43210 PUDDING POPS; CHOCOLATE
43211 PUDDING POPS; FLAVORS OTHER THAN CHOCOLATE
43212 BACON BITS; MEATLESS
43213 MARGARINE-LIKE SPREAD; STICK OR TUB
43214 BUTTER REPLACEMENT; FAT FREE, POWDER
43215 SALAD DRESSING; BUTTERMILK, LITE TYPE
43216 SWEETNER; FRUCTOSE
43217 TOMATO SAUCE; LOW SODIUM
43218 CEREALS READY-TO-EAT; ALPEN
43219 CEREALS READY-TO-EAT; APPLE RAISIN CRISP
43220 CEREALS READY-TO-EAT; BANANA FROSTED FLAKES
43221 CEREALS READY-TO-EAT; BOOBERRY
43222 CEREALS READY-TO-EAT; BODY BUDDIES WITH BROWN SUGAR AND HONEY
43223 CEREALS READY-TO-EAT; BODY BUDDIES, NATURAL FRUIT FLAVOR
43224 CEREALS READY-TO-EAT; ALMOND DELIGHT
43225 CEREALS READY-TO-EAT; BRANOLA
43226 CEREALS READY-TO-EAT; BUC WHEATS
43227 CEREALS READY-TO-EAT; C-3PO'S
43228 CEREALS READY-TO-EAT; CAP'N CRUNCH'S CHOCO CRUNCH
43229 CEREALS READY-TO-EAT; COCOA PUFFS
43230 CEREALS READY-TO-EAT; CORN TOTAL
43231 CEREALS READY-TO-EAT; COUNT CHOCULA
43232 CEREALS READY-TO-EAT; CRACKLIN OAT BRAN
43233 CEREALS READY-TO-EAT; CRISPIX
43234 CEREALS READY-TO-EAT; CRISPY OATMEAL AND RAISIN CHEX
43235 CEREALS READY-TO-EAT; DONKEY KONG
43236 CEREALS READY-TO-EAT; DONKEY KONG JR.
43237 CEREALS READY-TO-EAT; HALFSIES
43238 CEREALS READY-TO-EAT; CINNAMON TOAST CRUNCH
43239 CEREALS READY-TO-EAT; DONUTZ CEREAL
43240 CEREALS READY-TO-EAT; DONUTZ CEREAL, CHOCOLATE FLAVORED
43241 CEREALS READY-TO-EAT; FAMILIA
43242 CEREALS READY-TO-EAT; FRANKENBERRY
43243 CEREALS READY-TO-EAT; FROSTY O'S
43244 CEREALS READY-TO-EAT; FRUIT'N FIBER WITH APPLES AND CINNAMON
43245 CEREALS READY-TO-EAT; FRUIT'N FIBER WITH DATES, RAISINS AND WALNUTS
43246 CEREALS READY-TO-EAT; FRUITFUL BRAN
43247 CEREALS READY-TO-EAT; GOLDEN HARVEST PROTEINOLA
43249 CEREALS READY-TO-EAT; MARSHMALLOW KRISPIES
43250 CEREALS READY-TO-EAT; NUTRI-GRAIN, WHEAT AND RAISINS
43251 CEREALS READY-TO-EAT; NATURE VALLEY GRANOLA, FRUIT AND NUTS
43252 CEREALS READY-TO-EAT; NATURE VALLEY GRANOLA, CINNAMON AND RAISINS
43253 CEREALS READY-TO-EAT; PAC-MAN
43254 CEREALS READY-TO-EAT; RAISIN GRAPE-NUTS
43255 CEREALS READY-TO-EAT; RAISIN LIFE
43256 CEREALS READY-TO-EAT; SMURF-BERRY CRUNCH
43257 CEREALS READY-TO-EAT; STRAWBERRY KRISPIES
43258 CEREALS READY-TO-EAT; TOASTED WHEAT 'N RAISINS
43259 CEREALS READY-TO-EAT; UNCLE SAM'S HIGH FIBER CEREAL
43260 INSTANT BREAKFAST POWDER, SUGAR-FREE, NOT RECONSTITUTED
43261 YOGURT; FRUIT VARIETY, NONFAT
43262 BEVERAGE; DIET, LIQUID, CANNED
43263 BEVERAGE; DIET, POWDER, RECONSTITUTED
43264 BEVERAGE; HIGH CALORIE, RECONSTITUTED OR CANNED
43265 NUTRIENT SUPPLEMENT; MILK BASE, HIGH PROTEIN, LIQUID
43266 PROTEIN SUPPLEMENT; MILK BASE, POWDERED
43267 PROTEIN SUPPLEMENT; MILK BASE, LOW LACTOSE, POWDERED
43268 WHIPPED CREAM SUBSTITUTE; DIETETIC, MADE FROM POWDERED MIX
43269 ICE CREAM SUNDAE, PREPACKAGED TYPE

43270 FUDGESICLE
43271 MILK DESSERT; FROZEN, DIETARY
43272 CHEESE; LOW SODIUM (INCLUDE CHEDDAR AND COLBY)
43273 CHEESE; COTTAGE, WITH VEGETABLES
43274 CHEESE; CREAM, LOW FAT
43275 CHEESE; AMERICAN, PROCESSED, LOW FAT
43276 CHEESE SPREAD; CREAM CHEESE BASE
43277 CHEESE; CREAM, IMITATION
43278 CHEESE; AMERICAN CHEDDAR TYPE, IMITATION
43279 CHEESE SPREAD; IMITATION
43280 CHICKEN; NECK OR RIBS, RSTD, SKIN NOT EATEN
43281 CHICKEN NUGGETS
43282 QUAIL; COOKED
43283 PHEASANT; COOKED
43284 BEEF; LIVER (CALVES), BRAISED
43285 EGGS; SCRAMBLED, FROZEN MIXTURE
43286 ICE CREAM; IMITATION, NOT CHOCOLATE
43287 SQUAB; COOKED (INCLUDES DOVE)
43288 CHICKEN; NECK OR RIBS, WITH SKIN, ROASTED
43289 NUTRIENT SUPPLEMENT; PROTEIN, MILK BASE, SODIUM CONTROLLED
43290 NUTRIENT SUPPLEMENT; HIGH CALORIE BEV, MILK BASE, POWDER
43291 NUTRIENT SUPPLEMENT; MILK BASE, POWDER
43292 BEVERAGE; TIGER'S MILK
43293 VEAL; CUTLET OR STEAK, LEAN ONLY, FRIED
43294 VEAL; LEAN ONLY, ROASTED
43295 VEAL; CHOP, SEPARABLE LEAN, FRIED
43296 PEARS; JAPANESE, RAW
43297 PORK; ORIENTAL STYLE, DEHYDRATED
43298 CEREALS READY-TO-EAT; JUST RIGHT
43299 CHEESE; CURD CHEESE
43300 DIET MEAL; FORMULATED
43301 SEEDS; FLAX (LINSEED)
43302 PLUMS; ROCK SALT, DRIED
43303 WI APPLE
43305 NOODLES; WHOLE WHEAT, COOKED
43306 CEREALS; NESTUM, DRY
43307 CEREALS READY-TO-EAT; JUST RIGHT WITH RAISINS,DATES
43308 SPAGHETTI; HIGH PROTEIN, COOKED
43310 MILLET; COOKED
43311 POTATOES, CANNED, DRAINED SOLIDS, LOW SODIUM
43312 VEGETABLES; MIXED (CORN,LIMA BEANS,PEAS,GR BEANS,CARROTS)
43313 CEREALS; SEVEN GRAIN, COOKED
43314 CRACKERS; SALTINES, LOW SODIUM
43315 FISH SAUCE; BAGOONG
43316 CEREALS READY-TO-EAT; RAINBOW BRITE
43317 CEREALS READY-TO-EAT; KABOOM
43318 CEREALS READY-TO-EAT; STRAWBERRY SHORTCAKE
43319 BREADSTICKS
43320 BREAD; FRENCH OR VIENNA, ENRICHED, LOWER CALCIUM
43321 BREAD; FRENCH OR VIENNA, ENRICHED, TOASTED, LOWER CALCIUM
43322 BREAD; ITALIAN, ENRICHED, LOWER CALCIUM
43323 BREAD; WHITE, ENRICHED, LOWER CALCIUM
43324 BREAD; WHITE, ENRICHED, TOASTED, LOWER CALCIUM
43325 PORK PRODUCTS; CURED, HAM, LOW NA, COOKED, NS AS TO FAT
43326 PORK PRODUCTS; CURED, HAM, LOW NA, LEAN AND FAT, COOKED
43327 PORK PRODUCTS; CURED, HAM, LOW NA, LEAN ONLY, COOKED
43328 SALAD DRESSING; BACON AND TOMATO, LOW CALORIE
43329 SALAD DRESSING; MAYONNAISE TYPE, LOW CALORIE
43330 POTATO CHIPS; WHITE, RESTRUCTURED, LOW FAT AND SODIUM
43331 SALAD DRESSING; BACON AND TOMATO
43332 CEREALS READY-TO-EAT; S'MORES CRUNCH
43333 CEREALS READY-TO-EAT; SUNFLAKES
43334 CEREALS READY-TO-EAT; O.J'S
43335 CEREALS READY-TO-EAT; E.T.
43336 CEREALS READY-TO-EAT; CABBAGE PATCH
43337 CEREALS READY-TO-EAT; GREMLINS

43338 CEREALS READY-TO-EAT; MR.T
43339 CEREALS READY-TO-EAT; RAISIN SQUARES
43340 CHEESE; PARMESAN, LOW SODIUM
43341 COCOA; WHEY, LOW CALORIE SWEETNER, MIX, NOT RECONSTITUTED
43342 CRACKERS; TOAST THINS (RYE, WHITE, WHEAT) LOW SODIUM
43343 BEVERAGE; COFFEE AND COCOA (MOCHA), DRY PWDR WITH WHITENER
43344 JAMS; PRESERVES, MARMALADE, REDUCED SUGAR
43345 BEVERAGE; FRUIT FLAVORED DRINK, POWDER MIX WITH HI
43346 FRUIT JUICE BAR; ORANGE FLAVOR, FROZEN
43347 FRUIT JUICE BAR; FLAVOR OTHER THAN ORANGE, FROZEN
43348 BREAD; WHEAT, REDUCED CALORIE, HIGH FIBER
43350 SAUERKRAUT; CANNED, LOW SODIUM
43352 CHEESE; COTTAGE, LOW FAT, NO SODIUM ADDED
43353 SOUP; TOMATO, LOW SODIUM, PREPARED WITH WATER
43354 CHEESE; COTTAGE, LOW SODIUM
43355 MAYONNAISE; LOW SODIUM, LOW CALORIE OR DIET
43356 SOUP; VEGETABLE CHICKEN, LOW SODIUM
43357 SOUP; PEA, LOW SODIUM, PREPARED WITH WATER
43359 BEVERAGE; FRUIT-FLAVORED, LOW CALORIE, DRY
43360 CRACKERS; WHOLE WHEAT, LOW SODIUM
43361 CEREALS READY-TO-EAT; FIBER ONE
43362 MARGARINE; STICK OR TUB, LOW SODIUM
43363 CRACKERS; BUTTER, LOW SODIUM
43364 TORTILLA CHIPS; UNSALTED
43365 TOMATO AND VEGETABLE JUICE; LOW SODIUM
43366 TURKEY; WING, SMOKED, COOKED, WITH SKIN
43367 TURKEY; DRUMSTICK, SMOKED, COOKED, WITH SKIN
43368 CHEESE; AMERICAN, PROCESSED, LOW FAT, LOW SODIUM
43369 BEVERAGE; CHOCOLATE FLAVORED DRINK, WHEY AND MILK BASED
43371 BABYFOOD; CEREAL, TOASTED OAT RINGS
43372 BEVERAGE; APPLE CIDER FLAVORED DRINK, POWDER MIX
43373 BABYFOOD; DINNER, CHICKEN & NOODLE W/VEGETABLES, TODDLER
43374 SAUCE; WORCESTERSHIRE
43376 SPAGHETTI; WHOLE WHEAT, COOKED
43377 CEREALS READY-TO-EAT; BRAN MUFFIN CRISP
43378 PORK PRODUCTS; CURED, BACON, REDUCED SODIUM
43379 CHEESE; PROCESSED, SWISS, LOW FAT
43380 CRACKERS; FIBER
43381 CEREALS READY-TO-EAT; FRUIT'N FIBER WITH TROPICAL FRUIT
43383 APPLES; DRIED, UNCOOKED, LOW SODIUM
43384 BEEF; BOLOGNA, REDUCED SODIUM
43385 CRACKERS; MIXED GRAIN, SALT FREE
43386 CEREALS READY-TO-EAT; CRACKER JACK
43387 TURNIP GREENS; CANNED, LOW SODIUM
43388 APPLE CIDER FLAVORED DRINK, FROM POWDERED MIX, LO CAL
43389 CEREALS READY-TO-EAT; FRUIT'N FIBER MOUNTAIN TRAIL
43390 TURKEY; LIGHT OR DARK MEAT,SMOKED,COOKED,W/SKIN
43391 TURKEY; LIGHT OR DARK MEAT,SMOKED,COOKED,W/O SKIN
43392 PALM HEARTS, RAW
43393 CEREALS READY-TO-EAT; SHREDDED WHEAT 'N BRAN
43394 SAUCE, SPAGHETTI, LOW SODIUM
43395 CEREALS READY-TO-EAT; GHOSTBUSTERS
43396 CHEESE; COTTAGE, LOW FAT, W/VEGETABLES
43397 BREAD; RYE, REDUCED CALORIE, HIGH FIBER 514-0106
43398 CHEESE; PROCESSED, CHEDDAR OR AMERICAN TYPE, LOW SODIUM
43399 MEAL REPLACEMENT,LIQUID,SOY-BASED 414-4010
43400 SOUP; BEEF AND MUSHROOM, LOW SODIUM, CHUNK STYLE
43401 COFFEE,DRY,POWDER,WITH WHITENER+LOW CAL SWEETNER
43402 SOUP; CHICKEN NOODLE, LOW SODIUM, PREPARED WITH WATER
43403 TOMATO CATSUP,LOW SODIUM 744-0111
43404 CRANBERRY-APPLE JUICE DRINK,LOW-CAL,WITH VIT C ADDED
43405 CHEESE; SWISS, LOW SODIUM 141-0902
43406 YEAST EXTRACT SPREAD 752-3650
43408 BABYFOOD; JUICE, PEAR 672-1200
43409 CEREALS READY-TO-EAT; NUTRI GRAIN, ALMOND RAISIN 573-1610
43410 CHICKEN; MEATLESS, BREADED, FRIED 418-1061

43411 MULTIGRAIN BREAD, REDUCED CALORIE, HIGH FIBER 516-0201
43412 RICE MIX; FLAVORED, WITH CHEESE 581-6333
43413 RICE MIX; WHITE AND WILD, DRY 581-6335
43414 RICE MIX; BROWN AND WILD, DRY 581-6336
43416 CEREALS READY-TO-EAT; RAISIN NUT BRAN 573-3210
43417 BABYFOOD; MEAT, BEEF WITH VEGETABLES, TODDLER 276-1073
43418 CEREALS READY-TO-EAT; CIRCUS FUN 571-2580
43419 CEREALS READY-TO-EAT; HORIZON 572-4350
43420 BREAD; VERY LOW SODIUM 511-3051
43421 SOFT DRINK, FRUIT FLAVORED, 10% FRUIT JUICE, VITAMIN ENRICHED
43422 CAKE; BOSTON CREAM PIE 531-0300
43423 CEREALS READY-TO-EAT; ROCKY ROAD 573-4050
43424 CEREALS READY-TO-EAT; DAIRY CRISP 572-0110
43425 CEREALS READY-TO-EAT; DAIRY CRISP WITH STRAWBERRIES 572-0120
43426 APPLE-GRAPE-RASPBERRY JUICE 641-0455
43427 COCOA FLAVORED BEVERAGE POWDER W LO CAL SWEETNER,NOT RECONSTITUTED
43428 SAUCE, BARB-B-QUE, LOW SODIUM, COMMERCIALLY CANNED 744-0605
43429 CEREALS READY-TO-EAT; OH'S CRUNCHY NUT 573-1670
43430 CRACKERS; WATER BISCUITS 543-3600
43432 BABYFOOD; DINNER, MACARONI, BEEF AND TOMATO SAUCE, TODDLER
43433 ALCOHOLIC BEVERAGE; DAIQUIRI, DAIQUIRI 933-0150
43434 CHEESE; SWISS, PROCESSED, LOW SODIUM 144-1041
43435 CHEESE; MEUNSTER, LOW SODIUM 144-0721
43436 CHEESE; CHEDDAR OR COLBY, LOW FAT, LOW SODIUM 141-1002
43437 SOUP; BEEF STROGANOF, CANNED, CHUNKY STYLE, READY-TO-SERVE 233-17
43438 CHEESE; PROCESSED, MUENSTER, LOW FAT, LOW SODIUM
43439 SOUP; INSTANT, CREAM OF (COMPOSITE), LOW SODIUM, PREPARED 584-070
43440 RICE CAKES, PUFFED
43441 ROLLS, PUMPERNICKEL
43442 ROLLS, WHITE, SOFT, REDUCED CALORIE, HIGH FIBER
43443 BEVERAGE; CITRUS JUICE DRINK, LOW CALORIE
43444 GELATIN, DIETETIC, POWDER, DRY
43447 CORN CHIPS, UNSALTED
43448 CEREALS READY-TO-EAT; DOUBLE CHEX
43449 BAKED BEANS, CANNED, LOW SODIUM
43450 FRUIT JUICE BAR WITH CREAM, FROZEN
43451 WHEAT FLOUR; ALL PURPOSE, ENRICHED, WEIGHTED FOR CALCIUM
43452 BREAD; WHITE, ENRICHED
43453 BREAD; WHITE, ENRICHED, TOASTED
43454 COOKIES; MACAROONS
43455 COOKIES; FORTUNE
43456 CHEESE; CHEDDAR OR COLBY, LOW FAT
43457 COCOA WITH NFDM, LOW CALORIE, HIGH CALCIUM, DRY MIX
43458 PICKLES, SWEET, REDUCED SALT
43459 CROUTONS (INCLUDES PLAIN AND SEASONED)
43460 ALCOHOL, GRAIN
43461 STRAWBERRY JUICE
43462 MEAL REPLACEMENT, POSITRIM DRINK MIX, DRY POWDER
43463 CEREALS READY TO EAT; ICE CREAM CONES CEREAL
43464 GRAVY, MEAT OR POULTY, PREPARED, LOW SODIUM
43465 FRUIT JUICE BAR, 90% FRUIT JUICE, FROZEN, LOW CALORIE
43466 CEREALS READY-TO-EAT; NUTRI-GRAIN NUGGETS, WHOLE GRAIN
43467 BEER, COOKED
43468 LIQUEUR, SWEET, COOKED
43469 ALCOHOLIC BEVERAGE; DISTILLED, AFTER COOKING
43470 ALCOHOLIC BEVERAGE; WINE, DESSERT, SWEET, AFTER COOKING (>2 HRS, 46 MIN)
43471 ALCOHOLIC BEVERAGE; WINE, TABLE, AFTER COOKING (>2 HRS, 46 MIN)
43474 CEREALS READY-TO-EAT; APPLE CINNAMON SQUARES
43475 CANDY; BAR NONE
43476 TOFU YOGURT
43477 CEREALS READY-TO-EAT; FRUIT WHEATS
43478 COUSCOUS, PLAIN, COOKED
43479 WINE, RICE (SAKE)
43480 CEREALS READY-TO-EAT; HONEY GRAHAM CHEX
43481 CEREALS READY-TO-EAT; MUESLIX BRAN CEREAL
43482 CEREALS READY-TO-EAT; MUESLIX 5-GRAIN CRL
43483 MILLET, PUFFED
43484 BREAD, WHOLE WHEAT, VERY LOW SODIUM
43492 SOUP; VEGETABLE, LOW SODIUM, DRY, PREPARED WITH WATER
43493 SOUP; POTATO, INSTANT, DRY MIX
43494 TOMATILLO; RAW
43495 CEREALS READY-TO-EAT; OAT BRAN FLAKES, HEALTH VALLEY
43496 GINSENG, DRIED
43497 JELLYFISH, DRIED, SALTED
43498 NOODLES; SPINACH, COOKED
43499 MASA HARINA; DRY
43500 PUDDING ROLL-UPS; CHOCOLATE
43501 PUDDING ROLL-UPS; NOT CHOCOLATE
43502 SWEET MAGIC (SUGAR SUBSTITUTE)
43503 BABYFOOD; CHICKEN NOODLE DINER, DRY, INSTANT
43504 BABYFOOD; PEAS AND CARROTS, DRY, INSTANT
43505 CRISPBREAD; RYE, LOW SODIUM
43506 ICE CREAM BAR; CHOC OR CARM COVERED, W/NUTS
43507 FRANKFURTER, LOW SALT
43508 CEREALS READY-TO-EAT; FREAKIES
43509 POPCORN CAKES
43510 CEREALS READY-TO-EAT; CRISPY BROWN RICE CEREAL
43511 BABYFOOD; DESSERT, PEACH COBBLER, DRY, INSTANT
43512 BABYFOOD; FRUIT, PEARS, DRY, INSTANT
43513 BABYFOOD; TUNA NOODLE DINER, DRY, INSTANT
43514 POPSICLE WITH LOW-CALORIE SWEETENER
43516 CEREALS READY-TO-EAT; CRUNCHY BRAN
43517 WHEAT SPROUTS, RAW
43518 TAPIOCA PUDDING, CND
43519 INJERA (ETHIOPIAN BREAD)
43520 BABYFOOD; DINNER, VEGETABLE & NOODLES CHICKEN
43522 MILK DESS BAR, FROZEN DIET
43523 BABYFOOD; DESSERT, MIXED FRUIT YOGUURT
43524 CEREALS READY-TO-EAT; MORNING FUNNIES
43525 CEREALS READY-TO-EAT; NUT & HONEY CRUNCH BISCUITS
43526 CEREALS READY-TO-EAT; COMMONSENSE OAT BRAN
43527 CEREALS READY-TO-EAT; COMMONSENSE OAT BRAN W/RAISINS
43528 ENSURE PLUS BIG NUTR.
43529 BABYFOOD; CEREAL, RICE CEREAL W/APPLES, DRY
43530 NUTRI GRAIN, WHOLE GRAIN SHREDDED WHEAT
43531 CEREALS READY-TO-EAT; APPLE CINNAMON CHEERIOS
43532 CEREALS READY-TO-EAT; NINTENDO
43533 CEREALS READY-TO-EAT; OAT BRAN OPTIONS
43534 BABY FOOD; BANANA-APPLE DESSERT
43535 BABY FOOD; APPLE-CHERRY JUICE
43536 BABYFOOD; DESSERT, PEACH YOGURT
43537 BABYFOOD; DESSERT, BLUEBERRY YOGURT, STRAINED
43538 CEREALS READY-TO-EAT; APPLE CINNAMON OHS
43539 BABY FOOD; BANANA YOG, STRAINED
43540 CEREALS READY-TO-EAT; QUACKER OAT BRAN
43541 ICE CREAM; CHOCOLATE, RICH, APPX 16% FAT
43542 COFFEE CAKE FROM MIX
43543 MILK, IMITATION NON-SOY
43544 BABYFOOD; CEREAL, RICE CEREAL W/PEARS, APPLE JUICE, DRY
43545 BABYFOOD; DESSERT, PLUMS W/RICE, W/O TAPIOCA, STRAINED
43546 BABYFOOD; DESSERT, BANANAS, W/O TAPIOCA, STRAINED
43547 CEREALS READY-TO-EAT; RAISIN BRAN, TOTAL
43548 PUDDING, CHOCOLATE, REDUCED FAT
43549 PUDDING, NOT CHOCOLATE, REDUCED FAT
43550 BABYFOOD; BANANA APPLE DESSERT, STRAINED
43558 BUTTER-VEGETABLE OIL BLEND
43559 CEREALS READY-TO-EAT; FRUIT & FIBER W/PEACH ALMOND RAISIN
43560 CEREALS READY-TO-EAT; OAT FLAKES, POST
43561 CEREALS READY-TO-EAT; FRUITY YUM MUMMY
43562 CEREALS READY-TO-EAT; ALL-BRAN W/EXTRA FIBER
43564 CEREALS READY-TO-EAT; TEENAGE MUTANT NINJA TURTLES
43565 CEREALS READY-TO-EAT; RAISIN BRAN, NUTRI SYSTEM
43566 SALTY SNACKS, CORN
43567 NUTRAMIGEN, POWDERED
43568 OAT BRAN CEREAL, MULTIGRAIN, INSTANT
43569 PUFFED CORN CAKE
43570 CEREALS READY-TO-EAT; HONEY BUNCHES OF OATS
43571 CRUMPET
43572 POPCORN, MICROWAVE, LOW FAT, LOW SODIUM
43573 BABYFOOD; FRUIT, PEACHES, DRY, INSTANT
43574 CEREALS READY-TO-EAT; S.W. GRAHAM
43575 CEREALS READY-TO-EAT; BATMAN CEREAL
43576 CEREALS READY-TO-EAT; OATBAKE, HONEY BRAN
43577 CEREALS READY-TO-EAT; OATBAKE, RAISIN NUT
43579 MILK DESSERT, FROZEN, DIETARY, REDUCED FAT
43580 CRACKERS, SANDWICH TYPE, CHEESE-FILLED
43581 CRACKERS, SANDWICH TYPE, PEANUT-BUTTER FILLED
43582 BABYFOOD; FORMULA, GOOD NATURE (CARNATION), DRY
43583 CRACKERS, CHEESE, LOW SODIUM
43584 AMARANTH FLAKES
43585 BABYFOOD; FRUIT, SUPREME DESSERT
43586 CEREALS READY-TO-EAT; HEARTWISE, PLAIN
43587 CEREALS READY-TO-EAT; HEARTWISE, WITH FRUIT NUGGETS
43588 CEREALS READY-TO-EAT; MUESLIX GOLDEN CRUNCH
43589 CHEESE, SWISS, LOWFAT
43590 CEREALS READY-TO-EAT; BREAKFAST WITH BARBIE
43591 CEREALS READY-TO-EAT; BRAN NEWS (CINNAMON)
43592 WAFFLE, OAT BRAN
43593 PEANUT BUTTER CAKE
43594 CEREALS READY-TO-EAT; CROONCHY STARS
43595 BREAKFAST BAR, CORN FLAKE CRUST WITH FRUIT FILLING
43596 CEREALS READY-TO-EAT; CRISP CRUNCH
43597 CHEESE, MOZZARELLA, LOW SODIUM
43598 MAYONNAISE-TYPE SALAD DRESSING, CHOLESTEROL FREE
43599 MAYONNAISE-TYPE SALAD DRESSING, LOW-CALORIE OR DIET
43600 PEDIASURE
44000 DILL; FRESH
44001 HONEYWORT, RAW 4911-701-32-10
44002 CHICKPEAS, RAW, IMMATURE 4947-206-35-10
44003 TREE FERN, RAW 4958-508-35-10
44004 SALAD DRESSING, LOW SODIUM, LOW CALORIE, REDCUED FAT
44005 OIL; CORN, PEANUT, AND OLIVE 4137-101-73-99
44006 HONEY, COMB 4723-102-81-99
44007 MARMALADE, HOME PRESERVED 4732-301-81-11
44008 CORN, BABY, W/COB 5114-605-35-20
44009 JAMS, PRESERVES AND FRUIT TOPPINGS, HOME PREPARED
44010 OAT BRAN, DRY, UNENRICHED 4231-106-62-99
44011 CEREALS; OATS, INSTANT, WITH FRUIT AND SPICE 4231-103-52
44012 BEET JUICE 5312-104-35-20
44013 COLA SYRUP 42-201-08-40
44014 SOY MILK, DRY 4022-201-08-40
44015 GRAPE JUICE, SINGLE STRENGTH, HOME FROZEN
44016 HONEY, WHIPPED 4723-103-81-99
44017 FRUIT BUTTER, MADE WITH SUGAR OR HONEY, HOME PROCESSED
44018 FRUCTOSE, LIQUID 4714-202-93-99
44019 BABYFOOD; DINNER, VEGETABLE AND BEEF, INSTANT, DRY
44020 BABYFOOD; VEGETABLES, CARROTS, INSTANT, DRY
44021 BABYFOOD; VEGETABLES, SQUASH, INSTANT, DRY
44022 BABYFOOD; VEGETABLES, SWEET POTATOES, INSTANT, DRY
44023 BABYFOOD; VEGETABLES, CREAMED PEAS, INSTANT, DRY
44024 BABYFOOD; VEGETABLES, CREAMED CORN, INSTANT, DRY
44025 BABYFOOD; VEGETABLES, MIXED VEGETABLES, INSTANT, DRY
44026 BABYFOOD; FRUIT, APPLES, INSTANT, DRY 5423-101-
44027 BABYFOOD; FRUIT, PEACHES, INSTANT, DRY 5423-105-
44028 BABYFOOD; DINNER, VEGETABLES AND CHICKEN, INSTANT, DRY
44029 BABYFOOD; DINNER, VEGETABLES AND TURKEY, INSTANT, DRY
44030 BABYFOOD; DINNER, VEGETABLES AND HAM, INSTANT, DRY
44031 BABYFOOD; FRUIT, BANANAS, INSTANT, DRY 5423-108-
44032 BABYFOOD; FRUIT, MIXED FRUIT, INSTANT, DRY 5423-111-
44034 PEANUTS, ROASTED, LOW CALORIE, SALTED 5711-205-23-99
44035 CEREALS; SEVEN-GRAIN, DRY
44036 CEREALS READY-TO-EAT; ALL BRAN WITH EXTRA FIBER
44037 CEREALS READY-TO-EAT; SUPER GOLDEN CRISP 4232-218-52-99
44038 CHEESE; CAMEMBERT, LOW SODIUM 4058-102-03-99
44039 CHEESE; LIMBURGER, LOW SODIUM 4058-202-03-99
44040 CHEESE; BRICK, LOW SODIUM 4058-302-03-99
44041 CHEESE; BLUE OR ROQUEFORT, LOW SODIUM 4058-402-03-99
44042 CHEESE; PROVOLONE, LOW SODIUM 4058-502-03-99
44043 CHEESE; MOZARELLA, LOW SODIUM 4058-602-03-99
44044 CHEESE; IMITATION, SWISS 4059-102-03-99
44045 CHEESE; IMITATION, BRICK 4059-103-03-99
44046 CHEESE; IMITATION, PROVOLONE 4059-104-03-99
44047 CHEESE; IMITATION, MOZZARELLA 4059-105-03-99
44048 CHEESE; IMITATION, CHEESE FOOD 4059-201-03-99
44049 CEREALS READY-TO-EAT; GRANOLA, COCONUT AND HONEY
44050 CEREALS READY-TO-EAT; HONEY BUC WHEAT CRISP 4232-537
44051 RICE MIX, W OR W/O VERMICELLI AND OTHER PASTA, DRY V[illegible]
44052 RICE, WILD, MIXES 4241-204-52-99
44053 TOMATO, DRIED 5413-115-34-41
44054 VEGETABLES; MIXED, DRIED 5413-108-35-41
44055 CELERY FLAKES, DRIED 5413-102-35-41
44056 SOUP; CHICKEN NOODLE, LOW SODIUM, CONDENSED
44057 INSTANT BEVERAGE MIX WITH MILK BASE AND SUGAR, DRY
44058 CEREALS READY-TO-EAT; PRO GRAIN
44059 CORN; SWEET, DRIED 5413-104-35-41
44060 DESSERT TOPPING, NON-DAIRY,DRY,LOW CALORIE 4035-202
44061 PUDDING MIX, CHOCOLATE FLAVOR, LOW CALORIE, INSTANT ,DRY
44062 BABYFOOD; MIXED FRUIT AND YOGURT 5841-105-08-60
44063 CHILI CON CARNE, LOW SODIUM, CANNED
44064 BREAD; WHITE, REDUCED CALORIE, HIGH FIBER
44065 DUMPLINGS WITH CHICKEN, LOW SODIUM, CANNED
44066 DUMPLINGS WITH CHICKEN, CANNED
44067 PRETZELS, UNSALTED, READY-TO-EAT
44068 PRETZELS, WHOLE WHEAT, READY-TO-EAT
44071 BABYFOOD; WHITE POTATOES WITH MILK, CANNED 4821-201
44072 BABYFOOD; APPLES AND STRAWBERRIES, CANNED 5122-105-
44073 BABYFOOD; TROPICAL FRUIT MEDLEY, CANNED 5122-604-
44074 BABYFOOD; GRAPE JUICE, NO SUGAR, CANNED 5332-203-
44075 BABYFOOD; MIXED FRUIT JUICE, IRON FORTIFIED, NO SUGAR
44076 BABYFOOD; DESSERT, BANANA CUSTARD PUDDING, STRAINED
44077 PAPAYA JUICE CONCENTRATE 5332-501-43-20
44078 CORNMEAL, WHOLE GROUND, LIME TREATED 4242-113-52-99
44079 CRAB, RAW 4522-106-17-10
44080 VEGETABLE CHOW MEIN 5815-101-38-10
44081 PASTA, WHOLE WHEAT, WHOLE GRAIN, DRY 4243-107-52-99
44082 PASTA, HIGH PROTEIN, ENRICHED, DRY 4243-106-52-99
44083 WHITE RICE FLOUR 4212-103-61-99
44084 PASTA FLOUR, ENRICHED 4211-402-51-99
44085 POTATO PANCAKE MIX, DRY 4841-103-31-41
44086 POTATOES, FRENCH FRIES, FROZEN, REDUCED FAT
44087 BARLEY FLOUR 4212-108-51-99
44088 TRITICALE, FLOUR OR GRITS 4212-109-51-99
44089 OAT FLOUR 4212-107-51-99
44094 SNAIL MEAT, CANNED 4522-415-17-20
44095 FRANKFURTERS, MEAT, LOWER FAT 4461-102-15-99
44096 SAUSAGE; BOLOGNA, BEEF AND PORK, LOWER FAT
44097 MANGOES, DRY 5423-111-43-42
44098 BERRIES, DRY 5423-114-43-42
44099 CHERRIES, SWEET, DRY 5423-115-43-42
44100 FRUIT AND JUICE BAR, ARTIFICIALLY SWEETENED
44101 CEREALS READY-TO-EAT; RICE KRISPIES, LOW SODIUM
44102 CEREALS READY-TO-EAT; MULTIGRAIN MIXTURE
44103 CEREALS; HOMINY GRITS, YELLOW, QUICK COOKING, ENRICHED
44104 CEREALS; HOMINY GRITS, YELLOW, QUICK COOKING, UNENRICHED

44105 PASTA, CORN, WHOLE GRAIN 4243-108-52-99
44106 SAUSAGE, LEAN, SMOKED, COOKED
44107 PORK PRODUCTS; CURED, BACON, COOKED, DRIED (BACON BITS)
44108 JELLY, HOME PRESERVED 4731-101-81-11
44109 JAMS, PRESERVES, FRUIT TOPPINGS, REDUCED SUGAR, HOME PRESERVED
44110 JELLY, REDUCED SUGAR OR NO SUGAR, HOME PRESERVED 4731-102-81-11
44111 SOUP; CREAM OF MUSHROOM, LOW SODIUM, READY-TO-SERVE, CANNED 5615-
44112 SOUP; MUSHROOM AND BARLEY, LOW SODIUM, READY-TO-SERVE, CANNED 5625
44113 SOUP; CREAM OF MUSHROOM, LOW SODIUM, CONDENSED, CANNED 5625-201-0
44114 SOUP; VEGETABLE, LOW SODIUM, READY-TO-SERVE, FROZEN 5646-201-38-3
44115 SOUP; ONION, LOW SODIUM, READY-TO-SERVE, CANNED 5616-203-38-20
44116 SOUP; BOUILLON CUBES AND GRANULES, LOW SODIUM, DRY 5653-501-28-40
44117 SOUP; CORN, LOW SODIUM, READY-TO-SERVE, CANNED 5616-202-38-20
44118 SOUP; VEGETABLE BEEF, LOW SODIUM, CONDENSED, CANNED 5626-201-38-2
44119 NUTS; MACADAMIA NUTS, DRY ROASTED, SALTED
44120 NUTS; COCONUT, FROZEN
44121 NUTS; CHESTNUTS, EUROPEAN, PEELED, CANNED, IN WATER
44122 PIE FILLING, APPLE, WITH SUGAR, COMMERCIAL CANNED 5122-103-43-20
44123 BREAKFAST TOASTER PASTRIES, FROZEN
44124 INFANT FORMULA; ENFAMIL PREMATURE FORMULA, MILK BASED, READY TO SE
44125 WON TON WRAPPER 4337-103-54-99
44126 BEEF RAVIOLI,LOW SODIUM, CANNED 5822-106-58-25
44127 SOUP; CABBAGE, CONDENSED, CANNED 5626-108-38-20
44128 SOUP; TOMATO, LOW SODIUM, CONDENSED, CANNED 5624-201-34-20
44129 SOUP; CRAB, CONDENSED, CANNED 5623-302-28-20
44130 SOUP; VEGETABLE NOODLE, CONDENSED, CANNED 5622-105-58-20
44131 SOUP; CREAM OF BROCCOLI, DRY 5651-103-08-40
44132 SOUP; SEAFOOD BISQUE, DRY 5651-111-08-40
44133 SOUP; CREAM OF POTATO, DRY 5651-107-08-40
44134 SOUP; LOBSTER BISQUE, DRY 5651-109-08-40
44135 SOUP; CREAM OF TOMATO, DRY 5654-103-34-40
44136 SOUP; MUSHROOM, WITH BEEF BROTH, DRY 5655-102-38-40
44137 SOUP; CREAM OF MUSHROOM, DRY 5655-101-08-40
44139 ONION RINGS, FRIED, CANNED 5824-107-38-20
44140 SOUP; VEGETABLE BEEF, CHUNKY, LOW SODIUM, READY TO SERVE 5616-206
44141 SAUCE; CHILI, LOW SODIUM, CANNED COMMERCIAL 5721-202-34-20
44142 ICING MIX, ALL FLAVORS EXCEPT CHOCOLATE, CREAMY, DRY 4754-101-83-
44143 ICING MIX, ALL CHOCOLATE FLAVORS, CREAMY, DRY 4754-102-83-40
44144 ICING, READY-TO-USE, NOT CHOCOLATE, COMMERCIAL CANNED 4754-201-83
44145 ICING, READY-TO-USE, CHOCOLATE, COMMERCIAL CANNED 4754-202-83-20
44146 APRICOT PIE FILLING, WITH SUGAR, COMMERCIAL CANNED 5122-203-43-20
44147 LEMON PIE FILLING, COMMERCIAL CANNED
44148 COFFEE, BEANS OR GROUNDS
44149 ADVANCE NUTRITIONAL BEVERAGE, CONCENTRATED 4021-409-08-20
44150 INFANT FORMULA; SOY BASE, CONCENTRATED LIQUID 4021-406-08-20
44151 INFANT FORMULA; MILK BASE, DRY 4022-302-08-40
44152 INFANT FORMULA; MILK BASE WITH IRON, CONCENTRATED LIQUID 4021-404
44153 INFANT FORMULA; MILK BASE, CONCENTRATED LIQUID, CANNED 4021-402-0
44154 INFANT FORMULA; LOFENLAC, DRY 4022-303-08-40
44155 INFANT FORMULA; PROSOBEE, DRY 4022-305-08-40
44156 CEREALS READY-TO-EAT; ALL BRAN FRUIT AND ALMONDS 4232-228-52-99
44157 PIE FILLING; PEACH, WITH SUGAR, COMMERCIAL CANNED 5122-403-43-20
44158 PIE FILLING; BLUEBERRY, WITH SUGAR, COMMERCIAL CANNED 5122-808-43
44159 PIE FILLING; STRAWBERRY, WITH SUGAR, COMMERCIAL CANNED 5122-803-4
44160 BEER/ALE, LOW ALCOHOL, CANNED OR BOTTLED 5561-103-91-99
44161 SALT, LOW SODIUM 5752-103-93-99
44162 SALT SUBSTITUTE AND SEASONED SALT SUBSTITUTE 5752-104-93-99
44163 BRAN BREAD, ENRICHED
44164 MEAT TENDERIZER AND MARINATE, DRY 5753-102-93-99
44165 FISH BREADING (FOR COMMERCIAL FROZEN BREADED FISH PRODUCTS)
44166 LIQUID BAKING CHOCOLATE PREPARATION 5531-202-92-99
44167 PICKLES, SOUR AND DILL, LOW SODIUM 5731-102-35-99
44168 WHEAT PILAF, DRY MIX
44169 SOUP; CHICKEN VEGETABLE, CHUNKY, LOW SODIUM, READY-TO-SERVE, CANNE
44170 CEREALS READY-TO-EAT; OH'S HONEY GRAHAM CEREAL
44171 INFANT FORMULA; MILK-BASED, DRY, ENFAMIL WITH IRON 4022-302-08-40

44172 BANANA CHIPS
44173 CRACKERS; RYE OR PUMPERNICKEL
44174 CRACKERS; RYE OR PUMPERNICKEL, LOW SALT
44175 INFANT FORMULA; MEAT-BASED, CONCENTRATE, GERBER 4021-407-08-20
44176 CEREALS READY-TO-EAT; NERDS
44177 ROLLS; WHITE, ENRICHED, BROWN AND SERVE
44178 MATZO, WHOLE WHEAT 4321-703-54-99
44179 MUSTARD SAUCE, COMMERCIAL 5734-102-92-20
44180 PRETZELS, SOFT, NOT BAKED, COMMERCIALLY FROZEN 4329-103-54-30
44182 CRACKERS; WHEAT 4321-601-54-99
44183 CRACKERS; WHEAT, LOW SALT 4321-602-54-99
44184 RICE CAKES, PUFFED, WITHOUT SALT 4321-402-54-99
44185 BAKING POWDER, LOW OR NO SODIUM
44186 SALT, SEASONED 5752-105-93-99
44187 SALT, SEASONED, LOW SODIUM 5752-106-93-99
44188 SOUP; CHICKEN BROTH, LOW SODIUM, CANNED 5613-501-28-20
44189 VEGETABLES WITH PASTA IN SAUCE
44192 CORN PUFFS, WITH CHEESE, REDUCED SODIUM 4329-206-64-99
44193 EGG CUSTARD, DRY (INCLUDES FLAN MIX)
44194 BREAD; FRENCH/ITALIAN, ENRICHED, BROWN AND SERVE 4311-302-53-99
44195 BREAD; RAISIN, SALT FREE 4311-502-53-99
44196 BREAD; WHITE, ENRICHED, BROWN AND SERVE 4311-102-53-99
44197 MELBA TOAST, WITHOUT SALT 4313-404-53-99
44198 SOFT DRINK, WITH FRUIT JUICE, FORTIFIED, DIETETIC 5541-504-92-99
44199 BEVERAGE; LEMONADE, CONCENTRATED, REDUCED CALORIE, FROZEN
44200 BREADSTICKS, WITHOUT SALT 4313-402-53-99
44201 BEVERAGE; THIRST QUENCHER DRINK, POWDERED
44202 BEVERAGE; DRINKS, ADES AND PUNCHES, UNSWEETENED, POWDERED
44203 COCKTAIL MIX, NON-ALCOHOLIC, CONCENTRATED, FROZEN 5554-205-82-30
44204 BREAD; MULTIGRAIN, UNSALTED 4313-106-53-99
44205 BREAD; WHEAT, ENRICHED, UNSALTED 4313-103-53-99
44206 ROLLS; WHEAT, ENRICHED, BROWN AND SERVE 4322-302-54-99
44207 ICED TEA CONCENTRATE WITH SUGAR, COMMERCIAL FROZEN 5523-601-83-30
44208 SOUP; BEEF STEW, LOW SODIUM, CANNED 5822-103-28-25
44209 SOUP; CHICKEN STEW, LOW SODIUM, CANNED 5823-302-28-25
44210 DIP AND/OR SALAD DRESSING MIX, DRY
44211 PIES; APPLE, UNBAKED
44212 PIES; APPLE, ONE CRUST, UNBAKED
44213 PIES; LEMON, UNBAKED
44214 PIES; PEAR, UNBAKED
44215 PIES; PINEAPPLE, UNBAKED
44216 STRUDEL; APPLE, UNBAKED
44217 TURNOVER; APPLE, UNBAKED
44218 TURNOVER; LEMON, UNBAKED
44219 FRITTERS; APPLE, UNBAKED
44220 SPAGHETTI WITH MEAT SAUCE, LOW SODIUM, CANNED
44221 PIES; APRICOT, UNBAKED
44222 PIES; CHERRY, UNBAKED
44223 PIES; PEACH, UNBAKED
44224 STRUDEL; CHERRY, UNBAKED
44225 STRUDEL; PEACH, UNBAKED
44226 TURNOVERS AND DUMPLINGS; PEACH, UNBAKED
44227 TURNOVERS AND DUMPLINGS; CHERRY, UNBAKED
44228 PIES; BLACKBERRY, UNBAKED
44229 PIES; BLUEBERRY, UNBAKED
44230 PIES; RASPBERRY, UNBAKED
44231 FRITTERS; BERRY, UNBAKED
44232 STRUDEL; BERRY, UNBAKED
44233 TURNOVER AND DUMPLINGS; BERRY, UNBAKED
44234 PIES; RAISIN, UNBAKED
44235 PIES; MINCE, UNBAKED
44236 PIES; RHUBARB, UNBAKED
44237 PIES; STRAWBERRY-RHUBARB, UNBAKED
44238 PIES; STRAWBERRY, ONE-CRUST, UNBAKED
44239 PIES; COCONUT CUSTARD, UNBAKED
44240 PIES; CUSTARD, UNBAKED

44241 PIES; PUMPKIN, UNBAKED
44244 CRACKERS; ORIENTAL HARD RICE
44246 PIES; CHERRY, LOW CALORIE, UNBAKED
44247 GRANOLA BARS, WITH NON-CHOCOLATE COATING
44248 GRANOLA BARS, CHEWY OR CRUNCHY TYPE, NO COATING
44249 COOKIE DOUGH; CHOCOLATE CHIP, UNBAKED
44250 COOKIE DOUGH; OATMEAL RAISIN, UNBAKED
44251 COOKIE DOUGH; PEANUT BUTTER, UNBAKED
44252 COOKIE DOUGH; SUGAR, UNBAKED
44253 CAKE; COCONUT, WITH ICING
44254 CAKE; POUND, CHOLESTEROL FREE
44255 NONALCOHOLIC COCKTAIL MIX, CONCENTRATED, CANNED
44256 BEVERAGE; DRINKS, ADES, PUNCHES WITH SUGAR, CONCENTRATED
44257 HAM AND CHEESE NUGGETS, READY-TO-EAT
44258 PUDDING MIX, CHOCOLATE FLAVOR, LOW CALORIE, REGULAR, DRY
44259 PUDDING MIX,ALL FLAVOR EXCEPT CHOCOLATE,LOW CALORIE,REGULAR
44260 PUDDING MIX,ALL FLAVOR EXCEPT CHOCOLATE,LOW CALORIE,INSTANT
44262 EGG CUSTARD, LOW CALORIE, DRY
44263 MAIN DISH MIX; MACARONI AND CHEESE, DRY
44265 MAIN DISH MIX; WITH MACARONI, DRY
44266 CHICORY (GROUND, ROASTED ROOT)
44267 CEREALS READY TO EAT; RAISIN LIFE
44268 MAIN DISH MIX; WITH NOODLES AND MEAT, DRY
44270 PIE; APPLE, LOW CALORIE, COMMERCIAL FROZEN, NOT BAKED
44271 ROLL MIX, DRY, ENRICHED
44273 BEVERAGE; TEA, LEAF, LOOSE OR BAG, DRY
44274 BEVERAGE; TEA, HERBAL, LOOSE OR BAG, DRY
44275 BEVERAGE; IMITATION BREAKFAST DRINK, SUGAR FREE, DRY
44276 BEVERAGE; JUICE DRINK, W/ SUGAR,CONCENTRATE,
44277 BREAD; RICE
44278 CEREALS READY-TO-EAT; WHOLE WHEAT & BRAN BISCUIT, SHREDDED
44279 CEREALS READY-TO-EAT; WHEAT CEREAL, PRESWEETENED
44280 BEANS; MATURE, RED, LOW SODIUM, CANNED
44281 BEANS, MATURE, WHITE, LOW SODIUM, CANNED
44282 SOUP; BEEF NOODLE, LOW SODIUM, READY-TO-SERVE, CANNED
44283 FLOUR TORTILLA MIX (MASA TRIGO)
44284 FRUIT JUICE DRINK, REDUCED CALORIE, CONCENTRATE, FROZEN
44285 SLOPPY JOE TYPE SAUCE
44286 SOUP; CREAM OF CHICKEN, LOW SODIUM, CONDENSED
44287 SOUP, VEGETABLE, LOW SODIUM, CONDENSED, CANNED
44289 CEREALS READY-TO-EAT; QUAKER OAT SQUARES
44290 CEREALS READY-TO-EAT; CLUSTERS
44291 CEREALS READY-TO-EAT; OATMEAL RAISIN CRISP
44295 CEREALS READY-TO-EAT; STRAWBERRY SQUARES
44296 CEREALS READY-TO-EAT; CRISPY CRITTERS
44297 CEREALS READY-TO-EAT; FRUIT ISLANDS
44298 CEREALS READY-TO-EAT; OATIOS
44299 CEREALS READY-TO-EAT; DINERSAURS
44300 CEREAL; WHEAT HEARTS
44301 CEREALS READY-TO-EAT; POPEYE SWEET CRUNCH
44303 CEREALS READY-TO-EAT; NUTRIFIC OATMEAL FLAKES
44304 MACARONI, VEGETABLE, (THREE COLOR)
44305 CEREALS READY-TO-EAT; AMAZING HONYE RAISIN BRAN
44306 SOUP; CHICKEN VEGETABLE, LOW SODIUM, COMMERCIAL, CANNED
44307 CEREALS READY-TO-EAT; KASHI (MULTIGRAIN CEREAL)
44308 CEREALS; OATMEAL, INSTANT HIGHLY FORTIFIED
44309 MANGO JUICE
44310 WHEAT BASED SNACK, LOW NA 4329-202-54-99
47002 CAKE MIX, PUDDING TYPE, DRY, CHOCOLATE FLAVOR
47003 CAKE MIX, PUDDING TYPE, DRY, FLAVORS OTHER THAN CHOCOLATE
47004 POPCORN OIL, BETA-CAROTENE USED FOR COLORING
47007 BEVERAGE; DIET POWDER, UNRECONSTITUTED, CHOCOLATE
47008 BEVERAGE; DIET POWDER, UNRECONSTITUTED, NOT CHOCOLATE
47009 CHEESE, PROCESSED, APPROXIMATELY 15% FAT (NCHS)
47010 CHEESE, PROCESSED, LOW SODIUM, APPROXIMATELY 15% FAT
47011 BEVERAGE; FRUIT-FLAVORED, POWDER, UNSWEETENED, DRY MIX

70260 APPLE BUTTER
71300 BAKING POWDER(NA AL SO4); W/MONO CA PHOS(MONOHYDRATE)
71320 BAKING POWDER(NA AL SO4); W/MONO CA PHOS(MONOHYD)&CA SO4
71330 BAKING POWDER(NA AL SO4); W/STRAIGHT PHOS
71340 BAKING POWDER(TARTRATE); CREAM OF TARTAR, W/TARTARIC AC
71350 BAKING POWDER; LO NA COMMERCIAL
71370 BAKING POWDER; COMMERCIAL USE, PYROPHOS, NO ADDED LEAV ACID
71420 BANANAS; RED, RAW
71450 BARLEY; PEARLED, LIGHT
71460 BARLEY; PEARLED, POT OR SCOTCH
71470 FISH; BARRACUDA, PACIFIC, RAW
72890 BEEF; SIRLOIN STEAK(RND BONE), CHOICE, SEPARABLE LEAN
72900 BEEF; SIRLOIN STEAK(RND BONE), CHOICE, SEPARABLE LEAN
73701 BEEF; HAMBURGER, LEAN, 21%FAT, CKD, RARE TO MEDIUM
73730 BEEF; ROAST BEEF, CND
73790 BEEF; CORNED BEEF HASH, CND, W/POTATO
74130 BISCUIT DOUGH; COMMERCIAL, ENR, CHILLED, IN CANS
74151 BISCUIT MIX; DRY FORM, ENRICHED
74230 BLACKBERRY JUICE; CND, UNSWEETENED
74320 FISH; BONITO, (INC ATLANTIC PACIFIC AND STRIPPED), RAW
74440 BREAD; CRACKED WHEAT
74450 BREAD; CRACKED WHEAT, TOASTED
74460 BREAD; FRENCH OR VIENNA, ENRICHED
74470 BREAD; FRENCH OR VIENNA, ENR, TOASTED
74500 BREAD; ITALIAN, ENRICHED
74520 BREAD; RAISIN
74530 BREAD; RAISIN, TOASTED
74540 BREAD; RYE, AMERICAN, 1/3 RYE AND 2/3 CLEAR FLOUR
74550 BREAD; RYE, AMERICAN, 1/3 RYE AND 2/3 CLEAR FLOUR, TOASTED
74560 BREAD; RYE, PUMPERNICKEL
74570 BREAD; SALT-RISING
74580 BREAD; SALT-RISING, TOASTED
74610 BREAD; WHITE, ENR, 3-4%NFDMS, SOFT CRUMB
74710 BREAD; WHOLE-WHEAT, 2%NFDMS, FIRM CRUMB
74720 BREAD; WHOLE-WHEAT, TOASTED, 2%NFDMS, FIRM CRUMB
74730 BREAD; WHOLE-WHEAT, MADE W/WATER, SOFT CRUMB
74740 BREAD; WHOLE-WHEAT, TOASTED, MADE W/WATER, SOFT CRUMB
74750 BREADCRUMBS; DRY, GRATED
74770 BREADSTUFFING MIX; DRY
74930 BUCKWHEAT, WHOLE-GRAIN
74940 BUCKWHEAT FLOUR; DARK
74950 BUCKWHEAT FLOUR; LIGHT
74980 BULGUR; PARBOILED WHEAT, DRY, COMMEP
75000 BULGUR; CND, FROM HARD RED WINTER WHEAT, UNSEASONEC
75490 CAKEMIX; ANGELFOOD, DRY, ENR
75530 CAKEMIX; COFFEE CAKE MIX, DRY, ENR
75580 CAKEMIX; DEVIL'S FOOD, DRY, ENR
75620 CAKEMIX; HONEY SPICE, DRY, ENR
75640 CAKEMIX; MARBLE, DRY, ENR
75660 CAKEMIX; WHITE, DRY, ENR
75680 CAKEMIX; YELLOW, DRY
75800 CANDY; BUTTERSCOTCH
75810 CANDY; CARAMELS, PLAIN OR CHOCOLATE
75820 CANDY; CARAMELS, PLAIN OR CHOCOLATE WITH NUTS
75830 CANDY; CARAMELS, CHOCOLATE FLAVORED ROLL
75850 CANDY; CHOCOLATE, SEMISWEET
75860 CANDY; CHOCOLATE, SWEET
75870 CANDY; MILKCHOCOLATE, PLAIN
75880 CANDY; MILKCHOCOLATE, WITH ALMONDS
75890 CANDY; MILKCHOCOLATE, WITH PEANUTS
75900 CANDY; CHOCOLATE COATED, ALMONDS
75910 CANDY; CHOCOLATE COATED, CHOCOLATE FUDGE
75920 CANDY; CHOCOLATE COATED, CHOCOLATE FUDGE, W/NUTS
75930 CANDY; CHOCOLATE COATED, COCONUT CENTER
75940 CANDY; CHOCOLATE COATED, FONDANT
75950 CANDY; CHOCOLATE COATED, FUDGE, CARAMEL, AND PEANUTS

75970 CANDY; CHOCOLATE COATED, HARD CANDY W/PEANUT BUTTER
75980 CANDY; CHOCOLATE COATED, NOUGAT AND CARAMEL
75990 CANDY; CHOCOLATE COATED, PEANUTS
76000 CANDY; CHOCOLATE COATED, RAISINS
76020 CANDY; FONDANT
76030 CANDY; FUDGE, CHOCOLATE
76050 CANDY; FUDGE, VANILLA
76060 CANDY; FUDGE, VANILLA, W/NUTS
76070 CANDY; GUM DROPS, STARCH JELLY PCS
76080 CANDY; HARD
76090 CANDY; JELLY BEANS
76100 CANDY; MARSHMALLOWS
76110 CANDY; PEANUT BARS
76120 CANDY; PEANUT BRITTLE
76130 CANDY; SUGAR-COATED ALMONDS
76140 CANDY; SUGAR COATED CHOCOLATE DISCS
76270 CARROTS, DEHYDRATED
76640 CHERRIES, CANDIED
76750 CHERRIES; MARASCHINO, BOTTLED, SOL+LIQ
76790 CHESTNUT FLOUR
76800 CHEWING GUM
77590 CHOCOLATE; BITTER OR BAKING
77610 CHOCOLATE SYRUP; FUDGE TYPE
77670 CITRON; CANDIED
77790 COCOA; BEVERAGE POWDER, DRY, WO/MILK
77810 COCOA; DRY POWDER, HI-FAT OR BREAKFAST, PLAIN
77820 COCOA; DRY POWDER, HI-FAT OR BREAKFAST, PROC W/ALKALI
77830 COCOA; DRY POWDER, HI-MEDIUM FAT, PLAIN
77840 COCOA; DRY POWDER, HI-MEDIUM FAT, PROC W/ALKALI
77850 COCOA; DRY POWDER, LO-MEDIUM FAT, PLAIN
77860 COCOA; DRY POWDER, LO-MEDIUM FAT, PROC W/ALKALI
77870 COCOA; DRY POWDER, LOW FAT
77970 FISH; COD, DEHYDRATED, LIGHTLY SALTED
78120 COOKIES; ASSORTED, COMMERCIAL
78142 BROWNIES; W/NUTS, FRZ, COMMERCIAL, W/CHOCOLATE-IC, ENR
78150 COOKIES; BUTTER, THIN, RICH
78160 COOKIES; CHOCOLATE
78180 COOKIES; CHOCOLATE CHIP, COMMERCIAL
78190 COOKIES; COCONUT BARS
78200 COOKIES; FIG BARS
78210 COOKIES; GINGERSNAPS
78220 COOKIES; LADYFINGERS
78240 COOKIES; MARSHMALLOW
78250 COOKIES; MOLASSES
78260 COOKIES; OATMEAL, W/RAISINS
78270 COOKIES; PEANUT
78280 COOKIES; RAISIN
78290 COOKIES; SANDWICH TYPE
78300 COOKIES; SHORTBREAD
78320 COOKIES; SUGAR WAFERS
78330 COOKIES; VANILLA WAFERS
78601 CORN FLOUR; YELLOW VARIETY
78602 CORN FLOUR, WHITE VAR
78642 GRITS, WHITE, UNENRICHED, DRY
78810 CORNBREAD MIX; DRY
78831 CORNMEAL; UNBOLT, YEL, WHL GRND
78832 CORNMEAL; UNBOLT, WHITE, WHL GRND
78851 CORNMEAL; YEL, DRY, DEGERMED, ENR
78852 CORNMEAL; WHITE, DRY, DEGERMED, ENR
78861 CORNMEAL; YEL, CKD, DEGERMED, ENR, W/SALT
78862 CORNMEAL; YEL, CKD, DEGERMED, ENR, WO/SALT
78871 CORNMEAL, YELLOW, DRY
78872 CORNMEAL, WHITE, DRY
78891 CORNMEAL, SELF-RISING, YELLOW
78892 CORNMEAL, SELF-RISING, YELLOW
78893 CORNMEAL, SELF-RISING, WHITE

78894 CORNMEAL, SELF-RISING, WHITE
78911 CORNMEAL, SELF-RISING, YELLOW
78912 CORNMEAL, SELF-RISING, YELLOW
78913 CORNMEAL, SELF-RISING, WHITE
78914 CORNMEAL, SELF-RISING, WHITE
78940 CORNSTARCH
79100 CRACKERS; ANIMAL
79110 CRACKERS; BUTTER
79120 CRACKERS; CHEESE
79130 CRACKERS; GRAHAM, CHOC COATED
79140 CRACKERS; GRAHAM, PLAIN
79150 CRACKERS; GRAHAM, SUGAR-HONEY COATED
79160 CRACKERS; SALTINES
79170 CRACKERS; SANDWICH TYPE, PEANUT-CHEESE
79180 CRACKERS; SODA
79190 CRACKERS; WHOLE-WHEAT
79430 CUCUMBER, PARED, RAW
79571 DOUGHNUTS; CAKE TYPE, W/ENR FLOUR
79581 DOUGHNUTS; YEAST, PLAIN, W/ENR FLOUR
79583 DOUGHNUTS; YEAST, GLAZED, W/ENR FLOUR
79670 SEAFOOD; EEL, SMOKED
80200 FROG LEGS; RAW
80300 GELATIN; DRY
80310 GELATIN; DESSERT POWDER
80320 GELATIN; DESSERT, MADE W/WATER, PLAIN
80830 GRAPEFRUIT; PEEL, CANDIED
81050 FISH; HALIBUT, (ATLANTIC AND PACIFIC), SMOKED
81140 HEART, CALF, RAW
81200 HEART, LAMB, RAW
81290 FISH; HERRING, SALTED OR BRINED
81340 HONEY; STRAINED OR EXTRACTED
81350 HORSERADISH; RAW
81360 HORSERADISH; PREPARED
81420 ICE CREAM CONES
81440 ICES; WATER, LIME
81481 JAMS AND PRESERVES; OTHER THAN RED CHERRY OR STRAWBERRY
81482 JAMS AND PRESERVES; (RED CHERRY OR STRAWBERRY)
81491 JELLIES OTHER THAN GUAVA
81610 BEEF; (CALF), KIDNEYS, RAW
81630 KIDNEYS, LAMB, RAW
81640 FISH; KINGFISH, (SOUTHERN GULF AND NORTHERN WHITING), RAW
81840 LAMB, LEG, TOTAL EDIBLE, RAW
81850 LAMB; LEG, CHOICE, 83/17 LN/FAT(%), CKD, ROASTED, TOTAL EDIBLE
81870 LAMB; LEG, CHOICE, SEPARABLE LEAN, CKD, ROASTED
81890 LAMB; LEG, GOOD, 85/15 LN/FAT(%), RAW, TOTAL EDIBLE
81900 LAMB; LEG, GOOD, 85/15 LN/FAT(%), CKD, ROASTED, TOTAL EDIBLE
81990 LAMB, LOIN, TOTAL EDIBLE, RW
82000 LAMB; LOIN CHOPS, CHOICE, 66/34 LN/FAT(%), CKD, BROILED
82020 LAMB; LOIN, CHOICE, SEPARABLE LEAN, CKD, BROILED
82140 LAMB, RIB, TOTAL EDIBLE, RAW
82150 LAMB; RIB CHOPS, CHOICE, 62/38 LN/FAT(%), CKD, BROILED
82170 LAMB; RIB, CHOICE, SEPARABLE LEAN, CKD, BROILED
82290 LAMB; SHOULDER, CHOICE, 74/26 LN/FAT(%), RAW, TOTAL EDIBLE
82300 LAMB; SHOULDER, CHOICE, 74/26 LN/FAT(%), CKD, ROASTED
82310 LAMB; SHOULDER, CHOICE, SEPARABLE LEAN, RAW
82320 LAMB; SHOULDER, SEPARABLE LEAN, CKD, ROASTED
82500 LEMON PEEL; CANDIED
82680 BEEF; (CALF), LIVER, RAW
82690 BEEF; (CALF), LIVER, CKD, FRIED
82750 LIVER, LAMB, RAW
82760 LAMB; LIVER, CKD, BROILED
82980 MACARONI; ENR, DRY
82990 MACARONI; ENR, CKD, FIRM STAGE, 8-10 MIN
83000 MACARONI; ENR, CKD, TENDER STAGE, 14-20 MIN
83010 MACARONI, UNENRICHED, DRY
83020 MACARONI; UNENR, CKD, FIRM STAGE, 8-10 MIN

83050 MACARONI AND CHEESE; CND
83110 FISH; MACKEREL, SALTED
83120 FISH; MACKEREL, SMOKED
83140 MALT EXTRACT; DRIED
83180 MARMALADE; CITRUS
83380 MILLET; (PROSO, BROOMCORN, HOGMILLET), WHOLE GRAIN
83390 MOLASSES; CANE, FIRST EXTRACTION OR LIGHT
83400 MOLASSES; CANE, SECOND EXTRACTION OR MEDIUM
83410 MOLASSES; CANE, THIRD EXTRACTION OR BLACKSTRAP
83420 MOLASSES; CANE, BARBADOS
83490 MUFFIN MIX; CORN, DRY, W/ENR FLOUR
83730 MUSTARD; PREPARED, YELLOW
83770 NOODLES; EGG NOODLES, ENR, DRY
83780 NOODLES; EGG NOODLES, ENR, CKD
83790 NOODLES; EGG NOODLES, UNENR, DRY
83800 NOODLES; EGG NOODLES, UNENR, CKD
83810 NOODLES; CHOW MEIN, CND
84060 OLIVES; PICKLED, CND OR BOTTLED, GREEN
84080 OLIVES; PICKLED, CND OR BOTTLED, RIPE, (MANZANILLA)
84160 ONIONS, YOUNG GREEN, BULB & WHITE PORTION OF TOP
84170 ONIONS, YOUNG GREEN, TOPS ONLY
84190 OPOSSUM; COOKED, ROASTED
84410 ORANGE PEEL; CANDIED
84550 PANCAKE AND WAFFLE MIX; PLAIN AND BUTTERMILK, ENR, DRY
84610 PANCAKE MIX; BUCKWHEAT AND OTHER CEREAL FLOURS, DRY
84750 PASTINAS, ENRICHED EGG, DRY
84770 PASTINAS; ENR, DRY, VEGETABLE(SPINACH)
85000 PEANUT SPREAD
85310 PEAS; MATURE SEEDS, DRY, WHOLE, RAW
85390 PEPPERS; HOT, CHILI, IMMATURE GREEN, CND, CHILI SAUCE
85420 PEPPERS; HOT, CHILI, MATURE RED, CND, CHILI SAUCE
85430 PEPPERS; HOT, CHILI, MATURE RED, DRIED PODS
85580 PICKLES; CUCUMBER, DILL
85590 PICKLES; CUCUMBER, FRESH, (BREAD AND BUTTER PICKLES)
85600 PICKLES; CUCUMBER, SOUR
85610 PICKLES; CUCUMBER, SWEET
85630 PICKLES; CHOWCHOW, WITH CAULIFL ONION MUSTARD, SWEET
85640 PICKLES; RELISH, FINELY CUT OR CHOPPED, SOUR
85650 PICKLES; RELISH, FINELY CUT OR CHOPPED, SWEET
85971 PIE CRUST; ENR, UNBAKED, VEG-S
86101 PIMIENTOS; CND, SOL+LIQ, WO/ADDED CA SALTS
86102 PIMIENTOS; CND, SOL+LIQ, W/ADDED CA SALTS
86120 PINEAPPLE; CANDIED
86530 POPCORN; UNPOPPED
86540 POPCORN; POPPED, PLAIN
86551 POPCORN; POPPED, W/COCONUT OIL AND SALT ADDED
86552 POPCORN; POPPED, W/BUTTER AND SALT ADDED
86560 POPCORN; POPPED, SUGAR COATED
88140 PRETZELS
88250 PUDDING MIX; CHOCOLATE, STARCH BASE, REGULAR DRY FORM
88260 PUDDINGS; CHOCOLATE, PREP FR STARCH BASE MIX, MADE W/MILK
88270 PUDDING MIX; CHOCOLATE, STARCH BASE, INSTANT, DRY FORM
88280 PUDDINGS; PREP FR STARCH BASE MIX, MADE W/MILK WO/COOKING
88400 RABBIT, DOMESTIC, RAW
88410 RABBIT; DOMESTICATED, FLESH ONLY, CKD, STEWED
88420 RABBIT, WILD, RAW
88590 RENNIN TABLET; SALTS, STARCH, RENNIN ENZYME
88690 RICE; BROWN, RAW
88701 RICE; BROWN, CKD, W/SALT ADDED
88702 RICE; BROWN, CKD, WO/SALT
88710 RICE; WHITE, MILLED OR POLISHED, ENR, COMMON VAR,
88721 RICE; WHITE, MILL OR POLISH, ENR, COM VAR, ALL TYPES, CKD
88722 RICE; WHITE, MILL OR POLISH, ENR, COM VAR, ALL TYPES, CKD
88730 RICE, WHT, PARBOILED, ENRICHED
88741 RICE; WHITE, MILL OR POL, ENR, COM VAR, LONG GR, PARBOIL,
88742 RICE; WHITE, MILL OR POL, ENR, COM VAR, LNG GR, PARBOIL,

88750 RICE; WHITE, PRE-CKD INSTANT, DRY, MILLED OR POLISHED
88762 RICE; WHITE, PRE-CKD INSTANT, READY TO SERVE, WO/SALT
88770 RICE; WHITE, FULLY MILLED OR POLISHED, UNENR, ALL TYPES
88781 RICE; WHITE, FULLY MILLED OR POLISH, UNENR, ALL TYPES
88782 RICE; WHITE, FULLY MILLED OR POLISH, UNENR, ALL TYPES
88810 RICE BRAN POLISH
88990 ROLLS AND BUNS; COMM READY TO SERVE, DANISH PASTRY
89000 ROLLS AND BUNS; COMM READY TO SERVE, HARD, ENR
89020 ROLLS AND BUNS; COMM READY TO SERVE, PLAIN PAN ROLLS, ENR
89050 ROLLS AND BUNS; COMM READY TO SERVE, SWEET ROLLS
89060 ROLLS AND BUNS; COMM READY TO SERVE, WHOLE WHEAT ROLLS
89210 RYE; WHOLE-GRAIN
89220 RYE; WHOLE-GRAIN FLOUR, LIGHT
89230 RYE; WHOLE-GRAIN FLOUR, MEDIUM
89240 RYE; WHOLE-GRAIN FLOUR, DARK
89250 RYE WAFERS; WHOLE-GRAIN
89511 FISH; SALMON, CHUM, CND, SOL+LIQ, W/SALT
89630 SALT; TABLE
89740 FISH; SARDINES, PACIFIC, CND, IN BRINE OR MUSTARD,
89780 SAUERKRAUT JUICE; CND
90080 POTTED MEAT; INC POTTED BEEF, CHICKEN, AND TURKEY
90190 SAUSAGE; SCRAPPLE
90240 SHELLFISH; (BAY AND SEA), SCALLOPS, CKD, STEAMED
90450 SHELLFISH; SHRIMP, DRY PACK OR DRAINED, SOLIDS
90480 SYRUP; CANE
90490 SYRUP; MAPLE
90500 SYRUP; SORGHUM
90510 SYRUP; TABLE BLEND, CHIEFLY CORN, LIGHT AND DARK
90520 SYRUP; TABLE BLEND, CANE AND MAPLE
90530 FISH; SKATE(RAJA FISH), RAW
90560 SNAIL; RAW
90580 SORHUM GRAIN, ALL TYPES
91490 SOYBEAN FLOUR; DEFATTED
91570 SPAGHETTI; ENR, DRY
91580 SPAGHETTI; ENR, CKD, FIRM STAGE, AL DENTE(8-10 MIN)
91590 SPAGHETTI; ENR, CKD, TENDER STAGE, 14-20 MIN
91600 SPAGHETTI, UNENRICHED, DRY
91620 SPAGHETTI; UNENR, CKD, TENDER STAGE, 14-20 MIN
91640 SPAGHETTI; IN TOMATO SAUCE W/CHEESE, CND
91660 SPAGHETTI AND MEAT BALLS; IN TOMATO SAUCE, CND
92290 SUGARS; BEET OR CANE, BROWN
92300 SUGARS; BEET OR CANE, GRANULATED
92310 SUGARS; BEET OR CANE, POWDERED
92320 SUGARS; DEXTROSE, ANHYDROUS
92330 SUGARS; DEXTROSE, CRYSTALLIZED
92340 SUGARS; MAPLE
92430 BEEF; SWEETBREADS, (THYMUS), CALF, CKD, BRAISED
92550 SWEET POTATOES; DEHYDRATED FLAKES, DRY FORM
92560 SWEET POTATOES; DEHYDRATED FLAKED, PREP W/WATER
92680 TAPIOCA; DRY
92750 FISH; TAUTOG, (BLACKFISH), RAW
92861 TOMATO CATSUP; BOTTLED, W/SALT ADDED
92871 SAUCE; TOMATO CHILI SAUCE; BOTTLED, W/SALT ADDED
92872 SAUCE; TOMATO CHILI SAUCE; BOTTLED, WO/SALT, LO NA
93050 TONGUE, CALF, RAW
93090 LAMB TONGUE, RAW
93130 BEEF; TONGUE, WHOLE, CND OR PICKLED
93140 BEEF; TONGUE, POTTED OR DEVILED
93160 BEEF; TRIPE, COMMERCIAL
93600 SEAFOOD; TURTLE, GREEN, RAW
93610 SEAFOOD; TURTLE, GREEN, CND
93690 VEAL; CHUCK, MED-FAT CLASS, 86/14 LN/FT(%), RAW,
93700 VEAL; CHUCK, MED-FAT, 85/15 LN/FT(%), CKD, BRAISED
93710 VEAL; CHUCK, THIN CL, 90/10 LN/FT(%), RAW, TOT ED
93740 VEAL; FLANK, MED-FAT CL, 60/40 LN/FT(%), CKD, STEWED
93810 VEAL; LOIN, MED-FAT CL, 85/15 LN/FT(%), RAW, TOT ED

93820 VEAL; LOIN, MED-FAT CL, 77/23 LN/FT(%), CKD, BROILED, TOT ED
93830 VEAL; LOIN, THIN CL, 89/11 LN/FT(%), RAW, TOT ED
93850 VEAL, PLATE, LEAN+FAT, RAW
93890 VEAL, RIB, LEAN+FAT, RAW
93930 VEAL; ROUND W/RUMP, MED-FAT CL, 87/13 LN/FT(%), RAW, TOT ED
93940 VEAL; ROUND W/RUMP, MED-FAT CL, 79/21 LN/FT(%), CKD, BROILED, TOT
93950 VEAL; ROUND W/RUMP, THIN-CL, 91/9 LN/FT(%), RAW, TOT ED
94050 VENISON; LEAN MEAT ONLY, RAW
94060 VINEGAR; CIDER
94070 VINEGAR; DISTILLED
94300 WHEAT, WHOLE-GRAIN, RED
94310 WHEAT; WHOLE GRAIN, HARD RED, WINTER
94350 WHEAT FLOURS; (WHOLE), FROM HARD WHEATS
94390 WHEAT FLOURS; PATENT, ALL PURPOSE OR FAMILY, ENR
94400 WHEAT FLOURS; PATENT, ALL PURPOSE OR FAMILY, UNENR
94410 WHEAT FLOURS; BREAD, ENR
94420 WHEAT FLOURS; BREAD, UNENR
94430 WHEAT FLOURS; CAKE, PATENT, CAKE OR PASTRY
94451 WHEAT FLOURS; PATENT, SELF-RISING, ENR, W/ANHYD MONO CA PHOS
94460 WHEAT BRAN; CRUDE, COMMERCIALLY MILLED
94690 SAUCE; WHITE SAUCE; THIN
94700 SAUCE; WHITE SAUCE; MEDIUM
94710 SAUCE; WHITE SAUCE; THICK
94720 WILD RICE; RAW
94761 YEAST; BAKERS, COMPRESSED, NOT FORTIFIED
94770 YEAST; BAKERS, DRY, ACTIVE
94780 YEAST; BREWERS, DEBITTERED

Appendix B

Tables of Significant Variances for Clustering on Total Meat Intake in Women Aged: 19-24; 25-34; 35-50; 51-64; 65-74; 75+

NPg Females 19 to 24 Years - USDA weighted (302 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
1199	3851	5805	285	People/1000
11	35	52	3	Percent
32	104	157	8	in sample
30.25	12.51	21.64	0.00	All meat (%Kc)
All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) +		
All meat (gm) +	All meat (gm) -	All meat (gm) +		
Beef all (%Kc) +	Beef all (%Kc) -	Beef all (%Kc) +		
Beef all (gm) +	Beef all (gm) -	Beef all (gm) +		
Pork, all (%Kc) +	Pork, all (%Kc) -	Pork, all (%Kc) +		
		Pork, all (gm) +		
Poultry,all (%Kc) +	Poultry,all (%Kc) -	Poultry,all (%Kc) +		
Poultry, all (gm) +	Poultry, all (gm) -			
Process,all (%Kc) +	Process,all (%Kc) -	Process,all (%Kc) +		
Process, all (gm) +				
Kcalories, MT +	Kcalories, MT -	Kcalories, MT +		
	Protein (%rda) -		Protein (%rda) -	
Protein (%rda), MT +	Protein (%rda), MT -	Protein (%rda), MT +		
Total fat (% Kc) +	Total fat (% Kc) -			
Total fat (% Kc), MT +	Total fat (% Kc), MT -	Total fat (% Kc), MT +		
Sat. fat (% Kc), MT +	Sat. fat (% Kc), MT -	Sat. fat (% Kc), MT +		
		Cholesterol (mg) +	Cholesterol (mg) -	
Cholesterol (mg), MT +	Cholesterol (mg), MT -	Cholesterol (mg), MT +		
			B-6 (%rda) -	
B-6 (%rda), MT +	B-6 (%rda), MT -	B-6 (%rda), MT +		
Calcium (%rda) -	Calcium (%rda) +			
Calcium (%rda), MT +	Calcium (%rda), MT -	Calcium (%rda), MT +		
Magnesium (%rda) -	Magnesium (%rda) +			
Magnesium (%rda), MT +	Magnesium (%rda), MT -	Magnesium (%rda), MT +		
			Iron (%rda) -	
Iron (%rda), MT +	Iron (%rda), MT -	Iron (%rda), MT +		
			Zinc (%rda) -	
Zinc (%rda), MT +	Zinc (%rda), MT -	Zinc (%rda), MT +		
		Copper (%rda), MT +		
			Urbanization: Suburban +	
			Male hd emp: Emp not work +	
			Female hd emp: Emp not work +	

NPg Females 25 to 34 Years - USDA weighted (753 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Non-consumers	
213	4434	6908	7003	575	297	People/1000
1	23	36	36	3	2	Percent
8	172	268	271	22	12	in sample
45.50	9.46	17.34	25.00	36.65	0.00	All meat (%Kc)
All meat (%Kc) +	All meat (%Kc) -		All meat (%Kc) +	All meat (%Kc) +		
All meat (gm) +	All meat (gm) -		All meat (gm) +	All meat (gm) +		
	Beef all (%Kc) -	Beef all (%Kc) -	Beef all (%Kc) +	Beef all (%Kc) +		
	Beef all (gm) -	Beef all (gm) -	Beef all (gm) +	Beef all (gm) +		
Pork, all (%Kc) +	Pork, all (%Kc) -	Pork, all (%Kc) -	Pork, all (%Kc) +	Pork, all (%Kc) +		
Pork, all (gm) +	Pork, all (gm) -		Pork, all (gm) +			
	Poultry,all (%Kc) -		Poultry,all (%Kc) +			
	Poultry, all (gm) -	Poultry, all (gm) +	Poultry, all (gm) +			
	Process,all (%Kc) -		Process,all (%Kc) +	Process,all (%Kc) +		
	Process, all (gm) -		Process, all (gm) +			
		Kcalories +	Kcalories -	Kcalories -	Kcalories -	
Kcalories, MT +	Kcalories, MT -		Kcalories, MT +	Kcalories, MT +		
	Protein (%rda) -		Protein (%rda) +		Protein (%rda) -	
Protein (%rda), MT +	Protein (%rda), MT -		Protein (%rda), MT +	Protein (%rda), MT +		
Total fat (% Kc) +	Total fat (% Kc) -		Total fat (% Kc) +		Total fat (% Kc) -	
Total fat (% Kc), MT +	Total fat (% Kc), MT -		Total fat (% Kc), MT +	Total fat (% Kc), MT +		
			Sat. fat (% Kc) +			
Sat. fat (% Kc), MT +	Sat. fat (% Kc), MT -		Sat. fat (% Kc), MT +	Sat. fat (% Kc), MT +		
	Cholesterol (mg) -		Cholesterol (mg) +		Cholesterol (mg) -	
Cholesterol (mg), MT +	Cholesterol (mg), MT -		Cholesterol (mg), MT +	Cholesterol (mg), MT +		
					B-6 (%rda) -	
B-6 (%rda), MT +	B-6 (%rda), MT -		B-6 (%rda), MT +	B-6 (%rda), MT +		
Calcium (%rda) -	Calcium (%rda) +	Calcium (%rda) +	Calcium (%rda) -	Calcium (%rda) -		
	Calcium (%rda), MT -		Calcium (%rda), MT +	Calcium (%rda), MT +		
Magnesium (%rda) -	Magnesium (%rda) +		Magnesium (%rda) -	Magnesium (%rda) -		
Magnesium (%rda), MT +	Magnesium (%rda), MT -		Magnesium (%rda), MT +	Magnesium (%rda), MT +		
Iron (%rda), MT +	Iron (%rda), MT -		Iron (%rda), MT +	Iron (%rda), MT +		
	Zinc (%rda) -		Zinc (%rda) +		Zinc (%rda) -	
Zinc (%rda), MT +	Zinc (%rda), MT -		Zinc (%rda), MT +	Zinc (%rda), MT +		
	Copper (%rda), MT -		Copper (%rda), MT +			
BMI +	BMI -		BMI +	BMI +	BMI -	
	Fem head edu +			Fem head edu -	Fem head edu +	
				Race: White -		
	Race: Black -			Race: Black +		
				Race: Eskimo/Indian +		
					Region: Northeast +	
	Region: South -			Region: South +		
					Male hd emp: Emp full -	
					Male hd emp: Emp part +	
					Male hd emp: Not Emp +	
	Health diet: Excellent -					
					Health diet: Good +	
	Health diet: No answer +					
	Special diet: Yes +					
					Vit/min supp: Almost daily +	

NPg Females 35 to 50 Years - USDA weighted (906 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
1547	3962	19299	246	People/1000
6	16	77	1	Percent
56	143	698	9	in sample
30.96	32.94	16.67	0.00	All meat (%Kc)
All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) -		
All meat (gm) +	All meat (gm) +	All meat (gm) -		
Beef all (%Kc) +	Beef all (%Kc) +	Beef all (%Kc) -		
Beef all (gm) +	Beef all (gm) +			
Pork, all (%Kc) +	Pork, all (%Kc) +			
	Pork, all (gm) +			
Lamb,etc,all (%Kc) +				
Lamb,etc, all (gm) +	Lamb,etc, all (gm) +			
Poultry,all (%Kc) +	Poultry,all (%Kc) +			
Poultry, all (gm) +	Poultry, all (gm) +	Poultry, all (gm) -		
Process,all (%Kc) +	Process,all (%Kc) +			
	Process, all (gm) +			
Kcalories -	Kcalories -	Kcalories +	Kcalories -	
Kcalories, MT +	Kcalories, MT +	Kcalories, MT -		
Protein (%rda) +	Protein (%rda) +		Protein (%rda) -	
Protein (%rda), MT +	Protein (%rda), MT +	Protein (%rda), MT -		
Total fat (% Kc) +	Total fat (% Kc) +	Total fat (% Kc) -		
Total fat (% Kc), MT +	Total fat (% Kc), MT +	Total fat (% Kc), MT -		
Sat. fat (% Kc) +	Sat. fat (% Kc) +	Sat. fat (% Kc) -	Sat. fat (% Kc) -	
Sat. fat (% Kc), MT +	Sat. fat (% Kc), MT +	Sat. fat (% Kc), MT -		
	Cholesterol (mg) +		Cholesterol (mg) -	
Cholesterol (mg), MT +	Cholesterol (mg), MT +	Cholesterol (mg), MT -		
			B-6 (%rda) -	
B-6 (%rda), MT +	B-6 (%rda), MT +	B-6 (%rda), MT -		
Calcium (%rda) -	Calcium (%rda) -	Calcium (%rda) +		
Calcium (%rda), MT +	Calcium (%rda), MT +			
Magnesium (%rda) -	Magnesium (%rda) -	Magnesium (%rda) +		
Magnesium (%rda), MT +	Magnesium (%rda), MT +	Magnesium (%rda), MT -		
			Iron (%rda) -	
Iron (%rda), MT +	Iron (%rda), MT +	Iron (%rda), MT -		
Zinc (%rda) +	Zinc (%rda) +		Zinc (%rda) -	
Zinc (%rda), MT +	Zinc (%rda), MT +	Zinc (%rda), MT -		
Copper (%rda) -				
	Copper (%rda), MT +			
BMI +	BMI +		BMI -	
	Income (% poverty) -	Income (% poverty) +	Income (% poverty) -	
	Race: White -			
	Race: Black +			
	Race: Other +			
Region: Northeast -				
	Region: South +			
	Food stmps resp: Yes +			
			Vit/min supp: Almost daily +	

NPg Females 51 to 64 Years - USDA weighted (639 individuals)

Cluster 1	Non-consumers	
15040	260	People/1000
98	2	Percent
628	11	in sample
21.25	0.00	All meat (%Kc)

Protein (%rda)	-
Sat. fat (% Kc)	+
Cholesterol (mg)	-
Calcium (%rda)	+
Magnesium (%rda)	+
Zinc (%rda)	-
BMI	-
Fem head edu	+
Race: Other	+
Race: No data	+
Region: Northeast	+
Urbanization: Suburban	+
Food stmps resp: Yes	+
Male hd emp: Not Emp	+
Health diet: Poor	+

NPg Females 65 to 74 Years - USDA weighted (387 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Non-consumers	
2031	1315	1307	197	4560	103	People/1000
21	14	14	2	48	1	Percent
83	53	53	8	185	4	in sample
8.46	14.28	33.18	49.29	20.94	0.00	All meat (%Kc)
All meat (%Kc) -	All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) +		
All meat (gm) -	All meat (gm) -	All meat (gm) +	All meat (gm) +	All meat (gm) +		
Beef all (%Kc) -		Beef all (%Kc) +		Beef all (%Kc) +		
Beef all (gm) -		Beef all (gm) +		Beef all (gm) +		
Pork, all (%Kc) -		Pork, all (%Kc) +	Pork, all (%Kc) +	Pork, all (%Kc) +		
Pork, all (gm) -		Pork, all (gm) +	Pork, all (gm) +	Pork, all (gm) +		
Poultry,all (%Kc) -		Poultry,all (%Kc) +	Poultry,all (%Kc) +	Poultry,all (%Kc) +		
Poultry, all (gm) -		Poultry, all (gm) +	Poultry, all (gm) +	Poultry, all (gm) +		
Process,all (%Kc) -		Process,all (%Kc) +	Process,all (%Kc) +	Process,all (%Kc) +		
Process, all (gm) -				Process, all (gm) +		
Kcalories +		Kcalories -	Kcalories -		Kcalories -	
Kcalories, MT -	Kcalories, MT -	Kcalories, MT +	Kcalories, MT +	Kcalories, MT +		
Protein (%rda) -		Protein (%rda) +			Protein (%rda) -	
Protein (%rda), MT -	Protein (%rda), MT -	Protein (%rda), MT +	Protein (%rda), MT +	Protein (%rda), MT +		
Total fat (% Kc) -		Total fat (% Kc) +			Total fat (% Kc) -	
Total fat (% Kc), MT -	Total fat (% Kc), MT -	Total fat (% Kc), MT +	Total fat (% Kc), MT +	Total fat (% Kc), MT +		
		Sat. fat (% Kc) +			Sat. fat (% Kc) -	
Sat. fat (% Kc), MT -	Sat. fat (% Kc), MT -	Sat. fat (% Kc), MT +	Sat. fat (% Kc), MT +	Sat. fat (% Kc), MT +		
Cholesterol (mg) -		Cholesterol (mg) +			Cholesterol (mg) -	
Cholesterol (mg), MT -	Cholesterol (mg), MT -	Cholesterol (mg), MT +	Cholesterol (mg), MT +	Cholesterol (mg), MT +		
B-6 (%rda), MT -		B-6 (%rda), MT +	B-6 (%rda), MT +	B-6 (%rda), MT +		
Calcium (%rda) +	Calcium (%rda) +	Calcium (%rda) -	Calcium (%rda) -		Calcium (%rda) -	
Calcium (%rda), MT -		Calcium (%rda), MT +	Calcium (%rda), MT +	Calcium (%rda), MT +		
Magnesium (%rda) +		Magnesium (%rda) -	Magnesium (%rda) -			
Magnesium (%rda), MT -		Magnesium (%rda), MT +	Magnesium (%rda), MT +	Magnesium (%rda), MT +		
					Iron (%rda) -	
Iron (%rda), MT -		Iron (%rda), MT +	Iron (%rda), MT +	Iron (%rda), MT +		
					Zinc (%rda) -	
Zinc (%rda), MT -		Zinc (%rda), MT +	Zinc (%rda), MT +	Zinc (%rda), MT +		
Copper (%rda) +		Copper (%rda) -	Copper (%rda) -		Copper (%rda) +	
Copper (%rda), MT -			Copper (%rda), MT +	Copper (%rda), MT +		
			BMI +		BMI -	
Income (% poverty) +			Income (% poverty) -	Income (% poverty) -	Income (% poverty) -	
Fem head edu +			Fem head edu -		Fem head edu -	
			Race: Black +		Race: Black +	
	Race: Other +					
	Race: No data +					
					Region: Midwest +	
Region: West +						
					Urbanization: Central cities +	
			Urbanization: Non-metro +			
			Food stmps resp: Yes +			
			Food stmps resp: No answer +			
		Male hd emp: Emp full +				
			Health diet: Fair +			

NPg Females 75 to 99 Years - USDA weighted (236 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
2996	3177	367	96	People/1000
45	48	6	1	Percent
107	113	13	3	in sample
12.88	22.73	37.28	0.00	All meat (%Kc)
All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) +		
All meat (gm) -	All meat (gm) +	All meat (gm) +		
Beef all (%Kc) -	Beef all (%Kc) +			
Beef all (gm) -	Beef all (gm) +			
	Lamb,etc,all (%Kc) +			
	Lamb,etc, all (gm) +			
Poultry,all (%Kc) -	Poultry,all (%Kc) +	Poultry,all (%Kc) +		
	Poultry, all (gm) +	Poultry, all (gm) +		
	Seafood,all (%Kc) +			
		Process,all (%Kc) +		
Kcalories, MT -	Kcalories, MT +	Kcalories, MT +		
Protein (%rda) -	Protein (%rda) +	Protein (%rda) +	Protein (%rda) +	
Protein (%rda), MT -	Protein (%rda), MT +	Protein (%rda), MT +		
Total fat (% Kc) -	Total fat (% Kc) +	Total fat (% Kc) +		
Total fat (% Kc), MT -	Total fat (% Kc), MT +	Total fat (% Kc), MT +		
Sat. fat (% Kc) -	Sat. fat (% Kc) +	Sat. fat (% Kc) -	Sat. fat (% Kc) -	
Sat. fat (% Kc), MT -	Sat. fat (% Kc), MT +	Sat. fat (% Kc), MT +		
Cholesterol (mg) -	Cholesterol (mg) +	Cholesterol (mg) -		
Cholesterol (mg), MT -	Cholesterol (mg), MT +	Cholesterol (mg), MT +		
B-6 (%rda) +	B-6 (%rda) -	B-6 (%rda) -	B-6 (%rda) -	
B-6 (%rda), MT -	B-6 (%rda), MT +	B-6 (%rda), MT +		
Calcium (%rda) +	Calcium (%rda) -	Calcium (%rda) -	Calcium (%rda) +	
Calcium (%rda), MT -	Calcium (%rda), MT +	Calcium (%rda), MT +		
Magnesium (%rda) +	Magnesium (%rda) -	Magnesium (%rda) -	Magnesium (%rda) +	
Magnesium (%rda), MT -	Magnesium (%rda), MT +	Magnesium (%rda), MT +		
Iron (%rda) +	Iron (%rda) -	Iron (%rda) -	Iron (%rda) -	
Iron (%rda), MT -	Iron (%rda), MT +	Iron (%rda), MT +		
Zinc (%rda) -	Zinc (%rda) +	Zinc (%rda) -	Zinc (%rda) -	
Copper (%rda) +	Copper (%rda) -	Copper (%rda) -	Copper (%rda) -	
			Urbanization: Suburban +	
			Health diet: Poor +	

Appendix C

Tables of Significant Variances for Clustering on Beef Intake in Women Aged:

19-24; 25-34; 35-50; 51-64; 65-74; 75+

NPg Females 19 to 24 Years - USDA weighted (302 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Non-consumers	
2495	645	4148	1623	2228	People/1000
22	6	37	15	20	Percent
68	17	112	44	60	in sample
10.47	16.14	4.12	18.28	0.01	Beef all (%Kc)
All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) -	
All meat (gm) +		All meat (gm) -			
Beef all (%Kc) +	Beef all (%Kc) +	Beef all (%Kc) -	Beef all (%Kc) +		
Beef all (gm) +	Beef all (gm) +	Beef all (gm) -	Beef all (gm) +		
				Pork, all (%Kc) +	
	Pork, all (gm) -	Pork, all (gm) +		Pork, all (gm) +	
	Poultry,all (%Kc) -		Poultry,all (%Kc) -	Poultry,all (%Kc) +	
	Poultry, all (gm) -	Poultry, all (gm) +	Poultry, all (gm) -	Poultry, all (gm) +	
	Seafood,all (%Kc) -			Seafood,all (%Kc) +	
	Seafood, all (gm) -			Seafood, all (gm) +	
				Kcalories -	
Kcalories, BF +	Kcalories, BF +	Kcalories, BF -	Kcalories, BF +		
Protein (%rda) +					
Protein (%rda), BF +	Protein (%rda), BF +	Protein (%rda), BF -	Protein (%rda), BF +		
Total fat (% Kc) +				Total fat (% Kc) -	
Total fat (% Kc), BF +	Total fat (% Kc), BF +	Total fat (% Kc), BF -	Total fat (% Kc), BF +		
Sat. fat (% Kc) +				Sat. fat (% Kc) -	
Sat. fat (% Kc), BF +	Sat. fat (% Kc), BF +	Sat. fat (% Kc), BF -	Sat. fat (% Kc), BF +		
Cholesterol (mg), BF +	Cholesterol (mg), BF +	Cholesterol (mg), BF -	Cholesterol (mg), BF +		
B-6 (%rda), BF +	B-6 (%rda), BF +	B-6 (%rda), BF -	B-6 (%rda), BF +		
			Calcium (%rda) -		
Calcium (%rda), BF +	Calcium (%rda), BF +	Calcium (%rda), BF -	Calcium (%rda), BF +		
Magnesium (%rda), BF +	Magnesium (%rda), BF +	Magnesium (%rda), BF -	Magnesium (%rda), BF +		
Iron (%rda), BF +	Iron (%rda), BF +	Iron (%rda), BF -	Iron (%rda), BF +		
Zinc (%rda) +			Zinc (%rda) +	Zinc (%rda) -	
Zinc (%rda), BF +	Zinc (%rda), BF +	Zinc (%rda), BF -	Zinc (%rda), BF +		
				Copper (%rda) +	
Copper (%rda), BF +	Copper (%rda), BF +	Copper (%rda), BF -	Copper (%rda), BF +		
				BMI +	
		Vit/min supp: Never +			

NPg Females 25 to 34 Years - USDA weighted (753 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
7616	4509	3317	3988	People/1000
39	23	17	21	Percent
295	175	129	155	in sample
9.06	2.84	18.59	0.00	Beef all (%Kc)
All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) -	
		All meat (gm) +	All meat (gm) -	
Beef all (%Kc) +	Beef all (%Kc) -	Beef all (%Kc) +		
Beef all (gm) +	Beef all (gm) -	Beef all (gm) +		
		Pork, all (gm) -		
			Lamb,etc,all (%Kc) +	
			Lamb,etc, all (gm) +	
	Poultry,all (%Kc) +	Poultry,all (%Kc) -	Poultry,all (%Kc) +	
	Poultry, all (gm) +	Poultry, all (gm) -	Poultry, all (gm) +	
	Seafood,all (%Kc) +	Seafood,all (%Kc) -		
	Seafood, all (gm) +	Seafood, all (gm) -		
		Process, all (gm) -	Process, all (gm) +	
	Organ mt,all (%Kc) +			
	Organ mt all (gm) +		Organ mt all (gm) +	
	Kcalories +	Kcalories -	Kcalories -	
Kcalories, BF +	Kcalories, BF -	Kcalories, BF +		
			Protein (%rda) -	
Protein (%rda), BF +	Protein (%rda), BF -	Protein (%rda), BF +		
			Total fat (% Kc) -	
Total fat (% Kc), BF +	Total fat (% Kc), BF -	Total fat (% Kc), BF +		
	Sat. fat (% Kc) -	Sat. fat (% Kc) +	Sat. fat (% Kc) -	
Sat. fat (% Kc), BF +	Sat. fat (% Kc), BF -	Sat. fat (% Kc), BF +		
Cholesterol (mg) +			Cholesterol (mg) -	
Cholesterol (mg), BF +	Cholesterol (mg), BF -	Cholesterol (mg), BF +		
B-6 (%rda), BF +	B-6 (%rda), BF -	B-6 (%rda), BF +		
	Calcium (%rda) +	Calcium (%rda) -		
Calcium (%rda), BF +	Calcium (%rda), BF -	Calcium (%rda), BF +		
	Magnesium (%rda) +	Magnesium (%rda) -		
Magnesium (%rda), BF +	Magnesium (%rda), BF -	Magnesium (%rda), BF +		
Iron (%rda), BF +	Iron (%rda), BF -	Iron (%rda), BF +		
Zinc (%rda) +		Zinc (%rda) +	Zinc (%rda) -	
Zinc (%rda), BF +	Zinc (%rda), BF -	Zinc (%rda), BF +		
	Copper (%rda) +	Copper (%rda) -		
Copper (%rda), BF +	Copper (%rda), BF -	Copper (%rda), BF +		
		Fem head edu -	Fem head edu +	
Urbanization: Central cities -			Urbanization: Central cities +	
			Male hd emp: Emp full -	
			Male hd emp: Emp part +	
			Male hd emp: Emp not work +	
			Special diet: Yes +	

NPg Females 35 to 50 Years - USDA weighted (906 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
2565	11200	6394	4895	People/1000
10	45	26	20	Percent
93	405	231	177	in sample
19.77	5.59	12.39	0.01	Beef all (%Kc)
All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) -	
All meat (gm) +		All meat (gm) +	All meat (gm) -	
Beef all (%Kc) +	Beef all (%Kc) -	Beef all (%Kc) +		
Beef all (gm) +	Beef all (gm) -	Beef all (gm) +		
			Pork, all (%Kc) +	
Pork, all (gm) -			Pork, all (gm) +	
			Lamb,etc, all (gm) -	
			Poultry,all (%Kc) +	
Poultry, all (gm) -	Poultry, all (gm) +	Poultry, all (gm) -	Poultry, all (gm) +	
Seafood,all (%Kc) -			Seafood,all (%Kc) +	
Seafood, all (gm) -	Seafood, all (gm) +		Seafood, all (gm) +	
Process, all (gm) -				
Kcalories -	Kcalories +		Kcalories -	
Kcalories, BF +	Kcalories, BF -	Kcalories, BF +		
			Protein (%rda) -	
Protein (%rda), BF +	Protein (%rda), BF -	Protein (%rda), BF +		
			Total fat (% Kc) -	
Total fat (% Kc), BF +	Total fat (% Kc), BF -	Total fat (% Kc), BF +		
Sat. fat (% Kc) +		Sat. fat (% Kc) +	Sat. fat (% Kc) -	
Sat. fat (% Kc), BF +	Sat. fat (% Kc), BF -	Sat. fat (% Kc), BF +		
	Cholesterol (mg) +		Cholesterol (mg) -	
Cholesterol (mg), BF +	Cholesterol (mg), BF -	Cholesterol (mg), BF +		
	B-6 (%rda) +		B-6 (%rda) -	
B-6 (%rda), BF +	B-6 (%rda), BF -	B-6 (%rda), BF +		
Calcium (%rda) -	Calcium (%rda) +		Calcium (%rda) -	
Calcium (%rda), BF +	Calcium (%rda), BF -	Calcium (%rda), BF +		
Magnesium (%rda) -	Magnesium (%rda) +		Magnesium (%rda) -	
Magnesium (%rda), BF +	Magnesium (%rda), BF -	Magnesium (%rda), BF +		
	Iron (%rda) +		Iron (%rda) -	
Iron (%rda), BF +	Iron (%rda), BF -	Iron (%rda), BF +		
Zinc (%rda) +		Zinc (%rda) +	Zinc (%rda) -	
Zinc (%rda), BF +	Zinc (%rda), BF -	Zinc (%rda), BF +		
Copper (%rda) -	Copper (%rda) +		Copper (%rda) -	
Copper (%rda), BF +	Copper (%rda), BF -	Copper (%rda), BF +		
BMI +				
			Race: Black +	
			Race: Other +	
			Region: West +	
			Male hd emp: Emp full -	
			Male hd emp: Emp not work +	
			Male hd emp: Not Emp +	
			Female hd emp: Can't calc +	
			Special diet: Yes +	

NPg Females 51 to 64 Years - USDA weighted (639 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
7967	3353	37	3943	People/1000
52	22	0	26	Percent
333	140	2	165	in sample
6.58	16.51	51.03	0.00	Beef all (%Kc)
	All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) -	
	All meat (gm) +		All meat (gm) -	
Beef all (%Kc) -	Beef all (%Kc) +	Beef all (%Kc) +		
Beef all (gm) -	Beef all (gm) +	Beef all (gm) +		
		Pork, all (gm) -		
Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) +	
Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) +	
	Poultry,all (%Kc) -	Poultry,all (%Kc) -	Poultry,all (%Kc) +	
	Poultry, all (gm) -	Poultry, all (gm) -	Poultry, all (gm) +	
	Seafood,all (%Kc) -	Seafood,all (%Kc) -	Seafood,all (%Kc) +	
	Seafood, all (gm) -	Seafood, all (gm) -	Seafood, all (gm) +	
		Process,all (%Kc) -		
	Process, all (gm) -	Process, all (gm) -		
Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) +	
Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) +	
Kcalories +		Kcalories -	Kcalories -	
Kcalories, BF -	Kcalories, BF +	Kcalories, BF +		
			Protein (%rda) -	
Protein (%rda), BF -	Protein (%rda), BF +	Protein (%rda), BF +		
	Total fat (% Kc) +		Total fat (% Kc) -	
Total fat (% Kc), BF -	Total fat (% Kc), BF +	Total fat (% Kc), BF +		
	Sat. fat (% Kc) +		Sat. fat (% Kc) -	
Sat. fat (% Kc), BF -	Sat. fat (% Kc), BF +	Sat. fat (% Kc), BF +		
Cholesterol (mg), BF -	Cholesterol (mg), BF +	Cholesterol (mg), BF +		
B-6 (%rda), BF -	B-6 (%rda), BF +	B-6 (%rda), BF +		
	Calcium (%rda) -			
Calcium (%rda), BF -	Calcium (%rda), BF +	Calcium (%rda), BF +		
	Magnesium (%rda) -	Magnesium (%rda) -	Magnesium (%rda) +	
Magnesium (%rda), BF -	Magnesium (%rda), BF +	Magnesium (%rda), BF +		
Iron (%rda), BF -	Iron (%rda), BF +	Iron (%rda), BF +		
	Zinc (%rda) +		Zinc (%rda) -	
Zinc (%rda), BF -	Zinc (%rda), BF +	Zinc (%rda), BF +		
	Copper (%rda) -	Copper (%rda) -	Copper (%rda) +	
Copper (%rda), BF -	Copper (%rda), BF +	Copper (%rda), BF +		
	Income (% poverty) -		Income (% poverty) +	
			Region: Northeast +	
			Region: Midwest -	
		Female hd emp: Can't calc +		

NPg Females 65 to 74 Years - USDA weighted (387 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Non-consumers	
175	912	2569	2310	608	2939	People/1000
2	10	27	24	6	31	Percent
7	37	105	94	25	120	in sample
31.56	9.34	3.41	14.67	6.90	0.00	Beef all (%Kc)
All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) +		All meat (%Kc) -	
	All meat (gm) +	All meat (gm) -	All meat (gm) +		All meat (gm) -	
Beef all (%Kc) +	Beef all (%Kc) +	Beef all (%Kc) -	Beef all (%Kc) +	Beef all (%Kc) +		
Beef all (gm) +	Beef all (gm) +	Beef all (gm) -	Beef all (gm) +	Beef all (gm) +		
Pork, all (%Kc) -				Pork, all (%Kc) -		
Pork, all (gm) -		Pork, all (gm) +		Pork, all (gm) -		
Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,otc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) +	
Lamb,etc, all (gm) -	Lamb,etc, all (gm) +	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) +	
Poultry,all (%Kc) -					Poultry,all (%Kc) +	
Poultry, all (gm) -			Poultry, all (gm) -		Poultry, all (gm) +	
					Seafood,all (%Kc) +	
			Seafood, all (gm) -		Seafood, all (gm) +	
Process,all (%Kc) -						
Process, all (gm) -						
Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) +	
Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) +	
Kcalories -	Kcalories +	Kcalories +			Kcalories -	
Kcalories, BF +	Kcalories, BF +	Kcalories, BF -	Kcalories, BF +	Kcalories, BF +		
Protein (%rda) -	Protein (%rda) +		Protein (%rda) +		Protein (%rda) -	
Protein (%rda), BF +	Protein (%rda), BF +	Protein (%rda), BF -	Protein (%rda), BF +	Protein (%rda), BF +		
Total fat (% Kc), BF +	Total fat (% Kc), BF +	Total fat (% Kc), BF -	Total fat (% Kc), BF +	Total fat (% Kc), BF +		
Sat. fat (% Kc) +		Sat. fat (% Kc) +			Sat. fat (% Kc) -	
Sat. fat (% Kc), BF +	Sat. fat (% Kc), BF +	Sat. fat (% Kc), BF -	Sat. fat (% Kc), BF +	Sat. fat (% Kc), BF +		
	Cholesterol (mg) +	Cholesterol (mg) +			Cholesterol (mg) -	
Cholesterol (mg), BF +	Cholesterol (mg), BF +	Cholesterol (mg), BF -	Cholesterol (mg), BF +	Cholesterol (mg), BF +		
B-6 (%rda) -	B-6 (%rda) +			B-6 (%rda) +		
B-6 (%rda), BF +	B-6 (%rda), BF +	B-6 (%rda), BF -	B-6 (%rda), BF +	B-6 (%rda), BF +		
Calcium (%rda) -		Calcium (%rda) +				
Calcium (%rda), BF +	Calcium (%rda), BF +	Calcium (%rda), BF -	Calcium (%rda), BF +	Calcium (%rda), BF +		
Magnesium (%rda) -	Magnesium (%rda) +					
Magnesium (%rda), BF +	Magnesium (%rda), BF +	Magnesium (%rda), BF -	Magnesium (%rda), BF +	Magnesium (%rda), BF +		
Iron (%rda) -	Iron (%rda) +				Iron (%rda) -	
Iron (%rda), BF +	Iron (%rda), BF +	Iron (%rda), BF -	Iron (%rda), BF +	Iron (%rda), BF +		
	Zinc (%rda) +		Zinc (%rda) +		Zinc (%rda) -	
Zinc (%rda), BF +	Zinc (%rda), BF +	Zinc (%rda), BF -	Zinc (%rda), BF +	Zinc (%rda), BF +		
Copper (%rda) -						
Copper (%rda), BF +	Copper (%rda), BF +	Copper (%rda), BF -	Copper (%rda), BF +	Copper (%rda), BF +		
					Race: Black +	
			Race: Other +			
	Female hd emp: Emp part +					
		Health diet: Poor +				
				Health diet: No answer +		
				Special diet: No answer +		

NFg Females 75 to 99 Years - USDA weighted (236 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Non-consumers	
728	317	224	2212	1097	2057	People/1000
11	5	3	33	17	31	Percent
26	11	8	79	39	73	in sample
6.23	28.94	18.51	11.72	3.11	0.00	Beef all (%Kc)
	All meat (%Kc) +	All meat (%Kc) +		All meat (%Kc) -		
	All meat (gm) +	All meat (gm) +				
Beef all (%Kc) -	Beef all (%Kc) +	Beef all (%Kc) +	Beef all (%Kc) +	Beef all (%Kc) -		
	Beef all (gm) +	Beef all (gm) +	Beef all (gm) +	Beef all (gm) -		
Pork, all (%Kc) -	Pork, all (%Kc) -	Pork, all (%Kc) -	Pork, all (%Kc) -	Pork, all (%Kc) +	Pork, all (%Kc) +	
Pork, all (gm) -	Pork, all (gm) -	Pork, all (gm) -	Pork, all (gm) -	Pork, all (gm) +	Pork, all (gm) +	
Lamb,etc,all (%Kc) +	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) +	
Lamb,etc, all (gm) +	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) +	
	Poultry,all (%Kc) -				Poultry,all (%Kc) +	
	Poultry, all (gm) -	Poultry, all (gm) -			Poultry, all (gm) +	
					Seafood,all (%Kc) +	
	Process,all (%Kc) -				Process,all (%Kc) +	
	Process, all (gm) -	Process, all (gm) -			Process, all (gm) +	
Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) +	Organ mt,all (%Kc) +	
Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) +	Organ mt all (gm) +	
				Kcalories +	Kcalories -	
	Kcalories, BF +	Kcalories, BF +	Kcalories, BF +	Kcalories, BF -		
	Protein (%rda), BF +	Protein (%rda), BF +	Protein (%rda), BF +	Protein (%rda), BF -		
		Total fat (% Kc) +		Total fat (% Kc) -		
	Total fat (% Kc), BF +	Total fat (% Kc), BF +	Total fat (% Kc), BF +	Total fat (% Kc), BF -		
		Sat. fat (% Kc) +		Sat. fat (% Kc) -		
	Sat. fat (% Kc), BF +	Sat. fat (% Kc), BF +	Sat. fat (% Kc), BF +	Sat. fat (% Kc), BF -		
Cholesterol (mg) -		Cholesterol (mg) +				
	Cholesterol (mg), BF +	Cholesterol (mg), BF +	Cholesterol (mg), BF +	Cholesterol (mg), BF -		
	B-6 (%rda) -			B-6 (%rda) +		
	B-6 (%rda), BF +	B-6 (%rda), BF +	B-6 (%rda), BF +	B-6 (%rda), BF -		
	Calcium (%rda), BF +	Calcium (%rda), BF +	Calcium (%rda), BF +	Calcium (%rda), BF -		
	Magnesium (%rda) -			Magnesium (%rda) +		
	Magnesium (%rda), BF +	Magnesium (%rda), BF +	Magnesium (%rda), BF +	Magnesium (%rda), BF -		
	Iron (%rda) -		Iron (%rda) +			
	Iron (%rda), BF +	Iron (%rda), BF +	Iron (%rda), BF +	Iron (%rda), BF -		
					Zinc (%rda) -	
	Zinc (%rda), BF +	Zinc (%rda), BF +	Zinc (%rda), BF +	Zinc (%rda), BF -		
	Copper (%rda) -			Copper (%rda) +		
	Copper (%rda), BF +	Copper (%rda), BF +	Copper (%rda), BF +	Copper (%rda), BF -		
		BMI -			BMI +	
					Race: Black +	
				Urbanization: Central cities -		
Urbanization: Suburban +						
	Food stmps resp: No answer +					
Male hd emp: Emp full +						
	Male hd emp: Emp part +					
Female hd emp: Emp full +						
Female hd emp: Emp part +						
				Female hd emp: Emp not work +		
		Health diet: Very good +				
Health diet: Good -						
Health diet: Fair +						

Appendix D

Tables of Significant Variances for Clustering on Poultry Intake in Women Aged: 19-24; 25-34; 35-50; 51-64; 65-74; 75+

NPg Females 19 to 24 Years - USDA weighted (302 individuals)

Cluster 1	Cluster 2	Non-consumers	
3271	2805	5063	People/1000
29	25	45	Percent
89	76	137	in sample
11.03	3.52	0.00	Poultry,all (%Kc)
All meat (%Kc) +		All meat (%Kc) -	
All meat (gm) +		All meat (gm) -	
Beef all (%Kc) -		Beef all (%Kc) +	
Beef all (gm) -		Beef all (gm) +	
Poultry,all (%Kc) +	Poultry,all (%Kc) -		
Poultry, all (gm) +	Poultry, all (gm) +		
Process,all (%Kc) -		Process,all (%Kc) +	
	Kcalories +		
Kcalories, PL +	Kcalories, PL -		
	Protein (%rda) +	Protein (%rda) -	
Protein (%rda), PL +	Protein (%rda), PL +		
Total fat (% Kc) -		Total fat (% Kc) +	
Total fat (% Kc), PL +	Total fat (% Kc), PL -		
Sat. fat (% Kc) -		Sat. fat (% Kc) +	
Sat. fat (% Kc), PL +	Sat. fat (% Kc), PL -		
Cholesterol (mg), PL +	Cholesterol (mg), PL -		
B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) -	
B-6 (%rda), PL +	B-6 (%rda), PL +		
Calcium (%rda) -	Calcium (%rda) +		
Calcium (%rda), PL +	Calcium (%rda), PL +		
	Magnesium (%rda) +	Magnesium (%rda) -	
Magnesium (%rda), PL +	Magnesium (%rda), PL -		
	Iron (%rda) +		
Iron (%rda), PL +	Iron (%rda), PL +		
Zinc (%rda), PL +	Zinc (%rda), PL +		
Copper (%rda), PL +	Copper (%rda), PL -		
	BMI +		
	Income (% poverty) +	Income (% poverty) -	
	Urbanization: Central cities -		
Health diet: Excellent +			
	Special diet: Yes +		
	Special diet: No answer +		
	Vit/min supp: Daily +		

NPg Females 25 to 34 Years - USDA weighted (753 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Non-consumers	
615	4032	2268	3973	820	7723	People/1000
3	21	12	20	4	40	Percent
24	156	88	154	32	299	in sample
0.41	4.87	2.02	9.40	17.70	0.00	Poultry,all (%Kc)
All meat (%Kc) -		All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) +		
All meat (gm) -	All meat (gm) +		All meat (gm) +	All meat (gm) +	All meat (gm) -	
			Beef all (%Kc) -	Beef all (%Kc) -	Beef all (%Kc) +	
			Beef all (gm) -	Beef all (gm) -	Beef all (gm) +	
					Pork, all (%Kc) +	
					Pork, all (gm) +	
Poultry,all (%Kc) -	Poultry,all (%Kc) +	Poultry,all (%Kc) -	Poultry,all (%Kc) +	Poultry,all (%Kc) +		
Poultry, all (gm) -	Poultry, all (gm) +	Poultry, all (gm) -	Poultry, all (gm) +	Poultry, all (gm) +		
Seafood,all (%Kc) -					Seafood,all (%Kc) +	
Seafood, all (gm) -						
	Kcalories +	Kcalories +		Kcalories -	Kcalories -	
Kcalories, PL -	Kcalories, PL +	Kcalories, PL -	Kcalories, PL +	Kcalories, PL +		
	Protein (%rda) +	Protein (%rda) +	Protein (%rda) +		Protein (%rda) -	
Protein (%rda), PL -	Protein (%rda), PL +	Protein (%rda), PL -	Protein (%rda), PL +	Protein (%rda), PL +		
Total fat (% Kc), PL -	Total fat (% Kc), PL +	Total fat (% Kc), PL -	Total fat (% Kc), PL +	Total fat (% Kc), PL +		
			Sat. fat (% Kc) -	Sat. fat (% Kc) -	Sat. fat (% Kc) +	
Sat. fat (% Kc), PL -	Sat. fat (% Kc), PL +	Sat. fat (% Kc), PL -	Sat. fat (% Kc), PL +	Sat. fat (% Kc), PL +		
	Cholesterol (mg) +	Cholesterol (mg) +			Cholesterol (mg) -	
Cholesterol (mg), PL -	Cholesterol (mg), PL +	Cholesterol (mg), PL -	Cholesterol (mg), PL +	Cholesterol (mg), PL +		
	B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) +		B-6 (%rda) -	
B-6 (%rda), PL -	B-6 (%rda), PL +	B-6 (%rda), PL -	B-6 (%rda), PL +	B-6 (%rda), PL +		
Calcium (%rda) +		Calcium (%rda) +		Calcium (%rda) -		
Calcium (%rda), PL -	Calcium (%rda), PL +	Calcium (%rda), PL -	Calcium (%rda), PL +	Calcium (%rda), PL +		
		Magnesium (%rda) +		Magnesium (%rda) -	Magnesium (%rda) -	
Magnesium (%rda), PL -	Magnesium (%rda), PL +	Magnesium (%rda), PL -	Magnesium (%rda), PL +	Magnesium (%rda), PL +		
	Iron (%rda) +	Iron (%rda) +		Iron (%rda) -	Iron (%rda) -	
Iron (%rda), PL -	Iron (%rda), PL +	Iron (%rda), PL -	Iron (%rda), PL +	Iron (%rda), PL +		
		Zinc (%rda) +				
Zinc (%rda), PL -	Zinc (%rda), PL +	Zinc (%rda), PL -	Zinc (%rda), PL +	Zinc (%rda), PL +		
Copper (%rda) -	Copper (%rda) +	Copper (%rda) +				
Copper (%rda), PL -	Copper (%rda), PL +	Copper (%rda), PL -	Copper (%rda), PL +	Copper (%rda), PL +		
		Income (% poverty) +	Income (% poverty) +		Income (% poverty) -	
Fem head edu -		Fem head edu +		Fem head edu +		
Region: Midwest +						
					Urbanization: Central cities -	
			Health diet: Excellent +			
Vit/min supp: No answer +						

NPg Females 35 to 50 Years - USDA weighted (906 individuals)

	Cluster 1	Cluster 2	Cluster 3	Non-consumers
People/1000	4394	117	10524	10019
Percent	18	0	42	40
in sample	159	4	381	362
Poultry,all (%Kc)	12.80	53.69	4.94	0.00
All meat (%Kc)	+	+	-	-
All meat (gm)	+	-	+	-
Beef all (%Kc)	-	-	-	+
Beef all (gm)	-	-	-	+
Pork, all (%Kc)	-	-	-	+
Pork, all (gm)	-	-	-	+
Lamb,etc,all (%Kc)	+	-	+	-
Lamb,etc, all (gm)	-	-	+	-
Poultry,all (%Kc)	+	+	+	-
Poultry, all (gm)	+	+	+	
Seafood,all (%Kc)	-	-	+	-
Seafood, all (gm)	-	-	+	-
Process,all (%Kc)	-	-	-	+
Process, all (gm)	-	-	+	+
Organ mt,all (%Kc)	-	-	-	+
Organ mt all (gm)	-	-	-	+
Kcalories	-	-	+	-
Kcalories, PL	+	+	+	
Protein (%rda)	+	-	+	-
Protein (%rda), PL	+	+	+	
Total fat (% Kc)	+	+	-	-
Total fat (% Kc), PL	+	+	+	
Sat. fat (% Kc)	-	+	-	+
Sat. fat (% Kc), PL	+		+	
Cholesterol (mg)	+		+	-
Cholesterol (mg), PL	+		+	
B-6 (%rda)	+	-	+	-
B-6 (%rda), PL	+	+	+	
Calcium (%rda)	-		+	-
Calcium (%rda), PL	+	+	+	
Magnesium (%rda)	-	-	+	-
Magnesium (%rda), PL	+	+	+	
Iron (%rda)	-	-	+	-
Iron (%rda), PL	+	+	+	
Zinc (%rda)	-		+	-
Zinc (%rda), PL	+	+	+	
Copper (%rda)	-		+	-
Copper (%rda), PL	+	+	+	
BMI	-		-	+
Income (% poverty)	+	-	+	-
Fem head edu	+	-	+	-
Race: Black				-
Race: Other		+		
Region: Northeast	-			
Region: South		+		
Male hd emp: Not Emp		+		
Health diet: Very good			+	-
Health diet: Fair				+

NPg Females 51 to 64 Years - USDA weighted (639 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Non-consumers	
2199	1419	3914	1542	6225	People/1000
14	9	26	10	41	Percent
92	59	163	64	260	in sample
8.19	8.40	3.50	16.83	0.00	Poultry,all (%Kc)
All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) -	
All meat (gm) +	All meat (gm) +		All meat (gm) +	All meat (gm) -	
			Beef all (%Kc) -	Beef all (%Kc) +	
			Beef all (gm) -	Beef all (gm) +	
				Pork, all (%Kc) +	
				Pork, all (gm) +	
Poultry,all (%Kc) +	Poultry,all (%Kc) +	Poultry,all (%Kc) -	Poultry,all (%Kc) +		
Poultry, all (gm) +	Poultry, all (gm) +	Poultry, all (gm) -	Poultry, all (gm) +		
			Process, all (gm) -		
		Kcalories +	Kcalories -		
Kcalories, PL +	Kcalories, PL +	Kcalories, PL -	Kcalories, PL +		
Protein (%rda) +			Protein (%rda) +	Protein (%rda) -	
Protein (%rda), PL +	Protein (%rda), PL +	Protein (%rda), PL -	Protein (%rda), PL +		
Total fat (% Kc), PL +	Total fat (% Kc), PL +	Total fat (% Kc), PL -	Total fat (% Kc), PL +		
			Sat. fat (% Kc) -	Sat. fat (% Kc) +	
Sat. fat (% Kc), PL +	Sat. fat (% Kc), PL +	Sat. fat (% Kc), PL -	Sat. fat (% Kc), PL +		
Cholesterol (mg), PL +	Cholesterol (mg), PL +	Cholesterol (mg), PL -	Cholesterol (mg), PL +		
B-6 (%rda) +	B-6 (%rda) +		B-6 (%rda) +	B-6 (%rda) -	
B-6 (%rda), PL +	B-6 (%rda), PL +	B-6 (%rda), PL -	B-6 (%rda), PL +		
			Calcium (%rda) -		
Calcium (%rda), PL +	Calcium (%rda), PL +	Calcium (%rda), PL -	Calcium (%rda), PL +		
Magnesium (%rda), PL +	Magnesium (%rda), PL +	Magnesium (%rda), PL -	Magnesium (%rda), PL +		
Iron (%rda), PL +	Iron (%rda), PL +	Iron (%rda), PL -	Iron (%rda), PL +		
Zinc (%rda), PL +	Zinc (%rda), PL +	Zinc (%rda), PL -	Zinc (%rda), PL +		
Copper (%rda), PL +	Copper (%rda), PL +	Copper (%rda), PL -	Copper (%rda), PL +		
				Health diet: Excellent -	

NPg Females 65 to 74 Years - USDA weighted (387 individuals)

Cluster 1	Cluster 2	Non-consumers	
182	5696	3635	People/1000
2	60	38	Percent
7	232	148	in sample
31.27	7.47	0.00	Poultry,all (%Kc)

All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) -
All meat (gm) +	All meat (gm) +	All meat (gm) -
Beef all (%Kc) -		Beef all (%Kc) +
Beef all (gm) -		Beef all (gm) +
Pork, all (%Kc) +		
Pork, all (gm) +		
Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) +	Lamb,etc,all (%Kc) -
Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) +
Poultry,all (%Kc) +		
Poultry, all (gm) +		
	Seafood,all (%Kc) +	
Seafood, all (gm) -	Seafood, all (gm) +	
	Process,all (%Kc) -	Process,all (%Kc) +
Kcalories -	Kcalories +	Kcalories -
Kcalories, PL +		
Protein (%rda) +	Protein (%rda) +	Protein (%rda) -
Protein (%rda), PL +		
Total fat (% Kc), PL +		
	Sat. fat (% Kc) -	Sat. fat (% Kc) +
Sat. fat (% Kc), PL +		
	Cholesterol (mg) +	Cholesterol (mg) -
Cholesterol (mg), PL +		
B-6 (%rda) -	B-6 (%rda) +	B-6 (%rda) -
	B-6 (%rda), PL +	
Calcium (%rda) -		
Calcium (%rda), PL +		
Magnesium (%rda) -		
Magnesium (%rda), PL +		
Iron (%rda) -		
Iron (%rda), PL +		
Zinc (%rda), PL +		
Copper (%rda) -		
Copper (%rda), PL +		
	BMI -	BMI +
	Fem head edu +	Fem head edu +
Race: Black +		
Food stmps resp: Yes +		
Male hd emp: Emp full +		
Health diet: Fair +		
Health diet: No answer +		
	Special diet: Yes +	Special diet: Yes -
		Special diet: No +
Special diet: No answer +		
Vit/min supp: No answer +		

NPg Females 75 to 99 Years - USDA weighted (236 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Non-consumers	
258	94	1224	2378	2681	People/1000
4	1	18	36	40	Percent
9	3	44	85	95	in sample
16.77	35.08	9.88	3.71	0.00	Poultry,all (%Kc)
All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) -	
All meat (gm) +	All meat (gm) +	All meat (gm) +	All meat (gm) -	All meat (gm) -	
Beef all (%Kc) -	Beef all (%Kc) -	Beef all (%Kc) -	Beef all (%Kc) -	Beef all (%Kc) +	
Beef all (gm) -	Beef all (gm) -	Beef all (gm) -	Beef all (gm) +	Beef all (gm) +	
Pork, all (%Kc) +	Pork, all (%Kc) -	Pork, all (%Kc) +	Pork, all (%Kc) -	Pork, all (%Kc) +	
Pork, all (gm) +	Pork, all (gm) -	Pork, all (gm) +	Pork, all (gm) -	Pork, all (gm) +	
Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) +	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) +	
Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) +	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	
Poultry,all (%Kc) +		Poultry,all (%Kc) +	Poultry,all (%Kc) -		
Poultry, all (gm) +	Poultry, all (gm) +	Poultry, all (gm) +	Poultry, all (gm) +		
Seafood,all (%Kc) -	Seafood,all (%Kc) -	Seafood,all (%Kc) +	Seafood,all (%Kc) -	Seafood,all (%Kc) -	
Seafood, all (gm) -	Seafood, all (gm) -	Seafood, all (gm) +	Seafood, all (gm) -	Seafood, all (gm) -	
Process,all (%Kc) -		Process,all (%Kc) +	Process,all (%Kc) -	Process,all (%Kc) +	
Process, all (gm) -	Process, all (gm) +	Process, all (gm) +	Process, all (gm) -	Process, all (gm) +	
Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) +	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	
Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) +	Organ mt all (gm) -	Organ mt all (gm) -	
Kcalories -	Kcalories -	Kcalories -	Kcalories +	Kcalories +	
Kcalories, PL +	Kcalories, PL +	Kcalories, PL +	Kcalories, PL +		
Protein (%rda) -	Protein (%rda) +	Protein (%rda) +	Protein (%rda) +	Protein (%rda) -	
Protein (%rda), PL +	Protein (%rda), PL +	Protein (%rda), PL +	Protein (%rda), PL +		
		Total fat (% Kc) -	Total fat (% Kc) -	Total fat (% Kc) +	
Total fat (% Kc), PL +	Total fat (% Kc), PL +	Total fat (% Kc), PL +	Total fat (% Kc), PL -		
		Sat. fat (% Kc) -	Sat. fat (% Kc) -	Sat. fat (% Kc) +	
Sat. fat (% Kc), PL +	Sat. fat (% Kc), PL +	Sat. fat (% Kc), PL +	Sat. fat (% Kc), PL -		
Cholesterol (mg) -	Cholesterol (mg) -	Cholesterol (mg) +	Cholesterol (mg) +	Cholesterol (mg) -	
Cholesterol (mg), PL +		Cholesterol (mg), PL +	Cholesterol (mg), PL +		
B-6 (%rda) -	B-6 (%rda) -	B-6 (%rda) -	B-6 (%rda) +	B-6 (%rda) -	
B-6 (%rda), PL +	B-6 (%rda), PL +	B-6 (%rda), PL +	B-6 (%rda), PL +		
Calcium (%rda) -	Calcium (%rda) -	Calcium (%rda) -	Calcium (%rda) +	Calcium (%rda) +	
Calcium (%rda), PL +	Calcium (%rda), PL +	Calcium (%rda), PL +	Calcium (%rda), PL +		
Magnesium (%rda) -		Magnesium (%rda) -	Magnesium (%rda) +	Magnesium (%rda) -	
Magnesium (%rda), PL +	Magnesium (%rda), PL +	Magnesium (%rda), PL +	Magnesium (%rda), PL +		
			Zinc (%rda) -	Zinc (%rda) +	
Zinc (%rda), PL +	Zinc (%rda), PL +	Zinc (%rda), PL +	Zinc (%rda), PL -		
Copper (%rda) -	Copper (%rda) -	Copper (%rda) -	Copper (%rda) +	Copper (%rda) -	
Copper (%rda), PL +		Copper (%rda), PL +	Copper (%rda), PL -		
BMI +	BMI +	BMI +	BMI -	BMI -	
Income (% poverty) -	Income (% poverty) -	Income (% poverty) +	Income (% poverty) +	Income (% poverty) -	
Fem head edu -	Fem head edu -	Fem head edu +	Fem head edu +	Fem head edu -	
Race: Black +	Race: Black +		Race: Black -		
		Region: Northeast +			
		Region: Midwest -			
				Urbanization: Suburban +	
Food stmps resp: Yes +	Food stmps resp: Yes +		Food stmps resp: Yes -		
		Health diet: Good -	Health diet: Good +		
		Health diet: Fair +			
			Vit/min supp: Almost daily +		
			Vit/min supp: Never -		

Appendix E

Tables of Significant Variances for Clustering on Processed Meat Intake in Women Aged: 19-24; 25-34; 35-50; 51-64; 65-74; 75+

NPg Females 19 to 24 Years - USDA weighted (302 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
2740	4497	818	3083	People/1000
25	40	7	28	Percent
74	122	22	84	in sample
1.81	5.82	15.38	0.00	Process,all (%Kc)
		All meat (%Kc) +		
			All meat (gm) -	
Pork, all (%Kc) +				
Poultry, all (gm) +		Poultry, all (gm) -		
		Seafood,all (%Kc) -	Seafood,all (%Kc) +	
Process,all (%Kc) -	Process,all (%Kc) +	Process,all (%Kc) +		
Process, all (gm) -	Process, all (gm) +	Process, all (gm) +		
Kcalories +			Kcalories -	
Kcalories, PR -	Kcalories, PR +	Kcalories, PR +		
Protein (%rda) +			Protein (%rda) -	
Protein (%rda), PR -	Protein (%rda), PR +	Protein (%rda), PR +		
	Total fat (% Kc) +	Total fat (% Kc) +	Total fat (% Kc) -	
Total fat (% Kc), PR -	Total fat (% Kc), PR +	Total fat (% Kc), PR +		
	Sat. fat (% Kc) +	Sat. fat (% Kc) +	Sat. fat (% Kc) -	
Sat. fat (% Kc), PR -	Sat. fat (% Kc), PR +	Sat. fat (% Kc), PR +		
Cholesterol (mg) +			Cholesterol (mg) -	
Cholesterol (mg), PR -	Cholesterol (mg), PR +	Cholesterol (mg), PR +		
B-6 (%rda) +				
B-6 (%rda), PR -	B-6 (%rda), PR +	B-6 (%rda), PR +		
Calcium (%rda) +			Calcium (%rda) -	
	Calcium (%rda), PR +	Calcium (%rda), PR +		
Magnesium (%rda) +		Magnesium (%rda) -		
Magnesium (%rda), PR -	Magnesium (%rda), PR +	Magnesium (%rda), PR +		
Iron (%rda) +			Iron (%rda) -	
Iron (%rda), PR -	Iron (%rda), PR +	Iron (%rda), PR +		
Zinc (%rda) +			Zinc (%rda) -	
Zinc (%rda), PR -	Zinc (%rda), PR +	Zinc (%rda), PR +		
Copper (%rda), PR -	Copper (%rda), PR +	Copper (%rda), PR +		
		Income (% poverty) -		
			Region: West +	
		Food stmps resp: Yes +		

NPg Females 25 to 34 Years - USDA weighted (753 individuals)

Cluster 1	Cluster 2	Non-consumers	
6856	7980	4594	People/1000
35	41	24	Percent
266	309	178	in sample
9.04	3.05	0.00	Process,all (%Kc)
All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) -	
All meat (gm) +		All meat (gm) -	
	Beef all (gm) +	Beef all (gm) -	
		Poultry,all (%Kc) +	
		Seafood,all (%Kc) +	
Process,all (%Kc) +	Process,all (%Kc) -		
Process, all (gm) +	Process, all (gm) -		
Organ mt,all (%Kc) +			
Organ mt all (gm) +			
	Kcalories +	Kcalories -	
Kcalories, PR +	Kcalories, PR -		
	Protein (%rda) +	Protein (%rda) -	
Protein (%rda), PR +	Protein (%rda), PR -		
Total fat (% Kc) +	Total fat (% Kc) -	Total fat (% Kc) -	
Total fat (% Kc), PR +	Total fat (% Kc), PR -		
Sat. fat (% Kc) +	Sat. fat (% Kc) -	Sat. fat (% Kc) -	
Sat. fat (% Kc), PR +	Sat. fat (% Kc), PR -		
Cholesterol (mg) +		Cholesterol (mg) -	
Cholesterol (mg), PR +	Cholesterol (mg), PR -		
	B-6 (%rda) +	B-6 (%rda) -	
B-6 (%rda), PR +	B-6 (%rda), PR -		
	Calcium (%rda) +	Calcium (%rda) -	
Calcium (%rda), PR +	Calcium (%rda), PR -		
Magnesium (%rda) -	Magnesium (%rda) +	Magnesium (%rda) -	
Magnesium (%rda), PR +	Magnesium (%rda), PR -		
	Iron (%rda) +	Iron (%rda) -	
Iron (%rda), PR +	Iron (%rda), PR -		
	Zinc (%rda) +	Zinc (%rda) -	
Zinc (%rda), PR +	Zinc (%rda), PR -		
	Copper (%rda) +	Copper (%rda) -	
Copper (%rda), PR +	Copper (%rda), PR -		
BMI +			
		Race: Black -	
		Region: Northeast +	
Region: Midwest +		Region: Midwest -	
		Region: South -	
		Region: West +	
Urbanization: Non-metro +	Urbanization: Non-metro -		
Food stmps resp: Yes +			
Special diet: Yes -		Special diet: Yes +	

NPg Females 35 to 50 Years - USDA weighted (906 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
6532	9698	803	8021	People/1000
26	39	3	32	Percent
236	351	29	290	in sample
2.28	7.38	20.50	0.00	Process,all (%Kc)
All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) -	
	All meat (gm) +	All meat (gm) +	All meat (gm) -	
		Beef all (%Kc) -		
		Pork, all (gm) -		
			Poultry,all (%Kc) +	
			Seafood,all (%Kc) +	
Process,all (%Kc) -	Process,all (%Kc) +	Process,all (%Kc) +		
Process, all (gm) -	Process, all (gm) +	Process, all (gm) +		
	Organ mt,all (%Kc) +	Organ mt,all (%Kc) +		
	Organ mt all (gm) +			
Kcalories +	Kcalories +	Kcalories -	Kcalories -	
Kcalories, PR -	Kcalories, PR +	Kcalories, PR +		
			Protein (%rda) -	
Protein (%rda), PR -	Protein (%rda), PR +	Protein (%rda), PR +		
Total fat (% Kc) -	Total fat (% Kc) +	Total fat (% Kc) +	Total fat (% Kc) -	
Total fat (% Kc), PR -	Total fat (% Kc), PR +	Total fat (% Kc), PR +		
	Sat. fat (% Kc) +	Sat. fat (% Kc) +	Sat. fat (% Kc) -	
Sat. fat (% Kc), PR -	Sat. fat (% Kc), PR +	Sat. fat (% Kc), PR +		
	Cholesterol (mg) +		Cholesterol (mg) -	
Cholesterol (mg), PR -	Cholesterol (mg), PR +	Cholesterol (mg), PR +		
B-6 (%rda), PR -	B-6 (%rda), PR +	B-6 (%rda), PR +		
Calcium (%rda) +		Calcium (%rda) -		
Calcium (%rda), PR -	Calcium (%rda), PR +	Calcium (%rda), PR +		
		Magnesium (%rda) -		
Magnesium (%rda), PR -	Magnesium (%rda), PR +	Magnesium (%rda), PR +		
Iron (%rda), PR -	Iron (%rda), PR +	Iron (%rda), PR +		
Zinc (%rda), PR -	Zinc (%rda), PR +	Zinc (%rda), PR +		
Copper (%rda), PR -	Copper (%rda), PR +	Copper (%rda), PR +		
	BMI +	BMI +	BMI -	
	Income (% poverty) -	Income (% poverty) -	Income (% poverty) +	
Fem head edu +	Fem head edu -			
			Region: South -	
	Region: West -		Region: West +	
		Urbanization: Central cities +		
			Health diet: Excellent +	
			Health diet: Fair -	

NPg Females 51 to 64 Years - USDA weighted (639 individuals)

Cluster 1	Cluster 2	Non-consumers	
6587	3740	4973	People/1000
43	24	33	Percent
275	156	208	in sample
4.10	10.04	0.00	Process,all (%Kc)
	All meat (%Kc) +	All meat (%Kc) -	
All meat (gm) +		All meat (gm) -	
Beef all (%Kc) +	Beef all (%Kc) -		
Beef all (gm) +	Beef all (gm) -		
Pork, all (gm) +			
	Poultry,all (%Kc) -	Poultry,all (%Kc) +	
	Poultry, all (gm) -	Poultry, all (gm) +	
	Seafood,all (%Kc) -	Seafood,all (%Kc) +	
	Seafood, all (gm) -	Seafood, all (gm) +	
Process,all (%Kc) -	Process,all (%Kc) +		
Process, all (gm) +	Process, all (gm) +		
Kcalories +		Kcalories -	
Kcalories, PR +	Kcalories, PR +		
Protein (%rda) +			
Protein (%rda), PR +	Protein (%rda), PR +		
	Total fat (% Kc) +	Total fat (% Kc) -	
Total fat (% Kc), PR -	Total fat (% Kc), PR +		
	Sat. fat (% Kc) +	Sat. fat (% Kc) -	
Sat. fat (% Kc), PR -	Sat. fat (% Kc), PR +		
Cholesterol (mg) +	Cholesterol (mg) +	Cholesterol (mg) -	
Cholesterol (mg), PR +	Cholesterol (mg), PR +		
	B-6 (%rda) -		
B-6 (%rda), PR +	B-6 (%rda), PR +		
Calcium (%rda), PR -	Calcium (%rda), PR +		
	Magnesium (%rda) -		
Magnesium (%rda), PR +	Magnesium (%rda), PR +		
Iron (%rda) +		Iron (%rda) -	
Iron (%rda), PR +	Iron (%rda), PR +		
Zinc (%rda) +		Zinc (%rda) -	
Zinc (%rda), PR +	Zinc (%rda), PR +		
Copper (%rda), PR +	Copper (%rda), PR +		
		Region: Northeast +	
		Region: South -	
		Region: West +	
		Special diet: Yes +	

NPg Females 65 to 74 Years - USDA weighted (387 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
2827	2725	492	3469	People/1000
30	29	5	36	Percent
115	111	20	141	in sample
9.50	2.81	5.90	0.00	Process,all (%Kc)
All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) -	
		All meat (gm) +	All meat (gm) -	
Pork, all (%Kc) +		Pork, all (%Kc) +	Pork, all (%Kc) -	
Pork, all (gm) +	Pork, all (gm) +	Pork, all (gm) +	Pork, all (gm) -	
			Poultry,all (%Kc) +	
Poultry, all (gm) -				
			Seafood,all (%Kc) +	
		Seafood, all (gm) -		
Process,all (%Kc) +	Process,all (%Kc) -	Process,all (%Kc) +		
Process, all (gm) +	Process, all (gm) -	Process, all (gm) +		
Kcalories -	Kcalories +	Kcalories +	Kcalories -	
Kcalories, PR +	Kcalories, PR -	Kcalories, PR +		
	Protein (%rda) +	Protein (%rda) +		
Protein (%rda), PR +	Protein (%rda), PR -	Protein (%rda), PR +		
Total fat (% Kc) +		Total fat (% Kc) +	Total fat (% Kc) -	
Total fat (% Kc), PR +	Total fat (% Kc), PR -	Total fat (% Kc), PR +		
Sat. fat (% Kc) +		Sat. fat (% Kc) +	Sat. fat (% Kc) -	
Sat. fat (% Kc), PR +	Sat. fat (% Kc), PR -	Sat. fat (% Kc), PR +		
		Cholesterol (mg) +	Cholesterol (mg) -	
Cholesterol (mg), PR +	Cholesterol (mg), PR -	Cholesterol (mg), PR +		
B-6 (%rda) -	B-6 (%rda) +		B-6 (%rda) +	
B-6 (%rda), PR +	B-6 (%rda), PR -	B-6 (%rda), PR +		
Calcium (%rda) -	Calcium (%rda) +			
Calcium (%rda), PR +	Calcium (%rda), PR -	Calcium (%rda), PR +		
Magnesium (%rda) -			Magnesium (%rda) +	
Magnesium (%rda), PR +	Magnesium (%rda), PR -	Magnesium (%rda), PR +		
Iron (%rda) -	Iron (%rda) +			
Iron (%rda), PR +	Iron (%rda), PR -	Iron (%rda), PR +		
Zinc (%rda), PR +	Zinc (%rda), PR -	Zinc (%rda), PR +		
Copper (%rda) -	Copper (%rda) +			
Copper (%rda), PR +	Copper (%rda), PR -	Copper (%rda), PR +		
	Urbanization: Non-metro +			
	Female hd emp: Emp part +		Female hd emp: Emp part -	
	Female hd emp: Emp not work +			
Health diet: Poor +				
			Special diet: No answer +	

NPg Females 75 to 99 Years - USDA weighted (236 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
346	1872	2407	2010	People/1000
5	28	36	30	Percent
12	67	86	71	in sample
18.59	7.64	2.48	0.00	Process,all (%Kc)
All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) -		
Beef all (%Kc) -	Beef all (%Kc) -		Beef all (%Kc) +	
Beef all (gm) -	Beef all (gm) -	Beef all (gm) +	Beef all (gm) +	
Process,all (%Kc) +	Process,all (%Kc) +			
Process, all (gm) +	Process, all (gm) +	Process, all (gm) -		
		Kcalories +		
Kcalories, PR +	Kcalories, PR +			
Protein (%rda), PR +	Protein (%rda), PR +	Protein (%rda), PR -		
Total fat (% Kc) +			Total fat (% Kc) -	
Total fat (% Kc), PR +	Total fat (% Kc), PR +			
Sat. fat (% Kc) +			Sat. fat (% Kc) -	
Sat. fat (% Kc), PR +	Sat. fat (% Kc), PR +			
		Cholesterol (mg) +	Cholesterol (mg) -	
Cholesterol (mg), PR +	Cholesterol (mg), PR +	Cholesterol (mg), PR -		
B-6 (%rda), PR +	B-6 (%rda), PR +	B-6 (%rda), PR -		
	Calcium (%rda) -			
Calcium (%rda), PR +	Calcium (%rda), PR +			
Magnesium (%rda) -		Magnesium (%rda) +		
Magnesium (%rda), PR +	Magnesium (%rda), PR +	Magnesium (%rda), PR -		
Iron (%rda), PR +	Iron (%rda), PR +	Iron (%rda), PR -		
Zinc (%rda), PR +	Zinc (%rda), PR +	Zinc (%rda), PR -		
		Copper (%rda) +		
Copper (%rda), PR +	Copper (%rda), PR +			
		Fem head edu +		
		Food stmps resp: Yes -		

Appendix F

Tables of Significant Variances for Clustering on Pork Intake in Women Aged: 19-24; 25-34; 35-50; 51-64; 65-74; 75+

NPg Females 19 to 24 Years - USDA weighted (302 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
1642	633	1496	7368	People/1000
15	6	13	66	Percent
45	17	41	200	in sample
3.68	0.93	10.83	0.00	Pork, all (%Kc)
		All meat (%Kc) +		
		All meat (gm) +		
Pork, all (%Kc) +		Pork, all (%Kc) +		
Pork, all (gm) +		Pork, all (gm) +		
Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) +	Lamb,etc,all (%Kc) +	
Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) +	
		Process,all (%Kc) -	Process,all (%Kc) +	
Kcalories +			Kcalories -	
Kcalories, PK +	Kcalories, PK -	Kcalories, PK +		
Protein (%rda) +	Protein (%rda) +	Protein (%rda) +	Protein (%rda) -	
Protein (%rda), PK +		Protein (%rda), PK +		
	Total fat (% Kc) +			
Total fat (% Kc), PK +		Total fat (% Kc), PK +		
Sat. fat (% Kc), PK +	Sat. fat (% Kc), PK -	Sat. fat (% Kc), PK +		
Cholesterol (mg) +	Cholesterol (mg) +	Cholesterol (mg) +	Cholesterol (mg) -	
Cholesterol (mg), PK +		Cholesterol (mg), PK +		
B-6 (%rda), PK +		B-6 (%rda), PK +		
Calcium (%rda) +	Calcium (%rda) +			
	Calcium (%rda), PK -	Calcium (%rda), PK +		
Magnesium (%rda) +				
Magnesium (%rda), PK +		Magnesium (%rda), PK +		
Iron (%rda), PK +		Iron (%rda), PK +		
Zinc (%rda), PK +		Zinc (%rda), PK +		
	Copper (%rda), PK -	Copper (%rda), PK +		
	BMI -	BMI +		
Income (% poverty) -	Income (% poverty) +			
Race: Asia/Polynesia +				
	Region: Midwest +			
	Region: South -			
	Urbanization: Suburban +	Urbanization: Suburban -		
		Health diet: Fair +		
	Health diet: No answer +			
	Special diet: Yes +			
	Special diet: No answer +			
	Vit/min supp: Daily +			
	Vit/min supp: Never -			
	Vit/min supp: No answer +			

NPg Females 25 to 34 Years - USDA weighted (753 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Non-consumers	
2356	2033	859	442	13741	People/1000
12	10	4	2	71	Percent
91	79	33	17	533	in sample
6.46	2.12	16.17	0.76	0.00	Pork, all (%Kc)
All meat (%Kc) +		All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) -	
All meat (gm) +	All meat (gm) +	All meat (gm) +		All meat (gm) -	
Pork, all (%Kc) +	Pork, all (%Kc) +	Pork, all (%Kc) +	Pork, all (%Kc) -		
Pork, all (gm) +		Pork, all (gm) +	Pork, all (gm) -		
	Lamb,etc,all (%Kc) +			Lamb,etc,all (%Kc) +	
			Process,all (%Kc) -		
			Process, all (gm) -		
Organ mt,all (%Kc) -	Organ mt,all (%Kc) +	Organ mt,all (%Kc) +	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	
Organ mt all (gm) -	Organ mt all (gm) +	Organ mt all (gm) +	Organ mt all (gm) -	Organ mt all (gm) -	
Kcalories +					
Kcalories, PK +		Kcalories, PK +	Kcalories, PK -		
Protein (%rda) +	Protein (%rda) +			Protein (%rda) -	
Protein (%rda), PK +		Protein (%rda), PK +	Protein (%rda), PK -		
	Total fat (% Kc) +	Total fat (% Kc) +	Total fat (% Kc) -	Total fat (% Kc) -	
Total fat (% Kc), PK +		Total fat (% Kc), PK +	Total fat (% Kc), PK -		
		Sat. fat (% Kc) +			
Sat. fat (% Kc), PK +		Sat. fat (% Kc), PK +	Sat. fat (% Kc), PK -		
Cholesterol (mg) +	Cholesterol (mg) +			Cholesterol (mg) -	
Cholesterol (mg), PK +		Cholesterol (mg), PK +	Cholesterol (mg), PK -		
B-6 (%rda), PK +		B-6 (%rda), PK +	B-6 (%rda), PK -		
Calcium (%rda), PK +	Calcium (%rda), PK +	Calcium (%rda), PK +	Calcium (%rda), PK -		
Magnesium (%rda), PK +		Magnesium (%rda), PK +	Magnesium (%rda), PK -		
Iron (%rda), PK +		Iron (%rda), PK +	Iron (%rda), PK -		
Zinc (%rda) +					
Zinc (%rda), PK +		Zinc (%rda), PK +	Zinc (%rda), PK -		
Copper (%rda), PK +		Copper (%rda), PK +	Copper (%rda), PK -		
			Income (% poverty) +		
Race: Black +					

NPg Females 35 to 50 Years - USDA weighted (906 individuals)

Cluster 1	Cluster 2	Non-consumers	
6561	1342	17151	People/1000
26	5	68	Percent
237	49	620	in sample
4.01	15.10	0.00	Pork, all (%Kc)
	All meat (%Kc) +		
	All meat (gm) +	All meat (gm) -	
	Beef all (%Kc) -		
	Beef all (gm) -		
	Pork, all (%Kc) +		
	Pork, all (gm) +		
	Lamb,etc, all (gm) -		
Poultry,all (%Kc) -		Poultry,all (%Kc) +	
Poultry, all (gm) -		Poultry, all (gm) +	
Seafood,all (%Kc) -		Seafood,all (%Kc) +	
Seafood, all (gm) -	Seafood, all (gm) -	Seafood, all (gm) +	
Kcalories +		Kcalories -	
	Kcalories, PK +		
	Protein (%rda), PK +		
	Total fat (% Kc) +		
	Total fat (% Kc), PK +		
	Sat. fat (% Kc), PK +		
Cholesterol (mg) +		Cholesterol (mg) -	
	Cholesterol (mg), PK +		
	B-6 (%rda), PK +		
	Calcium (%rda), PK +		
	Magnesium (%rda), PK +		
	Iron (%rda), PK +		
	Zinc (%rda), PK +		
Copper (%rda) +	Copper (%rda) -		
	Copper (%rda), PK +		
	BMI +		
	Income (% poverty) -		
	Race: Black +		
	Race: Asia/Polynesia +		
Urbanization: Central cities -			
	Food stmps resp: Yes +		
Male hd emp: Emp not work +			

NPg Females 51 to 64 Years - USDA weighted (639 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
1773	2389	1118	10020	People/1000
12	16	7	65	Percent
74	100	47	418	in sample
1.95	5.97	15.49	0.00	Pork, all (%Kc)
All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) +	All meat (%Kc) -	
	All meat (gm) +	All meat (gm) +	All meat (gm) -	
Pork, all (%Kc) -	Pork, all (%Kc) +	Pork, all (%Kc) +		
Pork, all (gm) -	Pork, all (gm) +	Pork, all (gm) +		
			Lamb,etc,all (%Kc) +	
		Lamb,etc, all (gm) -	Lamb,etc, all (gm) +	
		Poultry,all (%Kc) -	Poultry,all (%Kc) +	
		Seafood,all (%Kc) -	Seafood,all (%Kc) +	
		Seafood, all (gm) -		
	Organ mt,all (%Kc) +		Organ mt,all (%Kc) +	
	Organ mt all (gm) +		Organ mt all (gm) +	
Kcalories +	Kcalories +		Kcalories -	
Kcalories, PK -	Kcalories, PK +	Kcalories, PK +		
	Protein (%rda) +		Protein (%rda) -	
Protein (%rda), PK -	Protein (%rda), PK +	Protein (%rda), PK +		
Total fat (% Kc) +	Total fat (% Kc) +	Total fat (% Kc) +	Total fat (% Kc) -	
Total fat (% Kc), PK -	Total fat (% Kc), PK +	Total fat (% Kc), PK +		
		Sat. fat (% Kc) +	Sat. fat (% Kc) -	
Sat. fat (% Kc), PK -	Sat. fat (% Kc), PK +	Sat. fat (% Kc), PK +		
Cholesterol (mg) +	Cholesterol (mg) +		Cholesterol (mg) -	
Cholesterol (mg), PK -	Cholesterol (mg), PK +	Cholesterol (mg), PK +		
B-6 (%rda), PK -	B-6 (%rda), PK +	B-6 (%rda), PK +		
		Calcium (%rda) -		
Calcium (%rda), PK +	Calcium (%rda), PK +	Calcium (%rda), PK +		
Magnesium (%rda), PK -	Magnesium (%rda), PK +	Magnesium (%rda), PK +		
Iron (%rda), PK +	Iron (%rda), PK +	Iron (%rda), PK +		
Zinc (%rda), PK -	Zinc (%rda), PK +	Zinc (%rda), PK +		
Copper (%rda), PK +	Copper (%rda), PK +	Copper (%rda), PK +		
	Income (% poverty) -	Income (% poverty) -	Income (% poverty) +	
		Fem head edu -		
		Vit/min supp: Don't know +		
		Vit/min supp: No answer +		

NPg Females 65 to 74 Years - USDA weighted (387 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
695	808	1391	6619	People/1000
7	8	15	70	Percent
28	33	57	269	in sample
7.62	13.39	3.04	0.00	Pork, all (%Kc)
All meat (%Kc) +	All meat (%Kc) +			
All meat (gm) +				
	Beef all (%Kc) -			
	Pork, all (%Kc) +	Pork, all (%Kc) +		
Pork, all (gm) +	Pork, all (gm) +	Pork, all (gm) +		
			Lamb,etc, all (gm) +	
Seafood,all (%Kc) -			Seafood,all (%Kc) +	
Seafood, all (gm) -			Seafood, all (gm) +	
		Kcalories +		
Kcalories, PK +	Kcalories, PK +	Kcalories, PK +		
Protein (%rda), PK +	Protein (%rda), PK +	Protein (%rda), PK +		
	Total fat (% Kc) +		Total fat (% Kc) -	
Total fat (% Kc), PK +	Total fat (% Kc), PK +	Total fat (% Kc), PK +		
	Sat. fat (% Kc) +			
Sat. fat (% Kc), PK +	Sat. fat (% Kc), PK +	Sat. fat (% Kc), PK +		
Cholesterol (mg) +		Cholesterol (mg) +		
Cholesterol (mg), PK +	Cholesterol (mg), PK +	Cholesterol (mg), PK +		
B-6 (%rda), PK +	B-6 (%rda), PK +	B-6 (%rda), PK +		
	Calcium (%rda) -			
Calcium (%rda), PK +	Calcium (%rda), PK +			
	Magnesium (%rda) -			
Magnesium (%rda), PK +	Magnesium (%rda), PK +	Magnesium (%rda), PK +		
	Iron (%rda) -			
Iron (%rda), PK +	Iron (%rda), PK +	Iron (%rda), PK +		
Zinc (%rda), PK +	Zinc (%rda), PK +	Zinc (%rda), PK +		
Copper (%rda), PK +	Copper (%rda), PK +	Copper (%rda), PK +		
	Region: South +			
	Urbanization: Suburban -			
	Urbanization: Non-metro +			
Male hd emp: Emp part +	Male hd emp: Emp part +		Male hd emp: Emp part -	
Female hd emp: Emp not work +				
	Health diet: Poor +			

NPg Females 75 to 99 Years - USDA weighted (236 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Non-consumers	
1002	181	120	14	629	4689	People/1000
15	3	2	0	9	71	Percent
36	6	4	0	22	167	in sample
7.91	1.05	4.74	23.39	2.79	0.00	Pork, all (%Kc)
All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) -	All meat (%Kc) -	
All meat (gm) +	All meat (gm) -	All meat (gm) -	All meat (gm) +	All meat (gm) +	All meat (gm) -	
	Beef all (%Kc) +			Beef all (%Kc) +	Beef all (%Kc) +	
Beef all (gm) -	Beef all (gm) +	Beef all (gm) -	Beef all (gm) -	Beef all (gm) +	Beef all (gm) +	
Pork, all (%Kc) +	Pork, all (%Kc) -	Pork, all (%Kc) +	Pork, all (%Kc) +	Pork, all (%Kc) +		
Pork, all (gm) +	Pork, all (gm) -	Pork, all (gm) +	Pork, all (gm) +	Pork, all (gm) +		
Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) +	
Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) +	
Poultry,all (%Kc) +	Poultry,all (%Kc) -	Poultry,all (%Kc) -	Poultry,all (%Kc) +	Poultry,all (%Kc) -	Poultry,all (%Kc) +	
Poultry, all (gm) +	Poultry, all (gm) -	Poultry, all (gm) -	Poultry, all (gm) +	Poultry, all (gm) -	Poultry, all (gm) +	
Seafood,all (%Kc) -	Seafood,all (%Kc) -	Seafood,all (%Kc) -	Seafood,all (%Kc) -	Seafood,all (%Kc) +	Seafood,all (%Kc) +	
Seafood, all (gm) -	Seafood, all (gm) -	Seafood, all (gm) +	Seafood, all (gm) -	Seafood, all (gm) +	Seafood, all (gm) +	
Process,all (%Kc) +	Process,all (%Kc) -	Process,all (%Kc) +	Process,all (%Kc) -	Process,all (%Kc) +	Process,all (%Kc) -	
Process, all (gm) +	Process, all (gm) -	Process, all (gm) +	Process, all (gm) -	Process, all (gm) +	Process, all (gm) -	
Organ mt,all (%Kc) +	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	
Organ mt all (gm) +	Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) -	
Kcalories +	Kcalories +	Kcalories +	Kcalories +	Kcalories +	Kcalories -	
Kcalories, PK +	Kcalories, PK -	Kcalories, PK +	Kcalories, PK +	Kcalories, PK +		
Protein (%rda) +	Protein (%rda) +	Protein (%rda) +	Protein (%rda) +	Protein (%rda) +	Protein (%rda) -	
Protein (%rda), PK +	Protein (%rda), PK -	Protein (%rda), PK +	Protein (%rda), PK +	Protein (%rda), PK +		
Total fat (% Kc) +	Total fat (% Kc) -			Total fat (% Kc) +	Total fat (% Kc) -	
Total fat (% Kc), PK +	Total fat (% Kc), PK -	Total fat (% Kc), PK +	Total fat (% Kc), PK +	Total fat (% Kc), PK +		
		Sat. fat (% Kc) +			Sat. fat (% Kc) -	
Sat. fat (% Kc), PK +	Sat. fat (% Kc), PK -	Sat. fat (% Kc), PK +	Sat. fat (% Kc), PK +	Sat. fat (% Kc), PK +		
					Cholesterol (mg) -	
Cholesterol (mg), PK +	Cholesterol (mg), PK -	Cholesterol (mg), PK +	Cholesterol (mg), PK +	Cholesterol (mg), PK +		
B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) -	
B-6 (%rda), PK +	B-6 (%rda), PK -	B-6 (%rda), PK +	B-6 (%rda), PK +	B-6 (%rda), PK +		
Calcium (%rda) -	Calcium (%rda) -	Calcium (%rda) +	Calcium (%rda) -	Calcium (%rda) +	Calcium (%rda) -	
Calcium (%rda), PK +	Calcium (%rda), PK -	Calcium (%rda), PK +		Calcium (%rda), PK +		
Magnesium (%rda) -	Magnesium (%rda) +			Magnesium (%rda) +	Magnesium (%rda) -	
Magnesium (%rda), PK +	Magnesium (%rda), PK -	Magnesium (%rda), PK +		Magnesium (%rda), PK +		
Iron (%rda) -		Iron (%rda) -			Iron (%rda) -	
Iron (%rda), PK +	Iron (%rda), PK -	Iron (%rda), PK +		Iron (%rda), PK +		
Zinc (%rda) -	Zinc (%rda) +	Zinc (%rda) -	Zinc (%rda) +	Zinc (%rda) +	Zinc (%rda) -	
Zinc (%rda), PK +	Zinc (%rda), PK -	Zinc (%rda), PK +		Zinc (%rda), PK +		
Copper (%rda) +	Copper (%rda) +	Copper (%rda) +		Copper (%rda) +	Copper (%rda) -	
Copper (%rda), PK +	Copper (%rda), PK +	Copper (%rda), PK +		Copper (%rda), PK +		
BMI +	BMI +	BMI +	BMI +	BMI +	BMI -	
Income (% poverty) -	Income (% poverty) +	Income (% poverty) -	Income (% poverty) -	Income (% poverty) -	Income (% poverty) +	
Fem head edu -	Fem head edu +	Fem head edu -	Fem head edu -	Fem head edu -	Fem head edu +	
				Region: South +		
Food stmps resp: Yes +		Food stmps resp: Yes +				

Appendix G

Tables of Significant Variances for Clustering on Seafood Intake in Women Aged: 19-24; 25-34; 35-50; 51-64; 65-74; 75+

NPg Females 19 to 24 Years - USDA weighted (302 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Non-consumers	
1314	309	629	1343	7545	People/1000
12	3	6	12	68	Percent
36	8	17	36	205	in sample
4.87	11.91	2.25	0.78	0.00	Seafood,all (%Kc)
	All meat (gm) +	All meat (gm) +			
Beef all (%Kc) -	Beef all (%Kc) -	Beef all (%Kc) +	Beef all (%Kc) -	Beef all (%Kc) +	
Beef all (gm) -	Beef all (gm) -	Beef all (gm) +	Beef all (gm) -	Beef all (gm) +	
		Poultry,all (%Kc) -		Poultry,all (%Kc) +	
		Poultry, all (gm) -			
Seafood,all (%Kc) +	Seafood,all (%Kc) +		Seafood,all (%Kc) -		
Seafood, all (gm) +	Seafood, all (gm) +	Seafood, all (gm) +	Seafood, all (gm) -		
				Process,all (%Kc) +	
Kcalories, SF +	Kcalories, SF +	Kcalories, SF +			
		Protein (%rda) +			
Protein (%rda), SF +	Protein (%rda), SF +	Protein (%rda), SF +	Protein (%rda), SF -		
Total fat (% Kc), SF +	Total fat (% Kc), SF +	Total fat (% Kc), SF -			
Sat. fat (% Kc), SF +	Sat. fat (% Kc), SF +	Sat. fat (% Kc), SF +	Sat. fat (% Kc), SF -		
	Cholesterol (mg) +	Cholesterol (mg) +			
Cholesterol (mg), SF +	Cholesterol (mg), SF +	Cholesterol (mg), SF +			
B-6 (%rda), SF +	B-6 (%rda), SF +	B-6 (%rda), SF +	B-6 (%rda), SF -		
Calcium (%rda), SF +	Calcium (%rda), SF +	Calcium (%rda), SF +			
Magnesium (%rda), SF +	Magnesium (%rda), SF +	Magnesium (%rda), SF +			
		Iron (%rda) +	Iron (%rda) -		
Iron (%rda), SF +					
Zinc (%rda) -		Zinc (%rda) +			
	Zinc (%rda), SF +	Zinc (%rda), SF +			
	Copper (%rda) +	Copper (%rda) +			
Copper (%rda), SF +	Copper (%rda), SF +	Copper (%rda), SF +			
			Fem head edu +		
Race: Black -					
Race: Asia/Polynesia +					
		Urbanization: Suburban +			
Urbanization: Non-metro -					
			Health diet: No answer +		
	Special diet: Yes +				
			Special diet: No answer +		
			Vit/min supp: No answer +		

NPg Females 25 to 34 Years - USDA weighted (753 individuals)

Cluster 1	Cluster 2	Non-consumers	
1989	5230	12211	People/1000
10	27	63	Percent
77	203	473	in sample
5.55	1.70	0.00	Seafood,all (%Kc)
All meat (gm) +	All meat (gm) +	All meat (gm) -	
Beef all (%Kc) -		Beef all (%Kc) +	
Beef all (gm) -		Beef all (gm) +	
		Pork, all (%Kc) +	
		Pork, all (gm) +	
		Lamb,etc,all (%Kc) +	
Poultry,all (%Kc) -			
Poultry, all (gm) -	Poultry, all (gm) +		
Seafood,all (%Kc) +	Seafood,all (%Kc) +		
Seafood, all (gm) +			
Process,all (%Kc) -		Process,all (%Kc) +	
	Kcalories +		
Kcalories, SF +			
	Protein (%rda) +	Protein (%rda) -	
Protein (%rda), SF +			
Total fat (% Kc), SF +			
Sat. fat (% Kc) -		Sat. fat (% Kc) +	
Sat. fat (% Kc), SF +			
	Cholesterol (mg) +	Cholesterol (mg) -	
Cholesterol (mg), SF +			
	B-6 (%rda) +		
B-6 (%rda), SF +			
	Calcium (%rda) +	Calcium (%rda) -	
Calcium (%rda), SF +			
	Magnesium (%rda) +	Magnesium (%rda) -	
Magnesium (%rda), SF +			
	Iron (%rda) +	Iron (%rda) -	
Iron (%rda), SF +			
Zinc (%rda), SF +			
	Copper (%rda) +	Copper (%rda) -	
Copper (%rda), SF +			
Region: Northeast +			

NPg Females 35 to 50 Years - USDA weighted (906 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
2305	6098	1374	15276	People/1000
9	24	5	61	Percent
83	221	50	552	in sample
7.65	2.58	0.52	0.00	Seafood,all (%Kc)
	All meat (%Kc) -	All meat (%Kc) -		
All meat (gm) +				
Beef all (%Kc) -	Beef all (%Kc) -		Beef all (%Kc) +	
Beef all (gm) -	Beef all (gm) -		Beef all (gm) +	
Seafood,all (%Kc) +		Seafood,all (%Kc) -		
Seafood, all (gm) +		Seafood, all (gm) -		
	Process,all (%Kc) -	Process,all (%Kc) -	Process,all (%Kc) +	
Process, all (gm) -	Process, all (gm) -		Process, all (gm) +	
			Organ mt all (gm) +	
Kcalories -		Kcalories +		
Kcalories, SF +		Kcalories, SF -		
	Protein (%rda) +	Protein (%rda) +	Protein (%rda) -	
Protein (%rda), SF +		Protein (%rda), SF -		
Total fat (% Kc), SF +	Total fat (% Kc), SF +	Total fat (% Kc), SF -		
Sat. fat (% Kc), SF +	Sat. fat (% Kc), SF +	Sat. fat (% Kc), SF -		
		Cholesterol (mg) +		
Cholesterol (mg), SF +	Cholesterol (mg), SF +	Cholesterol (mg), SF -		
B-6 (%rda), SF +	B-6 (%rda), SF +	B-6 (%rda), SF -		
Calcium (%rda), SF +	Calcium (%rda), SF +	Calcium (%rda), SF -		
Magnesium (%rda), SF +	Magnesium (%rda), SF +	Magnesium (%rda), SF -		
Iron (%rda), SF +	Iron (%rda), SF +	Iron (%rda), SF -		
	Zinc (%rda), SF +			
Copper (%rda), SF +	Copper (%rda), SF +	Copper (%rda), SF -		
Income (% poverty) +	Income (% poverty) +		Income (% poverty) -	
Fem head edu +				
	Urbanization: Non-metro -		Urbanization: Non-metro +	
	Female hd emp: Emp part +			
	Female hd emp: Can't calc +			
			Vit/min supp: Daily -	
			Vit/min supp: Never +	

NPg Females 51 to 64 Years - USDA weighted (639 individuals)

Cluster 1	Cluster 2	Cluster 3	Non-consumers	
3338	535	2743	8684	People/1000
22	3	18	57	Percent
139	22	115	363	in sample
5.71	14.75	1.60	0.00	Seafood,all (%Kc)
	All meat (%Kc) +			
All meat (gm) +	All meat (gm) +		All meat (gm) -	
Beef all (%Kc) -	Beef all (%Kc) -		Beef all (%Kc) +	
Beef all (gm) -	Beef all (gm) -		Beef all (gm) +	
Pork, all (%Kc) -		Pork, all (%Kc) +		
	Pork, all (gm) -	Pork, all (gm) +		
Seafood,all (%Kc) +	Seafood,all (%Kc) +	Seafood,all (%Kc) -		
Seafood, all (gm) +	Seafood, all (gm) +	Seafood, all (gm) +		
Process,all (%Kc) -	Process,all (%Kc) -		Process,all (%Kc) +	
Process, all (gm) -				
			Organ mt,all (%Kc) +	
			Organ mt all (gm) +	
	Kcalories -	Kcalories +		
Kcalories, SF +	Kcalories, SF +	Kcalories, SF -		
Protein (%rda) +		Protein (%rda) +	Protein (%rda) -	
Protein (%rda), SF +	Protein (%rda), SF +	Protein (%rda), SF +		
Total fat (% Kc) -	Total fat (% Kc) -		Total fat (% Kc) +	
Total fat (% Kc), SF +	Total fat (% Kc), SF +			
Sat. fat (% Kc) -	Sat. fat (% Kc) -		Sat. fat (% Kc) +	
Sat. fat (% Kc), SF +	Sat. fat (% Kc), SF +			
Cholesterol (mg), SF +	Cholesterol (mg), SF +	Cholesterol (mg), SF -		
B-6 (%rda), SF +	B-6 (%rda), SF +	B-6 (%rda), SF -		
	Calcium (%rda) -			
Calcium (%rda), SF +	Calcium (%rda), SF +	Calcium (%rda), SF -		
		Magnesium (%rda) +	Magnesium (%rda) -	
Magnesium (%rda), SF +	Magnesium (%rda), SF +	Magnesium (%rda), SF +		
	Iron (%rda) -	Iron (%rda) +		
Iron (%rda), SF +	Iron (%rda), SF +			
	Zinc (%rda) -	Zinc (%rda) +		
	Copper (%rda) -	Copper (%rda) +		
Copper (%rda), SF +		Copper (%rda), SF +		
	BMI -			
Income (% poverty) +	Income (% poverty) +	Income (% poverty) +	Income (% poverty) -	
	Urbanization: Central cities +			
Urbanization: Suburban +				
Urbanization: Non-metro -				
Food stmps resp: Yes -			Food stmps resp: Yes +	
Health diet: Very good +			Health diet: Very good -	

NPg Females 65 to 74 Years - USDA weighted (387 individuals)

Cluster 1	Cluster 2	Non-consumers	
1242	2687	5584	People/1000
13	28	59	Percent
51	109	227	in sample
6.14	2.20	0.00	Seafood,all (%Kc)
All meat (gm) +	All meat (gm) +	All meat (gm) -	
Beef all (%Kc) -		Beef all (%Kc) +	
Beef all (gm) -		Beef all (gm) +	
Pork, all (%Kc) -		Pork, all (%Kc) +	
Pork, all (gm) -			
Seafood,all (%Kc) +			
Seafood, all (gm) +			
		Organ mt,all (%Kc) +	
	Kcalories +		
Kcalories, SF +			
Protein (%rda) +	Protein (%rda) +	Protein (%rda) -	
Protein (%rda), SF +			
	Total fat (% Kc) -	Total fat (% Kc) +	
Total fat (% Kc), SF +			
Sat. fat (% Kc) -	Sat. fat (% Kc) -	Sat. fat (% Kc) +	
Sat. fat (% Kc), SF +			
Cholesterol (mg), SF +			
B-6 (%rda), SF +			
Calcium (%rda), SF +			
		Magnesium (%rda) -	
Magnesium (%rda), SF +			
Iron (%rda), SF +	Iron (%rda), SF +		

NPg Females 75 to 99 Years - USDA weighted (236 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Non-consumers	
656	14	172	786	215	4791	People/1000
10	0	3	12	3	72	Percent
23	1	6	28	8	170	in sample
6.67	15.23	3.33	1.94	0.96	0.00	Seafood,all (%Kc)
All meat (%Kc) +			All meat (%Kc) -	All meat (%Kc) +	All meat (%Kc) -	
All meat (gm) +	All meat (gm) +	All meat (gm) -	All meat (gm) +	All meat (gm) +	All meat (gm) -	
Beef all (%Kc) -	Beef all (%Kc) -	Beef all (%Kc) +	Beef all (%Kc) +	Beef all (%Kc) +	Beef all (%Kc) -	
Beef all (gm) -	Beef all (gm) -	Beef all (gm) +	Beef all (gm) +	Beef all (gm) +	Beef all (gm) -	
Pork, all (%Kc) -	Pork, all (%Kc) -	Pork, all (%Kc) -	Pork, all (%Kc) +	Pork, all (%Kc) +	Pork, all (%Kc) -	
Pork, all (gm) -	Pork, all (gm) -	Pork, all (gm) -	Pork, all (gm) +	Pork, all (gm) +	Pork, all (gm) -	
Lamb,etc,all (%Kc) +	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) +	Lamb,etc,all (%Kc) -	Lamb,etc,all (%Kc) -	
Lamb,etc, all (gm) +	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	Lamb,etc, all (gm) +	Lamb,etc, all (gm) -	Lamb,etc, all (gm) -	
Poultry,all (%Kc) +	Poultry,all (%Kc) +	Poultry,all (%Kc) -	Poultry,all (%Kc) -	Poultry,all (%Kc) -	Poultry,all (%Kc) +	
Poultry, all (gm) +	Poultry, all (gm) +	Poultry, all (gm) -	Poultry, all (gm) -	Poultry, all (gm) -	Poultry, all (gm) +	
Seafood,all (%Kc) +		Seafood,all (%Kc) +	Seafood,all (%Kc) +	Seafood,all (%Kc) -	Seafood,all (%Kc) -	
Seafood, all (gm) +		Seafood, all (gm) +	Seafood, all (gm) +	Seafood, all (gm) +		
Process,all (%Kc) -	Process,all (%Kc) -	Process,all (%Kc) -	Process,all (%Kc) -	Process,all (%Kc) +	Process,all (%Kc) +	
Process, all (gm) -	Process, all (gm) -	Process, all (gm) -	Process, all (gm) -	Process, all (gm) +	Process, all (gm) +	
Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) +	Organ mt,all (%Kc) -	Organ mt,all (%Kc) -	Organ mt,all (%Kc) +	
Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) +	Organ mt all (gm) -	Organ mt all (gm) -	Organ mt all (gm) +	
Kcalories -	Kcalories +	Kcalories -	Kcalories +	Kcalories +	Kcalories -	
Kcalories, SF +	Kcalories, SF +	Kcalories, SF +	Kcalories, SF +	Kcalories, SF +		
Protein (%rda) +		Protein (%rda) -	Protein (%rda) +	Protein (%rda) +	Protein (%rda) -	
Protein (%rda), SF +		Protein (%rda), SF +	Protein (%rda), SF +	Protein (%rda), SF +		
				Total fat (% Kc) +	Total fat (% Kc) -	
Total fat (% Kc), SF +		Total fat (% Kc), SF +	Total fat (% Kc), SF +	Total fat (% Kc), SF -		
Sat. fat (% Kc) -	Sat. fat (% Kc) -	Sat. fat (% Kc) -	Sat. fat (% Kc) +	Sat. fat (% Kc) +	Sat. fat (% Kc) -	
Sat. fat (% Kc), SF +	Sat. fat (% Kc), SF +	Sat. fat (% Kc), SF +	Sat. fat (% Kc), SF +	Sat. fat (% Kc), SF -		
Cholesterol (mg) +	Cholesterol (mg) +	Cholesterol (mg) -	Cholesterol (mg) +	Cholesterol (mg) +	Cholesterol (mg) -	
Cholesterol (mg), SF +		Cholesterol (mg), SF +	Cholesterol (mg), SF +	Cholesterol (mg), SF +		
B-6 (%rda) -	B-6 (%rda) +	B-6 (%rda) -	B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) -	
B-6 (%rda), SF +	B-6 (%rda), SF +	B-6 (%rda), SF +	B-6 (%rda), SF +	B-6 (%rda), SF +		
Calcium (%rda) -	Calcium (%rda) +	Calcium (%rda) -	Calcium (%rda) +	Calcium (%rda) +	Calcium (%rda) +	
Calcium (%rda), SF +		Calcium (%rda), SF +	Calcium (%rda), SF +	Calcium (%rda), SF +		
		Magnesium (%rda) -			Magnesium (%rda) -	
Magnesium (%rda), SF +		Magnesium (%rda), SF +	Magnesium (%rda), SF +	Magnesium (%rda), SF +		
Iron (%rda) -	Iron (%rda) +	Iron (%rda) -	Iron (%rda) +	Iron (%rda) +	Iron (%rda) -	
Iron (%rda), SF +	Iron (%rda), SF +	Iron (%rda), SF +	Iron (%rda), SF +	Iron (%rda), SF +		
Zinc (%rda) +	Zinc (%rda) -	Zinc (%rda) -	Zinc (%rda) +	Zinc (%rda) +	Zinc (%rda) -	
		Zinc (%rda), SF -		Zinc (%rda), SF -		
Copper (%rda) +	Copper (%rda) -	Copper (%rda) -	Copper (%rda) +	Copper (%rda) +	Copper (%rda) -	
	Copper (%rda), SF +					
BMI +	BMI +	BMI -	BMI -	BMI -	BMI +	
Income (% poverty) -	Income (% poverty) -	Income (% poverty) +	Income (% poverty) +	Income (% poverty) +	Income (% poverty) +	
Fem head edu -	Fem head edu -	Fem head edu +	Fem head edu -	Fem head edu -	Fem head edu +	
		Race: Black +				
Region: Northeast +						
Urbanization: Central cities +						
Food stmps resp: No answer +		Food stmps resp: No answer +				

Appendix H

Tables of Significant Variances for Clustering on Vitamin B6, Iron and Zinc Intakes in Women Aged: 19-24 & 25-34; 35-50 & 51-64; 65-74; 75+

NPg Females 19 to 24 Years - USDA weighted (302 individuals)

Cluster 1	Cluster 2	Cluster 3	
3101	450	7587	People/1000
28	4	68	Percent
84	12	206	in sample
All meat (gm) +	All meat (gm) +	All meat (gm) -	
Beef all (gm) +			
Pork, all (gm) +			
Poultry, all (gm) +	Poultry, all (gm) +		
Kcalories +	Kcalories +	Kcalories -	
Protein (%rda) +	Protein (%rda) +	Protein (%rda) -	
Sat. fat (% Kc) -	Sat. fat (% Kc) +		
Cholesterol (mg) +		Cholesterol (mg) -	
B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) -	
Calcium (%rda) +	Calcium (%rda) +	Calcium (%rda) -	
Magnesium (%rda) +	Magnesium (%rda) +	Magnesium (%rda) -	
Iron (%rda) +	Iron (%rda) +	Iron (%rda) -	
Zinc (%rda) +	Zinc (%rda) +	Zinc (%rda) -	
Copper (%rda) +	Copper (%rda) +	Copper (%rda) -	
BMI +			
Vit/min supp: Every so often -			
Vit/min supp: No answer +			

NPg Females 25 to 34 Years - USDA weighted (753 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	
116	12313	5064	1587	349	People/1000
1	63	26	8	2	Percent
4	477	196	62	14	in sample
			All meat (%Kc) -		
	All meat (gm) -	All meat (gm) +		All meat (gm) +	
Beef all (%Kc) +	Beef all (%Kc) +		Beef all (%Kc) -		
Beef all (gm) +		Beef all (gm) +	Beef all (gm) -		
	Poultry, all (gm) -	Poultry, all (gm) +	Poultry, all (gm) +		
Seafood,all (%Kc) -					
Seafood, all (gm) -		Seafood, all (gm) +			
	Kcalories -	Kcalories +		Kcalories +	
	Protein (%rda) -	Protein (%rda) +		Protein (%rda) +	
Total fat (% Kc) +	Total fat (% Kc) +		Total fat (% Kc) -		
	Cholesterol (mg) -	Cholesterol (mg) +	Cholesterol (mg) -	Cholesterol (mg) +	
B-6 (%rda) +	B-6 (%rda) -	B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) +	
	Calcium (%rda) -	Calcium (%rda) +		Calcium (%rda) +	
	Magnesium (%rda) -	Magnesium (%rda) +	Magnesium (%rda) +	Magnesium (%rda) +	
Iron (%rda) +	Iron (%rda) -	Iron (%rda) +	Iron (%rda) -	Iron (%rda) +	
Zinc (%rda) +	Zinc (%rda) -	Zinc (%rda) +	Zinc (%rda) -	Zinc (%rda) +	
	Copper (%rda) -	Copper (%rda) +		Copper (%rda) +	
		BMI +	BMI -		
				Income (% poverty) -	
Fem head edu +	Fem head edu -		Fem head edu +		
			Region: South -		
			Urbanization: Central cities +		
Urbanization: Non-metro +					
Health diet: Excellent +					

NPg Females 35 to 50 Years - USDA weighted (906 individuals)

Cluster 1	Cluster 2	
21938	3116	People/1000
88	12	Percent
793	113	in sample
	All meat (gm) +	
	Beef all (gm) +	
	Poultry, all (gm) +	
Kcalories -	Kcalories +	
Protein (%rda) -	Protein (%rda) +	
	Total fat (% Kc) -	
	Sat. fat (% Kc) -	
	Cholesterol (mg) +	
	B-6 (%rda) +	
	Calcium (%rda) +	
Magnesium (%rda) -	Magnesium (%rda) +	
	Iron (%rda) +	
	Zinc (%rda) +	
Copper (%rda) -	Copper (%rda) +	

NPg Females 51 to 64 Years - USDA weighted (639 individuals)

Cluster 1	Cluster 2	
3086	12214	People/1000
20	80	Percent
129	510	in sample
All meat (gm) +	All meat (gm) -	
Beef all (gm) +		
Poultry, all (gm) +		
Process,all (%Kc) -		
Organ mt,all (%Kc) +		
Organ mt all (gm) +		
Kcalories +	Kcalories -	
Protein (%rda) +	Protein (%rda) -	
Cholesterol (mg) +		
B-6 (%rda) +	B-6 (%rda) -	
Calcium (%rda) +	Calcium (%rda) -	
Magnesium (%rda) +	Magnesium (%rda) -	
Iron (%rda) +		
Zinc (%rda) +		
Copper (%rda) +	Copper (%rda) -	
Region: West -		

NPg Females 65 to 74 Years - USDA weighted (387 individuals)

Cluster 1	Cluster 2	Cluster 3	
204	2336	6973	People/1000
2	25	73	Percent
8	95	284	in sample
	All meat (%Kc) -	All meat (%Kc) +	
	Beef all (%Kc) -	Beef all (%Kc) +	
	Beef all (gm) -		
	Process,all (%Kc) -	Process,all (%Kc) +	
	Total fat (% Kc) -	Total fat (% Kc) +	
	Sat. fat (% Kc) -	Sat. fat (% Kc) +	
B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) -	
Calcium (%rda) +	Calcium (%rda) +		
Magnesium (%rda) +	Magnesium (%rda) +	Magnesium (%rda) -	
Iron (%rda) +	Iron (%rda) +		
Copper (%rda) +	Copper (%rda) +		
	Male hd emp: Emp full -		
	Special diet: Yes +		

NPg Females 75 to 99 Years - USDA weighted (236 individuals)

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	
273	1032	705	4559	66	People/1000
4	16	11	69	1	Percent
10	37	25	162	2	in sample
All meat (%Kc) -		All meat (%Kc) -			
	All meat (gm) +	All meat (gm) +		All meat (gm) +	
Beef all (gm) +		Beef all (gm) +			
Poultry,all (%Kc) -	Poultry,all (%Kc) +	Poultry,all (%Kc) -			
	Poultry, all (gm) +	Poultry, all (gm) -			
Kcalories +	Kcalories +	Kcalories +	Kcalories -	Kcalories +	
Protein (%rda) +	Protein (%rda) +	Protein (%rda) +	Protein (%rda) -	Protein (%rda) +	
Cholesterol (mg) +		Cholesterol (mg) +			
B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) +	B-6 (%rda) -		
Calcium (%rda) +		Calcium (%rda) +	Calcium (%rda) -		
Magnesium (%rda) +	Magnesium (%rda) +	Magnesium (%rda) +	Magnesium (%rda) -	Magnesium (%rda) +	
Iron (%rda) +	Iron (%rda) +	Iron (%rda) +		Iron (%rda) +	
Zinc (%rda) +	Zinc (%rda) +	Zinc (%rda) +		Zinc (%rda) +	
Copper (%rda) +	Copper (%rda) +	Copper (%rda) +	Copper (%rda) -	Copper (%rda) +	
		Fem head edu +	Fem head edu -		
		Female hd emp: Emp not work +			
Health diet: Poor +					

Appendix I

Bioavailability of Heme Iron and Nonheme Iron as Influenced by Iron Status and Dietary Composition

Physiologic Iron Stores (mg)	Dietary Availability of Nonheme Iron *	% Bioavailability	
		Heme Iron	Nonheme Iron
0	low	35	5
	moderate	35	11
	high	35	20
250	low	28	4
	moderate	28	7
	high	28	12

(Table adapted from Carpenter and Mahoney, 1992)

* Availability of nonheme iron for absorption was classified as low, moderate or high based on the amount of enhancing units present per day (low < 120; moderate = 120-300; high = > 300).

One enhancing unit = 1 mg ascorbic acid = 1 g meat, fish or poultry.

Appendix J

Average Nutrient Intake (% Standards) of Women Aged 35-50 Derived from Meat and "Other" Foods by Meat Intake Level

	Very Low (1-56g)		Low (57-112g)		Moderate (113-169g)		High (170+g)	
Nutrient	Other	Meat	Other	Meat	Other	Meat	Other	Meat
N=846								
Meat (g)	37		85		136		218	
Calories	1126	96	1318	206	1527	334	1782	502
Protein † *	19	59	43	59	68	63	110	65
Niacin	14	53	35	59	54	62	87	64
Vitamin B_6	7	45	18	52	28	52	47	57
Copper	1	46	7	51	10	52	22	57
Iron	5	48	11	51	17	57	27	56
Magnesium	3	55	7	62	12	63	19	66
Phosphorus	9	82	22	80	35	86	56	88
Zinc	11	32	24	36	38	37	62	38
Total Fat **	17	98	28	90	40	86	49	78
Saturated Fat	18	108	31	96	44	90	51	83
Monounsat. Fat	27	98	37	93	52	89	62	79
Polyunsat. Fat	5	63	8	64	13	62	17	57
Cholesterol	10	47	23	40	38	49	64	53

† Nutrient values are rounded to nearest %. * Protein, vitamins and minerals expressed as % of RDA / ESADDI. ** Fat intakes expressed as % of NRC recommendations.

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EDUCATION

Brigham Young University	B.A.	Home Economics Education Clinical Dietetics	1975
University of Washington	M.A.	Human Nutrition	1981
Utah State University	PhD.	Human Nutrition	1994

MAJOR RESEARCH INTERESTS

Nutrition education theory and practice; education technology
Human energy metabolism; effect of diet, hormones and exercise
Human nutrition assessment surveys; analysis and methodology

PROFESSIONAL EXPERIENCE

1991-94 — Graduate Research Assistant
Department of Nutrition and Food Sciences
Utah State University, Logan, UT

1991-94 — Teaching Assistant
Department of Nutrition and Food Sciences
Utah State University, Logan, UT

1988-1990 — Regional Dietitian, Marriott Corp.
Riverside Community Hospital, Riverside CA
Providence Medical Center, Seattle, WA

1981-1989 — Chief Clinical Dietitian, Marriott Corp.
Providence Medical Center, Seattle, WA

1977-1978 — Associate Director of Dietary
Duke University Medical Center, Durham, NC

1975-1977 — Inservice Education Dietitian
Duke University Medical Center, Durham, NC

CONSULTING

1987-1989	Pacific Kitchens, Seattle, WA Computer analysis of nutrient composition and reviewing advertising copy for nutritional accuracy.
1989	Microsoft, Inc., Seattle, WA Implementation of wellness program via company cafeteria and newsletters.
1989	Mercer Island School District, Seattle, WA Nutrient analysis and assessment of adequacy of school lunch and breakfasts.
1988	Rainier Bank, Seattle, WA Implementation of nutrition-based wellness programs in employee/executive cafeterias.

DISSERTATION

Martin, Dian. Meat consumption patterns of U.S. Women: the contribution of meat to nutritional status. Doctoral Dissertation. Utah State University. 1994.

THESIS

Martin, Colleen Dian. Use of programmed self-instructional material to teach parents of children with cerebral palsy basic nutrition. Masters Thesis. University of Washington. 1981.

PUBLICATIONS

Martin, C.D. Gut reaction: A computerized learning program on the gastrointestinal tract. 1993.

Martin C.D. Taking risks to market heart health. J Am Diet Assoc. 90:521, 1990

The Providence diet. Eds. 1-3. Providence Medical Center, Seattle, WA. 1987-1989.

Martin C.D., Dull, A., Close, D. Guidelines for enteral tube feeding. Providence Medical Center, Seattle, WA. 1986.

Martin C.D. Eatin' time, growin' time: a programmed nutrition text. Children's Hospital and Medical Center, Seattle, WA. 1981.

BOOK CHAPTER
Martin, D., Gastrointestinal disorders and consistence modifications. In: Handbook of Clinical Dietetics, 6th Ed. Utah Dietetic Association, 1992.

BOOK REVIEW
Windham CT, Martin CD. The Balancing Act. Kostas, G and Rojohn, K. From Cooper Clinic/Aerobics Center, Dallas, TX 1991. J. Nutrition Education 24:46, 1992.

PEER REVIEWER

Journal of American Dietetic Association
Journal of Nutrition Education

TEACHING EXPERIENCE
University level

1993	NFS 440 Nutrition and Human Metabolism. Lecturer and Teaching Assistant. Utah State University.
1993-4	NFS 222 Nutrition Through the Life Cycle. Lecturer and lab assistant. Utah State University.
1992	NFS 405 Nutrition Education Course on training dietetic students to interview, assess and create care plans for patients. Three lecture hours weekly. Utah State University.
1991 & 1992	NFS 456 Clinical Dietetics Six hour unit on cancer and nutrition Utah State University.
1991 & 1993	NFS 458 Clinical Dietetics Experience Supervision of dietetic students during their class field work at Logan General Hospital.
1990	Designed, implemented and evaluated learning experiences for a six month hospital practicum for a Master's Degree dietetic student from Loma Linda University, Riverside, CA.
1988-89	Designed, implemented and evaluated learning experiences for a six month hospital practicum for a Master's Degree dietetic student at Providence Medical Center, Seattle, WA.
1981-83	Supervision of field practicum for six dietetic technician students. Planned, implemented and evaluated learning experiences.

1980	Team-taught a course (3 hours lecture weekly) on interviewing and nutrition assessment to CUP dietetics students. University of Washington.
1979-80	Supervision of CUP dietetic students in their hospital field experiences. University of Washington.

Community Education

Conducted over 200 community classes on nutrition-related topics for community members. Population groups ranged from grade and high school children to low-income and the elderly. Specific disease-related classes were taught on a regular, on-going basis for self-help groups in the following areas: ostomy, congestive heart failure, arthritis, obesity and cardiovascular disease.

PROFESSIONAL AND HONORARY ORGANIZATIONS

American Dietetic Association	#394273
Utah Dietetic Association	1989-94
American Association of University Women	1994
Society for Nutrition Education	1991-94
Phi Upsilon Omicron	1991-94
Health Check Northwest	1984-86

HONORS AND AWARDS

Scholastic:

Sigma Xi Scientific Poster Contest: First Prize, 1993	$200.
Frances E. Fischer Scholarship, A.D.A., 1992	$1,000.
Vice President of Research Fellowship, Utah State University, 1991.	$7,500.
Vice President of Research Fellowship, Utah State University,1990.	$7,500.
H.E.W. Fellowship, University of Washington, 1978	$3,500.

Professional:

Marketing Innovations Award, Marriott Corp., 1987
Professional Services Award of Excellence, Marriott Corp., 1984

PROFESSIONAL PRESENTATIONS

1994	Meat intake by women in the United States. Oral Presentation, F.A.S.E.B. Annual Meeting. Anaheim, CA.
1993	Trace mineral status and meat intake in American women. Poster Session. Utah Dietetic Association Annual Meeting Ogden, Utah.

1993	Contributions of meat to diet of American women. Poster Session. F.A.S.E.B. Annual Meeting, New Orleans, LA.
1992	Ethics in Nutrition Education. Ogden Dietetic Assoc. Journal Club, Ogden, Utah.
1990	Nutrition - what happens next? Utah Math Science Network Conference, Utah State University.
1990	Changing diet patterns for heart health. Riverside Community Hospital; Riverside, CA.
1989	Use of bioimpedence to determine body fat. Marriott , Western Division Annual Mtg.
1989	Using nutrition-related DRG's to enhance hospital reimbursements. Marriott, Regional Dietitian's Meeting.
1988	Marketing heart health. Poster session, American Dietetic Assoc., National Meeting.
1988	Strategies for creating an effective quality assurance program. Marriott, Regional Meeting.
1987	Implementation of hand-held computer use in patient nutrition assessment and care. Marriott, Regional Meeting.
1986	For their health: Fast foods and your customer. American Restaurant Association, Annual Meeting, WA Chapter.

MASS MEDIA PRESENTATIONS

"Providence Diet" Program

1987	Scripted, directed and appeared in a series of 12 nutrition spots aired on evening news, KIRO-TV
1987	Two interviews on Jim French show, KIRO-radio
1988	Interviewed on evening news and midday family show on KIRO-TV

"Shape Up Washington" Program

1986	Presented two television news spots on KIRO-TV, a CBS affiliate
1986	Two radio interviews plus a series of 8 taped nutrition information spots on KIRO Midday Show - KIRO radio

GRANTS

USU Graduate Student Travel Grant, 1993.
USU Women and Gender Research Institute Travel Grant, 1993.

INCOME / RESOURCE GENERATION

1989 Researched, developed and implemented a program which, via early recognition of patient malnutrition, allowed the hospital to add a minimum of $250,000 income for an annual outlay of $20,000.

1987-1989 Promotion of the Providence Diet program, which I developed, resulted in the hospital receiving significant amounts of free advertising from KIRO radio and TV. The dollar value estimated at over $50,000 in 1987 alone. This does not include the name recognition for the hospital resulting from distribution of one million copies of the program via 125 participating supermarkets.

1987 Performed a cost/benefit analysis of clinical staffing and was able to add two diet technicians and one dietitian F.T.E. to the staff despite economic strain in the facility.

1985 Established a nutrition clinic for Providence Medical Center. Clinic was self-supporting within 10 months. Obtained the only contract given by the Washington State Department of Health and Social Services for development and implementation of a weight loss program for the massively obese.

ADDITIONAL EDUCATIONAL EXPERIENCE

1989 Business computers. Riverside Community College Riverside, CA.
1984 McGaw-Hill supervisory training course. Seattle, WA
1983 Introduction to microcomputers. Seattle Community College, Seattle, WA
1981 SAGA management training course. Kalamazoo, MI

COMMUNITY ACTIVITIES

Sunday School instructor
Choir conductor
Member Northern Utah Choral Society
Member of Cache Valley Ballet Guild
Home economics instructor for women's group

OTHER INTERESTS

Interior design
Carpentry and woodworking
Costume design
Choral productions