Use of 1955 Food Survey Data for Research in Agricultural Economics

By Marguerite C. Burk and Thomas J. Lanahan, Jr.

Statisticians studying the demand for farm commodities have long made use of data collected by home economists, particularly those issued by the Institute of Home Economics of the United States Department of Agriculture in reports of research on family dietary levels and economic problems. They have also made extensive use of data collected by the Bureau of Labor Statistics for revision of price indexes. The most comprehensive food survey yet undertaken was the 1955 Survey of Household Food Consumption, and apparently it was the first in which agricultural economists took an active part. Because of the widespread demand for current data on food consumption patterns, statistical data from the survey were published jointly by the Institute of Home Economics of the Agricultural Research Service and the Agricultural Marketing Service immediately after the data were tabulated, but a minimum of descriptive information accompanied the data. Early publication of the data enabled public and private researchers outside the Department to proceed with their own analysis at the same time that several research groups within the Department were carrying on studies. Although various facets of food use have been described and analyzed in the many articles and speeches prepared by our research workers, from the many requests received from agricultural economists for guidance in use of the new data, it appeared desirable to publish a comprehensive article designed especially for their research needs. The authors have been working with the basic data for the last 18 months, and this article summarizes their experience.

CENSUS-TYPE BENCHMARKS for statistics on food consumption are provided by the 1955 Survey of Household Food Consumption. In view of the gradualness with which food habits change, data from these reports will be directly useful in the next 5 or 6 years, or more, for analysis of consumption patterns and markets for food commodities.

Study of food consumption patterns existing at one point in time in relation to region, degree of urbanization, and income adds greatly to our understanding of factors that affect the demand for food commodities. Even more can be learned about changes in demand from data obtained in two or more such surveys, spaced some years apart.

These data can also be analyzed in combination with other types of information, such as long-time statistical series on food supplies, marketing, consumption, price, and related economic and social categories. They contribute materially to our understanding of the factors that bring about historical trends in food consumption and food marketing. With such information we can improve our projections of possible future changes in pat-

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terns of food consumption and in the structure of the United States market for farm food commodities.[1]

This article has three parts: (1) A description of the survey and the types of data obtained from it; (2) notes on procedures for working with the data based on problems we have encountered; and (3) examples of use of the data in economic analyses of problems of significance to agricultural adjustment.

Description of the Survey

The 1955 survey was designed to provide reliable statistics on food consumption by all housekeeping households in the spring of that year, and for major segments of this total. The housekeeping population included about 153 million civilians. Excluded were about 9 million people (1) who lived in households not having at least one person who ate 10 or more meals from household supplies during the survey week, and (2) who lived in rooming houses or hotels, or in public or private institutions—often described as the nonhousekeeping population.

The Sample

Only a brief description is given here.[2] A total of 6,060 households participated in the survey. The basic part was a national self-weighting probability sample of 4,605 households. There was also a supplementary sample of 1,455 farm households, taken to assure particularly reliable data on farm-consumption patterns.[3]

The sample was designed to represent households only in the four regions for which the data were tabulated and not to yield data on smaller geographic subgroupings. Therefore, reorganization of the sample data into other subgroupings by area is on uncertain statistical grounds.[4]

Collection of the Data

The survey was conducted by a private marketing research firm under contract with the U. S. Department of Agriculture. It was directed by survey statisticians and food economists of the Institute of Home Economics and by sampling specialists and other statisticians of the Agricultural Marketing Service. The data were collected by trained interviewers in personal interviews averaging 2 hours each. These were made in the April–June period.

Studies made by the Institute had indicated that spring is the most representative part of the year for most foods, and this was the period covered by several earlier surveys. A detailed schedule with questions regarding the family's economic status and its food consumption was used. This is known as the recall-list method.[5]

The response rate of eligible households was 89 percent. The food consumption data pertained to the week preceding the interview, a period of reasonably good recall for this detail under circumstances of the interview situation.

Although some of the terminology may be new to a few readers, we shall not explain all terms at this point. Terms found to be critical for analytical work are noted at appropriate points in this article. An extensive glossary accompanies each survey report.

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[1] A series of four regional articles, one on urban food patterns, and a series on the household market for major commodities were published in *The National Food Situation*, a quarterly periodical of the Agricultural Marketing Service, U. S. Department of Agriculture. Beginning in February 1957, each issue has carried a list of reports, articles, and speeches based on survey data. See also FOOD CONSUMPTION AND DIETARY LEVELS OF HOUSEHOLDS IN THE UNITED STATES—SOME HIGHLIGHTS FROM THE HOUSEHOLD FOOD CONSUMPTION SURVEY, SPRING 1955. U. S. Dept. Agr., Agr. Res. Serv. ARS 62–6. Aug. 1957.

[2] More detail can be found in U. S. DEPARTMENT OF AGRICULTURE. FOOD CONSUMPTION OF HOUSEHOLDS IN THE UNITED STATES. U. S. Dept. Agr. Household Food Consumption Survey 1955 Report 1, pp. 186–192. 1956.

[3] The oversampling of the farm households necessitates the use of a weight of one-quarter for the farm household data in making combinations of farm, rural nonfarm, and urban samples.

[4] A number of requests for additional tabulations has been received. Each must be considered separately. Although the Department cannot undertake special tabulations of these data, it will authorize such work, provided certain conditions are met. National Analysts Inc. (Philadelphia, Pa.), made the basic tabulations of the 1955 survey data under contract with the Department; it is currently keeping duplicate sets of the summary cards.

[5] For a comparison of the recall method using a detailed food list and the record-keeping approach, see MURRAY, JANET, BLAKE, ENNIS C., DICKENS, DOROTHY, AND MOSER, ADA M. COLLECTION METHODS IN DIETARY SURVEYS. Southern Coop. Ser. [Exp.] Bul. 23. April 1952. (Available from the South Carolina Station.)

The schedule in the survey was reprinted as AMS–200, U. S. Dept. Agr. July 1957.

TABLE 1.—*Types of food data from first five reports on 1955 Survey of Household Food Consumption*

Data Given in Survey Reports 1 to 5

(1) Average money value per family of:
  (a) All foods and beverages used in a week at home and away from home, including purchased and without direct expense;
  (b) Purchased food for home use and meals, snacks and beverages consumed away from home;
  (c) Food used at home received without direct expense from home production or as gifts or payment in kind.[1]
(2) For each of some 230 food items separately and for groups of foods, from all sources and purchased only:
  (a) Percentage of households in group using item in week;
  (b) Average quantity used at home per household in week;
  (c) Average money value of the quantity used per household.
(3) Use of major home-produced foods by rural nonfarm and farm households:
  (a) Percentage of households in group using item in week;
  (b) Average quantity used at home per household in week;
  (c) Average money value of the quantity used per household.

Averages Reported for Households Grouped by

Area	*Urbanization category*	*1954 money income of family after income taxes*[2]	
United States	All combined	Under $1,000	$5–6,000
Northeast	Nonfarm	$1–2,000	$6–8,000
North Central Region	Urban	$2–3,000	$8–10,000
South	Rural nonfarm	$3–4,000	$10,000 and over.
West	Farm	$4–5,000	

Data Computable from Reported Statistics for Each Group

(1) Per person averages for each type of data for individual foods and for groups of foods.
(2) Per household averages for those households using item during week.
(3) Estimates of regional, urbanization, and income shares of (a) the commercial market for all food and for individual foods, (b) home-produced foods, (c) all food consumed at home.
(4) Breakdown of the money spent for food at home among commodities.
(5) Average prices paid by selected groups of households for individual foods and groups of foods.
(6) Structural indexes of food consumption per person (retail level), of total food use per person (farm level), and of use of purchased foods per person (farm level)—now in process.[3]

[1] Valued at prices paid for purchased item by households in the same urbanization category and region.
[2] Some income classes were combined in some urbanizations of same regions because of small number of cases in sample.
[3] Described in footnote 25 of this article.

Types of Data

The first five statistical reports[6] on the 1955 Survey of Household Food Consumption provide about 1,000 pages of data. Participating households supplied information about their family membership and household composition, the 1954 money incomes of the primary economic families,[7] expenditures for meals and snacks away from home by members of the primary economic families, and their use of all individual foods at home in the 7 days preceding the interviews. The major types of data available from these reports are summarized in table 1.

Survey Reports 6 to 10[8] contain (1) less detailed tables on the quantities of foods used than in Reports 1 to 5, (2) detailed information on the nutritive value of the foods used by the households, computed schedule by schedule from the quantities of individual food items reported, and (3) distributions of persons into specified age and sex groups for the same groupings of households used in Reports 1 to 5. Report 11 contains data on home canning and freezing, Report 12 covers

[6] U. S. DEPARTMENT OF AGRICULTURE. FOOD CONSUMPTION OF HOUSEHOLDS IN THE UNITED STATES; NORTHEAST; NORTH CENTRAL REGION; SOUTH; AND WEST. U. S. Dept. Agr. Household Food Consumption Survey 1955 Reports 1 to 5. 1956.

[7] An "economic family" is a person living alone or a group of persons who live together and draw from a common fund for their major items of expense. The data on income and food expenditures away from home are for primary economic families and exclude guests, boarders, farm help, etc. If more than one economic family were living in the unit, the one that maintained the dwelling unit was the primary one. But the detailed data on food consumption at home include all food consumed in the household, defined as one or more persons sharing food supplies and including guests, boarders, secondary families, and farm help.

[8] U. S. DEPARTMENT OF AGRICULTURE. DIETARY LEVELS OF HOUSEHOLDS IN THE UNITED STATES; NORTHEAST; NORTH CENTRAL REGION; SOUTH; AND WEST. U. S. Dept. Agr. Household Food Consumption Survey 1955 Reports 6 to 10. 1957.

home food production in 1954, and Report 13 will be on home baking practices.[9]

Some useful byproduct data from tabulations already made are still unpublished. They include such information as numbers of meals eaten at and away from home; distributions by household size and type; age, education, and employment of wife or female head; and some related economic data. Some progress has been made in assembling these data, but publication plans are still to be developed.

The Institute of Home Economics has made some additional tabulations with less item detail, using the following classifications: Household size, age of homemaker, and education of homemaker—in addition to the region, urbanization, and income class controls. Such data will be published in the survey series as soon as practicable.

Procedures Used in Working With the Survey Data

In this section we (1) describe the procedures followed in working with the data and (2) attempt to answer some of the questions more frequently raised.[10]

Value Data for All Food

The value data, summarized in table 2 of the first five reports, are on a family basis. (The family sizes given in the table must be used in deriving per person averages.) In this article, we refer to these (money) value data as *market* values. The estimates of expenditures for food away from home in the preceding week involved estimation by the respondent of each family member's expenditures for meals and beverages (including alcoholic) away from home and for snacks. Therefore, this segment of the data includes the costs of marketing involved in preparation and handling of such food in eating places.

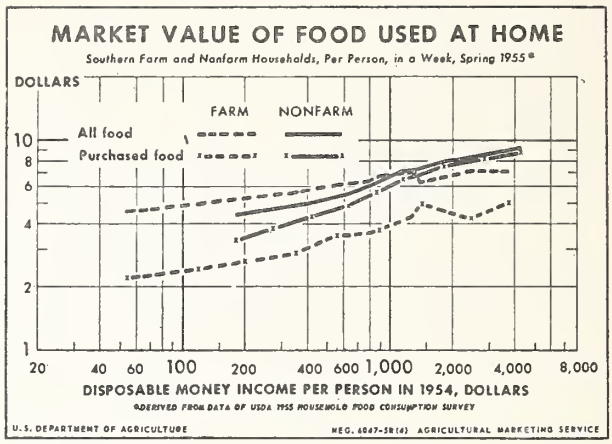

FIGURE 1.

The average values of all food consumed at home in tables 2 and 3 of the published reports include the estimates for alcoholic beverages. These market value data were built up from reported quantities and the information on value of purchased foods used. The quantities of foods received without direct expense—home-produced or received as gift or pay—were valued at the average prices for the same foods paid by other households in the same urbanization category of the region. Accordingly, the market value data for food at home represent essentially *retail* values. Figure 1 illustrates these sets of data.

The value data that summarize the values of all commodities consumed at home on a household basis are reported in table 3 of Survey Reports 1 to 5.

Commodity Data

The commodity detail in the reports cover use at home only. The objective of the major groupings of commodities in the first five reports was to expedite marketing analysis, but subgroupings followed the way foods are used in meals. Butter, for example, is grouped with fats and oils. Most processed items are grouped according to form. Fresh fruits and fresh vegetables represent special cases. They include home-canned and home-frozen items,[11] on the grounds that the items were

[9] U. S. DEPARTMENT OF AGRICULTURE. HOME FREEZING AND CANNING BY HOUSEHOLDS IN THE UNITED STATES—BY REGION. U. S. Dept. Agr. Household Food Consumption Survey 1955 Report 11. 1957.

U. S. DEPARTMENT OF AGRICULTURE. FOOD PRODUCTION FOR HOME USE BY HOUSEHOLDS IN THE UNITED STATES—BY REGION. U. S. Dept. Agr. Household Food Consumption Survey 1955 Report 12. 1958.

[10] The authors acknowledge extensive assistance received from the staff of the Institute of Home Economics—particularly FAITH CLARK, JANET MURRAY, ENNIS C. BLAKE, AND MOLLIE ORSHANSKY.

[11] Included in terms of processed weights. It now appears that conversion to fresh weight equivalents would have been wiser.

purchased "fresh" or home produced. This is a departure from usual procedures in dietary surveys. In reports on earlier surveys, home-canned foods were generally grouped with the commercially canned items.

Detailed data, from which other researchers may recombine to suit their own needs, have been published. Some alternative summaries also have been published. Special summary measures for dairy products (excluding butter) are given in table 5 of the first five reports. These include their fluid milk equivalent on a nutrition basis (calcium content), milk fat, and milk solids-not-fat. Data on flour equivalents of all grain products and other usual dietary study groupings are to be found in table 15 of Survey Reports 6 to 10. Fat content information is summarized in table 3 of these reports and includes fat content of meats, dairy products, and other such foods, as well as the consumption of so called "visible" fats and oils, as butter and lard.

Guides for Comparison With Other Data

In comparing the 1955 survey data with those from earlier surveys [12] (especially those for all households in spring 1942 and urban households of two or more persons in spring 1948), we frequently fell into two traps: We failed (1) to subtract home-canned fruits and vegetables from the "canned" classification in the 1942 report and add them to "fresh," and (2) to add pork fat cuts (classified with fats and oils in the 1942 report) to lean pork.

Whereas the general food situation in the spring of 1955 was quite "normal," the situations in April and May 1942 (the months in which practically all of the schedules were collected) and April, May, and June 1948 were so abnormal for some commodities as to require great care in making comparisons.[13]

We found it necessary to study the description of the food situation in the spring of 1942 in the

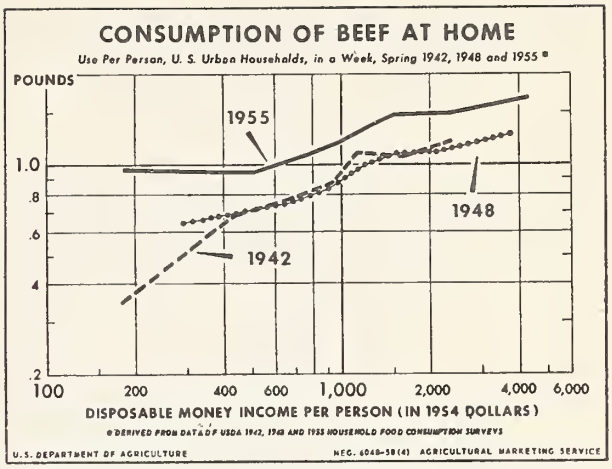

FIGURE 2.

first issue of the Department of Agriculture's official publication on food, *The National Food Situation* (July 1942) and to refer to crop reports for that period. Short food supplies in the spring of 1942 were apparently shared at most income levels so that the general levels of the Engel curves [14] were lowered, but the shapes or patterns tend to be similar to those for 1948 and 1955 (fig. 2). Despite the problems of comparing levels, we believe that much can be learned about changes in the structure of food consumption by using data from the earlier surveys along with those for the spring of 1955.

Still another trap for the unwary is the difference in household coverage between the income breakdowns of the 1942 data and those for 1948 and 1955. The 1942 data reported in *Family Food Consumption in the United States, Spring 1942* [15] include one-person households, whereas the other two sets of survey data tabulated by income cover only households of two or more. A retabulation of 1942 data on urban households of two or more is given in table 54 of the 1948 report, *Food Consumption of Urban Families in the United States*,[16] and in more detail in tables 8 to 12 of

[12] See the last page of the 1955 survey reports for list of selected publications in other surveys of family food consumption and dietary levels.

[13] For example, the discussion of the 1942 vegetable situation on page 30 of *The National Food Situation*. February 1958. Op. Cit.

[14] The graphic relationship between consumption and income, plotted for each family income class.

[15] U. S. BUREAU OF HUMAN NUTRITION AND HOME ECONOMICS. U. S. Dept. Agr. Misc. Pub. 550. 1944.

[16] CLARK, FAITH, MURRAY, JANET, WEISS, G. S., AND GROSSMAN, EVELYN. U. S. Dept. Agr. Agr. Inform. Bul. 132. 1954.

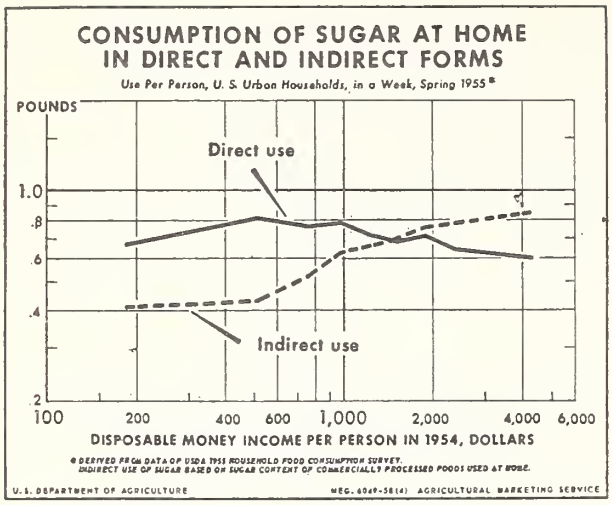

FIGURE 3.

Preliminary Report 12[17] on the 1948 survey.

Household food surveys provide statistics on variations in food consumption that lie behind the United States annual averages. Comparisons of averages from survey data with AMS data on annual per capita civilian consumption are informative, provided proper attention is paid to differences in classification, in level of distribution, and in universe covered. Even though the commodity detail in Survey Reports 1 to 5 were organized along marketing lines, there are many variations from the classifications and specifications used in the annual consumption data. A key to these differences in classification is provided by table 2 of this article.

In addition to regroupings, a variety of adjustments must be made to convert the retail-product weights of the survey data to weights appropriate to the level of distribution desired for the analysis to be undertaken.[18] Some of the complexities and the significance of such conversions were explored in an earlier article.[19] The importance of studying both "direct" consumption of sugar (use of purchased sugar) and "indirect" consumption in the form of purchased prepared foods, for example, is illustrated by figure 3.

In working with commodity detail from the 1955 household survey data and the AMS disappearance data (annual per capita civilian consumption), it is essential to keep in mind these differences of fact: The 1955 survey data on commodities cover 1 week's use of food at home in a week of April to June by housekeeping households, whereas the annual disappearance data cover the consumption of the entire civilian population at home and away from home, in eating places of all kinds and in public and private institutions. It is not surprising, therefore, that the per person averages derived from the survey multiplied by 52 do not match the disappearance data. More about this is given in the section that follows.

Although we do not have access to the A. C. Nielsen retail sales data, based on a sample of retail food stores, a few comments may be helpful to those who do have these data and wish to compare them with our survey data.

First, the household survey data include only the purchases (or consumption) of housekeeping households and not the food bought from retail stores by small restaurants, boarding houses, and others in the nonhousekeeping population. The proportion of children in the housekeeping population may differ from that of the whole clientele of retail food stores.

Second, the household survey data include supplies obtained from sources other than retail stores—department stores, local produce markets, delicatessens, milkmen, farmers, and wholesalers.

Third, the household statistics pertain to use of food in a week in a specified number of meals for a carefully identified population, whereas buyers at retail stores are not identified directly in the process of obtaining the Nielsen sales data.

Problems are also encountered in comparing the 1955 United States Department of Agriculture household survey data with those collected from the household panel of the Market Research Corporation of America (MRCA).

[17] U. S. BUREAU OF HUMAN NUTRITION AND HOME ECONOMICS. 1948 FOOD CONSUMPTION SURVEY PRELIMINARY REPORT 12. NUTRITIVE VALUE OF DIETS OF URBAN FAMILIES, UNITED STATES, SPRING 1948, AND COMPARISONS WITH DIETS IN 1942. 1948.

[18] Most of the factors needed for adjusting the data are available in CONVERSION FACTORS AND WEIGHTS AND MEASURES FOR AGRICULTURAL COMMODITIES AND THEIR PRODUCTS. U. S. Department of Agriculture, Production and Marketing Administration. May 1952.

[19] See BURK, MARGUERITE C. PROBLEMS IN THE ANALYSIS OF FOOD CONSUMPTION. Agr. Econ. Res. 6: 10–19. 1954.

TABLE 2.—*Comparison of divergent classifications of commodities in the 1955 Household Food Survey Reports 1 to 5, primary distribution categories, and retail summary table for annual per capita food consumption data*

Used at home as reported in Survey Reports 1 to 5 [1]	Annual per capita civilian consumption data [2]	
	Primary distribution basis as in tables 8–26 of Agr. Handb. 62	Summary food groups on retail weight basis as in table 38 of Agr. Handb. 62
Table 5.—Summary measures of milk, cream, ice cream, cheese:		
Fluid milk equivalent based on calcium content (excluding butter).	All dairy products combined in terms of fluid whole milk on a fat content basis.[3]	Same basis as survey.[3]
Milk fat (excluding butter)	Same basis as survey except includes butter.[3]	Not shown.
Milk solids-not-fat	Same basis as survey except includes butter.[3]	Not shown.
Table 6.—Milk, cream, ice cream, cheese. Includes weight of chocolate in drink and cocoa in dry cocoa mixes, and fruit etc., in ice cream; excludes sherbet, ices.	Fluid milk and cream measured at farm or distributor level on a fluid milk equivalent basis; other items in terms of product weight (see table 31 for complete list of minor dairy products).[3]	Differs from primary distribution basis in that fluid milk and fluid cream are shown separately—cream in terms of 25 percent fat content equivalent (here half and half is considered to be cream). Ice cream is shown in terms of milk and cream used (see table 9 for product weight) to avoid duplication with fruits, sugar, etc.
Table 7.—Fats and oils: Includes ingredients other than fats and oils in salad dressing, mayonnaise, and sandwich spread.	Measured at processing level [3]	Same as primary distribution basis except includes fat pork cuts.
Table 8.—Flour and cereal products: Includes all ingredients of prepared flour mixes, noodles, and ready-to-eat breakfast cereals. Includes popcorn, tapioca, potato flour and soya flour.	Grain products (excl. corn sugar and sirup) measured at milling or processing level.[3] Excludes all non-grain material except small amounts of sweetener or flavoring in breakfast cereals and infant foods. Barley expressed in terms of malt equivalent. Excludes popcorn, soya flour, and tapioca. Potato flour in the potato figures.	Same as primary distribution basis. Soya flour included with dry beans and peas on product weight basis.
Table 9.—Bakery products, commercial.	No comparable series. Ingredients of mixed foods are included in their respective basic food groups.	
Table 10.—Meat, poultry, fish: Includes the nonmeat ingredients in luncheon meats, sausage, etc. These items purchased in a variety of forms.	*Meat*—measured at the slaughter level and expressed in terms of carcass weight which excludes edible offal. *Fish*—market weights converted to edible weight. *Poultry*—slaughter weight converted to ready-to-cook basis. Excludes edible offal and game.	Same as primary distribution basis for fish and poultry. Meat converted to "fresh retail cut" equivalent using constant conversion factors for all years. Fat cuts of pork included with fats and oils. Includes edible offal and game.
Table 11.—Eggs: Data given in dozens of assorted sizes.	Measured at the farm level. Data expressed in number of eggs.[3]	Primary distribution data converted to retail weights using constant loss factor (except in war period when breakage was considered slightly higher). Poundage derived using constant factor of 1.5 pounds per dozen 1909–1946, increasing thereafter to allow for larger size eggs in recent years.
Table 12.—Sugar, sweets: Excludes chocolate sirup. Includes all ingredients of jams, jellies, candy, and fruit, butterscotch and caramel sirups.	*Sugar and sirups* [3]—Beet and cane sugar, measured at the refining level, is expressed as granulated sugar, but because amounts of powdered and brown sugars reported in the survey are small, no significant difference is noted.	Same as primary distribution basis except excludes duplication of sugars ans sirups used in the processed foods and given elsewhere in this set of statistics (e. g., canned fruits and vegetables, condensed milk, etc.).

See footnotes at end of table.

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TABLE 2.—*Comparison of divergent classifications of commodities in the 1955 Household Food Survey Reports 1 to 5, primary distribution categories, and retail summary table for annual per capita food consumption data*—Continued

Used at home as reported in Survey Reports 1 to 5 [1]	Annual per capita civilian consumption data [2]	
	Primary distribution basis as in tables 8–26 of Agr. Handb. 62	Summary food groups on retail weight basis as in table 38 of Agr. Handb. 62
Table 13.—Potatoes, sweetpotatoes: Includes product weight of chips and sticks.	Measured at farm level. Canned and frozen potatoes and sweetpotatoes reported in the vegetable tables; chips and sticks and dehydrated potatoes included on a fresh weight equivalent with the fresh category. Excludes quantities produced in home gardens.	"Fresh" converted to retail weight by use of constant conversion factors; canned and frozen same as primary distribution basis. Includes quantities produced in home gardens.
Table 14.—Fresh vegetables: Home canned and home frozen vegetables included on product weight basis. Includes sauerkraut, not canned, and horseradish.	Measured at farm level. Excludes quantities from home gardens. Sauerkraut and horseradish excluded. Melons, also given in the tables, being a truck crop.	Farm weights converted to approximate retail weights by use of constant conversion factors for individual items. Includes quantities from home gardens. Sauerkraut and horseradish excluded.
Table 15.—Fresh fruit: Home canned and home frozen included on product weight basis.	Measured at farm level. Excludes all home produced fruits and since 1934 apples grown in noncommercial areas of the United States. Excludes melons and minor fruits and berries.	Farm weight converted to approximate retail weights by use of constant conversion factors for individual items. Includes apples grown in noncommercial areas, and melons, but excludes all fruit produced in home gardens or grown wild and minor fruits and berries.
Table 16.—Commercially frozen fruits and vegetables: Excludes frozen fruit juices and potatoes.	Includes frozen fruit juices and fruit ades and potatoes.[3]	Same as primary distribution basis except excludes potatoes and includes frozen citrus juices on single strength basis.[4]
Table 17.—Commercially canned fruits and vegetables: Excludes bulk sauerkraut, tomato catsup, chili sauce, etc. and pickles, olives, and relishes.[5] Includes baby food and baked beans and mature peas.	Includes all sauerkraut; excludes minor canned fruits, baby foods, baked beans, and canned mature peas.[3] (Baby food shown as separate category and baked beans and canned mature peas included with dry beans and peas in terms of their dry equivalents.)	Same as primary distribution basis, except fruit and vegetable baby foods and all canned soups are included.[4]
Table 18.—Fruit and vegetable juices: Canned fruit and vegetable juice data include home canned and frozen juices. Frozen concentrated juice data exclude frozen ades (e. g. lemonade).	Data for juices reported in the tables on canned fruit juices, canned vegetables, and frozen fruit. Includes only commercially produced canned fruit and vegetable juice. Concentrated frozen fruit ades are included.	Same as primary distribution basis.[4]
Table 19.—Dried fruits and vegetables: Excludes canned baked beans and canned mature peas.	*Dry beans and peas* measured at farm level, on a cleaned basis. Includes dry bean equivalent of canned baked beans; excludes quantities produced in nonfarm gardens. *Dried fruit* measured at the packer level.	Same as primary distribution basis except includes quantities of dry beans and peas produced in all home gardens and soya flour on product weight b asis Dried fruit is shown with fruits.
Table 20.—Beverages:		
Coffee, tea and chocolate, cocoa Coffee includes coffee substitute. Ingredients of chocolate sirup included.	Measured at the import level. Coffee in terms of green beans; chocolate and products in terms of cocoa beans.[3]	Coffee converted to roasted equivalent, cocoa beans to chocolate liquor.
Soft drinks, bottled, canned and powdered and fruit ade other than frozen.	No comparable series. Ingredients included in their respective basic food groups.	
Frozen fruit ade	Frozen lemonade, etc. included with frozen fruit juices.	Same as primary distribution basis.
Alcoholic beverages (no quantity data collected).	Not classified as a food; ingredients not included.	

See footnotes at end of table.

TABLE 2.—*Comparison of divergent classifications of commodities in the 1955 Household Food Survey Reports 1 to 5, primary distribution categories, and retail summary table for annual per capita food consumption data*—Continued

Used at home as reported in Survey Reports 1 to 5 [1]	Annual per capita civilian consumption data [2]	
	Primary distribution basis as in tables 8–26 of Agr. Handb. 62	Summary food groups on retail weight basis as in table 38 to Agr. Handb. 62
Table 21.—Miscellaneous foods:		
Nuts and peanut butter	Peanut butter included in shelled peanut equivalent.[3]	Same as primary distribution basis, included in dry bean, pea, nut category.
Soups, including home canned and dehydrated and frozen.	Commercially canned only	Same as primary distribution basis, included with canned vegetables.
Catsup, chili sauce, etc	Commercial only. Tomato products, pickles and relishes included in canned vegetable data, olives in canned fruit data.	Same as primary distribution basis.
Pickles, olives, relishes (both include home made products).		
Puddings, pie fillings, icing mix, fudge mix, and mixtures other than baby food, prepared or partially prepared.	No comparable series, ingredients included in basic food groups.	
Strained canned pudding (baby)	Included with baby food in a separate category, "canned baby food."	Excluded. Ingredients included in basic food groups.
Baby and junior foods, mixed, prepared or partially prepared.		
Sherbets, ices	Included with dairy products	Same as primary distribution basis.
Leavening agents (yeast, baking powder, cream of tartar, soda).	No series available	No series available.
Seasonings (vinegar, salt, spices, extract, flavors, flavoring sauces, meat tenderizer).	Data on spices only, measured at import level.	Not included.

[1] Quantities consumed at home per household; product weight. Unless otherwise noted, excludes quantities in mixed foods. Table numbers refer to tables in each of the 5 reports.

[2] As published in Agr. Handb. 62, Consumption of Food in the United States; includes all use away from home. Items on *primary distribution basis* are annual averages for the United States, measured at whatever level data are available, derived as a residual from data on production, stocks, foreign trade, and military takings, and include quantities used in producing mixed foods such as bakery products. *Retail weight data* are derived from primary distribution data using various loss factors or making other adjustments such as those to avoid duplication with other foods listed. Reference to tables are those in Agr. Handb. 62.

[3] Includes quantities used in mixed foods, such as bakery products, salad dressings, soft drinks, etc.

[4] In table 38 of Agr. Handb. 62 the fruits and vegetables are in 3 nutritional groupings: Citrus fruit and tomatoes; leafy, green and yellow vegetables; and other vegetables and fruit.

[5] As shown in table 21—Miscellaneous foods, tomato catsup, chili sauce, etc. and pickles and relishes do not have separate data for commercial and home canned items.

First, the USDA survey collected data on all foods used by the household through extended interviews by specially trained interviewers, using a detailed schedule. Although we understand that there is a personal interview when a family joins the MRCA panel, apparently the panel members receive most of their instructions by mail and send in their records each week.

Second, the USDA household survey data pertain to use of food in a week in a specified number of meals for a carefully identified number of persons, but MRCA data pertain to purchases during the period, not use.

Third, as already indicated, the USDA survey collected data on use of *all* foods, whereas MRCA panel members report purchases of only specified items on the records they keep.

Fourth, the USDA sample was a self-weighting probability sample, whereas, because of dropouts, it is difficult to maintain a continuous panel on a random probability basis, even if it is started in that way.

Fifth, the income data given in the 1955 food survey reports pertain to *1954* money income after payment of income taxes, whereas the MRCA data refer to income before taxes and usually are not shown in dollars or in much detail.

Converting to Per Person Basis

The survey data for commodities are reported in terms of average per household, because they

were collected from households as units. Rates of consumption or purchases per household are undoubtedly useful for some analyses because the household is a purchasing unit. Those concerned with retail marketing problems probably prefer to keep the consumption and income data in the reported units.

Because average household size varies systematically by (1) income level, (2) urbanization category, and (3) region, in general, we found it desirable to convert the data to a per-person basis. In developing comparisons with other types of data, such as time series on consumption, income, and population, the necessity for converting data to a per-person basis is emphasized. Household averages should be divided by the average household size in each subgroup of households, reported in table 3 of Survey Reports 1 to 5. Average household size for a subgroup was derived by dividing by 21 the total number of meals served to all persons in the household from its food supplies.[20]

The 21-meal equivalent person for survey data is widely accepted as a means of standardizing the base for comparisons. It allows account to be taken of all foods eaten at home by all persons actually present at meals, whether family members, boarders, hired help or guests, as well as for foods in carried lunches. In the 21-meal equivalent calculation, no distinction is made between morning, noon and evening meals. Meals eaten away from home by family members are excluded from this calculation.

The process of calculating per-person rates involves the analyst in a series of generalizations, as all persons in the families are considered of equal significance in dividing up the family income, whereas obviously their demands vary. Then, too, all persons who eat from the household

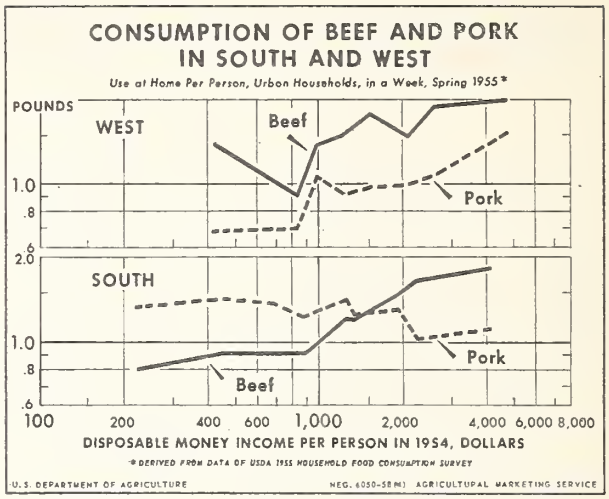

FIGURE 4.

food supplies do not consume equal portions of all foods. (As yet, we know little about how they share in the household's food use.) Also, there are some economies of scale in cooking for large families. Additional tabulations of basic data will give clues to the significance of this factor. You will recall, however, that we make the same kinds of generalizations when we use annual averages of per capita food consumption and average disposable income per capita.

Graphic Analysis

To supplement work with statistical data arranged in tabular form, many analysts turn to graphic analysis. We make frequent use of logarithmic charts of consumption per person for each income class plotted against average income per person of families in that class for each urbanization category of each region. These curves are called Engel curves. For example, note figure 4. Such graphic analysis permits the analyst to see the outlines of the forest and to avoid getting lost among the trees of minor aberrations. Charts reveal the systematic variations in the consumption data with such factors as purchasing power and degree of urbanization. Sometimes, they bring unexpected patterns to light and enable the analyst to study and explain them by reference to other sets of data.

At this point a digression to possible reasons for apparently erratic variations may be useful. Variations of this kind may arise from such elements as special consumption patterns of the households of a given type in the universe being

[20] Example: A family of 4 persons ate a total of 76 meals at home in the week, including 28 breakfasts, 23 lunches, and 24 dinners served to the family and one dinner served to a guest. On the basis of one person eating 21 meals at home in a week, this yields a computed household size of 3.6 persons.

For further consideration of problems of calculating per-person data, see pp. 6, 35, 40, AGR. INFORM. BUL. 132, op. cit., and pp. 179–183, ORSHANSKY, MOLLIE, LEBOVIT, CORINNE, BLAKE, ENNIS C., AND MOSS, MARY ANN. FOOD CONSUMPTION AND DIETARY LEVELS OF RURAL FAMILIES IN THE NORTH CENTRAL REGION, 1952. U. S. Dept. Agr. Agr. Inform. Bul. 157. Nov. 1957.

sampled, in the sample thereof (sampling variation), or from reporting errors.

Sampling variations in the survey data are now being studied by statisticians in the Institute of Home Economics. The extent of reporting error cannot be measured by our available information. But we know that the effect of reporting error and sampling variation varied from cell to cell (income class within urbanization category in a region) and from item to item. It depends upon such things as number of cases, proportion of households in the cell that used the item, how difficult it is to recall the quantity of the item used (e. g. sugar out of canister, sugar bowls, etc.), and whether response is biased because of an element of prestige or status associated with reporting or not reporting an item.

Use of Related Data

Reference to other sets of survey data and to other kinds of information improves one's sense of direction in finding basic relationships. We have found also that the search for clues as to factors that account for seemingly incomprehensible variations from one survey to another or from one income group to the next, challenges our understanding of economic and social statistics. Unexpected patterns may result from special effects of age composition of the households (as on fluid milk and orange juice), from differences in national origins (as on high consumption of lamb in the Northeast), or from special marketing practices—such as the sale of cream by north central farmers to creameries and their purchase of butter at prices they received for their cream.

Some Problems in Analysis of the Data

It is hoped that the foregoing discussion has alerted the reader to some of the tricky procedural problems. In the section that follows we describe in more systematic fashion some of these problems, and show how we deal with them.

One-Person Households

Data for one-person households were handled separately in the survey tabulations—their consumption patterns are greatly influenced by the fact that they include primarily adults. Separate tabulations have not been made of consumption by one-person households subdivided by income. Budgetary limitations and the capacity of the electronic computer forced a choice among subgroupings. As one-person households make up only 2.4 percent of the housekeeping population in the United States, all such households were grouped together.[21] Therefore, for all income-food analyses we use the relationships found among households of two or more that reported their income.

Foods Eaten Out

Study of the makeup of the total U. S. food market in terms of buyers is greatly limited by the lack of information on foods eaten out—by both housekeeping and nonhousekeeping populations. These survey data include global estimates of expenditures by the housekeeping population for meals purchased and eaten away from home (including alcoholic beverages) and for snacks. The 1955 survey also yielded information on which meals were eaten out, and by whom. From some unpublished data we found that 9 percent of the families' meals were eaten out, one-third being received as gifts or pay (probably many as visitors) and two-thirds as purchased meals. The cost of purchased meals averaged 75 cents a meal.

We believe that estimates of expenditures away from home are understated. The $1.40 average expenditure for food and beverages away from home per household member derived from the survey data and adjusted to a yearly total for this population sector ($10 to $11 billion), plus an allowance of $4 billion for the nonhousekeeping population (9.3 million people times the United States average money value of all food per person for the survey population in a week times 52 weeks) totals $14 to $15 billion. From what we can learn from available data, this appears to be a reasonable estimate for away-from-home *food* expenditures only (excluding alcoholic beverages).

Checks on Level of 1955 Survey Data

How do the estimates of food consumption derived from the 1955 Survey of Household Food Consumption check with other measures? Some critics of one-time surveys argue that surveys of this kind yield gross overestimates. Because such survey data provide the principal basis for

[21] A substantial proportion of single individuals live in quasi-households (hotels, rooming houses) or do not qualify as housekeeping households by eating at least 10 meals from household supplies in a week.

analysis of the cross-section of our national food market in terms of its buyers, they would be useful for many purposes even if their levels were out of line.

We have carried through a variety of checks on the overall dollar figures, on overall measures of per capita food consumption, and on quantities of major foods consumed. Before going into the findings, these facts need emphasis: A range of error is to be expected in these survey data as well as in the aggregate figures for food expenditures and food disappearance. Neither set of data proves or disproves the validity or accuracy of the other.

In brief, these are our findings to date:

1. The survey data on market value of all farm food commodities consumed, adjusted to United States aggregates for the year, are 5 or 6 percent higher than our estimates of the market value of all farm foods and meals consumed by the civilian population. About half of the difference arises from the disparity between the amount of home food production as estimated for the disappearance data and that reported by housekeeping households, both for a week of spring 1955 and for the year 1954.

2. A comparable degree of difference was found between the overall level of use per person of farm food commodities by the sample of housekeeping households in a week of spring 1955 and the level indicated by the index of per capita use of farm foods in the year 1955. Again, about half of the difference arose from the estimation of home production. The small discrepancy remaining seems to indicate that seasonal variations for individual foods balance out in the total for all foods.

3. Among commodities, there is wider variation between averages computed from survey data for the housekeeping population's use of food at home and those derived from disappearance data. Average use of sugar at home in all forms, adjusted to a yearly total from the survey data, was much lower than average annual per capita consumption. But use at home excludes all the candy, soft drinks, and desserts consumed away from home.

At the other extreme, survey data on eggs appear to average substantially higher than AMS estimates of per capita consumption. The procedure by which equivalent persons are calculated apparently leads to upward or downward bias for foods consumed primarily at one meal of the day.[22] When allowance is made for seasonal variations in food consumption, the survey data for meats and for fats and oils were found to be close to the levels indicated by annual per capita consumption data. Study of data for other commodities is still in progress.

For individual commodities and farm consumption of home-produced foods, analysts working with survey data will frequently face the problem of seasonality of supplies and of consumption. Reference to seasonal analyses in earlier household surveys,[23] quarterly disappearance data for some foods, carlot shipment, and trade data helps one to understand such variations and to develop necessary adjustments. Fortunately, the spring of 1955 was remarkably "normal" in both supplies and prices for most foods.

Which Measure to Use

With the several measures of food consumption supplied by the survey, the choice of the proper one for the particular job at hand becomes significant. Our study provides some clues. Market (money) value of all food at home and away is a useful measure for studying the relationship between overall food consumption and income. Market (money) value of food at home is in effect the retail value of all food consumption at home. *Food expenditures* for home consumption and away from home (money value of purchased food used at home, meals, and other food eaten away from home) provide a reasonably satisfactory measure of commercial sales of food and meals to the housekeeping population for the spring of 1955. The dollar outlays for food to be consumed at home approximate retail food sales to this population.[24]

The *quantities of food* used from all sources are directly pertinent to the study of the structure of the consumption of food commodities. ("Structure of food consumption" refers to varia-

[22] See Burk, Marguerite C., Introduction to 1955 household survey data on eggs. U. S. Dept. Agr. Agr. Mktg. Serv. The Poultry and Egg Situation. May 1957. pp. 13–19, 51.

[23] Agr. Inform. Bul. 132. op. cit. pp. 9–10 and 102–103.

[24] The only segments of the commercial food market not covered by household survey data on food expenditures are the sales of food to nonhousekeeping people and institutions and sales of meals, snacks, and beverages by public eating places to the nonhousekeeping population.

tions in averages among households grouped by region, urbanization, and income.) After the conversions indicated by the information in table 2 have been made, these data on a per-person basis can be compared with time series of apparent per-capita consumption by the whole civilian population at home and away from home. We consider the quantities of foods *purchased* to be the proper figures to use for work on demand for commercially produced and marketed foods, and for many other marketing problems.

To measure for demand analysis the structure of overall food consumption in quantitative terms, three new indexes are now being developed.[25] Two will match the definitions of the time-series index of per capita food use of farm commodities. The consumption data from the survey are being converted to their farm commodity equivalents and valued at 1947–49 farm prices. One of these will cover consumption from all sources, the other only purchased foods. The third index will measure variations in consumption from all sources in terms of average retail value at 1947–49 average prices. This index will match the time-series index of per capita food consumption.

Separation of Effects of Several Factors

The most difficult problem encountered in the analysis of food consumption in the spring of 1955 was the separate measurement of the effects of the many interrelated factors that contributed to its structure. These factors include: (1) Proportion of the population in each group or category having specified characteristics; (2) regional patterns of food use; (3) differences in consumption rates according to degree of urbanization; (4) relationships between food consumption and income; (5) differences in proportions of households using and in average use among using households; (6) variations caused by known factors such as family composition but not measurable with available data; and (7) effects of unknown social and economic factors. There is no short cut to the solution of this problem. It is a long, tedious job—one that involves many calculations, much plotting of data, and extensive statistical and economic analysis.[26]

Population Distributions

Reference to distributions of the housekeeping population among subgroupings [27] is essential to an understanding of how regional averages combine into United States averages; how urban, rural nonfarm, and farm averages merge into the regional figure; and how the averages for the several income classes result in the overall average for the urbanization category of a region.

Regional Data

Each regional average of food used per person represents a weighted combination of (1) the population distribution within the region, first, among urbanization categories and second, among income classes; and (2) the average consumption rates per person for each income class.

Regional data on consumption are a major contribution of the 1955 food survey; they have opened up new vistas for analysis of food consumption. What appear to be unique features of one region's consumption pattern sometimes turn out to be the result of a particular combination of income and degree of urbanization. For example, average consumption of beef and veal per person at home in all households of the Northeast was 1.42 pounds in a week, spring of 1955, compared with 0.89 pounds in the South.

But data in part (*a*) of table 3 hint that patterns of consumption of beef and veal in the two regions were not nearly so far apart as these overall averages indicate. This table illustrates the procedure we have followed to separate the effects of several major factors on average consumption per person.

[25] These indexes are being developed by the Consumption Section of the Statistical and Historical Research Branch, AMS. Each index will relate the per-person food consumption rates of households in the 1955 food survey in each income class of each urbanization category to the U. S. average (equal to 100) and the averages for each urbanization category of each region to the all U. S. average.

[26] See also U. S. Dept. Agr. Agr. Inform. Bul. 132 op. cit.

[27] Starting with the family size data in table 2 of Survey Reports 1 to 5 and the number of families in the basic sample (including only the fourth of the farm families who were in the self-weighting sample), we developed a population distribution by region, urbanization, and income, summarized on pages 27 and 28 of *The National Food Situation* for February 1957. (Op. cit., footnote 1.) This distribution of family members is preferable for demand analysis for all food combined to a distribution of household members, which can be derived from data in table 3 of Survey Reports 1 to 5. However, the two distributions are so close that we use the former even for work on commodities.

TABLE 3.—*Relationship of region, urbanization, and income to consumption per person of meats and poultry during a week of spring 1955* [1]

(*a*) *Regional* differences, illustrated by data for urban households with money incomes after income taxes of $4–5,000

Food item	United States	Northeast	North Central Region	South	West
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Beef and veal	1. 46	1. 41	1. 51	1. 31	1. 56
Pork	1. 08	. 94	1. 18	1. 41	. 92
Lamb and mutton	. 09	. 19	. 02	. 00	. 11
Poultry	. 73	. 84	. 68	. 61	. 53

(*b*) *Urbanization* differences, illustrated by data for southern households roughly comparable in money plus nonmoney income

Food item	Urban $4–5,000	Rural nonfarm		Farm		
		$4–5,000	$3–4,000	$4–5,000	$3–4,000	$2–3,000
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Beef and veal	1. 31	0. 81	0. 81	1. 12	0. 76	0. 83
Pork	1. 41	1. 72	1. 45	1. 11	1. 40	1. 20
Lamb and mutton	. 00	. 00	. 01	. 00	. 03	. 04
Poultry	. 61	. 54	. 59	. 62	. 83	. 55

(*c*) *Income* differences, north central urban households grouped by money income after income taxes

Food item	All	Under $2,000	$2–4,000	$4–6,000	$6–8,000	$8–10,000	$10,000 and over
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Beef and veal	1. 62	1. 40	1. 49	1. 61	1. 59	1. 78	1. 81
Pork	1. 21	1. 38	1. 20	1. 20	1. 36	1. 08	1. 08
Lamb and mutton	. 07	. 03	. 07	. 03	. 03	. 15	. 28
Poultry	. 68	. 71	. 58	. 74	. 64	. 61	. 76

[1] 1955 Survey of Household Food Consumption.

Urbanization Differences

The average consumption per person in households grouped in a particular urbanization category is compounded of the population distribution among income classes and the average rates for all households in each income class. To determine the effect of degree of urbanization on consumption rates one must make allowances for nonmoney income.

Because of its complexity, the Department did not ask for information on nonmoney income in this survey, hence analysts who use the survey data will have to make rough approximations for the effect of nonmoney income on food consumption. One possible procedure is illustrated by part (*b*) of table 3, which assembles some of the survey data for the South. As some rural nonfarm households have substantial amounts of nonmoney income in the form of home-produced food and fuel, there were probably households in the $3–4,000 money income group that had total income (including nonmoney income) approximating that of urban households in the $4–5,000 range.

The range of the averages for the two rural nonfarm income groups indicates how rural nonfarm consumption patterns may vary from those of urban households with comparable total incomes. The much greater significance of nonmoney income of farm families, such as home-produced food, fuel, and rental value of their homes, led us to decide that data of the $2–3,000 money income group must also be considered.

Income-Consumption Relationships

The probable effect of variations in income or purchasing power on consumption rates can be evaluated by means of Engel curves, as in figure 4, by organizing data as in part (*c*) of table 3. Certain facts about the income data from the survey need to be kept in mind. The data are for money income only as noted previously; some families in a given income class in 1954 might normally belong in a higher or a lower class. (Some background data for study of the transitory aspects of income were collected in the survey, but they are not yet published.) Although the relationships of money income and consumption per person, calculated from averages for each income class, are not the same as would have been obtained by sorting the cards by income per person, they do provide a working approximation.

Some of the complexities of the 21-meal person device have already been explored. To these must be added another—the idea that the per-person averages discussed in this article are the result of adding up all the quantities consumed by households in that cell (or broader grouping), and dividing by the total number of 21-meal equivalent persons in those households. This number includes nonusers of the commodity. As data covering household size are not available for using households only, relevant per-person averages cannot be calculated.

Experience with the available data has shown the need for (1) frequency distributions of households within income classes by quantities used to supplement the overall averages and (2) cross-tabulations. The staff of the Institute of Home Economics is planning to make frequency distributions. Lack of cross-tabulations prevents satisfactory analysis of cross-elasticities; but new tabulations being planned for a few items by the Institute of Home Economics will provide a beginning.

Price Implications

Survey data are generally unsatisfactory for price analysis because no large-scale cross-section survey has gathered quality data along with quantity and price or value information. The analyst cannot ascertain whether the price variation from one income class to the next results from such influences as differences in the quality of the product purchased, extensive buying in delicatessens on Sunday, or heavy purchases from relatives with farms.

The rather extensive classification of commodities used in the 1955 food survey represents in part the results of an attempt to identify the extent of commercial processing. This is useful for study of price relationships. The inclusion of home-canned fruits and vegetables in the fresh categories will affect average prices per pound for fresh produce. This problem can be avoided by use of the data for purchased quantities only.

Use of Survey Data in Agricultural Research

In this section, we introduce several types of analyses we are making with the survey data.

Structure of the Food Market

The 1955 Survey of Household Food Consumption has provided data needed for studies of many aspects of the food market. The total market value of all foods and beverages consumed at home and away from home (item 1, table 4) comes close enough to the concept of the food and beverage expenditure series of the Department of Commerce [28] to be used as a reasonable basis for regional breakdowns and for indications of variations in such expenditures by income level. However, as noted earlier, the away-from-home data must be handled judiciously.

Data on the average market value of all food consumed per person in this country for segments of the population grouped according to region, urbanization, and income, computed from the household averages, are the only available statistics for analysis of so-called food expenditure by groups of consumers (including nonhousehold members). Some marked differences in the dollar value of food consumption from region to region are revealed by similar data for each level within the same urbanization category, as well as the expected variations by income and between

[28] But there are two significant exceptions: (1) Commerce data cover the whole population, whereas the survey data apply only to housekeeping households, and (2) survey data on money value of all foods include home-produced foods used by nonfarm households and all payments in food, some of which are excluded from the Commerce series.

TABLE 4.—*Measures of the value of food consumed per family in U. S. in a week, spring 1955*[1]

Description of measure	*Average per family (dollars)*
1. Market value of all food and beverages consumed at home and away from home[2]	29.58
2. Market value of purchased food and beverages consumed at home and away from home (total food and beverage expenditures)[2]	27.05
3. Expenditure for meals, snacks, and beverages away from home[2]	4.76
4. Expenditure for alcoholic beverages for home consumption	.74
5. Market value of all food consumed at home (including food obtained without direct expense)	24.08
6. Expenditure for food consumed at home[3]	21.55
7. Market value of food obtained without direct expense:[4]	
Home-produced	1.85
Received as pay or gift	.68
	2.53

[1] Data from 1955 Household Food Consumption Survey Report 1. Report uses term "money value," which is equivalent here to market value.

[2] Includes alcoholic beverages consumed away from home; separate data on such expenditures away from home not reported.

[3] Excludes 74 cents for alcoholic beverages bought for consumption at home (based on average rate per "economic" family).

[4] Valued at average price paid for each item by other households in each urbanization category of each region.

farm and urban households. These variations are one indicator of the possible range of expansion or contraction in per capita food use and food sales in the future.

The data show, for example, that people in northeastern urban households ranked highest in market value of food consumed per person, owing to heavier away-from-home expenditures. Also, the average market value of food per person in southern households in each urbanization category fell below the corresponding average for other regions. Average prices paid for many foods were lower there, and the proportion of low-income families (incomes under $2,000) was more than twice as high in the South as in the North and West.

When the averages for market values of food consumed at home and those for food consumed away from home are compared by income levels, greater increases in relation to income in amounts spent for food away from home than in the value of food consumed at home are revealed. Dollar outlays for food purchased for consumption at home (as item 6 of table 4) increased more with income than did the market value of all food consumed at home. This reflected the decreasing importance of home-produced food in total food consumption of households in the higher range of money income. Averages for all urbanizations combined are also affected by the decreasing proportion of rural households.

The total market (or money) value figures for food at home, comparable to the overall figure for item 5 of table 4, are recorded for 230 individual commodities and major commodity groups. A subdivision into the value of purchased food and that of food received without direct expense provides the basis for deriving estimates of the commodity breakdown for perhaps 75 to 80 percent of the total food market, excluding the eating place and institutional market.

As mentioned earlier, these at-home patterns of food expenditures can be used as rough approximations of the commodity breakdown of total food expenditures including those away from home. Data for broad commodity groups have been developed and described in a series of articles on regional and commodity food patterns published in *The National Food Situation* (op. cit., footnote 1) beginning in February 1957. These articles provide further detail and some discussion of the factors back of consumers' allocations of their food dollars to particular foods.

Our estimates of shares of the U. S. food market by region, urbanization, and income show, for example, that farm households accounted for only 7 percent of the sales of food, meals, and snacks, compared with the 69-percent share taken by urban households. Why this picture emerges is easy to explain in general terms: There are five times as many urban as farm households; urban families have more purchasing power; and they produce little of their own food.

Variations in Consumption

Even more significant for research on agricultural problems than the data for all foods combined are statistics pertaining to each of some 230 food items and major groups of these items. They provide a welcome opportunity for study of the similarities and dissimilarities of the United States food consumption patterns and for consideration of tendencies toward homogeneity of food patterns.

Data such as those in table 3 reveal some striking variations, but comparison of consumption patterns of farm and urban households in the spring of 1942 and the spring of 1955 appear to indicate that U. S. households probably are eating more uniformly than they did a decade or so ago. However, there are still some underlying factors that create diversification. It is likely that differences in available supplies and in consumer purchasing power are the predominant influences, as they have been in the past.

We have described how we use such arrays of data as those in table 3 to study the influence on food consumption of regions, urbanization, and income. Agricultural economists are familiar with the significance of this type of analysis, therefore we proceed to a less familiar area.

Survey data on the proportion of households in each group using the commodity in the preceding week supply clues to the vital *marketing* question: Is the average consumption rate coming from very high rates of a relatively few households, or from relatively general usages? [29]

For example, consumption of butter and margarine in all urban households of two or more persons in the North Central Region averaged 0.82 and 0.64 pounds *per household*, respectively. But consumption of margarine in all households that used this commodity averaged precisely the same as consumption of butter by those who used butter.[30] Accordingly, the higher average for butter among households in the North Central

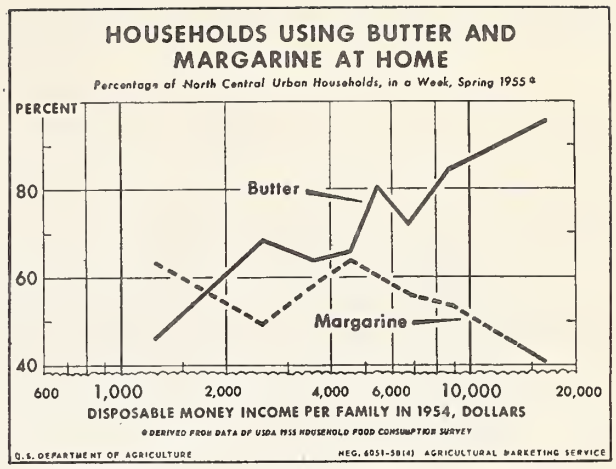

FIGURE 5.

Region resulted because relatively more households used butter than used margarine.

Consumption of butter rose from an average of 1.1 pounds per household using it at the $6–8,000 income level, to 1.6 pounds for the households with incomes of $10,000 or more. These two income groups consumed practically the same quantity of bread. The highest group bought more rolls but used much less flour. Figure 5 shows how the proportions using butter and margarine vary with income.[31]

Regional Production and Consumption Patterns

Estimates of the regional distribution of the United States market for farm food commodities *only*, as well as for all foods, can also be derived from survey data. Food expenditures by the nonhousekeeping population are excluded, but they make up no more than 6 percent of the total population eating from civilian food supplies.

As the four sets of data in table 5 show, estimates of the regional pattern differ slightly according to the precise definition of "food market." The total market value of farm-produced

[29] The percentage of users generally increases with the lengthening of the time period covered, so these data for the 7-day period of this survey are not directly comparable with those for longer periods.

[30] These averages are derived by dividing the average for all households in the cell or income group by the percentage of households using each commodity.

[31] Other related factors are household practices in use of foods. See (1) U. S. DEPARTMENT OF AGRICULTURE, AGRICULTURE MARKETING SERVICE, HOMEMAKERS' USE AND OPINIONS ABOUT FATS AND OILS USED IN COOKING. U. S. Dept. Agr., Agr. Mktg. Serv. Mktg. Rept. 67. 1951. (2) LEBOVIT, CORRINE AND CLARK, FAITH. HOUSEHOLD PRACTICES IN THE USE OF FOODS, THREE CITIES, 1953. U. S. Dept. Agr., Agr. Inform. Bul. 146. 1956. (3) Agr. Inform. Bul. 157. op. cit. pp. 53–61.

TABLE 5.—*Regional shares of food production and of the market for all foods and for selected foods, 1954–55*

Item	North-east	North Central Region	South	West
All farm food commodities				
A. On supply side				
1. Total food output based on farm value aggregates of farm output index, 1954 [1]	*Percent* 9	*Percent* 52	*Percent* 22	*Percent* 17
2. Cash receipts by farmers for domestic food commodities, 1954	11	48	22	19
B. On demand side (from data for a week in spring of 1955)				
1. Total market value of farm foods consumed by housekeeping families at home and away from home [2]	30	32	26	12
2. Total expenditures for farm foods by housekeeping families at home and away from home [2]	31	32	24	13
3. Purchases of farm foods for home consumption	30	32	25	13
4. Retail value of all farm foods used at home (including home produced foods)	29	32	27	12
Selected food groups				
A. Dairy products [3]				
1. Milk marketed by farmers	18	52	17	13
2. Dairy products purchased	31	37	19	13
B. Total meat [4]				
1. Net marketings of meat animals, 1955	3	63	22	12
2. Meat production from all slaughter (retail weight), 1955	9	59	19	13
3. Household meat consumption, spring 1955	27	35	26	12

[1] Using 1947–49 prices. In addition to fibers and tobacco, excludes 50 percent of wheat, 75 percent of rice, 50 percent of cottonseed, and 70 percent of soybeans as not being domestic food.

[2] Excluding fish, bananas, coffee, tea, cocoa, and alcoholic beverages used at home and same relative amounts away from home.

[3] Based on milk fat content. Marketing data for year 1955. Purchase data for 1 week in spring of 1955. See *The National Food Situation*, Feb. 1957. Op. cit.

[4] See p. 66 of *The National Food Situation*, April 1957.

foods consumed by housekeeping families both at home and away from home was divided percentagewise among the regions thus: Northeast 30, North Central 32, South 26, and West 12.

In economic terms, this measures the regional allocation of the demand for farm inputs in the form of primary food production plus the demand for inputs of marketing resources in the form of all services performed from the farm gate to the ultimate buyers in retail stores and eating places. Regional differences in away-from-home expenditures and in home production cause the slight variations from the first set of data to the others.

Structural indexes of per capita food use from all sources, including food purchased and home produced, and of purchased food only—measured at the farm level—are being developed, as noted earlier, for analysis of regional distributions of the demand for farm foods. They will be more comparable in concept to the two measures of regional patterns of farm food production given in table 5 than to measures based on the market value of purchased food (the third item under demand) or on the retail value of food used at home (the fourth item).

The production measure developed from data of the Department's farm output index reflects primary farm inputs of resources into food production. In the North Central share, for example, it includes the value of grains sold to other regions for livestock feeding.[32]

In the consumption end of the flow of food from production to consumption as compared with farm output, the four regions share differently. Whereas in 1954 the North Central Region produced half of the food in the country, a few months later households in that region accounted for only a third of the United States domestic market. In contrast, the Northeast consumed three times as large a share as it produced.

[32] Adjustments in commodity prices from 1947–49 averages used in computing the value aggregates of the farm output index to the 1954 levels might make small differences in the distribution.

Cash receipts by farmers for farm food commodities include some sales of commodities a step removed from the primary producing level. For instance, the total value of livestock sold in the Northeast is included, although it includes the value of some grain grown in the North Central Region.

No data on regional contributions of marketing inputs added to the farm commodities in the form of such services as handling, processing, and storage have been developed. Most of the data needed for such research are now available from the 1954 Censuses of Manufactures and Distribution.

Measures of regional shares of the input of productive resources and of consumption for dairy products and meat are given also in table 5.

Changes in Home Food Production

The first five survey reports yield useful information on relationships between consumption of home-produced food supplies and purchased foods, and this can be compared with United States data from earlier surveys. Except possibly for garden vegetables, primary production of food commodities by urban households for home use is relatively insignificant. But in rural areas, home production is a notable competitor of commercially produced and marketed foods.

The 1955 survey provided the first measurement of the overall extent of such competition since 1942. Rural nonfarm households of two or more persons relied on commercial sources for 88 percent of their food supply for *use at home*, whereas farm families bought only 56 percent of their food during a week in the spring of 1955. Both groups obtained from 3 to 4 percent of their food as gifts or payment in kind.

Home production supplied about 8 percent of the food consumed by rural nonfarm households at home and 41 percent for farm households in the spring of 1955. This represented a substantial change from the 22 percent for rural nonfarm and 61 percent for farm households in the spring of 1942.[33] For every major home-produced item except beef, the proportion of home production in the total declined for both groups of rural households.

There was a marked increase in purchases of most major items, except butter and potatoes, and in the proportion of total food used, which had been purchased by rural nonfarm and farm households. Both this shift to more purchased food by rural nonfarm and farm households and the decline in the farm population (accompanied by a much larger increase in the rural nonfarm population) contributed to the great increase in commercial food marketing from 1942 to 1955.

A marketing analysis of the 1954 data on home food production, published in Survey Report 12,[34] is reported in two articles in *The National Food Situation* (op. cit., footnote 1) for April and July 1958.

Demand Analysis

Illustrations of the use of survey data already cited are from our research on the demand for farm foods. To indicate other aspects of such research, we mention four pieces of work now under way—parts have already been published: (1) Analysis of changes in the market value of food through time, using time-series and cross-section data;[35] (2) analysis of the effect on the demand for commercially produced and marketed farm foods of changes in rural food consumption;[36] analysis of trends in the demand for individual foods, as in the sugar and vegetable articles carried in *The National Food Situation*, February 1958; (4) a special AMS research report on the elasticity of demand with respect to income for major foods and groups of food. The report will show separate elasticities derived from per capita averages based on all households and on households using the foods. The report will show also the net effect of household size on food consumption at home. The computations

[33] See ORSHANSKY, MOLLIE. CHANGES IN FARM FAMILY FOOD PATTERNS. Address, Annual Agricultural Outlook Conference, November 21, 1957. Available from Institute of Home Economics, Agricultural Research Service, U. S. Dept. Agr.

[34] Op. cit.

[35] BURK, MARGUERITE C. INCOME-FOOD RELATIONSHIPS FROM TIME SERIES AND CROSS-SECTION SURVEYS. Amer. Statis. Assoc. Proc. Bus. and Econ. Statis. Sec. 1957. pp. 106–117.

[36] BURK, MARGUERITE C. AN ECONOMIC APPRAISAL OF CHANGES IN RURAL FOOD CONSUMPTION. Manuscript scheduled for publication in *Journal of Farm Economics*, August 1958.

were made from individual household observations rather than from averages for groups of households. This information is designed for research on market development and on broader aspects of demand analysis.

More to Come

This article has reviewed survey data principally from Survey Reports 1. to 5, with some reference to the dietary reports (Reports 6 to 10), and to Report 12 on home food production in 1954. Many more statistics are still to come from tabulations already made, in process, or in the planning stage. As a general policy, publication of the tabulated data for public use will continue to precede analysis by the Department of Agriculture. Some special tabulations will be possible. But costs of sorting and tabulating the thousands of cards on which basic data have been punched are sizable. These impose a limit on both the publication of special tabulations and analyses of relationships implicit in the data.