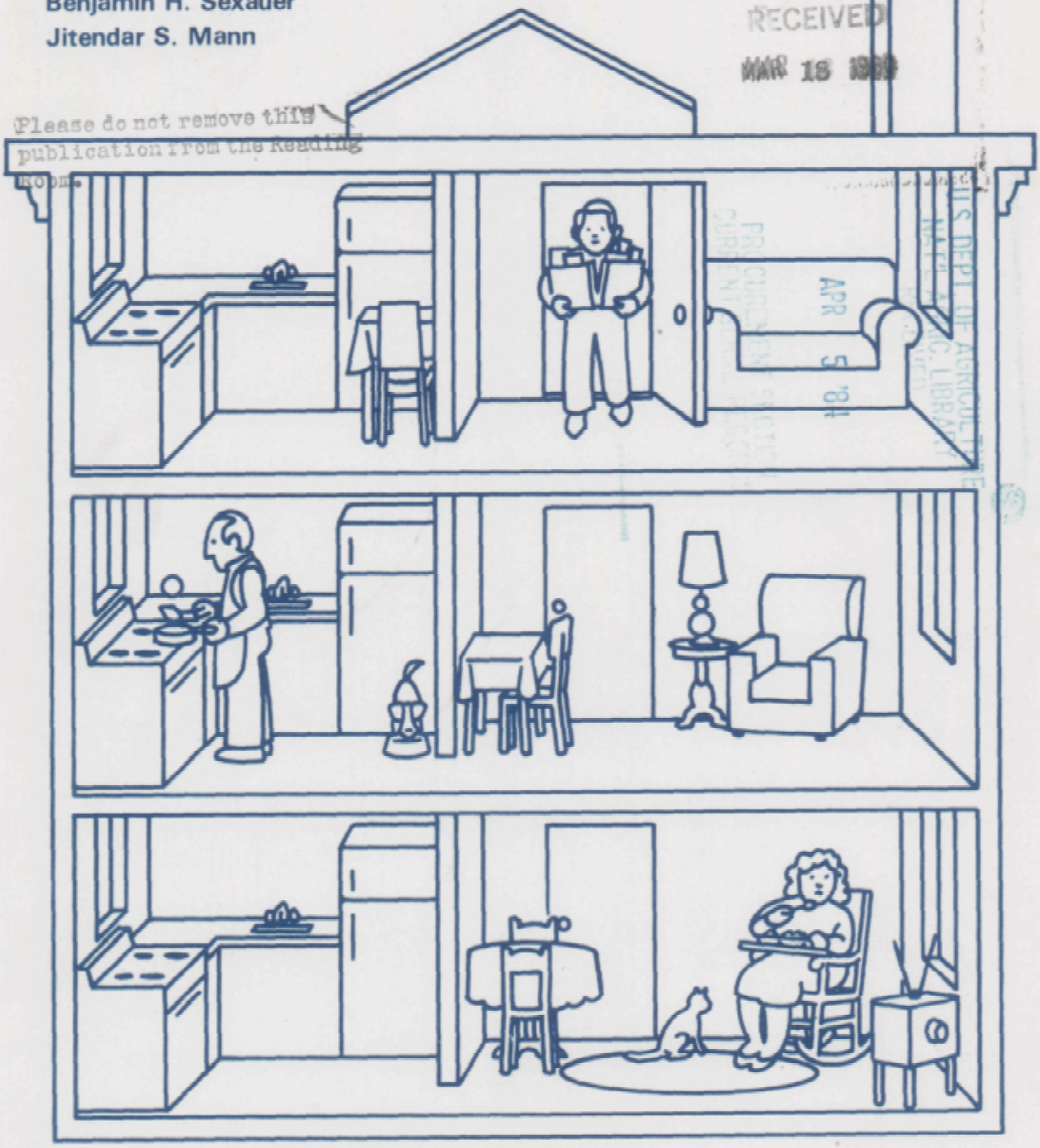
Ag84Ag
Copy 5

Food Expenditure Patterns of Single-Person Households

Benjamin H. Sexauer
Jitendar S. Mann

CROSS REFERENCE CENTER
RECEIVED
MAR 15 1984
Please do not remove this publication from the Reading Room.
U.S. DEPT. OF AGRICULTURE
NAT'L AGRIC. LIBRARY
APR 5 '84
PROCUREMENT SECTION
CURRENT SERIAL RECORDS



United States Department of Agriculture

Economics, Statistics, and Cooperatives Service

Agricultural Economic Report No. 428

FOOD EXPENDITURE PATTERNS OF SINGLE-PERSON HOUSEHOLDS by Benjamin H. Sexauer and Jitendar S. Mann, National Economics Division of the Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture. Agricultural Economic Report No. 428.

ABSTRACT

Single-person households differ widely in their food purchases according to income, age, and sex. Young upper income men spend more than half their food dollars dining out, while elderly lower income women spend only about 10 percent. The young spend more than three times per week than the elderly on soft drinks. Men spend more on prepared foods (like frozen dinners) than women, and lower income young men spend more on prepared foods than any other of the 12 subgroups studied. Single-person households spend more on food than do multiperson households per person.

Keywords: Food expenditure, Consumer behavior, Single persons

CONTENTS

Summary iv
Introduction 1
Food Expenditures By Single-Person and Multiperson Households 3
Significance of Socioeconomic Factors 5
Types of Food Expenditures By Single-Person Households 7
  Total Food 9
  Food Away from Home 9
  Food at Home 9
Comparison of Proportional Allocations 14
Patterns of Food Expenditures By Types of Single-Person Households 16
Average Incomes and Budget Proportions Spent on Food 17
Implications and Limitations 18

Washington, D.C. 20250 July 1979

SUMMARY

Food purchases of single-person households differ markedly according to income, age, and sex. The food expenditures of an elderly low-income widow and a young high-income bachelor are very different. Some of the most striking contrasts are for food away from home and soft drinks. Those with upper incomes spend 43.1 percent of their food budget away from home; those with lower incomes only 19.2 percent. Soft drink purchases sharply decline with age. The young spend $1.24 per week; the elderly only an average of $0.27.

The impact of the socioeconomic factors (income, age, and sex) often varies greatly across the groups. For example, the effect of income on total food expenditures is much stronger for men than women. Purchases by upper income men average $27.99 weekly, while those for lower income men average $16.68. The difference in expenditures for upper and lower income women, by contrast, is less than $4.

In addition, the combined effects of different pairs of the socioeconomic factors sometimes affect food purchases more noticeably than the individual factors alone. The combined effect of income and age is especially significant on beef and veal purchases. The upper income elderly spend 23 percent less on beef and veal than the upper income group as a whole. The lower income young spend 40 percent less on beef and veal than the lower income group as a whole.

The average single-person household spends more per week on food, whether for use at home or away, than do multiperson households per person.

A statistical test for significance (t-test) shows that mean expenditures on a per-person basis for every food category except beef and veal are statistically different between single-person and multiperson households. Analysis of variance indicates that income is an important variable in explaining differences in food expenditures among single-person households. Differentiation by age and sex also yield significantly different mean expenditures for a large number of food categories. The significant interactions among income, age, and sex as explanatory factors are also identified by the analysis of variance.

The income of individuals living alone affects the proportion of income spent on food. Lower income single persons spend up to a third of their income on food, while upper income singles spend from 8 to 14 percent.

Food Expenditure Patterns of Single-Person Households

Benjamin H. Sexauer

Jitendar S. Mann 1/

INTRODUCTION

Purchases by single-person households are becoming an increasingly important factor in the food system. The number of single-person households has increased at a rate almost twice as great as that for all U.S. households in the last 25 years. Single-person households increased from 10.9 percent of all households in 1950 to 20.9 percent in 1977. The Census Bureau projects that over one-quarter of all households will consist of only one person by 1990. The food-purchasing pattern of this fast growing segment of the population is distinctive in many ways. Moreover, there are marked differences among single-person households in food purchases according to the income, age, and sex of the individual. A better understanding of single persons' expenditure behavior should be valuable in understanding current retail food demand and predicting future demand. This information should be particularly useful to food-marketing management and researchers and food policymakers.

Food expenditures by persons living alone are particularly interesting from an analytical point of view. Their purchases reveal the actual food preferences of individuals since the individual purchasing the food will be the person eating it, except for an occasional houseguest. There are two additional complications for larger households: first, since the pattern of consumption by individuals in the household is unknown, nothing can be said about the actual preferences of individuals; second, the family's food purchases may reflect a particular individual's preferences, family-wide preferences, or compromises over preferences. For these reasons, stronger inferences about individuals' food preferences and actual diets may be drawn for one-person households than for others.

The major objective of this study is to describe and analyze the food expenditure patterns of the major types of one-person households. This analysis is based on the diary portion of the Bureau of Labor Statistics' 1972-74 Consumer Expenditure Survey. The survey households kept diaries for a 2-week period. 2/ The data analyzed in this report are for the second year of the diary survey, which covered the period from July 1973 to June 1974. Data on individual households from the public use tape were

---

1/ Agricultural economists, Food Economics Branch, National Economics Division, Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture.

2/ For this study, the expenditure for 2 weeks was averaged to obtain a weekly figure. Not all respondents purchased a particular item during the survey period. It is impossible to tell whether the household did not buy a commodity at all or simply did not buy during those 2 weeks. The averages in this report are for the entire sample group and not for just the buying group. For this reason, average expenditures may be less than the purchase price of a unit of some commodities.

analyzed. The data covered only individuals who lived in separate households, not those in institutional settings. Therefore, college students living in dormitories and senior citizens living in rest homes were excluded. 3/

Although now several years old, the Consumer Expenditure Survey provides the most recent and comprehensive data on food expenditures in the United States. The data were not released for public use until 1977, and only limited analysis has been done so far with the data. Although dollar expenditures will have changed with inflation, real expenditure levels and expenditure patterns change fairly slowly; thus, a trend analysis is considered valid today.

After preliminary editing, the data contained 2,355 single-person households. To protect the confidentiality of respondents, actual dollar income below $2,000 and above $35,000 and actual family size for families of more than six were not reported on this data tape by the Bureau of Labor Statistics. The mean values, which are available, were entered in each case.

Two tables (5 and 6), which compare the average spending on the major food categories for 12 types of one-person households, form the core of this study. Single-person households are classified into 12 groups according to two income categories, three age categories, and sex. A comparison of weekly dollar expenditures is shown in table 5. Table 6 gives the expenditures as a percentage of food-at-home spending or total food expenditures. To show causation, the tables are supplemented by an analysis of variance, which allows one to test which of the socioeconomic variables (income, age, sex) has a statistically significant effect on expenditures.

Single-person households are most certainly not a homogeneous group; about all they have in common is that they live alone. There is every reason to expect the food purchases of the high-income young bachelor and the elderly widow living on a small pension to differ markedly. Therefore, single-person households are classified in this study by: high or low income (above or below $5,645 per year); age of 35 and below, 36 to 64, and 65 and above; and sex. The dividing line for high and low income was the mean income level for one-person households in 1973-74. These socioeconomic categories are the most important factors in terms of explaining variations in food expenditures among single-person households. Their choice was supported by preliminary regression analysis.

Those three factors (income, age, and sex) yield 12 types of one-person households: lower income young, middle-aged, and older women; lower income men in each age group; upper income women in each age group; and upper income men in each age group. The population of each category differs from the others not just in the three socioeconomic factors utilized, but also in psychological outlook, social position, and even nutritional needs.

Sixty-three percent of all persons living alone had annual incomes below $5,645; 37 percent had incomes above that. Sixty-two percent were women and 38 percent were men. The largest group of men was those 35 and below with higher incomes. The young (age 35 and below) constituted 28 percent of those living alone, the middle-aged (age 36 to 64) 34 percent, and the elderly (age 65 and above) 39 percent. Lower income elderly women formed the largest group living alone, some 5.9 percent of total U.S. households. Lower income women aged 36 to 64 constituted the next largest group. Middle-aged and elderly lower income women accounted for almost 40 percent of all single-person households. The smallest group was upper income elderly men, who

3/ For further details on the scope of this survey, see U.S. Department of Labor, Bureau of Labor Statistics, Consumer Expenditure Survey: Diary Survey, July 1972-June 1974, Bulletin 1959, U.S. Govt. Print. Off., 1977.

constituted less than 2 percent of single-person households. Table 5, discussed at length later, lists in the second to the last row the percentage of single-person households in each of the 12 groups.

FOOD EXPENDITURES BY SINGLE-PERSON AND MULTIPERSON HOUSEHOLDS

Tables 1 and 2 compare the food expenditures of single-person and multiperson households. The dollars spent on each food category are given in table 1. Table 2 presents the expenditure for each food category as a percentage of total at-home food purchases and gives the percentages of the total food budget spent on at-home and away-from-home food consumption. 4/ Each table conveys somewhat different information. The first gives the actual magnitude of expenditures. The second provides a clearer impression of the food expenditure pattern--how the food budget is distributed. It is important to evaluate both absolute and relative expenditures because although one household may spend a smaller percentage of its food budget on meat than another household, its actual dollar expenditure may be considerably larger.

Table 1 shows that persons living alone spent less on a household basis than multiperson families for every category listed, but more on a per capita basis in every case. 5/ Single-person households spent less than half as much as multiperson households on total food expenditure, but per capita expenditures for the single-person household were approximately 1½ times that of the average multiperson household. The average multiperson household includes children who require lower per capita food expenditures than adults. The difference between the per capita expenditure of single-person and multiperson households was statistically significant at the 0.05 level for every category (based on a t-test) except for beef and veal.

One-person households spent an average of 17.1 percent of their income on food; multiperson households 17.9 percent. Single-person households spent about 38 percent as much as multiperson families on food at home, but averaged 25 percent more on a per capita basis. Single-person households formed a major component of the away-from-home market; their dollar expenditures away from home were double the per capita level of multiperson households.

Table 2 shows that the proportional distribution of expenditure among food categories differed substantially for single-person and multiperson households. The mean values for the two groups were statistically different at the 0.05 level for 11 of the 19 mutually exclusive categories.

Persons living alone spent a smaller portion of their food dollar at home and a larger percentage on dining out than did multiperson households. Single-person households spent less on cereal and cereal products and more on bakery products. The proportion of their at-home food dollar going to beef and veal purchases was lower, probably because they obtained additional meat elsewhere, since they dine out more frequently. A slightly higher percentage of the at-home food budget of persons living alone went to processed dairy products. Their percentage allocation was also higher for both fresh and processed fruits, as well as nonalcoholic beverages.

4/ The method of calculating the expenditure proportions in tables 2 and 6 requires a brief discussion. An expenditure proportion was calculated for each household observation. Then the average was derived. This method can yield results that are somewhat different from those obtained by using the average expenditure levels in tables 1 and 5 to calculate proportions.

5/ The per capita figures were derived by dividing expenditure by family size for each multiperson household observation.

Table 1--Weekly food expenditures of single-person and multiperson households, 1973-74 1/

Food category	Single-person households	Multiperson households	
		Total	Per person 2/
		Dollars	
Total food	18.57	41.64	12.92*
Food away from home	6.55	10.20	3.28*
Food at home	12.01	31.45	9.64*
Cereals and bakery products	1.41	3.78	1.13*
Cereal and cereal products	.36	1.07	.31*
Bakery products	1.05	2.72	.82*
Meats, poultry, fish, and eggs	4.44	12.36	3.82*
Beef and veal	1.57	4.86	1.51
Pork	1.05	2.80	.87*
Other meats	.50	1.48	.45*
Poultry	.60	1.52	.47*
Fish and seafood	.34	.86	.27*
Eggs	.37	.83	.26*
Dairy products	1.60	4.33	1.29*
Fresh milk and cream	.88	2.61	.76*
Processed dairy products	.72	1.72	.53*
Fruits and vegetables	1.99	4.36	1.38*
Fresh fruits	.54	1.12	.36*
Fresh vegetables	.60	1.40	.44*
Processed fruits	.46	.85	.27*
Processed vegetables	.39	1.01	.31*
Sugars and sweets	.35	.92	.28*
Fats and oils	.37	.93	.29*
Nonalcoholic beverages	.94	2.24	.69*
Other prepared foods	.93	2.53	.76*
		Percent	
Proportion of total households	22.8	77.1	--
		Number	
Number of households	2,355	7,943	--

-- Not applicable.

1/ Amounts may not sum to totals because of rounding.

2/ An asterisk (*) indicates that the mean values of the first and third columns are significantly different at the 0.05 level based on a t-test.

Table 2--Food expenditure proportions for single-person and multiperson households 1/

Food category	Single-person households	Multiperson households 2/
	Percent	
Percentage of total foods:		
Food away from home	28.1	22.6*
Food at home	71.9	77.4*
Percentage of food at home:		
Cereal and bakery products	13.0	12.8
Cereal and cereal products	2.9	3.4*
Bakery products	10.2	9.4*
Meat, poultry, fish, and eggs	32.3	36.4*
Beef and veal	10.8	13.2*
Pork	7.3	8.4*
Other meats	4.1	4.7*
Poultry	4.3	4.6
Fish and seafood	2.5	2.6
Eggs	3.2	2.9*
Dairy products	15.5	15.1
Fresh milk and cream	9.3	9.5
Processed dairy products	6.2	5.6*
Fruits and vegetables	15.9	14.0*
Fresh fruits	4.6	3.7*
Fresh vegetables	4.5	4.5
Processed fruits	3.7	2.8*
Processed vegetables	3.1	3.1
Sugars and sweets	3.3	3.0
Fats and oils	2.9	3.0
Nonalcoholic beverages	9.1	7.6*
Other prepared foods	8.2	8.2

1/ Percentages may not sum to totals because of rounding.
2/ An asterisk (*) indicates that the values of the two columns are significantly different at the 0.05 level based on a t-test.

SIGNIFICANCE OF SOCIOECONOMIC FACTORS

Analysis of variance was used to test the significance of the three classification factors--income, sex, and age--on the food expenditure behavior of one-person households. 6/ Table 3 presents the results using dollar expenditures and table 4 for expenditure proportions. A significance level of 0.05 was again used.

The interpretation of the analysis of variance results requires some explanation. If the main effect of a variable, income for example, is significant, then there will be a statistically valid difference in the mean expenditures of upper and lower income households. For age, with three categories, the fact that age is significant indicates that the means of at least two, but possibly more, age categories are different. The pattern of means has to be examined to determine which two or more are significantly

6/ The statistical analysis was performed with the Statistical Package for the Social Sciences (SPSS). See Norman H. Nie, et al. Statistical Package for the Social Sciences, New York: McGraw-Hill, 1975. The analysis of variance method is discussed in William C. Guenther, Analysis of Variance, New York: Prentice-Hall, 1964.

Table 3--Results of analysis of variance test for significance of effects of income, sex, and age on average food expenditures of one-person households

Food category	Income 1/	Sex 1/	Age 1/
Total food	*, sex 2/	*, income, age	*, sex
Food away from home	*, sex	*, income	*
Total at home	*		*
Cereals and bakery products			*
Cereal and cereal products	*	*	*
Bakery products			*
Meats, poultry, fish, and eggs	age		*, income
Beef and veal	*, age	*	income
Pork	age		*, income
Other meats			*
Poultry	*, sex	*, income	*
Fish and seafood			
Eggs	age		*, income
Dairy products		age	*, sex
Fresh milk and cream	age	*, age	*, sex, income
Processed dairy products	*	*	*
Fruits and vegetables	*	*	*
Fresh fruits	*	*	*
Fresh vegetables	*	*	*
Processed fruits			*
Processed vegetables			*
Sugars and sweets		*	*
Fats and oils		*	
Nonalcoholic beverages	*, age		income
Other prepared foods	*	*	

1/ An asterisk (*) indicates that the main effect of the variable has a significant effect on the mean at the 0.05 level.
2/ The indicated interaction effects are significant at the 0.05 level. For more than one significant interaction, the variables are separated by a comma.

different. The interaction components will tend to be zero if the effects of income, sex, and age are additive. For example, if the main effects of income and sex are both significant, but the interaction is not, the difference in income will produce the same effect on men and women and the difference in sex will produce the same effect on both income groups. If the income-sex interaction is significant, the effect of income will not be uniform for men and women and the effect of sex will vary between the two income groups. 7/

Among the three socioeconomic factors, age had a significant effect on average expenditures for the largest number of food categories in table 3. The effects of income and sex were significant for about an equal number of categories. The most prevalent interaction effect was between income and age, which means the impact of income differs depending on the age bracket in those cases. Age and sex each had a significant impact in about an equal number of categories in table 4, and income only in slightly fewer cases. Significant interaction effects were somewhat more prevalent for the expenditure proportions in table 4 than for the dollar expenditures in table 3.

7/ In this analysis, none of the potential three-way interactions among income-sex-age were found to be statistically significant at the 0.05 level.

Table 4--Results of analysis of variance test for significance of effects of income, sex, and age on proportions of food expenditures for one-person households

Food category	Income 1/	Sex 1/	Age 1/
Total food			
Food away from home	*, sex, age 2/	*, income	*, income
Total at home	*, sex, age	*, income	*, income
Cereals and bakery products	*		
Cereal and cereal products	*	*, age	sex
Bakery products		*	
Meats, poultry, fish, and eggs	age	age	*, sex, income
Beef and veal	*, age		income
Pork		*	*
Other meats		*	
Poultry	*		*
Fish and seafood		age	
Eggs	*	*, age	*, sex
Dairy products		*, age	sex
Fresh milk and cream			sex
Processed dairy products	*	*	
Fruits and vegetables	*, age	*	*, income
Fresh fruits	*, age	*, income	*, income
Fresh vegetables	*, sex		*
Processed fruits		income	*
Processed vegetables	sex	*	*
Sugars and sweets	*	*	
Fats and oils			
Nonalcoholic beverages	*	*	*
Other prepared foods			*

1/ An asterisk (*) indicates that the main effect of the variable has a significant effect on the mean at the 0.05 level of significance.
2/ The indicated interaction effects are significant at the 0.05 level. For more than one significant interaction effect, the pertinent variables are separated by a comma.

TYPES OF FOOD EXPENDITURES BY SINGLE-PERSON HOUSEHOLDS

The data on food expenditures in table 5 must be interpreted in light of the analysis of variance results in table 3. The observed sample means may differ from one another even if no true differences exist among the group means in the population from which the sample was drawn. Based on the analysis of variance results, however, statistically significant expenditure differences can be identified. 8/

8/ All the data discussed in this section can be generated by calculating the appropriate weighted averages from the data in table 5. The weights are the population proportions. This is also true for the following section on expenditure proportions, if table 6 is used.

Table 5--Weekly food expenditures by types of single-person households, 1973-74

Item	Upper income						Lower income					
	Female			Male			Female			Male		
	35 and below	36 to 64	65 and above	35 and below	36 to 64	65 and above	35 and below	36 to 64	65 and above	35 and below	36 to 64	65 and above
	Dollars											
Total food	17.74	20.69	16.99	28.99	27.56	23.66	13.80	16.58	14.46	16.75	17.16	16.28
Food away from home	7.48	7.23	4.70	17.54	14.23	12.88	5.02	3.12	1.85	8.04	5.89	3.62
Food at home	10.27	13.48	12.28	11.45	13.33	10.78	8.78	13.46	12.60	8.71	11.27	12.66
Cereals and bakery products	1.04	1.58	1.40	1.06	1.43	1.24	1.07	1.57	1.59	.98	1.54	1.60
Cereal and cereal products	.25	.32	.28	.20	.25	.18	.34	.43	.49	.29	.47	.31
Bakery products	.79	1.26	1.12	.85	1.18	1.07	.73	1.15	1.11	.70	1.08	1.30
Meats, poultry, fish, and eggs	3.60	4.77	4.14	4.50	5.25	3.83	3.04	5.32	4.46	2.85	4.41	4.94
Beef and veal	1.47	1.50	1.44	2.01	2.13	1.16	1.07	1.61	1.50	1.00	1.52	1.70
Pork	.81	1.26	.94	1.14	1.13	.94	.55	1.36	1.00	.51	1.30	1.22
Other meats	.31	.60	.54	.41	.70	.34	.31	.57	.49	.47	.53	.61
Poultry	.36	.65	.60	.29	.45	.79	.58	.92	.77	.26	.43	.60
Fish and seafood	.34	.42	.36	.35	.40	.37	.31	.40	.29	.37	.23	.34
Eggs	.30	.34	.25	.30	.43	.25	.21	.47	.42	.23	.40	.46
Dairy products	1.27	1.71	1.74	1.63	1.72	1.47	1.17	1.69	1.72	1.34	1.45	1.62
Fresh milk and cream	.67	.81	.79	.93	.92	.67	.51	.97	.95	.86	.98	.93
Processed dairy products	.60	.91	.95	.70	.80	.80	.66	.72	.77	.49	.48	.69
Fruits and vegetables	1.72	2.56	2.52	1.48	2.05	2.14	1.35	2.13	2.28	1.28	1.58	2.11
Fresh fruits	.44	.70	.77	.38	.59	.75	.36	.55	.64	.34	.34	.60
Fresh vegetables	.50	.83	.83	.39	.62	.59	.40	.67	.67	.31	.55	.63
Processed fruits	.43	.52	.52	.37	.41	.50	.36	.43	.59	.34	.30	.49
Processed vegetables	.36	.52	.42	.33	.43	.31	.25	.49	.39	.30	.39	.39
Sugars and sweets	.29	.29	.41	.18	.34	.21	.27	.42	.49	.19	.27	.35
Fats and oils	.35	.39	.37	.32	.26	.25	.28	.49	.42	.28	.33	.38
Nonalcoholic beverages	.94	1.23	.90	1.11	1.06	.60	.75	.97	.89	.72	.86	.87
Other prepared foods	1.08	.96	.81	1.20	1.24	1.06	.85	.86	.77	1.07	.84	.80
	Percent											
Proportion of all single-person households	5.6	7.8	3.9	10.3	8.3	1.6	6.5	12.2	25.6	5.6	5.2	7.4
	Number											
Number of households	133	183	91	243	193	37	153	288	604	132	123	175

Total Food

Upper income persons living alone spent an average of $23.79 weekly on food in 1973-74, whereas those with lower incomes spent $15.45. Men living alone spent significantly more than women, $22.61 versus $16.04. The mean weekly expenditure of the group 65 and over, at $15.44, was statistically different from that of the other two age groups, $20.76 for those 35 and under and $20.32 for those 36 to 64.

The effect of income was much stronger for men than for women. Purchases by upper income men averaged $27.99 while those for lower income men averaged $16.68. The difference in expenditure for upper and lower income women was less than $4, $18.90 versus $14.94. The effect of sex on food purchases was greater for the upper income group, $27.99 for men and $18.90 for women, than for the lower income group, $16.68 for men and $14.94 for women. Women's food purchases were highest during middle age, but men's were highest before age 36. The largest difference between the purchases of men and women was among the young, $24.68 for men and $15.63 for women. Among the 12 types of individuals specified in table 5, food purchases were lowest for young lower income women and highest for young upper income men.

Food Away from Home

Upper income single-person households spent over three times more dining out than did those with lower incomes, $11.62 versus $3.53. Men spent much more than women, $10.97 versus $3.80. Away-from-home expenditures declined sharply with age: the young spent more than the middle-aged and the middle-aged more than the elderly, $10.71, $7.22, and $2.93, respectively. In addition, the interaction between sex and income was significant. The sex differential was much greater for upper income men and women, $15.83 and $6.74 respectively, than for the lower income group, $5.63 versus $2.67. The income-generated difference was much larger for men than for women: upper income men spent $15.83 and lower income men $5.63; upper income women spent $6.74 and lower income women $2.67. Expenditure away from home was lowest by middle-aged lower income women and highest by young upper income men. The spending of the latter group was over seven times greater than that of the former group.

Food at Home

Purchases of the upper income group and the lower income group for food at home were surprisingly close: $12.16 versus $11.92. Analysis of variance indicated that the difference, although not large, was significant. Age also had a significant impact. The young purchased $10.04, the middle-aged $13.09, and the elderly $12.50 for at-home use. The difference between the young and middle-aged was significant. The lowest purchases for at-home use were by young lower income men and the highest by middle-aged upper income women.

Cereals and Bakery Products

Age alone had a significant impact on purchases in this category. For the age breakdown, only the difference between the young at $1.04 and the other two age groups, $1.53 for the middle-aged and $1.56 for the elderly, was significant. Expenditures were lowest by young lower income men and highest by elderly lower income men.

Cereal and Cereal Products.--Income, sex, and age all affected expenditures in this category. The upper income group spent $0.26 while the lower income group spent $0.42. Men spent $0.28, women $0.40. The young spent $0.26, the middle-aged

$0.37, and the elderly $0.42. None of the interactions were significant though. Cereal purchases were lowest by elderly upper income men and over twice as high by elderly lower income women.

Bakery Products.--Only age had a significant impact on mean expenditure levels for bakery goods. The young purchased much less at $0.78 per week in 1973-74, than the other two age groups, at $1.17 and $1.14 for the middle-aged and elderly, respectively. Expenditures were lowest by young lower income men and highest by elderly lower income men.

Meats, Poultry, Fish, and Eggs

Purchases in this category were highest by the middle-aged at $5.04 per week, lowest by the young at $3.65, and $4.49 by the elderly. The young probably purchased much more food in this category when they dined out. The effect of income depended on the age bracket. Income had its strongest impact on the purchases of those under 36, $4.18 for the upper income group versus $2.95 for the lower income group. Income had virtually no effect on the purchases of the 36-to-64 age group. Young lower income men purchased the least in this category, whereas middle-aged lower income women purchased the most.

Beef and Veal.--Income, sex, and the income-age interaction all had significant impacts on beef and veal purchases. Average purchases were $1.76 by the upper income group, $1.46 by the lower income group, $1.72 by men, and $1.47 by women. For the upper income group, those 65 and over bought much less, at $1.36, than the other two groups, both at $1.82. However, for the lower income group, the young purchased less than the other two age groups. The effect of income was strongest on the young, $1.82 for upper income versus $1.04 for lower. Middle-aged upper income men purchased more than twice as much as young lower income men and women.

A comparison of mean expenditures by the 12 groups on more detailed food categories showed that the type of beef purchased was strongly related to income level. Those with upper incomes spent nearly twice as much on steaks as those with lower incomes. For young men, income generated a threefold expenditure differential.

Pork.--The young spent the least on pork, $0.81, and the middle-aged the most, $1.27. Income and age interacted. The young upper income group spent substantially more than the young lower income group, $1.02 versus $0.53. However, for the other two age brackets, those with lower incomes spent more on pork. Pork purchases were lowest by young lower income men and highest by middle-aged lower income women.

In the more detailed pork categories, two features were of particular interest. One was the large purchases of bacon by upper income young women, especially in comparison with purchases by lower income young women. The other was the large expenditure of upper income elderly women on ham, excluding canned, again particularly in comparison with purchases by lower income women.

Other Meats.--Other meats included frankfurters, luncheon meats, and lamb. Only age had a significant impact on expenditures, and only the spending of the young and middle-aged were significantly different, at $0.38 and $0.60 respectively. Young women spent the least and middle-aged upper income men spent the most.

An analysis of various subcategories showed that purchases of frankfurters were higher for each lower income sex and age group than for their upper income counterparts and that such purchases declined with age. However, there was little difference by sex. Luncheon meats and coldcuts, on the other hand, were particularly popular with upper income single men.

Poultry.--Upper income households purchased less poultry than lower income households, $0.47 versus $0.69. Men spent less than women, $0.42 versus $0.72. The young spent less than the other two age groups, $0.36 versus $0.67 for the middle-aged and $0.72 for the elderly. Income and sex interacted so that the income-generated difference was greater for women than for men and the sex difference greater for those with lower incomes. Purchases of poultry were three times larger by middle-aged lower income women than by both groups of young men.

Fish and Seafood.--None of the factors, either alone or interacting, had a statistically valid effect on purchases of fish and seafood.

Eggs.--The purchases of the young, at $0.26, differed from those of the other two age groups, $0.42 for the middle-aged and $0.40 for the elderly. However, the effect of age depended on income level. Spending was lowest by the elderly in the upper income group, but by the young in the lower income group. Interestingly, egg purchases were lowest by young lower income women, but highest by middle-aged lower income women.

Dairy Products

Dairy purchases averaged $1.39 for those under age 36 versus $1.66 for the 36-to-64 age group and $1.69 for the 65-and-over age group. There was an even more pronounced difference between the purchases of young women and older women, $1.22 versus an average of $1.71. The effect of sex depended on age. Young men spent more on dairy goods than young women, but above age 36, women spent more than men. The lowest purchases were by young lower income women; the highest by elderly upper income women.

Fresh Milk and Cream.--Sex and age interacted in the purchase patterns of fresh milk and cream. Young women purchased much less than other age-sex groups. Young women spent $0.58, whereas the other groups all spent between $0.88 and $0.94 weekly. Income and age also interacted. The young upper income group spent more than the young lower income group, $0.83 versus $0.68. However, for the other two age groups, those with lower incomes spent more. $0.97 versus $0.87 for the middle-aged and $0.94 versus $0.75 for the elderly. For those with upper incomes, the elderly were the lowest spenders at $0.75. For those with lower incomes, the young were the lowest spenders at $0.68. The lowest expenditure on fresh milk and cheese among the 12 types of single-person households was by young lower income women and the highest by middle-aged lower income men.

Processed Dairy Products.--Those with upper incomes spent more for processed dairy products than those with lower incomes, $0.78 versus $0.69. Women purchased more than men, $0.76 versus $0.66. The young spent less than the other two groups, $0.63 versus $0.75 for the middle-aged and $0.77 for the elderly. The smallest expenditure on this category was by young and middle-aged lower income men and the largest by elderly upper income women.

An examination of selected subcategories revealed that lower income elderly men bought the most butter. Their expenditures, $0.14 per week, were the highest of any group and double the average for all persons living alone. Upper income women purchased the most cheese and the difference by income, for cheese expenditures, was much greater for women than for men. The elderly purchased the most ice cream, at least for at-home consumption. Elderly lower income men and elderly upper income men and women all spent about two-thirds more on ice cream than the average of $0.14 per week for all persons living alone.

Fruits and Vegetables

Women spent more than men on fruits and vegetables, $2.15 versus $1.73. This pattern might be related to more away-from-home eating by men. Persons under 36 spent $1.46 per week, those between 36 and 64 spent $2.12, and those 65 and over spent $2.26. This age-related pattern was probably somewhat related to a decline in fruits and vegetables obtained in away-from-home dining, since dining out decreased sharply with age. Young lower income men spent only about half as much as middle-aged and elderly upper income women on fruits and vegetables.

Fresh Fruits.--Women spent $0.59 weekly on fresh fruits, whereas men spent $0.47. Expenditures increased with age: the young spent $0.38, the middle-aged $0.55, and the elderly $0.66. Since dining away from home is not typically a very important source of fresh fruits, we must infer that men and young persons living alone simply did not eat as much fresh fruits as the others. Elderly upper income men and women spent over twice as much as young and middle-aged lower income men.

Income had a stronger effect on apple purchases than on banana purchases. The middle-aged rather than the elderly bought the most apples. Middle-aged upper income men were the largest purchasers of apples. Banana purchases were little different for high- and low-income households. Purchases of oranges were strongly related to age for upper income men, but not for women. Elderly upper income men bought the most oranges, whereas young upper income men bought the fewest.

Fresh Vegetables.--Men spent $0.50 weekly for fresh vegetables, whereas women spent $0.65. The young spent $0.39, markedly less than the amounts spent by the other two age groups, $0.68 for the middle-aged and $0.67 for the elderly. Dining out might likely be an important source of fresh vegetables, especially in the form of salads, for the young and for men. Young lower income men spent the least and middle-aged and elderly upper income women spent the most.

An examination of a few selected fresh vegetables indicated that expenditures on white potatoes, a low-priced staple, increased sharply with age for the lower income group, but not nearly so much for those with higher incomes. The lower income elderly spent $0.17 per week on potatoes, the upper income elderly only $0.11. Lettuce purchases were higher by the young and were positively related to income. Tomato purchases sharply increased with age for upper income men from $0.04 for those 35 and under to $0.19 for those 65 and over; the average expenditure for tomatoes for all one-person households was only $0.08 per week.

Processed Fruits.--Only age had a significant impact on expenditure. The young spent $0.38 weekly, the middle-aged spent $0.43, and the elderly spent $0.55. Young and middle-aged lower income men had the lowest purchases, whereas elderly lower income women had the highest. Elderly upper income women spent the most for fruit juices and related items, $0.20 per week, whereas their lower income counterparts spent only $0.10.

Processed Vegetables.--Only age had a significant impact on expenditures for processed vegetables. The young spent $0.31 per week, the middle-aged $0.47, and the elderly $0.40. Middle-aged upper income women spent more than double the amount of young lower income women.

Sugars and Sweets

Women spent considerably more than men on sugar and sweets, $0.41 versus $0.26. This pattern may be partially explained by the likelihood that women did more home baking, which requires considerable amounts of sugar, than men. Expenditures increased with age: the young spent $0.23, the middle-aged $0.34, and the elderly

$0.45. Elderly lower income women spent double the amount of young upper income and lower income men.

Fats and Oils

Women spent more on fats and oils than did men. This pattern might partially reflect the more elaborate home cooking and baking by women. Middle-aged lower income women spent almost twice the amount of middle-aged and elderly upper income men.

Nonalcoholic Beverages

Expenditures on nonalcoholic beverages were related to income. Upper income households spent more than lower income ones, $1.05 versus $0.87. The income-generated differential was greatest for those under 36, $1.05 for those with higher incomes and $0.74 for those with lower incomes. For the elderly, those with lower incomes spent somewhat more than those with upper incomes, $0.88 versus $0.81. Middle-aged upper income women spent twice as much as elderly upper income men, the smallest purchasers. The latter group, which had large expenditures on dining out, probably had fairly large away-from-home expenditures on this category.

Striking contrasts arose when expenditures on the carbonated drinks and coffee were examined. Average expenditures by the young on soft drinks were three times those of the elderly. Young upper income men spent $1.24 per week, 10.8 percent of their at-home food dollar, on soft drinks. The average expenditure for all young persons living alone was $0.92 per week. And these figures do not count the can or cup of soft drink purchased and consumed away from home. Soft drink purchases correlated strongly with income, but the sharp decline in purchases by age was most striking. Elderly persons living alone spent an average of only $0.27 per week on soft drinks; the middle-aged averaged $0.62.

The young, on the other hand, drank very little coffee, at least at home. The middle-aged and elderly spent three times as much as the young. The average expenditure by the young was only $0.14 per week, the older age groups averaged $0.42. Women buy considerably more coffee than do men, $0.40 versus $0.25. Lower income households spent substantially more than upper income ones, $0.37 versus $0.28. Middle-aged and elderly women drank the most coffee.

Other Prepared Foods

This category contained a heterogeneous group of foods from frozen dinners to olives. The one factor that most of these foods had in common was that they required minimal preparation in the home. Those with higher incomes living alone spent more on such foods than those with lower incomes, $1.09 versus $0.84. Men spent more than women, $1.05 versus $0.85. The highest expenditures were by middle-aged upper income men and the lowest by elderly lower income women.

Again, the expenditure pattern was more distinctive for some of the particular foods than for the overall category. Upper income men of all ages, and lower income young men were the largest purchasers of frozen dinners. Upper income men spent $0.40 per week in each age group. Lower income young men spent $0.47, which was 5.4 percent of their at-home food expenditure. The purchases by middle-aged and elderly lower income men came to $0.18 per week. Expenditures by women did not differ much by age or income and averaged $0.17.

Lower income young men and upper income young and middle-aged men were also the largest purchasers of snack foods at $0.24, $0.32, and $0.24 respectively. Purchases declined for older men, though: upper income elderly men spent an average of only $0.03 per week and lower income elderly men $0.09. Obviously, a very large proportion

of these older men did not normally buy any snack foods. The purchases by women declined slightly across age groups and were marginally lower for the lower income group. The average expenditure by women was $0.13.

COMPARISON OF PROPORTIONAL ALLOCATIONS

In the previous section, the results of the analysis of variance were applied to food expenditures. A similar discussion could be presented for expenditure proportions using tables 4 and 6, but such a discussion would be excessively repetitive. Therefore, in this section only a few highlights concerning expenditure proportions from table 6 are given. These highlights bring out two salient points.

First, age, sex, and income had a strong impact on the allocation of the food dollar among categories. This section will discuss the major categories where one of the three factors was significant in table 4 and the proportional magnitude of the difference was large. Second, the apparent impact of the three factors frequently differed depending on whether dollar expenditures or expenditure proportions were compared. Instances for the major food categories in which a factor did not have a significant effect on the dollar expenditure (table 3) but did have a significant effect on the expenditure proportion (table 4) will also be discussed.

Income had a strong impact on the allocation to expenditures away from home. The upper income group spent 43.1 percent of their food budget away from home; those with lower incomes spent 19.2 percent. Spending at home was the converse of these figures. The proportion of the at-home budget allocated to cereal and bakery products differed significantly by income, whereas the dollar expenditures differed by age. Lower income persons living alone spent 13.9 percent of their at-home food budget on cereals and bakery products; the upper income group spent 11.6 percent. Income also had a significant effect on the proportion spent on sugars and sweets, even though it did not affect the dollar expenditure. Those with lower incomes allocated 3.7 percent to sugars and sweets, whereas those with higher incomes allocated 2.7 percent. The upper income group spent 10.8 percent of their at-home food budget on nonalcoholic beverages, whereas those with lower incomes spent 8 percent.

The proportion of expenditures spent on food away from home was affected by sex: men spent 39.7 percent of their food dollars away from home, women only 20.9. Sex interacting with age affected food for at-home consumption in the proportional allocation, but not in the dollar amount, spent on meats, poultry, fish, and eggs. The allocation of dairy products differed by sex: men spent 16.3 percent of their food dollar for dairy products, women 15 percent. Women, however, spent a larger portion of their at-home food dollar on fruits and vegetables, 17 percent versus 14.1 for men. Men allocated 2.6 percent of their at-home food budget to sugars and sweets; women 3.8 percent. For fats and oils, women allocated 3.3 percent, men 2.4.

The proportion spent away from home decreased with age: 47 percent for the young, 28.3 percent for the middle-aged, and 14.2 percent for the elderly. Age affected the proportion of the budget spent on meats, poultry, fish, and eggs. The average allocation ranged from 29 percent for the young to 34.2 percent for the middle-aged. The allocation by age for fruits and vegetables ranged from 13.7 percent by the young to 17.5 by the elderly. The proportion of the food dollar spent on nonalcoholic beverages and other prepared foods was also affected by age, even though expenditures were not. The allocation for nonalcoholic beverages was 11.9 percent for the young and 7.1 percent for the elderly; and for other prepared foods the allocation was 12.1 percent for the young and 6.1 percent for the elderly.

Table 6--Food expenditure proportions for types of single-person households, 1973-74

Food category	Upper income						Lower income					
	Female			Male			Female			Male		
	35 and below	36 to 64	65 and above	35 and below	36 to 64	65 and above	35 and below	36 to 64	65 and above	35 and below	36 to 64	65 and above
	Percent											
Percentage of total food:												
Food away from home	41.8	32.6	24.8	56.2	45.9	43.9	37.9	15.2	10.6	46.0	25.1	14.7
Food at home	58.2	67.4	75.3	43.8	54.1	56.1	62.1	84.8	89.4	54.0	74.9	85.3
Percentage of food at home:												
Cereal and bakery products	10.7	12.0	11.1	11.3	12.0	13.3	13.8	12.8	14.4	12.7	14.6	14.7
Cereal and cereal products	2.0	2.2	2.2	2.3	1.7	1.2	3.2	3.3	3.9	3.3	3.2	2.4
Bakery products	8.8	9.8	8.9	9.0	10.3	12.2	10.6	9.5	10.5	9.5	11.4	12.4
Meat, poultry, fish, and eggs	29.8	32.0	30.1	30.1	33.4	29.7	29.5	36.2	32.6	24.7	33.8	36.1
Beef and veal	12.5	10.0	10.2	14.2	12.1	7.8	9.2	10.3	10.4	8.4	11.0	11.4
Pork	6.5	8.8	7.8	5.6	7.5	7.2	4.4	8.9	7.4	4.5	9.4	9.0
Other meats	2.7	3.9	3.8	4.1	5.2	4.7	4.7	4.3	3.5	4.7	4.8	4.4
Poultry	2.7	4.1	4.5	1.8	2.7	4.7	4.8	5.8	5.9	2.5	3.4	4.9
Fish and seafood	2.4	2.6	2.6	2.7	2.4	2.3	3.3	3.1	2.0	2.3	1.8	2.4
Eggs	3.2	2.6	1.9	2.2	3.6	2.9	3.2	3.9	3.4	2.3	3.5	4.0
Dairy products	14.1	14.3	16.9	16.6	16.3	16.1	13.1	14.3	16.0	18.6	15.6	15.0
Fresh milk and cream	7.8	7.4	8.3	10.2	10.8	8.8	6.0	8.6	9.8	13.2	10.6	8.4
Processed dairy products	6.3	6.9	8.6	6.4	5.5	7.3	7.1	5.8	6.2	5.4	4.9	6.6
Fruits and vegetables	16.2	19.6	20.3	11.3	15.3	21.2	15.4	15.4	17.1	13.5	13.5	15.9
Fresh fruits	4.6	5.6	5.9	2.9	5.3	8.6	4.6	4.3	5.0	3.3	3.0	4.7
Fresh vegetables	3.9	6.0	7.0	2.7	4.0	4.5	4.1	4.5	5.1	2.9	4.2	4.6
Processed fruits	4.4	4.1	4.2	3.4	3.1	6.0	4.0	2.9	4.1	4.1	3.1	3.4
Processed vegetables	3.5	4.0	3.3	2.4	3.0	2.2	2.8	3.7	2.9	3.3	3.3	3.3
Sugars and sweets	2.7	3.2	3.8	2.0	2.6	2.2	5.6	3.5	3.8	2.8	2.8	3.1
Fats and oils	3.1	2.7	4.1	2.2	2.0	1.9	3.0	3.3	3.4	2.7	2.7	2.6
Nonalcoholic beverages	13.0	9.8	6.9	13.5	9.2	7.6	9.4	8.1	7.2	10.6	9.9	6.3
Other prepared foods	10.5	6.7	6.4	12.7	9.4	8.3	10.4	6.6	5.7	14.6	7.3	6.4

PATTERNS OF FOOD EXPENDITURES BY TYPES OF SINGLE-PERSON HOUSEHOLDS

In this section, the expenditure patterns based on the proportional allocations for each type of single-person household in table 6 are compared with those of the average one-person household in table 2. The comparisons made in this section are on the basis of the samples' means. The differences have not been tested for statistical significance: although a test for significance would be desirable, such comparisons would create a very complex statistical situation, because the means are not mutually independent.

Lower income young women purchased considerably more of their food away from home and less for use at home than the average single-person household. They purchased more cereal and bakery goods, but substantially less meat, particularly beef and pork, as a percentage of their at-home food dollar. The proportion going to milk was also lower. The percentage spent on sugars and sweets and other prepared foods was considerably higher.

Lower income middle-aged women used more of their food dollars at home and less away from home than the average. They spent somewhat more of their at-home food dollars on meats, particularly pork and poultry, but somewhat less on dairy products. They also spent proportionally less on beverages and other prepared foods.

Lower income elderly women, a large group, spent the smallest proportion of all single households on food away from home. They spent a larger portion than average on cereal and bakery goods and poultry but a smaller portion on all meats. Their fruit and vegetable purchases were proportionally greater, as were their purchases of sugars and sweets and fats and oils. Their proportional allocations for nonalcoholic beverages and other prepared foods were both well below average.

Lower income young men spent proportionally more away from home and less at home than average. They spent a remarkably lower proportion on pork and poultry, but much more on milk, than average. A smaller proportion of their at-home food dollar went to fresh produce and more to canned and frozen fruits and vegetables. They spent the highest proportion of their at-home budget of any group of persons living alone on prepared foods.

Lower income middle-aged men spent a slightly larger share on food at home than average. They spent more on bakery goods, pork, and other meats, but less on poultry, seafood, fruits, vegetables, and prepared foods than average.

Lower income elderly men spent much less away from home than average, but more on bakery goods and every category of meat and eggs except seafood. This group devoted a high percentage of their at-home food budget to meats and eggs. The proportion going to beverages and prepared foods was considerably below average.

Upper income young women spent a substantially larger proportion away from home and less at home than the average and a considerably smaller portion of their at-home food budget was allocated to bakery goods, pork, other meats, poultry, and milk. However, the allocation to beef was higher than average, and the proportion going to beverages and prepared foods was much higher.

Upper income middle-aged women also spent more of their food dollars away from home than average. They allocated a larger proportion to pork and fruits and vegetables (both fresh and processed), but less to milk and prepared foods, than the average single-person household.

Upper income elderly women spent a slightly smaller proportion away from home than average. They spent a smaller proportion of their food dollars on cereal and

bakery goods, meats, and eggs. They spent more than average on processed dairy products and about a fourth more of their budget on fruits and vegetables, particularly fresh vegetables. Less of their food budget went to prepared foods and beverages than the average, but more to fats and oils.

Upper income young men, the largest group of males living alone, spent the highest proportion of any group dining out: over half of their food dollars were spent away from home. They were high spenders for beef, but low for pork and poultry. The proportion of their at-home food budget they devoted to fruits and vegetables, especially fresh produce, was below average. The portion going to beverages and prepared foods was very high.

Upper income middle-aged men also spent almost half of their food dollars away from home. They spent more on beef, but less on poultry than the average, more on milk, but less on processed dairy goods, more on prepared foods, but less on sugars and sweets and fats and oils.

Upper income elderly men spent a much larger portion away from home than the average but less than upper income young and middle-aged men. At home, they allocated less of their food budget to cereal goods and more to bakery goods. The proportion going to beef was the lowest of any group. They spent a higher portion of their budget on fruits and vegetables than any group, nearly double the average on both fresh and processed fruits. Less of their at-home food dollar went to sugars and sweets, fats and oils, and beverages.

AVERAGE INCOMES AND BUDGET PROPORTIONS SPENT ON FOOD

The economic well-being of individuals living alone varies widely as does the proportion of food purchases relative to income. Table 7 compares the average annual incomes and the average portions of total income spent on food for the 12 types of single-person households. The income figures include income from all sources, including pensions, Social Security, welfare payments, and unemployment; food stamp benefits, however, are not included in this measure of income. By isolating specific types of individuals and showing where the need for assistance is strongest, this comparison should be of particular relevance to those interested in public welfare policy, especially food assistance programs.

Upper and lower income persons living alone confront very different economic situations. The mean income for the lower income group was $2,634; the mean for the upper income group, at $10,699, was four times larger. Lower income individuals living alone were far more numerous than those with higher incomes, 63 percent versus 37 percent. For the lower income group, income decreased with age, so that the elderly were the worst off. The poverty level for elderly women living alone was $2,241 for 1973-74. 9/ With an average income of $2,372, this group constituted a significant component of those most in need. The overall poverty guideline for nonfarm one-person households was $2,371 in 1973-74. For the upper income group, women's income increased with age while men's income was highest in the peak career years of middle-age. The absolute income differential between men and women was much greater for the higher income groups than for the lower income groups.

The budget proportion going to food averaged 30.8 percent in 1973-74 for those with lower incomes living alone. The average American family allocated 17.4 percent of its income for food during the same period, while upper income one-person house-

9/ U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Consumer Income: Characteristics of the Low-Income Population, Series P-60 (for 1973 and 1974). The 1973-74 figures are calculated as the average for 1973 and 1974.

Table 7--Average incomes and proportions of income spent for food by type of single-person household, 1973-74

Item	Unit	Female			Male		
		35 and below	36 to 64	65 and above	35 and below	36 to 64	65 and above
Upper income:							
Average income	Dollars	8,450	9,696	10,856	10,681	13,010	11,302
Budget proportion for food	Percent	10.9	11.1	8.2	14.1	11.0	10.9
Lower income:							
Average income	Dollars	3,006	2,626	2,372	3,329	2,803	2,575
Budget proportion for food	Percent	23.9	32.8	31.7	26.2	31.8	32.9

holds allotted 11.6 percent. Food expenditures tended to account for a smaller drain on the budget of the upper income group as they grew older. The portion devoted to food was lowest for upper income elderly women. The budget portion spent on food increased with age for lower income men and increased sharply for lower income women, beyond age 36.

One of the premises underlying the Food Stamp Program is that households should not have to spend more than 30 percent of their income to obtain an adequate diet. Those households who would have to spend more are eligible for assistance in most cases. On this basis, a large portion of the middle-aged and elderly lower income individuals living alone are probably eligible for food stamp benefits. Eligibility can also be viewed from another perspective. The 125 percent of poverty income guideline (which was $2,964 in 1973-74 for nonfarm persons living alone), is frequently used as a rough measure of eligibility for the Food Stamp Program. On this basis also, a large portion of the lower income middle-aged and elderly living alone would be eligible.

IMPLICATIONS AND LIMITATIONS

Less than 8 percent of the total population live in single-person households. Such households, nevertheless, account for 12 percent of total food expenditures, 10 percent of at-home food expenditures, and 16 percent of away-from-home purchases. In addition, those living alone constitute a rapidly growing portion of the population.

Single-person households vary widely in their food purchase patterns. This study has been devoted to quantifying, analyzing, and describing these differences. For the majority of the food commodities analyzed, the highest level of weekly expenditure was more than double the lowest level among the 12 types of single-person households specified. Not surprisingly, an elderly widow living on Social Security and a young bachelor spend their food money in different ways. The future effect of single-person households on the food market, therefore, depends very much on the type of single-person household that increases most rapidly.

Demographers say that the birth rate is declining, the population is growing older, and the life span differential between men and women is not decreasing. The average age at which men and women first marry is increasing; plus the divorce rate remains high. In addition, more and more women are securing better paying jobs. Some of the faster growing groups of persons living alone, therefore, will be elderly women,

mostly with lower incomes, and upper income middle-aged and young women. The former group spends very little away from home, but has relatively large purchases of fruits and vegetables. The latter groups spend a high proportion of their food dollars away from home and on beverages, particularly soft drinks, and prepared foods.

Attention should be drawn to the major limitations of this study so the results are not misunderstood. Many of the limitations are a reflection of the data source utilized. The data reflect purchases, not food consumption. Because of such factors as nonpurchased food sources and food waste, any inferences about diet should be drawn with great care. In addition, the data allow us to say nothing about the allocation to different food categories of away-from-home food purchases. Both these shortcomings will be alleviated by the Department of Agriculture's 1977-78 Nationwide Food Consumption Survey (NFCS) on individual intake, which will provide a complete record of the food and beverages consumed by individuals during each of three 24-hour days.

The method we used, looking at a cross section of single-person households at a point in time, has certain limitations. The information must not be treated as if it were based on specific groups of people who were traced over time. The limitation with the present analysis is that we cannot say if people, as they grow older, will modify their behavior to conform to the cross sectional pattern or maintain their current preferences.

Those 35 and under spend 9 percent of their at-home food budget on carbonated drinks, whereas those over 65 spent only 2.2 percent. Will the current generation of those under 36 sharply reduce their soft drink purchases as they grow older or will they remain voracious drinkers of soft drinks? A good guess is probably somewhere in between. They will reduce their soft drink purchases but not to a level as low as the current elderly. This is only a conjecture, though, because our cross sectional data cannot yield this type of information.

The analytical methodology employed in this study has additional limitations. Relying on a comparison of means backed up by an analysis of variance is practical only when the data set is large. In addition, the number of factors that have an important influence on behavior must not be too great. Also, this approach does not provide estimates of the magnitude of the effect of specific factors as regression analysis does. The full explanatory power of continuous variables such as income is reduced. In addition, no measure of their marginal effect, such as an income elasticity, is generated. Some of the expenditure differences attributed to sex and age factors are likely due to income, since mean income levels between some of the groups vary substantially.

In addition, considerable food price inflation occurred during the survey year. Households surveyed at different times during the year faced different prices. This price effect is not accounted for. The problem is reduced, though, by the fact that the data collection for any one type of household should be randomly distributed throughout the year.

Distinct advantages also apply to the methodological approach of this study. The analysis dealt with the three most important factors relevant to explaining food purchase behavior of single-person households: income, age, and sex. The results are not biased by relevant left-out variables in the way regression coefficients might be. In addition, an a priori restriction was not placed on the structure of behavior by having to specify a functional form as in regression analysis. Above all, allowance was made for not only the effects of the individual factors, but also for the effects of possible interaction among the factors. The impact of one factor often varied greatly across the groups. The study yielded many examples of the importance of interactions among factors in explaining the complexity of food purchase behavior.

*U.S. GOVERNMENT PRINTING OFFICE: 1979 280-931/ESCS-129