
Changes in Food Expenditures, 1969–73: Findings From the Retirement History Study

by Janet H. Murray*

From 1969 to 1973, average expenditures for food at home reported by Retirement History Study respondents increased by almost the same proportion—30 percent—as did the food component of the consumer price index. Changes in these expenditures were not very responsive to changes in income, but income had greater power in explaining total food expenditures. The analysis was based largely on a regression technique that identifies the factors most important in explaining the variation in food expenditures. Size of household was the most important predictor of both the total level of household food expenditures and the per person level. Residence (urban, rural nonfarm, and farm), a proxy variable for home-produced food, was also generally significant. With size of household and income taken into account, a number of socioeconomic variables—including race, sex, age, morale, health, education, and homeownership—were found not significant.

As a major item in family budgets, food might be expected to bear the brunt of the adjustments that normally accompany a reduction in income following retirement. Many studies, however, have indicated that food expenditures are not very responsive to income changes. The findings of this article are consistent with those of earlier research. The decrease in income associated with retirement results in a proportionately much smaller decrease in expenditures for food.

Scope of the Analysis

The data examined here were derived from the Retirement History Study (RHS), a 10-year Social Security Administration survey. At 2-year intervals since 1969, the base year for the study, RHS respondents have been reinterviewed about their past, present, and anticipated work status and their income, health, expenditures, activities, and living arrangements. The members of this cohort, who were aged 58–63 in 1969 and 62–67 in 1973, will provide insights into the retirement process as they progress through the ages at which retirement normally occurs.

All the respondents will not survive throughout the

period and others will be lost to the study through interview refusals or contact failures. Of the 11,153 persons from whom completed interviews were obtained in 1969, 9 percent had died by 1973 and 11 percent refused to participate or could not be located. Data on those who were institutionalized and from surviving spouses studied separately are not included in this analysis.¹

The major focus of this analysis is on the level of food expenditures in 1973 and the change in such expenditures between the 1969 and 1973 surveys as related to a number of socioeconomic variables in the two years. Household size, income, residence, employment, health, morale, race, sex, age, and marital status. These factors serve to identify each household by some characteristic that is assumed to affect expenditures. That is, larger households generally spend more than smaller ones, those with more income generally spend more than those with less, and so on. As such characteristics change over the years, expenditures may change accordingly.

¹ In addition, since preliminary analysis showed some questionably high income and food expenditure cases, these cases were omitted by limiting the regression analysis to those with \$30,000 or less in annual income and food expenditures of \$1–\$10,000. Case counts are therefore less than the number reported in Kathleen Bond, "Retirement History Study's First Four Years: Work, Health, and Living Arrangements," *Social Security Bulletin*, December 1976.

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Such hypotheses assume that the households encounter essentially the same price situation from year to year. From 1969 to 1973, however, prices rose much faster than would normally be expected because of the strong inflationary trend that began in the period. Although this trend could be taken into account explicitly by deflating income and expenditures according to the Consumer Price Index (CPI) to obtain amounts in constant dollars, such a procedure has not been used here. Rather, measurements must be interpreted in light of the average changes in prices that occurred over the period. The cost of living, as measured by the all-item CPI, increased 21 percent from 1969 to 1973. The corresponding increase in the food component of the CPI was 30 percent.

The 28-percent change in food prices that occurred between the spring of 1969 and the spring of 1973, however, is probably a more appropriate measure of the price change facing the respondents when they answered the question on food expenditures. Most of the interviews were made in May and June of these years. The expenditures for food at home reflect the specific food purchases in the week preceding the interview, adjusted appropriately if the respondent reported that such expenditures were more or less than the "usual" expenditure. Such "usual" weekly expenditures were multiplied by 52 to obtain the estimates for the year. It is assumed that these estimates most nearly reflect the reaction of respondents to the current food prices, modified to some extent by the experiences in 1968 and 1972.²

Several other general qualifications concerning the data relate to the definitions of the variables used in the analysis—primarily income, expenditures, and employment. Income in particular presents both conceptual and practical problems. The income measure used here is total money income received in 1968 by the husband and wife in the case of married men and by individual respondents in the case of nonmarried men and nonmarried women. It does not include imputed values for the owned home, homegrown food, noncash "welfare" items such as public housing and food stamps, or workers' fringe benefits.³ The noncash values of food (homegrown food and food stamps) are also excluded from the food variables.

The conceptual problems of relating income (gross or net of taxes, "permanent" or "temporary," "money"

or "imputed") to expenditures and the practical measurement difficulties have both long been recognized in household-income and expenditure surveys. Any comparison of the findings of this survey with other surveys must take account of variations in definitions and collection methods as well as differences in timing and population coverage.⁴

The procedure used here is multiple classification analysis (MCA), a form of dummy-variable regression. This technique provides a measure of the extent to which variation in a dependent variable (such as the level of expenditures for food at home in 1973) may be explained by the predictor variables (income in 1972 or household size in 1968). The importance of the predictors in explaining the variation in the dependent variable is measured by two statistics: η^2 , which estimates the ability of each predictor alone to explain variation in the dependent variable, and β^2 , which estimates the ability of each predictor to explain the variation in the dependent variable adjusted for the effects of the other predictors.⁵

For most of the analyses the dependent variable is 1973 expenditures for food at home (in current dollars), expressed as expenditures for the household or as expenditures per person eating from the household food supply, and also as change in spending measured by the ratio of 1973 to 1969 expenditures.⁶ Total expenditures for food—that is, expenditures for food at home, meals at work, and dinners, other meals, and snacks eaten away from home—have also been studied, but only for a subgroup of the total sample—the couples and nonmarried men and nonmarried women living alone.

Although income and household size were the only household characteristics that consistently explained some of the variation in food expenditures, other variables, not as consistently significant, were considered to be of sufficient interest to warrant separate discussion in this article. Residence, employment, sex, and marital status. Findings with respect to many of the variables investigated, however, were, in a sense, negative—they were not found to be significantly related to food expenditures. These variables include race, morale, health limitations, age, education, and homeownership.

⁴ See Janet Murray, "Activities and Expenditures of Pre-retirees," *Social Security Bulletin*, August 1975, pages 7-8.

⁵ See the technical note to this article on page 29. For the application of the MCA technique to other studies using RHS data, see Alan Fox and Bennie A. Clemmer, "Using Dummy Variable Regression for Longitudinal Analysis," in American Statistical Association, *Proceedings of the Social Statistics Section, 1975, 1976*, Lenore E. Bixby, "Retirement Patterns in the United States: Research and Policy Interaction," *Social Security Bulletin*, August 1976, and Gayle B. Thompson, "Pension Coverage and Benefits, 1972: Findings From the Retirement History Study," *Social Security Bulletin*, February 1978.

⁶ Food expenditures as a proportion of income was also tried but not explored in detail.

² In 1969, 84 percent of the households reported that the preceding week's expenditures represented about what was usually spent for food, about 5 percent reported that their expenditures for the period were higher than usual. In 1973 the corresponding proportions were 73 percent and 18 percent, which suggests that more families in the spring of that year were aware of rapidly rising food costs.

³ See Alan Fox, "Work Status and Income Change 1968-72: Retirement History Study Preview," *Social Security Bulletin*, December 1976.

Table 1.—Annual expenditure for food at home, 1973, by selected characteristics

Characteristic	Food expenditure at home		
	Unadjusted	Adjusted ²	Percent of cases
Grand mean	\$1,485		
Standard error	\$9		
R ²	0.328		
Sample size ¹	8,077		
Size of household			
1	\$888	\$961	23.9
2	1,504	1,469	53.2
3	1,859	1,848	13.2
4	2,194	2,193	4.8
5 or more	2,486	2,542	4.9
Eta² = .275 Beta² = .251			
1972 income			
\$1-1,999	\$1,150	\$1,327	9.7
2,000-3,999	1,225	1,392	13.9
4,000-5,999	1,386	1,438	11.8
6,000-7,999	1,488	1,474	10.4
8,000-9,999	1,592	1,504	7.8
10,000-14,999	1,706	1,597	11.6
15,000 or more	1,840	1,671	7.5
Not ascertained	1,557	1,510	27.3
Eta² = .067 Beta² = .015			
1968 income			
\$1-1,999	\$1,121	\$1,344	12.7
2,000-3,999	1,249	1,384	13.3
4,000-5,999	1,406	1,452	13.3
6,000-7,999	1,535	1,500	12.3
8,000-9,999	1,620	1,530	9.9
10,000-14,999	1,672	1,520	13.0
15,000 or more	1,789	1,587	5.9
Not ascertained	1,618	1,581	19.6
Eta² = .066 Beta² = .012			
Place of residence			
Urban	\$1,531	\$1,533	69.1
Rural nonfarm	1,423	1,430	23.0
Farm	1,263	1,225	7.9
Eta² = .010 Beta² = .012			

¹ Represents those reporting food expenditures of \$1-10,000 and income of \$1-30,000

² Adjusted for the effects of the other specified characteristics

Findings

Expenditures for Food at Home

Income. The classic studies of food expenditures have usually been concerned with the income-expenditure relationship seen at a point in time. It may be summarized by such measures as the correlation and the regression coefficient. Income elasticity is a less well-known but useful measure that indicates the percentage change in expenditures that accompanies a small (1 percent, for example) change in income.

The income elasticity, as measured by the slope of the income-expenditure line expressed in logarithms, is 0.212 for the 1969 data and 0.188 for the 1973 data.⁷ Thus, on the average, with a decrease in income of about 10 percent, food expenditures would be expected to be only about 2 percent less. Although perhaps lower

⁷ Computed from a 25-percent sample for each year.

than elasticities measured in some other studies, this finding is not out of line.⁸

About 12 percent of the variation in food expenditures in 1969 was explained by income alone ($R^2 = 0.125$) and 10 percent in 1973 ($R^2 = 0.097$). These findings, of course, are equivalent to the results of two cross-sectional surveys. The longitudinal results are shown in table 1. Income in 1968 and income in 1972 perform equally well in explaining variations in 1973 household expenditures for food at home (note similar Eta^2 's and $Beta^2$'s). Similar results are to be found in table 2, where the dependent variable is expenditures per person.

These data suggest that households are resistant to

⁸ A useful summary of such studies, for example, notes that "a steady state elasticity of food expenditure with respect to basic income is in the neighborhood of 0.2." See J. Benus, J. Kmenta, and M. Shapiro, "The Dynamics of Household Budget Allocation to Food Expenditures," *The Review of Economics and Statistics*, May 1976, page 137.

Table 2.—Annual expenditure per person for food at home, 1973, by selected characteristics

Characteristic	Food expenditure per person		
	Unadjusted	Adjusted ²	Percent of cases
Grand mean	\$732		
Standard error	\$4		
R ²	0.110		
Sample size ¹	8,067		
Size of household			
1	\$829	\$863	23.8
2	743	727	53.2
3	646	641	13.3
4	588	588	4.8
5 or more	516	543	4.9
Eta² = .051 Beta² = .062			
1972 income			
\$1-1,999	\$623	\$647	9.7
2,000-3,999	683	688	13.9
4,000-5,999	705	708	11.8
6,000-7,999	734	730	10.4
8,000-9,999	735	736	7.8
10,000-14,999	791	778	11.6
15,000 or more	820	812	7.5
Not ascertained	756	753	27.3
Eta² = .026 Beta² = .017			
1968 income			
\$1-1,999	\$633	\$661	12.7
2,000-3,999	677	694	13.3
4,000-5,999	703	713	13.2
6,000-7,999	746	748	12.3
8,000-9,999	760	753	9.9
10,000-14,999	763	741	13.1
15,000 or more	819	779	6.0
Not ascertained	783	776	19.6
Eta² = .024 Beta² = .012			
Place of residence			
Urban	\$768	\$756	69.1
Rural nonfarm	681	703	23.0
Farm	565	605	7.9
Eta² = .029 Beta² = .015			

¹ Represents those reporting food expenditures of \$1-10,000 and income of \$1-30,000

² Adjusted for the effects of the other specified characteristics

Table 3.—Annual expenditure per person for food at home, 1973, and employment status, 1968 and 1972, by selected characteristics

	Food expenditure per person											
	Employed in 1968 and 1972			Employed in 1968, not employed in 1972			Not employed in 1968 and 1972					
	Grand mean	Standard error	R ²	Sample size ¹								
	\$739	\$7	0.134	2,953	\$720	\$9	0.089	1,425	\$705	\$10	0.097	1,194
Characteristic	Unad-justed	Ad-justed ²	Per-cent of cases	Unad-justed	Ad-justed ²	Per-cent of cases	Unad-justed	Ad-justed ²	Per-cent of cases			
1972 income												
\$1-1,999	\$594	\$632	3.1	\$629	\$683	10.7	\$646	\$664	28.4			
2,000-3,999	639	634	10.2	713	723	16.1	739	736	23.2			
4,000-5,999	668	676	10.5	731	722	15.1	706	684	10.9			
6,000-7,999	726	726	13.0	742	728	11.4	719	698	5.4			
8,000-9,999	709	727	9.9	736	725	6.7	800	754	3.7			
10,000-14,999	795	783	17.7	768	750	7.4	903	837	2.5			
15,000 or more	819	818	13.3	843	803	2.6	789	765	9			
Not ascertained	768	764	22.3	715	710	29.8	701	712	25.0			
	Eta ² = .034 Beta ² = .026			Eta ² = .016 Beta ² = .005			Eta ² = .024 Beta ² = .012					
1968 income												
\$1-1,999	\$599	\$678	6.2	\$545	\$545	7.2	\$668	\$667	39.3			
2,000-3,999	688	634	12.7	667	660	12.5	685	681	18.8			
4,000-5,999	679	676	16.2	707	706	14.0	770	783	9.1			
6,000-7,999	726	726	15.0	745	752	15.6	837	842	3.9			
8,000-9,999	743	727	11.9	760	768	11.9	898	873	2.3			
10,000-14,999	777	783	15.6	732	735	18.0	758	748	2.3			
15,000 or more	811	818	8.3	804	793	7.1	845	784	3			
Not ascertained	843	766	14.0	747	741	13.9	707	715	23.8			
	Eta ² = .032 Beta ² = .013			Eta ² = .034 Beta ² = .035			Eta ² = .027 Beta ² = .026					
Residence												
Urban	\$783	\$769	67.8	\$744	\$735	73.2	\$722	\$716	67.6			
Rural nonfarm	710	727	21.1	664	681	20.3	674	686	29.6			
Farm	527	583	11.0	559	658	6.0	637	651	2.8			
	Eta ² = .047 Beta ² = .024			Eta ² = .018 Beta ² = .007			Eta ² = .005 Beta ² = .002					
Size of household												
1	\$866	\$896	19.4	\$803	\$843	22.5	\$794	\$808	38.0			
2	750	740	35.8	728	711	36.0	700	682	39.1			
3	656	674	14.6	640	631	13.1	584	587	11.6			
4	592	587	5.6	617	628	4.0	578	591	4.2			
5 or more	511	528	4.6	510	543	4.4	533	545	7.1			
	Eta ² = .057 Beta ² = .047			Eta ² = .046 Beta ² = .059			Eta ² = .066 Beta ² = .072					

¹Represents those reporting food expenditures of \$1-10,000 and income of \$1-30,000

²Adjusted for the effects of the other specified characteristics

change and try to maintain their customary food pattern, whatever determines it. The RHS sample, of course, represents an older age group whose food patterns presumably are well-established and whose reactions may differ from those of younger age groups. Another piece of evidence is that average expenditures for food at home increased over the 4-year period by almost the same percentage as did food prices. Still another indication is provided by the data in table 3, which give the average expenditures per person for those employed in 1968 and 1972, those employed in 1968 but not in 1972, and those not employed in either year. The levels of food expenditures for the three groups did not differ significantly but were in the expected direction—\$739 for those employed in both years, \$720 for those employed only in 1968, and \$705 for those employed in neither year.

One difference that is suggestive in the present con-

text, however, is the relationship of 1968 and 1972 income and 1973 food expenditures for those who continued to work and for those who had retired. Food expenditures were more closely related to 1972 income for the former and to 1968 income for the latter.⁹

The third group, made up of persons not employed in either year, had similar Eta²'s for 1968 incomes and 1972 incomes. This group was dominated by nonmarried women, who also seem to have well-established and stable food expenditure patterns.

Finally, support for the hypothesis that the food patterns of the elderly tend to maintain a surprising degree of stability in the face of rising food costs and declining real income was provided by an MCA program in which the

⁹ The median income of those employed in both years increased, as did the income of those not employed in either year. Those who were employed in 1968 but not in 1972 had lower incomes. See Alan Fox, *op cit*, table 5.

change in food expenditures (ratio of 1973 to 1969 expenditures) was regressed on the change in income (ratio of 1972 to 1968 income) as well as on other predictors (table 4). The average ratio of 1973 to 1969 expenditures was 1.298—an increase similar to the 30-percent rise in food prices. Households with a great decrease or increase in income had an estimated rise in food expenditures of about 33 percent, and households with moderate income changes had a slightly smaller increase. Overall, however, income change was not significantly related to changes in food expenditures. Change in household size accounted for virtually all of the small amount of variation explained by the model.¹⁰

Although changes in income seem to have no significant impact on changes in food expenditures, a second model was set up to test the argument that this finding might not be true for those with low incomes. Married men were divided into three groups. Those with low 1972 incomes (less than \$6,000), medium incomes (\$6,000 to \$11,999), and high incomes (\$12,000 to \$30,000). The regression was run with change in food expenditures between the two years as the dependent variable and with changes in income, household size, and 1973 residence as predictors. This model also provided negative results. Almost none of the variation about the averages was significantly accounted for by these predictors.

The averages themselves differed in the three groups. Those with low incomes had food expenditures that were 34 percent higher in 1973 than in 1969, a rise slightly greater than the increase in food prices, the middle and high income groups increased food expenditures over the period by smaller proportions (19 percent and 13 percent, respectively). The relationship between change in income and change in food expenditures was not significant—nor was residence as a predictor for any of the three groups. Only change in household size was significant for the lower and middle income groups. Again, the lack of responsiveness of food expenditures to income changes was demonstrated.

Household size. The consistency of the relative importance of household size in predicting the expenditures of food in the households, as shown in tables 1–4, conforms to common sense. Rather more interesting is the consistent evidence of “economies of scale.” In table 1 the average expenditures of one-person households for food at home in 1973 is shown as \$888, for households of five or more persons, \$2,486 was spent. In table 2 the overall average expenditure per person is shown as \$732 (the range was from \$829 in one-person

Table 4.—Ratio of annual expenditure for food at home in 1973 to expenditure in 1969, by selected characteristics

	Ratio of 1973 to 1969 food expenditure for food at home		
	Unadjusted	Adjusted ²	Percent of cases
Grand mean	1.298		
Standard error	0.016		
R ²	0.028		
Sample size ¹	6,812		
1969 food expenditures estimated³			
\$500–999	1.511	1.451	26.5
1,000–1,499	1.278	1.262	44.5
1,500–1,999	1.149	1.230	22.3
2,000 or more	1.087	1.187	6.7
	Eta² = .012 Beta² = .005		
Change in size of household			
Same	1.317	1.303	69.9
Smaller	1.060	1.113	23.4
Larger	1.917	1.882	6.7
	Eta² = .024 Beta² = .019		
Change in employment status			
Employed in 1968 and 1972	1.299	1.321	36.5
Employed in 1968, not employed in 1972	1.310	1.304	18.6
Not employed in 1968 and 1972	1.354	1.288	13.8
Not ascertained	1.265	1.263	31.1
	Eta² = .001 Beta² = .004		
Percentage change in income from 1968 to 1972			
Decreased			
50 or more	1.253	1.333	5.5
25–49	1.310	1.330	8.9
0–25	1.265	1.264	12.5
Increased			
1–25	1.276	1.262	13.7
26–50	1.274	1.262	11.3
51–100	1.379	1.330	8.6
Not ascertained	1.309	1.323	39.5
	Eta² = .001 Beta² = .001		
Marital status and sex			
Married men	1.254	1.231	65.0
Nonmarried			
Men	1.307	1.323	8.6
Women	1.405	1.292	26.4
	Eta² = .003 Beta² = 0		

¹ Represents those reporting food expenditures of \$1–10,000 and income of \$1–30,000.

² Adjusted for the effects of the other specified characteristics.

³ Estimated from the two most significant predictors—1968 income and household size—producing a first-stage R² of .20.

households to \$516 in households of five or more persons.)¹¹ Similar findings are shown in table 3. In table 4, households that were larger in 1973 than in 1969 are shown to have increased food expenditures by about 90 percent, compared with a rise of around 10 percent for those households that became smaller. Expenditures for married couples living alone were less than twice as high

¹¹ After determining the amount usually spent for household food, respondents were asked, “How many people usually eat from this food supply at least four days a week?” Expenditures per person were computed from this number. Household size was determined by the number of persons recorded as “living here.” The size of household and the number eating from the household food supply, although not precise matches, were not very different.

¹⁰ A preliminary model included the actual 1969 food level, which was correlated (Eta² = .19) with changes in food expenditures. Because of measurement error and the natural tendency to regression toward the mean, the actual food level was discarded in favor of a predicted 1969 food-expenditure variable. See table 4.

Table 5—Annual expenditure for food at home of married men and of nonmarried men and women living alone, 1973, by selected characteristics

	Food expenditure at home								
	Married men (couples)			Nonmarried					
				Men			Women		
Grand mean	\$1,507			\$882			\$856		
Standard error	\$12			\$32			\$12		
R ²	0.079			(1)			0.056		
Sample size ²	2,750			274			1,112		
Characteristic	Unad-justed	Ad-justed ³	Per cent of cases	Unad-justed	Ad-justed ³	Per cent of cases	Unad-justed	Ad-justed ³	Per cent of cases
1972 income									
\$1-1,999	\$1,297	\$1,415	3.1	\$738	\$787	13.9	\$728	\$781	17.3
2,000-3,999	1,226	1,318	7.6	899	905	25.9	835	861	25.5
4,000-5,999	1,381	1,416	12.1	938	901	17.2	863	842	13.8
6,000-7,999	1,473	1,493	12.1	903	877	8.0	909	869	10.7
8,000-9,999	1,530	1,529	10.5	852	851	4.7	943	858	3.4
10,000-14,999	1,645	1,601	16.2	1,127	1,145	8.8	983	925	6.1
15,000 or more	1,652	1,596	10.5	958	1,048	2.6	1,108	1,047	1.2
Not ascertained	1,532	1,517	27.8	791	771	19.0	890	883	21.9
	Eta ² = .039 Beta ² = .016			Eta ² = .039 Beta ² = .039			Eta ² = .034 Beta ² = .012		
1968 income									
\$1-1,999	\$1,214	\$1,421	3.3	\$754	\$780	23.7	\$730	\$741	25.7
2,000-3,999	1,245	1,378	7.8	947	963	23.0	849	853	21.9
4,000-5,999	1,387	1,460	12.5	852	874	12.0	864	870	18.1
6,000-7,999	1,463	1,476	14.2	1,038	1,051	10.9	1,032	1,027	9.8
8,000-9,999	1,546	1,511	13.9	986	897	9.5	957	936	4.2
10,000-14,999	1,573	1,503	19.0	910	852	8.0	943	887	4.2
15,000 or more	1,642	1,560	8.2	735	720	2.6	1,430	1,386	.5
Not ascertained	1,613	1,596	21.0	823	821	10.2	887	879	15.6
	Eta ² = .039 Beta ² = .010			Eta ² = .035 Beta ² = .030			Eta ² = .061 Beta ² = .050		
Place of residence									
Urban	\$1,597	\$1,581	66.3	\$891	\$882	72.6	\$863	\$853	77.4
Rural nonfarm	1,393	1,422	24.3	880	902	20.1	847	879	19.9
Farm	1,167	1,208	9.5	806	833	7.3	738	788	2.7
	Eta ² = .050 Beta ² = .036			Eta ² = .002 Beta ² = .001			Eta ² = .003 Beta ² = .001		
Change in employment status									
Employed in 1968 and 1972	\$1,516	\$1,517	37.6	\$903	\$822	31.8	\$880	\$839	29.9
Employed in 1968, not employed in 1972	1,479	1,493	20.3	884	914	20.4	878	867	15.3
Not employed in 1968 or 1972	1,442	1,488	8.3	874	932	16.8	831	900	24.8
Not ascertained	1,529	1,508	33.8	865	897	31.0	843	833	29.9
	Eta ² = .002 Beta ² = .000			Eta ² = .001 Beta ² = .007			Eta ² = .003 Beta ² = .005		

¹ Though a small initial R² and the small number of cases produce the adjusted R² as 0, the results for nonmarried men are given here for comparison.
² Represents those reporting food expenditures of \$1-10,000 and income of

\$1-30,000.
³ Adjusted for the effects of the other specified characteristics.

as expenditures for nonmarried men and women living alone (table 5).

Residence. Urban, rural nonfarm, and farm residence was introduced as a variable with the expectation that the greater use of homegrown foods on farms and in rural areas would reduce food expenditures. This hypothesis was supported by the data. Average per capita expenditures in 1973 were \$756 for urban households, \$703 for rural nonfarm households, and \$605 for farm households. Differences in amounts of donated food and of food received as gifts or as pay may also affect the money expenditures of these households.

A Department of Agriculture survey¹² found that the money expenditures for food at home were 7 percent

greater in urban households than in rural nonfarm households and 35 percent greater than in farm households. The total value of food used was approximately the same in urban and rural nonfarm households and about 10 percent greater in farm households.

Employment. Since the focus of the RHS is on the behavior patterns of persons shifting from employment to retirement, the 1973 food expenditures of those employed in 1968 but not in 1972 were compared with the expenditures of those whose employment status did not change (table 3). Contrary to expectations, this factor did not prove to be significantly related to the level of food expenditures. Nevertheless, it seemed helpful to compare the data for "retirees" with data for the other groups. As indicated above, for the retiree group, 1968 income seemed to be a somewhat better predictor of 1973 expenditures than was 1972 income.

¹² Department of Agriculture, Agricultural Research Service, Household Food Consumption Survey, 1965-66 (Report No. 12), March 1972, table 2.

Age, marital status, and sex. Age, within the narrow range of the cohort under study, did not yield consistent differences in food expenditures. Marital status and sex were introduced as a "filter" variable (table 5). For the nonmarried women, food expenditures were generally lower than those of the nonmarried men, but this difference may have resulted in part from lower income.

Other variables. Additional MCA programs were tried in an attempt to explain variation by means of some of the other socioeconomic factors that occur to economists and sociologists. When race, morale (satisfaction with way of living, subjective comparison of way of living with that of others), homeownership, and health limitations were introduced, however, they provided associations (Eta^2 's) with food expenditures of less than 1/10 of 1 percent. They all ranked lower in explanatory power than household size, income, or residence. Education showed more correlation ($Eta^2 = 0.19$) than those variables mentioned above, although its $Beta^2$ rank was not high (7th of 14 predictors). A summary measure of socioeconomic status was obtained by combining education and income into an SES score. The use of the score did not increase R^2 , however, and no further use was made of this variable.

At best, as table 1 shows, only about a third of the variation in 1973 average expenditures for food at home was explained by the major factors—household size, current or earlier income, and residence ($R^2 = 0.3$). There is left the conclusion, perhaps unsatisfactory, that "tastes and preferences" account for the difference. A recent study finds that "no significant behavior has been illuminated by differences in tastes. Instead, they, along with assumptions of unstable tastes, have been a convenient crutch to lean on when the analysis has bogged down."¹³

Total Food Expenditures

The analysis to this point has been limited to a discussion of the data on expenditures for food at home, which makes up the greater part (80–90 percent) of total expenditures for food. Interest does attach, however, not only to the amounts spent for food at work and for other meals and snacks purchased and eaten out, but also to the hypothesis that income may be a better predictor of expenditures for total food than for food at home.

Because information on the amounts spent for meals and snacks away from home was obtained only for the respondent and spouse, the total amount of expenditures for all households is not known. Comparisons are valid

¹³ See George Stigler and Gary Becker, "De Gustibus Non Est Disputandum," *The American Economic Review*, March 1977, page 89.

only for the married couples and the nonmarried men and nonmarried women living alone. A table was therefore prepared with total food expenditures as the dependent variable (table 6) to match the one for spending on food at home for these three groups (table 5). Total food expenditures, on the average, were 17 percent greater than expenditures for food at home for the couples, 31 percent greater for the nonmarried men, and 12 percent greater for the nonmarried women. These estimates for food away from home are somewhat lower than those from the Bureau of Labor Statistics Consumer Expenditure Survey that would seem most comparable.¹⁴ They seem, however, to be reasonably in line with those of the University of Michigan Panel Study of Income Dynamics.¹⁵

A comparison of tables 5 and 6 does suggest that both 1972 income and 1968 income are better predictors of total food expense in 1973 than of expense for food at home. Residence is significant only for couples because relatively few of the nonmarried live alone in rural areas and the $Beta^2$'s are similar for both food at home and total food.

The relatively greater importance of food away from home for nonmarried men living alone is evident, not only from the dollar amounts but also from the higher correlations with both 1968 income and 1972 income. The Eta^2 's between food at home and 1968 income and 1972 income, respectively, were .03 and .04, the comparable Eta^2 's for total food were .15 and .14. Similar but not such striking differences between the associations of income with food at home and total food appeared for the other two groups.

Because of the hypothesis that retirement might be of special importance in affecting meals away from home (those eaten at work), change in employment status was introduced. It did not prove significant.

Data for all three groups support a finding of other surveys. Spending for meals away from home is more responsive to income changes than is spending for food at home.

Summary

From 1969 to 1973, average expenditures for food at home increased by almost the same proportion as did food prices, as measured by the food component of the CPI—about 30 percent. Expenditures for food at home

¹⁴ Bureau of Labor Statistics, *Consumer Expenditure Survey Interview Survey, 1972 and 1973*, Errata Report 455–3, tables 2 and 4. See also Department of Agriculture, *op cit*, table 2.

¹⁵ Greg Duncan reported that "In the spring of 1974, panel families reported spending an average of \$35 a week for groceries and about \$6 weekly in restaurants." See Greg J. Duncan, "Food Expenditures Changes Between 1972 and 1974," in *Five Thousand American Families: Patterns of Economic Progress*, vol. IV, Institute for Social Research, University of Michigan, 1976, page 214.

Table 6.—Annual total food expenditure of married men and of nonmarried men and women living alone, 1973, by selected characteristics

	Total food expenditure								
	Married men (couples)			Nonmarried					
				Men			Women		
Grand mean	\$1,745			\$1,151			\$954		
Standard error	\$16			\$43			\$17		
R ²	0.143			0.146			0.116		
Sample size ¹	2,620			289			1,090		
Characteristic	Unad-justed	Ad-justed ²	Per cent of cases	Unad-justed	Ad-justed ²	Per cent of cases	Unad-justed	Ad-justed ²	Per cent of cases
1972 income									
\$1-1,999	\$1,321	\$1,540	3.1	\$768	\$945	14.2	\$701	\$814	17.7
2,000-3,999	1,290	1,465	7.7	1,041	1,133	25.3	873	915	25.6
4,000-5,999	1,432	1,519	12.1	1,202	1,170	17.0	992	955	13.9
6,000-7,999	1,690	1,735	12.2	1,350	1,248	11.0	1,108	1,010	10.6
8,000-9,999	1,724	1,743	10.3	1,412	1,346	8.0	1,137	992	3.3
10,000-14,999	1,941	1,855	16.5	1,774	1,519	8.3	1,300	1,153	6.0
15,000 or more	2,209	2,041	10.8	1,588	1,275	3.1	1,400	1,255	1.3
Not ascertained	1,792	1,779	27.4	1,046	1,042	19.4	1,010	1,010	21.7
	Eta ² = .090 Beta ² = .036			Eta ² = .136 Beta ² = .044			Eta ² = .090 Beta ² = .028		
1968 income									
\$1-1,999	\$1,261	\$1,580	3.3	\$811	\$944	23.5	\$728	\$802	26.0
2,000-3,999	1,268	1,476	7.8	1,101	1,150	22.5	917	935	21.9
4,000-5,999	1,503	1,631	12.4	1,143	1,135	12.1	977	949	17.7
6,000-7,999	1,639	1,678	14.3	1,232	1,147	11.4	1,252	1,184	9.7
8,000-9,999	1,786	1,750	14.0	1,668	1,460	9.3	1,146	1,026	4.2
10,000-14,999	1,885	1,768	19.2	1,659	1,523	7.6	1,253	1,080	4.2
15,000 or more	2,197	2,007	8.1	1,548	1,429	2.8	1,284	1,103	6.6
Not ascertained	1,885	1,860	21.0	991	1,024	10.7	1,027	1,038	15.7
	Eta ² = .083 Beta ² = .024			Eta ² = .153 Beta ² = .064			Eta ² = .097 Beta ² = .044		
Place of residence									
Urban	\$1,880	\$1,845	66.4	\$1,203	\$1,173	73.0	\$988	\$970	77.5
Rural nonfarm	1,551	1,618	24.1	1,025	1,093	19.4	848	910	19.8
Farm	1,298	1,372	9.5	971	1,084	7.6	773	843	2.7
	Eta ² = .057 Beta ² = .034			Eta ² = .014 Beta ² = .003			Eta ² = .013 Beta ² = .003		
Change in employment status									
Employed in 1968 and 1972	\$1,830	\$1,812	37.6	\$1,339	\$1,199	32.2	\$1,094	\$1,028	29.8
Employed in 1968, not employed in 1972	1,653	1,681	20.5	1,272	1,259	19.4	906	901	15.6
Not employed in 1968 or 1972	1,581	1,706	8.0	989	1,149	16.6	859	969	25.0
Not ascertained	1,746	1,720	33.9	960	1,032	30.8	919	896	29.6
	Eta ² = .009 Beta ² = .004			Eta ² = .058 Beta ² = .014			Eta ² = .029 Beta ² = .011		

¹Represents those reporting food expenditures of \$1-10,000 and income of \$1-30,000

²Adjusted for the effects of the other specified characteristics

were not very responsive to changes in income a 10-percent decrease in income was accompanied, on the average, by only a 2-percent drop in food expenditures

Regression analysis was used to identify the factors most important in explaining the variation in expenditures. Size of household was found to be the most important predictor of both the total level of household food expenditures and the per person level (The latter fact suggests the operation of "economy of scale" as a factor). In addition, evidence was found that residence (urban, rural nonfarm, farm), though not as important a predictor as household size or income, can explain some variation in expenditures. Lower expenditures for food purchases in rural than in urban areas may be largely attributable to the use of homegrown food. A number of socioeconomic variables were tried but not found to be significant after household size and income were taken into account.

The stability of expenditures for food at home was further suggested by the fact that for retirees (those employed in 1968 but not in 1972), 1968 income was possibly a better predictor than was 1972 income, although differences were not significant. For those employed in both years, 1972 income was more important. In addition, changes in expenditures for food at home were not found to be significantly related to changes in income for either the total group or for subgroups composed of those with low, medium, and high incomes.

Income had greater power, however, in explaining variation in total food expenditures (including meals away from home) than expenditures for household food supplies. Data were available for comparisons of total and "at home" expenditures only for couples and nonmarried men and nonmarried women living alone. Food away from home was of greatest importance for the

nonmarried men Change in employment did not prove to be a significant factor in predicting total food expenditures

Technical Note*

RHS Sample

The sampling frame for the Retirement History Study is the same as that used by the Bureau of the Census for its Current Population Survey (CPS) ¹⁶ Sample members were persons living in households that had last participated in the CPS before February 1969 They were men in all marital-status categories and women who, at the time of sample selection, had no husband in the household In any month the CPS panel consists of eight groups of households selected up to 18 months previously The oldest of these rotation groups is dropped and replaced by a new one each month

Nineteen of these discontinued CPS rotation groups were used for the Retirement History Study Information was gathered from sample members and their spouses by Bureau of the Census interviewers, usually in late spring of the survey year In 1969, 11,153 interviews were completed, 10,169 were completed in 1971, and 9,423 in 1973

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¹⁶ For a general description of the CPS, see Bureau of the Census, *The Current Population Survey—Design and Methodology* (Technical Paper No. 40), 1978 See also Marvin M. Thompson and Gary Shapiro, "The Current Population Survey: An Overview," *Annals of Economic and Social Measurement*, April 1973

Multiple Classification Analysis

Multiple classification analysis (MCA), a type of dummy variable multiple regression, shows the category means and the overall ability of each predictor variable to explain variation in the dependent variable both before and after adjusting for the effects of all other predictors It also shows the combined effect of the predictors on the dependent variable The specific MCA statistics presented in this article are described below ¹⁷

Grand mean Mean of the dependent variable for the total group
Standard error Standard deviation of the grand mean

R² (multiple correlation coefficient squared) An estimate of the amount of variation in the dependent variable explained by all predictor variables combined

Sample size The number of cases in the analysis excluding those for which the dependent variable was not ascertained

Unadjusted category mean The mean value of the dependent variable for a particular category

Adjusted category mean The grand mean plus the adjusted coefficient This figure indicates what the mean would have been if the group had been exactly like the total population in its distribution over all the other predictor classifications

Percent of cases The proportion of all cases in the sample that falls in each category of each predictor variable

Eta² An estimate of the overall ability of each predictor variable to explain variation in the dependent variable unadjusted for the effects of the other predictors

Beta² An estimate of the overall ability of each predictor variable to explain variation in the dependent variable adjusted for the effects of the other predictors

¹⁷ For more detail, see Frank M. Andrews et al., *Multiple Classification Analysis: A Report on a Computer Program for Multiple Regression Using Categorical Predictors*, Institute for Social Research, University of Michigan, revised 1973