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**working paper**

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December 1984

PATTERNS OF CONSUMER EXPENDITURE ON  
FRESH FRUITS WITH SPECIFIC  
EMPHASIS ON FRESH PEACHES

by

J. C. O. Nyankori, P. J. Rathwell,  
and C. P. Rosson, III\*

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Working Papers are not subject to internal review within the Department of Agricultural Economics and Rural Sociology, Clemson University.

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Patterns of Consumer Expenditure on Fresh Fruits With Specific  
Emphasis on Fresh Peaches

J.C.O. Nyankori, P.J. Rathwell, and C.P. Rosson, III

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Introduction

The South Carolina Peach Board has recognized the existence of market problems facing the peach industry in general and South Carolina peach growers in particular. In the attempt to attenuate these market forces the South Carolina Peach Board has commissioned an extensive study of the market to generate updated information for strategic production and marketing decisions.

This paper reports the results of part of the study which focused onto the demand side. More specifically, we report on the consumption pattern and the competitive position of fresh peaches to the extent that can be determined from the analysis of household food expenditures. Subsequently, the fresh peach market is characterized on the basis of usage for strategic production, promotional and marketing decisions.

The basic questions to which precise answers are sought are: What are the characteristics of fresh peach consumers? Where are they located? What is their combined expenditures on fresh peaches? What marketing opportunities do these provide South Carolina peach growers?

### Data

The data used for the study are from the Bureau of Labor Statistics 1980 - 1981 Consumer Expenditure Survey. This is the most recent data set of its kinds and contains information gathered from a national probability sample of U. S. households. The survey data contains reliable expenditure information by households on frequently purchased items such as food, beverages, gas, electricity, Gasoline, health and beauty products. In addition the data contain information on the socioeconomic characteristics of the households.

### Total Household Food Expenditure Pattern

The household is our unit of analysis and we assume that each household operates on a food budget which is used to purchase a number of different food items at any given time. Because the food budget is limited, what is spent on one food item cannot be spent on the other food items. For instance, a dollar spent on beef cannot be spent on eggs, or fruits or any other food item.

In a sense, a whole array of food items can be thought of as competing for the food budget. The percentage of the total household food budget spent on the various food items provide a basis for determining the relative competitive positions of a given set of food items.

Table 1 contains a summary of the mean percentage expenditures on selected food items for the U. S. and each of the four regions: Northeast, North Central, South and West.

Table 1 Mean Percentage Shares of Total Household Food Budget for Selected Food Items: U. S., Northeast, North Central, South, West

Food Item	United States	North east	North Central	South	West
	-----%				
Bakery products	8.3	8.7	8.5	7.6	7.6
Beef	13.6	13.2	14.1	13.7	12.6
Cereals	5.2	4.8	4.8	5.3	4.9
Dairy	7.3	7.1	7.4	6.7	7.5
Eggs	3.1	2.9	2.8	3.3	2.9
Fats	4.2	3.8	4.0	4.2	4.9
Fish	6.0	5.9	5.1	5.4	6.0
Fresh fruits	5.8	5.4	5.5	5.6	6.4
Fresh vegetables	5.0	4.9	4.7	5.6	4.9
Milk	8.2	7.3	7.9	7.7	7.6
Other meats	6.4	6.5	6.8	6.0	5.4
Pork	9.5	8.5	11.2	9.4	8.2
Poultry	8.1	7.6	7.6	8.4	7.3
Processed fruits	5.0	4.9	5.0	4.8	5.2
Processed vegetables	3.7	3.5	3.5	4.0	3.9
Soft drinks	10.3	11.7	10.3	10.0	11.7
Sugar	5.8	5.7	5.7	5.3	5.0
The rest	8.7	7.8	9.1	8.8	8.5

Source: 1980 Consumer Expenditure Survey. Bureau of Labor Statistics

The percentage share of the total household food budget varies widely across food items. For U. S. households, eggs receive the lowest percentage (3.1 percent) and beef the highest percentage (13.6 percent) of the total household food budget, on the average. A similar pattern is repeated regionally but with differences in the orderings for the budgets shares of items other than eggs, on the one end and beef on the other.

Fresh peaches fall under the fresh fruits category which, evidently, is allocated a medial share of the household food budget. For U. S. the household food budget share of fresh fruits is 5.8 percent and regionally, the fresh fruits share of the food budget range from 5.4 percent in the Northeast to to 6.4 percent in the West.

The pattern of the food budget shares of fresh fruits has some important implications to fresh peach market potentialities. First of all, it suggests that there are possibilities of increasing the fresh fruits share of the food budget from the medial towards the top range. Such increases are possible through a reallocation of the food budget from other items to fresh fruits and or a reallocation of nonfood budget to fresh fruits which are possible through consumer education, advertising and promotion.

Secondly, the regional variations in the expenditure patterns suggest strategic changes in the distributional activities such that the potentials for additional shipments are explored for those regions in which the fresh fruits share of the food budget is low (relative to other regions or the national average).



## Socioeconomic Characteristics and Fresh Peach Consumption

A number of studies have shown that the socioeconomic characteristics of household are important determinants of household food expenditures. These influence both the types and amount of food items purchased. Apart from income, there is no solid framework for predicting the influence of the other factors (age, education, household size) on food expenditures.

Nevertheless, the knowledge of the relationships between such background characteristics and food expenditures in general and fresh peaches in particular, is basic to formulating production and marketing policies. The subsequent sections presents the results which relate household income, age of head, and household size to fresh fruits expenditures.

### Income and Income Profile

Table 2 shows the mean percentages of the total household budget spent on fresh fruits by income groups and region. For the U. S. the fresh fruits share of the total food budget for households with annual income under \$8,000 is 4.14 percent. Households in the \$20,000 - \$39,999 income group have the highest mean fresh fruits budget share, 5.01 percent.

These, however, vary regionally and it is evident that households in the North Central with annual income under \$20,000 allocate smaller percentages of the total food budget to fresh fruits than their counterparts in all the other regions. Similarly, households in the South with annual income over \$19,999 allocate smaller percentage of the food budget to fresh fruits.

For all income groups with annual income over \$7,999, households in the West allocate higher percentages of the total food budget to fresh fruits than their counterparts in the Northeast, North Central and the South.

Purely on the basis of the fresh fruits budget shares by income groups and by regions, there are fresh peach market potentials among certain income groups in all regions, and all income groups in the South and North Central.

Table 2 Fresh Fruits Budget Share of Total Household Food Budget for the U. S. and Northeast, North Central, South and West

Income Category	United States	North east	North Central	South	West
	-----mean percentage-----				
Under \$8,000	4.14	4.44	3.78	3.99	4.33
\$8,000-\$12,999	4.52	4.20	3.23	3.62	4.79
\$13,000-\$19,999	4.24	3.44	2.97	4.38	4.89
\$20,000-\$39,999	5.01	5.75	4.51	4.19	5.76
Over \$39,999	4.72	4.67	4.74	4.39	5.31

Additional dimension of the fresh fruits expenditure pattern is derived by examining the product usage pattern. For this purpose, consumers are categorized as light users, medium users or heavy users depending on the the percenetage of the total food budget allocated to fresh fruits.

Light users are composed of households whose fresh fruits share of the total food budget is under two percent. Medium users and heavy users are those whose fresh fruits shares of the total food budget are 2-5 percent and over 5 percent, respectively.

Table 3 shows the distributions of U. S. households by income group and usage categories.

For the U. S. households with income under \$8,000, 80.4 percent are light users, 14.7 percent are medium users and 4.9 percent are heavy users. The higher the income bracket, the lower the percentage of the households in the light user category and the higher the percentage medium and heavy users.

The same pattern holds at the regional level. However, the highest percentage of light users tend to be in the South and North Central for all income groups and the highest percentage of heavy users are, similarly, in the West.

Table 3 Fresh Fruits Usage pattern: U. S., Northeast, North Central, South and West

Usage Category	Under \$8,000	\$8,000 to \$12,499	\$12,500 to \$19,999	\$20,000 to \$34,999	Over \$34,999
United States:					
Low	80.4	76.7	72.2	69.9	58.7
Medium	14.7	17.6	20.8	20.6	26.4
Heavy	4.9	5.7	7.0	9.5	14.9
Northeast:					
Low	79.1	71.5	67.2	69.4	57.7
Medium	15.7	19.2	24.3	21.9	23.8
Heavy	5.2	9.4	8.5	8.8	18.5
North Central:					
Low	77.4	81.6	76.3	72.7	59.4
Medium	16.3	15.6	20.2	20.0	27.1
Heavy	6.3	2.7	3.5	7.3	13.5
South:					
Low	80.6	81.3	76.6	72.3	69.5
Medium	12.9	13.0	21.4	21.5	18.0
Heavy	6.5	5.7	2.0	6.2	12.5
West:					
Low	80.5	75.2	65.3	61.5	47.9
Medium	14.7	16.4	19.3	20.8	35.9
Heavy	4.8	8.4	15.4	17.7	16.2

An indication of the absolute size of these market segments are shown in Table 4 where the product usage is described in terms of the number of households by income category and regions.

Table 4 The Size of the Fresh Fruits Market Segments: U. S., Northeast, North Central, South and West.

Market segment	United States	North east	North Central	South	West
Light Users	45,373	10,348	12,684	12,695	9,646
Medium Users	11,358	2,277	3,190	2,695	2,746
Heavy Users	4,660	1,165	1,078	863	1,554
TOTAL	61,391	13,790	16,952	16,253	13,946

There are concentrations of light users in the South and in the North Central. The medium and heavy users are more or less distributed evenly across regions.

The size of the market segments by income groups and regions are shown in Table 5. The table is self explanatory: of all the households in the Northeast with income less than \$8,000, there are 3,767,000 who spend less than two percent of the total food budget on fresh fruits. Similarly, there are 1,440,000 households with income between \$8,000 and \$12,499 and 782,000 with income between \$20,000 and \$29,999, who spend less than two percent of the total food budget on fresh fruits.

Assuming that the market potential is greatest among the light users, the relatively large number of households in the light user category and the less than proportionately low number in the medium and heavy categories suggest, rather clearly, the target household groups for promotional activities.

Table 5 The Size of the Market Segments by Income Group and Region:  
Number of Households

Region	Under \$8,000	\$8,000 to \$12,499	\$12,500 to \$19,999	\$20,000 to \$34,999	Over \$34,999
-----Thousands-----					
Light Users:					
Northeast	3,767	1,440	782	3,983	421
North Central	4,057	1,691	1,219	5,270	447
South	5,872	2,115	1,163	3,109	436
West	3,279	1,492	890	3,451	534
Medium Users:					
Northeast	708	378	273	1,196	168
North Central	860	331	320	1,474	205
South	882	494	326	,907	113
West	640	320	255	1,131	379
Heavy Users:					
Northeast	286	190	96	463	130
North Central	329	58	53	536	101
South	344	88	60	284	87
West	208	162	81	935	168

Assume that the light users and the medium users allocate 1.2 percent and 3.5 percent of the total households food budget on fresh fruits, respectively. A marketing strategy which elevates 10 percent of the light users in each region to the medium user category increases the expenditures on fresh peaches by \$495,960 per year, other things remaining the same.

#### Age and Age Profile

Age specific consumption patterns are attributed to differences in biophysical, life style and life cycle stages. Heads of households belonging to different age categories are characteristically distinguishable by household size and age composition of children which to which are assigned peculiar consumption patterns.

Table 6 shows the age of head profile relative to fresh fruits usage. As shown in the table, the highest percentage of households in each age category are light users and in all regions, the highest percentage of light users occur in the 25-34 age group.

Table 6 Age of Head Profile and Fresh Fruits Consumption Pattern for Households in the Northeast, North Central, South and West

Usage Category	Age categories (years):					
	Under 25	25 to 34	35 to 44	45 to 54	55 to 64	Over 64
Northeast:						
Light Users	9.8	15.6	11.0	10.6	10.1	15.4
Medium Users	0.5	3.2	3.8	3.0	4.0	4.8
Heavy Users	0.1	1.2	1.3	2.1	2.1	1.4
North Central:						
Light Users	12.1	18.2	11.2	10.3	11.0	12.2
Medium Users	0.8	3.1	3.2	3.5	3.7	4.3
Heavy Users	0.2	1.1	1.3	1.5	1.3	1.0
South:						
Light Users	13.0	20.0	9.6	10.6	10.7	13.8
Medium Users	1.1	3.3	3.1	3.2	2.0	4.1
Heavy Users	0.1	0.6	1.2	1.3	1.1	1.2
West:						
Light Users	7.5	20.0	12.3	8.7	9.9	11.0
Medium Users	1.1	4.3	3.9	3.0	3.4	3.8
Heavy Users	0.5	2.2	2.7	2.6	1.8	1.4

Numerically (Table 7), there are estimated 2,939,000 households in the Northeast in the over 64 year category who are light users. This is the largest age group of light users and is followed by the 2,579,000 households in the 25-34 age group. A smaller number of light users are in the under 25 age. This reflects the relative small size of this category of households.

Table 7 Age of Head Profile and Fresh Fruits Consumption Pattern for Households in the Northeast, North Central, South and West:  
The Number of Households

Usage Category	Age Categories (years):					
	Under 25	25 to 34	35 to 44	45 to 54	55 to 64	Over 64
-----1,000-----						
Northeast:						
Light Users	372	2,579	1,707	1,354	1,397	2,939
Medium Users	16	481	539	348	505	833
Heavy Users	4	189	189	254	275	254
North Central:						
Light Users	880	4,056	2,057	1,490	1,710	2,490
Medium Users	58	669	567	491	558	848
Heavy Users	13	235	230	208	195	196
South:						
Light Users	903	4,308	1,697	1,422	1,550	2,816
Medium Users	73	670	515	405	272	787
Heavy Users	6	119	198	163	147	229
West:						
Light Users	395	3,718	1,817	923	1,440	1,355
Medium Users	60	839	604	332	369	521
Heavy Users	28	426	417	289	193	188

Outside the Northeast, the 25-34 age group constitute the single largest number of light users in each of the regions. This is followed by the over 64 age group in North Central and the South but in the West

the next highest light users are in the 35-44 age group.

In all cases, however, less than proportional number of households are in the medium and heavy user categories for all age groups and regions. Clearly the target segments of the household is represented by younger and retired heads of households.

#### Summary

On the basis of consumer expenditure pattern, fresh fruits in general are allocated a medial percentage of total household food budget. To the extent that household food consumption behaviors are influenced the the socioeconomic characteristics of households, the following factors were analyzed with respect to fresh fruit expenditure pattern: household income, household size, age, education and race of head of household.

Of these factors, household income and age of head were found to be the most discriminating. Three categories of consumers: light, medium and heavy users, determined on the basis of the precentage of total household food allocated to fresh fruits were developed.

The largest number of light users are in the South followed closely by North Central. The West has the lowest number of light users. In each region, the lowest number of households are in the heavy user category.

There are concentrations of light users among the low income (under \$8,000) households and those in the \$20,000-\$34,999 income brackets. Numerically, medium and heavy users, by income group and in all regions are much smaller than the light users.

On the basis of age of head of household, the largest number of light users are in the 25-34 age group followed by the over 64 age group. With the exception of the West, the medium users are predomi-



nated by the over 64 but the heavy users are distributed in ways that vary from region to region.

These results provide a basis for identifying, characterizing and segmenting the fresh fruits market for the purposes of advertising and promotional activities.

For promotional objectives, the target consumer spends less than 2 percent of the total household food budget on fresh fruits, is either over 64 years or in the 25-34 age group. These characteristics are evident throughout the U. S. but is highly concentrated in the South.

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