1-1-1973

Fresh apple utilization as related to income

Robert L. Jack

Kathleen Brain

Follow this and additional works at: https://researchrepository.wvu.edu/wv_agricultural_and_forestry_experiment_station_bulletins

Digital Commons Citation

Jack, Robert L. and Brain, Kathleen, "Fresh apple utilization as related to income" (1973). *West Virginia Agricultural and Forestry Experiment Station Bulletins*. 625.
https://researchrepository.wvu.edu/wv_agricultural_and_forestry_experiment_station_bulletins/536

This Bulletin is brought to you for free and open access by the Davis College of Agriculture, Natural Resources And Design at The Research Repository @ WVU. It has been accepted for inclusion in West Virginia Agricultural and Forestry Experiment Station Bulletins by an authorized administrator of The Research Repository @ WVU. For more information, please contact ian.harmon@mail.wvu.edu.

Fresh Apple Utilization Related to Income

625 • September 1973

AG. ENGR. LIBRARY
WEST VIRGINIA UNIVERSITY

Virginia University • Agricultural Experiment Station

Blank Page in Original Bulletin

CONTENTS

Summary	3
Introduction	5
Purpose of This Study	5
Methodology	5
Characteristics of Sample	6
Analysis	7
Purchases	7
Preferences	9
Utilization	13
Conclusions and Implications	16
Tables 1-56.	17
Appendix	75

THE AUTHORS

Robert L. Jack is Agricultural Economist; at the time of this study, Kathleen Brain was a Graduate Research Assistant in Agricultural Economics.

This bulletin is published as a contribution to the Northeast Regional Marketing Research Project (NEM-41). The West Virginia research for this publication was supported by both state and regional research funds.

**West Virginia University
Agricultural Experiment Station
College of Agriculture and Forestry
R. S. Dunbar, Jr., Director
Morgantown**

SUMMARY

A random sample of homemakers in West Virginia was asked a series of questions regarding their attitudes toward uses of fresh apples. Contingency chi-square tests of independence were used to determine whether any of the responses were dependent on income level.

Slightly less than one-third of the sample indicated that their purchases of fresh apples are distributed equally throughout the year. Twenty-five per cent of the respondents were unable to name the variety of apple preferred by the family. The most common package types purchased were clear plastic bags and baskets or boxes. However, plastic bags and loose apples are the most preferred package types for convenience.

Per capita consumption of fresh apples ranged from zero to over 100 pounds. Over half the sample consumed 30 pounds or less per year. The majority of the respondents indicated that their use of fresh apples for desserts, applesauce, preservation, and eating fresh has remained constant over the last 10 years. Of those who decreased their use of fresh apples, the number in the low income category was larger and the number in the high income category was smaller than would be expected by chance. A large per cent of fresh apple purchases were used for eating fresh as opposed to the other uses mentioned above.

Apples and bananas were the most frequently mentioned fruit selections in all situations presented. There was a general tendency for apples to be mentioned proportionately fewer times by low income respondents than high income respondents, while the reverse was true for bananas. In general, a medium, crisp, fine-textured apple was preferred by all income categories. However, an unusually large number of low income respondents reported that they like a soft, mealy apple.

Blank Page in Original Bulletin

Fresh Apple Utilization As Related to Income

ROBERT L. JACK and KATHLEEN BRAIN

Per capita consumption of fresh apples in the United States decreased from 74 pounds in 1912 to 15 pounds in 1969. The average annual rate of decline during this period was over one pound per capita. Although recent data indicate a slower rate of decline in per capita consumption, commercial producers are still concerned about the future of the fresh apple market. As a result of this concern the following questions are being asked:

1. What is responsible for the large decrease in per capita consumption of fresh apples?
2. What can be done to reverse this downward trend in per capita consumption of fresh apples?

Purpose of This Study

Little has been published on the socio-economic characteristics of fresh apple consumers. Most previous studies have lacked the necessary detail to give the industry sufficient guidelines for assessing the causes and developing a program to reverse the downward trend in per capita consumption.

This study was intended, primarily, as an exploratory project which would identify some areas that would be valuable for future research on apple consumption. Secondly, the scope was broadened to obtain enough data so that relationships between socioeconomic variables (income, age, education, place of residency, and family size) and fresh apple utilization could be explored in detail. In this publication only the analysis of relationships between family income and purchase patterns, utilization, and preferences for fresh apples is reported.

Methodology

The 55 counties in West Virginia were divided into three categories on the basis of population density in 1970. "Rural counties" were defined as having 20 or fewer inhabitants per square mile; "urban counties," 100 or more; and "other counties" included those with over 20 but less than 100 inhabitants per square

mile.¹ According to this definition there were 9 rural, 15 urban, and 31 other counties in the State.

To obtain a representative sample, the number of counties surveyed in each category was proportional to the per cent of State population reported in each classification. In 1960, 6.5 per cent of the population of West Virginia was considered rural, 40.5 per cent urban, and 53 per cent rural non-farm.² Accordingly, of the 18 counties randomly selected, three were selected from rural counties, five from urban counties, and 10 from other counties, where the "other" category was to correspond to the rural, non-farm classification.

Four starting points were randomly selected in each of the rural and other counties by using a table of random numbers and a county map. Three interviews with the homemaker were completed at each starting point in rural counties, making a total of 12 interviews from each county. In the other county classification six interviews were completed at each starting point, making the county total 24 interviews. For the urban counties telephone directories for the urban center in each county were used to randomly select three starting points. Twelve homemaker interviews were conducted at each starting point.

The total number of personal interviews with homemakers was 451; 33 in rural counties, 240 in other counties, and 178 in urban counties, which accounted for 7 per cent, 53 per cent, and 40 per cent of the sample, respectively. These interviews were completed during the months of May and June 1972.

Normally a rigorous statistical test is not necessary for identifying relationships that would provide profitable areas for future research. Therefore, the chi-square test for independence was used to identify significant relationships. For the purpose of this study, tabulated chi-square values having a probability of .10 or less were considered to be significant.

CHARACTERISTICS OF SAMPLE

Socioeconomic variables such as age, education, income, occupation, and family size provide a good basis for comparing respondents living in rural, other, and urban areas. Later in this study, income will be used as the independent variable in assessing the utilization of fresh apples in West Virginia.

The age distribution of homemakers who responded in personal interviews was similar for all three places of residence (Table 1). All places of residency had the smallest percentage of the homemakers interviewed less than 25 and the

¹U.S. Dept. of Commerce, Bureau of the Census, *1970 Census of Population: Number of Inhabitants, West Virginia* (Washington: U.S. Government Printing Office, May, 1971), p. 14.

²Leonard M. Sizer, *Population Changes in West Virginia With Emphasis 1940-1960*, Agricultural Experiment Station Bulletin 563 (Morgantown: West Virginia University, May, 1968), p. 29.

largest proportion 55 years of age and over. A smaller percentage of homemakers in the rural and urban areas were in the 34 or less age category than for the total sample. For the 55 and over category, the urban area showed a higher proportion than the total sample. The other area, which includes suburban areas, had the lowest average age. This figure supports the contention that a large proportion of rural and urban population is composed of older people.

Forty-eight per cent of all respondents in the sample reported attendance or graduation from high school as their educational achievement, with very little variation according to place of residence. Only four per cent of the sample had completed some graduate work. The highest proportion completing some graduate work by place of residency was six per cent in urban, three per cent in other and none in rural areas.

More than 65 per cent of the total sample, 78 per cent of rural, 54 per cent of other, and 72 per cent of urban housewives reported annual household incomes of less than \$10,000. When income was over \$15,000 annually, the other category showed 21 per cent, rural 9 per cent and urban 7 per cent. The higher annual income and lower average age for the other category is consistent with what one would expect. However, the high levels of college education in rural and urban areas were unexpected.

ANALYSIS

The appearance of modern transportation, refrigeration, and self-service super markets have been responsible for changes in the market structure of the fresh apple industry. The combined improvement in transportation and refrigeration has influenced competition by increasing the size of the supply area from which high quality fruit can be obtained for a given market. Controlled atmosphere storage has enabled producers to supply a high quality apple over a greater period of the year and higher incomes have made it possible for housewives to buy out-of-season fruit for family consumption. However, increased participation of homemakers in the labor force may be related to the decline in fresh apple consumption and the increased consumption of apples in processed forms.

Purchases

Of the 427 people interviewed who disclosed their income level, 383 had purchased apples for fresh consumption in the last year (Table 2). Fresh consumption was defined as consumption of the apple in its natural state, exclusive of any type of home preparation. A large portion of those who had not purchased apples were in the low income group and very few were in the high income category. Thus, there was some indication that a relationship exists between income level and apples purchased for fresh consumption during the last year. Many of the 44 respondents who had not purchased apples had

consumed apples from their own trees or from other non-monetary cost sources and were able to supply other information concerning utilization and preferences. The top figure in each response category in the table indicates the actual number of homemakers responding, the middle figure indicates the number of expected responses based on the chi-square test, and the bottom figure is the amount of the total chi-square value accounted for by that cell.

When questioned about the season when they purchase the most fresh apples, 129 respondents (31 per cent) in the survey sample said they purchased the same amount each month (Table 3). The fall and winter seasons received 26 and 24 per cent of the total number of responses, respectively. The patterns for each income category were such that the relationship between income and seasonal purchasing habits was not statistically significant.³

Income level apparently does not influence the purchasing habits of those who vary their apple purchases monthly. There was general agreement among respondents that they purchase more apples when the price is lower or when apples are in season (Table 4). Other factors cited frequently for variation in apple purchases were variations in appetite, holidays, and depletion of home-grown apples.

With respect to the color of apples they usually buy, over half the respondents indicated they purchased both yellow and red apples. Thirty-two per cent of the respondents buy red apples exclusively, while 10 per cent buy only yellow apples (Table 5).

Red delicious was the most often mentioned variety for eating fresh for all income categories (Table 6). Other varieties mentioned frequently were yellow delicious, staymen, winesap, and grimes golden, in that order. Twenty-five per cent of the respondents to this question could not name the variety of apple they usually eat. Statistically there was no significant relationship between income and variety selected for eating fresh.

Over half of the respondents purchased their apples for fresh consumption at a supermarket (Table 7). In the high income category the frequency of supermarket purchases was larger than would be expected by chance alone, while fruit farm purchases were disproportionately low. Statistical evidence in this case suggests dependence between income and location of fresh apple purchases.

Fifty-seven per cent of the respondents indicated the apples they buy for fresh consumption were usually in clear plastic bags (Table 8). Twenty-one per cent of the respondents frequently purchased their apples by the basket or box. Loose apples and overwrapped trays, which usually cost more per unit than

³People who did not respond to this question (10) or who purchased larger quantities of apples in the spring (7) were not included in the chi-square test, accounting for the difference in Table 2 and Table 3 totals.

containers holding larger volumes, were mentioned less frequently. No pattern of dependence between income and packaging material was obvious in the responses to this question.

After indicating the type of package usually selected in buying apples, the respondents were asked which type package they preferred for convenience. Clear plastic bags were preferred by over half the sample (Table 9). Loose apples were preferred by more respondents than overwrapped trays or baskets or boxes. This seems to suggest that the price of loose apples, which is generally higher than prepackaged apples, is a deterrent to their selling ability. The test shows that there was no evidence of a dependent relationship between preferred package type and income level.

The most important criteria for choosing packaging were ease in seeing the product and convenience of storage (Table 10). Less frequently mentioned reasons were adequacy of quantity in the package, economy, good keeping quality, and lack of availability of alternative packaging. There was no discernable dependence between income level and reason for preferring a certain package type.

Ninety-one per cent of the respondents indicated that they could usually find fresh apples packaged in the size package preferred (Table 11). Perhaps because of this, few improvements for packaging were suggested (Table 12). No statistical tests were performed on these data due to the nature of frequency distribution.

Apple purchases did not appear to be associated with a particular brand name. Ninety-two per cent of the respondents indicated that they did not look for a specific brand name (Table 13). Four per cent of the respondents gave what they thought was a brand name, but what was actually a variety. The pattern was similar for all three income categories.

Preferences

A series of fresh apple characteristics including firmness, juiciness, sweetness, texture, color, and size, was listed and the respondent was queried as to the characteristics preferred. In general, a medium, crisp, fine-textured apple was preferred by all income categories (Tables 14, 15, 16). However, an unusually large number of low income respondents reported that they liked a soft, mealy apple. These characteristics are generally associated with apples which have received regular as opposed to controlled atmosphere storage over the winter. Since regular storage apples are less costly, they might be more accessible, price-wise, to low income people. More research would be necessary to determine the factors associated with this response.

Out of the 429 homemakers who answered the question concerning juiciness of apple, all except 15 indicated that they preferred a juicy apple as opposed to a dry apple (Table 17). Eleven of those who preferred a dry apple

were in the low income category, while only one was in the high income category. Thus, this is an indication that those who prefer dry apples are more likely to be in low income brackets.

In the random sample taken, the number of people who preferred sweet apples was twice that of those who preferred tart apples (Table 18). Of those who preferred tart apples, the responses from the middle income category were lighter than would be expected by chance, thus contributing approximately half of the total tabulated chi-square value. The probability associated with the frequencies shown in this table is .098. The region of rejection for this survey was set at .10. Therefore, it was concluded that preference for apple sweetness is not independent of income level.

Over half the people interviewed indicated they preferred a bright or deep red apple (Table 19). Next in popularity was an apple having more yellow than red. The proportions in each of the income categories were sufficiently similar that independence could not be rejected.

When the respondents were asked which variety of apple best fit the characteristics they preferred, 150 said it was red delicious (Table 20). Seventy-three respondents could not identify the variety they preferred. Low income respondents had a relatively low response to red delicious and a relatively high response to grimes golden, although, in absolute terms red delicious was listed more frequently than the grimes golden. Of those who could identify the variety they preferred, yellow delicious was the second most popular variety. In the low and high income categories staymen, winesap was equally as popular as the golden delicious, but was not reported to have the same level of popularity in the middle income category. These results indicate that apple variety preference is not dependent on income level.

In a series of questions, respondents were asked which one of seven fresh fruits they would serve for various situations presented. In general, apples were the most frequent choice, leading all other fruits listed in 8 of 11 situations. Contingency chi-square tests were performed to test the null hypothesis of independence between fruit chosen and level of income. In order to get meaningful tabular chi-square values, fruits with very few or no responses were excluded from the test.

Grapefruit was by far the most frequently mentioned fresh fruit which respondents would serve for breakfast for all income categories (Table 21). In the low income group bananas followed grapefruit, and oranges were third in popularity. The second and third choices were reversed in the middle and high income categories, although the difference was not significant at the .10 level.

In general, peaches were the preferred fresh fruit for lunch, followed by apples (Table 22). Of those who preferred apples, the middle income response was rather large, and the high income response was rather small. The cell chi-square values in these categories were relatively large suggesting different

preference patterns in the two income categories. Also of note was the number of low income respondents who indicated they would serve pears for lunch, indicative of stronger preference than would be expected by chance alone.

For the evening meal the most commonly mentioned fruit was peaches, followed by apples and pears (Table 23). This pattern was the same for all three income categories. From this survey there was no indication of a dependent relationship between income and fresh fruit preference for the evening meal.

The preference pattern for an adult sack lunch was apples, bananas, and oranges, in that order (Table 24). Among those who would serve apples, the response from the low income category was less than expected and the high-income response was greater than expected, although the differences were not large enough to suspect a dependent relationship.

Apples and bananas were the favorite choices for a child's sack lunch (Table 25). Of those who indicated apples, the previous pattern of fewer responses than expected in the low income category and more responses than expected in the high income category was again evident. Thirty-nine respondents specified oranges as their choice for a child's sack lunch, making this the third most popular fruit. Twenty-one of these responses were from the low income category, which had a cell chi-square value of 2.42, while eight were from the high income category and contributed 1.37 to the total chi-square value of 11.23. There was some evidence that low income respondents had a stronger preference for peaches than respondents in the other income categories.

Apples and bananas were also the more common responses for the fresh fruit one would serve for a children's party (Table 26). In the low income category apples and bananas were equally popular, while in the other income categories approximately twice as many respondents checked apples rather than bananas. Also of interest was the response to pears. Of the nine respondents who checked this fruit, seven were in the low income group and none were in the high income group.

Apples were also the most frequently checked fruit for a teenager's party (Table 27). Grapes and bananas were the second and third selections, respectively. The patterns by income category appeared to differ. Apples were proportionately less popular in the low income category while oranges, of lesser popularity in all income groups, were checked more frequently by low income respondents than by those of higher incomes.

Income had no apparent effect on the fruit that would be served for an adult party (Table 28). In general the order of preference was apples, peaches, and grapes, although in the high income category grapes were selected more often than peaches and the difference in responses to these two fruits in the low income category was negligible. Although mixed fruit was not included as a possible response to this question, it was written in by 22 respondents including 14 from the high income group. When this response was included in the

contingency chi-square test the results were significant, although it should be pointed out that if mixed fruit had been listed as a possible response on the questionnaire the results would not necessarily have been the same.

Bananas were the most popular fruit in the low income group for a child's snack, while apples were checked more frequently in the other two income categories (Table 29). Only in the high income category was the response to apples disproportionately large, however. Among those who indicated they would serve peaches for a child's snack the number of low income responses was relatively large, while only two respondents in the high income category checked peaches. There was also evidence that the preference for oranges for a child's snack is greater among low income households in West Virginia. Pears were an unpopular response at all income levels.

Apples and bananas were also the more frequently checked fruits for a teenager's snack; although, unlike the previous situation there was no evidence that fruit preferences were related to income level (Table 30). Again pears and grapes were the least popular selections.

In considering the fruit one would serve for an adult's snack, apples again were the most frequently mentioned fruit at all income levels (Table 31). However, this response was recorded fewer times in the low income category and more times in the high income category than would be expected under the conditions of independence. In all income categories bananas ranked second in frequency, although only in the low income category was the response unusually large—over double the frequency in each of the other income categories.

Income level did not appear to influence attitudes concerning the nutritional value of processed apples as opposed to fresh apples (Table 32). Seventy-seven per cent of the homemakers interviewed ranked fresh apples higher than processed apples in this respect. Twenty-one per cent felt there is no difference in nutritional value, and only two per cent thought of processed apples as being more nutritious than fresh apples.

A series of characteristics for apples was listed and the respondents were asked which apple was superior—a fresh red delicious apple produced in West Virginia or Washington. This question proved very difficult to answer. Originally, *the respondents were asked to choose between the two apple-producing regions.* Many people did make a choice, but indicated to the interviewer that it was a guess. In view of this lack of conviction, later respondents were permitted to answer "don't know" if it was apparent that they could not make a clear-cut choice.

There was a strong tendency for the respondents to answer all parts of the question in like fashion, that is, to check the same apple as superior in all characteristics listed. The West Virginia-produced apple was considered superior to the Washington-produced apple by at least 78 per cent of the respondents for each characteristic listed (Tables 33-40). In all cases it appeared that dependence

between income level and source of apple existed. Of those who indicated Washington-produced apples are superior to those produced in West Virginia, about half were in the high income category. This unequal distribution caused the cell chi-square value for high income respondents who preferred Washington-produced apples to be large (about half of the total tabulated chi-square in all but one case).

Eighty-two per cent of the respondents felt that housewives would not pay higher prices for fresh red delicious apples produced in Washington than the same type produced in West Virginia (Table 41). The frequencies in each category were such that dependence between the two sets of classifications did not appear likely.

Utilization

Respondents were asked which fruit they preferred for fresh consumption. In general, bananas were the most frequently selected fruit, followed by apples (Table 42). In the low income category, the response for apples was lower than would be expected by chance. Peaches, third in popularity by low income respondents, received a comparatively high response. Apples and bananas each received 39 responses in the high income category. Oranges, which had a relatively high frequency in the lower income categories, were next in popularity. Peaches had a low response rate in the high income category and thus this cell had a large cell chi-square value. These frequencies indicate that the preference patterns do vary by income category. There was general agreement that brand is not of importance when selecting fruit for the family. Seventy-eight per cent of the survey sample did not buy fruit by brand name (Table 43). Of those who do purchase a specific brand, Chiquita, which sells bananas, was mentioned most frequently. As was noted previously, there was some confusion as to what constitutes a brand name, with many respondents providing a fruit type or variety rather than brand name.

The range of per capita annual fresh apple consumption was from zero to over 100 pounds (Table 44). In each income category over half the population was accounted for in the first three consumption groups (0-30 pounds). There appears to be a dependent relationship between income and fresh apple consumption; however, a more rigorous statistical test would be necessary to determine the nature of the differences.

In a series of questions respondents were asked if their use of fresh apples for various circumstances had varied over the last 10 years. Over half of the respondents indicated their use of fresh apples for pies, cakes, and other cooked desserts has remained constant over this time period, while very few noted an increase in use (Table 45). However, the patterns of the three income categories did not appear to be the same. The frequency of decrease for the low income category was relatively high when compared to the expected value while the

reverse was true for the high income category. This indicates that the rate of decline in use for fresh apples for cooked desserts is more pronounced in low income households.

In regard to use of fresh apples for applesauce or other preparations eaten with the main part of the meal, two-thirds of those interviewed said their use had remained constant over the last 10 years (Table 46). Of those who had decreased their use of fresh apples for this purpose, the proportion in the low income category was unusually high and the responses in the high income category were lighter than would be expected by chance alone. The small value of the critical level for this test indicates a great degree of dependence between income level and rate of fresh apple use in this situation.

In the low and high income categories there appeared to be a dependent relationship between income category and the quantity of apples eaten fresh in the last 10 years (Table 47). In the low income category a substantially larger number than expected noted their use of fresh apples had decreased, while fewer than would be expected (under conditions of independence) indicated a constant quantity was used over the last 10 years. The reverse was true of the high income category. In all income categories more respondents indicated that their fresh apple use had remained constant over the last 10 years, although in the low income category the difference between decreased and constant use of eating apples was negligible.

Most people in this survey indicated that their use of fresh apples for preservation has remained constant over the last 10 years (Table 48). The next popular response was a decrease in preservation, with only 15 of the 422 respondents indicating their use of fresh apples for preservation had increased over the last 10 years. Of those citing a decrease, 65 per cent were in the low income category. As was true for all questions in this series, there appeared to be a dependent relationship between income level and use.

Those respondents who indicated an increase or decrease in any of the uses for fresh apples mentioned were asked which factors contributed to their change in consumption. In general, a decrease in family size was the primary reason for the decrease in the use of fresh apples in the various situations mentioned (Table 49). Health reasons and shortage of time for preparation of fresh apples were less popular reasons given for decreasing consumption of fresh apples. In the low income category 62 of the 79 respondents who indicated a decrease in fresh apple consumption noted a decrease in family size was responsible for this. A decrease in time available for fresh apple preparation was more evident in the middle and high income categories than in the low income category. Of the five people who cited a decrease in general food consumption as responsible for the decrease in fresh apple use, four of them were in the middle income category.

The most frequently mentioned factor contributing to increases in fresh apple use was an increase in family size (Table 50). Health reasons, changes in

tastes and preferences, and increased access to apple trees were of minor importance. The patterns were similar for all income categories.

The respondents were asked to estimate the per cent of their fresh apple purchases which were used in each of four stated categories: cooked desserts, main dish accompaniments, eating fresh, and preservation. The average per cent used for desserts was less than 30 in all income categories (Table 51). The mode, which is the most frequently mentioned response, for all three income categories was 25 per cent; however, the range in the middle income category was considerably less than that of the low and high income groups. As the income level increased, the number of respondents who did not use fresh apples for preparation of desserts decreased.

The average per cent of fresh apple purchases used for applesauce or other preparations eaten with the main part of the meal was close to 30 for all income categories (Table 52). As with the previous use, 25 per cent was the most frequently mentioned portion of fresh apple purchases being used for applesauce or other main dish accompaniments. Roughly the same number of respondents in all income categories used fresh apples for making preparations to be eaten with the main course. Of those who did not use fresh apples for this purpose, the largest number was in the low income group and the smallest number was in the high income category.

It appears that the majority of fresh apples are purchased for eating out of hand. The average per cent in this category was greater than 70 per cent in all three income categories and the mode was 100 per cent in all income categories (Table 53). Only 12 of the 427 respondents did not eat fresh apples.

Eighty-nine per cent of the homemakers interviewed did not preserve fresh apples (Table 54). Of those who did preserve, this accounted for 26.5 per cent or less of their fresh apple purchases, on the average. The ranges for this use of fresh apples were shorter than for the other uses described and the modes were generally lower.

There appeared to be no significant relationship between income and source of apples for apple pie. In all income categories roughly half of the respondents indicated apple pie they serve is usually made at home from fresh apples (Table 55). The second most frequent response was that apple pie is bought from a bakery or grocery store. Only eight per cent of the survey sample indicated apple pie is never served in the household.

The question concerning the type of applesauce usually served was significant at the .10 level (Table 56). Over half of the total chi-square value was contributed by the responses of the low income category. Of those who indicated they earn between \$1,000 and \$4,999 annually, the portion who serve applesauce made at home from fresh apples was greater than would be expected under conditions of independence while those who serve applesauce purchased in canned form was less than would be expected by chance. Nine people out of

the 427 responding to this question indicated they never serve applesauce. Six of those nine were in the low income category.

CONCLUSIONS AND IMPLICATIONS

There is some evidence from this study that apples, which used to be considered a seasonal fruit, are becoming a year-around fruit. Forty-three per cent of the survey sample *either purchased the same amount of apples every month or made variable purchases during the year, independent of seasonal variation.* Increased use of controlled atmosphere storage, which evens out fresh apple supply as well as price fluxuation throughout the year, should accentuate this trend. The year-around availability of fresh apples will bring them into competition with seasonal fruits such as peaches and strawberries with which they have never had to compete. The apple industry may need to be more aggressive in order to maintain its share of the fresh fruit market.

Approximately one-fourth of the homemakers interviewed could not name the apple variety preferred by their household members. Brand preference was virtually nonexistent, with 94 per cent of the homemakers disavowing brand loyalty for apples. Four per cent of the respondents said they did buy a specific brand name, but, when asked to name the brand, they responded with a variety name. Thus it appears that industry education-oriented advertising, *explaining prime uses of the various apple varieties, could be useful in combatting the downward trend in fresh apple consumption.*

Statistical reports indicate that consumers differentiate between Washington apples and those grown elsewhere, allowing Washington apples to command a premium price. This did not appear to be true of West Virginia consumers, who *are generally loyal to their State. The homemakers interviewed overwhelmingly preferred locally-grown red delicious apples to those grown in Washington. They also indicated that they would not pay more for a Washington red delicious apple.*

The per cent of fresh apples purchased for eating out of hand was considerably higher than for other uses such as applesauce, desserts, or preservation. Also, the largest increase in fresh apple consumption during the last 10 years was for eating out of hand—over double the increases reported in the other categories. Promotional campaigns presenting apples as a nutritious, non-messy, fresh fruit would probably be more effective than campaigns dealing with uses of apples which require preparation time.

In this study there was little evidence that income influences purchase patterns, utilization, or preferences of fresh apples. Thus, *fresh apple consumption will likely be unaffected by the continuing rise of disposable income.*

Tables 1-56

Blank Page in Original Bulletin

TABLE 1
Comparison of Socioeconomic Characteristics
by Place of Residency.

Socioeconomic Variable	Place of Residency ^a			Per Cent of Total Sample (N=450)
	Rural (N=33)	Other (N=240)	Urban (N=177)	
<i>Per Cent</i>				
Age of Homemakers:				
Less than 25	3	8	3	5
25-34	9	17	7	13
34-44	18	20	19	20
45-54	33	20	23	22
55 and over	37	35	48	40
Education of Homemaker:				
Grade school (1 - 8 years)	36	41	18	31
High school (9 - 12 years)	46	49	48	48
College	18	7	28	17
Graduate work	0	3	6	4
Annual Household Income:				
\$1,000 - \$4,999	39	22	46	36
\$5,000 - \$9,999	39	32	26	30
\$10,000 - \$14,999	9	18	16	16
\$15,000 - \$24,999	6	15	6	10
\$25,000 and over	3	6	1	3
No income data	3	7	5	5
Size of Household:				
1	6	7	15	10
2	34	29	34	31
3	24	20	19	20
4	15	23	19	21
5	6	10	7	8
6	6	7	4	6
7+	9	5	2	4

Categories may not add to 100 per cent due to rounding.

TABLE 2
Have You Purchased Any Apples for Fresh Consumption
for Your Family During the Last Year?^a

Purchased	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Yes	133.00 ^c	124.00	126.00	383.00
	147.10	119.30	116.60	383.00
	1.35	0.19	0.76	2.29
No	31.00	9.00	4.00	44.00
	16.90	13.70	14.40	44.00
	11.77	1.62	6.59	19.97
TOTALS ^b	164.00	133.00	130.00	427.00
	164.00	133.00	130.00	427.00
	13.12	1.80	7.35	22.27

TOTAL CHI-SQUARE = 22.27 WITH 2 D.F. PROB > CHISQ = 0.0001

^aQuestions asked of the homemaker during the interviewing are used as table headings throughout this study.

^bSummation of row and column cell values may not equal total due to computer rounding.

^cThe top figure in each response category indicates the actual number of homemakers responding, the middle figure indicates the number of expected responses based on statistical tests, and the bottom figure is the amount of the total chi-square value accounted for by that cell. For example, in the cell composed of the \$1,000-4,999 income and the yes categories, 133.00 is the number of actual homemakers in this income group who purchased apples during the last year, 147.10 is the expected number of yes responses based on the chi-square test, and 1.35 is the cell chi-square and indicates the amount of the total chi-square (22.27) accounted for by this cell.

TABLE 3

During the Year Do You Buy the Same Amount of Fresh Apples Each Month or Does the Amount Purchased Vary from One Month To Another?

Month	Household Income			TOTALS
	\$1,000-4,999	\$5,000-9,999	\$10,000 and up	
Same each month	41.00	40.00	48.00	129.00
	48.77	40.59	39.64	129.00
	1.24	0.01	1.76	3.01
December	42.00	27.00	29.00	98.00
January	37.05	30.83	30.12	98.00
February	0.66	0.48	0.04	1.18
June	11.00	5.00	9.00	25.00
July	9.45	7.87	7.68	25.00
August	0.25	1.04	0.23	1.52
September	42.00	37.00	28.00	107.00
October	40.45	33.67	32.88	107.00
November	0.06	0.33	0.73	1.11
No special months, variable	19.00	20.00	12.00	51.00
	19.28	16.05	15.67	51.00
	0.00	0.97	0.86	1.84
TOTALS	155.00	129.00	126.00	410.00
	155.00	129.00	126.00	410.00
	2.22	2.83	3.61	8.66

TOTAL CHI-SQUARE = 8.66 WITH 8 D.F. PROB>CHISQ = 0.37

TABLE 4
Why Do You Purchase More Apples During These Months
Than Other Months?^a

Reason for Purchase Variation	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
No more apples on their trees	14.00	8.00	4.00	26.00
	10.08	8.50	7.41	26.00
	1.52	0.03	1.57	3.12
Less expensive, plentiful, in season	33.00	22.00	30.00	85.00
	32.97	27.80	24.23	85.00
	0.00	1.21	1.37	2.59
Cooking, canning, cider	10.00	6.00	3.00	19.00
	7.37	6.21	5.42	19.00
	0.94	0.01	1.08	2.02
Buy according to appetite	13.00	18.00	14.00	45.00
	17.45	14.72	12.83	45.00
	1.14	0.73	0.11	1.97
Holidays	10.00	9.00	5.00	24.00
	9.31	7.85	6.84	24.00
	0.05	0.17	0.50	0.72
Fresher or taste better	3.00	7.00	5.00	15.00
	5.82	4.91	4.28	15.00
	1.36	0.89	0.12	2.38
TOTALS	83.00	70.00	61.00	214.00
	83.00	70.00	61.00	214.00
	5.01	3.04	4.75	12.80

TOTAL CHI-SQUARE = 12.80 WITH 10 D.F. PROB> CHISQ = 0.23

^aSee Table 3 for months referred to.

TABLE 5

When You Buy Apples for Fresh Consumption Do You Usually Buy Red Apples, Yellow Apples, or Some of Both Colors?

Apple Color	Household Income			TOTALS
	\$1,000-4,999	\$5,000-9,999	\$10,000 and up	
Red	57.00	37.00	39.00	133.00
	50.19	41.88	40.92	133.00
	0.92	0.57	0.09	1.58
Yellow	17.00	10.00	14.00	41.00
	15.47	12.91	12.62	41.00
	0.15	0.66	0.15	0.96
Some of both colors	83.00	84.00	75.00	242.00
	91.33	76.21	74.46	242.00
	0.76	0.80	0.00	1.56
TOTALS	157.00	131.00	128.00	416.00
	157.00	131.00	128.00	416.00
	1.83	2.02	0.25	4.10

TOTAL CHI-SQUARE = 4.10 WITH 4 D.F. PROB>CHISQ = 0.39

TABLE 6
What Variety of Apple Does Your Family Prefer
for Eating Fresh?

Variety	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Don't know —	31.00	32.00	22.00	85.00
No description	31.72	29.24	24.04	85.00
	0.02	0.26	0.17	0.45
Don't know —	2.00	0.00	1.00	3.00
Gave description	1.12	1.03	0.85	3.00
	0.69	1.03	0.03	1.75
Yellow delicious	22.00	20.00	18.00	60.00
	22.39	20.64	16.97	60.00
	0.01	0.02	0.06	0.09
Red delicious	37.00	45.00	33.00	115.00
	42.92	39.56	32.52	115.00
	0.82	0.75	0.01	1.57
Grimes golden	14.00	11.00	10.00	35.00
	13.06	12.04	9.90	35.00
	0.07	0.09	0.00	0.16
Staymen, winesap	22.00	10.00	13.00	45.00
	16.79	15.48	12.73	45.00
	1.61	1.94	0.01	3.56
	128.00	118.00	97.00	343.00
TOTALS	128.00	118.00	97.00	343.00
	3.21	4.09	0.28	7.5

TOTAL CHI-SQUARE = 7.58 WITH 10 D.F. PROB > CHISQ = 0.67

TABLE 7

Where Do You Usually Buy Apples Used for Fresh Consumption?

Location	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Supermarket	67.00	65.00	79.00	211.00
	77.88	66.83	66.30	211.00
	1.52	0.05	2.43	4.00
Produce or fruit market	33.00	21.00	21.00	75.00
	27.68	23.75	23.57	75.00
	1.02	0.32	0.28	1.62
Neighborhood store	25.00	24.00	17.00	66.00
	24.36	20.90	20.74	66.00
	0.02	0.46	0.67	1.15
Fruit farm	23.00	17.00	9.00	49.00
	18.08	15.52	15.40	49.00
	1.34	0.14	2.66	4.13
TOTALS	148.00	127.00	126.00	401.00
	148.00	127.00	126.00	401.00
	3.89	0.97	6.04	10.91

TOTAL CHI-SQUARE = 10.91 WITH 6 D.F. PROB > CHISQ = 0.09

TABLE 8
How Are The Apples You Buy For Fresh Consumption
Usually Packaged?

Package	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
In clear plastic bags	79.00 89.00 1.12	77.00 73.50 0.17	80.00 73.50 0.58	236.00 236.00 1.87
In over-wrapped trays	7.00 9.05 0.46	8.00 7.47 0.04	9.00 7.47 0.31	24.00 24.00 0.81
Displayed and sold as loose apples	31.00 24.89 1.50	18.00 20.55 0.32	17.00 20.55 0.61	66.00 66.00 2.43
Basket or box	38.00 32.06 1.10	25.00 26.47 0.08	22.00 26.47 0.76	85.00 85.00 1.94
	155.00	128.00	128.00	411.00
TOTALS	155.00 4.19	128.00 0.60	128.00 2.26	411.00 7.05

TOTAL CHI-SQUARE = 7.05 WITH 6 D.F. PROB > CHISQ = 0.32

TABLE 9

**Which Type of Package Do You Prefer for The Sake of Convenience
In Buying, Handling, and Storing for Your Family?**

Package Preference	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Clear plastic bags	78.00	70.00	75.00	223.00
	84.12	69.44	69.44	223.00
	0.45	0.00	0.45	0.89
Basket or box	29.00	19.00	13.00	61.00
	23.01	18.99	18.99	61.00
	1.56	0.00	1.89	3.45
Loose, individual	36.00	28.00	27.00	91.00
	34.33	28.34	28.34	91.00
	0.08	0.00	0.06	0.15
Overwrapped tray	6.00	6.00	8.00	20.00
	7.54	6.23	6.23	20.00
	0.32	0.01	0.50	0.83
TOTALS	149.00	123.00	123.00	395.00
	149.00	123.00	123.00	395.00
	2.40	0.02	2.90	5.32

TOTAL CHI-SQUARE = 5.32 WITH 6 D.F. PROB > CHISQ = 0.50

TABLE 10
Why Do You Prefer This Type Package?

Reason	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Can see or	39.00	41.00	51.00	131.00
pick what	46.84	42.26	41.91	131.00
you get	1.31	0.04	1.97	3.32
Keep better	13.00	7.00	8.00	28.00
	10.01	9.03	8.96	28.00
	0.89	0.46	0.10	1.45
Easier to	37.00	38.00	36.00	111.00
handle or	39.69	35.81	35.51	111.00
store	0.18	0.13	0.01	0.32
Economy	17.00	12.00	7.00	36.00
	12.87	11.61	11.52	36.00
	1.32	0.01	1.77	3.11
Only way	8.00	11.00	7.00	26.00
they come	9.30	8.39	8.32	26.00
	0.18	0.81	0.21	1.20
Amount is	19.00	11.00	10.00	40.00
right	14.30	12.90	12.80	40.00
	1.54	0.28	0.61	2.44
TOTALS	133.00	120.00	119.00	372.00
	133.00	120.00	119.00	372.00
	5.43	1.74	4.67	11.84

TOTAL CHI-SQUARE = 11.84 WITH 10 D.F. PROB > CHISQ = 0.30

TABLE 11

Can You Usually Find Apples for Fresh Consumption Packaged
In the Size Package You Prefer for Your Family?

Response	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Preferred package available	145	120	114	379
Packages are too small	4	1	2	7
Packages are too large	5	8	8	21
Other reason	2	2	3	7
TOTALS	156	131	127	414

TABLE 12

**What Suggestions Do You Have for Improving Packaging of Apples
for Fresh Consumption to Aid the Housewife?**

Suggestions	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
No suggestions	140	111	109	360
Make smaller packages	6	5	10	21
Sell apples loose	2	2	2	6
Reference to spoilage due to plastic bags	1	5	1	7
Put brand on package	4	2	1	7
TOTALS	153	125	123	401

TABLE 13

Do You Look for A Specific Brand Name When You Buy Apples
for Fresh Consumption? If Yes, What Brand?

Brand	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
No	151.00	126.00	117.00	394.00
	150.45	123.18	120.36	394.00
	0.00	0.06	0.09	0.16
Yes				
	6.00	5.00	7.00	18.00
	Gave variety			
	6.87	5.63	5.50	18.00
	0.11	0.07	0.41	0.59
	3.00	0.00	4.00	7.00
	Other			
	2.67	2.19	2.14	7.00
TOTALS	0.04	2.19	1.62	3.85
	160.00	131.00	128.00	419.00
	160.00	131.00	128.00	419.00
	0.15	2.32	2.12	4.60

TOTAL CHI-SQUARE = 4.60 WITH 4 D.F. PROB > CHISQ = 0.33

TABLE 14
Which of The Following Characteristics Do You Prefer In
Apples Purchased for Fresh Consumption?

Size	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Small	8.00	2.00	2.00	12.00
	4.59	3.71	3.71	12.00
	2.54	0.78	0.78	4.11
Medium	127.00	110.00	112.00	349.00
	133.47	107.77	107.77	349.00
	0.31	0.05	0.17	0.53
Large	26.00	18.00	16.00	60.00
	22.95	18.53	18.53	60.00
	0.41	0.02	0.34	0.77
TOTALS	161.00	130.00	130.00	421.00
	161.00	130.00	130.00	421.00
	3.26	0.85	1.30	5.40

TOTAL CHI-SQUARE = 5.40 WITH 4 D.F. PROB > CHISQ = 0.25

TABLE 15

Which of The Following Characteristics Do You Prefer in Apples
Purchased for Fresh Consumption?

Firmness	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Soft	44.00	14.00	10.00	68.00
	25.94	21.11	20.95	68.00
	12.57	2.39	5.72	20.68
Crisp	93.00	88.00	93.00	274.00
	104.54	85.06	84.41	274.00
	1.27	0.10	0.87	2.25
Hard	24.00	29.00	27.00	80.00
	30.52	24.83	24.64	80.00
	1.39	0.70	0.23	2.32
TOTALS	161.00	131.00	130.00	422.00
	161.00	131.00	130.00	422.00
	15.23	3.19	6.82	25.25

TOTAL CHI-SQUARE = 25.25 WITH 4 D.F. PROB > CHISQ = 0.0001

TABLE 16

Which of The Following Characteristics Do You Prefer in Apples
Purchased for Fresh Consumption?

Texture	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Mealy	47.00	17.00	15.00	79.00
	29.74	24.82	24.44	79.00
	10.01	2.46	3.65	16.12
Fine textured	110.00	113.00	112.00	335.00
	126.13	105.24	103.63	335.00
	2.06	0.57	0.68	3.31
No preference	0.00	1.00	2.00	3.00
	1.13	0.94	0.93	3.00
	1.13	0.00	1.24	2.37
TOTALS	157.00	131.00	129.00	417.00
	157.00	131.00	129.00	417.00
	13.20	3.04	5.56	21.80

TOTAL CHI-SQUARE = 21.80 WITH 4 D.F. PROB > CHISQ = 0.0003

TABLE 17

Which of The Following Characteristics Do You Prefer in Apples
Purchased for Fresh Consumption?

	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Juiciness				
	11.00	3.00	1.00	15.00
	5.71	4.64	4.64	15.00
Dry	4.89	0.58	2.86	8.33
Juicy	149.00	127.00	129.00	405.00
	154.29	125.36	125.36	405.00
	0.18	0.02	0.11	0.31
TOTALS	160.00	130.00	130.00	420.00
	160.00	130.00	130.00	420.00
	5.07	0.60	2.96	8.64

TOTAL CHI-SQUARE = 8.64 WITH 2 D.F. PROB > CHISQ = 0.01

TABLE 18

Which of The Following Characteristics Do You Prefer in Apples
Purchased for Fresh Consumption?

	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Taste				
	98.00	97.00	83.00	278.00
	104.76	87.65	85.59	278.00
Sweet	0.44	1.00	0.08	1.51
Tart	55.00	31.00	42.00	128.00
	48.24	40.35	39.41	128.00
	0.95	2.17	0.17	3.29
TOTALS	153.00	128.00	125.00	406.00
	153.00	128.00	125.00	406.00
	1.39	3.17	0.25	4.80

TOTAL CHI-SQUARE = 4.80 WITH 2 D.F. PROB > CHISQ = 0.09

TABLE 19

Which Of The Following Characteristics Do You Prefer In Apples
Purchased for Fresh Consumption?

Color	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Bright or deep red	72.00	74.00	65.00	211.00
	80.82	66.17	64.01	211.00
	0.96	0.93	0.02	1.90
More red than yellow	25.00	18.00	25.00	68.00
	26.05	21.33	20.63	68.00
	0.04	0.52	0.93	1.49
More yellow than red	52.00	30.00	28.00	110.00
	42.13	34.50	33.37	110.00
	2.31	0.59	0.86	3.76
TOTALS	149.00	122.00	118.00	389.00
	149.00	122.00	118.00	389.00
	3.31	2.03	1.81	7.15

TOTAL CHI-SQUARE = 7.15 WITH 4 D.F. PROB > CHISQ = 0.13

TABLE 20

In Your Opinion Which Variety of Apple Fits This Description Best?

Variety	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Yellow delicious	25.00	18.00	19.00	62.00
	23.09	19.93	18.98	62.00
	0.16	0.19	0.00	0.34
Red delicious	42.00	59.00	49.00	150.00
	55.87	48.21	45.92	150.00
	3.44	2.41	0.21	6.06
Grimes golden	14.00	4.00	5.00	23.00
	8.57	7.39	7.04	23.00
	3.45	1.56	0.59	5.60
Staymen, winesap	25.00	10.00	17.00	52.00
	19.37	16.71	15.92	52.00
	1.64	2.70	0.07	4.41
Other	16.00	6.00	10.00	32.00
	11.92	10.29	9.80	32.00
	1.40	1.79	0.00	3.19
Don't know	24.00	29.00	20.00	73.00
	27.19	23.46	22.35	73.00
	0.37	1.31	0.25	1.93
TOTALS	146.00	126.00	120.00	392.00
	146.00	126.00	120.00	392.00
	10.46	9.95	1.12	21.52

TOTAL CHI-SQUARE = 21.52 WITH 10 D.F. PROB > CHISQ = 0.02

TABLE 21

Which of The Following Fresh Fruit Would You Serve for Breakfast?

Fruit ^a	Household Income			TOTAL\$
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Bananas	30.00	24.00	24.00	78.00
	27.86	24.97	25.17	78.00
	0.16	0.04	0.05	0.26
Oranges	20.00	26.00	25.00	71.00
	25.36	22.73	22.92	71.00
	1.13	0.47	0.19	1.79
Grapefruits	85.00	71.00	73.00	229.00
	81.79	73.30	73.91	229.00
	0.13	0.07	0.01	0.21
TOTALS	135.00	121.00	122.00	378.00
	135.00	121.00	122.00	378.00
	1.42	0.58	0.26	2.26

TOTAL CHI-SQUARE=2.26 WITH 4 D.F. PROB>CHISQ = 0.69

^aApples and three other fruits were eliminated from this test due to very low response.

TABLE 22

Which Of The Following Fresh Fruit Would You Serve for Lunch?

Fruit	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Pears	24.00	10.00	13.00	47.00
	17.90	14.37	14.73	47.00
	2.08	1.33	0.20	3.61
Bananas	28.00	22.00	28.00	78.00
	29.70	23.84	24.45	78.00
	0.10	0.14	0.52	0.76
Peaches	50.00	42.00	54.00	146.00
	55.60	44.63	45.77	146.00
	0.56	0.16	1.48	2.20
Apples	45.00	44.00	26.00	115.00
	43.80	35.16	36.05	115.00
	0.03	2.23	2.80	5.06
TOTALS	147.00	118.00	121.00	386.00
	147.00	118.00	121.00	386.00
	2.77	3.85	5.00	11.63

TOTAL CHI-SQUARE = 11.63 WITH 6 D.F. PROB >CHISQ = 0.07

TABLE 23

Which Of The Following Fresh Fruit Would You Serve for The Evening Meal?

Fruit	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Pears	32.00	31.00	29.00	92.00
	34.70	29.68	27.62	92.00
	0.21	0.06	0.07	0.34
Bananas	24.00	19.00	14.00	57.00
	21.50	18.39	17.11	57.00
	0.29	0.02	0.57	0.88
Peaches	48.00	45.00	44.00	137.00
	51.67	44.19	41.13	137.00
	0.26	0.01	0.20	0.48
Apples	41.00	34.00	31.00	106.00
	39.98	34.19	31.83	106.00
	0.03	0.00	0.02	0.05
Oranges	7.00	1.00	3.00	11.00
	4.15	3.55	3.30	11.00
	1.96	1.83	0.03	3.82
TOTALS	152.00	130.00	121.00	403.00
	152.00	130.00	121.00	403.00
	2.75	1.93	0.88	5.56

TOTAL CHI-SQUARE = 5.56 WITH 8 D.F. PROB > CHISQ = 0.70

TABLE 24

**Which Of The Following Fresh Fruit Would You Serve
for An Adult's Sack Lunch?**

Fruit	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Bananas	39.00	29.00	25.00	93.00
	35.57	28.60	28.83	93.00
	0.33	0.01	0.51	0.84
Peaches	7.00	5.00	4.00	16.00
	6.12	4.92	4.96	16.00
	0.13	0.00	0.19	0.31
Apples	91.00	79.00	91.00	261.00
	99.83	80.26	80.91	261.00
	0.78	0.02	1.26	2.06
Oranges	16.00	10.00	4.00	30.00
	11.48	9.23	9.30	30.00
	1.78	0.07	3.02	4.87
TOTALS	153.00	123.00	124.00	400.00
	153.00	123.00	124.00	400.00
	3.02	0.09	4.97	8.09

TOTAL CHI-SQUARE = 8.09 WITH 6 D.F. PROB > CHISQ = 0.23

TABLE 25
Which Of The Following Fresh Fruit Would You Serve
for A Child's Sack Lunch?

Fruit	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Bananas	53.00	38.00	33.00	124.00
	47.62	38.03	38.34	124.00
	0.61	0.00	0.74	1.35
Peaches	6.00	2.00	2.00	10.00
	3.84	3.07	3.09	10.00
	1.21	0.37	0.39	1.97
Apples	74.00	73.00	81.00	228.00
	87.56	69.94	70.50	228.00
	2.10	0.13	1.56	3.80
Oranges	21.00	10.00	8.00	39.00
	14.98	11.96	12.06	39.00
	2.42	0.32	1.37	4.11
TOTALS	154.00	123.00	124.00	401.00
	154.00	123.00	124.00	401.00
	6.34	0.83	4.06	11.23

TOTAL CHI-SQUARE = 11.23 WITH 6 D.F. PROB > CHISQ = 0.08

TABLE 26
Which Of The Following Fresh Fruit Would You Serve for A
Children's Party?

Fruit	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Pears	7.00	2.00	0.00	9.00
	3.46	2.79	2.75	9.00
	3.62	0.22	2.75	6.59
Bananas	52.00	33.00	34.00	119.00
	45.77	36.90	36.33	119.00
	0.85	0.41	0.15	1.41
Peaches	10.00	6.00	5.00	21.00
	8.08	6.51	6.41	21.00
	0.46	0.04	0.31	0.81
Apples	55.00	63.00	69.00	187.00
	71.92	57.99	57.09	187.00
	3.98	0.43	2.49	6.90
Oranges	12.00	12.00	4.00	28.00
	10.77	8.68	8.55	28.00
	0.14	1.27	2.42	3.83
Grapes	24.00	13.00	15.00	52.00
	20.00	16.13	15.88	52.00
	0.80	0.61	0.05	1.45
TOTALS	160.00	129.00	127.00	416.00
	160.00	129.00	127.00	416.00
	9.85	2.98	8.16	20.99

TOTAL CHI-SQUARE = 20.99 WITH 10 D.F. PROB > CHISQ = 0.02

TABLE 27
Which Of The Following Fresh Fruit Would You Serve for A
Teenager's Party?

Fruit	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Bananas	24.00	18.00	20.00	62.00
	23.89	18.90	19.21	62.00
	0.00	0.04	0.03	0.08
Peaches	20.00	12.00	7.00	39.00
	15.03	11.89	12.08	39.00
	1.64	0.00	2.14	3.78
Apples	56.00	63.00	65.00	184.00
	70.91	56.08	57.01	184.00
	3.14	0.85	1.12	5.11
Oranges	20.00	10.00	7.00	37.00
	14.26	11.28	11.46	37.00
	2.31	0.14	1.74	4.19
Grapes	33.00	18.00	24.00	75.00
	28.90	22.86	23.24	75.00
	0.58	1.03	0.03	1.64
TOTALS	153.00	121.00	123.00	397.00
	153.00	121.00	123.00	397.00
	7.67	2.07	5.05	14.80

TOTAL CHI-SQUARE = 14.80 WITH 8 D.F. PROB > CHISQ = 0.06

TABLE 28
**Which Of The Following Fresh Fruit Would You Serve
for An Adult’s Party?**

Fruit	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Pears	17.00	9.00	14.00	40.00
	16.22	12.35	11.43	40.00
	0.04	0.91	0.58	1.52
Bananas	19.00	17.00	8.00	44.00
	17.85	13.58	12.57	44.00
	0.07	0.86	1.66	2.60
Peaches	33.00	25.00	17.00	75.00
	30.42	23.15	21.43	75.00
	0.22	0.15	0.92	1.28
Apples	43.00	47.00	40.00	130.00
	52.73	40.13	37.14	130.00
	1.80	1.18	0.22	3.19
Oranges	10.00	7.00	8.00	25.00
	10.14	7.72	7.14	25.00
	0.00	0.07	0.10	0.17
Grapefruit	6.00	1.00	4.00	11.00
	4.46	3.40	3.14	11.00
	0.53	1.69	0.23	2.45
Grapes	31.00	15.00	21.00	67.00
	27.18	20.68	19.14	67.00
	0.54	1.56	0.18	2.28
TOTALS	159.00	121.00	112.00	392.00
	159.00	121.00	112.00	392.00
	3.20	6.41	3.89	13.50

TOTAL CHI-SQUARE = 13.50 WITH 12 D.F. PROB > CHISQ = 0.33

TABLE 29
Which Of The Following Fresh Fruit Would You Serve
for A Child's Snack?

Fruit	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Pears	6.00	6.00	2.00	14.00
	5.39	4.35	4.25	14.00
	0.07	0.62	1.19	1.88
Bananas	58.00	42.00	39.00	139.00
	53.54	43.23	42.23	139.00
	0.37	0.03	0.25	0.65
Peaches	16.00	10.00	2.00	28.00
	10.78	8.71	8.51	28.00
	2.52	0.19	4.98	7.69
Apples	51.00	55.00	67.00	173.00
	66.63	53.80	52.56	173.00
	3.67	0.03	3.97	7.66
Oranges	21.00	8.00	11.00	40.00
	15.41	12.44	12.15	40.00
	2.03	1.58	0.11	3.72
Grapes	9.00	9.00	6.00	24.00
	9.24	7.46	7.29	24.00
	0.01	0.32	0.23	0.55
TOTALS	161.00	130.00	127.00	418.00
	161.00	130.00	127.00	418.00
	8.67	2.78	10.72	22.17

TOTAL CHI-SQUARE = 22.17 WITH 10 D.F. PROB > CHISQ = 0.01

TABLE 30
Which Of The Following Fresh Fruit Would You Serve
for A Teenager's Snack?

Fruit	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Pears	9.00	3.00	3.00	15.00
	5.72	4.66	4.62	15.00
	1.89	0.59	0.57	3.05
Bananas	36.00	25.00	23.00	84.00
	32.01	26.10	25.89	84.00
	0.50	0.05	0.32	0.87
Peaches	16.00	14.00	8.00	38.00
	14.48	11.81	11.71	38.00
	0.16	0.41	1.18	1.74
Apples	70.00	65.00	72.00	207.00
	78.88	64.31	63.81	207.00
	1.00	0.01	1.05	2.06
Oranges	15.00	14.00	13.00	42.00
	16.00	13.05	12.95	42.00
	0.06	0.07	0.00	0.13
Grapes	11.00	7.00	8.00	26.00
	9.91	8.08	8.01	26.00
	0.12	0.14	0.00	0.26
TOTALS	157.00	128.00	127.00	412.00
	157.00	128.00	127.00	412.00
	3.73	1.27	3.12	8.12

TOTAL CHI-SQUARE = 8.12 WITH 10 D.F. PROB> CHISQ = 0.62

TABLE 31
Which Of The Following Fresh Fruit Would You Serve
for An Adult's Snack?

Fruit	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Pears	8.00	13.00	7.00	28.00
	10.73	8.50	8.77	28.00
	0.69	2.38	0.36	3.43
Bananas	49.00	21.00	21.00	91.00
	34.87	27.63	28.51	91.00
	5.73	1.59	1.98	9.30
Peaches	22.00	19.00	14.00	55.00
	21.07	16.70	17.23	55.00
	0.04	0.32	0.61	0.96
Apples	56.00	56.00	67.00	179.00
	68.58	54.35	56.07	179.00
	2.31	0.05	2.13	4.49
Oranges	13.00	8.00	13.00	34.00
	13.03	10.32	10.65	34.00
	0.00	0.52	0.52	1.04
Grapes	11.00	9.00	8.00	28.00
	10.73	8.50	8.77	28.00
	0.01	0.03	0.07	0.10
TOTALS	159.00	126.00	130.00	415.00
	159.00	126.00	130.00	415.00
	8.78	4.89	5.65	19.33

TOTAL CHI-SQUARE = 19.33 WITH 10 D.F. PROB > CHISQ = 0.04

TABLE 32
How Do You Rate The Nutritional Value Of Processed Apples
As Opposed To Fresh Apples?

Nutritional Value	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Processed apples have more nutritional value	2.00	4.00	0.00	6.00
	2.32	1.88	1.80	6.00
	0.04	2.38	1.80	4.22
Fresh apples have more nutritional value	124.00	101.00	103.00	328.00
	126.87	102.89	98.25	328.00
	0.06	0.03	0.23	0.33
They are equally nutritious	38.00	28.00	24.00	90.00
	34.81	28.23	26.96	90.00
	0.29	0.00	0.32	0.62
TOTALS	164.00	133.00	127.00	424.00
	164.00	133.00	127.00	424.00
	0.40	2.42	2.35	5.17

TOTAL CHI-SQUARE = 5.17 WITH 4 D.F. PROB > CHISQ = 0.27

TABLE 33
In Your Opinion Which Of The Following Apples
Has The Best Flavor?

Preferred Apple	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Fresh red delicious produced in West Virginia	125.00 123.05 0.03	100.00 101.89 0.04	94.00 94.05 0.00	319.00 319.00 0.07
Fresh red delicious produced in Washington	7.00 10.80 1.34	6.00 8.94 0.97	15.00 8.26 5.51	28.00 28.00 7.82
Don't know	25.00 23.14 0.15	24.00 19.16 1.22	11.00 17.69 2.53	60.00 60.00 3.90
TOTALS	157.00 157.00 1.52	130.00 130.00 2.22	120.00 120.00 8.04	407.00 407.00 11.78

TOTAL CHI-SQUARE = 11.78 WITH 4 D.F. PROB > CHISQ = 0.02

TABLE 34

In Your Opinion Which Of The Following Apples Has The Best Texture?

Preferred Apple	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Fresh red delicious produced in West Virginia	125.00 122.96 0.03	100.00 102.46 0.06	95.00 94.58 0.00	320.00 320.00 0.10
Fresh red delicious produced in Washington	5.00 9.61 2.21	6.00 8.00 0.50	14.00 7.39 5.91	25.00 25.00 8.63
Don't know	26.00 23.44 0.28	24.00 19.53 1.02	11.00 18.03 2.74	61.00 61.00 4.04
TOTALS	156.00 156.00 2.52	130.00 130.00 1.58	120.00 120.00 8.66	406.00 406.00 12.76

TOTAL CHI-SQUARE = 12.76 WITH 4 D.F. PROB > CHISQ = 0.01

TABLE 35

In Your Opinion Which Of The Following Apples Has The Best
Tenderness Of Skin?

Preferred Apple	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Fresh red delicious produced in West Virginia	125.00 123.36 0.02	100.00 102.14 0.04	94.00 93.50 0.00	319.00 319.00 0.07
Fresh red delicious produced in Washington	6.00 10.05 1.63	6.00 8.33 0.65	14.00 7.62 5.34	26.00 26.00 7.62
Don't know	26.00 23.59 0.25	24.00 19.53 1.02	11.00 17.88 2.65	61.00 61.00 3.92
	157.00	130.00	119.00	406.00
TOTALS	157.00 1.90	130.00 1.72	119.00 7.99	406.00 11.61

TOTAL CHI-SQUARE = 11.61 WITH 4 D.F. PROB > CHISQ = 0.02

TABLE 36

**In Your Opinion Which Of The Following Apples
Has The Best Sweetness?**

Preferred Apple	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Fresh red delicious produced in West Virginia	124.00 122.57 0.02	100.00 102.14 0.04	95.00 94.29 0.01	319.00 319.00 0.07
Fresh red delicious produced in Washington	6.00 9.99 1.59	6.00 8.33 0.65	14.00 7.68 5.19	26.00 26.00 7.43
Don't know	26.00 23.44 0.28	24.00 19.53 1.02	11.00 18.03 2.74	61.00 61.00 4.04
TOTALS	156.00 156.00 1.89	130.00 130.00 1.72	120.00 120.00 7.94	406.00 406.00 11.54

TOTAL CHI-SQUARE = 11.54 WITH 4 D.F. PROB > CHISQ = 0.02

TABLE 37
In Your Opinion Which Of The Following Apples
Has The Best Color?

Preferred Apple	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Fresh red delicious produced in West Virginia	125.00 123.05 0.03	100.00 101.89 0.04	94.00 94.05 0.00	319.00 319.00 0.07
Fresh red delicious produced in Washington	6.00 10.42 1.87	6.00 8.62 0.80	15.00 7.96 6.22	27.00 27.00 8.89
Don't know	26.00 23.53 0.26	24.00 19.48 1.05	11.00 17.99 2.71	61.00 61.00 4.02
TOTALS	157.00 157.00 2.16	130.00 130.00 1.88	120.00 120.00 8.94	407.00 407.00 12.98

TOTAL CHI-SQUARE = 12.98 WITH 4 D.F. PROB >CHISQ = 0.01

TABLE 38

In Your Opinion Which Of The Following Apples Has The Best Size?

Preferred Apple	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Fresh red delicious produced in West Virginia	123.00 118.17 0.20	100.00 95.41 0.22	93.00 102.42 0.87	316.00 316.00 1.28
Fresh red delicious produced in Washington	9.00 10.84 0.31	6.00 8.76 0.87	14.00 9.40 2.25	29.00 29.00 3.43
Don't know	3.00 5.98 1.49	3.00 4.83 0.69	10.00 5.19 4.47	16.00 16.00 6.65
TOTALS	135.00 135.00 2.00	109.00 109.00 1.78	117.00 117.00 7.59	361.00 361.00 11.37

TOTAL CHI-SQUARE = 11.37 WITH 4 D.F. PROB > CHISQ = 0.02

TABLE 39
In Your Opinion Which Of The Following Apples
Has The Best Juiciness?

Preferred Apple	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Fresh red delicious produced in West Virginia	125.00	100.00	94.00	319.00
	123.05	101.89	94.05	319.00
	0.03	0.04	0.00	0.07
Fresh red delicious produced in Washington	6.00	6.00	15.00	27.00
	10.42	8.62	7.96	27.00
	1.87	0.80	6.22	8.89
Don't know	26.00	24.00	11.00	61.00
	23.53	19.48	17.99	61.00
	0.26	1.05	2.71	4.02
TOTALS	157.00	130.00	120.00	407.00
	157.00	130.00	120.00	407.00
	2.16	1.88	8.94	12.98

TOTAL CHI-SQUARE = 12.98 WITH 4 D.F. PROB > CHISQ = 0.01

TABLE 40

In Your Opinion Which Of The Following Apples
Has The Best Nutritional Value?

Preferred Apple	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Fresh red delicious produced in West Virginia	124.00 118.13 0.29	98.00 94.50 0.13	93.00 102.38 0.86	315.00 315.00 1.28
Fresh red delicious produced in Washington	4.00 8.63 2.48	5.00 6.90 0.52	14.00 7.48 5.70	23.00 23.00 8.70
Don't know	7.00 8.25 0.19	5.00 6.60 0.39	10.00 7.15 1.14	22.00 22.00 1.71
	135.00	108.00	117.00	360.00
TOTALS	135.00 2.96	108.00 1.04	117.00 7.69	360.00 11.69

TOTAL CHI-SQUARE = 11.69 WITH 4 D.F. PROB > CHISQ = 0.02

TABLE 41

Do You Think Housewives Are Willing To Pay Higher Prices
for Red Delicious Apples Produced In West Virginia?

Decision	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Yes	18.00	20.00	16.00	54.00
	20.72	16.71	16.58	54.00
	0.36	0.65	0.02	1.03
No	129.00	105.00	109.00	343.00
	131.61	106.11	105.29	343.00
	0.05	0.01	0.13	0.19
Don't know	13.00	4.00	3.00	20.00
	7.67	6.19	6.14	20.00
	3.70	0.77	1.61	6.07
TOTALS	160.00	129.00	128.00	417.00
	160.00	129.00	128.00	417.00
	4.11	1.43	1.76	7.30

TOTAL CHI-SQUARE = 7.30 WITH 4 D.F. PROB>CHISQ = 0.12

TABLE 42

Which Fruit Does Your Family Like Best for Fresh Consumption?

Fruit	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Grapefruit	8.00	7.00	9.00	24.00
	9.16	7.59	7.25	24.00
	0.15	0.05	0.42	0.62
Apples	35.00	44.00	39.00	118.00
	45.03	37.34	35.63	118.00
	2.24	1.19	0.32	3.74
Bananas	62.00	51.00	39.00	152.00
	58.01	48.10	45.89	152.00
	0.27	0.18	1.04	1.49
Oranges	19.00	9.00	20.00	48.00
	18.32	15.19	14.49	48.00
	0.03	2.52	2.09	4.64
Peaches	20.00	11.00	6.00	37.00
	14.12	11.71	11.17	37.00
	2.45	0.04	2.39	4.88
Grapes	3.00	1.00	5.00	9.00
	3.43	2.85	2.72	9.00
	0.06	1.20	1.92	3.17
Pears	8.00	7.00	3.00	18.00
	6.87	5.70	5.43	18.00
	0.19	0.30	1.09	1.58
Strawberries	3.00	1.00	4.00	8.00
	3.05	2.53	2.42	8.00
	0.00	0.93	1.04	1.97
TOTALS	158.00	131.00	125.00	414.00
	158.00	131.00	125.00	414.00
	5.37	6.40	10.31	22.08

TOTAL CHI-SQUARE = 22.08 WITH 14 D.F. PROB > CHISQ = 0.08

TABLE 43

When Buying This Fruit Do You Look for A Specific Brand Name?
If Yes, What Brand? ^a

Brand	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
No	118.00	100.00	100.00	318.00
	121.77	99.28	96.95	318.00
	0.12	0.01	0.10	0.22
Chiquita	21.00	21.00	13.00	55.00
	21.06	17.17	16.77	55.00
	0.00	0.85	0.85	1.70
Something other than brand	8.00	6.00	6.00	20.00
	7.66	6.24	6.10	20.00
	0.02	0.01	0.00	0.03
Other	10.00	1.00	6.00	17.00
	6.51	5.31	5.18	17.00
	1.87	3.50	0.13	5.50
TOTALS	157.00	128.00	125.00	410.00
	157.00	128.00	125.00	410.00
	2.00	4.36	1.07	7.44

TOTAL CHI-SQUARE = 7.44 WITH 6 D.F. PROB > CHISQ = 0.28

^aSee Table 42 for fruits referred to.

TABLE 44

Annual Per Capita Fresh Apple Consumption By Income Level. ^a

Per Capita Consumption (lbs)	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
0 - 9	35.00	33.00	31.00	99.00
	38.02	30.84	30.14	99.00
	0.24	0.15	0.02	0.42
10 - 19	24.00	37.00	31.00	92.00
	35.33	28.66	28.01	92.00
	3.64	2.43	0.32	6.39

	28.00	13.00	23.00	64.00
20 - 29	34.58	19.93	19.48	64.00
	0.48	2.41	0.63	3.52
	15.00	11.00	17.00	43.00
30 - 39	16.52	13.39	13.09	43.00
	0.14	0.43	1.17	1.73
	17.00	10.00	11.00	38.00
40 - 49	14.59	11.84	11.57	38.00
	0.40	0.28	0.03	0.71
	6.00	6.00	4.00	16.00
50 - 59	6.15	4.98	4.87	16.00
	0.00	0.21	0.16	0.37
	9.00	9.00	1.00	19.00
60 - 69	7.30	5.92	5.78	19.00
	0.40	1.61	3.96	5.96
	2.00	1.00	3.00	6.00
70 - 79	2.30	1.87	1.83	6.00
	0.04	0.40	0.75	1.20
	3.00	1.00	0.00	4.00
80 - 89	1.54	1.25	1.22	4.00
	1.39	0.05	1.22	2.66
	6.00	2.00	2.00	10.00
90 - 99	3.84	3.11	3.04	10.00
	1.21	0.40	0.36	1.97
	19.00	10.00	7.00	36.00
100 or greater	13.83	11.21	10.96	36.00
	1.94	0.13	1.43	3.50
	164.00	133.00	130.00	427.00
TOTALS	164.00	133.00	130.00	427.00
	9.87	8.50	10.05	28.42

TOTAL CHI-SQUARE = 28.42 WITH 20 D.F. PROB> CHISQ = 0.0995

^aPer capita figures in this table were calculated from annual family consumption data and family size reported by homemakers.

TABLE 45

Has Your Use of Fresh Apples for Dessert Increased, Decreased,
Or Remained Constant Over The Last Ten Years?

Level of Dessert Preparation	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Increased	10.00	7.00	11.00	28.00
	10.75	8.69	8.56	28.00
	0.05	0.33	0.70	1.08
Decreased	64.00	37.00	29.00	130.00
	49.91	40.36	39.74	130.00
	3.98	0.28	2.90	7.16
Remained constant	88.00	87.00	89.00	264.00
	101.35	81.95	80.70	264.00
	1.76	0.31	0.85	2.92
TOTALS	162.00	131.00	129.00	422.00
	162.00	131.00	129.00	422.00
	5.79	0.92	4.45	11.16

TOTAL CHI-SQUARE = 11.16 WITH 4 D.F. PROB > CHISQ = 0.02

TABLE 46

Has Your Use Of Fresh Apples For Applesauce Or Other Preparations
Eaten With The Main Part Of The Meal Increased, Decreased,
Or Remained Constant Over The Last Ten Years?

Level of Sauce Preparation	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
increased	9.00	7.00	9.00	25.00
	9.60	7.76	7.64	25.00
	0.04	0.07	0.24	0.35
Decreased	60.00	30.00	23.00	113.00
	43.38	35.08	34.54	113.00
	6.37	0.74	3.86	10.96
Remained constant	93.00	94.00	97.00	284.00
	109.02	88.16	86.82	284.00
	2.36	0.39	1.19	3.94
TOTALS	162.00	131.00	129.00	422.00
	162.00	131.00	129.00	422.00
	8.76	1.20	5.29	15.25

TOTAL CHI-SQUARE = 15.25 WITH 4 D.F. PROB > CHISQ = 0.004

TABLE 47
Has Your Eating Of Fresh Apples Increased, Decreased,
Or Remained Constant Over The Last Ten Years?

Level of Fresh Apple Consumption	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Increased	28.00	28.00	21.00	77.00
	29.56	23.90	23.54	77.00
	0.08	0.70	0.27	1.06
Decreased	66.00	30.00	20.00	116.00
	44.53	36.01	35.46	116.00
	10.35	1.00	6.74	18.09
Remained constant	68.00	73.00	88.00	229.00
	87.91	71.09	70.00	229.00
	4.51	0.05	4.63	9.19
TOTALS	162.00	131.00	129.00	422.00
	162.00	131.00	129.00	422.00
	14.94	1.76	11.64	28.34

TOTAL CHI-SQUARE = 28.34 WITH 4 D.F. PROB > CHISQ = 0.0001

TABLE 48

Has Your Use Of Fresh Apples for Preservation Increased, Decreased,
Or Remained Constant Over The Last Ten Years?

Level of Preservation	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Increased	7.00	6.00	2.00	15.00
	5.76	4.66	4.59	15.00
	0.27	0.39	1.46	2.11
Decreased	46.00	16.00	9.00	71.00
	27.26	22.04	21.70	71.00
	12.89	1.66	7.44	21.98
Remained constant	109.00	109.00	118.00	336.00
	128.99	104.30	102.71	336.00
	3.10	0.21	2.28	5.58
TOTALS	162.00	131.00	129.00	422.00
	162.00	131.00	129.00	422.00
	16.25	2.25	11.17	29.68

TOTAL CHI-SQUARE = 29.68 WITH 4 D.F. PROB > CHISQ = 0.0001

TABLE 49

What Factors Were Responsible for The Decreases Reported Above?^a

Decrease Factors	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Family decreased	62.00	21.00	19.00	102.00
	47.96	27.32	26.71	102.00
	4.11	1.46	2.23	7.80
Health	11.00	7.00	11.00	29.00
	13.64	7.77	7.60	29.00
	0.51	0.08	1.53	2.11
Reference to time factor	5.00	13.00	14.00	32.00
	15.05	8.57	8.38	32.00
	6.71	2.29	3.77	12.76
Decrease in general food consumption	1.00	4.00	0.00	5.00
	2.35	1.34	1.31	5.00
	0.78	5.29	1.31	7.37
TOTALS	79.00	45.00	44.00	168.00
	79.00	45.00	44.00	168.00
	12.10	9.11	8.83	30.05

TOTAL CHI-SQUARE = 30.05 WITH 6 D.F. PROB > CHISQ = 0.0001

^aSee Tables 45-48 for decreases referred to.

TABLE 50

What Factors Were Responsible For The Increases Reported Above?^a

Increase Factors	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Increase in	20.00	18.00	14.00	52.00
family size	19.42	18.17	14.41	52.00
	0.02	0.00	0.01	0.03
Health	3.00	4.00	4.00	11.00
	4.11	3.84	3.05	11.00
	0.30	0.01	0.30	0.60
Access to	4.00	2.00	1.00	7.00
apple trees	2.61	2.45	1.94	7.00
	0.73	0.08	0.46	1.27
Change in tastes	4.00	5.00	4.00	13.00
and preferences	4.86	4.54	3.60	13.00
	0.15	0.05	0.04	0.24
	31.00	29.00	23.00	83.00
TOTALS	31.00	29.00	23.00	83.00
	1.20	0.14	0.81	2.14

TOTAL CHI-SQUARE = 2.14 WITH 6 D.F. PROB >CHISQ = 0.90

^aSee tables 45-48 for increases referred to.

TABLE 51

Per Cent Of Apples Purchased Fresh Used for Pies, Cakes,
Or Other Cooked Desserts.

Per Cent of Apple Used for Apple Desserts and Totals	Household Income		
	\$1,000- 4,999 (N=164)	\$5,000- 9,999 (N=133)	\$10,000 and over (N=130)
Average	27.07	22.41	24.15
Range	5-99	5-50	5-90
Mode	25	25	25
Subtotal	58	51	65
No apple used	106	82	65
Grand total	164	133	130

TABLE 52

Per Cent Of Apples Purchased Fresh Used for Applesauce Or Other
Preparations Eaten With The Main Part Of The Meal.

Per Cent of Apple Used for Applesauce and Totals	Household Income		
	\$1,000- 4,999 (N=164)	\$5,000- 9,999 (N=133)	\$10,000 and over (N=130)
Average	32.40	29.80	30.05
Range	5-80	2-99	5-75
Mode	25	25	25
Subtotal	63	56	63
No apple used	101	77	67
Grand total	164	133	130

TABLE 53
Per Cent Of Apples Purchased Fresh Used for Eating Fresh.

Per Cent of Apple Used for Apple For Eating Fresh and Totals	Household Income		
	\$1,000- 4,999 (N=164)	\$5,000- 9,999 (N=133)	\$10,000 and over (N=130)
Average	74.81	77.66	70.85
Range	1-100	10-100	5-100
Mode	100	100	100
Subtotal	157	128	130
No apple used	7	5	0
Grand total	164	133	130

TABLE 54
Per Cent Of Apples Purchased Fresh Used for Preservation.

Per Cent of Apple Used for Preservation and Totals	Household Income		
	\$1,000- 4,999 (N=164)	\$5,000- 9,999 (N=133)	\$10,000 and over (N=130)
Average	22.79	26.50	19.12
Range	10-45	10-50	10-50
Mode	25	10	10
Subtotal	19	10	17
No apple used	145	123	113
Grand total	164	133	130

TABLE 55
When You Serve Apple Pie, It Is Usually — — —.

Pie Source	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Made at home	82.00	69.00	63.00	214.00
from fresh	82.19	66.66	65.15	214.00
apples	0.00	0.08	0.07	0.15
Made at home	28.00	13.00	16.00	57.00
from processed	21.89	17.75	17.35	57.00
apples	1.70	1.27	0.11	3.08
Bought from	39.00	41.00	42.00	122.00
bakery or	46.86	38.00	37.14	122.00
grocery store	1.32	0.24	0.64	2.19
Never serve	15.00	10.00	9.00	34.00
apple pie	13.06	10.59	10.35	34.00
	0.29	0.03	0.18	0.50
	164.00	133.00	130.00	427.00
TOTALS	164.00	133.00	130.00	427.00
	3.31	1.63	0.99	5.92

TOTAL CHI-SQUARE = 5.92 WITH 6 D.F. PROB > CHISQ = 0.43

TABLE 56

When You Serve Applesauce, It Is Usually — — — —.

Source	Household Income			TOTALS
	\$1,000- 4,999	\$5,000- 9,999	\$10,000 and up	
Made at home	86.00	58.00	55.00	199.00
from fresh	76.43	61.98	60.59	199.00
apples	1.20	0.26	0.51	1.97
Purchased in	72.00	73.00	74.00	219.00
canned form	84.11	68.21	66.67	219.00
	1.74	0.34	0.80	2.88
Never serve	6.00	2.00	1.00	9.00
applesauce	3.46	2.80	2.74	9.00
	1.87	0.23	1.11	3.21
	164.00	133.00	130.00	427.00
TOTALS	164.00	133.00	130.00	427.00
	4.81	0.82	2.42	8.06

TOTAL CHI-SQUARE = 8.06 WITH 4 D.F. PROB > CHISQ = 0.09

Blank Page in Original Bulletin

APPENDIX

Survey Form

1. Have you purchased any apples for fresh consumption for your family during the past year?

Yes _____

No _____

Don't Know _____

2. When you buy apples for fresh consumption do you usually buy red apples, yellow apples, or some of both colors?

Red _____

Yellow _____

Some of both colors _____

3. During the year do you buy about the same amount of fresh apples each month or does the amount purchased vary from one month to another?

Same each month _____

Varies from month to month _____

If the amount varies from month to month, which months do you purchase the most? _____

Why do you purchase more during these months than other months?

4. What variety of apple does your family prefer for eating fresh?

Variety _____

Don't Know _____

5. How many apples would you estimate that your family consumes each year for eating as fresh apples (do not include fresh apples not eaten from hand). Record answer in pounds. _____

6. Which fruit does your family like best for fresh consumption?

Grapefruit _____

Peaches _____

Apples _____

Grapes _____

Bananas _____

Pears _____

Oranges _____

Other _____

7. When buying this fruit do you look for a specific brand name?

Yes _____ No _____ If yes, what brand _____ Why? _____

8. In a years time would you estimate that your family consumes more apples or more of the above fruit for fresh consumption?

More apples _____

More of No. 6 _____

9. Where do you usually buy apples used for fresh consumption?

Supermarket _____

Produce or fruit market _____

Neighborhood store _____

Fruit farm _____

Trucker _____

Other _____

10. How are the apples you buy for fresh consumption usually packaged?

Packaged in clear plastic bags _____

Packaged in over-wrapped trays _____

Displayed and sold as loose individual apples _____

Other _____ How? _____

11. Which type of package do you prefer for the sake of convenience in buying, handling and storage for your family?

Why do you prefer this type of package? _____

12. Can you usually find apples for fresh consumption packaged in the size package you prefer for your family?

Yes _____

No _____

If answer is No, please explain. _____

13. What suggestions do you have for improving packaging of apples for fresh consumption to aid the housewife?

No suggestions _____

Suggestions _____

14. Do you look for a specific brand name when you buy apples for fresh consumption?

Yes _____

No _____

If yes, what brand? _____

15. Which of the following characteristics do you prefer in apples purchased for fresh consumption?

☐ soft

☐ crisp

☐ hard

☐ bright or deep red

☐ more red than yellow

☐ more yellow than red

☐ dry

☐ juicy

☐ small

☐ medium

☐ large

☐ sweet

☐ tart

☐ Other characteristics:

Describe: _____

☐ mealy

☐ fine textured

16. In your opinion which variety of apple fits this description best?

17. What per cent of the apples you purchase fresh are used for:

_____ pies, cakes, or other cooked desserts.

_____ applesauce or other preparations eaten with the main part of the meal.

_____ eating fresh.

_____ preservation.

100 = Total

18. Has your use of fresh apples for _____ increased, decreased, remained about constant over the last 10 years?

_____ pies, cakes, or other cooked desserts.

_____ applesauce or other preparations eaten with the main part of the meal.

_____ eating fresh.
 _____ preservation.

19. What factors were responsible for the increase reported in 18 above?

What factors were responsible for the decrease reported in 18 above?

20. In your opinion which of the following apples has the best

	A Fancy Red Delicious Produced in West Vir- ginia	A Fancy Red Delicious Produced in the State of Washington
Flavor	_____	_____
Color	_____	_____
Size	_____	_____
Nutritional Value	_____	_____
Texture	_____	_____
Sweetness	_____	_____
Tenderness of Skin	_____	_____
Juiciness	_____	_____

21. Do you think housewives are willing to pay a higher price for Fancy Red Delicious apples produced in the state of Washington than for Fancy Red Delicious apples produced in West Virginia? _____

22. Which of the following fresh fruit would you serve for _____

	Pears	Bananas	Peaches	Apples	Oranges	Grapefruit	Grapes
Breakfast							
Lunch							
The Evening Meal							
A Sack Lunch (adult)							
A Sack Lunch (child)							

	Pears	Bananas	Peaches	Apples	Oranges	Grapefruit	Grapes
A Children's Party							
A Teenager's Party							
An Adult Party							
Child's Snack							
Teenager's Snack							
Adult's Snack							

23. How would you rate the nutritional value of processed as opposed to fresh apples?

_____ processed apples have more nutritional value than fresh apples.
 _____ fresh apples have more nutritional value than processed apples.
 _____ they are equally nutritious.

24. When you serve apple pie it is usually

_____ made at home from fresh apples.
 _____ made at home from processed apples.
 _____ bought from bakery or grocery store.
 _____ never serve (apple pie).

25. When you serve applesauce it is usually

_____ made at home from fresh apples.
 _____ purchased in canned form.
 _____ never serve applesauce.

26. In order to make studies of this type useful, we group families by size, age, education, and other categories.

How many people live in the household? (List Below) _____

No.	Relation	Age
1		
2		
3		
4		

5		
6		
7		
8		
9		
10		

27. In which of the following age groups are you? (read)

Under 25	
25 - 34	
35 - 44	
45 - 54	
55 + Over	

28. In which of the following educational groups are you?

Grades	Some Work	Graduated
Grade School 1 - 8		
High School 9 - 12		
College		
Graduate Work		

29. Into which of the following income groups would your household fall?

- a. \$1,000 to \$4,999
- b. \$5,000 to \$9,999
- c. \$10,000 to \$14,999
- d. \$15,000 to \$24,999
- e. \$25,000 and over

30. What is your husband's occupation? _____

Blank Page in Original Bulletin