

VEGETABLE PURCHASE AND USAGE PATTERNS OF THE  
RESIDENTS OF TULSA COUNTY, OKLAHOMA

By

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## CHAPTER I

### INTRODUCTION

All but a small percentage of the United States' population has ceased to be directly involved in farming. As society experiences this increasing divergence, the vast majority of the nation's consumers have become less aware of the factors of production of modern agriculture and its economic impact. Cochrane (1965) stated:

He [the city man] has the political power and the budget incentive to resolve the farm problem in some way, but he typically doesn't know modern agriculture, doesn't understand the basic problems of modern farming and cannot understand why farmers need special consideration or help from the government (p. vii).

Of course, the blame for this lack of consumer knowledge cannot be completely averted from the farming community. As Higbee (1963) stated:

In nearly every debate on farm policy which is conducted among farmers there is a blissful inclination to overlook the fact that some very interested bystanders would also like to be heard--the urban taxpayers who are obligated for the bill and who are compelled by the Internal Revenue Service to come up with the cash (p. 126).

There is a peril in this issue that may not be readily apparent to the casual observer:

. . . Congressman Roosevelt was among the first lawmakers to recognize that as farmers become fewer in number, but more substantial and better organized, the present era of uncontrolled production of cheap food may give way to one in which highly capitalized agriculturalists ration production privileges among themselves and set prices at whatever levels the traffic will bear (Higbee, 1963, p. 73).

If what Congressman Roosevelt said is true, how should consumers respond not only in the present but in the future as well? Do consumers fully realize the various alternative markets available to them as retail purchasers of agricultural products? As inflation erodes the consumer's budget in all areas are they, the consumers, informed of the options available for food purchase and the dollar's purchasing power associated with each option?

In Oklahoma, Nelson (1982) found that income generated directly or indirectly by agriculture made up 20% of the state's income. Clearly, it is a vital industry to the state. There are many enterprises involved in making up the agricultural industry in Oklahoma. Since Oklahoma is dependent on agriculture for its growth and economic well being, a valid question to ask deals with the awareness of Oklahoma consumers concerning the agricultural products grown and marketed in the state.

Due to the prohibitive nature of a comprehensive study of all facets of the agricultural industry in Oklahoma, a small segment of the industry was selected for investigation. The segment selected, that of vegetable production, was chosen because of the estimated profit potential associated with commercial vegetable production and the relative obscurity of the enterprise. For these reasons, the question of consumer purchasing and vegetable usage patterns of vegetable production in Oklahoma was considered worthy of study.

There is no intention to infer that the horticultural industry and, specifically, commercial vegetable production, is representative of the agricultural industry as a whole. It is, however, a segment of that industry for which consumer purchasing and vegetable usage

patterns can begin to be determined and baseline data for the agricultural industry can begin to be garnered.

#### Statement of the Problem

As inflation continues to drive up farmers' production costs and the consumers' food costs, a creative alternative to current food marketing methods is worth consideration. Determination of the vegetable purchasing and usage patterns of Tulsa County consumers of existing direct markets and the extent to which these markets are presently utilized by Tulsa County consumers required measurement and evaluation.

#### Purpose of the Study

The purpose of this study was to discover the vegetable purchasing and usage patterns of the household food purchaser from the various marketing channels available for the purchase of fresh vegetables and the relationship of these purchasing and usage patterns to such variables as age, gender, income level, household size, and employment status.

#### Objectives of the Study

1. To determine the vegetable purchasing and usage patterns of the household food purchaser in Tulsa County concerning the markets available for the purchase of fresh vegetables.
2. To determine the relation of age, gender, income level, household size, and employment status to the consumers' purchasing

patterns, knowledge of alternate purchasing sources, and use of vegetables.

3. To identify the nature and/or characteristics of vegetables that influence their purchase by Tulsa County residents.

#### Rationale of the Study

"Intelligent decision-making by farmers and by city men about farm problems requires that they understand consumers' behavior" (Cochrane, 1965, p. 87). This decision-making cannot be effective unless it is based on factual information about consumers. As Frederick (1929, p. 89) so concisely stated the issue: "The manufacturers and distributors who are closest to the consumer, and who research consumers most frequently are the most successful." With business and industry making such extensive use of consumer research techniques and to such advantage, the time has come to apply these techniques to agriculture.

There have been numerous studies conducted on consumer reaction to direct marketing methods for fresh produce. These studies have been conducted by the Cooperative Extension Services of such states as Louisiana, New Jersey, New York, and Ohio to mention a few.

With the recent energy crisis and inflationary trends which have boosted the cost of land, equipment, and transportation, the current method for production and distribution of foodstuffs, and fresh produce in particular, will most likely require review, revision, and restructuring. Maxon and Baquet (1981) pointed out:

The potential for profitable production and marketing of horticultural food crops in Oklahoma has never been greater. Although Oklahoma is not known as a large

producer of horticultural food crops, changes in energy and economic resources during the past decade now present an opportunity to change the situation (p. 1).

Most of the commercial production of horticultural food crops has become concentrated in areas that are distant from some of the most populated regions of the country (Maxon and Baquet, 1981). As the economic factors affecting this issue change, the more feasible will be the local production of vegetables for producers and consumers alike.

Economic considerations are of vital importance to any business but they must be coupled with "savvy" about the purchasing patterns, wants, needs, and the acceptance by the consuming public. The basic question is: What are the purchasing and vegetable usage patterns of Tulsa County residents?

#### Assumptions and Limitations of the Study

##### Assumptions

For the purpose of this study, the following assumptions were made:

1. All respondents answered the questions in an honest manner to the best of their ability.
2. The survey instrument elicited responses which rendered appropriate data to measure consumer purchasing patterns and vegetable usage.
3. Every person in Tulsa County had equal access to a telephone or telephone service.

4. Individuals represented in various classifications were representative of others in that same classification.

### Limitations

The following limitations of this study were recognized:

1. The population of this study was restricted to the county of Tulsa in the state of Oklahoma.

2. To be included in the sample, an individual was required to have access to a telephone, be listed in a telephone directory in their community, and not have had their telephone service interrupted in their area for an extended period of time.

3. Individuals with new listings (listed since publication of the most recent telephone directory) and unlisted numbers were automatically excluded from the sample.

### Definition of Terms

The following definitions were included to avoid confusion, aid in interpretation, and enhance the continuity of the study:

Pick-Your-Own (PYO): Pick-your-own or PYO or U-Pick was used to designate a system of marketing characterized by on-the-farm retailing of products that are picked by customers themselves.

Patterns: Those current stated habits or practices that are evident, measurable, and distinct. For this study, patterns will be applied to the vegetable purchasing and use by Tulsa County residents.

## CHAPTER II

### REVIEW OF LITERATURE

This chapter was compiled to give the reader an overview of the existing literature related to the topic of this study. The areas in the review included a brief look at consumers and their food, directly related literature, and indirectly related literature.

#### A Brief Look at Consumers and Their Food

In 1929, Frederick observed that the people of the United States were rapidly taking on a sedentary, predominantly indoor way of life and as a result were likely to be unconsciously adjusting their diets to the drastic drop in the food intake requirements of the less active worker. This hypothesis continues to apply as people become more and more health and fitness conscious. Some other major factors responsible for consumer change cited by Frederick (1929, p. 29) were increased income and a more thorough diffusion of that income, as well as the "increased alertness, sophistication, and power of American women." This would have had a great impact on all areas of purchase, including the grocery store. In Frederick's day, 81 percent of the purchases made in the grocery store were made by women. More recently, the National Study of Supermarket Shoppers which was conducted during 1979 and 1980 indicated that 82.4 percent of the



primary household food shoppers were female (Census Profile, 1979-1980).

Troelstrup (1970) indicated that:

The right quality and quantity of food for the family depend mainly on the buying practices of the homemaker, on her information and skill in choice making, on her willingness to shop at the stores where the best food buys are available, and her actual selection of the food (p. 214).

If the previous statement was true, some of the information provided by the National Study of Supermarket Shoppers concerning the status and characteristics of U.S. supermarket shoppers warranted mention. Among other things, the study by the Census Profile (1979-1980) found that:

- Among the total sample, the number of shopping trips per week is approximately 1.4 (p. iv).
- Only 26.7 percent of the respondents shop more than once a week in the supermarket (p. iv).
- The average weekly expenditure in the supermarket (in 1979-80) was \$48.82 (p. iv).
- 68.8 percent of the respondents read food store advertisements in newspapers with 54.1 percent of these respondents influenced by those ads (p. v).
- 47.6 percent of the respondents saw television advertisements for food stores but only 18.3 percent of those who saw food advertisements on television were influenced by those ads as to where they shopped (p. v).
- 74.4 percent of the respondents compared prices between supermarkets (p. vi).

Another study by the Newspaper Advertising Bureau (1979, p. iii) observed that: "In 1971, nonworking women were a little more likely to spend more for groceries, but by 1979, working women tended to spend more."

In the area of price, Frederick (1929) declared not only that "Mrs. Consumer" had some very definite ideas about acceptable price levels on purchases, but also that higher prices did not necessarily inhibit sales but may stimulate sales as much as lower prices.

With respect to proportion of the food dollar to be allocated for fruits and vegetables, Frederick (1929) quoted a 15 percent figure, while Troelstrup (1970) quoted 21 percent of the family food costs should be adequate for sound nutrition. The Household Food Consumption Survey showed that in 1955, 19.8 cents of every food dollar was actually spent on vegetables and fruits, and in 1965, the figure was 19.6 cents of every food dollar (USDA, 1965). When comparing the expense of certain prepared items such as frozen corn on the cob, stuffed baked potatoes, cheese in a spray can, and frozen dinners to fresh, the prepared items cost more, but such items as frozen or canned orange juice, canned fruit cocktail, and frozen green peas are frequently less costly than fresh (Troelstrup, 1970).

Interestingly, Troelstrup (1970, p. 191) related cost and nutritional value using the following example: "One of the most widely used convenience foods--dehydrated mashed potatoes--costs about twice as much per serving and has only approximately 50 percent as much vitamin C as fresh mashed potatoes." Clearly, one cannot make similar judgments about all prepared vegetable items in relation to fresh, but Troelstrup also stated:

Generally, the most food value in relation to the cost is found in fresh fruits and vegetables in season and properly cared for; then, in the following order: dried and dehydrated foods, canned foods, and frozen foods (p. 248).

Another interesting characteristic of "Mrs. Consumer" that may or may not be beneficial is her obsession with color and eye appeal in foods (Frederick, 1929). "It [eye appeal] had made her an addict to white bread, white rice and other less desirable forms, solely bought on a basis of eye appeal" (Frederick, 1929, p. 50).

When one looks back over the past century, there have been some changes in food consumption and preparation patterns. As Frederick (1929) stated:

When women stayed home, their services free to their families, cookery was purposely and preferably complicated and the menus elaborate. . . . But with daughters away at school or entering business early, with hired servants scarce and astoundingly higher priced than in the days of \$20 a month cooks, food preparation just naturally becomes simple if not 'sketchy' or 'delicatessen' in type (p. 120).

Along with the ever increasing simplicity of the meals, there has also been a shift in food buying techniques:

This lavish 'old time' quantity buying was necessary when storage space was generous, telephone ordering and rapid delivery systems unknown, roads bad and retailers few and far between (Frederick, 1929, p. 240).

Some of the factors Frederick felt accounted for the shift to a "hand-to-mouth" form of buying included:

1. decrease in family size
2. restricted space and decreased storage facilities due to city and apartment dwelling
3. the entrance of eleven million women into the job market
4. decrease in individual food consumption
5. increased diversification of the diet
6. development of new cooking fuels and more compact cooking appliances

7. instigation of package and canned food industry
8. increased number and wider distribution of food retailers and improved telephone and delivery services
9. increased emphasis on nutrition education
10. changed attitudes of women regarding their leisure time, the status of cooking and the lack of servant help (p. 241).

The increased emphasis on, interest in, and dissemination of nutritional information came about during World War I (Frederick, 1929). Other marked changes in our diet came about through the efforts of cooperative marketing associations who provided tremendous impetus to fruits, vegetables, etc. (Frederick, 1929).

Frederick (1929, p. 116) predicted a "marked strong increase in the consumption of fresh and green vegetables and fruits and their canned or packed equivalents." Some 40 years later, Troelstrup (1970, p. 190) generalized that: "Consumers have increased their consumption of relatively higher-priced foods, such as meat and commercially processed foods as opposed to fresh or relatively unprocessed foods." At the same time, Troelstrup (p. 210) indicated that: "Eating habits of Americans have improved somewhat in terms of consumption of fruits vegetables, and dairy products, but unfortunately the eating of grain products and potatoes has decreased."

In a 1965 survey by the U.S. Department of Agriculture on household food consumption, the quality of diet in the United States was studied. In this survey, diets were classified as "good," "fair," or "poor." These ratings were determined from the Recommended Dietary Allowances for seven nutrients, including protein, calcium, iron, vitamin A, riboflavin, and ascorbic acid, which were established by

the National Research Council's Food and Nutrition Board. Those diets rated "good" met the requirements for all seven nutrients, while those rated "poor" provided less than two-thirds of the allowance for one or more of these nutrients. Overall, the quality of diets declined from 1955 to 1965, with the 1955 figures showing 60 percent with good diets, 25 percent with fair, and 15 percent with poor diets as compared to the 1965 figures of 50 percent with good diets, 29 percent with fair diets, and 21 percent with poor diets. With respect to vegetables and fruits specifically, the study stated:

Both urban and rural households used less vegetables and fruit per person in 1965 than in 1955. In each survey, urban households used more vegetables and fruit than their farm counterparts, but the gap was smaller in 1965. . . . Another important change was the smaller amount of dark green and deep yellow vegetables used in 1965 than in 1955, particularly by urban households. The reduction in amount used by farm households was almost entirely accounted for by smaller amounts of home-produced items used (USDA, 1965, p. 10).

#### Directly Related Literature

In the National Study of Supermarket Shoppers, a breakdown of the places respondents purchased most of their fresh produce was given by total sample and also by census region (Census Profile, 1979-1980). In the West South Central region, which included Oklahoma, 91.1 percent of the respondents purchased their fresh produce from supermarkets. This was the highest percentage of the nine regions, with the Middle Atlantic registering the lowest at 73 percent. In the total sample, 83.7 percent of those responding purchased fresh produce from supermarkets. Under the heading of produce purchased directly from the farm or from a roadside stand, the West

South Central region registered 4.4 percent, the New England region 15.2 percent, and the total sample 8.7 percent.

As indicated earlier, women did the bulk of the grocery shopping. This trend appeared to hold true for customers of direct marketing outlets for fresh produce. In the study of customers of Louisiana farmers' markets, Roy (1977, p. 9) indicated that: "Almost 90 percent of customers surveyed were the principal grocery shoppers, indicating decision makers in grocery and produce buying." Roy also stated that 18 percent of the customers at Louisiana farmers' markets were male. Eiler (1973, p. 30) studied roadside markets in New York and indicated that 60 percent of the customers were female and that: "The data suggested that the more urban the location the higher the proportion of female customers." Rossi (1980), however, found gender to be independent of whether respondents picked at PYO farms in 1979, during the previous four years, or not during the previous four years. Approximately 80 percent of the customers at Louisiana farmers' markets were married, about 10 percent were single, and about 8 percent were divorced or widowed (Roy, 1977).

When looking at the data from three methods of direct marketing of fresh produce: roadside markets, PYO, and farmers' markets, the age of the customers appeared to be an important factor. In a study by Watkins (1977) of roadside markets in Ohio, the largest group of customers were those in the 45-64 year range (43.4 percent) and in a study by Roy (1977) of farmers' markets in Louisiana, those from 31-60 years of age made up 54.4 percent of the total sample, while those under 30 comprised 11.4 percent of Watkins' sample and 17.5 percent of Roy's sample. In a study by Hungate (1979, p. 7) on PYO customers,

it was stated: "Older customers are bigger spenders for PYO produce than are younger ones." Eiler (1973) studied roadside markets in New York and showed that more than half the customers lived in households with the head of household being between 25 and 44 years of age. Rossi (1980), in a study of PYO farms in New Jersey, found that age was independent of whether or not respondents had picked in 1979 or during the previous four years.

With regard to the occupation of customers, Roy (1977) found that of the customers in Louisiana farmers' markets, almost 40 percent were housewives with no outside employment, 11.8 percent were retired persons, 7.7 percent were teachers, 6.1 percent were in nursing or medical services, 4.2 percent were company executives or managerial personnel, with numerous other occupations comprising the remainder. Stuhlmler (1976, p. 25) found that patrons of PYO operations were from households where the female head was employed on a part-time basis, whereas the data for roadside markets in the same study indicated that there was "essentially no difference by female employment outside of the home." Eiler (1973) studied roadside markets and found the most predominant occupation group included professional, managerial, and technical. In another PYO study, this one by Rossi (1980), it was found that occupation was independent of whether or not respondents had picked at PYO farms during 1979, during the previous four years, or not during the previous four years.

When income was considered, Roy (1977) found that 27 percent of the customers of farmers' markets in Louisiana had annual family incomes of less than \$10,000, 41.7 percent had incomes between

\$10,000 and \$19,999, and 22 percent had incomes of \$20,000 or greater. In the study by Hungate (1979) of Ohio customers and PYO farms, it was reported that the average household income for PYO customers was \$19,461, which was more than the average for Ohio families. The survey showed that a large percentage of low income households, less than \$5,000 income, spent in excess of \$25 annually for PYO produce, while there was no apparent relationship between income and the amount spent on produce for the other groups. Rossi (1980) found that:

One-half of the respondents reported family incomes of \$20,000 or more and 21 percent reported incomes of \$30,000 or more. While the chi-square test indicates that the characteristics of income level and PYO experience are not independent of one another, the exact nature of the relationship between the two is not clear (p. 9).

Stuhlmiller (1976) indicated that the percentage of those respondents who purchased from roadside markets increased as the level of income increased, and that the total family income for PYO customers was in the range of \$10,000 to \$24,000. In this same study, however, Stuhlmiller found that total family income had little impact on shoppers at farmers' markets.

Watkins (1977) found in a study of Ohio roadside markets that the average household size for respondents was 3.3, with the largest single category (two-person households) containing 32.4 percent. Roy (1977) indicated that the average household size for all direct markets surveyed was 2.99, which was slightly less than the reported average household of 3.10 persons for the Louisiana population as a whole. Hungate (1979, p. 8) stated: "Larger households spent more for pick-your-own produce than did smaller households. There are



exceptions, however." In a study by Rossi (1980), 76 percent of the households had between two and four members.

Location of residence also seemed to have a bearing on customers of direct marketing methods for fresh produce. In the study of customers who patronized selected farmers' markets in Louisiana, Roy (1977, p. 6) found that: "About 82 percent of the 377 market customers surveyed resided in towns and cities, while 9 percent resided in rural nonfarm and 7.2 percent were rural farm residents." Rossi (1980) indicated that:

More rural households picked at New Jersey PYO farms in 1979 or during the previous four years than would be expected from chance alone. Similarly, more suburban and urban households had either most recently picked before 1975 or never picked at New Jersey PYO farms than would be expected by chance alone (p. 9).

Also, Rossi's data indicated that 70 percent of the respondents considered their area of residence to be suburban. Stuhlmiller (1976) stated that, overall, the respondents were most likely to live in small towns and rural areas versus on the farm or in the city. However, Stuhlmiller did find that patronage of farmers' markets increased as urbanization increased: 23 percent for farm respondents, 41 percent for small village or rural respondents, and 64 percent for city respondents.

From another study of PYO customers, Rossi (1980, p. 9) found that: "Two-thirds of the respondents had their own vegetable and/or fruit gardens." Stuhlmiller (1976) found that out of 3,200 respondents 88 percent had gardens the previous year and that the percentage of gardeners decreased as urbanization increased. In the same study, it was discovered that even though both gardeners and nongardeners purchased

produce from PYO operations, farmers' markets, and roadside stands, a larger proportion of gardeners bought produce at PYO's, while nongardeners were more likely to buy from farmers' markets and roadside stands.

Even though Courter (1978) referred to PYO operations in the following statement, it applied to all direct marketing methods for fresh produce:

Customers who patronized U-pick farms come from varied backgrounds. They are 'rich and poor,' young and old, from large families and small families, and some live on farms while many live in cities. They pick fruits and vegetables for daily table use but also purchase large quantities to freeze, can or process (p. 43).

#### Indirectly Related Literature

An issue that deserved attention was the attitude of consumers with regard to the place or places from which they purchased their food as well as their general attitude about the food they purchased. Frederick (1929) indicated several reasons consumers stopped shopping at a grocery store included high prices, 14 percent; delay in store service, 10 percent; poor quality of goods, 10 percent; indifference of sales people, 9 percent; haughtiness of sales people; 7 percent, errors; 7 percent, pushy sales people, 6 percent; attempt to substitute goods, 6 percent; tricky methods, 6 percent; store arrangement or appearance, 6 percent; wrong policies of management, 6 percent; misrepresentation of goods, 5 percent; reluctance to exchange goods, 4 percent; ignorance of goods, 3 percent; and poor advertising, 1 percent. The National Study of Supermarket Shoppers, published by the Census Profile (1979-1980) indicated that in a year, 18.2 percent of

the respondents had changed the supermarket where most of their shopping was done. The change was most frequent for younger people and larger families and the reasons most often cited were lower prices and moving to a new location. The study also showed that the top four factors considered when choosing a supermarket were (by average importance rating on a scale of 1 to 9, with 9 being the most important): quality and freshness of meats, 8.10; quality and freshness of fruits and vegetables, 8.09; attractiveness and cleanliness of the store, 7.97; overall prices of groceries, 7.78.

Also in the study by the Census Profile (1979-1980), the rating of quality and freshness of fruits and vegetables in deciding on a supermarket was compared to income, age, family size, amount spent per week in the supermarket, and gender. With regard to the rating and income, there was a range from 57.8 percent of those in the under \$6,000 category who considered the quality and freshness of fruits and vegetables as most important in selecting a supermarket, to 58.9 percent for those in the \$15,000 to \$24,999 category. By age, the range went from 55.3 percent of the under 25 category to 65.6 percent of the 45-54 year olds. Family size was fairly constant with from 56.3 percent of the one-member families considering quality and freshness of fruits and vegetables most important to 62.8 percent of the five or more member families responding likewise. Under the heading of amount spent per week in the supermarket, 55.4 percent of those in the \$51-\$70 category felt that quality and freshness of fruits and vegetables were important in supermarket selection, while 67.6 percent of those in the \$71 and over category considered it

most important. By gender, 61.9 percent of the females considered the issue important, while 44.7 percent of the males agreed.

When working and nonworking women's supermarket expenditures were compared by the Newspaper Advertising Bureau (1979) for 1971 and 1979, the results were:

<u>1971</u>	<u>Working</u>	<u>Nonworking</u>
\$20 or less	30%	28%
\$21-40	48	44
\$41-60	17	21
Over \$60	5	5
Don't Know/NA	--	2

  

<u>1979</u>	<u>Working</u>	<u>Nonworking</u>
\$30 or less	18	24
\$31-50	34	32
\$51-70	23	19
Over \$70	23	18
Don't Know/NA	2	7

(Differences in scaling due to a rise of 74.3 percent in the consumer price index from 1978) (p. 45).

Some years after supermarkets came into existence Troelstrup (1970) stated:

Food supermarkets are not the efficient, economical stores that they were in the early decades of food supermarketing. Also, it takes more time and physical effort to shop for food now than it did before the supermarket appeared on the scene. And since the food supermarket now has a margin requirement of over 20 percent on food, it is hardly offering food on a basis so much lower than was traditional in the service stores many years ago as to justify the shopper's extra time and effort (p. 219).

With Troelstrup's statement in mind, a glance at customer's attitudes about direct marketing methods such as PYO, roadside markets, and farmers' markets seemed to be in order. Watkins (1977) found that in his study of Ohio customers of roadside markets, 44.9 percent of the respondents felt that, when selecting a market, some

aspect of the product itself was of importance, such as product quality, 19.4 percent; product freshness, 12.9 percent; and product variety, selection, and choice, 12.6 percent. Reasonable, fair, and competitive prices were indicated in 17.5 percent of the responses. In the same study, it was determined that what a large percentage of the customers liked about roadside marketing was the freshness, taste, and ripeness of the product (42.8 percent). Quality of product in a distant second place garnered 14.4 percent with competitive, reasonable, fair prices far down the list, with 3 percent of the total sample. When customers were asked what they disliked, the top three responses were: distance from home (17.7 percent); prices (16.0 percent); and parking and traffic problems (14.7 percent). In an Illinois study on roadside markets, Vandemark (1978) stated that freshness was clearly the main reason shoppers frequented roadside markets, with flavor and quality second and third. Price ranked fourth, variety was fifth, and convenience was last. Watkins (1977) stated:

Seventy-one percent of the customers rated as very important making available the best quality produce, regardless of where the product was grown. Thirty-two percent rated as very important selling in quantities for freezing and canning. Twenty-eight percent rated as very important what was grown on the farm. Fourteen percent of the customers rated as very important markets which specialized in organically grown products. Three percent rated as very important the market offering an opportunity for family recreation in addition to traditional market functions (p. 10).

With regard to packaging and display, customers in the Watkins (1977) study chose bulk displays 49.4 percent and a combination of the previous options 38 percent of the time. (In the previous two

entries, the total percentage was more than 100 percent, due to multiple responses.)

As in roadside markets, quality was the most important concern of PYO customers, along with local availability and reasonable prices (Courter, 1981). Along the same line, Hungate (1979) noted:

Pick-your-own customers identified quality of product as the number one reason for liking pick-your-own. Most customers did not object to picking their own crops. However, they like to have more publicity about when, where, and what crops are available for pick-your-own (p. 4).

Hungate recorded two factors cited as reasons people like to pick their own produce, which garnered over 74 percent of the responses. These two reasons were quality of products (53.5 percent) and price (20.7 percent). When Hungate solicited responses about the dislikes of PYO customers, over 60 percent said they had no dislikes about picking their own crops.

A study of customers of farmers' markets was conducted in Louisiana by Roy (1977). In this survey, about half of the respondents indicated that their main reason for shopping at farmers' markets in Louisiana was the availability of fresh produce. Also, another 20 percent said the produce was better and more economical.

When preserving fresh produce was considered, Stuhlmiller (1976) found that 83 percent of the PYO customers canned or froze the fruits and vegetables they purchased, while 41 percent of the roadside market customers and 44 percent of the farmers' market customers did likewise. Stuhlmiller also indicated that:

A higher proportion of families with children preserved produce from U-Pick operations and farmers' markets than did older respondents without children. For roadside markets, the difference by households of various family composition was minor (p. 30).

The results of this study also indicated that more gardeners than nongardeners preserved produce. In the study of Ohio customers of PYO produce conducted by Hungate (1979), 79 percent of the respondents picked produce for canning and freezing, but it was also noted that 88 percent of the respondents picked for immediate consumption.

In a New York study, Stuhlmiller (1976) studied the customers of three methods of direct marketing of fresh produce--pick-your-own, roadside stands, and farmer's markets--and reported:

For all three operations, an overwhelming majority (over 90 percent) of the customers reported they were generally satisfied with the produce they had purchased. Further examination reveals that, for each operation, customers were slightly less satisfied with quality and least satisfied with price (p. 31).

#### Summary

The high percentage of women doing the bulk of the grocery shopping has remained constant over the past half century, with a vast majority of these shoppers purchasing fresh vegetables at the supermarket and a small minority purchasing directly from the farm, roadside market, or farmers' market. When choosing a supermarket, the older customers, the females, and those consumers from larger families were more likely to consider vegetable and fruit quality and freshness as a prime consideration.

Most of those customers of farmers' markets and PYO farms were older people who resided mainly in urban areas. Gardeners were the predominant customers at PYO farms, while nongardeners were more likely to buy from farmers' markets or roadside markets. About 83 percent of the PYO patrons preserved the produce, while only about half that

percentage of roadside market or farmers' market customers did likewise.

The characteristics that most attracted customers to PYO farms and roadside markets were the freshness, taste, and ripeness of the product. Customers, however, disliked the distance of the markets and farms from their homes, prices, and parking and traffic problems.

The questions raised by the review of literature were: What are the vegetable purchase and usage patterns of consumers of a selected county, such as Tulsa County? What do they consider to be the most important factor when they purchase fresh vegetables--price or product quality?



## CHAPTER III

### METHODOLOGY

This chapter is set forth to outline the format and procedures used to obtain the information required to meet the objectives of this study. The data were collected the Fall of 1982.

#### Sample

In this study, the sample was taken from the population that included the residents of Tulsa County. This population was selected because of its proximity and accessibility to direct marketing outlets for fresh produce; roadside markets, farmers' markets, and pick-your-own farms. Another important factor was the economic consideration as well as the time required to complete the study using this population. Due to the large population of Tulsa County, 470,593 according to the United States Census figures for 1980, any attempt to survey each member of the population was deemed unreasonable.

The formula used to arrive at an appropriate sample size was found in the third edition of Sampling Techniques by Cochran (1977) and a confidence interval of .95 was selected. The formula was:

$$n = \frac{\frac{t^2 PQ}{d^2}}{1 + \left[ \frac{1}{N} \left( \frac{t^2 PQ}{d^2} - 1 \right) \right]}$$

where:

$n$  = sample size

$N$  = population size = 470,593

$d$  = margin of error = .05

$t$  = abscissa of the normal curve that cuts off an area of .025 at each of the tails = 1.96

$P$  = estimation of response with a dichotomous question = .5

$Q$  =  $1-P$  = .5

To further explain the use of .5 as the value of "P" in the previous formula, without a priori indication that the population response will deviate from 50 percent for either possible response to a dichotomous question,  $P = .5$  is used. Also, the use of  $P = .5$  renders the most conservative sample size. The formula indicated that a sample of 384 would satisfy the confidence interval selected.

#### Sampling Procedure

The sample was selected randomly from all the telephone directories that served Tulsa County in 1981. These included directories for the cities of Tulsa, Bixby, Glenpool, Broken Arrow, Collinsville, and Skiatook. All other cities and towns located in Tulsa County were incorporated into the directories for the above-mentioned cities.

Randomness was assured to the fullest possible extent by utilizing the computer at Oklahoma State University to provide a listing of telephone numbers generated from information about the beginning and ending page numbers bearing residential listings, the number of columns per page, and the number of entries per column in each telephone directory. Since telephone exchanges, as well as directories, do not

follow county lines, the first question asked was whether or not the respondent was a resident of Tulsa County. If the individual was not a resident of Tulsa County, the interview was terminated and the individual was not included in the survey. For this reason, also, the population was oversampled in anticipation that some people listed in a directory would not be Tulsa County residents. This oversampling was also done to ensure that there would be adequate numbers to account for business and organizational listings incorporated in the residential listings of some telephone directories, for numbers that were disconnected, and for numbers that did not answer.

The initial random sample included a list of 500 entries. Two additional lists of 200 entries each were selected to ensure the exact sample size required for the study. Each entry in these lists was verified with the appropriate telephone directory to make certain it was valid. The criteria for a valid entry were: 1) a telephone number had to fall on the space designated by the entry; 2) the number had to be that of a residence as opposed to that of a business, church, government office, or other organization; 3) if a listing was a children's telephone, it was considered invalid. The invalid entries were replaced with other entries in the list of 500 until all those numbers had been exhausted. After that, the first oversampling of 200 entries was subjected to the criteria for validity and those valid numbers used until they had also been exhausted. Likewise, the second oversampling was used to complete the required 384 respondents needed to satisfy the calculated sample size.

When the actual calling began, disconnected numbers were dialed twice to ensure no error in dialing had occurred. Each disconnected

number was then replaced by another random number from the lists of random numbers. Those numbers which were called on three different occasions with no answer were also replaced. All working numbers were allowed to ring at least five times before the attempted call was terminated. Smead (1980) indicated that with five rings of the telephone, 99.2 percent of those individuals who were at home were reached. A successful call was considered to be one in which the respondent was given an opportunity to reply to the telephone survey.

The calls were made by three individuals, with one individual doing the bulk of the telephoning. All three of the individuals were briefed as to the calling procedure, valid and invalid numbers, and clarification of questions on the instrument to elicit uniform responses.

#### Development of the Instrument

Every method of data collection has certain advantages and disadvantages associated with it. Considering the constraints of this study, it was decided that a questionnaire would be the most adequate instrument to use.

Tentative questions were suggested during a preliminary meeting of Oklahoma State Cooperative Extension horticulture personnel, Agriculture Economics faculty, the researcher's major adviser, and the researcher. These questions were revised, some deleted, and others added through successive restructuring of the instrument. Various members of the staff and faculty of the Agricultural Education Department at Oklahoma State University aided in the revision of the instrument. In the final form, the questionnaire included 18 questions.

The areas dealt with by the questionnaire included: patterns of vegetable consumption, patterns of vegetable purchase, factors that encourage or discourage vegetable purchase, preferences in vegetables, and personal demographic data.

#### Analysis of Data

The analysis of data for this study was accomplished by the use of frequency data. This frequency data included percentages as well as the numbers of respondents.

## CHAPTER IV

### PRESENTATION AND ANALYSIS OF DATA

#### Introduction

The purpose of this chapter was to present, describe, and analyze the purchasing patterns of the general public of Tulsa County concerning selected sources for the purchase of vegetables. The data were collected using a random sample of Tulsa County residents compiled from the telephone directories serving the county.

The characteristics of the respondents were reported in the first section of this chapter. The second section of the chapter was devoted to the presentation of results of the respondents' purchasing, usage patterns, and knowledge regarding vegetable sources. The third section looked further into certain characteristics of the respondents and how those characteristics affected purchasing and usage patterns.

#### Background of the Sample

The population of this study included the residents of Tulsa County. From the population, a random sample of 384 individuals was selected. A telephone survey instrument of 18 questions was administered and, as indicated in Table I, 286 respondents (74.48 percent) of the sample of 384 were willing to participate in the study. The statistical analysis was based on the number of responses given on each individual question. Certain respondents chose not to answer various

questions and this had the effect of altering the number (N) of total responses on those questions. Therefore, those who did not respond to the question were not included in the analysis.

TABLE I  
DISTRIBUTION OF RESPONSE RATE

	Frequency Distribution	
	N	%
Yes	286	74.48
No	98	25.52
Total Responses	384	100.00

#### General Characteristics of Respondents

The telephone survey instrument used in this study contained 11 questions dealing with personal information about the respondents such as the location of their residence, how often they purchased fresh vegetables, their estimated total weekly food bill excluding non-food items, the two primary occupations of household members, type of dwelling, the number of people in the household, the respondents' ethnic background, age, gender, employment status, and household income level. Once again, various respondents chose not to respond to some questions, making the number (N) vary in some tables.

Indicated in Table II was the location of residence. Those who lived in Tulsa numbered 194 (67.83 percent). Fifty-five individuals

(19.23 percent) resided in a suburb of Tulsa, while 20 respondents (6.99 percent) lived in small towns and 17 (5.95 percent) lived in the country.

TABLE II  
DISTRIBUTION OF RESPONDENTS BY LOCATION  
OF RESIDENCE

Location	Frequency Distribution	
	N	%
Tulsa	194	67.83
Suburb	55	19.23
Small Town	20	6.99
Country	17	5.95
Total Responses	286	100.00

Table III outlined the frequency with which the respondent, the primary household food purchaser, purchased fresh vegetables. Those who purchased fresh vegetables once a week numbered 161 (60.30 percent of the total 267 respondents who answered the question). In the two to three times per month category, 72 individuals (26.97 percent) were included. These two categories combined totaled 87.27 percent of the sample. The remaining 12.73 percent fell into the categories of a few times each week (5.99 percent) and once a month (6.74 percent), with no one responding less often than once a month or never.



TABLE III  
DISTRIBUTION OF RESPONDENTS BY FREQUENCY OF  
FRESH VEGETABLE PURCHASE

Times Purchased	Frequency Distribution	
	N	%
A few times each week	16	5.99
Once a week	161	60.30
Two to three times a month	72	26.97
Once a month	18	6.74
Less often than once a month	--	--
Never	--	--
Total Responses	267	100.00

Table IV represented the estimated total weekly food bill excluding non-food items. Two hundred and five respondents (89.91 percent of the 228 responses to this question) spent between \$26.00 and \$100.00 per week, while the remaining 10.09 percent spent either less than \$25.00 or more than \$100.00 per week. The total response of 228 was due to many people having no idea how much they spend on food weekly.

Table V gave information on the types of dwellings in which respondents lived. Two hundred and thirty-three respondents (82.62 percent) indicated that they lived in a house, 29 (10.28 percent) lived in an apartment, 12 (4.26 percent) lived in a mobile home, and 8 (2.84 percent) lived in some other type of dwelling.

Table VI contained the distribution of respondents by household size. Two member households made up 35.69 percent of the total responses. The percentage of individuals in two-, three- and four-member

TABLE IV  
 DISTRIBUTION OF RESPONDENTS BY ESTIMATED  
 TOTAL WEEKLY FOOD BILL EXCLUDING  
 NON-FOOD ITEMS

	Frequency Distribution	
	N	%
Less than \$25 per week	15	6.58
\$26-50 per week	95	41.67
\$51-75 per week	69	30.26
\$76-100 per week	41	17.98
More than \$100 per week	8	3.51
Total Responses	228	100.00

TABLE V  
 DISTRIBUTION OF RESPONDENTS BY TYPE OF DWELLING

	Frequency Distribution	
	N	%
House	233	82.62
Apartment	29	10.28
Mobile Home	12	4.26
Other	8	2.84
Total Responses	282	100.00

households combined for a total of 78.45 percent. Households with one member were indicated in 34 instances (12.01 percent) and those with five or more members were indicated by 27 individuals (9.54 percent).

TABLE VI  
DISTRIBUTION OF RESPONDENTS BY HOUSEHOLD SIZE

	Frequency Distribution	
	N	%
1	34	12.01
2	101	35.69
3	60	21.20
4	61	21.56
5 or more	27	9.54
Total Responses	283	100.00

With regard to racial background, Table VII showed that 249 individuals (89.25 percent) were white, 22 (7.88 percent) were black, 4 (1.43 percent) were Indian, 1 (0.36 percent) was Asian, and 3 (1.08 percent) were of other racial backgrounds.

Table VIII indicated the age distribution for the 273 respondents who answered this question. Thirty-six (13.19 percent) of the respondents were 65 or older, 55 respondents (20.15 percent) were between 52-64 years of age, and 70 (25.64 percent) were between 37-51 years of

age. The largest category, the 27-36 year olds, included 83 individuals (30.40 percent). Twenty-seven respondents (9.89 percent) were in the 20-26 category and two people (0.73 percent) were 19 or younger. Interestingly, 76.19 percent were from 27-64 years of age.

TABLE VII  
DISTRIBUTION OF RESPONDENTS BY  
RACIAL BACKGROUND

	Frequency Distribution	
	N	%
White	249	89.25
Black	22	7.88
Indian	4	1.43
Hispanic	--	--
Asian	1	0.36
Other	3	1.08
Total Responses	279	100.00

The distribution by respondents' gender, found in Table IX, showed that 223 respondents (79.08 percent) were female and 59 respondents (29.92 percent) were male. This difference was due to the design of the instrument in that the respondent was the primary household food purchaser.

Table X gave the employment status of the primary household food purchaser. Of the 270 respondents, 145 (53.70 percent) were employed

TABLE VIII  
DISTRIBUTION OF RESPONDENTS BY AGE LEVEL

	Frequency Distribution	
	N	%
65 or older	36	13.19
52-64	55	20.15
37-51	70	25.64
27-36	83	30.40
20-26	27	9.89
19 or younger	2	0.73
Total Responses	273	100.00

TABLE IX  
DISTRIBUTION OF RESPONDENTS BY GENDER

	Frequency Distribution	
	N	%
Male	59	20.92
Female	223	79.08
Total Responses	282	100.00

and 125 (46.30 percent) were not employed. It should be noted that 33.33 percent of the households represented in the study indicated more than one occupation.

TABLE X  
DISTRIBUTION OF RESPONDENTS BY  
EMPLOYMENT STATUS

	Frequency Distribution	
	N	%
Employed	145	53.70
Not Employed	125	46.30
Total Responses	270	100.00

The distribution of respondents by yearly household income levels was shown in Table XI. In the less than \$5,000 category, there were seven respondents (2.50 percent). Those who had a household income of less than \$20,000 per year included 86 respondents (30.72 percent). Those who had household incomes of more than \$20,000 per year included 153 individuals (54.64 percent), with 21.07 percent of those individuals in the sample with yearly household incomes of \$40,000 or more. There were individuals who refused to respond to the question; however, a total of 85.36 percent of the sample was willing to cooperate with a positive response.

TABLE XI  
DISTRIBUTION OF RESPONDENTS BY YEARLY  
HOUSEHOLD INCOME

	Frequency Distribution	
	N	%
Less than \$5,000	7	2.50
\$5,000-\$9,999	23	8.22
\$10,000-\$14,999	25	8.93
\$15,000-\$19,999	31	11.07
\$20,000-\$39,999	94	33.57
\$40,000 or more	59	21.07
Refusal	41	14.64
Total Responses	280	100.00

A typical respondent in the study was a white female between the ages of 27 and 36 who lived in a house in Tulsa, purchased fresh vegetables once a week, spent \$26.00 to \$50.00 per week on food, lived in a two-person household, was employed, and had a yearly household income of \$20,000 to \$39,999.

#### Respondents' Purchasing and Vegetable Usage Patterns

In Table XII, the largest group of respondents, 121 (42.31 percent), purchased vegetables at two sources, followed by those who purchased at one source with 110 (38.46 percent). Combined, these two categories

made up 80.77 percent of the total sample. Forty-six individuals (16.08 percent) shopped at three sources and nine (3.15 percent) shopped at four sources.

TABLE XII  
DISTRIBUTION OF RESPONDENTS BY THE NUMBER  
OF SOURCES UTILIZED FOR VEGETABLE  
PURCHASE

Number of Sources	Frequency Distribution	
	N	%
1	110	38.46
2	121	42.31
3	46	16.08
4	9	3.15
Total Responses	286	100.00

As shown in Table XIII, the first ranked source utilized for vegetable purchase was the supermarket which was named by 236 respondents (82.52 percent). Supermarket was followed by home garden, listed by 30 people (10.49 percent). Eleven shoppers (3.84 percent) purchased most of their vegetables at the farmers' market with a pick-your-own farm and the category "other" having one response (0.35 percent) each. Friends or relatives received three responses (1.05 percent).

Table XIV outlined the alternate sources identified for vegetable purchase, whether or not the respondent actually purchased there.



TABLE XIII  
DISTRIBUTION OF RESPONDENTS BY PRIMARY SOURCE  
UTILIZED FOR VEGETABLE PURCHASE

	Frequency Distribution	
	N	%
Supermarket	236	82.52
Farmers' Market	11	3.84
Roadside Market	4	1.40
Pick-Your-Own Farm	1	0.35
Home Garden	30	10.49
Friends or Relatives	3	1.05
Other	1	0.35
Total Responses	286	100.00

TABLE XIV  
DISTRIBUTION OF RESPONDENTS BY NUMBER OF  
ALTERNATE SOURCES IDENTIFIED FOR  
VEGETABLE PURCHASE

Number of Sources	Frequency Distribution	
	N	%
0	106	37.06
1	108	37.76
2	66	23.08
3	6	2.10
Total Responses	286	100.00

There could be no duplication of responses on this question and the question concerning actual sources for purchasing vegetables. Two hundred eighty respondents (97.90 percent) gave two or less alternate sources for vegetable purchase. Those who gave no alternate sources totaled 106 people (37.06 percent). Those who gave three alternate sources included six respondents (2.10 percent).

Table XV revealed that the farmers' market was the most frequently identified alternate source with it listed by 111 respondents (43.02 percent). Roadside market was identified by 92 individuals (35.66 percent). These two alternate sources combined to make up 78.68 percent of those responding to the question. For the remainder of the alternate sources, 28 (10.85 percent) mentioned Pick-Your-Own, 10 (3.88 percent) cited supermarket, 9 (3.49 percent) cited some other source, and 4 (1.55 percent) each responded home garden and friends and relatives.

TABLE XV  
DISTRIBUTION OF RESPONSES BY KNOWLEDGE OF  
ALTERNATIVE SOURCES FOR VEGETABLE  
PURCHASE\*

Alternative Sources	Frequency Distribution	
	N	%
Farmers' Market	111	43.02
Roadside Market	92	35.66
Pick-Your-Own Farm	28	10.85
Supermarket	10	3.88
Other	9	3.49
Home Garden	4	1.55
Friends and Relatives	4	1.55
Total Responses	258	100.00

\*Note: Multiple responses possible by each respondent.

Table XVI listed the responses by ranking of the use of four forms of vegetables: fresh, canned, frozen, and dried. Upon examination, fresh vegetables were cited in 153 responses (54.06 percent) as the form of vegetable used most often. Canned was indicated as most frequently used in 76 responses (26.86 percent), frozen in 52 responses (18.37 percent), and only 2 responses (0.71 percent) indicated using dried most often. Only one response indicated non-use of fresh, while 51 indicated non-use of dried vegetables. Of the respondents using fresh at all, 78.02 percent used it first or second most often.

Table XVII showed the distribution of responses by ranking of preference of the four forms of vegetables. Of the responses given for first preference, 241 (85.77 percent) listed fresh, 24 (8.54 percent) listed canned, 16 (5.69 percent) gave frozen, and no responses gave dried as the first preference vegetable form. Only one response (0.43 percent) indicated fresh in fourth preference, while 192 responses (81.70 percent) indicated dried as fourth preference. Of the respondents stating a preference for fresh vegetables, 92.52 percent preferred it first or second to the other forms.

When referring to the preference indicated for the various forms, 241 (85.77 percent) of the 281 total respondents stating their preference indicated fresh to be their first preference. Canned was given as the first preference form by 24 individuals (8.54 percent), and 16 people (5.69 percent) listed frozen as their first preference. No one gave dried as their first preference vegetable form.

Table XVIII displayed the vegetables often consumed by the households in the sample. The three vegetables cited most often were closely grouped, with potatoes given as first in consumption by 58 respondents

TABLE XVI  
DISTRIBUTION OF RESPONSES BY RANKING OF USE  
OF FOUR FORMS OF VEGETABLES

Forms	Frequency Distribution																
	First			Second			Third			Fourth			Not Used			Total	
	N	Col. %	Row %	N	Col. %	Row %	N	Col. %	Row %	N	Col. %	Row %	N	Col. %	Row %	N	%
Fresh	153	54.06	54.26	67	24.10	23.76	57	21.27	20.21	4	1.91	1.42	1	1.10	0.35	282	100.00
Canned	76	26.86	26.86	82	29.50	28.97	88	32.84	31.10	16	7.66	5.65	21	23.08	7.42	283	100.00
Frozen	52	18.37	18.44	109	39.21	38.65	84	31.34	29.79	19	9.09	6.74	18	19.78	6.38	282	100.00
Dried	2	0.71	0.71	20	7.19	7.10	39	14.55	13.83	170	81.34	60.28	51	56.04	18.08	282	100.00
Total Responses	283	100.00		278	100.00		268	100.00		209	100.00		91	100.00			

TABLE XVII  
DISTRIBUTION OF RESPONSES BY RANKING OF PREFERENCE  
OF FOUR FORMS OF VEGETABLES

Forms	Frequency Distribution																
	First			Second			Third			Fourth			Not Used			Total	
	N	Col. %	Row %	N	Col. %	Row %	N	Col. %	Row %	N	Col. %	Row %	N	Col. %	Row %	N	%
Fresh	241	85.77	85.76	19	6.88	6.76	19	7.09	6.76	1	0.43	0.36	1	1.70	0.36	281	100.00
Canned	24	8.54	8.60	81	29.35	29.04	132	49.25	47.31	24	10.21	8.60	18	30.51	6.45	279	100.00
Frozen	16	5.69	5.71	161	58.33	57.50	72	26.87	25.72	18	7.66	6.43	13	22.03	4.64	280	100.00
Dried	0	--	--	15	5.44	5.38	45	16.79	16.13	192	81.70	68.82	27	45.76	9.67	279	100.00
Total Responses	281	100.00		276	100.00		268	100.00		235	100.00		59	100.00			

TABLE XVIII  
DISTRIBUTION OF RESPONSES OF THE VEGETABLES  
OFTEN CONSUMED

Vegetable	Most Often		Often Frequency Distribution	
	N	%	N	%
Artichokes	--	--	1	0.18
Asparagus	--	--	4	0.71
Beets	1	0.36	2	0.36
Broccoli	27	9.57	60	10.68
Cabbage	2	0.71	15	2.67
Cauliflower	4	1.42	25	4.45
Celery	--	--	5	0.89
Cucumbers	--	--	5	0.89
Green Beans	51	18.09	94	16.72
Lettuce	52	18.44	37	6.58
Limas	--	--	2	0.36
Mushrooms	--	--	4	0.71
Okra	5	1.77	5	0.89
Onions	--	--	10	1.78
Peas	3	1.06	36	6.40
Peppers	--	--	2	0.36
Potatoes	58	20.57	32	5.70
Spinach	6	2.13	20	3.56
Squash	3	1.06	10	1.78
Sweet Corn	39	13.83	76	13.52
Tomatoes	17	6.03	67	11.92
Turnips	--	--	6	1.06
Other	14	4.96	44	7.83
Total Responses	282	100.00	562	100.00

(20.57 percent of those vegetables given as most frequently consumed). Lettuce was the most frequently consumed vegetable by 52 individuals (18.44 percent), with green beans consumed most often by 51 respondents (18.09 percent). When the responses for two vegetables that were also consumed often by household members were examined, green beans were cited by 94 respondents (16.72 percent), sweet corn by 76 respondents (13.52 percent), tomatoes by 67 respondents (11.92 percent), and broccoli by 60 respondents (10.68 percent). It was noted that carrots had inadvertently been omitted from the list of vegetables; therefore, the high response to "Other" was mainly due to carrots being tabulated there.

Table XIX represented the respondents' perceptions of the amount of vegetables consumed by their families. There were 205 respondents (72.44 percent) who said their families ate a lot of vegetables, while 70 individuals (24.73 percent) said their families ate some vegetables. Eight respondents (2.83 percent) said their families ate little in the way of vegetables.

#### Selected Sample Demographics by Purchasing Pattern

The total responses in the following tables may not equal the total responses across the survey due to missing data or no response to some questions on the instrument.

Table XX dealt with the age of respondents and primary sources utilized for the purchase of vegetables. Among the age groups, the 20-26 year olds had the highest percentage of those who purchased vegetables mainly at the supermarket (92.60 percent). The group with

the lowest percentage (77.14 percent) of people using the supermarket as their main source of vegetables was the 37-51 year olds. In this group, 10 individuals (14.29 percent of that age group) indicated that they got most of their vegetables from a home garden. Across the age groups, one person in the 37-51 year group used pick-your-own farms as a primary source of vegetables. Four individuals in the three age groups encompassing 51-65+ used roadside markets as the primary source for their vegetables.

TABLE XIX  
DISTRIBUTION OF RESPONDENTS BY PERCEIVED  
AMOUNT OF VEGETABLES EATEN BY  
THE FAMILY

	Frequency Distribution	
	N	%
A lot	205	72.44
Some	70	24.73
Little	8	2.83
None	--	--
Total Responses	283	100.00

Table XXI showed the gender of respondents by the primary source of vegetable purchase. The supermarket was used by 84.75 percent of the men who were the primary household food shoppers. Of the female

TABLE XX  
AGE OF RESPONDENTS BY PRIMARY SOURCE UTILIZED  
FOR VEGETABLE PURCHASE

Age Group	Super-market		Farmers' Market		Roadside Market		PYO Farm		Home Garden		Total Responses	
	N	%	N	%	N	%	N	%	N	%	N	%
65 or older	28	80.00	1	2.86	1	2.86	0	0.00	5	14.28	35	100.00
52-64	44	81.48	1	1.85	2	3.71	0	0.00	7	12.96	54	100.00
37-51	54	77.14	4	5.71	1	1.43	1	1.43	10	14.29	70	100.00
27-36	70	86.42	4	4.94	0	0.00	0	0.00	7	8.64	81	100.00
20-26	25	92.60	1	3.70	0	0.00	0	0.00	1	3.70	27	100.00
19 or younger	2	100.00	0	0.00	0	0.00	0	0.00	0	0.00	2	100.00



shoppers, 83.10 percent used the supermarket as their primary source of vegetables. The farmers' market was the primary source for 3.39 percent of the males and 4.11 percent of the females. No men used the roadside market or the pick-your-own farm predominantly. Roadside market was used by 1.83 percent of the females, while 0.46 percent of the females used the pick-your-own farm as their number one source of vegetables. Ten and one-half percent of the women got most of their vegetables from a home garden, while 11.86 percent of the males did likewise.

TABLE XXI  
GENDER OF RESPONDENTS BY PRIMARY SOURCE  
UTILIZED FOR VEGETABLE PURCHASE

	Super-Market		Farmers' Market		Roadside Market		PYO Farm		Home Garden		Total Responses	
	N	%	N	%	N	%	N	%	N	%	N	%
Male	50	84.75	2	3.39	0	0.00	0	0.00	7	11.86	59	100.00
Female	182	83.10	9	4.11	4	1.83	1	0.46	23	10.50	219	100.00

Yearly household income of the respondents by their primary source of vegetables was the topic of Table XXII. The \$20,000-\$39,999 range had the largest percentage of respondents (89.13 percent) who used the supermarket as their primary source of vegetables. The group with the smallest percentage (71.43 percent) of those who

TABLE XXII

YEARLY HOUSEHOLD INCOME OF RESPONDENTS BY PRIMARY SOURCE  
UTILIZED FOR VEGETABLE PURCHASE

	Super-Market		Farmers' Market		Roadside Market		PYO Farm		Home Garden		Total Responses	
	N	%	N	%	N	%	N	%	N	%	N	%
Less than \$5,000	5	71.43	0	0.00	0	0.00	0	0.00	2	28.57	7	100.00
\$5,000-\$9,999	19	86.36	0	0.00	0	0.00	0	0.00	3	13.64	22	100.00
\$10,000-\$14,999	18	75.00	1	4.17	0	0.00	0	0.00	5	20.83	24	100.00
\$15,000-\$19,999	27	87.10	0	0.00	2	6.45	1	3.23	1	3.22	31	100.00
\$20,000-\$39,999	82	89.13	3	3.26	0	0.00	0	0.00	7	7.61	92	100.00
\$40,000 or more	45	76.27	5	8.48	1	1.69	0	0.00	8	13.56	59	100.00

used the supermarket as a primary vegetable source were those in the less than \$5,000 range. In this range, the remainder (28.57 percent) relied on a home garden for most of their vegetables. Interestingly, 13.56 percent of those in the \$40,000 or more category got most of their vegetables from a home garden. Also, of those in the \$40,000 or more category, 8.48 percent purchased the bulk of their vegetables at the farmers' market which was the highest percentage using the farmers' market as their primary vegetable source.

Table XXIII showed household size by the primary vegetable source. The group with the largest percentage using the supermarket as their main source of vegetables was the single member household, with 93.94 percent, followed closely by those with households of five or more at 92.31 percent. Those with the fewest people using the supermarket as their primary vegetable source were those in two-person households (79.00 percent) and those in four-person households (80.00 percent). No one in the single member households surveyed used the farmers' market, a roadside market, or a pick-your-own farm as a primary source of vegetables. Two respondents (6.06 percent) in single member households relied on home gardens for most of their vegetable needs. Home gardens were given as a primary vegetable source by 14.00 percent of those surveyed from two-member households, 10.00 percent of the three-member households, and 13.33 percent of the four-member households.

Table XXIV looked at the employment status of the primary household food shopper and the major source of vegetables. Of those employed respondents surveyed, 80.56 percent shopped for vegetables primarily at the grocery store, compared to 86.06 percent of those

TABLE XXIII  
 HOUSEHOLD SIZE OF RESPONDENTS BY PRIMARY SOURCE UTILIZED  
 FOR VEGETABLE PURCHASE

	Super-Market		Farmers' Market		Roadside Market		PYO Farm		Home Garden		Total Responses	
	N	%	N	%	N	%	N	%	N	%	N	%
1	31	93.94	0	0.00	0	0.00	0	0.00	2	6.06	33	100.00
2	79	79.00	4	4.00	2	2.00	1	1.00	14	14.00	100	100.00
3	51	85.00	2	3.33	1	1.67	0	0.00	6	10.00	60	100.00
4	48	80.00	3	5.00	1	1.67	0	0.00	8	13.33	60	100.00
5 or more	24	92.31	2	7.69	0	0.00	0	0.00	0	0.00	26	100.00

TABLE XXIV

EMPLOYMENT STATUS OF RESPONDENTS BY PRIMARY SOURCE UTILIZED  
FOR VEGETABLE PURCHASE

	Super-Market		Farmers' Market		Roadside Market		PYO Farm		Home Garden		Total Responses	
	N	%	N	%	N	%	N	%	N	%	N	%
Employed	116	80.56	5	3.47	1	0.69	0	0.00	22	15.28	144	100.00
Not Employed	105	86.06	5	4.10	3	2.46	1	0.82	8	6.56	122	100.00

respondents surveyed who were not employed. For those using the farmers' market, the percentage of the employed respondents surveyed was 3.47 percent, and of the respondents not employed, was 4.10 percent. None of the employed residents used a PYO farm as a primary source of vegetables, but 15.28 percent of them relied on home gardens for most of their vegetable needs.

#### Selected Sample Demographics by Knowledge of Alternative Sources of Vegetables

It should be noted at the outset of this section that the total responses for each table may include more than one response for each individual surveyed.

Table XXV outlined the age of the respondent by the knowledge of selected alternate sources for vegetable purchase. The age category with the highest percentage of respondents (63.64 percent) to identify the farmers' market as an alternate source for vegetables were the 65 year olds and older. Of the 52 to 64 year olds, 38.89 percent identified the farmers' market. The two age categories with the highest percentage of responses identifying the roadside market were the 37 to 51 year olds (48.21 percent) and the 52 to 64 year olds (48.15 percent). The 20-26 year olds had 42.11 percent of the responses identifying roadside markets. PYO farms were identified by 18.18 percent of the 65 and older group, 12.96 percent of the 52 to 64 year olds, 10.72 percent of the 37 to 51 year olds, 13.41 percent of the 27 to 36 year olds, 5.26 percent of the 20 to 26 year olds, and by none of the 19 or younger aged primary household food shoppers.

TABLE XXV  
AGE OF RESPONDENTS BY KNOWLEDGE OF SELECTED  
ALTERNATE SOURCES OF VEGETABLE PURCHASE

	Farmers' Market		Roadside Market		PYO Farm		Total Responses	
	N	%	N	%	N	%	N	%
65 or older	7	63.64	2	18.18	2	18.18	11	100.00
52-64	21	38.89	26	48.15	7	12.96	54	100.00
37-51	23	41.07	27	48.21	6	10.72	56	100.00
27-36	46	56.10	25	30.49	11	13.41	82	100.00
20-26	10	52.63	8	42.11	1	5.26	19	100.00
19 or younger	0	0.00	1	100.00	0	0.00	1	100.00

Table XXVI looked at gender and knowledge of selected alternate sources for vegetable purchase. Among the males surveyed, 49.09 percent identified the farmers' market, while 48.28 percent of the females did the same. With regard to roadside markets, 40.00 percent of the males had knowledge of this source, as well as 39.65 percent of the females. PYO farms were identified by 10.91 percent of the males surveyed and 12.07 percent of the females.

Table XXVII listed yearly household income and knowledge of selected alternate sources of vegetable purchase. The smallest percentage (33.33 percent) with a knowledge of the farmers' market fell in the less than \$5,000 yearly income, while the largest percentage (57.69 percent) of those who indicated knowledge of alternate sources was in the \$15,000 to \$19,999 category. PYO farms were identified by 7.69 percent of those in the \$15,000 to \$19,999 income level, as

TABLE XXVI

GENDER OF RESPONDENTS BY KNOWLEDGE OF SELECTED  
ALTERNATE SOURCES OF VEGETABLE PURCHASE

	Farmers' Market		Roadside Market		PYO Farm		Total Responses	
	N	%	N	%	N	%	N	%
Male	27	49.09	22	40.00	6	10.91	55	100.00
Female	84	48.28	69	39.65	21	12.07	174	100.00

TABLE XXVII

INCOME OF RESPONDENTS BY KNOWLEDGE OF SELECTED  
ALTERNATE SOURCES OF VEGETABLE PURCHASE

	Farmers' Market		Roadside Market		PYO Farm		Total Responses	
	N	%	N	%	N	%	N	%
Less than \$5,000	1	33.33	1	33.33	1	33.34	3	100.00
\$5,000-\$9,999	5	50.00	4	40.00	1	10.00	10	100.00
\$10,000-\$14,999	8	50.00	6	37.50	2	12.50	16	100.00
\$15,000-\$19,999	15	57.69	9	34.62	2	7.69	26	100.00
\$20,000-\$39,999	42	45.65	39	42.39	11	11.96	92	100.00
\$40,000 or more	22	37.29	26	44.07	11	18.64	59	100.00



compared to 18.64 percent of the \$40,000 or more category and 33.34 percent of those in the less than \$5,000 category. The percentage of responses for roadside markets ranged from 33.33 percent for those with household incomes of \$5,000 or less to 44.07 percent for those with yearly incomes of \$40,000 or more.

Table XXVIII had to do with household size and knowledge of selected alternate sources for vegetable purchase. Identification of the farmers' market was made in 50 percent of the cases by respondents in each of the three-, four- and five-or-more-member households. The smallest percentage (34.62 percent) identifying roadside markets was in the five-or-more-member household category. PYO farms were identified as alternate sources by 6.90 percent of the four-member households, with 25.00 percent of the one-member households identifying it.

TABLE XXVIII  
HOUSEHOLD SIZE OF RESPONDENTS BY KNOWLEDGE OF  
SELECTED ALTERNATE SOURCES OF  
VEGETABLE PURCHASE

	Farmers' Market		Roadside Market		PYO Farm		Total Responses	
	N	%	N	%	N	%	N	%
1	9	37.50	9	37.50	6	25.00	24	100.00
2	35	47.94	29	39.73	9	12.33	73	100.00
3	25	50.00	20	40.00	5	10.00	50	100.00
4	29	50.00	25	43.10	4	6.90	58	100.00
5 or more	13	50.00	9	34.62	4	15.38	26	100.00

Table XXIX compared employment status with knowledge of selected alternate vegetable purchase sources. The farmers' market was identified by 50.74 percent of the employed primary household food shopper and by 46.34 percent of those who were not employed. Roadside market was identified by 36.76 percent of the employed responses and by 42.68 percent of those responses of non employed people. PYO farms were indicated as an alternate vegetable source in 12.50 percent of the employed's responses and in 10.98 of the non employed's responses.

TABLE XXIX  
EMPLOYMENT STATUS OF RESPONDENTS BY KNOWLEDGE  
OF SELECTED ALTERNATE SOURCES OF VEGETABLE  
PURCHASE

	Farmers' Market		Roadside Market		PYO Farm		Total Responses	
	N	%	N	%	N	%	N	%
Employed	69	50.74	50	36.76	17	12.50	136	100.00
Non Employed	38	46.34	35	42.68	9	10.98	82	100.00

Selected Sample Demographics by Primary Use of  
Fresh, Canned, Frozen, or Dried Vegetables

The total responses listed on the tables in this section may or may not be the same as those cited for the respondent distributions in an earlier section. This was caused by missing data due to some

respondents not answering a question or questions on the instrument at the time of the telephone interview.

Table XXX showed the age levels of the respondents by the most frequently used form of vegetables. The highest percentage (69.44 percent) of the primary household food shoppers using mostly fresh vegetables was among the 65 years and older group, with the lowest percentage being the 20 to 26 year olds, with 33.33 percent. Use of canned as the most frequent form ranged from 24.29 percent for the 37 to 51 year olds to 30.49 percent for the 27 to 36 year old group. The 50.00 percent for the 19 or younger group was disregarded because the whole category consisted of two people. Frozen vegetables were used most frequently by 5.56 percent of those respondents 65 or older, while 40.74 percent of the respondents between 20 and 26 used frozen most often. The two individuals who used dried vegetables most often belonged to the 27-36 year old age category.

TABLE XXX  
AGE OF RESPONDENTS BY PRIMARY USE OF FRESH,  
CANNED, FROZEN, AND DRIED VEGETABLES

	Fresh		Canned		Frozen		Dried		Total Responses	
	N	%	N	%	N	%	N	%	N	%
65 or older	25	69.44	9	25.00	2	5.56	0	0.00	36	100.00
52-64	33	60.00	15	27.27	7	12.73	0	0.00	55	100.00
37-51	39	55.71	17	24.29	14	20.00	0	0.00	70	100.00
27-36	39	47.56	25	30.49	16	19.51	2	2.44	82	100.00
20-26	9	33.33	7	25.93	11	40.74	0	0.00	27	100.00
19 or younger	1	50.00	1	50.00	0	0.00	0	0.00	2	100.00

Table XXXI detailed the primary household food purchaser using gender and the most frequent use of fresh, canned, frozen, or dried vegetables. Of the male respondents, 50.85 percent used fresh most often. Females using fresh most registered 54.95 percent of the females surveyed. In a look at canned, 28.81 percent of the males used this form most, while 26.13 percent of the females did so as well. Overall, fresh was ranked first in frequency of use for both men and women with canned second for both sexes, frozen third for both, and dried last.

TABLE XXXI  
GENDER OF RESPONDENTS BY PRIMARY USE OF FRESH,  
CANNED, FROZEN, AND DRIED VEGETABLES

	Fresh		Canned		Frozen		Dried		Total Responses	
	N	%	N	%	N	%	N	%	N	%
Male	30	50.85	17	28.81	12	20.34	0	0.00	59	100.00
Female	122	54.95	58	26.13	40	18.02	2	0.90	222	100.00

Table XXXII looked at yearly household income level and use of fresh, canned, frozen, or dried vegetables. A larger percentage of the respondents in the \$5,000 to \$9,999 range (78.26 percent) used mostly fresh vegetables than did those in the \$20,000 to \$39,999 range (37.23 percent). The percentage who used frozen vegetables most often went from 0.00 percent in the less than \$5,000 category to 25.81 percent

for those in the \$15,000 to \$19,999 category. In the \$20,000 to \$39,999 range, equally as many people used canned most often as used fresh most often (37.23 percent in each case). Of the two respondents who used dried vegetables most frequently, one (1.07 percent of the category total) was in the \$20,000 to \$39,999 and the other (1.69 percent of the category) was in the \$40,000 or more income bracket.

TABLE XXXII  
YEARLY HOUSEHOLD INCOME OF RESPONDENTS BY USE  
OF FRESH, CANNED, FROZEN, AND  
DRIED VEGETABLES

	Fresh		Canned		Frozen		Dried		Total Responses	
	N	%	N	%	N	%	N	%	N	%
Less than \$5,000	5	71.43	2	28.57	0	0.00	0	0.00	7	100.00
\$5,000-\$9,999	18	78.26	3	13.04	2	8.70	0	0.00	23	100.00
\$10,000-\$14,999	15	60.00	8	32.00	2	8.00	0	0.00	25	100.00
\$15,000-\$19,999	19	61.29	4	12.90	8	25.81	0	0.00	31	100.00
\$20,000-\$39,999	35	37.23	35	37.23	23	24.47	1	1.07	94	100.00
\$40,000 or more	35	59.32	11	18.65	12	20.34	1	1.69	59	100.00

Table XXXIII dealt with household size and primary use of fresh, canned, frozen, and dried vegetables. One-member households had 64.71 percent of the category's respondents using fresh vegetables most frequently. Fresh was used as the most frequent vegetable form by 40.74

percent of the respondents in households with five or more members. Canned vegetables were used most often by households of five or more by 33.33 percent of the respondents, while in the one-member households, canned was used most frequently by 11.76 percent of the individuals. Frozen vegetables were used most often in two-person households by 11.00 percent.

TABLE XXXIII  
HOUSEHOLD SIZE OF RESPONDENTS BY USE OF FRESH,  
CANNED, FROZEN, AND DRIED VEGETABLES

Household Size	Fresh		Canned		Frozen		Dried		Total Responses	
	N	%	N	%	N	%	N	%	N	%
1	22	64.71	4	11.76	8	23.53	0	0.00	34	100.00
2	62	62.00	27	27.00	11	11.00	0	0.00	100	100.00
3	30	50.00	16	26.67	13	21.67	1	1.66	60	100.00
4	28	45.90	19	31.15	14	22.95	0	0.00	61	100.00
5 or more	11	40.74	9	33.33	6	22.22	1	3.71	27	100.00

Table XXXIV looked at employment status by use of fresh, canned, frozen, and dried vegetables. Of the employed primary household food purchasers, 53.79 percent used fresh most often with 54.03 percent of those not employed doing likewise. Regarding canned, 26.90 percent of the employed used this form most frequently with 26.61 percent of those not employed following suit. Frozen was used most often by 19.36

percent of the non-employed respondents, while 17.93 percent of the employed respondents did the same.

TABLE XXXIV  
EMPLOYMENT STATUS OF RESPONDENTS BY PRIMARY  
USE OF FRESH, CANNED, FROZEN, AND  
DRIED VEGETABLES

	Fresh		Canned		Frozen		Dried		Total Responses	
	N	%	N	%	N	%	N	%	N	%
Employed	78	53.79	39	26.90	26	17.93	2	1.38	145	100.00
Not Employed	67	54.03	33	26.61	24	19.36	0	0.00	124	100.00

Selected Characteristics of Vegetables and  
Their Influence on Respondents'  
Purchase of Vegetables

Table XXXV showed the distribution of respondents by what they looked for when buying fresh vegetables. The first consideration mentioned by 258 shoppers (91.49 percent) was product quality. The first thing considered by 17 respondents (6.03 percent) was the price of the fresh vegetables, while 7 respondents (2.48 percent) indicated some other reason such as pre-planned menu guidelines.

TABLE XXXV  
DISTRIBUTION OF RESPONDENTS BY THE MAJOR  
FACTOR INFLUENCING PURCHASE OF  
FRESH VEGETABLES

	Frequency Distribution	
	N	%
Product Quality	258	91.49
Price	17	6.03
Other	7	2.48
Total Responses	282	100.00



## CHAPTER V

### FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter was set forth to provide concise summaries of the following areas: purpose of the study, rationale for the study, design of the study, and the major findings of the research. After indepth consideration of these areas, conclusions and recommendations were outlined based on the analysis of the data.

#### Purpose of the Study

The main purpose of this study was to determine the vegetable purchasing patterns, knowledge of alternate sources and vegetable usage of Tulsa County household food purchasers and the relation of these purchasing patterns to variables such as age, gender, household size, income level, and employment status.

#### Rationale for the Study

Effective marketing and decision-making cannot be of value unless based on factual information about consumers. With business and industry using consumer research techniques so effectively, the time has come to apply appropriate techniques to agriculture.

With the future cost of energy, land and equipment uncertain, and the future of adequate returns on agronomic crops doubtful, the current method of production and distribution of fresh produce may require a

new look. Maxson and Baquet (1981, p. 1) said, "The potential for profitable production and marketing of horticultural food crops in Oklahoma has never been greater."

Upon approaching the issue of local production of horticultural food crops, the question evoked was: What are the purchasing and vegetable usage patterns of Tulsa County residents?

#### Design of the Study

The residents of Tulsa County, Oklahoma, were selected as the population for the study. From this population, a random sample of residents was obtained using a complete library of the most current telephone directories that served Tulsa County. From these directories, a computer program selected the random numbers based on information outlining the beginning and ending page numbers bearing residential numbers, the number of columns per page, and the number of lines per column. Potential respondents were determined using the random numbers indicated by the computer. The total number of respondents needed to satisfy the .95 confidence level was 384.

A telephone survey instrument of 18 items was used to collect the data for the study, with the surveying conducted in the Fall of 1982. Two hundred and eighty-six individuals were willing to respond to the survey. Those individuals who responded were limited to the primary household food purchaser only.

The data obtained were keypunched on IBM cards and run through the computer using a Statistical Analysis System program to calculate frequency information about the data.

## Major Findings of the Study

The following categories were selected and used to report the major findings of the study:

1. Characteristics of Respondents.
2. Distribution of Respondents by Vegetable Purchasing and Usage Patterns.
3. Selected Characteristics of Respondents by Vegetable Purchasing and Usage Patterns.
4. Major Factor Influencing Fresh Vegetable Purchase.

### Characteristics of Respondents

With regard to general characteristics, almost 68 percent said they lived in Tulsa, while another 20 percent said they lived in a suburb of Tulsa, totaling about 88 percent who were found to be urban dwellers. The remaining 12 percent were either small town or rural dwellers.

In terms of type of housing, an overwhelming majority (almost 83 percent) of the Tulsa County residents contacted indicated that they lived in houses rather than apartments or mobile homes.

Among the categories related to size of household, the largest (about 36 percent) was found to be the two-member household. Including the two-member households, almost 80 percent of the respondents lived in family groups of two to four members. The smallest category was that of five or more members per household.

Caucasians were found to make up almost 90 percent of the total sample, in terms of racial background. The remaining 10 percent were, in order of percentage, blacks, Indians, other, and Asians.

The most frequent age category was found to be the 27-36 year old group. Respondents in this category made up a third of the total. Those between the ages of 26 and 64 included about three-fourths of the sample.

Females represented almost 80 percent of those responding. This was to be expected due to the stipulation that the respondent be limited to the primary household food purchaser.

Slightly over half of the primary household food shoppers in the study indicated that they were employed.

The yearly household income of over half of the respondents was determined to be \$20,000 or more. Only seven individuals (2.5 percent) indicated having yearly household incomes of less than \$5,000. Those who had household incomes of more than \$40,000 did roughly include 20 percent of the respondents.

Almost three-fourths of the respondents who answered the question relative to weekly food expenditures did spend between \$26.00 and \$75.00 per week on groceries. Findings further revealed that almost 20 percent spent between \$76.00 and \$100.00 per week.

#### Distribution of Respondents by Vegetable

##### Purchasing and Usage Patterns

Well over half the respondents indicated purchasing fresh vegetables once a week. Another one-fourth of the sample revealed that they bought fresh vegetables two or three times per month.

Approximately 42 percent of the primary household food shoppers surveyed utilized two sources for vegetable purchase. About 80 percent

purchased from only one or two sources, while a meager three percent indicated purchasing from as many as four sources.

The primary sources of purchase mentioned most often were the supermarket, the farmers' market, and home garden. Over 80 percent of the respondents used the supermarket as a main source of vegetable purchase, while about 10 percent cited home garden as a major source of supply. Only four percent cited the farmers' market as a primary source.

It was further determined that 37 percent of the respondents surveyed did not identify alternate sources for vegetable purchases, while 61 percent did identify one or two alternate sources. Only two percent were able to identify as many as three alternative sources.

The distribution of responses revealing knowledge held by respondents regarding various alternate sources for vegetable purchase showed that knowledge of the farmers' market as a source totaled 43 percent of the responses given. In a similar manner, responses citing knowledge of roadside markets made up another 36 percent of the total responses. Another 11 percent of the responses indicated a knowledge of PYO (Pick-Your-Own) farms as an alternate source.

Responses were viewed as including the item of preference as a part of usage. Examination of responses relating to use of and preference for fresh, canned, frozen, and dried vegetables showed a distribution indicating that over 50 percent used fresh vegetables the most frequently as compared to almost 86 percent who said they preferred fresh vegetables over any other category. Twenty-seven percent of respondents cited use of canned vegetables most often, while only 8.5 percent who said they actually preferred to do so. Eighteen

percent did indicate use of frozen most often, with six percent giving top preference to the frozen form. Vegetables in a dried form were used most frequently by less than one percent of those surveyed, and no one preferred dried over the other three forms.

A check of the kinds of vegetables consumed most often by Tulsa County respondents revealed that almost 21 percent of the respondents indicated they consumed potatoes more frequently than any other vegetable, while green beans and lettuce were each indicated by 18 percent of the respondents as the vegetable they most often consumed. Respondents, asked to name the vegetable which the family most frequently used, distributed their responses among approximately 30 different vegetables. When a frequency distribution of vegetables respondents stated they used often was studied, the vegetables mentioned included green beans, sweet corn, tomatoes, and broccoli, in descending order.

When respondents were asked the question, "How would you rate your family on the amount of vegetables they eat?" over 70 percent reported that members of their household ate "a lot" of vegetables. About one-fourth said that household members ate "some" vegetables, while a small percentage (three percent) said their household members ate "little." However, no respondent reported that household members ate no vegetables.

#### Selected Characteristics of Respondents by Vegetable Purchasing, Usage, and Preference Patterns

Almost 93 percent of respondents between the ages of 20 and 26

purchased their vegetables primarily at the supermarket, compared with 77 percent of those in the age group 37 to 51, and 80 percent of those 65 or older. Thirteen to fourteen percent of those in each of the three upper age categories indicated their primary source of vegetables to be home gardens. Only an extremely small percentage of respondents in any age category reported use of either farmers' market, roadside markets, or PYO farms as primary sources of vegetables.

Regarding the gender of the primary household food purchasers and the primary source of vegetable purchase, an overwhelming majority of each gender, about 84 percent, purchased their vegetables primarily at the supermarket. About 11 percent of each gender used home gardens as a primary source of vegetables.

The yearly household income category having the most respondents purchasing vegetables from the supermarket was the \$20,000 to \$39,999 group (89.13 percent), followed closely by the \$15,000 to \$19,999 group with roughly 87 percent. The income category with the lowest percentage of respondents purchasing primarily at the supermarket was found to be those in the less than \$5,000 category (71.43 percent). In addition, it was determined that of those in the \$10,000 to \$14,999 category, 75 percent purchased primarily at the supermarket with an almost identical percentage, 76 percent, for those in the \$40,000 or more category. Among those making less than \$10,000 per year, no one surveyed indicated using the farmers' market, roadside markets, or PYO farms as primary vegetable sources. The highest percentage using the farmers' market as a primary source of vegetables fell into the \$40,000 or more (8.48 percent) category. With the exception of the \$15,000 to \$19,999 range, the second largest group of respondents, regardless of

income level, indicated their primary source of vegetables was the home garden, although in terms of total respondents, this represented only 10.50 percent.

Only slightly less than eight percent of the respondents representing households of five or more members purchased most of their vegetables at the farmers' market; even so, making it the category with the highest percentage doing so.

When employment status of the primary household food purchasers surveyed was examined, about 81 percent of the employed respondents used the supermarket as the primary source for vegetable purchase, while 86 percent of those respondents not employed did likewise. Seven percent of those respondents not employed relied on home gardens for most of their vegetables, with 15 percent of the employed respondents doing the same. Less than five percent of either the employed respondents or those not employed purchased their vegetables primarily from the farmers' market. Less than three percent of either category purchased vegetables primarily at the roadside market.

When respondents' knowledge of alternate sources for vegetable purchase was analyzed by age categories, it was quite clear that almost 64 percent of those responses from people in the category 65 or older identified knowledge of the alternate source, the farmers' market.

Almost 50 percent of the responses given by males and 50 percent of those by females identified the farmers' market, approximately 40 percent each identified roadside markets, and 11 to 12 percent of the responses from both genders identified PYO farms as alternate vegetable sources.



When income levels were considered, almost 58 percent of those responses from individuals with yearly household incomes of \$15,000 to \$19,999 identified farmers' markets, while in the less than \$5,000 range, 33 percent of the responses identified the farmers' market. In general, fewer responses in each income category identified roadside markets than had identified the farmers' market. PYO farms received the smallest percentage of responses across all income levels, except the less than \$5,000 level. With only three responses in the less than \$5,000 level, it was difficult to make statements about this category. About eight percent of the responses of individuals in the \$15,000 to \$19,999 level identified PYO farms, while almost 19 percent of the responses in the \$40,000 or more level identified PYO farms as an alternate vegetable source.

Regarding household size, almost 50 percent of the responses in each category from two-member households to five-or-more-member households indicate the farmers' market as an alternate source for vegetable purchase. There was little difference among the response rates of the various household sizes identifying roadside markets. Four-member households had the smallest percentage (6.90 percent) of responses identifying PYO farms, with the largest percentage (25.00 percent) of the responses indicating PYO farms as an alternate source coming from the single member households.

A look at employment status of the respondents by knowledge of alternate sources of vegetable purchase found that there was a difference of less than five percentage points between the employed respondents and those respondents not employed for each of the three categories

examined. The farmers' market had the largest percentage of responses, then the roadside markets, followed by PYO farms.

When considering the age level of respondents and their use of the various forms of vegetables, it was noted that in the 65 or older category, almost 70 percent of the respondents used mostly fresh vegetables, while only 33 percent of the 20 to 26 year olds used fresh primarily. The largest percentage of the respondents in each category used mostly fresh vegetables, except for the 20 to 26 year olds, where the largest percentage of respondents used mainly frozen vegetables. The two respondents who used mostly dried vegetables fell in the 27 to 36 year old bracket.

Of the females surveyed, 55 percent used fresh vegetables primarily, while 51 percent of the males did the same. In each of the remaining categories of canned, frozen, and dried there was less than a three percent difference between the number of male and female respondents who used each form primarily.

When comparison was made of the yearly household income levels and the primary use of the different forms of vegetables, the highest percentage (78.26 percent) using fresh primarily fell into the \$5,000 to \$9,999 bracket, with 37 percent of those making between \$20,000 and \$39,999 using fresh primarily. Twenty to 25 percent of the respondents in each category over \$15,000 used frozen primarily.

In one-member households, almost 65 percent of the respondents used fresh vegetables most often. In households of five or more, only 41 percent used mostly fresh. With the exception of one-member households, the second largest group of respondents across all household sizes used canned vegetables most frequently.

Of the employed and non employed respondents, 54 percent of each used fresh vegetables primarily. About 27 percent of each category used canned vegetables most frequently and frozen was used most often by about 18 percent of each group.

### Major Factor Influencing Fresh Vegetable Purchase

Overwhelmingly, product quality was the major factor affecting respondents' purchase of fresh vegetables. Approximately 92 percent said quality was the first thing they considered when buying fresh vegetables, and only six percent said price was their first consideration.

### Conclusions

The following conclusions were based on the data collected and the subsequent findings regarding the data:

1. In general, it was concluded that a majority of the primary household food purchasers had the following characteristics: They were Caucasian female residents of Tulsa County between the ages of 27 and 36 living in the city of Tulsa who resided in homes rather than in apartments or mobile homes, had a household size of two members, were employed, with a yearly household income of more than \$20,000, purchased fresh vegetables once a week, and spent \$26.00 to \$75.00 per week on food.

2. It was concluded from the findings that a large majority of the primary household food purchasers chose to purchase vegetables at only one or two sources, while a very small percentage purchased from as many as four sources.

3. According to the findings, it was concluded that very little use was made of the farmers' market, the roadside market, or PYO farms as primary vegetable sources, rather the respondents overwhelmingly relied on the supermarket as a primary vegetable source.

4. Only a very small percentage of the respondents had a knowledge of several alternate sources for vegetable purchase, with a large number of respondents being unable to identify even one alternate source.

5. Upon reviewing the findings, it was concluded that of those respondents who did give an alternate source for vegetable purchase, most indicated knowledge of the farmers' market and the roadside market, but not of PYO farms.

6. As a result of the findings, it was concluded that half the respondents actually used fresh vegetables most frequently, while a much larger proportion preferred fresh vegetables to the other three categories of canned, frozen, and dried.

7. It was concluded that the three vegetables consumed most frequently by respondents' household members were potatoes, green beans, and lettuce.

8. Regardless of the income category, it was concluded that more responses identified the farmers' market as an alternate source for vegetable purchase than did those identifying roadside markets or the PYO farms.

9. It was concluded that the extent of primary use of fresh vegetables by respondents increased with an increase in the age of the respondents.

10. It was concluded that the reason so many respondents had a knowledge of the farmers' market was due to extensive advertising in the Tulsa area.

11. In general, yearly household income had no effect on use of fresh vegetables.

12. It was concluded from the findings that gender and employment status had no effect on the primary source of vegetable purchase, knowledge of alternate sources for vegetable purchase, or use of fresh, canned, frozen, or dried vegetables.

13. Based on the findings, the conclusion was drawn that an overwhelming majority of respondents considered product quality to be their first criterion when purchasing fresh vegetables.

#### Recommendations and Implications

The following recommendations were made as a result of the conclusions drawn from analysis and interpretation of the data:

1. Based on the conclusion that the respondents' primary source of vegetables was the supermarket, advertising efforts for the other commercial vegetable sources should be refined and amplified to help disseminate information about these alternative sources for vegetable purchase.

2. Due to the large discrepancy between the actual primary use of fresh vegetables and the preference for fresh, extension professionals should continue to assist and encourage individuals in the area of home gardening as well as nutrition and food preparation.

3. Extension personnel should also work closely with those horticultural food crop producers to develop not only their production potential but to improve marketing channels as well.

Recommendations to Methodology and for  
Additional Research

1. Those individuals making the telephone calls to collect information for the study should receive extensive training as to how to obtain information from potential respondents and be completely familiarized with the survey instrument prior to conducting the telephone interviews.

2. The ranking of multiple responses to an individual question should be avoided, if at all possible.

3. Further study should be undertaken to determine the reason for the discrepancy between the actual use of fresh vegetables and the preference for fresh vegetables which was evident in this study.

4. A more comprehensive study of all 77 counties in Oklahoma should be undertaken and compared with the results of this study to gain an overview for the entire state.

5. A study should be conducted to determine the most effective method or methods of disseminating information about the alternative sources for vegetable purchase.

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APPENDIX

## QUESTIONNAIRE

NAME \_\_\_\_\_ PHONE NUMBER \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_ NO. \_\_\_\_\_

1. Hello, my name is \_\_\_\_\_ from Oklahoma State University. We are collecting information about the vegetable industry in Tulsa County. May I speak with the person in your home who does most of the grocery shopping? (PAUSE) Could we have a few minutes of your time to help us with this project?
- 1  Yes  
2  No--Thank you, goodbye.
2. Are you a resident of Tulsa County?
- 1  Yes  
2  No--Thank you so much for your willingness to cooperate. Since we need responses from Tulsa County residents only, this concludes our interview.
3. Do you live in:
- 1  Tulsa      3  Small Town  
2  Suburb      4  Country
4. Where do you get the most vegetables? Are there any other places that you get vegetables? (PLACE A STAR BY PRIMARY SOURCE--PROBE FOR ALL SOURCES)
- 1  Supermarket  
2  Farmers' Market  
3  Roadside Market  
4-10  Pick-your-own Farm  
5  Home Garden  
6  Friends or Relatives  
7  Other
5. Can you name any other places to get vegetables in your area WHETHER OR NOT you actually buy them there?
- 1  Yes      1  Supermarket  
                 2  Farmers' Market  
                 3  Roadside Market  
11-18          4  Pick-your-own Farm  
                 5  Home Garden  
                 6  Friends or Relatives  
                 7  Other  
2  No
6. Do you USE fresh, canned, frozen, or dried vegetables? Can you rank them for me by how much you use each one? ....Now can you rank them by which you LIKE the best? Are there any you don't use? (MUST BE RANKED--NO TIES. PLACE A ZERO BY THE ONE OR ONES NOT USED)
- |       | USE     | PREFER  |        |
|-------|---------|---------|--------|
|       | 1 _____ | 5 _____ | Fresh  |
| 19-26 | 2 _____ | 6 _____ | Canned |
|       | 3 _____ | 7 _____ | Frozen |
|       | 4 _____ | 8 _____ | Dried  |
7. How often do you buy fresh vegetables?
- 1  A few times each week  
2  Once a week  
27  2-3 times a month  
4  Once a month  
5  Less often than once a month  
6  Never
8. What do you look for when buying fresh vegetables? (AVOID READING RESPONSES IF POSSIBLE)
- 1  Product Quality  
28  Price  
3  Other
9. What vegetable does your family eat most often? Can you give me two more that are eaten frequently?
- 29-35 \_\_\_\_\_  
\_\_\_\_\_
- |   |  |
|---|--|
| 01 <input type="checkbox"/> Artichokes  | 15 <input type="checkbox"/> Okra       |
| 02 <input type="checkbox"/> Asparagus   | 16 <input type="checkbox"/> Onions     |
| 03 <input type="checkbox"/> Beets       | 17 <input type="checkbox"/> Peas       |
| 04 <input type="checkbox"/> Broccoli    | 18 <input type="checkbox"/> Peppers    |
| 05 <input type="checkbox"/> Cabbage     | 19 <input type="checkbox"/> Potatoes   |
| 06 <input type="checkbox"/> Cauliflower | 20 <input type="checkbox"/> Radishes   |
| 07 <input type="checkbox"/> Celery      | 21 <input type="checkbox"/> Spinach    |
| 08 <input type="checkbox"/> Cucumbers   | 22 <input type="checkbox"/> Squash     |
| 09 <input type="checkbox"/> Eggplant    | 23 <input type="checkbox"/> Sweet Corn |
| 10 <input type="checkbox"/> Garlic      | 24 <input type="checkbox"/> Tomatoes   |
| 11 <input type="checkbox"/> Green Beans | 25 <input type="checkbox"/> Turnips    |
| 12 <input type="checkbox"/> Lettuce     | 26 <input type="checkbox"/> Yams       |
| 13 <input type="checkbox"/> Limas       | 27 <input type="checkbox"/> Other      |
| 14 <input type="checkbox"/> Mushrooms   |  |

10. How would you rate your family on the amount of vegetables they eat?

36 1     *Alot*  
 2     *Some (Average)*  
 3     *Little*  
 4     *None*

11. Could you give me a rough estimate of your total weekly food bill NOT INCLUDING pet food, detergent, etc.? (CAN INCLUDE MEALS EATEN OUT)

37 1     *Less than \$25 per week*  
 2     *\$26-\$50 per week*  
 3     *\$51-\$75 per week*  
 4     *\$76-\$100 per week*  
 5     *More than \$100 per week*

The remaining questions deal with information about you and your family.

12. What occupations do the primary wage earners in your household have? (TWO RESPONSES AT MOST--WRITE SPECIFIC OCCUPATIONS IN THE BLANKS)

38-39 1     *Agriculture* 4     *Professional*  
 2     *Business* 5     *Other*  
 3     *Labor* 6     *Not Employed*

13. What type of dwelling do you live in?

40 1     *House* 3     *Mobile Home*  
 2     *Apartment* 4     *Other*

14. How many people live in your household?

41 1     *One* 4     *Four*  
 2     *Two* 5     *Five or More*  
 3     *Three*

15. What is your ethnic background?

42 1     *White* 4     *Hispanic*  
 2     *Black* 5     *Asian*  
 3     *Indian* 6     *Other*

16. In what year were you born?

43 1     *1917 or before*  
 2     *1918-1930*  
 3     *1931-1945*  
 4     *1946-1955*  
 5     *1956-1962*  
 6     *1963 or after*

17. (TRY TO DETERMINE GENDER WITHOUT ASKING SPECIFICALLY)

44-45 1     *Male Employed?* 1     *Y* 2     *N*  
 2     *Female Employed?* 1     *Y* 2     *N*

18. Now for the last question. We would like to have a ROUGH ESTIMATE of your yearly household income. (WHEN ASKING, CHOOSE A GOOD AVERAGE FIGURE THEN GO UP OR DOWN AS INDICATED)

46 1     *Less than \$5,000*  
 2     *\$5,000-\$9,999*  
 3     *\$10,000-\$14,999*  
 4     *\$15,000-\$19,999*  
 5     *\$20,000-\$39,999*  
 6     *\$40,000 or more*  
 7     *No Response--Refusal*

VITA

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