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Factors Affecting Per Capita Consumption of Frozen Broilers in Tennessee

by
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SUMMARY

THE OBJECTIVES of this study were to determine: 1) the relationship which exists between the per capita consumption of frozen broilers and other factors such as home refrigeration facilities and practices, merchandising practices, product characteristics, and family characteristics and practices, 2) reasons why many families never buy or consume frozen broilers, 3) reasons why many consumers prefer frozen broilers, and 4) reasons why some consumers are dissatisfied with frozen broilers. The study was based on schedules obtained in 1960 from 266 retail grocery stores and 847 families in Tennessee.

- For 847 families surveyed the annual per capita consumption averaged 35.4 pounds of broilers of which 12.1 pounds were frozen cut-up, whole, or parts. Annual per capita consumption of 461 families consuming both ice-chilled and frozen broilers averaged 38.6 pounds, compared with 32.1 pounds for 386 families consuming only ice-chilled broilers.

- Important factors discussed in this report which point toward an increase in annual per capita consumption of frozen broilers are: increased freezer facilities in the home enabling the consumer to buy more broilers at one time at favorable prices, and to freeze or hold the product for use at the convenience of the housewife; increased availability at stores of well-displayed, high-quality broilers of various forms and weights and attractively packaged; merchandising of broilers in frozen forms at prices competitive with the ice-chilled forms; increased knowledge by consumers of different ways of cooking broilers and desirable nutritional qualities of the product; and increased family income and education.

- Factors studied which should remain fairly static and therefore not affect annual per capita consumption of frozen broilers include: size of family; race; religion; geographic distribution of families; employment status of wage earner of family; type and number of stores where broilers are purchased, brand name of product; practice of freezing cooked broilers at home; and seasonality of broiler purchases.

- The most important reason cited by the 46% of 847 families surveyed who did not consume frozen broilers in any form was limited food freezer facilities at home. Other reasons were production of chickens for home use, price of frozen broilers too high, and frozen broilers not available at stores.

- Primary reasons why many consumers prefer frozen over ice-chilled broilers are: convenience in storing; the belief that frozen

broilers are more tender, better cleaned, and freer of pinfeathers and hair; and better packaging of frozen birds. Little difference exists in consumer ratings of frozen versus ice-chilled broilers in regard to such points as objectionable odor, skin tears and bruises, broken bones, and plumpness or fleshing.

- Important reasons why some consumers were dissatisfied with frozen broilers were: lack of variety in forms in which broilers were sold at stores; poor condition of some packages; poor display of frozen broilers at stores; prices too high in comparison with fresh-chilled birds; discolored meat and bones; and dryness in appearance.

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CONTENTS

	<i>Page</i>
SUMMARY	2
INTRODUCTION	6
Importance and Purpose of the Study	6
Scope and Procedure	6
HOME FREEZER FACILITIES AFFECTING	
CONSUMPTION	8
Number of Broilers Purchased at One Time	8
Consumer Rating of Frozen Broilers as Convenient to Prepare for Cooking	9
Food Freezer Space Per Home	9
Ease of Storing	10
Length of Time Frozen Broilers Held Before Cooking	10
Seasonality of Frozen Broiler Consumption	10
Freezing Cooked Broilers at Home	11
MERCHANDISING PRACTICES AND PRODUCT	
CHARACTERISTICS	11
Variety of Forms of Broilers Sold at Stores	11
Package Rating of Broilers	11
Quality Rating of Frozen Broilers	11
Price Paid for Frozen Broilers	12
Display of Frozen Broilers at Stores	13
Size of Town or City Where Broilers Were Purchased	13
Purchase of Frozen Broilers by Brand Name	13
Number of Stores from Which Groceries Were Purchased	14
Type of Store Where Groceries Were Purchased	14
FAMILY CHARACTERISTICS AND PRACTICES	14
Weights of Frozen Broilers Purchased or Preferred	14
Number of Different Ways of Serving Frozen Broilers	14
Number of Forms of Broilers Used	15
Size of Family	15
Occupation of Head of Family	16
Impulse Buying of Broilers	16

Member of Family Doing Most of the Food Shopping.....	17
Monthly Family Income.....	17
Race	17
Geographic Distribution of Families.....	17
Source of Frozen Broilers.....	18
Employment Status of Head of Family.....	18
Residence in Country or City.....	18
Religion	18

WHY MANY FAMILIES NEVER BUY OR CONSUME

FROZEN BROILERS

Families Not Buying Broilers in Frozen Form.....	19
Families Not Consuming Any Frozen Broilers.....	19

CONSUMER RATING OF FROZEN BROILERS.....

Why Many Consumers Prefer Frozen Broilers.....	20
Why Some Consumers Are Dissatisfied with Frozen Broilers	22

APPENDIX A

Factors Affecting Per Capita Consumption Of Frozen Broilers In Tennessee

by
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INTRODUCTION

Importance and Purpose of the Study

THIS IS the fifth report which presents the results of a study of broiler consumption in Tennessee. The first deals with economic information relating to areas of broiler production and the consumer quality ratings.¹ In the second report emphasis is placed on factors relating to the consumption of ice-chilled broilers.² The third report is concerned with the availability and sales of frozen broilers and such store merchandising practices as origin, pricing, advertising, and sales displays of broilers.³ The fourth report evaluates the factors affecting the per capita consumption and market potential for frozen chicken pies.⁴

The primary objectives of this part of the study are to determine the various factors affecting the per capita consumption of frozen broilers, the reasons why many families never buy or consume frozen broilers, why many prefer broilers in frozen form, and why some consumers are dissatisfied with frozen broilers. The study is designed to aid in estimating potential demand for frozen broilers; indicate ways in which frozen broiler consumption changes; and provide a basis for improvements in broiler processing and merchandising practices to take account of the preferences, acceptances, and satisfactions of consumers.

Scope and Procedure

This report is based on analysis of schedules of information and personal interviews obtained from 266 retail grocery stores and 847 families in Tennessee in 1960. The rate of sampling was

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¹B. D. Raskopf, *Consumer Rating of Broilers in Tennessee*, Tennessee Agricultural Experiment Station Bulletin 255, November, 1956.

²B. D. Raskopf, *Factors Affecting Per Capita Consumption of Broilers in Tennessee*, Tennessee Agricultural Experiment Station Bulletin 288, August, 1958.

³B. D. Raskopf, *Marketing Frozen Broilers in Tennessee Retail Grocery Stores*, Tennessee Agricultural Experiment Station Bulletin 331, August, 1961.

⁴B. D. Raskopf, *Market Potential for Frozen Chicken Pies*, Tennessee Farm and Home Science, Progress Report 42, 1962.

3.5% for stores and 0.1% for families. The sample of stores was stratified by county, size of town or city, and by type and size of store. The sample of families was stratified by county, size of town or city, by rural or urban residence, and race.

Interviews of members of families residing in towns and cities were conducted at random among patrons of urban retail grocery stores. Interviews of members of families residing in rural areas were made at random in each county. The number and locations of the consumers included in the survey are shown in Figure 1.

The term "broiler" used throughout the report refers to a young chicken, 9 to 14 weeks of age, of either sex, that is tender-meated with soft, pliable, smooth-textured skin, and flexible breastbone cartilage. Reference to "broiler parts" refers to chickens which have been cut into parts such as breasts, thighs, drumsticks, wings, backs, necks, and giblets, and sold separately. Data obtained on broilers also include those for chickens that were pre-cooked and sold either whole, cut-up in parts, or "barbecued."

Data were not obtained for such products containing chicken as sausage, franks, hash, chicken cold cuts, and other newly-developed products containing little if any broiler meat. Annual per capita consumption in this report includes amounts consumed as frozen or ice-chilled broilers, as reported by family members during interviews. Where reference is made to differences in per capita consumption averages among families as being significant or not significant, the term "significant" means at the 5% level of probability or those differences which are great enough so that the chances are 95 out of 100 against their occurrence due to chance alone.

In evaluating the importance of variables affecting per capita consumption of frozen broilers, the 30 factors considered were divided into three broad categories: 7 relating to home freezer facilities and practices affecting consumption; 9 associated with variations in merchandising practices and product characteristics; and 14 relating to family characteristics and practices.

HOME FREEZER FACILITIES AFFECTING CONSUMPTION

Number of Broilers Purchased at One Time

All families that reported buying more than one ice-chilled or frozen broiler at a time owned home freezers or had more than 1 cubic foot of food freezer space in refrigerators. Among 726 fam-

ilies, as the number of broilers bought at one time increased from 1 to 5 or more, the annual per capita consumption of frozen broilers increased from 5.7 to 35 pounds, and consumption of all broilers from 31.8 to 48.5 pounds (Appendix A, item 1).

The remaining 121 families did not buy ice-chilled or frozen broilers in either whole or cut-up form. This group included 54 families that purchased ice-chilled or frozen selected parts of broilers only, 55 families that produced at home all of the broilers consumed, and 12 families reporting no consumption of any ice-chilled or frozen broilers in any form.

Families consuming selected broiler parts only had an average per capita consumption of 15.3 pounds and consumed about 8 times more ice-chilled than frozen broiler parts. Families producing all of the broilers consumed at home averaged high in total per capita broiler consumption (47.2 lb.) and consumed about equal proportions of ice-chilled and home-frozen broilers.

Consumer Rating of Frozen Broilers as Convenient to Prepare for Cooking

Of the 461 families consuming frozen broilers, 389 or 84% rated the frozen products "easy to prepare for cooking." All of these families reported more than 1 cubic foot of frozen food storage space per home. With ample food storage facilities, the broilers in frozen form could be taken out of refrigeration and thawed at the convenience of the cook.

The 72 families having little or no freezer space in the home reported frozen broilers "difficult to thaw" and the average annual per capita consumption of these families was only 1.2 pounds of frozen broilers (Appendix A, item 2). However, these families reported high per capita consumption of ice-chilled broilers (34.3 lb.).

Food Freezer Space Per Home

A most important factor associated with increased per capita consumption of frozen broilers was the availability of food freezer space in the home. Of the 847 families, 32% had home freezers, and an additional 60% had refrigerators with 1 to 3 cubic feet of space available for freezing and holding frozen broilers for home consumption. As the number of cubic feet of refrigeration space per home increased from none to 20 or more, the per capita consumption of frozen broilers increased significantly from 2 to 24 pounds, and consumption of all broilers from 29.9 to 39.7 pounds

(Appendix A, item 3). Among groups of families, each increase of 1 cubic foot of frozen food storage space in the home was associated with an increase in per capita consumption of about 1 pound of frozen broilers.

Ease of Storing

The 385 families who rated frozen broilers as being "easy to store" averaged significantly higher (12.1 lb.) per capita frozen broiler consumption than 76 families reporting difficulty in storing (Appendix A, item 4). The families reporting frozen broilers easy to store reported an average of 7 cubic feet of food freezer space per home, compared with an average of 2 cubic feet per home for the families who rated broilers "hard to store."

Length of Time Frozen Broilers Held Before Cooking

Of the 461 families who used frozen broilers, about 32% consumed them within 1 week after purchase or freezing; 20% stored them from 2 to 4 weeks; and 48% held them from 5 to 51 weeks. Among these families, as the time that frozen broilers were held before cooking increased from 1 to 5 or more weeks, the per capita consumption of both purchased and home-frozen broilers increased significantly from 21.6 to 29.2 pounds; also, all broilers increased in consumption from 40.9 to 43.5 pounds (Appendix A, item 5). The 146 families holding frozen broilers up to 1 week before cooking averaged under 3 cubic feet of freezer space per home, 91 families holding from 2 to 4 weeks averaged 6 cubic feet, and 224 families holding from 5 to 51 weeks averaged 12 cubic feet of freezer space.

Seasonality of Frozen Broiler Consumption

Of the 461 families consuming frozen broilers, about 71% indicated no seasonal differences in rates of frozen broiler consumption. Per capita consumption ranged from 19.3 pounds for 12 families consuming most frozen broilers during the fall to 24.2 pounds for 49 families consuming most frozen broilers during the summer, but the difference was not significant (Appendix A, item 6). Of the 185 retail stores selling one or more forms of frozen broilers to the 461 families, 60% reported little seasonal differences in rates of broiler sales; 26% sold proportionally more during the summer, and 14% sold more during the winter, spring, or fall months.

Freezing Cooked Broilers at Home

Of the 461 families consuming frozen broilers, 9% reported that, when portions of cooked broilers were left over after meals, occasionally they were put in home freezer storage and then held for 1 to 4 weeks before consumption. Families reporting the freezing of some cooked broilers consumed 1.9 pounds more frozen broilers per capita than those who did not, but the difference was not significant (Appendix A, item 7).

MERCHANDISING PRACTICES AND PRODUCT CHARACTERISTICS

Variety of Forms of Broilers Sold at Stores

Nearly half of the 847 families rated the variety of forms in which ice-chilled and frozen broilers were sold at stores as Fair to Poor and the annual per capita consumption of frozen broilers for these families averaged only 2 pounds (Appendix A, item 8). Frozen broilers in different forms were not available to all grocery store customers. Of the 266 stores serving the 847 families, only 1 of 14 handled frozen whole broilers, 1 of 7 frozen cut-up, and 6 of 10 frozen parts. All of the stores handled ice-chilled broilers in forms of whole, cut-up, or parts.

Package Rating of Broilers

About 94% of the 461 families that consumed frozen broilers rated the frozen broiler package as Excellent or Good with respect to condition of wrapper and attractiveness of pack (Appendix A, item 9). Families rating broiler packages as Fair to Poor averaged lower annual per capita consumption of both frozen and total broilers. The most common reasons for downgrading the packages of ice-chilled or frozen broilers were "leakage of fluids through the wrapper," and "unpleasant odor of package or wrapper."

Quality Rating of Frozen Broilers

Consumers were asked to rate frozen broilers as Excellent, Good, and Fair to Poor, in 13 ways which included major factors affecting quality (Table 1). About 79% of the 461 families consuming frozen broilers gave them an over-all quality rating of "Excellent" or "Good" and 21% rated them "Fair to Poor." Families rating frozen broilers "Fair to Poor" in quality averaged significantly lower per capita consumption of frozen broilers (Appendix A, item 10).

Important quality factors on which frozen broilers were downgraded by 30 to 40% of the families were "discolored bones and meat," "dryness in appearance," "difficulty in determining quality," and "objectionable odor." There were also many consumers who were doubtful about the nutritive value of frozen broilers and downgraded the chicken with respect to the palatability factors of flavor or taste, and tenderness (Table 1).

Table 1. Consumer Quality Rating of Frozen Broilers,
461 Families in Tennessee, 1960

Item	Quality rating of frozen broilers*		
	Excellent	Good	Fair to poor
	Percent of families reporting		
Freedom from discolored bones	4	56	40
Flavor or taste	9	55	36
Freedom from discolored meat	5	61	34
Nutrition	5	63	33
Freedom from dryness in appearance	10	60	30
Ease in determining quality	3	68	29
Freedom from unpleasant odor	18	55	27
Tenderness	29	60	11
Freedom from skin tears and bruises	8	82	10
Fleshing	4	89	7
Well cleaned	15	81	4
Freedom from pin feathers and hair	15	81	4
Freedom from broken or crooked bones	6	91	3
Over-all quality rating	10	69	21

*Frozen broilers included those purchased in frozen forms, purchased in ice-chilled forms and frozen at home, or produced and frozen at home.

Price Paid for Frozen Broilers

The consumer impression of prices paid for frozen broilers showed significant relationship to annual per capita consumption. Of 461 families, 323 or 70% reported the price "satisfactory" and their per capita consumption averaged 25.3 pounds of frozen broilers, and 17.3 pounds of ice-chilled broilers.

By comparison, 138 families reporting the price of frozen broilers "too high" had per capita consumption of 13.9 pounds of frozen broilers and 15 pounds of ice-chilled broilers (Appendix A, item 11). Most of the families reporting frozen broiler price "too high" also indicated that the price of ice-chilled broilers was "high" in relation to that of competing meats, particularly pork.

During the period of the survey the weighted average price per pound for 10 forms of frozen broilers was about 6 cents higher

than for similar forms of fresh broilers. Among 266 stores the average price of fresh broilers ranged from 23 to 59 cents per pound for fresh whole and fresh cut-up. By comparison, the average price of frozen broilers ranged from 34 to 69 cents per pound for frozen whole and frozen cut-up birds.

Display of Frozen Broilers at Stores

Of the 847 families, 461 were patrons of 185 grocery stores that handled frozen broilers in forms of cut-up, whole, or special parts. These patrons were asked to rate the display of frozen broilers at stores that handled broilers in frozen forms. About 84% of the families rated the display "Excellent" or "Good" and 16% "Fair to Poor." Families rating frozen broiler displays "Fair to Poor" averaged about 11 pounds less in annual per capita consumption of frozen broilers (Appendix A, item 12). Among the 185 stores handling frozen broilers it was found that operators of stores selling the greatest volumes of frozen broilers did the following: displayed them in self-service cases; displayed frozen before ice-chilled broilers to customers in the usual flow of shopper traffic through the store; and held broilers in display cases at below zero degree in temperature to preserve quality.

Size of Town or City Where Broilers Were Purchased

Significant differences existed in annual per capita consumption of frozen broilers among groups of families who shopped for food in towns or cities ranging from under 5,000 to 25,000 and over in population (Appendix A, item 13). Per capita consumption of frozen broilers for families purchasing at stores in cities of 1,000 to 4,999 population averaged 9.5 pounds, compared with 15.3 pounds for families living in cities of 5,000 to 25,000 in population.

Purchase of Frozen Broilers by Brand Name

Although frozen forms of broilers sold by stores in Tennessee were processed by 20 different companies, originating in 9 different states, there was no significant relationship between per capita consumption and brand name. Only 7% of the 461 families consuming frozen broilers indicated that they bought broilers by brand name and their annual per capita consumption was 19.4 pounds of frozen broilers; this was not significantly different from the average of 22.2 pounds consumed by 430 families indifferent to name brands (Appendix A, item 14).

Number of Stores from Which Groceries Were Purchased

Of all families surveyed about 24% reported the purchase of fresh or ice-chilled broilers at more than one store. Families buying broilers at 1, compared with 2 or 3 stores, showed no significant differences in per capita consumption of frozen or ice-chilled broilers (Appendix A, item 15).

Type of Store Where Groceries Were Purchased

About 55% of all families reported the purchase of ice-chilled or frozen broilers at chain stores and 45% at independently-operated stores. Families buying broilers at chain stores, compared with independent stores, showed no significant differences in annual per capita consumption of frozen broilers (Appendix A, item 16).

FAMILY CHARACTERISTICS AND PRACTICES

Weights of Frozen Broilers Purchased or Preferred

Data on broiler weights were available from 461 families who bought frozen broilers, bought ice-chilled broilers and froze them at home, or produced broilers for freezing at home. Families consuming birds of the heavier weights reported significantly higher per capita consumption of frozen broilers (Appendix A, item 17). Among 407 families, about 62% consumed frozen broilers weighing from 2 to 2½ pounds, about 8% used birds weighing under 2 pounds, and 30% used birds weighing from 2½ to 4 pounds. The weight of ready-to-cook broilers averaged 2.4 pounds per bird or the equivalent of 3.3 pounds per bird, live weight.

Number of Different Ways of Serving Frozen Broilers

Among 461 families, as the methods of cooking frozen chicken increased from 1 to 6 or more ways, the annual per capita consumption of frozen broilers increased from 13.9 to 30.8 pounds, and all broilers from 32.9 to 51.8 pounds (Appendix A, item 18).

The more popular ways to cook and serve frozen broilers were frying, baking, stewing, barbecuing, with dumplings, and broiling (Fig. 2).

WAYS OF SERVING

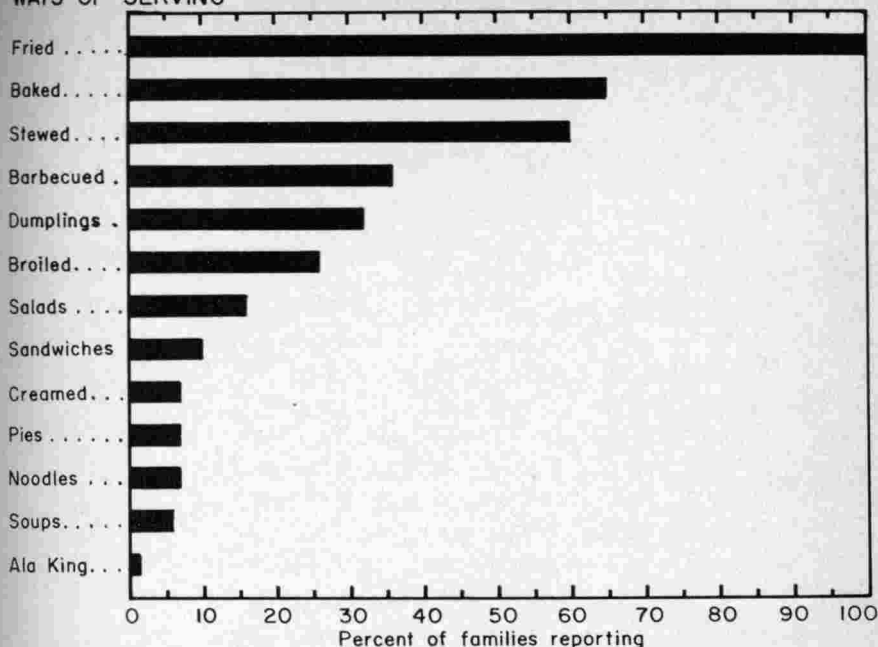


Figure 2. Number of different ways of serving frozen broilers reported by 461 families in Tennessee, 1960.

Number of Forms of Broilers Used

Broilers bought at stores or produced at home were used in 6 different forms—ice-chilled whole, cut-up or parts; and frozen whole, cut-up or parts. As the number of different forms of broilers used increased from 1 to 3 or more, the annual per capita consumption of frozen broilers increased significantly from 6.4 to 20.9 pounds, and total broiler consumption from 33.3 to 42.1 pounds (Appendix A, item 19). Total annual per capita consumption of broilers averaged highest among 312 families consuming both ice-chilled and frozen broilers in various combinations of forms—whole, cut-up, and parts. The stores serving the families included in the study that sold the highest volume of broilers per store sold 2 or more forms of both ice-chilled and frozen broilers.

Size of Family

Size of family was defined as the number of persons in the family living at home. As size of family increased from 1 to 7 or more persons, the annual per capita consumption of frozen broilers

decreased significantly, from 17.4 to 5.5 pounds, and ice-chilled broilers from 48.8 to 18.9 pounds (Appendix A, item 20).

Although large families consumed more total pounds of broilers annually, their per capita consumption was less than for small families. Many housewives reported they bought only one cut-up or whole bird weekly, regardless of the size of family. Generally, the larger families had a higher proportion of children who consumed less food per capita than adults.

Occupation of Head of Family

Families of farm owners averaged annual per capita consumption of 14.8 pounds of frozen broilers, compared with 5.3 pounds for tenant families, and 12.2 pounds for nonfarm families (Appendix A, item 21). Among nonfarm families, the annual per capita consumption of broilers averaged lower when the wage earners were engaged in mining, manufacturing, and construction than for families whose wage earners were professional and other white collar workers.

Impulse Buying of Broilers

Of the 847 families about 19% reported "impulse buying" of either ice-chilled or frozen broilers.⁵ The annual per capita consumption of these families averaged 19.7 pounds of frozen broilers, compared with 10.5 pounds for families not reporting impulse buying (Appendix A, item 22). The effects of impulse buying of frozen broilers on per capita consumption of frozen broilers could not be determined accurately for the following reasons: 1) about three-fourths of the 461 families consuming frozen broilers purchased some fresh broilers in different forms and froze them at home for future consumption; 2) difficulties were encountered in determining whether family broiler purchases were planned in advance of buying or whether the decision to buy was made while the customer was in the store; and 3) store methods of merchandising broilers varied widely with respect to such factors as forms of broilers sold, prices received and mark-up on frozen compared with fresh broilers, and methods and frequency of advertising and displaying both fresh and frozen broilers.⁶

⁵"Impulse buying" is defined as purchases which presumably were not planned by the customer before entering a store, but which resulted from a stimulus created by advertising and sales promotional devices in the store.

⁶B. D. Raskopf, *Marketing Frozen Broilers*, Tennessee Agricultural Experiment Station Bulletin 331, August, 1961.

Member of Family Doing Most of the Food Shopping

Per capita consumption of frozen broilers was related to the education, sex, and age of the persons who did the family shopping. As the formal education of the members of the family doing most of the food buying increased from grade school to college, the annual per capita consumption of frozen broilers increased significantly from 8.6 to 16.6 pounds, and all broilers from 31.4 to 39.9 pounds (Appendix A, item 23). For 88% of the families where the woman of the household did most of the food purchasing, the per capita consumption of frozen broilers averaged 12.7 pounds or significantly higher than the 7.1 pounds among families where men did most of the food shopping. Per capita use of frozen broilers averaged 10.1 pounds where the age of the member of the family doing most of the food shopping ranged from under 30 years, tended to be greater at the 50 to 59 age level, and then declined at the 60-and-over age level.

Monthly Family Income

Annual per capita consumption of frozen broilers ranged from 8.5 pounds among families whose monthly incomes averaged under \$200 to 16 pounds for families with incomes over \$400 (Appendix A, item 24). Per person use of all broilers tended to decline among families whose monthly income averaged over \$400. As family income increased above \$400 monthly the trend was toward less consumption of ice-chilled broilers.

Race

Per capita consumption of frozen broilers among White families was significantly greater than among Negro families, the difference averaging 5.2 pounds annually (Appendix A, item 25). Although Negro families consumed more fresh broilers, the total per capita consumption of all broilers averaged about the same for White and Negro families. The lower per capita consumption of frozen broilers among Negro families was attributed mainly to such variables as limited home freezer facilities, higher price charged for frozen compared with ice-chilled broilers, and lower family income.

Geographic Distribution of Families

Of all families surveyed, 29% lived in the 21 counties of West Tennessee, 40% in the 41 counties of Middle Tennessee, and 31%

in the 33 counties of East Tennessee. Among groups of families in these areas a difference of only 2 pounds existed in annual per capita consumption of frozen broilers (Appendix A, item 26). This difference was not significant.

Source of Frozen Broilers

Of all families surveyed about 33% or 277 bought ice-chilled broilers and froze over half the birds at home and held them for future consumption. Another 7% or 55 families produced all of the broilers they consumed and about half of their production was frozen and stored in home freezers. About 15% or 129 families purchased both ice-chilled and frozen broilers at stores and two-thirds of their purchases were in frozen form. Among these three groups of families there was no significant difference in the per capita consumption of frozen broilers (Appendix A, item 27).

Employment Status of Head of Family

Of the 847 families surveyed about 14% of the family heads were unemployed, either retired or temporarily out of work. Employment status of the head of the family showed no significant association with differences in per capita consumption of frozen broilers. However, the per capita consumption among families, where the family head was employed, averaged significantly higher for fresh broilers (Appendix A, item 28).

Residence in Country or City

Over half of the families lived in cities or suburbs. Annual per capita consumption of frozen broilers for city families averaged 12.3 pounds, compared with 11.9 pounds for families living in the country (Appendix A, item 29). The difference was not significant. On the other hand, city families consumed significantly more ice-chilled broilers per person.

Religion

Protestant families, compared with families following other religions, consumed about the same amount of frozen broilers but significantly fewer ice-chilled broilers (Appendix A, item 30). Average annual per capita consumption in Catholic and Jewish families of all broilers was 44.7 pounds, compared with 35.4 pounds for Protestant families. Catholic and Jewish families bought heavier ice-chilled broilers, bought more birds at one time, and reported more ways of cooking and serving chicken.

WHY MANY FAMILIES NEVER BUY OR CONSUME FROZEN BROILERS

Families Not Buying Broilers in Frozen Form

Of the 847 families surveyed, 718 or nearly 85% purchased few if any broilers in frozen forms during 1960. The main reason 332 of these families gave for not buying broilers already frozen was that they did considerable freezing of chicken at home. As indicated in Appendix A, item 27, 277 families purchased ice-chilled broilers and froze over half of them at home; and an additional 55 families produced broilers and half of their production was frozen and stored for future consumption.

Important factors conducive to producing chicken or buying ice-chilled broilers and freezing them at home were: 1) adequate facilities were available at home for freezing and storing chicken; 2) ice-chilled whole or cut-up broilers generally were more available than frozen birds; 3) ice-chilled broilers averaged lower in price; and 4) consumer doubt among some families as to whether frozen broilers sold at stores were as high in quality as those freshly chilled.

Families Not Consuming Any Frozen Broilers

Of the 847 families surveyed, 386 or nearly 46% did not consume any frozen broilers at home in the forms of frozen cut-up, whole, or parts. Although half of these families reported more than one reason for not consuming any frozen broilers, by far the most important factor was limited food freezer facilities at home (Table 2).

Table 2. Reasons for Not Consuming Any Frozen Broilers,
386 Families, Tennessee, 1960

Reasons for not consuming any frozen broilers	Families reporting	
	No.	%
Limited food freezer facilities	386	100
Produce chickens for home use	55	14
Frozen chicken takes too long to thaw	45	12
Price of frozen broilers too high	42	11
Frozen broilers not available at stores	31	8
Don't use much frozen food	17	4
Some members of the family prefer ice-chilled broilers	13	3
Heard that frozen broilers are low in quality	9	2

About 15% of the 386 families reported no home food freezer facilities, and the average was under 2 cubic feet of frozen food storage space per home. About two-thirds of the housewives reported that limited freezer facilities precluded: 1) buying of ice-chilled broilers for freezing and storing at home, 2) freezing of chicken produced on the farm, 3) buying and storing broilers when they were available and at favorable prices, and 4) better preservation of the quality of the product.

About 14% of the families reported that they produced all of the chicken needed for home consumption. The interviews with the food shoppers in these families indicated that all of them were potential consumers of frozen broilers under one or more of the following conditions: 1) the family ceased production of chicken for home use; 2) food freezer space per home increased; or 3) no difference existed between the price of ice-chilled or frozen broilers. The study revealed that of 110 families producing chicken for home use, 55 reported facilities for freezing and storing some broilers (Appendix A, items 1 and 27).

Many of the reasons given for not consuming frozen broilers were based on general observations and attitudes of consumers. Among the 386 families not consuming any frozen broilers, 45 indicated that frozen chicken would take too long to thaw; 42 families reported that the price of frozen broilers was too high in comparison with ice-chilled broilers; 31 families reported that broilers in frozen forms were not available at stores where they shopped for food; 17 families indicated little use of frozen foods that required home freezers; and 22 families reported that they had heard from others that the quality of frozen broilers was inferior to that of fresh-chilled birds, or some members of the family preferred ice-chilled chicken for reasons which could not be defined.

The per capita consumption of the 386 families not consuming any frozen broilers (Appendix A, item 27) averaged 32.1 pounds of ice-chilled broilers. By comparison, 461 families that consumed both fresh and frozen broilers averaged total broiler per capita consumption of 38.6 pounds.

CONSUMER RATING OF FROZEN BROILERS

Why Many Consumers Prefer Frozen Broilers

As an aid in determining why many consumers prefer or accept frozen broilers, 461 family respondents were asked to rate or compare frozen with ice-chilled broilers with regard to 21 different

factors relating to product convenience, product quality, and merchandising practices. All of these families consumed some form of frozen and ice-chilled broilers during the period of the study.

Generally, a higher proportion of the consumers rated frozen above ice-chilled birds with respect to such factors as convenience in storing, tenderness, freedom from pin feathers and hair, well cleaned, and method of pack including attractiveness of package and freedom from torn wrappers. Not much difference existed in consumer rating of frozen versus ice-chilled broilers in regard to such points as freedom from objectionable odor, skin tears and bruises, broken bones, and plumpness or fleshing. As an average for all factors, about 12% of the consumers rated frozen over ice-chilled broilers; 56% rated both forms about the same; and 32% rated ice-chilled broilers superior to frozen (Table 3).

Table 3. Reasons Why Many Consumers Prefer Frozen Over Ice-chilled Broilers, 461 Families, Tennessee, 1960

Item	Consumer rating of frozen broilers		
	Above ice chilled	About same	Below ice chilled
Percent of consumers reporting			
<i>Product convenience</i>			
Easier to store	48	36	16
More convenient to prepare for cooking	10	37	53
<i>Product quality</i>			
More tender	30	59	11
Less unpleasant odor	19	54	27
Less pinfeathers and hair	15	81	4
Better cleaned	15	81	4
Less dry appearance	10	60	30
Better flavor or taste	10	54	36
Less skin tears and bruises	9	81	10
Less broken bones	6	85	9
Better plumpness or fleshing	5	88	7
More nutritious	5	62	33
Less discolored meat	5	61	34
Less discolored bones	4	56	40
Easier to determine quality	3	68	29
<i>Merchandising practices</i>			
More attractive package	12	82	6
Products better wrapped	10	84	6
More variety sold at stores	9	4	87
Lower price per pound	7	17	76
Better displayed at stores	6	15	79
More available at stores	5	15	80
Average of all ratings	12	56	32

Why Some Consumers Are Dissatisfied with Frozen Broilers

The consumer ratings of fresh over frozen broilers shown in Table 3 indicate several of the dissatisfactions with frozen broilers. One of the more important of these was the inconvenience in preparation for cooking in that it took considerable time to thaw frozen broilers.

An important consideration was the consumer doubt as to whether frozen broilers were as high in quality as those freshly chilled. From the viewpoint of quality factors the major dissatisfactions cited by 27% to 40% of the families were: discolored meat and bones, poor flavor or taste, dryness in appearance, the belief that frozen broilers are low in nutritive value, the difficulty in determining quality because the frozen products are usually wrapped in sealed packages, and the belief that some frozen broilers have an objectionable odor (Table 3).

From the point of view of merchandising frozen broilers, from 76 to 87% of the 461 consumers reported dissatisfactions relating to high price, broilers not being well displayed at stores, unavailability of frozen broilers, and lack of variety in forms of frozen broilers sold at stores.

The findings of this study indicate that considerable increase in per capita consumption of both ice-chilled and frozen broilers might be expected if the consumer dissatisfactions relating to merchandising practices and product characteristics are overcome. Appendix A, items 8 to 12 indicate that the per capita consumption of frozen broilers averaged low among groups of families rating broilers as Fair to Poor for the following factors: variety of forms of broilers sold at stores, attractiveness of package and condition of wrapper, over-all quality rating, satisfactory price, and method of display at stores.

APPENDIX A

Important Factors Associated with Annual Per Capita Consumption of Ice-chilled and Frozen Broilers, 847 Families, Tennessee, 1960

Factors related to home freezer facilities				Families reporting		Frozen broilers				Ice-chilled broilers	All broilers
						Cut-up	Whole	Parts	Total		
				No.	%	Annual per capita consumption (lb.)					
1. Number of broilers purchased at one time	1	361	43	4.1	1.0	0.6	5.7	26.1	31.8		
	2	203	24	5.8	2.6	1.4	9.8	26.3	36.1		
	3 or 4	79	9	13.3	4.2	2.2	19.7	23.9	43.6		
	5 or more	83	10	17.1	17.2	0.7	35.0	13.5	48.5		
	Buy ice-chilled or frozen parts only	54	6	0	0	1.7	1.7	13.6	15.3		
	Chicken produced—none bought	55	7	11.6	11.7	0	23.3	23.9	47.2		
	No broilers consumed	12	1	0	0	0	0	0	0		
	All families	847	100	7.0	4.0	1.1	12.1	23.3	35.4		
2. Frozen broilers convenient to prepare for cooking	Yes	389	46	14.6	8.4	2.2	25.2	13.8	39.0		
	No	72	8	0.9	0.2	0.1	1.2	34.3	35.5		
	No frozen consumed	386	46	0	0	0	0	32.1	32.1		
3. Number of cubic feet of freezer space per home	None	65	8	1.3	0.2	0.5	2.0	27.9	29.9		
	1	206	24	3.8	1.1	0.2	5.1	27.1	32.2		
	2	210	25	6.5	2.7	1.6	10.8	23.9	34.7		
	3	93	11	8.3	3.2	1.1	12.6	26.8	39.4		
	4-9	37	4	10.5	4.6	1.6	16.7	23.9	40.6		
	10-19	161	19	10.4	9.0	1.8	21.2	18.5	39.7		
	20 or more	75	9	13.4	9.7	0.9	24.0	15.7	39.7		
4. Frozen broilers easy to store	Yes	385	45	14.1	7.9	1.9	23.9	14.5	38.4		
	No	76	9	5.9	3.8	2.1	11.8	27.5	39.3		
	No frozen consumed	386	46	0	0	0	0	32.1	32.1		

APPENDIX A (Continued)

Factors related to merchandising practices and product characteristics				Families reporting		Frozen broilers				Ice-chilled broilers	All broilers
						Cut-up	Whole	Parts	Total		
				No.	%	Annual per capita consumption (lb.)					
5. Number of days		1-7		146	17	9.5	9.5	2.6	21.6	19.3	40.9
frozen broilers		8-28		91	11	12.0	12.0	2.6	26.6	22.9	49.5
held before		29-361		224	26	14.1	14.1	1.0	29.2	14.3	43.5
cooking		No frozen consumed		386	46	0	0	0	0	32.1	32.1
6. Season most		Spring		14	1	14.6	2.7	3.5	20.8	28.4	49.2
frozen broilers		Summer		49	6	14.5	8.3	1.4	24.2	17.0	41.2
were consumed		Fall		12	1	7.5	11.7	0.1	19.3	20.1	39.4
		Winter		58	7	11.1	5.3	3.9	20.3	17.2	37.5
		No difference		328	39	11.8	6.7	1.6	20.1	17.1	37.2
		No frozen consumed		386	46	0	0	0	0	32.1	32.1
7. Freezing		Yes		40	5	16.8	2.4	4.5	23.7	24.6	48.3
cooked broilers		No		421	49	12.4	7.7	1.7	21.8	16.0	37.8
at home		No frozen consumed		386	46	0	0	0	0	32.1	32.1
8. Consumer rating of											
variety of ice-											
chilled and frozen		Excellent		39	5	8.7	5.5	4.8	19.0	18.0	37.0
broilers sold at		Good		409	48	12.5	7.3	1.6	21.4	17.6	39.0
stores		Fair to poor		399	47	1.3	0.5	0.2	2.0	30.2	32.2
9. Package	Attractive-	Excellent		44	5	14.4	4.2	5.3	23.9	14.7	38.6
rating of	ness of	Good		392	46	13.0	7.9	1.6	22.5	16.2	38.7
ice-chilled	package	Fair to poor		25	3	6.2	2.6	1.2	10.0	26.5	36.5
and frozen	Condition	Excellent		54	6	11.3	6.7	4.9	22.9	19.0	41.9
broilers	of wrapper	Good		380	45	13.2	7.7	1.2	22.1	15.6	37.7
sold at		Fair to poor		27	3	9.7	2.7	6.1	18.5	26.3	44.8
stores		No frozen consumed		386	46	0	0	0	0	32.1	32.1
10. Quality rating		Excellent		46	5	12.6	12.9	4.0	29.5	10.3	39.8
of frozen		Good		318	38	13.3	7.7	1.7	22.7	15.1	37.8

broilers		Fair to poor	97	11	10.9	3.3	1.7	15.9	24.7	40.6
		No frozen consumed	386	46	0	0	0	0	32.1	32.1
11. Price paid for frozen broilers	Satisfactory		323	38	14.9	8.2	2.2	25.3	17.3	42.6
	Too high		138	16	7.5	5.1	1.3	13.9	15.0	28.9
	No frozen consumed		386	46	0	0	0	0	32.1	32.1
12. Display of frozen broilers at stores	Excellent		26	3	10.8	2.4	9.8	23.0	12.3	35.3
	Good		363	43	13.9	8.4	1.5	23.8	14.9	38.7
	Fair to poor		72	8	7.7	3.4	1.5	12.6	27.0	39.6
		No frozen consumed	386	46	0	0	0	0	32.1	32.1
13. Population of town or city where broilers were purchased	Under 1,000		64	7	4.6	5.4	0.2	10.2	20.1	30.3
	1,000- 4,999		260	31	4.3	4.6	0.6	9.5	24.7	34.2
	5,000-24,999		201	24	9.1	4.2	2.0	15.3	22.7	38.0
	25,000 and over		322	38	8.5	3.1	1.0	12.6	23.9	36.5
14. Buying frozen broilers by brand name	Yes		31	4	10.5	3.0	5.9	19.4	17.2	36.6
	No		430	50	12.9	7.6	1.7	22.2	16.6	38.8
	No frozen consumed		386	46	0	0	0	0	32.1	32.1
15. Number of stores from which groceries were purchased		1	644	76	6.6	4.1	1.1	11.8	23.2	35.0
		2-3	203	24	8.5	3.8	1.0	13.3	25.1	38.4
16. Type of store where groceries were purchased	Chain		466	55	6.8	3.6	1.4	11.8	24.9	36.7
	Independent		381	45	7.4	4.5	0.6	12.5	22.1	34.6
17. Weights of frozen broilers purchased or pre-ferred	Frozen, whole or cut-up (lbs.)	Under 1.75	16	2	5.7	5.0	1.4	12.1	20.3	32.4
		1.75-1.99	17	2	14.5	3.4	0	17.9	17.8	35.7
		2.00-2.24	130	15	11.6	6.9	0.7	19.2	18.4	37.6
		2.25-2.49	122	14	12.3	8.1	0.3	20.7	16.6	37.3
		2.50-2.74	81	9	13.6	9.0	0.3	22.9	14.7	37.6
		2.75-4.00	41	5	17.5	3.9	1.2	22.6	23.5	46.1
	Frozen parts (lbs.)	Under 1	38	4	7.8	1.7	7.7	17.2	15.3	32.5
		1-2	30	3	8.0	0.4	8.4	16.8	19.8	36.6
		3 and over	6	1	5.0	0	30.4	35.4	5.6	41.0
		No frozen consumed	386	46	0	0	0	0	32.1	32.1

APPENDIX A (Continued)

Factors relating to family characteristics and practices			Families reporting		Frozen broilers				Ice-chilled broilers	All broilers
					Cut-up	Whole	Parts	Total		
			No.	%	Annual per capita consumption (lb.)					
18. Number of different ways of serving frozen broilers	1		78	9	10.4	1.5	2.0	13.9	19.0	32.9
	2		95	11	8.3	5.1	2.2	15.6	16.6	32.2
	3		113	13	12.9	8.3	1.1	22.3	15.9	38.2
	4		78	9	14.1	8.6	1.1	23.8	16.4	40.2
	5		39	5	14.2	10.0	1.1	25.3	16.2	41.5
	6-13		58	7	18.6	10.4	1.8	30.8	21.0	51.8
	No frozen consumed		386	46	0	0	0	0	32.1	32.1
19. Number of forms of broilers consumed*	None		12	1	0	0	0	0	0	0
	1		466	55	4.2	1.3	0.9	6.4	26.9	33.3
	2		345	41	10.5	7.2	1.2	18.9	20.0	38.9
	3-6		24	3	9.8	8.6	2.5	20.9	21.2	42.1
20. Number of persons in family living at home	1		39	5	9.2	4.2	4.0	17.4	48.8	66.2
	2		208	24	11.7	2.5	1.5	15.7	37.5	53.2
	3		168	20	10.9	2.8	1.4	15.1	26.3	41.4
	4		191	22	7.4	6.5	0.6	14.5	20.6	35.1
	5		110	13	5.8	5.4	0.5	11.7	19.6	31.3
	6		65	8	4.1	3.3	1.8	9.2	20.4	29.6
	7 or more		66	8	2.7	1.9	0.9	5.5	18.9	24.4
21. Occupation of head of family	Farm owner		180	21	7.3	6.4	1.1	14.8	23.0	37.8
	Farm tenant		40	5	1.3	3.9	0.1	5.3	20.3	25.6
	Nonfarm		627	74	7.6	3.4	1.2	12.2	24.1	36.3
22. Impulse buying of broilers	Yes		159	19	11.3	5.6	2.8	19.7	19.6	39.3
	No		688	81	6.1	3.7	0.7	10.5	24.5	35.0
23. Member of the family doing	Education	Grade 1-7	175	21	5.1	2.7	0.8	8.6	22.8	31.4
		8	158	19	5.5	4.8	1.1	11.4	23.5	34.9
		H. S.	423	50	7.7	4.5	1.1	13.3	24.0	37.3
		College	91	10	11.8	3.2	1.6	16.6	23.3	39.9

(3M/6-63)	most of the food shopping	Sex	Women	745	88	7.4	4.2	1.1	12.7	23.0	35.7
			Men	102	12	3.6	2.4	1.1	7.1	29.4	36.5
			Under 30	203	24	6.4	2.9	0.8	10.1	24.2	34.3
		Age	30-39	263	31	6.7	4.5	1.1	12.3	20.8	33.1
		(yrs.)	40-49	186	22	6.4	5.4	1.2	13.0	24.0	37.0
			50-59	102	12	9.4	4.6	0.9	14.9	24.0	38.9
			60 and over	93	11	8.2	1.7	1.5	11.4	28.7	40.1
	24. Monthly family income		Under \$100	113	13	7.1	2.2	1.3	10.6	19.2	29.8
			100-199	215	25	4.1	3.8	0.6	8.5	27.2	35.7
			200-299	235	28	6.7	4.2	0.7	11.6	24.2	35.8
			300-399	159	19	9.0	4.9	1.3	15.2	24.8	40.0
			400 and over	125	15	9.7	4.4	1.9	16.0	18.8	34.8
27	25. Race		White	713	84	7.8	4.2	1.2	13.2	22.7	35.9
			Negro	134	16	4.1	3.3	0.6	8.0	27.3	35.3
	26. Geographic distribution of families		West Tennessee	245	29	9.0	3.3	0.7	13.0	23.3	36.3
			East Tennessee	338	40	6.7	3.7	1.9	12.3	22.1	34.4
			Middle Tennessee	264	31	5.6	5.1	0.3	11.0	25.8	36.8
	27. Source of broilers		Buy ice-chilled and freeze some	277	33	13.6	7.5	0.8	21.9	17.9	39.8
			Produce and freeze some	55	6	11.6	11.7	0	23.3	23.9	47.2
			Buy ice-chilled and frozen	129	15	11.5	4.9	5.1	21.5	10.9	32.4
			No frozen consumed	386	46	0	0	0	0	32.1	32.1
	28. Head of family employed		Yes	727	86	7.0	4.2	1.1	12.3	24.0	36.3
			No	120	14	7.2	2.7	1.2	11.1	20.2	31.3
	29. Residence of family		City or suburb	457	54	7.6	3.5	1.2	12.3	25.3	37.6
			Country	390	46	6.4	4.6	0.9	11.9	21.6	33.5
	30. Religion		Protestant	809	95	7.0	4.1	1.1	12.2	23.2	35.4
			Other	38	5	7.6	2.5	1.7	11.8	32.9	44.7

*Forms of broilers include ice-chilled whole, cut-up, or parts, and frozen whole, cut-up, or parts.

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