

THE UNIVERSITY OF MANITOBA
THE CONSUMER ACCEPTANCE OF PREPACKAGED FROZEN
CUTS OF PORK IN METRO WINNIPEG

by

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ABSTRACT

The Consumer Acceptance of Prepackaged Frozen Cuts of Pork in Metro Winnipeg

by

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A four phase study on consumer acceptance of frozen pork was conducted in Metro Winnipeg during 1971. The exploratory phase, phase I, consisted of four in-depth interviews with homemakers. The topics discussed were related to meat purchasing habits and attitudes to fresh and frozen meat. Defined areas within these topics were pursued in phase II which consisted of 200 personal interviews with the aid of a structured and semi-structured questionnaire. In phase III, 50 respondents tested the frozen pork in their homes. In phase IV, 43 of the 50 women in phase III redeemed credit slips, in a supermarket, for fresh or frozen pork.

The results showed that the consumer must have assurance that the meat is fresh at the time of freezing and that it has been stored and transported under optimum conditions. The product at the point of purchase must be readily visible. Thus the use of transparent packaging and keeping the product frost free during freezing, storage and display

is essential.

The term "quick frozen" pork enhanced the attitudes to the frozen pork products.

The results revealed that no subgroups of women were more receptive to frozen pork than others.

Frozen pork was considered different enough from frozen chicken that the attitudes towards the products are not associated in regard to considering to buy the frozen pork.

There are erroneous attitudes to pork and frozen meats which may be corrected by a consumer information program.

The findings of this study in general indicated that with a suitable program of consumer information accompanied by the application of proper packaging and handling methods, frozen retail cuts of pork could be a highly marketable Manitoba food product.

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I. INTRODUCTION

A logical direction for the development of the meat packing industry appears to be toward centralized fabrication of retail cuts of red meats. Further advantages might be gained from storing and marketing meat in the frozen state.

It is recognized that consumers are reluctant to buy fresh red meats in the frozen state. Reasons revealed by previous studies include suspicion that the meat is old and inability to judge quality. However, consumers frequently buy supplies of fresh meat which they freeze at home with neither suitable packaging nor ideal freezing conditions.

Why have frozen meats not been accepted in the market place? The reasons for this are manifold and complex. Ryan (1970) has reported that the prospect of the acceptance of frozen red meats is looked upon favorably by the meat packing industry in the U.S.A.

The major problem the packers are concerned with at present is consumer acceptance of frozen red meats. If the consumer will not accept the frozen product, the product will be a market failure. If there is consumer resistance sales will be lost to other meat products or even possible meat substitutes. However, at present there are those in the meat industry who believe that changes have taken place which favor the acceptance of frozen red meats.

Of particular concern in Manitoba is the expansion of the market for pork. The prairie hog production was up by one-third in 1970 compared with 1969 (Schreiner, 1971). As a result there is a surplus of pork in Canada. The Canadian Swine Council, the producers, packers and retailers are all working together on ways to promote pork. Considering the increased pork production and the suitability of pork for freezing, it seemed feasible that pork would be a suitable red meat to market in the frozen state. Furthermore, pork appears to come closer on the spectrum to frozen poultry, lamb and seafood which are currently being successfully marketed in the frozen state. Beef might be much more difficult to market in the frozen state due to the well-ingrained traditions in selecting this high priced meat.

There has been no published marketing research on frozen red meats in Canada and little, if any, anywhere dealing specifically with frozen pork. Metro Winnipeg is virgin territory for a marketing research survey on frozen meats, since there have been no attempts in the past to market frozen pork or beef.

In the U.S.A. improper freezing and packaging used in studies conducted in the past may have left the consumer with a reinforced prejudiced negative opinion of frozen red meats. It seems appropriate that if frozen pork is to be marketed in Metro Winnipeg, a marketing research study is needed. The study should attempt to reveal the technical

changes necessary in the product and areas to be handled in a consumer education program so that frozen pork will better meet the needs of the consumer than has resulted in the U.S.A.

The following investigation is a marketing study of the attitudes to packaged frozen boneless cuts of pork in Metro Winnipeg. The objectives are to provide additional guidelines for technological development and consumer education programs that will satisfy consumer needs before the product is placed on the market.

II. REVIEW OF LITERATURE

A. Present Status of the Market for Frozen Red Meats

A large majority of the nation's food shoppers buy meat unfrozen and freeze it at home. According to a recent survey in the U.S.A. (Weidenhamer et al., 1969) these same shoppers are apparently unwilling to buy red meat in the frozen state.

Frozen meat offers advantages to the consumer with regard to a new convenience in shopping, storing, preparing and serving. Frozen meat usually is deboned and well-trimmed resulting in lack of waste and complete utilization of the by-product. Considering the greater convenience and the high quality of frozen meat that can be produced today, the meat industry and consumer educators are obviously faced with the real challenge of elevating the acceptance level of frozen retail meats.

The acceptance of frozen retail meats is looked upon as feasible since Ryan (1970), in speaking for the meat packers, reported that most authorities agree that the meat industry is developing in the near future to a position in which over fifty percent of all retail meats will be marketed in a frozen state.

Despite failures in attempts to develop markets for

frozen beef in the 1930's and 1950's, Swift and Company is making a third attempt with beef, pork and lamb in the Dallas-Fort Worth area of Texas. The reason they are renewing their efforts is because there are those in the meat industry who believe that several changes have taken place that favor the greater use of frozen meats. Some of these changes may be summarized as follows:

(1) Cryogenic freezing produces a better product--better appearance and better quality. Rapid freezing at very low temperatures preserves color in the product and reduces moisture loss on thawing and cooking. Continuous tunnel freezing should reduce costs and permit more automation of the system.

(2) Consumers' attitudes are believed to have changed.

(3) Retailers have had more experience with frozen foods and therefore will be better acquainted with the techniques involved in storing and displaying frozen foods.

(4) The industry is beginning to realize that the packers, producers and retailers all must work together on consumer education and promotion to sell frozen meats and overcome consumer resistance.

There are, however, barriers hindering the development of the frozen meat market. The following is an analysis of the problems facing the meat packers.

B. Problems Hindering the Development of the
Market for Frozen Red Meats

Frozen pork has not been accepted as a product in the market place. One of the major reasons is that consumers have expressed concern about the suitability of meat for prolonged frozen storage. Thirty-seven percent of the respondents in the study by Weidenhamer and co-workers (1969) reported that they felt frozen meat, in general, could only be kept less than a month before using. Only thirteen percent thought that any meat could be stored frozen longer than six months. Consequently, the suitability of pork as a marketable frozen product must be considered.

1. Analysis of the freezing and keeping qualities of pork under various conditions

Consumer acceptance of any food product depends upon the eating quality of that product. Frozen pork has been evaluated by both objective and sensory methods and shown to be of good quality.

a. Suitability of pork for freezing.

Concern may be expressed about the suitability of pork for freezing since pork fat is more highly unsaturated than beef and lamb and therefore, more subject to rancidity development. This concern is unwarranted. The results of a study by Palmer and co-workers (1952) showed that frozen pork, chops and roasts, kept well for up to 12 months

regardless of the degree of fat saturation. Work prior to this by Longwell and co-workers (1952) and Shrewsbury and co-workers (1942) showed similar results.

It may be concluded that regardless of the origin or diet of hogs, which ultimately affects the degree of fat saturation, pork chops and roasts are suited for freezing.

- b. The effect of temperature and length of storage on the palatability of frozen pork.

It is generally recognized that fatty foods must be stored at low temperatures to delay rancidity development which hinders consumer acceptance.

- i. Storage temperatures.

The influence of storage temperature on the quality of frozen pork chops was studied by Dubois and co-workers (1940). Rancidity is a primary measure in frozen pork of consumer acceptance. Pork chops stored at -8° and -40°F for 14 months showed no signs of rancidity by organoleptic or active-oxygen tests. Storage at 0°F resulted in the chops being slightly rancid by 12 months. Rancidity developed in the chops within 4 months when they were stored at 10°F and within 2 months when stored at 15°F .

After further investigation Hall and co-workers (1949) reported that pork frozen at -35°F and stored at -10°F or -20°F had higher flavor, tenderness and juiciness scores than that stored at 0°F and 10°F for up to 72 weeks. However, the

0°F temperature was approved by Mackey and co-workers (1952) for storage of pork for one year if properly packaged in a waxed locker paper.

The literature reported thus indicates that a temperature of 0°F or lower is satisfactory for storing meat for up to one year if it is properly packaged. The majority of retail and household freezers are believed to meet these specifications.

ii. Fluctuations in temperature.

In actual practice in the handling of frozen meat, the meat industry is rarely dealing with a steady temperature, except possibly for the time the product is stored in a warehouse. In all other operations the meat is constantly exposed to changing temperatures. The problem is to evaluate the quality damage that occurs as a result of the changes.

Fluctuations in temperature were reported to have a deleterious effect upon frozen foods in general by Black (1945), Finnegan (1939) and Woodroof (1938). These findings are not in agreement with the results reported by Hustrulid and Winter (1943), Klose and co-workers (1951) and Gortner and co-workers (1948). The latter of these stored frozen pork roasts for periods up to one year at 0°F, 10°F and a temperature fluctuating between 0°F and 20°F. According to palatability and peroxide values, rancidity was reported to have developed at about the same rate for the roasts stored

steadily at 10°F and the roasts stored at the fluctuating temperatures. Palatability scores dropped with length of storage.

Palmer (1952) substantiated these results in work done with frozen ground pork. Fluctuating temperatures were reported to have had a deleterious effect upon the palatability of frozen ground pork. The effects were not progressive in nature and were of less practical significance than prolonged storage at 10°F.

The results indicate that the main consideration in monitoring frozen meat storage temperatures is not whether the temperature creeps over zero for a short time, but how high above zero it rises and for how long a period of time. Because of this factor temperature indicators capable of warning of mishandling have become an increasingly important concept for the handling of frozen pork en route. An example of this type of device is a system of little wax balls containing eutetic salts set on yellow paper which split when subjected to -20°F. When the product temperature rises above a preset point the eutetic salts turn the paper red (Anon., 1971a). Devices of this nature would assure the consumer of the quality of the frozen pork. An indicator is particularly necessary on the product from the time of leaving the packers until the point of purchase, when most temperature fluctuations occur.

Quality deterioration as a whole is not a problem in

the home since frozen foods are not held for long periods in the home refrigerator unit (Redstrom and co-workers, 1963). However, the large percentage of surveyed households holding frozen food at temperatures above the recommended storage temperature and the wide variability in temperature for each type of frozen food storage unit suggests the need to emphasize in consumer education programs, improved temperature control as maintained in a cabinet freezer or early use of products.

It may be concluded that pork is suited for freezing provided the meat has been adequately frozen, stored and transported without any extended fluctuations of temperature above 0°F.

2. Some prerequisites to developing the market for frozen red meats

There are also other factors which hinder the development of the frozen pork market. Following is a listing of some major needs which must be fulfilled in order to develop the market.

a) The need for improvements in freezing and packaging techniques to attain a product with maximum consumer appeal.

b) The need for the reorganization of marketing strategies to develop centralized packaging of frozen retail cuts of pork.

c) The need for the analysis of the total costs involved

in marketing frozen meat from a centralized packing plant.

d) The need for the acceptance by a significant proportion of the consumers of packaged frozen cuts of pork.

The last factor is the focus of this thesis and as such is to be discussed under a separate heading once the first three factors have been dealt with,

a. The need for improvements in freezing and packaging techniques to attain a product with maximum consumer appeal.

Freezing and packaging both are primary influencing factors affecting consumer appeal. The following discussion is an attempt to shed some light on these subjects.

i. The effect of rate of freezing on quality of frozen meat in relation to consumer appeal.

The effect of freezing rate on red meat quality is subject to much controversial discussion among operators. Most of the research on the rate of freezing on meat has been done on beef. Based on research done before the commercialization of the cryogenic systems, opinions of researchers are divided as to whether rapid freezing is at all beneficial to red meat quality. Unfortunately, color as a dimension of quality was seldom described in relation to consumer appeal.

One study on frozen pork loin chops without frozen storage by Lee and co-workers (1954) tested the effect of the freezing rate on quality. The results showed that the flavor, odor, color, texture, juiciness and appearance of pork as it

appeared on the table was not affected by the rate of freezing prior to frozen storage of raw meat. The rates of freezing used in the study were:

1. -50°F by plate freezing for 1.5 hours,
2. 0°F in a home freezer (still air) for 5.5 hours, and
3. 0°F in an insulated box in a home freezer for 18 hours.

There is a paucity of informative data on quality retention resulting from using the cryogenic systems as compared to the conventional systems.

The term cryogenic refers to "extremely rapid freezing achieved with liquid nitrogen at -320°F or carbon dioxide at -110°F . In contrast, 'conventional' freezers of the plate, air-blast and fluidizing types are limited to freezing temperatures in the -45°F range." (Trauberman, 1966)

Most of the basic research on cryogenic freezing of meats at various university laboratories has not yet been completed and consequently there are no reports related to pork available. The following is a summary of the most recently published articles on the subject.

Beef steaks frozen by a commercial liquid nitrogen freezing operation in Canada were reported to have a superior surface appearance, better texture and superior flavor when cooked (Anon., 1967).

A recent study on the cryogenic freezing of lamb by Lind and co-workers (1971) produced the following conclusions, after applying these freezing methods,

The rates of freezing used were as follows:

1. slow (0°F , still air),
2. rapid (-20°F , moving air), and
3. extremely rapid (-160°F at the surface of the chops, liquid nitrogen vapor).

The different rates of freezing did not significantly affect flavor, juiciness, water holding capacity, total moisture, overall acceptability and Warner-Bratzler shear values. However, the cryogenically frozen chops were more tender than the slow frozen chops. The total cooking losses were lower for slow than for extremely rapid freezing. It is of interest to note that the researchers reported that the differences in color among lamb chops frozen at the three freezing rates were not apparent. However, chops frozen by liquid nitrogen tended to crack and separate between the Longissimus dorsi muscle and fat area; the separation was not observed after thawing.

The major reason in favor of cryogenic freezing appears to be increased tenderness. With relation to pork, rapid freezing may not be necessary because individual variation between animals may be greater than the variations caused by differences in freezing methods. Furthermore, pork does not require the tenderizing process of beef and thus the possible tenderizing effect of the faster rates of freezing are less important with pork than with beef.

The data presented by Ryan (1969) is of importance in

relation to all frozen meats. The report showed a bacteria count reduction of as much as 93 percent in nitrogen frozen patties, thereby making longer shelf life possible.

In summary, more work definitely needs to be done in the area of cryogenic freezing of pork before any real conclusions may be drawn. The results to date do not substantiate the need for the cryogenic freezing of pork.

ii. The role of packaging in relation to consumer appeal.

The packaging of a food product is much more than the mere enclosing of a food in a container. Borgstrom (1968) stated that it is a many faceted problem involving such factors as specific product protection, packaging durability, appearance, suitability for retail display, and consumer appeal.

According to recent surveys, Borgstrom (1968) reported that 70 percent of all supermarket purchases by consumers are based upon buying decisions made in the store. These findings have placed the package in a key position. The package has the vital function of attracting the interest of the buyer in the supermarket. The importance of packaging reveals that the consumer acceptance of frozen pork involves more than just maintaining edibility. The aesthetic value of a foods presentation is also very important.

The following discussion deals with both the utilitarian packaging factors related to shelf life of frozen pork

and the consumer acceptance aspects of packaging frozen pork.

The choice of the packaging material is of special concern in the manufacture of high-quality frozen pork. First, the material must have physical and chemical characteristics that make it suitable for frozen meat. Palmer and co-workers (1952) concluded that the use of packaging materials which permit least oxygen and moisture transmission are necessary in maintaining the quality of frozen meat. The package should also have good mechanical strength, especially at low temperatures (several materials become brittle in the freezing range).

In recent years much research has been done in the area of suitable packaging for fresh frozen meats. Among the most recent advances (Anon., 1970b) are machines for centralized skin packaging of frozen retail cuts of meat. According to Du Pont, the system has produced packages that remain completely free of frost over the normal distribution and shelf life of frozen roasts. This is a very important aspect leading to consumer acceptance.

The importance of packaging frozen meats has been exemplified in a Kansas State University study (Anon., 1971b). Two packages, a transparent film package with a paperboard header-backing board attached to one edge of the film and a pictorial, high gloss carton for frozen meats, were compared with conventional fresh meat tray overwrap packages. The transparent package which offered total

visibility was preferred by the majority of the consumers. The transparent package conformed to the contours of the meat which prevented frost pockets during cryogenic freezing, in-store display and frozen storage.

In the past, Branson and King (1960), Brunthaver (1961) and Law and co-workers (1965) all used opaque packages in their studies. The acceptance of frozen retail cuts of meat thus may have been discouraged by the package.

A new package can be the major factor in a new marketing strategy by significantly improving the total product. The package projects by symbols and design certain feelings and attitudes to a potential buyer. Careful consideration thus must be given to the packaging of frozen cuts of pork.

- b. The need for the reorganization of marketing strategies to develop centralized packaging of frozen retail cuts of pork.

Meyers (1969) reported that the meat packing industry historically has been a dis-assembly industry. The packers simply broke the remarkable structures assembled by nature into separate, profit-making parts. The packers gradually are becoming less content to sell dressed carcasses to butchers to cut into steaks or chops for the consumer. One of the reasons for this is the low profit margin in the meat industry.

A centralized meat-packaging operation can make more efficient use of labor and equipment. Centralized meat

packaging can also stimulate the design of equipment for reduction to consumer cuts and final packaging. In addition to more efficient handling, all by-products can be utilized more readily at a central cutting and packing plant where meat is deboned and fully trimmed. Inventory control can be simplified by having most of the meat stored in one place and particular cuts of meat can be sent to the markets where there is specific demand.

These advantages may apply to either fresh or frozen centralized meat packaging operations. Advantages specifically related to frozen meats are that the problems of shelf life, rewrapping and package fogging, inherent in fresh meat are of less importance with frozen meat. Properly frozen meat also can be transported considerable distances from the processing plant to retail stores without affecting the color, which is so important to consumer acceptance (Brunthaver, 1961).

By using the centralized packaging system the packer would be able to distribute the product to the retailer and offer all of the necessary distribution benefits, such as consumer education, promotion, point of purchase materials and deliveries when required. The retailer, on the other hand, would be able to rely upon the packer to supply him with a uniform product when it is needed at a quality level required for best marketing.

- c. The need for analysis of the total costs involved in marketing frozen meat from a centralized packing plant.

At present there are no definite data published on the exact comparative costs of centralized packaging of frozen pork and packaging fresh pork in the retail store. The unit cost of production varies with each installation according to the analysis of amortization of capital equipment, labor, energy, supervision, transportation and quality control. The economies of savings by the centralized packaging and freezing of pork must also include the increased shelf life and the effective use of by-products in the plant.

Two of the prime factors that must be analyzed in the cost analysis of centralized packaging of frozen pork are:

1. the cost analysis of centralized packaging of fresh meat,
2. the cost analysis of current operating costs of various freezing processes.

The cost analysis of the centralized packaging of fresh meats has been investigated in a study referred to by Arthur D. Little (1968). The study investigated the cutting and wrapping of retail cuts as well as other operations away from the retail outlet.

According to the study, the estimated net cost of

distributing all meats by present methods in which cutting and wrapping are performed in the back room of the retail store was 0.0985 cents per pound. When performed at a central warehouse and the retail stores under a single management team the cost estimated was 0.0675 cents per pound. With a multiple management team, the cost was estimated at 0.0787 cents per pound, and at a packing plant a thousand miles from the retail store, the cost estimate was 0.0761 cents per pound.

According to the study, the transportation costs are significantly lower from a supermarket operated centralized packaging location to a retail store than from the packer to the retailer. On the other hand, warehousing would be cheaper for the packer. Labor costs would be reduced due to better efficiency. Floor space would be far cheaper for the centralized than for a retail operation. The basic difference between packer centralized packaging and supermarket centralized packaging was a rather large shrinkage loss from packer to retail store. This difference could be overcome by the concept of frozen fresh meat.

A cost analysis of freezing meat bears consideration. Table I is a summary by Ryan (1970) of the current operating costs based on a recent survey of commercial freezing installations.

Table I shows that the operating costs are considerably higher for the cryogenic methods of freezing than the

conventional methods but the time factor must also be considered. For example, the plate and blast freezing methods require 30 to 90 minutes while nitrogen freezing requires only 1 to 7 minutes.

TABLE 1
CURRENT MEAT FREEZING OPERATING COSTS

Preservation Method (modern equipment)	Freezing Time	Operating Cost/ lb. Product
Plate Freezing	30 - 90 min.	$\frac{1}{2}\text{¢} - 1\frac{1}{2}\text{¢}$
Blast Freezing	30 - 90 min.	$\frac{1}{2}\text{¢} - 1\frac{1}{2}\text{¢}$
Nitrogen Freezing	1 - 7 min.	$1\frac{1}{2}\text{¢} - 2\text{¢}$
Nitrogen-Mechanical Blast Freezing	15 - 30 min.	1 ¢ - $1\frac{1}{2}\text{¢}$
Freon Spray Freezing	3 - 10 min.	1 ¢ - $1\frac{1}{2}\text{¢}$
Mechanical Batch Freezing	4 - 6 hrs.	$\frac{1}{2}\text{¢} - 2\text{¢}$
Cold Storage	—	$\frac{1}{2}\text{¢} - \frac{3}{4}\text{¢}$

(Ryan, 1970)

Operating cost as employed here is defined as the cost resulting from the calculation of the amount of refrigerating energy consumed multiplied by the purchase price of the energy. In this context, energy is defined as the unit of nitrogen, used in chilling or freezing a pound of product. The operating cost is used rather than the unit cost of production since the evaluation of profitability is based on unit method operating cost.

The industry must do an overall cost analysis of the possible alternatives with reference to centralized packaging

and freezing of pork before major changes are made.

The industry will have to take approaches in the direction of satisfying these first three needs. However, if the consumers do not accept the product the previously discussed needs may be solved but the product still will not gain a share of the market.

C. Present Status of Consumer Acceptance

Full acceptance by a significant proportion of the population of packaged frozen cuts of pork is a major problem the packers appear to be concerned with at present. If the consumers will not accept the product, the first three problems may be solved but sales may be lost to other meat products or even possibly to meat substitutes if there is consumer resistance.

The literature on the consumer acceptance of frozen red meats is sparse since it is a relatively new area of research and much of it is confidential material held by specific meat packers.

In the past there have been a few market tests of frozen red meats--particularly frozen beef.

A summary of the approaches to the studies on frozen red meats done in the past are outlined in Table 2. The table indicates the type of frozen meat studied, the type of packaging, freezing and display used, as well as the type of

TABLE 2
SUMMARY OF APPROACHES TO SURVEYS ON FROZEN MEATS IN THE PAST

Reference	Frozen Meat Studied	Wrap	Display	Freezing	Type of Study	Participants
Riley (1956) Flint and Grand Rapids, Michigan	Meats on market - beef, pork, veal, lamb, poultry, fish and seafoods, and cooked meat dishes	*	*	*	Mail questionnaire	4,000 households
Higgins and Riley (1959) Detroit	Meats on market - beef, veal, pork, poultry, fish and seafood, and cooked meat dishes	*	*	*	Personal interviews	436 households
Branson and King (1960) Waco, Texas	beef, veal and pork	opaque	conventional meat cases plus promotion cam- paign	not reported	Market test - store audit consumer survey	- 16 chain stores + 150 independents - 1800 families
Brunthaver (1961) Toledo, Ohio	beef, lamb and pork	opaque	conventional meat cases	-40°F blast freezer	Case study of supermarkets Consumer survey	store #1 selling frozen meat for 13 yrs. store #2 innovates selling frozen meat store #1 = 260 shoppers store #2 = 129 shoppers vicinity of store #2 = 251 families
Law (1965) Baton Rouge, Louisiana	prefabricated beef	*	given to respondents in home	*	Consumer panel	selected 38 upper income families
Weidenhamer and co-workers (1969) U.S.A. nationwide	survey of all meat and meat products in the U.S.A.	*	*	*	Personal interviews	3,099 homemakers
Kansas State University (1971) (Preliminary work) Kansas	beef, pork, lamb, veal	transpar- ent and opaque	*	produced frost free product	Market test	Not reported

*not relevant to study.

study and a description of the respondents in each study. The approaches vary from a small consumer panel to a nationwide survey.

In general the studies were either a market test and consumer attitude survey or only a consumer attitude survey. The frozen meats studied varied from study to study. The frozen meats included frozen red meats, poultry, fish and seafood, and cooked meat dishes. The results revealed that red meats had the greatest resistance to consumer acceptance.

Examination of Table 2 indicates that the freezing, type of display and packaging used were not described in any detail in any of the studies with the exception of Brunthaver (1961).

The Kansas State University preliminary report (Anon., 1971b) was the only study to extensively describe the type of packaging employed. The same report also showed the importance of the combination of the effect of freezing and packaging techniques on the final product. The new packaging has minimized problems that previously discouraged the acceptance of frozen retail meat cuts. It conforms to the contours of the meat and prevents frost pockets during cryogenic freezing and during in-store display and frozen storage.

The Kansas State University frozen meat project pointed out that in previous tests by other researchers, the frozen meats were deboned, defatted and packaged in opaque materials and poorly merchandised. Improper packaging

techniques resulted in frost accumulation and freezer burn (Anon., 1971b).

The method of display was not described in any detail in any of the reported studies. The type of display used may have positively or negatively affected the message communicated to the consumer.

The results obtained from the studies are of value providing the limitations are recognized. The major negative factors as expressed by Riley (1956), Higgins and Riley (1959), Branson and King (1960), Brunthaver (1961) and Weidenhamer and co-workers (1969) were related to lack of visual criteria, inconvenience of thawing, high price and lack of quality. Quality was criticized in the reported studies as follows:

- | | | | |
|----------------------------|--------|---|---|
| Riley | (1956) | - | inferior to fresh |
| Higgins and Riley | (1959) | - | inferior to fresh |
| Branson and King | (1960) | - | though not expressed the authors concluded that consumers doubted the quality unless they could see it. |
| Brunthaver | (1961) | - | flavor |
| Weidenhamer and co-workers | (1969) | - | lack of standards for judging meat: |
| | | | 1. could not tell how long it was frozen |

Weidenhamer and
co-workers
(continued)

2. could not judge quality
of meat
3. could not tell if meat
was refrozen
4. could not judge fresh-
ness of meat before
freezing

Swift study (Anon., 1970a) - frozen meat often is 'old'

The major reasons in favor of buying frozen meat in all surveys, except the Kansas State University study (Anon., 1971b) for which these results are not published, are as follows:

- convenient, ready to use
- fresh
- less expensive than fresh

The Weidenhamer study (1969) also reported the responses given by consumers who said they "might" buy frozen meat. The major responses cited are as follows:

- if assured of good quality meat before freezing
- if meat not thawed and refrozen
- if reputation of store is good
- if assured length of time is frozen is short
- if price is reasonable

Most of these doubts are related to quality. The combination of these latter results and the negative results

indicate the need for an education program as well as a promotion program.

The concept of price appeared to be an important factor. In the Branson and King study (1960) the retailers tended to make the markup too high on frozen beef. The retailers apparently failed to take into consideration the reduced costs to them in terms of handling the frozen rather than the fresh cuts. Similar problems with retailers and price markups are reported to exist in the most recent Swift study (Anon., 1970a).

In the Branson and King study (1960) the price of deboned, frozen prepackaged meat was considered high by one out of five consumers. However, it is probable that all steaks and roasts were considered high. Consumers had difficulty in properly estimating the percentage waste (bone and extra fat) in steaks and roasts. Errors resulted in the opinion that frozen prepackaged meat prices were too high.

The Kansas State University study (Anon., 1971b) has recently completed an examination of the effect of price on frozen red meats. The meats were priced equally during the first weeks of the market test and, in later weeks, several frozen meat items were priced both higher and lower than identical fresh items to determine shopper purchase reaction.

A comparison of fresh and frozen sales of identical cuts of the retail meat showed that frozen sales averaged 16 to 20 percent of the total. Twenty-six different cuts of

beef, pork and lamb were available to the consumer. Further results on the study still are unpublished.

The reputation of the store selling the frozen meat appears to be worthy of consideration. The importance of the store has been mentioned by Brunthaver (1961), Weidenhamer and co-workers (1969) and the Swift study (Anon., 1970a). The results in the Brunthaver study (1961) showed that the store which evolved from a well established locker plant built up a sizeable clientele of customers satisfied with frozen meat. The high acceptance was reported to be due to the fact that they were marketing high quality meat of dependable grade and consistency of trimming. In spite of the fact that the second store in the study received their meat from the first store, the high acceptance of frozen meat was not achieved.

In the Swift study (Anon., 1970a) the retail chains have, by and large, taken the role of spectators rather than participants in spite of considerable interest expressed in the study. Consequently, Swift's distribution in the Dallas-Fort Worth area trials have been principally with discount type and convenience units. These latter stores were found to be largely "fill-ins" for meat purchases. It follows that the results of the study may have been adversely affected.

Thus it appears that results on the consumer response to frozen red meats may be negatively or positively

influenced by the stores involved in the study.

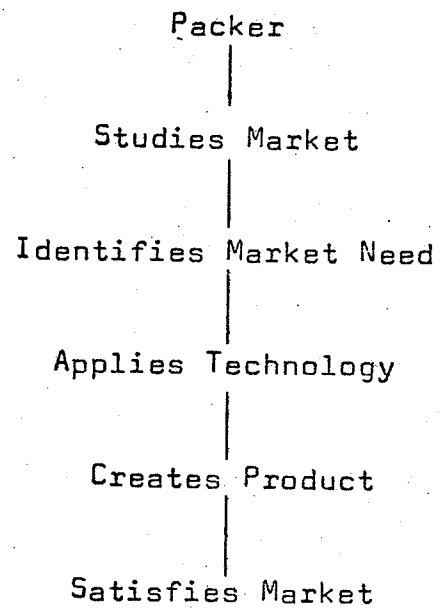
The percentage of consumers purchasing or considering purchasing frozen red meats varied from study to study. On the whole the numbers were quite low. The ranking of frozen red meats fell far below those cited for other frozen foods. Previous experience with frozen meats affected the responses. The results reported in the Weidenhamer study (1969) are quite startling. Only 1 percent reported that they presently bought frozen meat, 13 percent stated they would be willing to buy frozen meat, 79 percent stated a definite "no", and 6 percent said "it depends".

It is interesting to note that the report by Weidenhamer and co-workers (1969) differs from those by Riley (1956), Branson and King (1960) and Law and co-workers (1965). The major difference between the two sets of reports was researchers' prediction of the potential market for frozen meat. The report by Weidenhamer and co-workers (1969) appeared to show that the proportions opposing the idea of purchasing frozen meat was fairly uniform among all age, income, education, family size and place of residence groupings. Riley (1956), Branson and King (1960) and Law and co-workers (1965) suggested that income influenced the response. Law and co-workers (1965) as indicated in Table 2, worked strictly with the upper income groups in a limited study involving only 38 families. Riley (1956) showed that within the middle age group the low and high income groups showed

greater discrimination against frozen meat. Branson and King (1960) revealed that one fourth of the upper income white families purchased the product while only one-tenth of the lower income white families purchased the frozen meat. The difference between the two sets of reports may be due to changes in consumer attitudes over time, brought about by the continuing growth of low temperature storage space and the increased acceptance of frozen foods especially frozen poultry, fish and seafood. Thus it is difficult to assess who constitutes the potential market for frozen meat.

Progress is being made in relation to frozen red meats but more work definitely is needed before frozen red meats will be accepted in the market place. Progress can only be achieved if the needs of the consumers are met. Through marketing orientation (Figure 1), that is, accepting consumer need fulfillment as the singular objective of the meat industry, a general upgrading of the consumers' attitudes to frozen red meats will be achieved.

Market needs in relation to frozen red meats must be identified. These requirements, coupled with the technology available today and the implementation of consumer education programs to inform the consumers, will point the way to products designed to fill consumer needs.



(A. D. Little, 1968)

FIGURE 1. MARKET ORIENTATION

III. METHODS

The objectives of the present study were to:

1. analyze the homemakers' concept of prepackaged frozen cuts of pork.
2. discover if viewing the product and home use of the product would change the attitudes to the concept of frozen pork.
3. suggest the type of technical improvements necessary.
4. provide guidelines for consumer education.

The approach used in the study is outlined in Table

3. The study was composed of four phases which made use of the following techniques.

- group interviews.
- personal interviews - semi-structured and structured questionnaire.
- home use of product.
- credit slips.

The number of respondents in each phase and aim of each phase are outlined in Table 3.

Each phase is described with information pertaining to research design, selection of participants, procedure and limitations.

TABLE 3
SUMMARY OF APPROACH TO THE FOUR PHASE STUDY

Phase	Technique	Number of Respondents	Objective
I	Group interviews - unstructured	20	Exploratory - pilot study to establish hypotheses
II	Personal interviews - structured and semi-structured - non-disguised questionnaire	200	Descriptive, conclusive - to test hypotheses - to define guidelines for consumer education
III	Home use of product	50	Evaluation of product for convenience and eating qualities
IV	Credit slip	50 (43 actually used)	Preference for fresh or frozen in retail situation after phases II and III were completed

A. Phase I

1. Research design

The immediate purpose of the study was to decide where research would be indicated and what direction it should take. The method of approach was the group interview technique. This method of data collection is applicable in exploring a variety of subject matters, including personal attitudes and habits, where other types of questions or observations might be prematurely terminated. This exploratory research design was adopted as it is particularly suited to the search for new ideas and relationships. No formal design could be established because too little was known about the field to permit the drawing of basic hypotheses.

The advantage of the group interview method over the direct question method, as stated by Boyd and Westfall (1964), is that the relative importance of the various types of reasons can be judged more easily by the group method and inferences are obtained from study of an entire situation, an entity, rather than from study of one or several selected aspects alone. Since exploratory research is to find new ideas, it is important to give respondents the greatest possible freedom of response which is possible only in the free group interaction conversation. The method does not yield results suitable for statistical analysis.

The primary advantage of the exploratory design was that it enabled the problem to be defined and suggested hypotheses for areas to be investigated more thoroughly.

2. Selection of participants

Four group interviews composed of 4 to 6 women per group were conducted in Winnipeg in order to make these preliminary assessments. (One group at a downtown apartment block and three groups in the interview room of Opinion Place¹).

Women's groups within Metro Winnipeg were contacted for the interviewees. All women in the sample used pork, were not home economists and had no family members at present connected with the meat industry.

3. Procedure

The group moderator used no formal questionnaire other than a brief questionnaire which asked for basic information about the participants' families, their meat shopping habits and their freezer storage facilities. A sample of the questionnaire is presented in Appendix A. The discussion was conducted along the line indicated in the discussion outline of Appendix A. Each interview lasted

¹Opinion Place, a branch of Marketing Insights at Polo Park, Winnipeg, is a marketing research firm with interviewing facilities.

approximately 2 to 3 hours and was recorded in total on tape. To provide incentive for co-operation the respondents were aware that they would receive five dollars for their time and co-operation. The results were summarized as a progress report. (Appendix A)

4. Limitations

The exploratory nature of the research and the fact that no specific hypotheses were tested, should caution the reader against making unwarranted conclusions based on this report.

From phase I the following hypotheses were drawn.

5. Hypotheses

1. Consumers at present do freeze meat in the home. Freezing is thought to be the best method of preserving meat but there are gaps in the knowledge about frozen meat storage.

2. The consumers impressions of frozen meats currently on the market will influence the responses to the concept of frozen pork and the reaction to the actual sight of the product.

3. When shown an adequately frozen product, free of frost and with an unbroken package, the consumer will be more receptive to the product than to the concept of frozen pork without sight of the actual product.

4. The initial reaction of the consumers to the concept of frozen pork will reveal the negative aspects of frozen pork. The attitudes will be different for the concept of frozen pork than the attitudes for frozen meats currently on the market.

5. The viewing of frozen pork by the consumers will reveal technical and educational problems. The problems will be related to the appearance of the product and to consumer fears and misconceptions about frozen pork.

6. There is a need to inform the consumer of proper handling of frozen meats in the home.

7. When presented with a credit slip valid for fresh or frozen pork the majority of the respondents will still select the fresh product; however, some of the respondents will select the frozen product.

8. The consumers image of frozen meat will contain positive, neutral and negative aspects of frozen pork and poultry.

9. Certain segments of the women meat shoppers in Metro Winnipeg are more receptive to frozen pork than other segments.

B. Phases II and III

1. Research design (phase II)

This phase of the study was based upon the hypotheses drawn from phase I. The technique used was a structured and semi-structured, non-disguised questionnaire which made use particularly of the semantic differential. The above method was chosen since it would lend itself to statistical analysis and would obtain specific answers to specific questions.

2. Selection of participants (phase II)

All field work was conducted in the facilities of Opinion Place located on the air-conditioned mall of the Polo Park Shopping Centre. Sampling was executed according to traffic loads as outlined in Table 4, which were derived from a traffic study of the shopping centre by Reid (1971).

Table 5 was used as a guideline for the allocation of interviews to be conducted on various days and at time periods. The reason for this was so that a certain segment of the population would not be oversampled at times when few shoppers were at Polo Park. Table 5 is a breakdown of when the shoppers come to Polo Park by day of the week and time of the day. The percentages from Table 5 were then allocated in proportion to the total sample of 200 female

TABLE 4
DISTRIBUTION OF INTERVIEWS ACCORDING TO
PEAK TIME PERIODS

Day of the week	Total number of interviews in one day	Number of interviews by time period			
		Morning	Noon	Afternoon	Evening
Monday	20	5	2	8	5
Tuesday	16	4	2	7	3
Wednesday	19	5	2	8	4
Thursday	48	14	6	16	12
Friday	50	14	6	16	14
Saturday	47	12	15	20	*

*There is no evening shopping on Saturdays.

TABLE 5

TRAFFIC STUDY OF WHEN SHOPPERS COME TO POLO PARK
BY DAY OF WEEK AND TIME OF DAY

No. adults 18 years and over	Polo Park Customers		
	Total (3000)	Male (1230)	Female* (1770)
Come to Polo Park:	(%)	(%)	(%)
Everyday	6	7	5
Monday	9	9	9
Tuesday	6	5	6
Wednesday	10	11	9
Thursday	21	18	24
Friday	24	25	24
Saturday	24	25	23
Come in:			
Morning	25	22	28
Noon	11	13	10
Afternoon	38	17	38
Evening	26	28	24

(Reid, 1971)

*Percentage used in the present study.

respondents (Table 4). The 5 percent (10 people) of women shoppers who came every day were allocated randomly to the various days and time periods.

A representative sample of women was followed as outlined in Table 6. The derivation of sample size was based on the 1966 Census of the Winnipeg Metropolitan Area, with occupational distribution estimated from the 1961 Census. The size was computed so as not to report on a subsample of less than 64 people.

The respondents were only those who came to Polo Park. The traffic study referred to previously (Reid, 1971), however, indicated that when Polo Park customers were compared with the population of Metro Winnipeg as a whole there was a slightly higher proportion of people over 40, of females and married people who shopped at Polo Park. Generally, however, the shoppers represented an almost perfect cross section of Winnipeg by sex and age.

The people who shop at Polo Park tend to be more affluent than the population of Winnipeg as a whole. Almost half (45%) have household incomes of \$10,000 or more.

Polo Park shoppers seem to be much better educated than the population as a whole--less than 10 percent did not complete high school.

3. Procedure (phases II and III)

Phase II

TABLE 6
 REPRESENTATIVE SAMPLE OF WOMEN IN
 METRO WINNIPEG

Age Group	Married ¹	Single
<u>Not Employed</u> ²		
18-24 years	6	6
25-34	18	3
35-44	20	2
45-54	17	2
55+	38	4
<u>Blue Collar</u> ³		
18-24 years	3	3
25-34	4	1
35-44	6	1
45-54	6	1
55+	5	1
<u>White Collar</u> ⁴		
18-24 years	8	8
25-34	7	1
35-44	8	1
45-54	7	1
55+	4	0

(Excerpt from Murray, 1971)

¹Includes widowed and divorced.

²All people not holding a permanent or part-time job, so not having an employer--includes housewives.

³Includes workers classified as skilled laborers and unskilled laborers as illustrated in Appendix B.

⁴Includes workers classified as professional people, business executives, salespeople and clerical workers as outlined in Appendix B.

Hypotheses 1, 2, 3, 4, 5, 8 and 9 were tested in phase II. Three interviewers conducted the 200 interviews within a one week time period in the month of June 1971. The interviewers were given a training period within the actual situation in conjunction with the pretest of the questionnaire. The interview schedule was pretested, revised and re-tested using shoppers in the mall of the Polo Park Shopping Centre.

The questionnaire was followed exactly as outlined in Appendix C. The questionnaire was composed of five main parts.

1. Description of Personal Characteristics included in questions 1 to 6 inclusive and 24 to 29 inclusive.

2. Description of Meat Shopping and Meat Use Habits included in questions 7 to 14.

3. Attitudes to Frozen Meat Keeping Qualities and to Frozen Meats Currently on the Market included in questions 15 and 16 a and b.

4. Attitudes to a) Concept of Frozen Pork included in question 17, b) Concept of Quick Frozen Pork included in question 18, c) Frozen Pork Upon Viewing included in questions 19 to 21 inclusive.

5. Semantic Differential for Frozen Pork and Poultry included in question 22.

Questions 19, 20, 21 a and b, and 22 a and b were alternated in every second questionnaire to avoid order-of-

presentation bias. Two different colored questionnaires (pink and white) consequently were used to avoid confusion. The length of the interview varied from 15 to 20 minutes depending upon the speed of the respondent in answering.

The women were selected by the procedure of pre-selected random times at which interviews were to commence. The morning, noon, afternoon and evening time periods were divided into 15 random times as illustrated in Appendix B. When a random time came up the interviewers approached women within a certain area of the mall to see if they met the qualifications specified. The specifications were as follows:

1. the women did most of the meat shopping alone or with some other person.
2. neither the woman nor her spouse was employed in the meat industry.
3. the respondents lived in Metro Winnipeg.
4. the respondents currently used pork.

The interviewer checked the quota sheet before commencing each interview to avoid oversampling of a particular group.

The women were told that this was a survey on meat and meat shopping habits for a master's student at the University of Manitoba. The women were then asked if they would please co-operate by responding to the questionnaire.

Phase III

Every fourth respondent was asked after the interview in phase II if she would like to receive the frozen pork products displayed during the interview. The respondent was told that all of the meat was to be consumed before a specified time. If the meat was refused the next person was asked if she would like the meat. Each woman received one of each of the selected frozen boneless cuts of pork in sufficient amounts for a meal for the family.¹

Phase III was specifically to test hypothesis 6.

The product users were asked to rate the products on a five-point hedonic rating scale for convenience and eating qualities, after cooking them at home and serving them to their families. The questionnaires, which are illustrated in Appendix C, were to be mailed back to the graduate student in a self-addressed stamped envelope within 3 weeks.

4. Limitations (phase II)

It was not possible within the time period to obtain sufficient people to fill the following quotas.

Not Employed		No. of People Required
Single	18-24	-1
	25-34	-2
	35-44	-2
	Over 55	-1

¹One pork loin roast (5 lb.) - boneless string tied. The boneless pork loin chops were packaged individually with four to a package.

Blue Collar		No. of People Required
Married	18-34	-1
White Collar		
Single	35-44	-1

The reason for this may have been that since they are such small groups it would be most difficult to confront them in the mall. Also, generally they are not the meat shoppers of their household.

Another limitation is that the sample was relatively small due to limited personnel and financing. According to the limitations outlined in Table 6 the data may not be analyzed for a sub-sample smaller than about 64.

The survey was conducted during the month of June. This may affect the attitudes to frozen pork. The researcher would expect a higher percentage of negative responses since in the summer months thaw of frozen foods is more likely than during the winter months and fear of pork may be more prevalent in warm weather among certain segments of the population.

C. Phase IV

On completion of phase III the 50 recipients of the test product were mailed a credit slip, illustrated in Appendix C, for an equal amount of fresh or frozen meat previously received. The credit slip was valid for either the fresh or frozen product and had to be presented at the Dominion Store

at Polo Park within 10 days. The reason for the credit slip was to see if the consumer would select the frozen product or persist in choosing the fresh. Both the pork chops and the roast were offered to see if one product was better accepted in the frozen state than the other. Phase IV tested hypothesis 7.

The meat was equally priced. The meat was openly displayed so that anyone shopping in the store could purchase either the fresh or frozen pork.

The Dominion Store was selected primarily because of its location at Polo Park. The short time period for redemption of the credit slips was selected since Reid (1971) reported that more than half the shoppers, 54 percent, claimed to be in Polo Park once a week or more. Only 13 percent reported they came to Polo Park less than once a month. Reid's study included people from anywhere in Manitoba. Consequently it would appear that the Dominion Store at Polo Park would be a convenient location for the completion of phase IV.

D. Selection of Hogs

The hogs were selected on the weight basis as they entered the packing house. The selected hogs were heavy hogs weighing on the average 158 lbs, on the hot weight basis.

E. Freezing and Packaging of Pork

The pork was chilled for 24 hours at a temperature of 38°F in a setting up process for all phases of the study. The pork was then well trimmed, deboned, cut and packaged. In phases II, III and IV the pork was also pre-chilled for 8 hours at -20°F. The pork cuts in all phases were stored in a freezer at a temperature of -5°F.

The boneless pork loin twin backs were selected for the roasts. The boneless pork loin single backs were selected for the chops. These cuts of meat were chosen since they were preferred over the butt roasts in the group interviews (Appendix A). The pork loin cuts are the cuts upon which most of the reported literature is based.

The pork loin chops were placed four to a package on a white styrofoam tray with a shrink D-film, 75 gauge wrap in all phases of the study.

The pork loin roasts were packaged in a cellophane wrap in phase I. In phases II, III and IV the roasts were packaged in a Cryovac shrinkable bag with a vacuum of 15 inches and shrunk in a heat tunnel before being frozen.

The differences in the packaging techniques for the roasts and the innovation of the pre-chill period were to overcome breaks in the film and accumulation of frost.

The fresh meat in phase IV was packaged quite similarly to the frozen meat. The fresh meat was handled

exclusively by the Dominion Store at Polo Park.

F. Labeling

The cuts of pork were labeled with a plain white label stating FRESH FROZEN PORK, name of the cut and the weight. No other markings appeared on the package for phases I to III inclusive.

In phase IV the label included the Dominion Store brand name, price per pound, final price, name of the cut and the weight.

G. Transportation of Frozen Meat

The frozen meat was transported in a refrigerated truck to the end destination. In phase II, the frozen meat was stored at 0° in a deep freeze chest at Opinion Place. The frozen meat was stored at -10° in a deep freeze cabinet unit at the supermarket in phase IV.

H. Display of Meat During Personal Interviews in Phase II.

The frozen meat was placed in styrofoam containers which had ice packs placed in them to maintain a low temperature during the interviews. The frozen pork displayed was given to every fourth respondent for phase III. A new set of frozen chops and roast was then displayed. The top of the container was kept closed until the respondent was to

view the frozen products (Question 19).

I. Analysis of Data

The questionnaire was coded and the data were transferred to computer cards. Frequency distribution was carried out on 119 variables. The variables under study were cross tabulated and chi-square tests of independence on some variables were carried out. The above analyses were programmed in Fortran IV. A t-test on proportion of means and the derivation of means for the semantic differential were performed manually.

IV. RESULTS AND DISCUSSION

A. Description of Respondents

A description of the respondents is outlined in Methods (p.31). Criteria such as educational attainment, family size, income and full-time or part-time employment were not part of selection factors. The following is a brief account of these factors.

Eighty-one of the respondents had attended only public school or attempted high school, 86 of the respondents had a high school diploma or had attempted university, and 43 respondents had a university degree or other professional qualifications.

Forty percent (80) of the households were made up of one or two persons; 42 percent (84) of the households were made up of three or four people; while only 18 percent (36) of the households were made up of five or more people.

The majority of the people in the households (174) were over 18 years of age. Forty-three of the people in the households were between the ages of 13 and 17. Seventy-nine of the people in the households were under 12 years of age.

The majority of the respondents' total family incomes fell between \$3,000 and \$10,999.

Most of the respondents were full-time homemakers. Of those who were employed outside the home, 14 percent (12)

worked full-time and 86 percent (74) worked part time.

The sample of the respondents obtained during the survey period is described in Table 7. The table illustrates the distribution of the respondents by educational attainment, family description, income, occupation, marital status and age of the respondent.

B. Meat Shopping Habits

The majority of the women, 84 percent, did most of the meat shopping alone while 16 percent did it with some other person. It is of interest to note that 25 interviews were terminated due to the fact that the husband or some other member of the household did most of the meat shopping. The majority of the women, 78.5 percent, shopped once a week or more frequently while 22.5 percent shopped less than once a week.

Eighty-three percent of the women bought their main supply of meat from the supermarket while 14.5 percent bought their meat from the butcher shop or small grocery store with a butcher department, while only 2.5 percent bought most of their meat in large bulk supplies at wholesale prices. Consequently the majority of the women would be exposed to frozen prepackaged cuts of pork if they were placed in the supermarkets.

The rank order of meats served in the respondents'

TABLE 7
CHARACTERIZATION OF RESPONDENTS

Criteria		Number	Percent
Education	public school	80	40.0
	some high school		
	high school graduate	84	42.0
	some university		
	university graduate	36	18.0
	other professional qualifications		
Family size	1-2 people	80	40.0
	3-4 people	84	42.0
	5 or more people	36	18.0
Age of household members	over 18 years	174	
	13-17 years	43	
	7-12 years	38	
	under 7 years	41	
Income	under \$3,000	27	13.5
	\$3,000 - \$10,999	110	55.0
	over \$11,000	63	31.5
Occupation	employed full-time	74	37.0
	employed part-time	12	6.0
	unemployed	114	57.0
Respondent's Age	under 34	73	36.5
	35-54	71	35.5
	over 55	56	28.0

homes in the past 12 months are illustrated in Table 8. Table 8 indicates that chicken, pork chops, roast beef and steaks were served by most of the households in the past 12 months. Pork roast was served by a fairly large number of households (164) while turkey and lamb were served only by a small number of households.

TABLE 8
RANK ORDER OF MEATS USED IN THE PAST 12 MONTHS

Meat	Number of households using meat in the past 12 months	Percent of households using meat in the past 12 months
Chicken frozen	193	96.5
unfrozen		
Pork chops	192	96.0
Roast beef	187	93.5
Steak	185	92.5
Pork roast	164	82.0
Turkey frozen	118	59.0
unfrozen	73	36.5
Lamb frozen	30	15.0
unfrozen	25	12.5

Table 9 is a further breakdown of Table 8. Table 9 is a rank order of the total frequency of serving the meat in the home. The meats are listed in the descending order of the number of respondents reported using the meat. The

TABLE 9
RANK ORDER OF FREQUENCY OF SERVING MEATS IN THE HOME

Frequency of serving	1 x per week or more	1 x per month to 3 x per month	less than 1 x per month	not at all in past 12 months
Highest number of respondents using the meat	steak	pork roast	turkey (frozen)	lamb (unfrozen)
	chicken (unfrozen)	pork chops	turkey (unfrozen)	lamb (frozen)
	pork chops	roast beef	chicken (frozen)	turkey (unfrozen)
	roast beef	steak	chicken (unfrozen)	turkey (frozen)
	chicken (frozen)	chicken (unfrozen)	pork chops	chicken (frozen)
	pork roast	chicken (frozen)	steak	chicken (unfrozen)
			lamb (unfrozen)	pork roast
			roast beef	steak
				roast beef
				pork chops
Smallest number of respondents using the meat				

results follow the same trend as was revealed in Table 8. Steak, chicken, pork chops and roast beef were served the most frequently while lamb and turkey were served with the least frequency.

An examination of Tables 8 and 9 suggests that the amount of pork consumed is fairly high and that there is little actual purchasing resistance to pork. These results are substantiated by the per capita consumption of meat in Canada cited by Barratt (1971) in Table 10.

TABLE 10
PER CAPITA CONSUMPTION OF MEAT IN CANADA

Year	Beef	Veal	Mutton and Lamb	Pork	Offals	Canned Meats*	Total Meat	Poultry**
Pounds								
1936	55.1	10.2	5.6	41.4	5.9	2.0	120.2	14.5
1940	54.5	10.8	4.5	44.7	5.5	1.5	121.5	16.1
1945	67.0	12.5	4.3	52.7	5.7	3.3	145.5	19.8
1950	50.6	9.4	2.2	54.9	4.9	5.1	127.1	16.1
1955	69.1	8.4	2.6	49.2	5.3	4.2	138.8	24.3
1960	70.0	6.9	2.9	52.6	4.8	6.4	143.6	27.7
1961	70.5	6.8	3.5	50.3	4.5	4.3	139.9	31.1
1962	71.1	7.1	3.8	50.1	4.3	4.2	140.6	31.0
1963	74.3	6.5	4.0	50.7	4.0	4.4	143.9	33.0
1964	79.4	7.2	3.4	51.8	3.9	4.5	150.2	35.0
1965	83.6	8.3	2.8	47.9	3.6	4.2	150.4	36.6
1966	84.1	7.0	3.4	46.9	3.6	4.2	149.2	39.3
1967	84.0	7.2	3.6	53.8	3.9	4.7	157.2	40.7
1968	87.1	6.4	4.2	53.6	3.8	4.7	159.8	39.7
1969	88.2	5.1	4.0	51.9	4.0	4.6	157.8	42.8
1970	85.7	4.5	3.5	55.3	3.4	4.7	157.1	44.8

Source: Dominion Bureau of Statistics

*Canned meats expressed in terms of carcass weight.

**Poultry expressed in terms of eviscerated weight.

(Barratt, 1971)

Table 10 indicates a major development in the meat industry for 1970. The 1970 per capita consumption of pork

in Canada is at its highest since 1936.

It is of interest to note that only 18 interviews were terminated because the respondents did not use any pork at all in the past 12 months. Thus it appears that pork is well accepted by consumers.

C. Sources of Information

The source of information used by the homemaker may play an important role in the type of meat selected and the opinions that the respondents have about meat.

Table 11 lists in descending order the sources of information ever used by the respondents in selecting meat. Table 11 also lists the sources of information considered at present to be the most helpful and the second most helpful in the selection of meat. Trial and error, cookbooks, and mother, family and friends were the most important sources of information on selecting meat. Trial and error, and relatives and friends are very possible sources for the origin of consumer fears and misconceptions. Advice from the butcher, magazine and newspaper ads and articles were moderately important. The latter sources may provide more recent and up-to-date information on meat than the former sources of information.

From the information in Table 11 it appears that the three most reliable sources of information, that is, government bulletins, cooking schools and evening classes, and

TABLE 11
SOURCES OF INFORMATION USED BY THE RESPONDENTS IN THE
SELECTION OF MEAT

	Number of Respondents		
	Used at some time in the past*	Found to be most helpful source at present	Found to be second most helpful source at present
Trial and error	186	68	34
Mother, family, friends	150	28	38
Cookbooks	144	30	41
Magazine and newspaper articles	121	16	21
Magazine and newspaper ads	117	16	16
Advice from butcher	103	19	21
Husband	94	6	14
T.V. programs and ads	54	0	2
Government bulletins	45	4	1
Home economics courses	41	8	2
Cooking schools or evening classes	28	0	0
Other		3	7
Don't know		2	3
Total	not applicable	200	200

*Possible for each of the 200 respondents to be included in the response to each source of information.

home economics courses were not considered to be very helpful sources of information on what to look for in selecting meat. As a result, the potential sources of consumer education on meat may be point-of-sale promotion, magazine and newspaper ads and television programs. This information, if presented to the homemaker, will give her more guidance in selecting meats than merely relying upon the information supplied by mother, family, friends, trial and error and cookbooks. These sources may contain outdated information on pork and frozen meats about which the present study was most concerned. It is hoped the consumer will recognize the more recent information is the most accurate.

Now that the basic impressions of meat and meat shopping habits have been outlined the attitudes to frozen meats may be investigated. The investigation of the attitudes to frozen meats will be dealt with by analyzing the nine hypotheses (Section III, p. 35).

D. Testing of Hypotheses

Hypothesis 1:

Consumers at present do freeze meat in the home. Freezing is thought to be the best method of preserving meat but there are gaps in the knowledge about frozen meat storage.

Eighty-nine percent of the women reported that they freeze meat in the home. The Chi-Square test which is used for testing statistical significance of various relationships

among variables was applied here. Using this test it has been revealed that there was a statistically significant association ($P < .05$) between the type of freezer ownership and freezing red meat in the home. The results are presented in Table 12.

As expected, those women who have deep-freeze cabinets and two-door refrigerators with a separate freezer door practice freezing of meat in the home more than those who only have a one-door refrigerator.

The primary reasons for freezing meat, determined in an open-ended question (Question 14) are shown in Table 13. It may be concluded that convenience and the need to preserve quality were the prime factors depicted for freezing meat in the home. Economy was also expressed as another important reason for stocking meat in the freezer.

Despite the favorable attitudes to the freezing of meat in the home there is a lack of knowledge on the consumers' part about the maximum length of storage of frozen meats. Table 14 lists the responses by the respondents to question 15 which pertained to the maximum length of storage of frozen pork, poultry and beef. The results indicated that pork was considered to be the meat with the shortest freezing period.

The Canada Department of Agriculture (1968) published a guide to the maximum length of time which meat may be stored at 0°F without deterioration of quality. The maximum time period for pork chops is cited as being 3 to 4 months

TABLE 12

RELATIONSHIP BETWEEN TYPE OF FREEZER OWNERSHIP AND
THE PRACTICE OF FREEZING MEAT IN THE HOME

Practice of freezing meat in the home \ Freezer ownership	Deep freeze cabinet	2 door refrigerator	1 door refrigerator	Total
Freeze meat in the home	71	35	73	179
Do not freeze meat in the home	2	4	15	21
Total	73	39	88	200
Actual χ^2 = 8.69	df = 2		P < .05	
Theoretical χ^2 = 5.99				

TABLE 13
SUMMARY OF RESPONSES ON WHY RESPONDENTS
FREEZE MEAT IN THE HOME

Reason	Number of responses
Convenience	147
To have on hand	81
Fewer shopping trips	56
Portion it	8
Already frozen	1
Prefer to cook meat frozen	1
Quality	92
Prevents spoilage	89
Improves it	3
Economy	62
Buy in bulk - lower prices	62

TABLE 14
RESPONSES TO THE QUESTION OF MAXIMUM LENGTH
OF FROZEN STORAGE OF PORK, POULTRY
AND BEEF

Storage time	Meat	Pork		Poultry		Beef	
		Respondents Number	Percent	Respondents Number	Percent	Respondents Number	Percent
less than 2 wks.		75	37.5	55	27.5	48	24.0
about 3 to 4 wks.							
about 1 to 2 mo.		60	30.0	54	27.0	38	19.0
about 2 to 3 mo.							
more than 3 mo.		63	31.3	89	44.5	112	56.0
and up to a yr.							
more than a yr.							
Do not know		2	1.0	2	1.0	2	1.0

while the maximum storage time for pork roasts is 4 to 5 months. Table 15 indicates the suggested storage time for all meats.

A comparison of the Canada Department of Agriculture recommendations and those obtained in the present study indicate that a considerable amount of consumer education is needed to increase the consumers' knowledge of the length of storage of all frozen meats, particularly with respect to frozen pork. Sixty-seven (67.5) percent of the respondents thought that pork could only be kept frozen a maximum of 3 months or less, while only 31.5 percent thought pork could be stored frozen longer than 3 months. The information on length of storage of frozen pork could be combined with a program of food dating, a current concern of several government and consumer groups.

In summary, consumers in Metro Winnipeg at present do freeze meat in the home. Freezing is thought to be the best method of preserving meat in the home but there definitely are limits to the knowledge consumers have about frozen meat storage.

Hypothesis 2:

The consumers impressions of frozen meats currently on the market will influence the responses to the concept of frozen pork and the reaction to the actual sight of the product.

Attitudes to frozen chicken.

One hundred and eleven of the respondents reported

TABLE 15
GUIDE TO THE MAXIMUM LENGTH OF TIME WHICH MEAT MAY BE
STORED AT 0°F

Beef steaks, roasts	10-12 mo.	Lamb roasts	6-8 mo.
Veal roasts, chops	4-5 mo.	Lamb chops	4-5 mo.
Pork roasts	4-5 mo.	Variety meats	3-4 mo.
Pork chops	3-4 mo.	Minced meat (raw)	2-3 mo.
Pork (cured, smoked)	1-2 mo.	Cooked roasts	2-3 mo.
Bacon	1-2 mo.	Gravy (unthickened)	3-4 mo.
Sausage, wieners	2-3 wks.	Cooked meats, stews, meat loaves, etc.	1-2 mo.

(Canada Department of Agriculture, 1968)

that they used some frozen chicken; of these, 77 reported that they used a combination of unfrozen and frozen chicken and only 34 reported that they used frozen chicken exclusively. Eighty-two reported that they used only unfrozen chicken and 7 reported that they did not use any chicken at all. The results denote quite a high resistance to frozen chicken since, in total, 159 respondents used unfrozen and only 111 used frozen chicken.

Attitudes to frozen lamb.

The same approach was taken for lamb as for chicken. The number of respondents consuming any lamb at all is too small for tabulation. However, the results appeared quite similar to those for chicken.

Relationship between the attitude to frozen poultry, the concept of frozen pork and attitude upon viewing samples of frozen pork products.

When the concept of frozen pork was brought up, 42 percent of the respondents said they would consider buying frozen cuts of pork if they were available in the retail store and 58 percent replied "no". The next question introduced a new variable, the word "quick" frozen. The question (Question 18, Appendix III) was, "Would you consider buying cuts of pork, quick frozen, if they were available in the retail store?" This question was asked only of those who

replied "no" to the previous question. Nineteen (18.5) percent of the respondents were then converted to "yes" responses in favor of quick frozen pork while 39.5 percent remained with a confirmed "no" response. The total "yes" response in favor of frozen and quick frozen pork combined was 60.5 percent.

Using the Chi Square test it was found that there was no significant relationship between the concept of frozen pork, including quick frozen pork, and the attitude to frozen chicken ($P > .05$).

The results on quick frozen pork apply to the respondents who stated they would not consider buying "ordinary" frozen pork. The results are shown in Table 16.

The respondents were then shown the frozen pork loin chops and the frozen pork loin roast. Upon viewing the frozen cuts of pork the respondents were asked what they liked and disliked about the pork products. The respondents were then asked if they would consider buying the chops and the roast. The response to the pork loin chops was considerably higher than the response to the concept of frozen and quick frozen pork. There was little change from the concept of frozen and quick frozen pork for the pork loin roast.

The Chi Square measure of independence between the consideration to buy frozen pork (chops and roast) upon viewing and the attitude to frozen chicken yielded a non-significant association. There was no dependency of the attitude

TABLE 16

RELATIONSHIP BETWEEN THE ATTITUDES TO FROZEN CHICKEN AND
THE CONCEPT OF FROZEN PORK INCLUDING
QUICK FROZEN PORK

Concept of frozen pork Attitude to frozen chicken	Consider buying frozen pork	Consider buying quick frozen pork	Not consider buying quick frozen pork	Total
Favorable	48	17	46	111
Unfavorable	33	20	29	82
Total	81	37	75	193
Actual χ^2 = 2.57 Theoretical χ^2 = 5.99 df = 2 P > .05				

to frozen chicken and the consideration to buy frozen pork (chops and roast). These results are shown in Tables 17 and 18.

TABLE 17

RELATIONSHIP BETWEEN THE ATTITUDE TO FROZEN CHICKEN
AND THE CONSIDERATION OF BUYING FROZEN PORK
LOIN CHOPS UPON VIEWING

Attitude to frozen chicken	Frozen pork loin chops	Consider buying	Not consider buying	Total
Favorable		80	31	111
Unfavorable		63	19	82
Total		143	50	193
Actual $\chi^2 = 0.34$				
Theoretical $\chi^2 = 3.84$				
df = 1 P > .05				

It may be concluded that the consumers tend to have a reasonably favorable attitude to the frozen chicken currently on the market. Positive and negative attitudes to frozen chicken did not affect the attitudes to the concept of frozen pork. It appears that the two products are considered different enough that attitudes are not related.

TABLE 18

RELATIONSHIP BETWEEN THE ATTITUDE TO FROZEN CHICKEN
AND THE CONSIDERATION OF BUYING FROZEN PORK
LOIN ROASTS UPON VIEWING

Attitude to frozen chicken	Frozen pork loin roast	Consider buying	Not consider buying	Total
Favorable		60	51	111
Unfavorable		38	44	82
Total		98	95	193
Actual $\chi^2 = 0.84$				
Theoretical $\chi^2 = 3.84$				
df = 1 P > .05				

Hypothesis 3:

When shown an adequately frozen product, free of frost and with an unbroken package, the consumer will be more receptive to the product than to the concept of frozen pork without sight of the actual product.

Upon viewing the frozen boneless pork loin cuts of meat the respondents gave the following replies:

Pork Chops

Yes	73.5%
No	26.5%

Pork Roast

Yes	51.0%
No	49.0%

The Chi Square test revealed that the relationship between the concept of frozen pork (including quick frozen pork) and the consideration of buying frozen pork (chops and roast) upon viewing were statistically significant. These results are shown in Tables 19 and 20. It is evident then that a favorable impression of frozen pork has a positive influence on the consideration to buy frozen pork loin chops and roasts.

TABLE 19

RELATIONSHIP BETWEEN THE CONCEPT OF FROZEN PORK INCLUDING QUICK FROZEN PORK AND THE CONSIDERATION OF BUYING FROZEN PORK LOIN CHOPS UPON VIEWING

Without viewing	Upon viewing pork loin chops	Consider buying	Not consider buying	Total
Consider buying frozen pork		78	6	84
Consider buying quick frozen pork		28	9	37
Not consider buying quick frozen pork		41	38	79
Total		147	53	200
Actual $\chi^2 = 35.18$				
Theoretical $\chi^2 = 9.21$				
df = 2 P < .01				

TABLE 20

RELATIONSHIP BETWEEN THE CONCEPT OF FROZEN PORK INCLUDING
QUICK FROZEN PORK AND THE CONSIDERATION OF BUYING
FROZEN PORK LOIN ROASTS UPON VIEWING

Without viewing	Upon viewing pork loin roasts	Consider buying	Not consider buying	Total
Consider buying frozen pork		55	29	84
Consider buying quick frozen pork		20	17	37
Not consider buying quick frozen pork		27	52	79
Total		102	98	200
Actual $\chi^2 = 16.13$				
Theoretical $\chi^2 = 9.21$				
df = 2 P < .01				

The t-test of statistical inference was applied to the proportion of respondents favorable to the concept of frozen pork and the proportion of respondents who would consider buying frozen pork (chops and roast) upon viewing. Results indicated that there was a significant difference between the response to the concept of frozen pork (Question 17) and the consideration to buy frozen pork chops (Question 21 b) at the .01 level of significance ($t = -6.38$). The relationship between the concept of frozen pork (Question 17) and the

consideration to buy the frozen pork roast (Question 21a) showed no significant difference at the .05 level of significance ($t = -1.80$).

These results infer that the packaging and overall appearance of the boneless frozen pork loin chops significantly increased the acceptance of the product while the packaging and general appearance of the pork loin roast had no significant effect. Consideration, however, must be given to the fact that 23 people reported that they have no need for pork roast of any type (Table 24, p. 79). The negative response to pork roasts in general may have affected the results.

The results obtained indicate the need for appropriate packaging, freezing and storing techniques so that the product will have eye appeal. To further exemplify this point the group interviews outlined in Appendix A indicated that frost on the package brought about a high negative response to the product. Even those women who had a positive response to the concept of frozen pork reversed their opinions upon viewing the product with frost. In phase II, when shown an adequately frozen product, free of frost with an unbroken package, the consumer was more receptive to the product than to the concept of frozen pork without sight of the product.

Hypothesis 4:

The initial reaction of the consumers to the concept of frozen pork will reveal the negative aspects of frozen pork. The attitudes will be different for the concept of frozen pork than the attitudes for frozen meats currently on the market.

The responses to the unstructured questions on frozen chicken, the concept of frozen pork and quick frozen pork were looked at in testing this hypothesis. The responses are grouped in Table 21. A comparison of the major responses within the groupings are shown in Table 22. The percentage of favorable and unfavorable responses were quite similar for both frozen chicken and frozen pork. Convenience and economy received favorable responses for frozen pork. Economy received a favorable response for frozen chicken but convenience received an ambivalent type of response for frozen chicken. Quality received high negative responses for both products.

An examination of the responses to quick frozen pork indicates that this phase elicited extremely favorable responses related to quality in lieu of the negative attitudes that some respondents had to the concept of frozen pork.

It is interesting to note in Table 21 that if a grouping received a high positive response it correspondingly received a low negative response thus making the comments even more reliable.

Table 22 outlines the responses with the highest occurring frequencies.

TABLE 21
FAVORABLE AND UNFAVORABLE RESPONSES TO FROZEN CHICKEN AND
THE CONCEPT OF FROZEN PORK EXPRESSED IN THE
PERCENTAGE OF TOTAL RESPONSES TO
OPEN-ENDED QUESTIONS

Question Grouping	Chicken		Concept of Pork		
	positive	negative	Frozen positive	Frozen negative	Quick Frozen positive
Convenience	38	29	35	11	8
Quality	10	62	29	67	65
Economy	23	2	23	0	4
Don't know	2	1	2	3	6
Miscellaneous	27	11	11	19	16

TABLE 22

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THE MOST FREQUENTLY EXPRESSED RESPONSES OBTAINED FROM
OPEN-ENDED QUESTIONS TO FROZEN CHICKEN, THE
CONCEPT OF FROZEN PORK AND THE CONCEPT
OF QUICK FROZEN PORK

Grouping	Response	Number of responses	Percent of total responses
Favorable to frozen chicken			
C*	Convenient	20	12.2
	Ready for the freezer	28	17.1
			29.3
E*	Less expensive than fresh	35	21.3
M*	It is sold that way	42	25.6
	Total	125 of 164	76.2
Unfavorable to frozen chicken			
C	Thawing is inconvenient	26	19.9
Q*	Freezing harms taste	21	16.0
	Not sure how long was frozen	17	13.0
	Prefer fresh	16	12.2
	Total	80 of 131	61.1
Favorable concept of frozen pork			
C	Ready for the freezer	16	16.2
Q	No real difference between fresh and frozen	14	14.1
E	Less expensive than fresh	22	22.2
	Total	52 of 99	52.5
Unfavorable concept of frozen pork			
C	Thawing is inconvenient	18	10.0
Q	Prefer fresh	41	22.7
	Not sure how long was frozen	23	12.6
	Freezing harms taste	14	7.7
M	Strict with pork	18	10.0
	Total	114 of 181	63.0
Favorable concept of quick frozen pork			
Q	Frozen faster than most meat - preserved in the right way	24	24.5
	Not sitting on counter before frozen	12	12.2
	Not stored frozen a long time	10	10.2
	Total	46 of 98	46.9

*C = Convenience
*Q = Quality
*E = Economy
*M = Miscellaneous

A summary of the initial reaction of the consumers (Table 22) to the concept of frozen pork revealed the following major negative aspects to both frozen chicken and the concept of frozen pork:

- prefer fresh
- not sure of how long it was frozen
- inconvenient to thaw
- freezing harms taste

The major positive factors applying to both frozen chicken and the concept of frozen pork were reported to be:

- they are less expensive
- they are ready for the freezer
- there is no real difference between fresh and frozen

The initial reaction of the consumers to the concept of frozen pork revealed the negative and positive aspects of frozen pork. The attitudes to the concept of frozen pork were quite similar for frozen chicken which is currently on the market. However, the attitudes to the concept of quick frozen pork elicited a highly favorable response.

Hypothesis 5:

The viewing of frozen pork by the consumers will reveal technical and educational problems. The problems will be related to the appearance of the product and to consumer fears and misconceptions about frozen pork.

The unstructured questions related to viewing of the frozen products were analyzed to get an indication of the problems pertinent to frozen pork. The classification of the responses are outlined in Table 23. The occurrence of the most frequently expressed opinions (Questions 19, 20, 21a and b) related to favorable and unfavorable responses upon viewing the frozen boneless cuts of pork is represented in Table 24. The percentage of positive and negative responses (Table 23) were quite similar for all the questions studied (Questions 19, 20, 21a and b). Convenience and economy received favorable responses. Quality, however, received ambivalent responses.

The responses of the participants to the viewing of the products warrants discussion (Table 24). Despite the fact that the pork loin chops had very little fat on them, one of the most frequently voiced criticisms was that the pork was too "fatty". The same response was expressed in the group interviews (Appendix A). Pork is considered to be high in fat. Quality control and consumer education to inform the consumer of the leanness of pork are needed to overcome this resistance. Other problems revealed which require both quality control or consumer education are:

- the length of storage
- the color of the frozen pork
- the fear of having fat and gristle rolled up in the center of the roast

TABLE 23

FAVORABLE AND UNFAVORABLE RESPONSES TO OPEN-ENDED QUESTIONS
UPON VIEWING THE FROZEN PORK AS EXPRESSED IN
THE PERCENTAGE OF TOTAL RESPONSES

	Attitude to frozen pork				Consideration to buy frozen pork			
	Pork chops		Pork roast		Pork chops		Pork roast	
	positive	negative	positive	negative	buy	not buy	buy	not buy
Convenience	9	2	18	2	21	8	24	7
Quality	53	35	36	56	53	63	46	70
Economy	21	3	15	2	17	0	2	1
Do not know	6	42	24	37	1	7	20	1
Miscellaneous	11	18	8	4	10	22	8	20

TABLE 24

THE MOST FREQUENTLY EXPRESSED RESPONSES TO FROZEN PORK
OBTAINED FROM OPEN-ENDED QUESTIONS UPON
VIEWING THE FROZEN PORK

Grouping	Response	Number	Percent
Favorable - Frozen pork chops			
C*	Easy to prepare	12	3.7
Q*	Appealing	90	27.8
	Good color	21	6.5
	Well trimmed	40	12.3
E*	Boneless	65	20.1
DK*	Do not know	18	5.6
M*	Good package	18	5.6
	Nice size	17	5.2
		281 of 324	86.8
Favorable - Frozen pork roast			
C	Nice for slicing	21	8.0
	Easy to prepare	10	3.6
Q	Looks fresh	20	7.3
	Good color	45	16.4
	Not too fat	10	3.6
E	Boneless	39	14.2
DK	Do not know	65	23.6
M	Good package	11	4.0
		221 of 275	80.7
Unfavorable - Frozen pork chops			
Q	Not as bright as fresh	24	10.5
	Not sure how long was frozen	14	6.1
	Too fat	15	6.6
DK	Do not know	96	41.9
M	Too thin	10	4.4
	Kind of small	16	7.0
		175 of 229	76.5
Unfavorable - Frozen pork roast			
Q	May be fat rolled in	10	4.2
	Color	11	4.6
	Prefer fresh	12	5.0
	Not sure how long was frozen	16	6.7
	Hard to judge quality	17	7.1
	Too fat	45	18.9
DK	Do not know	88	37.0
		199 of 238	83.5

- TABLE 24 (continued) -

Grouping	Response	Number	Percent
Consider buying frozen pork chops			
C	Easy to prepare	11	5.9
	Ready for the freezer	26	14.0
Q	Look nice	13	7.0
	Not sitting on counter before frozen	22	11.8
	Not too fat	24	12.9
E	If less expensive than fresh	14	7.5
	Boneless	15	8.1
		125 of 186	67.3
Do not consider buying frozen pork chops			
Q	Not sure how long frozen	11	35.6
	Prefer fresh	32	12.2
		44 of 90	48.9
Consider buying frozen pork roast			
C	Ready for the freezer	20	16.0
Q	Look nice	14	11.2
	Not too fat	17	13.6
E	Boneless	10	8.0
	If less expensive than fresh	15	12.0
		76 of 125	60.8
Do not consider buying frozen pork roast			
Q	Hard to judge quality	11	8.2
	Too fat	12	7.5
	Prefer fresh	29	19.7
M	No need for pork roast	23	15.6
		75 of 147	51.0

*C = Convenience
 *Q = Quality
 *E = Economy
 *DK = Do not know
 *M = Miscellaneous

These factors (real or unreal) make it difficult for the consumer to adequately assess the quality of the frozen pork products and thus create consumer resistance to the acceptance of frozen pork.

The highest number of favorable responses (Table 24) were that chops are easy to prepare, that chops and roasts looked fresh, were boneless, well trimmed and that they had good color and good packaging. It is encouraging that the respondents had a greater number of favorable than unfavorable responses to the frozen pork products.

To summarize, the viewing of the frozen pork by the respondents in phase I (Appendix A) revealed problems with both technological and educational implications. The problems were related to packaging (frost accumulation) and consumer fears and misconceptions about the quality of frozen pork. In phase II however, due to modifications in the freezing and packaging techniques, viewing of the frozen pork by the respondents no longer received criticism on packaging. The comments revealed problems about consumer fears and misconceptions mainly pertaining to the quality of frozen pork.

Hypothesis 6:

There is a need to inform the consumer of proper handling of frozen meats in the home.

The frozen products given to 50 respondents received very high ratings for both the frozen boneless pork loin chops and roasts for the characteristics of convenience and

eating qualities (Table 25). A five-point rating scale was used for rating these products.

TABLE 25

SCORES OBTAINED FOR CONVENIENCE AND EATING QUALITIES OF FROZEN BONELESS PORK LOIN CHOPS AND ROASTS*

Characteristic \ Product	Boneless Pork Loin Chops	Boneless Pork Loin Roast
Convenience	4.1	4.6
Eating qualities	4.2	4.4

*High score = 5; Low score = 1.

Forty-three of the 50 respondents in phase IV expressed comments on the products after the home trial period. The majority of the comments were favorable with "tender and flavorful" being expressed, by 32 of the women, for both the chops and roast. Three women who had never tried pork roast before stated, "I'll definitely try it again."

The responses were not entirely positive. Seven women commented on the pork chops being dry and two women commented on the roast being dry. The dryness seems to be related to the cooking time. One of the complaints about the roast resulted from cooking a partially thawed 5 lb. roast at 325°F for six hours. Results of this nature indicate the

need for consumer information on cooking pork.

The structured questions within the questionnaire in phase III (Appendix C) showed that there is consumer uncertainty about the handling of pork. There is a need for information in relation to thawing the product, oven temperature and cooking time. The methods the respondents used in their homes are tabulated in Tables 26 and 27.

The results from Table 27 appear to indicate that the majority of the 50 respondents were cooking the pork roasts to the old 185°F internal temperature which is recommended in most cookbooks. However, Carlin and co-workers (1965) recommend the use of 170°F as a suitable internal temperature. Rib and loin pork roasts cooked to 170°F require less cooking time, have greater cooked meat yields, are higher in juiciness and are comparable in flavor and tenderness to roasts cooked to 185°F. The 170°F internal temperature assures certain destruction of *trichinella spiralis*.

Since the majority of the homemakers (81 percent), in phase II reported that they did not use a meat thermometer it is necessary to devise oven temperature and time guidelines for both the thawed and the frozen products.

Table 26 indicates that the majority of the respondents tended to feel that pork needs to be thawed before cooking. Information to the consumer on the suitability of cooking pork from the frozen state may be most beneficial. Lowe (1955) concluded that differences in meat palatability

TABLE 26

METHODS USED BY RESPONDENTS IN PREPARING THE
FROZEN PORK AT HOME

Method \ Product	Pork chops	Pork roast
Completely frozen	6	7
Partially frozen	5	7
Almost or completely thawed	39	36
Total	50	50

TABLE 27

OVEN TEMPERATURES AND COOKING TIMES FOR FROZEN
PORK ROASTS PREPARED AT HOME

Oven temperature used (°F)	Number of respondents	Cooking time used (hours)	Number of respondents
< 324	8	< 2	1
325-349	13	2-2.75	6
350-374	23	3-3.75	29
> 375	3	4-4.75	10
B.B.Q.	3	> 5	4
Total	50	Total	50

were negligible, regardless of whether the meat was cooked from the frozen state or defrosted in the refrigerator, at room temperature or in water.

The oven temperature used is not a crucial factor, so long as it is below 350°F, since Lowe and co-workers (1952) indicated no difference in palatability score for a 3 pound center cut pork loin roast cooked at 302° and at 347°F.

The question of consumer misconceptions in relation to handling of frozen pork in the home cannot be left before looking at the responses to the open-ended questions 17, 18, 21a and b. These open-ended questions are related to the concept of frozen pork and the consideration to buy frozen pork upon viewing. Quite frequently expressed negative comments were "thawing is a nuisance" and "the fresh is easier to prepare". The results indicate misconceptions on the handling of frozen pork and suggest the need for consumer information related to the home use of frozen pork.

However, since 179 respondents in phase II reported that they freeze meat in the home, the handling of frozen pork would not appear to be a major deterrent to consumer acceptance of frozen pork. Assurance on the convenience of handling and cooking frozen pork, however, may place frozen pork in a more favorable light.

Hypothesis 7:

When presented with a credit slip valid for fresh or frozen pork the majority of the respondents will still select the fresh product; however, some of the respondents will select the frozen product.

Upon completion of the home trial use of the frozen pork, credit slips were mailed to the respondents. The credit slip was to be redeemed before a stated expiry date. Forty-three of the 50 respondents took part in this phase (phase IV).

A supermarket in Polo Park handled the credit slips. The fresh meat was displayed in a regular meat case and the frozen meat was displayed in an open deep freeze cabinet. By comparison, the frozen product was rather poorly displayed. It is possible that if a respondent was in a hurry she might have overlooked the frozen pork.

The results from the credit slip redeemers in phase IV denoted that 37 percent (16) of the respondents purchased the boneless frozen pork loin chops and roast (Table 28). These results appear to be fairly high since the display of the fresh product was definitely superior to the frozen.

The results from phase IV were compared with the results obtained in phase II. There was no relationship of dependency between the concept of frozen pork (including quick frozen pork) and the consideration to buy the frozen pork chops and roast upon viewing when compared to the results of the credit slip redemption. The results are outlined

TABLE 28

RESULTS OBTAINED FROM THE REDEMPTION OF CREDIT SLIPS
FOR FRESH OR FROZEN PORK

Selection \ Product	Pork chops	Pork roast
Fresh	27	27
Frozen	16	16
*Neither	7	7

*The expiry date may have prevented certain respondents from redeeming the credit slip.

in Tables 29, 30, 31 and 32.

No real pattern was established for those who purchased the frozen pork. It is interesting to note that even some of the respondents in phase II who definitely stated they would not buy frozen pork later selected both the frozen chops and roast. The converse was also true. A large proportion of those who stated they would consider buying frozen pork selected the fresh product.

In conclusion, it appears that when presented with a credit slip for fresh or frozen pork the majority of the respondents still select the fresh product; however, some of the respondents will select the frozen. There was no pattern of response to determine who the market for frozen pork might be. There was no dependency upon the answers given to previous questions when compared to the final selection. The

TABLE 29

RELATIONSHIP BETWEEN THE CONCEPT OF FROZEN PORK INCLUDING
QUICK FROZEN PORK AND THE REDEMPTION OF CREDIT
SLIPS FOR FRESH OR FROZEN PORK CHOPS

Selection Concept	Fresh	Frozen	Total
Favorable to frozen pork	8	7	15
Favorable to quick frozen pork	5	3	8
Unfavorable to quick frozen pork	14	6	20
Total	27	16	43
Actual $\chi^2 = 1.02$			
Theoretical $\chi^2 = 5.99$			
df = 2 P > .05			

TABLE 30

RELATIONSHIP BETWEEN THE CONSIDERATION OF BUYING FROZEN
PORK CHOPS UPON VIEWING AND THE REDEMPTION OF CREDIT
SLIPS FOR FRESH OR FROZEN PORK CHOPS

Selection Decision upon viewing	Fresh	Frozen	Total
Consider buying	21	14	35
Not consider buying	6	2	8
Total	27	16	43
Actual $\chi^2 = 0.15$			
Theoretical $\chi^2 = 3.84$			
df = 1 P > .05			

TABLE 31

RELATIONSHIP BETWEEN THE CONCEPT OF FROZEN PORK INCLUDING
QUICK FROZEN PORK AND THE REDEMPTION OF CREDIT
SLIPS FOR FRESH OR FROZEN PORK ROASTS

Selection Concept	Fresh	Frozen	Total
Favorable to frozen pork	9	6	15
Favorable to quick frozen pork	5	3	8
Unfavorable to quick frozen pork	13	7	20
Total	27	16	43
Actual $\chi^2 = 0.09$			
Theoretical $\chi^2 = 5.95$			
df = 2 P > .05			

TABLE 32

RELATIONSHIP BETWEEN THE CONSIDERATION OF BUYING FROZEN
PORK ROASTS UPON VIEWING AND THE REDEMPTION OF CREDIT
SLIPS FOR FRESH OR FROZEN PORK ROASTS

Selection Decision upon viewing	Fresh	Frozen	Total
Consider buying	12	10	22
Not consider buying	15	6	21
Total	27	16	43
Actual $\chi^2 = 0.69$			
Theoretical $\chi^2 = 3.84$			
df = 1 P > .05			

results suggest the need for a market test combined with a consumer survey to define the true consumer response to frozen pork at the point of purchase.

Hypothesis 8:

The consumers image of frozen meat will contain positive, neutral and negative aspects of frozen pork and poultry.

The semantic differential permits the development of descriptive profiles that facilitates the comparison of items. The semantic differential was used in this study to compare the consumers attitudes to frozen chicken and frozen pork by use of a number of bipolar scales.

The descriptive profiles obtained from the study (Figure 2) indicate that there was a definite reaction pattern to the concept of frozen meats. These results at first glance might seem contrary to the results reported under hypothesis 2 (p. 63), in which it was concluded that the consumers' images of frozen poultry and pork were different enough not to affect each other in the decision to buy. However, the descriptive profile indicates quite similar reactions to the bipolar phrases. It appears that factors other than those covered in the descriptive profile affected the results in hypothesis 2. Perhaps the experience or lack of experience with the frozen product altered the overall opinion of frozen poultry and pork in questions related to hypothesis 2. In

I would like to have
my _____ frozen when
I buy it.

_____ is suited for
freezing.

Sure of getting good
quality with frozen
_____.

_____ need not be
dated with an expiry
date on the label.

Frozen _____ does not
lose flavor in storage.

Frozen _____ does not
lose more juices than
fresh _____.

Frozen _____ is safer
to eat than fresh
_____.

Frozen _____ offers
advantages to the
consumer.

An experienced
homemaker will buy
frozen _____.

A new homemaker will
buy frozen _____.

I would like frozen
pork to be boneless.

I would prefer to
freeze my _____ on
my own.

_____ is not suited
for freezing

Not sure of getting
good quality with
frozen _____.

_____ needs to be dated
with an expiry date on
the label.

Frozen _____ does lose
flavor in storage.

Frozen _____ loses more
juices than fresh
_____.

Frozen _____ is not as
safe to eat as fresh
_____.

Frozen _____ does not
offer advantages to the
consumer.

An experienced homemaker
will not buy frozen
_____.

A new homemaker will not
buy frozen _____.

I would like frozen pork
to have the bone in.

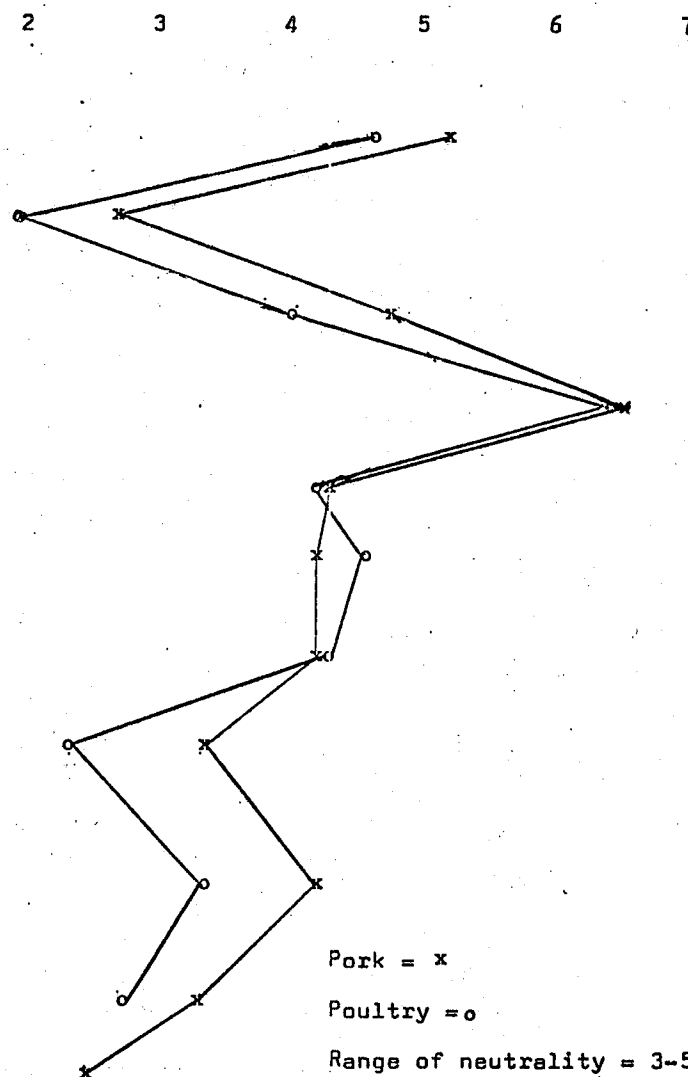


FIGURE 2. CONSUMER IMAGES OF FROZEN POULTRY AND FROZEN PORK

the descriptive profile, only one factor is considered at a time. There also might have been some bias due to presentation of one profile just prior to the other. It is believed by the researcher, however, that if a major difference in opinion did exist that it would have been revealed in the descriptive profiles. It might have been interesting to have asked the respondents which they would prefer to buy in the frozen state--chicken or pork.

An examination of the consumer response to the descriptive profiles discloses the following noteworthy points. The phrase most negative on the scale was with reference to the need for dating, that is, consumers were strongly in favor of dating. Another area of concern of slightly less importance was the desire to buy fresh pork and freeze it at home rather than buy pork that is already frozen. Consequently, it may be surmised that there is a large segment of consumers who would need reassurance that frozen pork in particular is not "old" if frozen pork is to be widely accepted. These results are in agreement with those summarized in hypotheses 1, 4 and 5.

The areas which fell into the arbitrarily chosen neutral point were quality, flavor, juiciness, "safety" of frozen pork and poultry, the advantages of frozen pork and the desire to buy frozen poultry rather than fresh poultry. Opinions on who would be most likely to buy frozen pork, an experienced homemaker or a new homemaker, were fairly neutral,

as were opinions on whether or not an experienced homemaker would buy frozen poultry. Provided these results infer indifferent neutrality (as opposed to ambivalent neutrality) a respondent may not have a category or may attach so little importance to it that she has no value for it (Crane, 1965). If this is so then the marketing strategy required in a consumer education program would be to show the receiver why this category is an important one. One way to do this is to report scientific articles which show that the quality of frozen meat is good.

If, on the other hand, it is an issue of ambivalent neutrality, in which the pros and cons are evenly balanced by the individual, this is unstable and temporary. This ambivalent neutrality might require creating a new category in which this conflict is less apparent. The results obtained in relation to quick frozen pork suggest that this term might be a possible approach to creating a positive response from a neutral response of the ambivalent type.

Favorable responses to frozen pork and poultry fell into the following categories.

1. Pork and poultry are suitable meats for freezing
2. A new homemaker would buy frozen poultry
3. There are advantages to buying frozen poultry
4. Frozen pork should be boneless

A consumer education program should reinforce these

existing positive beliefs and build upon them with information to help convert the consumers from previously held neutral and negative attitudes to positive attitudes.

Hypothesis 9:

Certain segments of the women meat shoppers in Metro Winnipeg are more receptive to frozen pork than other segments.

Questions 16, 17, 18, 21 a and b from the questionnaire used in phase II, the ratings for the pork loin chops and roasts from phase III and the results from the credit slips in phase IV were analyzed by the Chi-Square method of analysis to see if the responses had any association with the variables of occupation, age, family size, education and income. The hypothesis of an independent relationship was accepted in all instances ($P > .05$), consequently, the market in Metro Winnipeg cannot be segmented for the prepackaged frozen cuts of pork. The means of the scores of the bipolar statements of the descriptive profile (Figure 2) were calculated according to occupation, age, family size, education and income. There were no differences or very slight differences in the response of the subgroups.

It follows that certain segments of the women meat shoppers in Metro Winnipeg were not more receptive to frozen pork than other segments.

E. Implications for Consumer Education and
Technological Improvements to Gain
Consumer Acceptance

The survey indicated that there is a need for consumer information and technological improvements with regards to frozen meat. These implications are presented as a set of recommendations for the meat industry.

Recommendation 1:

The freezing and packaging must produce a clearly visible final product free of frost and freezer burn before it is placed on the market.

The group interviews in phase I (Appendix A) revealed negative attitudes upon viewing even where favorable attitudes to the concept of frozen pork previously existed. Frost was the most frequently voiced objection to the frozen pork. "They looked old" was a comment which resulted because of the frost. On the other hand, when the packaging and freezing techniques were modified in phase II, there was an increase in the positive response to the actual frozen product.

A report previously referred to in Section II C, the Kansas State University study (Anon., 1971b), also implied that there was a definite need for transparent packaging. It appears that the consumer prefers the transparent package because the clear film affords visibility of the product and enables the housewife to judge the various cuts before making a selection. The housewife has long exercised this prerogative

in her selection of fresh meat and is not prepared to give it up.

Recommendation 2:

The label should include the term QUICK FROZEN PORK along with information on handling and cooking.

Frozen meat partially eliminates the sensory criteria of sight and touch used to judge meat. Consequently the label will play an important role in informing the consumer of the quality of the frozen meat.

The term "quick frozen" inferred to the respondents a product which has been processed in the right way. This term should be used on the label as an indicator of quality.

The misconceptions expressed about the handling and cooking of frozen pork, Hypothesis 6 (p. 81), indicate that the label should include information on these factors. This information should not obstruct the viewing of the product. Printing on the transparent film might be a possible solution.

Recommendation 3:

Expiry dating or shelf-life termination dating on frozen pork is recommended but only if it is accompanied with some form of quality assurance with regards to handling of the product en route.

Despite the fact that dating came up as an important factor the author agrees with the results reported in the Department of Food Science, Rutgers University (1971) which stated that:

". . . . The report does not recommend the placing of an expiration or retail pull date on consumer packages because other factors, particularly temperature, are more significant in determining the product's shelf life than simply elapsed time. Until the storage and handling of products at all stages of the food supply system can be regulated and controlled by various levels of government, expiry dating would not seem to provide consumers with genuinely useful information."

The author of this study, however, suggests that perhaps an indicator device is warranted. The eutetic salts referred to in Section II (p. 9) is one such system which might accomplish this need.

The combination of dating and an indicator may be useful in overcoming fears the consumers have with reference to the mishandling of frozen pork en route and the fear about the lack of freshness of frozen pork.

The group interviews (Appendix A) showed that the consumer has fears about the handling and freshness of unfrozen meats. However, unfrozen meats at present have the advantage of the sensory criteria of sight, odor and touch to serve as guidance. Perhaps if the consumer could be adequately assured of the quality of frozen pork a significant proportion of the population might select the frozen over the fresh.

Recommendation 4:

Careful consideration must be given to the store in which the frozen meat is displayed and to the method of display used.

The frozen meat in phase IV was placed in a deep freeze cabinet which was deep rather than wide. Consequently, the display area was much smaller than the display of the fresh meat display cases. The method of display resulted in difficulty in comparative shopping for frozen meat. Improvements in the type of display used appear to be necessary for the product to communicate a favorable message to the consumer. Since the type of display used was not described by Branson and King (1960), Brunthaver (1961) and the Kansas State University study (Anon., 1971b) one can not be certain of the actual effect of the type of display used.

The effect of lighting on pork in display cases was not studied but may warrant consideration.

The reputation of the store seemed to be of prime importance in phase I. (Appendix A.) The store may or may not stand for good quality meats. The importance of the store in which the frozen meat was displayed was discussed in Section II (p.27).

Recommendation 5:

Price is a factor which should be given careful consideration before frozen pork is placed on the market. Price may suggest the quality of the product.

The results reported in Appendix A showed that there seemed to be a diversity of opinion on the importance of the role of price. The majority of the women felt that "you get what you pay for" yet they stated they would expect the price of frozen pork to be lower than that of the fresh as is generally the case with frozen lamb and poultry. However, the respondents felt that Swift's Butterball turkeys, though they are more expensive than "ordinary" turkeys, were of high quality. It thus appears that a quality (brand name)-price relationship was at play. The lower price of the frozen chicken and the possible lower price of frozen pork occurred as a major comment in the open-ended questions in phase II. There were, however, a few negative comments related to the possible higher price of frozen roasts.

It is recommended that more investigation into the subject of pricing is needed before any conclusions may be drawn.

Recommendation 6:

Education programs are needed on pork in general. Pork still conveys some negative connotations to consumers.

Pork as a whole is consumed in fairly large amounts by the majority of the respondents. On the whole, with reference to phases I and II, there appears to be little negative resistance to pork. The recent increase in the consumption of pork (Table 10, p. 55) indicates use of pork is gaining

favorably. There are, however, a few areas of consumer concern. These concerns are:

1. pork is fat--especially pork roasts.
2. pork requires a long cooking time.
3. pork does not have very good keeping qualities.

These concerns could be overcome by an effective consumer education program.

Recommendation 7:

The meat industry will have to evaluate the usefulness of a consumer education program on frozen pork. The producers, packers and retailers will all have to work together if it is to be successful.

The suggested media for the message are point of purchase displays, newspapers and magazine ads and articles and television programs and ads.

The following is a summary of a recommended approach for a consumer education program.

The meat industry must:

1. persuade the customer to try frozen pork,
2. stress the advantages of frozen meat through advertising and promotion,
3. insure high quality meat.

Price specials may provide incentive for the consumers to try the product. This study revealed that the consumers already are aware of some of the advantages of frozen pork. These advantages must be promoted and the

industry must find means of converting the neutral responses to positive responses and discover means to remove the biases people have against frozen pork.

Quality of "quick frozen" meats should be the theme of the consumer education program on frozen pork. The recent freezing of meat should be stressed along with dating and mishandling indicators. There is a need for the assurance of consistent quality. Branding may be useful here. The quality of the packaging must also be stressed.

Convenience of frozen pork should be emphasized. This may include convenience in meat selection, in preparation for the freezer, having meat on hand and in preparation of the meat.

The fact that the meat is trimmed and deboned should be included in a consumer education program. This may be accomplished by illustrating the price per pound and cost of edible portion of both trimmed and untrimmed cuts of meat.

CONCLUSIONS

In conclusion there was a generally favorable attitude in Metro Winnipeg to frozen pork packaged in a transparent, strong, frost free package. The term "quick frozen" pork enhanced the acceptability of the frozen pork products. The term appeared to imply that the pork was fresh when frozen and kept properly frozen.

Forty-two percent of the women were immediately favorable to the concept of frozen pork. Sixty-two percent of the respondents were favorable to the concept of quick frozen pork. When the respondents were actually shown the frozen pork chops the favorable responses of the 42 percent initially favorable to the concept of frozen pork increased significantly. The fact that a similar increase in favorable responses did not occur when respondents were shown the roasts is due to the fact that many respondents simply did not use pork roasts at all.

The women were divided into the subgroups of occupation, age, family size, education and income. The results revealed that no categories are more receptive to the acceptance of frozen pork than others.

The women in the study reported highly favorable attitudes to the freezing of meat in the home.

The open-ended questions pertaining to freezing meat in the home, the concepts of buying or not buying frozen and quick frozen pork, and the consideration to buy frozen pork upon viewing the frozen pork products were analyzed. Factors relating to convenience, quality and economy were the prime areas of concern and received different weighting depending upon the question.

The consumers tended to accept with certain reservations, the frozen chicken currently on the market. Many felt that the quality of fresh chicken is better and buy the fresh product when it is available. Positive and negative attitudes to frozen chicken were not carried over as similar attitudes to the concept of frozen pork, in questions relating to the concept of buying the frozen meats. However, the semantic differential revealed that the attitudes obtained were quite similar for both frozen pork and poultry. There were positive, neutral and negative concepts towards both products.

The open-ended questions on consumer fears and misconceptions showed that the major problems bearing technical and educational implications are related to the quality of the frozen products, both at the point of purchase and at the time of eating.

Consumers are concerned with how long the meat has been frozen, with methods of handling it in the home considering thawing to be inconvenient, and with the possible loss of flavor with freezing. In spite of these concerns there is

little actual consumer resistance in relation to the home use of frozen pork.

Thirty-eight percent of the respondents selected the frozen product in a store situation when presented with a credit slip after having taken part in phases II and III.

The most reliable sources of information, that is, government bulletins, cooking schools and evening classes and home economics courses, were not widely used sources of information on what to look for in selecting meat. Trial and error, mother, family and friends, and cookbooks were the most frequently expressed sources of information of selecting meat.

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VII. APPENDICES

APPENDIX A

Progress Report (Phase I)

Summary of four group interviews on

ATTITUDES TO FROZEN MEATS

Winnipeg, Manitoba
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APPENDIX

Basic Data Questionnaire

FOREWARD

There has been little marketing research done in Canada on frozen meats and very little anywhere on frozen pork.

In the past Swift and Co. and Canada Packers have tried to market frozen meats but have been unsuccessful. Swift at present is conducting a market test in the U.S.A. because it feels that many things have changed both in the industry and with consumer opinions.

The immediate purpose of this pilot study was to decide whether there were any problem areas of consumer attitudes where further research would be indicated and, if so, what direction such research should take.

In order to make these preliminary assessments, four group interviews comprising 20 women were conducted in Winnipeg (1 group at a downtown apartment block and 3 at Opinion Place).

All women in the sample used pork, were not home economists and no one in the family was connected with the meat industry. Participants completed a brief questionnaire which asked for basic information about their families, their meat shopping habits and freezer storage facilities. The results were tabulated but of course are not suitable for statistical analysis. After a general discussion about frozen meat, the women were shown samples of frozen pork:

- 1 Zip Net loin roast, boneless; 1 string tied loin roast, boneless; 1 Zip Net butt roast, boneless; 1 string tied butt roast, boneless.
- 1 package of 4 loin chops, boneless
- 1 package of 4 butt steaks, bone in.

The object of interviewing was to obtain consumer reaction and relate it to other information given by the interviewees.

The discussions were conducted along the lines indicated in the discussion outline of this report. All discussions were recorded on tapes *

The conclusions from this study are highlighted at the beginning of the report and are followed by the findings on which they are based.

This study is primarily impressionistic. It explores attitudes and feelings and their apparent significance for new product development, especially in relation to frozen pork.

These conclusions serve primarily as guidelines, and are not intended to provide assistance in the development of future marketing strategy. They are not definitive and require validation by standard quantitative methods.

*Tapes are available from Department of Foods and Nutrition.

The following discussion outline lists the points covered in each interview and the purposes of these points. They are not necessarily in the order in which they were discussed.

PROBE AREA

1. Meat generally
 - importance of meat-beef and pork, prepackaged vs. cut to order, established patterns, criteria to judge meat, specials.
2. Home storage of meat
 - freeze it, why, any difference in fresh and frozen
3. Purchase of frozen meats at present.
 - why they buy, opinion of them, why they are frozen
4. Bone in vs. boneless
 - price of boneless vs. bone in
5. Pork - image
6. Brand names
 - for fresh, processed and frozen
7. Labels
 - what would like to be included
 - dating
8. Concept of frozen meat.
 - appearance, flavor, etc.
9. Price-fresh vs. frozen, equally priced, 1 to 2¢ lower, 5¢ lower, 10¢ lower.
10. Cooking
 - pork, frozen meat
 - thaw or not thawed
11. Show frozen cuts of meat.

Probe reactions in relation to previous comments as to:
appeal - not appeal
who would buy - not buy
under what conditions, purposes and uses
price range

PURPOSES

To assess the perceived image of meat, functionally and otherwise and the dimensions which affect this image. Discover the difficulty consumers have in selecting meat they think is good.

To find out why they think freezing meat is a good preservation method.

To find out the positive and negative image of well established frozen meats in particular the positive attributes.

To assess how consumer feels about bone in meat. What value boneless meat has to the consumer.

To find how acceptable pork is to the consumer.

To assess the quality factor associated with brand names.

To find out the importance of dating to the consumer

To list initial and spontaneous reaction.

To find the relationship between price and quality

To assess problems the consumers are having with preparation of frozen meat.

To assess the relevance or otherwise these frozen cuts of pork are perceived to have for the projected ideas of frozen pork and to obtain any ideas that seem likely to be of assistance for marketing, promotion and especially education.

Sample of Interviewees

The series of 4 group interviews were conducted with a total of twenty women from greater Winnipeg who can be stratified as follows:

Marital Status

Married	18
Single	2

Work

Full time	10
Part time	2
Do not work	8

Freezer ownership

Deep freezer	7
2 door refrigerator	4
1 door refrigerator	11
Outdoor	2

Meat shopping frequency

More than 1 x week	6
1 x week	7
2 or 3 x month	6
1 x month	0
less than 1 x month	1

Age

20 - 25	3
26 - 35	7
36 - 45	2
46 - 55	7
over 55	0

Income

under 3,000	1
3,000 - 6,999	2
7,000 - 10,999	6
11,000 - 14,999	8
15,000 and over	3

CONCLUSIONS:

- * From the interviews it may be concluded that freezing meat at home is thought to be the best method of preserving meat. The amount of freezing is limited by freezing facilities.
- * Presently, frozen meats, chicken, turkey and lamb are well accepted. The respondents say they would prefer fresh products but at present have few complaints with the frozen. Frozen in many cases is all that is available. The above meats are thought to be "quick frozen" which means -
 - sealed in freshness
 - a safer product
- * There were a wide variety of shopping habits expressed by the interviewees. One point which all respondents agreed upon is that you learn how to select good meat only by experience.
- * The following covers the wide range of opinions expressed when the possibility of frozen meat was brought up -
 - the thought of frozen pork on the market terrifies me
 - why should they start freezing it?
 - pork is suitable for freezing.
- * Frozen pork, due to the danger of "contamination" appeared to be grouped closer to presently frozen meats than beef would be, therefore, suggesting it might be accepted if available in the frozen form.
There was only one woman who was sincerely sold on the idea of frozen pork. Apparently she received a good educational talk on the value of freezing food. This may show the benefit of using consumer education programs.
- * There were several negative attitudes toward the concept of frozen pork. Mistrust of "big" industry and concern about adequate freezing en route, length of storage, original quality, flavor, shape, color and frost were expressed.
- * There seems to be a split in the importance of the role of price. The majority of the women felt that "you get what you pay for", yet they would expect the price of frozen pork to be lower as frozen lamb and poultry is.

The example was given by the interviewees of frozen Butterball Turkeys. They were thought to be more expensive than other frozen turkeys but yet were very highly commended by the interviewees. It thus appears that a quality (brand name) price relationship is at play here. More work definitely is needed on this topic before any conclusions may be compiled.

- * Dating was brought up by the respondents as a possible solution to the fear of getting "old meat". They did not appear to worry about old frozen meats presently purchased unless they were put on sale. The recent publicity through the Consumers Association of Canada on dating may have influenced the responses.
- * Boneless pork was rated very high by the majority of respondents. Some buy boneless fresh pork loin roasts or butt roasts at present.
- * The respondents image of a consumer who would buy frozen pork if it was available at the retail stores was described as a new housewife "who didn't know any better". This may be overcome with educational programs. The opinions showed misconceptions and fears of frozen meat.
- * The image of pork itself is not unfavorable but the use of pork was less than beef since it is a "richer" meat. Pork chops received high praise both for variety and for being a "quick easy meal".
- * When the consumers were shown the actual product, a lot of the favorable response which existed previously was lost. Frost was the most frequently voiced objection. "They look old" was a comment which resulted because of the frost. The loin roast (string tied) received the most favorable comments. The butt was thought to be cheap and the zip net was associated with cheaper meats that would fall apart.
- * The reliability and reputation of the store from which meat is bought received a great deal of emphasis in relation to the quality of the meat you can purchase.
- * Frozen pork is seen as a coming trend in the future but consumers will resist it as long as it is feasibly possible.

RECOMMENDATIONS:

On the whole there definitely appears to be a need for for further investigation to determine the areas of resistance which may be dealt with in a consumer education program.

SUGGESTION BEFORE FURTHER RESEARCH IS DONE:

With the comments on the product in mind it is recommended that a more durable film be used which does not break and also that some method of freezing and transportation be developed to eliminate the frost which was the main area of criticism.

FINDINGS

The following is a detailed report of the group discussions on meat. The report is based upon the direct quotes of interviewees. The topics are grouped according to the listing in the table of contents and the appropriate quotes represent typical (unless stated to be atypical) responses from the women interviewed.

I. PRESENT FREEZING MEAT HABITS.

The great majority of respondents indicated they sometimes froze fresh meats at home. The practice was most common for those who had a deep freezer or a two-door refrigerator with a separate freezer section. Those who had a one-door refrigerator were the least likely to freeze meat for any period of time. It was the general concensus that freezing was the best method of preservation for meat; however, most women preferred to do their own freezing.

The few respondents who did not freeze fresh meat generally explained either that they preferred to make meat purchases in small quantities, or that they did not have adequate freezing facilities.

Those who on occasion froze fresh meats at home gave reasons such as: it saved shopping, prevented spoilage, was convenient or was economical. Beef and fresh pork were the meats mostlikely to be cited as having been frozen at home. Chicken, turkey and lamb were generally bought frozen and stored in that manner.

The respondents were very receptive to the frozen meats currently sold in the retail stores. There was little resistance to this concept which has been very well accepted. The only doubt about frozen meat already available was a fear of getting an "old" turkey when the price was drastically marked down. Despite the favorable connotations of these frozen meats consumers stated that they would still prefer to buy the fresh product if it were available.

A. General

One woman summed up the sentiments of the interviewees on frozen meats on the market as follows:

"If it's something that you can get all the time - there's no advantage. If it's something like lamb that only comes in now and then, then it's different. You have to take it when you can get it and how you can. But if you can get it fresh - if it's all year round then there's no need to freeze it".

Why do the consumers buy frozen chicken and turkey?

"It seems to me that the reason why most people buy poultry frozen is because that's the way it is, and it's sort of in a sense, pushed at us - we haven't got much choice".

In general the above is the way most of the respondents felt about frozen turkey and chicken. However, they had no complaints about the majority of such purchases.

B. Positive Aspects

i) Quick freezing was expressed as the most favorable aspect of buying frozen meat.

"I presume that when I buy frozen foods, that everything is quickly done - as soon as it's killed".

"----- whereas they might be sitting (unfrozen) in the store several days".

"----- you've got your freshness".

"----- this is why it is frozen - because it's safer".

Thus the consumer likes it when meat is quickly frozen and then it does not have to sit around for any period of time in the fresh form.

ii) Other reasons -

"----- maintains nice shape and appearance".

"----- fowl does not have to age".

"----- there is not the high turnover there is with beef".

"----- it is drippy and messy when fresh".

C. Negative aspects

This does not mean that there were no complaints. However, the complaints were not very strong or important in the interviewees' minds. The following is a typical example:

"I prefer to get them fresh. If I ever see them fresh, I'll pick them up and buy several, then freeze them myself. Then I know they haven't been frozen very long. And of course the colour - you can tell with fowl, if it's been frozen a long time. And I watch that I don't get a discoloured one. I have eaten turkeys that, as I say, taste like sawdust; the old frozen turkeys. Turkey more than anything else I think".

The majority of the women said they would prefer to buy fresh as compared to the frozen if available at the same price.

In conclusion the consumers have become adjusted to the idea of buying frozen chickens, turkeys and lamb. The positive aspects far outweigh the negative aspects of these frozen meats. All the respondents have had experience with the frozen meats sold in the stores. The results may reveal the importance of experience with a product to enable people to adequately assess good quality.

III. ESTABLISHED MEAT SHOPPING HABITS.

There were a wide variety of shopping habits revealed in the group interviews. Some of the women bought a part of an animal and either had it frozen for them or froze it themselves; some of the women bought mainly unpackaged meats while others bought only packaged meats. The importance placed on price and convenience, and criteria for selecting meat also varied widely. The habits could not be stratified. Some of the responses which appeared typical for various patterns are as follows:

Most of those who bought a part of an animal felt the following way -

"buy hind of beef or pork not for the sake of buying but for convenience sake".

The women who still do not rely upon prepackaged meat of any type felt this way -

"we always go to the butcher shop and I think they (the meats) taste so much better".

Some of the women who bought prepackaged meat felt the following way -

"you don't consciously look, you see the one you want and that's it. It's the way I am. It looks like the last one I bought and that was good".

"If I had time to think it over then I might debate it more but when I've no time to think I just have to pick what I know is good and keep going".

Convenience meant different things to different people. Here are a few varied but typical quotes on the topic - the young married woman who later indicated she would refuse to buy frozen beef and pork had this to say about her habits -

"I have to say I'm selfish when I shop for meat - I shop for convenience. I work till 6 o'clock every night so by the time I get home at 6:30 - quarter to seven - I want something I can cook fast that's still going to be good. And that's expensive meat. But because I want time to myself in the evening, I'll sacrifice maybe \$5.00 more a shopping day for that meat".

"I'm so rushed that I just follow kind of a pattern of either going to Triffo's or the Safeway or Loblaws and home again, and I don't have time to explore these other places that I would go to if I wasn't working. I'd go round and see what else there was. But when I'm working every day, full time, I just follow a set pattern".

"Convenience means a lot when you're working; I buy fresh meat every day on way home".

"Most people do it (use self service) just for the convenience of it you know, because you've got this big line-up, you've got to wait for half an hour before you get served especially in a big store".

The following is a typical comment from the women with experience in buying meat -

"It's a trained eye I believe. It's taken 10 years to learn how to do it but I have now learned and I would have to re-learn a different method of shopping were I to go to a butcher and it would take time".

"I think everybody over the years - it you get to cook better and better; and food buying and cooking gets to be sort of a love affair and I don't think about it; you just have a feeling and this is when you come through with good meats and I wouldn't have the same feeling with frozen meats".

In general quite a lot of consideration went into the meat purchases. Despite the method used in shopping the consumers must feel psychologically satisfied with the purchase.

On the whole the women had definite shopping patterns. Convenience seemed to be important but meant different things to different people. Patterns were determined by the location of the home and job in relation to the available stores.

IV. POSSIBILITY OF FROZEN BEEF AND PORK.

The following is a summary of the attitudes to the concept of frozen pork for the retail market. The responses showed a reinforcement of old habits and in most cases resistance to change. If convenience was important they would buy frozen meat if that was all that was available. The older, non-working women were more resistant to the concept on the whole than the younger women or the working women with families.

A. General

The following quotes cover the wide range of opinions expressed when the possibility of frozen meat was brought up.

"The question terrified me - would you want to buy frozen meat? I hope it isn't a trend that's coming". (married - children - work part-time).

The above woman bought frozen turkeys and chicken but not frozen lamb. Here is what she said about lamb.

"I don't know how long it has been frozen. Do you know I've seen it in Safeway's and I wouldn't buy it. But I'll get it from my butcher and he thaws it before he sends it to me, so all lamb - it has to be if it comes from Australia - it has to be frozen".

This was the only woman who felt this strongly however. One woman at the other extreme had this to say -

"I think I'd buy the frozen because that would save my freezer - you know it would be frozen and I know it would be quick - frozen and I think I'd buy the frozen". (married-children-work full-time).

"It's all done and wrapped for you for those who buy for the freezer - you don't have that worry -it's already done. Providing you know your meat - say you buy it once and you know it's good and it's got it's name on it, and you can go by that".

The above woman who had bought a freezer had received some excellent educational information along with it. She thought that freezing did not harm meat and might even tenderize it.

Other comments on the topic are as follows -

"You'd wonder why all of a sudden if they started freezing beef why they were doing it".
(married-no children, work full-time).

"I think if whoever up there who decides what to do with the meat - if they froze it and put it in all of the supermarkets - everybody would start buying it, just like they buy the trend in clothes". (unmarried - unemployed)

"I'd go to a small butcher".

"I'd stick with the supermarkets, if all the supermarkets changed but I'd first of all go to the one that didn't change". (married-children-not working).

"I don't know how to deal with a butcher. I do all my shopping by pre-packaging - their packaging sells me the meat". (married-children work part-time)

"If there were one that was fairly handy I would probably make the effort to go there to get fresh meat but if I had to drive out of my way just to get fresh meat I wouldn't".

(young married who tries to satisfy a husband who is a meat lover).

Same woman -

"I never did learn how to buy meat. I've been buying meat for three months for my husband and it's just like you know, luck is with you or it's not".

Another (young married woman) felt quite differently, she stated -

"It wouldn't matter to me if I had to go half way across town to do my shopping to get my fresh meat - if it came to the situation where all my meat was frozen when you bought it, then I think I'd go along and buy a hind of beef and freeze it myself. Even if it meant putting out two or three hundred dollars for a freezer. Because I know where I got it from and I know how long it's been frozen".

The reaction to the concept of frozen meat appeared to be negative. The overall tone was not completely negative however. Only a small proportion of those interviewed felt extremely negative to the concept of frozen pork. Most of the women were willing to talk about it as a possibility. It would appear that a good educational program is needed to assure the women of the why and how of frozen pork.

A. The following is a summary of the negative comments on frozen beef and pork.

1. How long has it been frozen?
2. Would old meat be frozen?
3. Are the stores' facilities adequate to store frozen meat?
4. Has it been thawed and refrozen?
5. I would have to learn a whole new method of shopping.
6. New cooking problems
7. Would have to trust the butcher-prefer to be my own judge.
8. It doesn't look as appealing
9. It doesn't look like real meat anymore - "plastic", "lump", "tree trunk".
10. Grey color
11. Frost on the package
12. The flavor deteriorates if stored too long.
13. With fresh you can "taste" it before you cook it.
14. Would the packaging be adequate to prevent freezer burn?
15. Personal touch is removed.
16. Supermarkets economize at consumers expense.
17. Will have to pay more for the better cuts since they could transport frozen cuts out of the province easier than fresh.
18. Frozen things weigh more.

B. Advantages of frozen meats.

- "---- just to keep them if you're not eating them right away".
- "---- well if you have a freezer it's a tremendous convenience just to have it thaw out separate like.
- "---- It saves shopping time".
- "---- quite often I think frozen meat will save money if you can buy in large quantities and on sale.
- "---- prevents spoilage".

C. Quotes on Attitudes to Frozen Meats.

1. General - First are listed the comments related to the industry rather than the meat itself.

"and if they are going to freeze it right from the packers, there is no limit on their transport of it. It's frozen so they take half of what we're consuming now and ship it out to other centers. We're going to fight for that better cut, and we're going to have to pay for it".

"And if it's beef from the west, why should we pay more than the east is going to pay".

"----- you'd really have to trust the store".

"I'd have to trust the butcher. I wouldn't just go in to say, Safeway, and buy a whole bunch of frozen meat or pork. I wouldn't trust them".

"I would tend to trust my butcher more than I do whether it's red or blue or whatever".

"Yes I think a lot of these big companies can put it over on you one way or another. They'll get rid of it. They never throw anything out".

There seems to be a general mistrust of the "big" packers and super-markets. There seems to be a fear of having them "put one over on you" if you are not careful.

2. Adequate Freezing en Route.

This aspect was not discussed by all the women but when it was, it received a fair amount of criticism. It only was a worry to those who have had unpleasant experience with thawed, refrozen vegetables from retail stores

"Vegetables form a solid lump if refrozen but how do you tell with meat?"

"Then my imagination sort of works overtime. You imagine things like refrigerator cars that something happens to the power, and it thaws and then it freezes again, en route to wherever its going; it partially unfreezes once or twice and then it freezes again. It might only happen once in a while but you just think all the time that this shipment I'm buying something awful has happened to it, on the way here".

"It thaws in the bins as you're watching it. It's cooled but it's not a freezer."

"People pick things up all the time and set them somewhere else and then dump them back into the freezer again for instance; freezers have to be kept shut. The stores aren't that great".

The consumers felt that they have no way of judging what type of care and handling the meat has undergone before it reaches the consumer. Again there was a basic mistrust of big operations.

3. Length of Storage.

A. General:

There is one topic which always came up as a major criticism of frozen meat. This problem definitely must be dealt with. The following quote may give some suggestions -

"You wouldn't know the length of time it was frozen. When you see something in the store fresh you assume that it's been bought in the last few days - you see something frozen- well that could be three weeks ago and it could still have been sitting there. I just assume that the fresh meat by appearance is fresh because you can soon tell on fresh meat whether its fresh or not, where you couldn't with frozen".

The same fear however also applies to fresh meats.

"If you buy them (fresh steaks) at Safeway you don't know when the meat was delivered and whether it was put out at 9:00 that morning or 6:00 the night before".

B. Pork.

Pork tends to be more favored for freezing in comparison to beef.

"As far as chops and roasts (pork) and that - I freeze them anyway, when I get them home but I don't like to buy them frozen. If you can take them home and then in the freezer and they haven't been frozen beforehand - you know how many days or how many weeks you can keep them".

"If it meant having to go somewhere else just to get pork chops, I would buy them frozen. But steaks and roasts and that kind of thing, I'd go out of my way to get them fresh if I could".

However the following fear that was general among the interviewees must be considered:

"I think we're very conscious that it must be fresh. I wouldn't want to buy it if I thought it was old, no matter for what reason".

"Especially the fact that it might have been thawed and then re-frozen - especially pork".

These are the same negative comments brought up in relation to fish and other meats presently sold frozen in the market place. As a result of this it appears that frozen pork may be the best product to put frozen on the market.

4. Original Quality.

On the whole mistrust of the original quality was not a very big problem. Criteria used to assess this would be the reputation of the source of freezing based on past experience and friends' comments.

"Then if they have fresh and frozen in the store I presume that they had some that wasn't selling so they froze it up".

"They could look pretty good because you can hardly tell with the frost, on the package just what sort of meat it is and you don't know till you really get it home and thaw it out, whether it really looks fresh or not".

5. Flavour.

Flavour is the main criterion used in judging meat when it is eaten. As a result of this it is a very important factor to consider. Here is what the respondents had to say about flavour. The main negative comments were associated with length of storage.

"It might be that what's frozen for a short length of time wouldn't change the flavour much but you take something out that's been frozen for quite a while and there you have a marked difference".

"And especially when there's a sale and they taste like sawdust. When they have those sales of turkeys, sometimes real cheap, and they just have stocks of them, and there is no flavour in them at all. And they are just clearing them out".

One woman stated that -

"It seems to me that some of the flavour gets lost too, when you freeze them. I think there is always a difference between frozen and fresh chickens".

A few other women felt similarly -

"There's always a juicier taste to it (fresh) it seems to hold its own juices and flavour much better, frozen meat has never the same flavour".

In general there may be a few women who believe that the freezing period deteriorates the flavour. Another woman who felt that this was no problem represented a good proportion of the women.

"You can always tell if it has been refrozen because the flavour is just not there - it's ghastly".

These quotes are believed by the researcher to be the true feeling of most of the women since they have so much experience with frozen meat whether they buy it frozen or freeze it themselves. Most of the meat they eat is frozen.

"I think it breaks down the protein a little but I don't think it makes that much difference".

Another woman said -

"I never noticed if anything tastes wrong with it. I figure it's what I've done or haven't done to it that makes the difference". (young married).

To sum up, very few of the respondents felt that freezing harmed meat provided it was not stored for too long. Very few blamed freezing of meat for any failures they may have had.

6. Appearance.

A. Shape: Shape is what first is noticed by the consumer when she is shopping for meat. A negative concensus which was expressed definitely would deter the consumer from purchasing frozen meat if fresh were also available.

"When you pick up a fresh roast it wobbles whereas a frozen roast is something solid right there - it doesn't move".

"A solid lump"

"I just think the whole thing's wrong- you open up the package; I think it puts you off to begin because it doesn't even look like any-thing eatable; because it's so square-----".

"And it doesn't look like meat anymore. It's like the fish which I hate buying in the package and the New Zealand lamb. I look at this and I think, is that really meat? Because it's so cut off at the ends and squared - so I've never bought it".

"Exactly! It looks like a tree trunk. I think I'm so modern, yet I don't buy that because it doesn't look like meat anymore. Then I freeze all my meat".

"They look like plastic".

"It's like an ice cube to water. When you want a glass of water to drink you're not going to take an ice cube out of the freezer".

"If I bring a piece of meat in from the store and go to cook it you can almost taste it before you cook it but the frozen doesn't have that appeal. I don't feel that way when I pull something out of the freezer and I never think of it until it gets cooked, but a piece of fresh meat you can almost taste it before you even start cooking it".

The appeal to the senses of touch and sight are major obstacles to be overcome. Perhaps a better psychological preparation through a consumer education program would help eliminate these negative attitudes.

B. Color and Frost:

Colors play a very important role in buying meat. Color is one of the main criteria for judging quality.

"If it's beef it's got to be red and if it's veal it's got to be pink and pork is pinkish too".

The consumers have very definite opinions on what color meat should be. A few women however looked for the brown colored meat because they felt it was better aged and therefore would be tenderer but the majority preferred "That nice red - you can just taste it". Frozen poultry presented no obvious color problem but lamb did -

"I think frozen lamb chops look especially horrible. They look sort of greyish when they're frozen - it really takes away from the appeal of them".

When referring to color one woman also brought up the topic of frozen beef patties -

"It just turns my stomach to look at them".

It was the general consensus that -

"I don't even like frozen meat that comes out of my freezer. I don't like the look of it".

"So if you get that old layer of frost, or just on the cellophane you know you can't see this the same, whereas the fresh, your cellophane is still clear and you can see it. And frozen meat, it's got a certain amount of moisture and frost on it".

A better explanation of the frost is evident when the consumers were shown some actual frozen cuts of meat (See Section XIII).

In conclusion shape, the loss of color, and frost are the major areas of resistance to the quality of the frozen product. If the product is to be accepted some method of overcoming them must be developed.

Consumer education may help but product improvement definitely is needed.

VI. BRANDS

Brand names would also appear to be an influencing factor in the case of frozen meats.

"If you had something to go by or if you could go by the brand name it would make it much easier".

"This is why I like Dominion-because I like their brands - foods other than meat".

"There is something to brand names, I think you buy brand names".

"Well, I think people tend to have confidence in brand names, if they feel that's theirs and that type is good they'll buy it and if not a very good high quality meat, I'll try the other brand".

"Like you get a Swift's Butterball Turkey, now you can't beat them, you know, and I think this --- they stand behind their products".

As a result of comments it appears that it is not the original quality of meat you buy when you buy a brand name but the processing, for example, special smoking, curing or freezing.

"You have confidence sometimes in a good operation, you know, because they have the facilities".

One very traditional woman had the following to say; not many women were this quality minded -

"I find what's happening with this great consumption in our country- we're getting away from the quality and the good name - like Haddon Hall, and all this sort of thing, in meats as well, is being diminished. Everything is sort of quantity, and push it through and we're losing that quality - people don't have to stand behind a name. They throw their stuff out and you take your chance, you know".

In conclusion it would appear that brand names in processed meats of any type including freezing is a big influence on the consumer's decision.

VII. PRICE.

A. General

There seems to be a split here in the importance of the role of price. The majority of the women felt as follows:

"I believe that you get what you pay for".

"You're willing to pay more for quality"

"I don't look at prices as much as I should -
I just look at the meat".

Yet some women reported they bought in bulk and froze on their own, mainly for convenience and price. A few women cited that price was extremely important to them. One particular instance was an unemployed young woman who was trying to make ends meet. All of the women however appeared to have some criteria for assessing quality and price relationships. However, the following quote would apply to all women with families -

"If there is some good buy on, I buy it, if it looks good; and yet if I have a special menu I want to make I'll buy it special regardless, that is unless it's really high".

The majority of the women felt that "people buy what they want regardless of the price", "People just don't have the time to shop around". Most of these women worked part time or full time so the full time homemaker was not adequately represented. The interviewees felt that the non-working homemaker might shop around more and be influenced by price. As a matter of fact they referred to friends or relatives who shopped in such a price conscious manner. The women who said that price was not important to them referred to how glad they were that other people felt as they did since -

"I find that the majority of my friends - are very price conscious and they will drive miles for the bargain".

This might imply that the sample did not include typical respondents - the market may be more price conscious than the sample used. Some of the women who said price wasn't important were prone to comment that if you "go late Saturday and the steaks are going that little bit of a grey color and they look ghastly but they've taken 50 to 75¢ off it, you know if there is anything wrong with it, my cooking is going to kill it".

"Easier to take because of the price reduction, but at over a dollar a pound, I want it as I like it".

B. Equal Price - fresh and frozen:

"If the price was equal I don't think anybody would buy it, unless they wanted to stock up their freezer for one reason or another".

"Even with the deep freeze I would just as soon buy the fresh, date it, and store it myself".

C. Frozen meat 1 or 2¢ lower than fresh:

"I'd automatically think there's something - you know, it's not out of the goodness of their hearts - there's an angle to it".

"You'd always be suspicious that there's got to be something wrong with it".

Yet a couple of women felt that "Well even 2 or 3¢ a lb. would make quite a difference".

D. Frozen meat 5¢ lower than fresh:

"I'd still buy the fresh".

"I would buy it at 5¢ cheaper frozen. Maybe because when we bought our freezer the lady did a tremendous selling job on how good - that even freezing tenderizes meat to a degree, a small degree but that it does - and so this why I would".

E. Frozen meat 10¢ lower than fresh:

"Would have to be at least 10¢ a pound cheaper".

"If it was very much cheaper to buy the same cut of meat frozen than the fresh then I probably would buy frozen".

"probably (the frozen pork should be) at sale price all the time".

"eliminated personal touch so price should go down - able to buy at cheaper prices therefore pass the advantage on to us".

"Not only are they trying to put something over on us but it's probably tough meat". (hostile voice).

The general attitude however was that the location of the consumer's home and job were reported to be strong influencing factors on the the stores where she shopped and thus she was restricted to the selection and prices available at these stores.

"I wouldn't be intrigued with the idea that it was going to be cheaper and buy it if I thought the flavor was gone - it wouldn't be worth it".

"Usually when they say a great big sale there's one nice steak out of about 500".

"A top supplier who has a ready market for his goods very often won't give a concession".

There seems to be a split in the importance of the role of price. The majority of the women felt that "you get what you pay for", yet they would expect the price of frozen pork to be lower as frozen lamb and poultry is.

With reference to price and the example given by the interviewees of Butterball turkeys, the Butterball turkeys were thought to be more expensive than other frozen turkeys but yet were highly commended by the interviewees. It thus may appear that a quality-(brand name) price relationship is at play here. More work definitely is needed on this topic before any conclusions can be compiled.

VIII DATING.

Dating was seen as a possible solution to the mistrust of stores selling "old" meat.

A. Need for dating:

"I think that would be a very good idea because you'd know just what you were getting more or less".

---- particularly with frozen meat

---- different cuts have different storage time

---- experts would set the expiry date

---- I'd refuse to buy pork without a date on it, because it does have a short freezer life.

"I find I turn the store upside down - when I go for meats for instance I go straight into the bottom, because I think maybe you are bringing a roast up to the top". (and getting a fresh one).

B. Problems with expiry date:

If the print was too small on the package it was felt that it would take too long to find. On the other hand, too big and clear, it would impart negative connotations. Respondents referred to the psychological effect of knowing that you could only keep it so long. There was some comment on using the date of freezing but it was rejected in favor of an expiry date because the consumer could not judge the keeping time. They also mentioned that something would have to be done so that all meats in a freezer cabinet had approximately the same expiry date to eliminate build up of meat with older dates which might result in high prices.

A comment on distrust of industry:

"But would packers give an expiry date? Would they want to - on frozen meat. Or would they say this can be kept indefinitely up to a year? After two months it loses flavor."

"I don't think it would cost them anything to label it - I think it would cost them in sales in the long run because people would tend to take the fresher and leave the older, which would be a loss to the company, and the meat companies are naturally -they're not going to take the loss; it will be passed on to the consumer, so you'll pay more for what you do buy".

To sum up, according to the consumers interviewed, dating would be one way of eliminating the fear of getting "old" meat. This suggestion warrants further investigation to find out what type of dating would be most effective and what bearing it actually has on the consumer. Perhaps the recent publicity on dating by the Consumers Association of Canada has influenced these responses since there was no fear of getting old frozen meats presently purchased unless the price was drastically reduced.

IX WASTE

A brief consideration of boneless meats raised the following opinions:

Positive:

"The pork roasts - I usually buy that boneless pork loin. I myself prefer to pay that bit more and get it all boneless than have the trouble cutting it".

"I'm sure you're getting a lot for your money because it has no bone".

"Subconsciously I'd buy boneless because of the fact you know, why should I pay for the bone if I can't eat it. It's weird because I don't watch prices when I buy but yet I still think of these things".

"A good beef roast with no bone, you use every bit of it".

"There is a lot of waste in cuts with bone".

Negative: "Bones are good for flavor".

"The sweetest part of the meat is the bone".

"They'd jack the price up because you're paying by pound and you get a lot of heavy bones".

"Bone is light - a bit of bone doesn't weigh that much, I wouldn't want to pay a lot more if they took the bone away".

On the whole it appears that boneless meats might have an excellent market.

Confusion was centered around cooking frozen meats -

"I like to defrost the meat before I cook it".

"Although when I had that hind of beef I let it thaw out and quite a lot of the juices dripped out - so the next time I put it in frozen. It really was delicious when I cooked it frozen.

"Takes a long time though".

"---- you have a good point there".

"---- do you lose juices?".

"---- Few times I've had a frozen roast I've found that it's well done on the outside and quite raw inside".

"Steak has to thaw otherwise you're going to get burnt spots".

"I occasionally cook a frozen roast- put a frozen roast in the oven. That's about the only thing I ever cook frozen, and I don't notice any real difference between putting it in frozen or when I let it thaw".

"I notice it. I notice the meals I take my time over that I've cooked, and prepared at noon and have spent a lot of - not actually doing anything, but thought and tender loving care, come out better".

"I can't honestly say I notice that big a difference".

"What's the best way to thaw - in refrigerator, in the wrapper, overnight, etc?"

The uncertain replies on thawing and cooking frozen meat would suggest that further research on consumer opinions be conducted so that a consumer education program may be set up to provide specific information on how to cook frozen meats.

XI. RESPONDENTS' IMAGE OF WOMEN WHO BUY PACKAGED FROZEN PORK.

On the whole, despite the fact that at various times some of the women suggested they might buy frozen pork, the general response was that the only person who would regularly buy frozen meat was a consumer "who didn't know any better". This reveals a definite need for consumer education to improve the image of frozen pork.

- some buy the first thing they see
- someone that won't be using it for a few days and can keep it in a refrigerator or freezer
- a new housewife - that didn't know any better
- planning to take meat to the lake
- someone who is very budget minded.

XII PORK

The following are some brief comments on the general image of pork -

- it is a man's meal
- danger of tapeworm or whatever you call it
- danger of trichinosis
- the longer you keep things warm the more danger
- cook it until it is whitish
- you just can't cook pork enough
- you cremate it (should cook it thoroughly)
- when I cook pork chops I wipe them
- pork is always fat
- it is a richer meat
- I like my chops to be 3/4" thick
- sometimes I like them to be 1" thick to stuff
- easier to cook than beef - easier to get a good tasting pork chop than it is to make your steak turn out right.
- a quick easy meal to prepare - old standby for easy quick meal
- a lot of variety in cooking
- I've ripped (frozen) chops apart and ruined them because I couldn't get them apart.

The image of pork itself is not unfavourable but the use of pork was less than beef since it is a "richer meat". Pork chops received high praise for variety and being a "quick easy meal".

When the women were shown the actual product a lot of the favorable response which existed was lost. The following quotations will verify the statement.

A. General:

Frost was one of the first things the women noticed and was the main criticism.

"Now this is what I meant about the color of frozen meats. You see the white across there instead of the actual meat. You see at the end. Now, you don't know whether you are going to get fat or meat in there because it's white frost and that's the way with frozen meats. Now you don't know what's in there or what's along the side here, or even what's in here- you see you can't see what you're getting when it's frosted".

This woman was against frozen meats throughout the interview mainly for the above reason based primarily on personal experience with her own frozen meats and followed through when shown these meats.

B. Comparison - Before and After Viewing Frozen Pork:

Here are three sets of comments from women who were positive to the concept of frozen pork but who changed to a negative tendency when shown the actual products. The one woman who was pro frozen meat throughout the same interview changed her projected train of thought as follows -

"Whoever froze them, froze them poorly because I don't think you should have that kind of frost. Did the air get in- is that why?"

"I'm sold on frozen foods and I would judge the first two choices (i.e. string tied fresh or frozen loin roast) similarly. I would take whichever was more convenient to pick out of either a freezer box or a cooler box.

With reference to frost she had this to say -

"I can see your point now- this I've never really thought of before. It would be much more appealing without the white frost covering part of your meat".

Another woman had this change of opinion -

"Well now you go to Eaton's basement to shop - you can go to the counter - they have a combination; you can go to the counter and get fresh meat or you can go to the frozen section and they've got just about anything you'd want to buy, packaged and frozen". (Eaton's does not sell frozen red meats, in fact).

Pork and beef?

"Yes".

Do you every buy?

"Oh yes. If you're shopping on the way home, of course, you're looking for the fresh stuff. If you're shopping for two or three days ahead you'll pick up some fresh cuts plus some frozen cuts - it depends on what you're shopping for. But ground beef - they sell frozen all the time it's fresh enough. I've never found any difference in ground beef frozen. Ground pork they always sell frozen..... I don't usually buy the pork ground. Pork tenderloin I bought (frozen) a couple of weeks ago we had it two nights ago and it was delicious. Oh no, it was about a month ago I bought it. It was frozen when I bought it and I put it in the freezer. Yes, if I saw those in the store, I don't think they'd appeal to me to buy".

Another woman described herself and recognized her self-contradiction as follows:

"I'd buy every single thing and then make a judgement. Very curious about anything new. Here I am, think myself so modern yet I'd refuse to buy frozen meats".

C. Appearance

"they're pale - so much frost on them"

"I thought it was boneless but then with your frost it looked like a bone and it wasn't - only way you're able to tell is if they state it on the package".

"This to me, whether it's the wrapping or not, looks like it's been frozen longer than this one. Now whether I'm right or not I don't know".

"But I would say that's poor packaging right here. That must have been in the freezer for some time to get that - you don't see that too often do you. How long have they been frozen?"

"I'd say a fair length of time because of the frost all through there. Maybe- have they all been frozen the same length of time?"

"I would say this one was frozen longer (pork butt roast)".

"It looks like its drying out a little bit here too".

"It appears to have more frost, but that's because it's bound with string".

"They don't look all that fresh do they".

"The seal on this one is broken".

"Plastic rather than cellophane - would be stronger - not break as easily".

The only package that didn't really receive any major criticism was the loin pork chops.

"Now this is a good way to package meats - you can see exactly, for the thinner cuts".

The butt chops were criticized because they overlapped. On the whole they were not given much consideration - general feeling was that they wouldn't buy butt chops. The roasts were the main topic for discussion - perhaps due to the fact that they are a more expensive item.

D. String Tied vs. Zip Net:

"I'd buy these two with the net in if I was real hard up and they had nothing left in the store, and had to buy something".

The pork loin string tied roast was the best received.

"Now this pork loin roast it's a beautiful roast - you know, just enough fat to give it flavor and yet if that was covered with frost like the other end is, I might pass it by because I wouldn't know what I was buying. And if that was fresh I wouldn't even hesitate because I could see it was a beautiful roast".

"I'd buy them (string tied) oh, a lot faster".

"I wouldn't hesitate in buying them (Zip Net). But if I had the fresh string tied, I'd taken them first".

"That would be my choice - the fresh string tied, then the frozen string tied, then the zip net".

Further comments:

Zip-Net - Used on cottage rolls - boil it you need the net, if it's something that's going to fall apart.

" ---automatically associate zip net with cheaper cuts of meat. You hardly know what's all strung up in the nets. You'd open it up,

thaw it and it would all fall apart; it would be a lump of fat".

"--- tried New Zealand lamb with it and it was a disaster to carve".

String tied -

"I'll take this string for appearance and for meat".

"Well these are well marked - if you had labels like that on the top plus your price - you'd have no trouble reading that".

"Is a respectable way to package roast - can see all around - know not getting extra fat and bone at bottom".

* Every group chose the frozen meats in the following order of preference -

1. Pork loin-string tied (boneless)
2. Pork loin roast -zip net (boneless)
3. Pork butt roast - string tied (boneless)
4. Pork butt roast - zip net (boneless)
5. Pork loin chops (boneless)
6. Pork butt chops (bone in)

In summary, there were a lot more negative than positive comments on the frozen cuts of pork shown to the consumers. However, if the cut resembled one presently used e.g. pork loin, it received quite good comments as long as there was no frost as a visual obstacle.

* The apartment group was not shown the frozen meat.

XIV IDEAS FROM RESPONDENTS ON PROMOTION.

The following comments were from two youngest respondents -

"put it in a very prominent place and mark it SPECIAL - FROZEN MEAT".

"Could there not be some home economists even if it's T.V. ads, giving you tips on what to look for, what not to look for".

"Isn't it up to the supplier to inform you of what you're getting".

Two full time homemakers felt very strongly against the supplier having to inform the consumer - they felt that it was up to the individual to learn by trial and error.

"I think we should be able to buy the quality of meat that we want, and not be forced into buying any other (with reference to frozen meat)".

The following comment is from the older working woman who was "sold" on frozen pork.

"But I think they could have a big market for this frozen pork if they brought it in quantities - quick-frozen, put sales on and people want to fill up their freezer, and maybe they wouldn't go and buy a hind of beef, they'd just go to the store and pick up the cuts they want - everything's there - the amount they want, the size they want, and they can pick up the variety they want and they might prefer this very much to having to buy a whole hind of beef just to be able to get a good quantity at a good price. And the packer should be able to do that cheaper if they're going to bring it to the store frozen. They certainly should be able to sell it cheaper".

From the above comments one can see that those who were most receptive to the concept of frozen pork were also those who could visualize promotion methods to encourage the sale of it. These women were also receptive to the idea of consumer education.

XV. STORES

The type of retailer that might handle frozen meats was considered. Who would carry frozen meats if they were to come on the market?

"The large places that would have the storage facilities and I think a lot of these large places their stuff doesn't stay for years and years. They don't get to know their individual customers. The people who shop there don't get to know the people behind the counters, and I think that they would be more likely to just package it (meat) just like beans - you know, assembly line. They've got a section for roast beef and a section for pork roasts and whatever you want they just go and get it for you. There would be no individual attention given, whereas a small shop I don't think would carry frozen packaged".

"A place like Dominion who has a reputation for good meat would not go into something like that".

"---they'd still keep their personalized service, because some people just wouldn't want it and they'd change stores".

"Purchase meat from Mini Mart and other such chains only in an emergency, if all of a sudden you have company and have nothing".

The comments on Economarts are as follows -

"I wouldn't go into Economart because I just don't like the look of it".

"It looks like a crummy old store - Safeway is nice and big and clean and in a way I am buying the store".

"Would buy anything there except the meat".

The reliability and reputation of the store from which meat is bought received a great deal of emphasis in relation to the quality of the meat available.

XVI TREND IN THE FUTURE.

This final dialogue from one interview sums up the feelings of the majority of the interviewees -

"I think it's just a built-in feeling that you get from ever since you've been shopping ---- the frozen idea has just started recently and I think we'll get used to it gradually until we don't care anymore".

"I think we're gradually becoming brain-washed. They can throw frozen anything at you, and you'll take it, you know".

"So you think perhaps in the future, they might be selling frozen meats?"

"I think so many young people now in many cases don't know what the original tasted like - like, ice cream. Kids now, they're not eating ice cream when they buy ice cream - not like when I was a kid, and I think this is a pattern --- it's changing all the time".

"Well, I think this is true of packaging anything, they certainly don't have to give service to the young people because they've never had it - they don't expect it -- and they don't know any different".

Frozen pork is seen as a coming trend in the future but all the consumers will resist it as long as possible.

CLASSIFICATION DATA

Just for statistical purposes

1. What is your marital status? Married () Widowed ()
Single () Divorced/Separated ()
2. What is your age bracket? Under 20 () 46-50 ()
21-25 () 51-55 ()
26-30 () 56-60 ()
31-35 () 61-65 ()
36-40 () Over 65 ()
41-45 ()
3. What are the ages of the other members of your family ?
Husband - _____
Boys in family _____ Others (circle sex)
_____ M F _____
_____ M F _____
Girls in family _____ M F _____
_____ M F _____
_____ M F _____
4. Are you employed outside the home? Yes () No ()
What is your occupation? _____
5. If employed outside the home, how many hours a week do you work? _____
6. a) What is your husband's occupation? _____
b) In what industry? _____
7. What is the present level of your education?
Grade school () Technical school ()
Junior high school () Some university ()
Some senior high () University graduate ()
Senior high graduate () Other degree of professional qualifications ()
8. Which group corresponds to your total family income from all sources
BEFORE TAXES?
Under \$3000 () \$11000-12999 ()
\$3000-\$4999 () \$13000-\$14999 ()
\$5000-\$6999 () \$15000 and over ()
\$7000-\$8999 ()
\$9000-\$10,999 ()

-
1. To begin with I'd like to get some idea about the meats served in your home.
As far as you can remember which of the meat products in the following table
served? Mark with a ✓.

	2 or more times/week	About once a week	2 or 3 times/mo.	About once per mon	Less than once per month	Not at all in past 12 mo.	Amount used per seal:eg. meat 2 steakd 1"thick x 4" diameter roast-3 lb.average
Steak							
Pot Roast of beef							
Oven roast of beef							
Ground beef							
Stew beef							
Bacon							
Ham or picnic							
Pork sausage							
Pork roast							
Pork chops							
Chicken (fresh)							
Chicken (frozen)							
Turkey (fresh)							
Turkey (frozen)							
Lamb (fresh)							
Lamb (frozen)							

2. What is the approximate dollar value of meat your family consumes in a month? \$ _____
3. Who does most of the meat shopping in your household?
You alone()
Spouse alone()
Both()
Other _____
4. How often do you shop for meats?
More than one time a week()
one time a week()
2 or 3 times a month()
Once a month()
Less than once a month()
5. Where do you do most of your meat shopping? _____
6. What type(s) of freezer(s) do you have?
Deep freezer()
Refrigerator freezer-2 doors()
Refrigerator with freezing compartment-1 door()

Do you usually use a meat thermometer when you roast meat?
Yes() No()

Describe your present meat shopping practises?

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

APPENDIX B

1. Classification of workers according to occupation
2. Example of random times used in phase II

CLASSIFICATION OF WORKERS ACCORDING TO OCCUPATION

Professional:

Architect
Artist
Auditor
Barrister
Chiropractor
Chartered Accountant
Clergyman
Dentist
Dietitian
Druggist
Editor
Engineer - chemical
 mining
 civil
 electrical
Journalist

Lecturer
Librarian
Musician
Nurse
Officer of ship
Optometrist
Pharmacist (if owner, class 2)
Photographer
Physician
Radio Announcer - Commentator
Reporter
School Inspector
Social Service Worker
Scientist
Surveyor
Teacher
Veterinarian

Business Executive: Owners - Managers

Broker
Builder
Contractor
Dealer
Exporter
Efficiency Expert
Hotel Keeper
Jobber
Manager of any business, office
 or department

Manufacturer
Manufacturer's Agent
Merchant
Nurseryman
Proprietor or Owner of any business
Publisher
President, Treasurer and Sec. Treas.
 of firm
Superintendent (if in managing position)
Undertaker
Service station lessee

Salespeople:

Auctioneer
Bond Salesman
Bar Tender
Bread Salesman
Customers' Man (Stock Brokerage)
Commercial Traveller
Clerk in store

Elevator Agent (Grain)
Insurance Salesman
Ice Salesman
Milk Salesman
Soda Fountain
Real Estate Agent

Clerical Workers:

Appraiser
Accountant
Bank Teller
Buyer - grain, etc.
Bookkeeper
Civil Service - Civil Servant
Customs Officer
Cashier
Credit Man
Investigator
Insurance Inspector

Insurance Adjuster
Office Worker
Postman
Private Secretary
Purchasing Agent
Stenographer
Switchboard or Telephone Operator
Stockkeeper
Station Agent
Time Keeper

Skilled Labourer:

Automobile Body Builder
Bus Driver
Baker
Barber
Beauty Operator
Brush Maker
Blacksmith
Bricklayer
Baggage Master
Brakeman
Butcher

Candy Maker
Carpenter
Cook
Crane Operator
Compositor (type setter)
Dressmaker
Dry Cleaner
Draftsman
Detective
Electrician

(cont'd...)

Skilled Labourer (continued)

Engineer - locomotive	Practical Nurse
stationary	Presser
marine	Printer
steam shovel	Prospector
radio transmitting eng.	Radio Serviceman
Fitter - general	Roofer
Fireman	Sawyer
Foreman	Sheet Metal Worker
Flying Instructor (civilian)	Sheriff
Gardener	Shipper
Garage Mechanic	Shoemaker
Gas Fitter	Signwriter
Hat Finisher	Steel Worker
Hand Tooler (furniture)	Stereotyper
Jeweller (if owner - Class 2)	Stonecutter or Stone Mason
Lineman	Street car conductor
Load Despatcher (railway)	Superintendent (apartment)
Logger	Fireman (train)
Lumber Grader	Tailor
Linotype Setter	Typewriter Mechanic
Mechanic	Tool Designer
Meter Man	Technician
Maintenance Man	Tool Setter
Machinist	Test Pilot
Motor Man	Trainman
Merchant Marine	Upholsterer
Millwright	Violin Maker
Moulder	Welder
Optician	Woodworker
Painter	War Worker
Plasterer	Tinsmith
Plumber	Embalmer
Policeman	

Unskilled Labourer:

Caretaker	Lumberman
Chauffeur	Millman
Drayman	Miner
Elevator Operator	Packer
Factory Worker	Restaurant Worker
Fisherman	Rooming-housekeeper
Gas Station Attendant	Stoker
Guard	Section Hand
Hospital Orderly	Taxi Driver
Incinerator Worker	Trackman
Janitor	Trapper
Labourer	Truck or Transport Driver
Laundress	Waiter or Waitress
Farm Hand	Watchman
Longshoreman	

Farmer (including tobacco growers (market gardeners) in rural - otherwise No. 5)

Widow and Spinster (living on income)

Pensioned and Retired

Unemployed -

Armed Forces

Students

Rejects - Not Stated

SATURDAY

<u>9-12</u>	<u>12-2</u>	<u>2-6</u>
9:25	12:14	2:11
9:34	12:15	2:13
9:35	12:17	2:31
9:37	12:25	2:52
9:51	12:26	2:53
9:53	12:28	2:54
9:55	12:33	2:59
10:00	12:34	3:11
10:01	12:40	3:24
10:02	12:42	3:32
10:04	12:46	3:35
10:12	12:50	3:36
10:14	12:51	3:57
10:17	12:55	4:02
10:21	1:00	4:06
10:24	1:01	4:19
10:28	1:03	4:42
10:39	1:02	4:57
10:49	1:04	4:58
10:51	1:12	4:59
11:00	1:14	5:17
11:11	1:21	5:20
11:13	1:24	5:21
11:15	1:38	5:24
11:34	1:39	5:27
11:38	1:49	5:35
11:41	1:51	5:42
11:45	1:56	5:45
11:47	1:57	5:59
11:48	2:00	6:00

APPENDIX C

1. Questionnaire - phase II
2. Questionnaire - phase III
3. Credit slip - phase IV

Hello, I am _____ a graduate student of the University of Manitoba. For my master's thesis, I am conducting a study about meat and meat shopping habits. Your help would be most appreciated.

1. First of all, who in your household does most of the meat shopping?
 you alone () (DO NOT READ LIST)
 spouse alone ()
 both ()
 other ()

IF SPOUSE ALONE OR OTHER, END INTERVIEW and ERASE

TALLY 1 2 3 4 5

Now I am looking for people with certain characteristics:

2. First of all I would like to know if you are married () single ()

IF MARRIED:

3. What is your husband's occupation? _____.

- 4. Are you employed outside the home? Yes () No () Go to Q.7

5. What is your occupation? _____.

6. How many hours a week do you work? _____.

IF EITHER OF ABOVE IS IN THE FOOD INDUSTRY OR IS A HOME ECONOMIST END INTERVIEW and ERASE

Tally 1 2 3 4 5

- 7. Now to begin with I would like to get some idea about the meat served in your home. As far as you can remember, how often do you serve these meats? (HAND RESPONDENT CARD 1) READ OFF MEATS TO RESPONDENT.

IF PORK NOT SERVED IN THE LAST TWELVE MONTHS, END INTERVIEW and ERASE.

Tally 1 2 3 4 5

	2 or more times a week	About once a week	2 or 3 times a month	About once a month	Less than once a month	Not in past 12 months
Steak						
Roast Beef						
Pork Roast						
Pork Chops						
Chicken * Unfrozen						
Chicken Frozen *						
Turkey * Unfrozen						
Turkey * Frozen						
Lamb * Unfrozen						
Lamb * Frozen						

* As purchased in the store.

8. How often do you shop for meat? (DO NOT READ)
- More than once a week ()
- Once a week ()
- Two or three times a month ()
- Once a month ()
- Less than once a month ()
9. Where do you usually buy your main supply of meat? (DO NOT READ)
- Butchershop ()
- Supermarket ()
- Other, specify _____
10. What sources of information have you ever used in the past to guide you in selecting meat, i.e. what sources have you used for information on what to look for in selecting meat. Just Say YES or NO. Shuffle cards and hand to respondent one at a time. Note letter and read to her.
- a. Government bulletins ()
- b. Cooking schools or evening classes ()
- c. Home economics courses ()
- d. Cookbooks ()
- e. Television programs and ads ()
- f. Husband ()
- g. Magazine and newspaper articles ()
- h. Magazine and newspaper ads ()
- i. Mother, family, friends ()
- j. Advice from butcher ()
- k. Trial and error, practice, experience ()
11. Which source of information would you consider to be the most helpful to you now? _____.
12. Which would you consider to be the next most helpful? _____
13. Do you sometimes buy FRESH MEAT and then freeze it yourself?
- YES () NO ()
- IF YES:
14. Why do you freeze meat? PROBE.

15. About how long do you think you can keep _____ frozen in a separate food freezer? That is, a food freezer or a refrigerator with a separate door to the freezing compartment? (DO NOT READ)

	a) Pork	b) Poultry	c) Beef
less than 2 weeks	()	()	()
about three to four weeks	()	()	()
about a month to 8 weeks	()	()	()
about 2 to 3 months	()	()	()
more than 3 months and up to a year	()	()	()
more than a year	()	()	()

16. You have already mentioned that you buy (do not buy) some frozen meats.
ASK ONLY IF EAT CHICKEN. UNDERLINE THE PHRASE READ.

a) Why do you buy (do not buy) frozen chicken? Probe.

ASK ONLY IF EAT LAMB. UNDERLINE THE PHRASE READ.

b) Why do you buy (do not buy) frozen lamb? PROBE.

17. Would you consider buying frozen cuts of pork if they were available in retail stores?

Yes () No ()

Why do you say that? PROBE.

ASK QUESTION #18 ONLY IF RESPONDENT REPLIES NO TO QUESTION #17. OTHERWISE SKIP TO QUESTION #19.

18. Would you consider buying cuts of pork quick frozen if they were available in the retail stores?

Yes () No () (IF NO SKIP TO QUESTION #19)

Why do you say that? PROBE

SHOW RESPONDENTS FROZEN CUTS OF PORK.

I would like you to look at these boneless frozen cuts of pork. When respondent has sufficient time to look at them ask her to ignore the size of the packages and also _____.

19. What do you like about the frozen boneless cuts of pork?

PROBE for both the roast and pork chops.

20. What do you dislike about the frozen boneless cuts of pork?

PROBE for both the roast and pork chops.

21. a) Do you think that you would consider buying these frozen pork chops if they were available in the retail stores?

Yes () No ()

Why do you say that?

b) Do you think that you would consider buying this frozen pork roast if it was available in the retail stores?

Yes () No ()

Why do you say that?

22. Now I am going to ask you to pick the statement you agree with most and the degree of agreement.

e.g. if agree a lot with Pierre Trudeau is handsome, say 1, if agree with Pierre Trudeau is not handsome take 7. If agree only moderately with either phrase choose a middle number closest to the phrase you agree with.

Pierre Trudeau is
handsome

1

2

3

4

5

6

7

Pierre
Trudeau is not
handsome

SHUFFLE THE CARDS FOR PORK AND HAND TO RESPONDENT ONE AT A

TIME. NOTE THE LETTER HANDED TO RESPONDENT AND READ ALOUD TO RESPONDENT WHEN SHE HAS THE CARD.

Repeat the above for poultry.

	D.K.	1	2	3	4	5	6	7	
a. I would like to have my pork frozen when I buy it	_____	_____	_____	_____	_____	_____	_____	_____	I would prefer to freeze my pork on my own
b. Pork is suited for freezing	_____	_____	_____	_____	_____	_____	_____	_____	Pork is not suited for freezing
c. Not sure of getting good quality with frozen pork	_____	_____	_____	_____	_____	_____	_____	_____	Sure of getting good quality with frozen pork
d. Frozen pork need not be dated with an expiry date on the label	_____	_____	_____	_____	_____	_____	_____	_____	Frozen pork needs to be dated with an expiry date on the label
e. Frozen pork does lose flavor in storage	_____	_____	_____	_____	_____	_____	_____	_____	Frozen pork does not lose flavor in storage
f. Frozen pork does not lose more juices than fresh pork	_____	_____	_____	_____	_____	_____	_____	_____	Frozen pork loses more juices than fresh pork
g. Frozen pork is safer to eat than fresh pork	_____	_____	_____	_____	_____	_____	_____	_____	Frozen pork is not as safe to eat as fresh pork
h. Frozen pork would offer advantages to the consumer	_____	_____	_____	_____	_____	_____	_____	_____	Frozen pork would not offer advantages to the consumer
i. An experienced homemaker would buy frozen pork	_____	_____	_____	_____	_____	_____	_____	_____	An experienced homemaker would not buy frozen pork
j. A new homemaker will not buy frozen pork	_____	_____	_____	_____	_____	_____	_____	_____	A new homemaker will buy frozen pork
k. I would like frozen pork to be boneless	_____	_____	_____	_____	_____	_____	_____	_____	I would like frozen pork to have the bone in

D.K. 1 2 3 4 5 6 7

a. I would like to have my poultry frozen when I buy it	_____	_____	_____	_____	_____	_____	_____	I would prefer to freeze my poultry on my own
b. Poultry is suited for freezing	_____	_____	_____	_____	_____	_____	_____	Poultry is not suited for freezing
c. Not sure of getting good quality with frozen poultry	_____	_____	_____	_____	_____	_____	_____	Sure of getting good quality with frozen poultry
d. Poultry need not be dated with an expiry date on the label	_____	_____	_____	_____	_____	_____	_____	Poultry needs to be dated with an expiry date on the label
e. Frozen poultry does lose flavor in storage	_____	_____	_____	_____	_____	_____	_____	Frozen poultry does not lose flavor in storage
f. Frozen poultry does not lose more juices than fresh poultry	_____	_____	_____	_____	_____	_____	_____	Frozen poultry loses more juices than fresh poultry
g. Frozen poultry is safer to eat than fresh poultry	_____	_____	_____	_____	_____	_____	_____	Frozen poultry is not as safe to eat as fresh poultry
h. Frozen poultry offers advantages to the consumer	_____	_____	_____	_____	_____	_____	_____	Frozen poultry does not offer advantages to the consumer
i. An experienced homemaker will buy frozen poultry	_____	_____	_____	_____	_____	_____	_____	An experienced homemaker will not buy frozen poultry
j. A new homemaker will not buy frozen poultry	_____	_____	_____	_____	_____	_____	_____	A new homemaker will buy frozen poultry

Now for a few basic data questions:

24. What type of freezing facilities do you use at present?

deep freeze cabinet ()

2-door refrigerator ()

1-door refrigerator ()

Other _____

25. Do you usually use a meat thermometer when you roast meat?

Yes () No ()

HAND RESPONDENT CARD 111.

26. In which age group do you fall? Just call off the number.

1 2 3 4 5

27. How many people are in your household? _____.

How many are -

18 years and over (), 13 - 17 (), 7-12 (), under 7 ()

HAND RESPONDENT CARD IV

28. What is the present level of your education? Just call off the number.

1 2 3 4 5 6

HAND RESPONDENT CARD V

29. Which group corresponds to your total family income from all sources?

1 2 3 4 5 Just call off the number.

Thank you for your co-operation.

If the respondent is receiving the samples of frozen pork REMEMBER TO GET

Name _____ Meat Number _____

Address _____

Phone _____

No. of Pork Chops _____

CARD I

2 or more times/week

About once a week

2 or 3 times/month

About once/month

Less than once/month

Not at all in past 12 months

CARD III

1. under 24

2. 25 - 34

3. 35 - 44

4. 45 - 54

5. 55 and over

CARD IV

1. Public school
2. Some senior high
3. Senior high graduate
4. Some university
5. University graduate
6. Other degree or
professional qualifications

CARD V

1. under \$3000
2. \$3000 - \$6999
3. \$7000 - \$10,999
4. \$11,000 - \$14,999
5. \$15,000 and over

Name _____

Date _____

ONCE YOU HAVE COOKED AND EATEN THE PORK YOU RECEIVED, PLEASE FILL OUT THE FOLLOWING FORM.

Mail the form back in the enclosed self addressed stamped envelope only when ALL QUESTIONS have been filled in.

In appreciation for the time and co-operation you have given us, we will then mail to you a credit slip for an equal amount of pork to be picked up at the Dominion Store at Polo Park. In order to receive this credit slip this questionnaire must be mailed before June 18.

Thank you for your co-operation.

Paulette Faryna
Graduate Student
University of Manitoba.

1. I cooked the roast when it was -
completely frozen ()
partially frozen ()
almost or completely
thawed ()
2. I used a meat thermometer for the pork roast? Yes () No ()
3. The pork roast was cooked at an oven temperature of _____°F for
_____ hours.
4. I cooked the pork chops when they were -
completely frozen ()
partially thawed ()
almost or completely
thawed ()

Now could you please rate the frozen pork on the attached rating cards.

SCORE CARD FOR FROZEN BONELESS LOIN PORK CHOPS

AFTER HAVING COOKED AND EATEN THE PORK CHOPS rate the pork chops with a (✓) for convenience and for the eating qualities on the following rating card.

CONVENIENCE

Very desirable _____
Desirable _____
Acceptable _____
Slightly
undesirable _____
Undesirable _____

EATING QUALITIES

Very desirable _____
Desirable _____
Acceptable _____
Slightly
undesirable _____
Undesirable _____

COMMENTS ON PORK CHOPS:

SCORE CARD FOR FROZEN BONELESS PORK LOIN ROAST

AFTER HAVING COOKED AND EATEN THE ROAST rate the pork roast with a (✓)
for convenience and for the eating qualities on the following rating card.

CONVENIENCE

Very desirable _____
Desirable _____
Acceptable _____
Slightly
undesirable _____
Undesirable _____

EATING QUALITIES

Very desirable _____
Desirable _____
Acceptable _____
Slightly
undesirable _____
Undesirable _____

COMMENTS ON PORK ROAST:

CREDIT SLIP FOR PHASE IV

Valid at the Dominion Store
at Polo Park BEFORE June 30.

Dept. of Foods & Nutrition
University of Manitoba.

Present this slip to the people at the meat counter and you
will receive one 5 lb. pork loin roast and _____ pork loin
chops.

Check Choice of Fresh or Frozen

Frozen pork roast	or	Fresh pork roast	+	Frozen pork chops	or	Fresh pork chops
_____		_____		_____		_____

Thank you for your co-operation.

Paulette Faryna
Graduate Student