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STORE MERCHANDISING OF CHEESE
AND CONSUMER REACTIONS

By

Robert M. Williams

AN ABSTRACT OF A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Dairy

1961

ABSTRACT

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The objective of this study was to provide the cheese industry with factual information concerning consumers' likes, dislikes and attitudes toward cheese and cheese merchandising practices. Four areas were selected for extensive investigation: (a) the evaluation of consumer acceptance and preference for various shapes, sizes, colors and types of packages; (b) the development of a practical package which would answer the need for a reclosable package that would also prevent loss of moisture from the packaged cheese; (c) the determination of the consumer image of cheese and cheese purchasers and consumer attitudes toward cheese merchandising and (d) the evaluation of cheese merchandising techniques used by food retailers.

Cheese cut into various shapes and packaged in various materials was tested by consumer panels. A list of names of 5,000 persons was prepared from current telephone directories of Michigan cities. An open-end questionnaire was mailed to each name. Thirty telephone or personal interviews were conducted with market managers of grocery stores and supermarkets in the Lansing area to determine the techniques used in merchandizing cheese in the store.

A re-closable plastic container was designed and vacuum molded from 0.024 inch clear modified polystyrene. The container was a two piece box, $3\frac{1}{2} \times 3\frac{1}{2} \times 2$ inches with a tear-tape seal. Cheese packaged in the plastic container, saran and aluminum foil was subjected to 5-week keeping quality tests to determine the ability of the various materials to preserve freshness of the cheese. A series of matched-lot merchandising trials were conducted in the Michigan State University Dairy Store to compare actual sales preferences for color, shape and type of packaging material.

Results from the consumer panel tests showed preference for block and bar shapes of cheese. Saran was the preferred wrapping material with results significant at the 1-percent level. No preference was found among the different colors of foil and wax.

Results obtained from questionnaires showed that the most frequently purchased cheese was mild Cheddar and the most frequent uses of cheese were in snacks and sandwiches. Swiss was the most frequently purchased foreign type of cheese. When cheese and luncheon meat were equally priced at \$0.49 per pound, 58 percent of the respondents said they would purchase luncheon meat.

The reasons listed for buying cheese were as follows: 46 percent "just liked it", 40 percent for nutritional value, 18 percent because of the wide variety of uses and 10 percent as a substitute for meat. As income of the

family increased the quantity of cheese purchased also increased. When size of family increased total quantity of cheese purchased increased, but consumption per person decreased. Quantity of cheese purchased increased as the amount of formal education increased. Food sampling in supermarkets impressed 47 percent of the respondents, 5 percent were opposed to the practice and 48 percent were indifferent to food sampling.

The major complaints against cheese were: quality not uniform, drying of the product and inconvenient packaging. The most frequent suggestion given for increasing the sale of cheese was consumer education. Unfamiliarity was the reason given most frequently for not purchasing foreign types of cheese. The consumer image was favorable for users of Cheddar cheese but unfavorable toward users of foreign types of cheese.

Grocery store managers in the Lansing area practiced no formalized procedure as a basis for the decision of how much and what type of cheese to stock. None of the managers surveyed used return-per-square-foot of display area as a means of allocating space.

Matched-lot trials in store sales corroborated the results found through the consumer panels and mailing questionnaires. A significant preference at the 1-percent level was shown for block and bar shaped cheese cuts packaged in transparent material.

Results showed that cheese freshness can be retained

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at least 5 weeks by wrapping the cheese in moisture proof materials.

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ACKNOWLEDGEMENTS

Dr. T. I. Hedrick, Professor of Food Science, is gratefully acknowledged by the author for guidance in both the work covered by this manuscript and the entire graduate program.

Sincere thanks are also extended to Dr. L. G. Harmon, Professor of Food Science, for his ready counsel and friendship. The author wishes also to express his gratitude to Drs. Harold Raphael, Glynn McBride and E. A. Brand for their assistance in the direction of this research problem.

Dr. H. E. Larzelere is gratefully acknowledged for his assistance in the Detroit Consumer Panel studies.

The author wishes to recognize Ruth, his wife, for her encouragement and assistance in compiling data in the preparation of this manuscript.

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INTRODUCTION

Many articles have been written on the subject of cheese merchandising. Some of these articles have had supporting research while many others have been based on opinion. The objective of this study was to test the results of previous, less extensive studies and to provide the cheese industry with additional information concerning likes, dislikes and attitudes toward cheese and cheese merchandising practices.

In 1959 cheese was the third most important use of fluid milk in the United States, utilizing approximately 11 percent of the milk produced. Cheese was made in 1,469 factories with an average annual production of 946,000 pounds per plant (17). Cheese accounted for \$838,550,000 or approximately 7 percent of the total income from the sale of all dairy products in 1957 (10).

The per capita consumption of cheese in the United States has increased steadily from about 3.2 pounds in 1839, 3.5 in 1920, 5.6 in 1938, to approximately 8 pounds per year in 1960 (2). However, consumption in the U. S. in 1960 was still far below that of the other major cheese producing countries of the world. Per capita consumption in the European countries in 1960 was approximately 17 pounds per year (2).

The consumer dictates quality and price and to some

extent the style of successful products. Processed cheese and pre-packaged consumer sized portions were responsible for the increased consumption of cheese in the 1930's (5). However, figures published in 1945 (3) showed that 80 percent of the cheese was consumed by 20 percent of the population. Therefore, it appears that the cheese industry has not given adequate attention to fashioning their product according to consumer desires.

Possible solutions to many of the merchandising problems facing the cheese industry were proposed for testing in the study. The study sought answers to the following questions:

1. Which varieties of cheese are purchased?
2. How is cheese used?
3. What are the dissatisfactions with cheese?
4. Why are so few varieties of cheese purchased?
5. What can be done to make cheese more appealing to the consumer?
6. Can the market be increased by making available convenience items?
7. Is the consumer willing to assume a share of the additional expense in merchandising to his desires?
8. To what segment of the market should future advertising be directed?
9. What advertising appeals should be stressed?

Definition of terms used in this study:

1. Cheese--This study was confined to natural ripened

cheese as opposed to processed.

2. Consumer Acceptance--The expression of positive or negative attitudes toward different types of wrapping materials for cheese.
3. Consumer Preference--The appeal of one package or product over another package or product.
4. Population--Any group of individuals having a common observable characteristic.

REVIEW OF LITERATURE

This review is divided into six areas. These are impulse buying, attitudes and motives, merchandising and point-of-purchase display, packaging, experimental techniques and statistical analysis.

Impulse Buying

According to a survey made in 1948 (4) 30 percent of the items purchased in service grocery stores were bought on impulse. In addition, 22 percent were partially impulse in that they were only generally planned with no preference for brand designation and 2 percent were substitutes for planned items which were not available. In self-service stores 38.2 percent of the purchases were in response to impulse. Packaging was believed to be the greatest single factor contributing to impulse buying.

In 1959 a survey (20) showed that unplanned purchases accounted for 69.5 percent of total grocery store purchases and only 30.5 percent of the purchases were specifically home-planned decisions. According to this survey 77.2 percent of the cheese purchases were impulse decisions and over 50 percent of the cheese purchases were completely unplanned.

Alderson (1) tended to minimize the importance of impulse buying. He said, "A woman shopping tries to use her head to achieve a specific goal." Alderson pointed

out that three factors tend to influence the buying motives. These were: "the total assortment of goods the housewife already owns, the family outlook for the future and the family goal structure or its particular set of values."

Courtney (35) emphasized that the whole myth of impulse buying ought to be reconsidered in terms of customer intelligence. The housewife cannot be stimulated indefinitely to buy on impulse. She knows how much she can spend and her impulses are well controlled within those limits.

Bauer (23), in discussing the limits of persuasion, stated that the individual's resistance to persuasion probably increased in proportion to the efforts made to persuade him against his own perceived interest. Bauer pointed out that impulse operated only in rather limited degrees, economy being the greatest single limiting factor.

Bursk (30), in much the same manner as Bauer, said that persuasion was more a matter of strategy than of manipulation. The seller needed to take the buyer's motives into account in order to out-manuever him and get him to move in the desired direction. The best way to sell was along these suggested lines: realize that it is normal for people to like to buy, employ a strategy that makes use of our best understanding of the psychology of the selling-buying relationship and minimize resistance and maximize the urge to buy through selling conducted on the rational goals for people which will lead them to a particular product or brand. Bursk concluded by saying that one of

the biggest components of a person's self-image was the picture of himself as a reasonable, thinking man.

Lawler (47) agreed with Bursk by saying that marketing and advertising men should appeal to the "reasonable, thinking man" and motivate fine eating as a sensible thing to do.

Lowry (50) concluded that "status" was the prime mover in the consumer's selection of almost any item. "The experts claim that the stores in which you shop, the cigarette you smoke and the drinks you consume are clues not only to whom you are but also who you want to be."

Seldin (61), like Lowry, said, "We have entered a 'psycho-economic' age in which emotional rather than technological factors determine the consumers' purchases. We must sell emotional security or go under." He continued by saying that it was the price of articles that determined the buying actions of more than half the families in the United States--those with annual incomes under \$4,000.

In a contrasting discussion of impulse buying the writers of Time (13) pointed out a number of very interesting statistics. "Despite all the talk about price as a determinant, low cost is the major factor for barely 16 percent of all shoppers; studies also show another 16 percent shop only for heavily advertised brands. A couple shopping together buys 60 percent more than the man alone and 30 percent more than the wife alone." The author continued by saying, "What sells is what appeals to the

shoppers' impulse: the size, the color, the shape, even the shelf position of the package."

An article in Food Merchandising (18) further pointed out the influence of shelf position on impulse buying. Balance the case according to customer demand. Good layout can induce the customer to shop the whole case. According to the article, this was accomplished by strategically locating products with tremendous pulling power, such as milk and eggs.

As a summary on impulse buying Shaffer (63) concluded that even though unplanned purchases accounted for a high percentage of store purchases, total food expenditures and the allocation of expenditures among particular foods for the population as a whole, were not substantially altered by store decisions.

Henry (44) made the statement that it was virtually impossible to lay down any general distinction between premeditated and impulse purchases.

Attitudes and Motives

Leighton (48) said, "Motivation research is used in situations where the so-called rational buying factors such as price do not provide a full explanation of consumer preferences. It should be used only as a source of ideas to supplement market surveys, sales tests, copy tests or other traditional tools of market research."

Frederick (42) said that there are two classes of motives: transient (impulse buying) and persisting

(homemaking, saving, display and love). He continued by saying that an economy of plenty will not be able to secure the sales needed to distribute such large quantity, unless first, the goods be designed, planned, priced and produced according to authentic 'consumer demand'; second, that to be authentic, demand must not be only a conscious articulate motive voiced directly and clearly by consumers-- but must also include deep and true sub-conscious human feeling and motivation. Frederick listed 29 appeals to human behavior, which he considered most important, from an advertising and promotional standpoint. In order of relative persuasiveness the appeals were:

- | | |
|----------------------|------------------------|
| 1. health | 15. medicinal |
| 2. cleanliness | 16. imitation |
| 3. scientific | 17. elegance |
| 4. time saved | 18. courtesy |
| 5. appetizing | 19. economy |
| 6. efficiency | 20. affirmation |
| 7. safety | 21. sport |
| 8. durability | 22. hospitality |
| 9. quality | 23. substitutes |
| 10. modernity | 24. clan feeling |
| 11. family affection | 25. nobby |
| 12. reputation | 26. recommendation |
| 13. guarantee | 27. social superiority |
| 14. sympathy | 28. beautifying |

Katona (45) pointed out that attitudes are not permanent and that they change frequently because of widely transmitted information of a general nature, because of personal experiences and because of errors in measurement of values.

Duffy (38) noted five basic questions that assist the market researcher in defining and describing what the consumer thinks:

1. Who? Who are the people who buy the product?
2. What? What are the satisfactions and dissatisfactions with the product?
3. Where? Where do people buy it?
4. When? When do people make up their minds to buy?
5. Why? Why do people buy a particular brand or product?

Perhaps the most extensive work in determining attitudes toward cheese was the research conducted for the American Dairy Association in 1954 (7). The study revealed the following attitudes: pre-sliced cheese was a favored way of packaging, keeping quality of the cheese was most important, and cheese was considered hard to digest and constipating to children. Less than half the housewives had tried any cheese other than Swiss and Cheddar (the reason for not trying other cheeses was largely "never heard of it"). The study further pointed out that cheese was used most often in sandwiches and that the lower economic group used cheese as a meat substitute to a great extent. Recommendations made from the study were that housewives must be educated to the keeping quality of cheese, that cheese be promoted to the lunch pail group and that cheese be promoted as a weekend easy-to-prepare food.

Moss (54) found that dairy products were second only to meat as a part of the food bill. He said that total dairy products accounted for 17.3 percent and cheese accounted for 2.8 percent of the total food bill. He

placed the weekly consumption of cheese at 1.4 pounds per family or 0.43 pounds per person. In relating socio-economic factors to food consumption and expenditures for cheese he listed the following results. Income groupings showed very little variation in per capita consumption or expenditures. As size of family increased both cheese consumption and expenditures for cheese decreased per person, dropping from \$0.27 to \$0.11 as size of family went from one to seven persons. As age of the housewife increased cheese consumption rose slightly and the more formal education the housewife had the higher the consumption of cheese.

Rojko (59) showed that in 1943 price elasticity of demand for cheese was $-.69$, income elasticity was $-.62$ and cross elasticity of cheese and substitute items was $.86$.

Pirie (56) said that anthropologists divide our society into three income classes: upper, middle and lower. Within each class people possess similar emotions, values, ambitions, likes and dislikes--all of which influence buying habits. To be truly effective the marketing and advertising program must be tailored to reach the social class that the product fits.

In an English study Sheppard and Carrinci (64) and Sheppard (65) interviewed 333 housewives to determine attitudes toward dairy products and what influenced the housewife when the purchase was made. Results of the survey were summarized as follows: 65 percent said they bought cheese because they liked it, 32 percent because

of nutritional value and 12 percent for cooking purposes. Way (68), in a Canadian study of 967 respondents, showed that 41 percent bought cheese because they liked it, 25 percent because of its food value, 10 percent because of taste and flavor and 9 percent because of diet and health.

Merchandising and Point-of-Purchase Display

A staff writer for Meat and Food Merchandising (11) (19) indicated that techniques and procedures for selling cheese were the same for large or small stores. These included an emphasis on variety, the giving of samples, the use of demonstrators and a tie in with related products. Bergren (24) said that consumer education was one of the most important elements in cheese merchandising.

A writer for Printer's Ink (14) listed 17 uses of point-of-purchase displays. They were:

- | | |
|------------------------|-----------------------------|
| 1. expose | 10. secure good store |
| 2. demonstrate | location |
| 3. sell | 11. establish point-of-sale |
| 4. show product detail | 12. establish associations |
| 5. attract attention | 13. institutionalize |
| 6. dispense | 14. solve dealer problems |
| 7. make news | 15. spotlight |
| 8. emphasize features | 16. special appeal |
| 9. prove benefits | 17. remind shoppers |

Groesbeck (43) stressed the proposition that most people spend a large percentage of their time in an "uninteresting, resting, relaxed, oblivious, blind and deaf state." That condition of the mind, he said, is a defense mechanism which is essential for survival. He emphasized the need to stress two stimuli in point-of-purchase or advertising materials to penetrate the minds

and emotions of the consumer. Those were self-preservation and emotional likes and dislikes.

Ludgin (51) stressed the difficult task of reaching the consumer. He said, "The consumer sees and hears so much advertising that he conditions himself against it. He turns his mind off to most of it." Ludgin continued by saying that advertising could break through to the consumers' consciousness if it was unexpected and believable.

Roper (60), in showing the value of image research, said, "The meat industry was suffering a few years ago. Research found people did not know much about meat except that it tasted good. A shift in advertising to 'Meat is the yardstick of protein value' has helped put meat sales on the rise."

Stryker (67) stressed the need for believability of point-of-purchase material.

Merriman (53) in a discussion of the effect of display on impulse purchasing, stated that in a test involving 22 stores soup was arranged in horizontal display for a month and then changed to a vertical display in 11 stores for a month. The test stores showed an average increase in sales of 21 percent over control stores.

Packaging

From the manufacturers' and retailers' point of view the greatest problem in merchandising cheese has been contamination of pre-packaged cheese. Estimates of the amount of cheese wasted ranged as high as 10 million

pounds each year as a result of mold contamination (6). Considerable work has been done in an effort to overcome the mold problem. Wrapping materials treated with sorbic acid or dipped in thermoplastic wax have helped decrease the problem (9).

One Boston packer (16) of custom cut cheese asked consumers what they wanted in cheese packaging. The answer was "small chunks of good cheese that can be served as is without fuss, and a cheese that doesn't need to be re-wrapped and that won't spoil in the refrigerator even though kept there a long time." The solution was pre-cut, bite size wedges of quality aged Cheddar cheese which were interlaced with a cellophane pull-tab for easy extraction of desired amounts and put into a vacuum pouch. Each package contained 11 one-half-ounce packages.

A packaging survey by National Family Opinion, Inc. (21) indicated, "The housewife is fed up with old-style Packages that are difficult to open, inconvenient to use or store and impossible to close tightly for storage." Sixty Percent of the housewives in the survey indicated a willingness to pay more for convenience in opening and closing. Other results of the survey included: 58 percent of the housewives suggested variety packs, 39 percent wanted strip Packages, 80 percent suggested information as to the Calorie and vitamin content on labels of all foods. Although cheese was not mentioned specifically, a major criticism of packages, which certainly had direct

application in cheese merchandising, was that plastic film was most disliked as a packaging material for all products. Objections to the package were that it was hard to open and once open could not be re-closed. Eighty-six percent of those responding said that keeping the product fresh was very important and 13 percent said it was important. Seventy percent said a re-closable feature was very important and 26 percent said it was important.

Deane and Downs (36) in work on moisture loss from natural cheese tested paraffin coating, uncoated aluminum foil and paracote. The results showed that uncoated aluminum foil was not practical as a protective package for cheese as it disintegrated during the ripening process. Wax coated cheese lost the most weight and paracote-wrapped cheese lost the least amount of moisture during ripening. Little or no mold growth occurred as long as the wrapper was in contact with the surface to exclude air.

Eldred (40), in an article on the value of new packaging methods, said that processed cheese in consumer-size packages resulted in a doubling of cheese consumption during the 1920's. Convenience packaging of natural cheese received almost no attention until the advent of self-service food stores. Eldred said, "Cheese possesses the greatest number of desirable merchandising characteristics of any food item. It has variety of color, texture, flavor, shape, size, usage and keepability. However, a continuous problem pertains to the number of varieties of cheese

necessary to present greatest efficiency of the dairy case!"

Henry (44) pointed out that package design functioned in the selling operation in three different ways: (a) insofar as it affected the way in which the product was used it became a constituent of the reality of the product, (b) whether or not it had some physical function, it invariably had some effect on the brand-image of the product and (c) the package had a major task to perform at the point-of-sale in attracting the attention of the potential customer and in conveying the idea that it was a desirable purchase.

MacNeill (52) in a study of consumer preference for various packaging materials showed that polyethylene received 40.4 percent of the first place selections. Saran was second with 23.3 percent and cellophane and cryovac received 22.1 and 15.2 percent, respectively.

In a study on moisture loss in pre-packaged consumer portions of cheese Wearmouth and Jackson (69) found Cryovac showed dehydration losses well below 1 percent by weight after a 3-month storage at 55° F. Standard moisture proof cellulose (MSAT 300) or pliofilm B. F. 75 both gave only a short-term shelf life for the packaged portions. One statement of interest was that most exponents of pre-packaging methods believe that the housewife prefers a wedge-shaped portion of cheese. When properly applied, waxes and resins were found to prevent mold growth but did not prevent dehydration.

Experimental Techniques

Market researchers are divided into two separate schools of thought as to the most effective way of gaining factual information from the consumer. Followers of the small-sample technique (clinical-qualitative research) used projective techniques, depth interview and sentence completion. The expense involved in that type of research demanded that a small sample be used. The large-sample technique (quantitative approach) employed statistical measurement of very large samples (8) (28).

A staff writer for Printer's Ink (15) pointed out the weakness of both systems of market research and stressed the need for a merger of the two methods. The advantages shown for a merger of the two schools were that sampling research provided a sample of a large percentage of the market segment and that consumer trends could be recognized with almost positive assurance of their validity; while motivation research gave more positive meaning to the study in that the questions sampled the individual experiences of each respondent, and reasons given for buying a product could be arranged on a scale of most to least significant.

Baeza (22) experimented with the telephone interview, the personal interview and the mailing questionnaire as sampling methods. He determined that the cost per completed interview was \$2.72 for personal interview, \$0.44 for telephone interview and \$0.54 per mailing questionnaire. Percentage returns from the three methods were 97 percent

for personal interview, 78 percent for telephone interview and 4.2 percent from the mailing questionnaire. At the conclusion of his study he stated that the results indicated it was possible to obtain comparable information by the three sampling methods.

Blankenship (25) indicated an expected return from mailing questionnaires of about 10 percent. He stated that the disadvantage of a mailing questionnaire was that the researcher never knew whether the people who answered a mailing questionnaire were or were not typical of his total market. There was usually a tendency for people most interested in a product or service or problem to answer mailing questionnaires about it.

Brooks (26) analyzed a study conducted by the New York World Telegram in which the original sample was picked from a list of registered voters. He found that the respondents were not representative of the sample. There was too high a proportion of certain age, income and educational groups. He concluded that mailing questionnaires were not reliable to cover a heterogeneous universe.

Brown (27), in a discussion of research methods, listed the advantages and disadvantages of personal interview, telephone interview and mailing questionnaire. He said the personal interview allowed better control of the sample, permitted more questions, faster field work and made it possible to cover a wider range of subjects than could be covered in a mailing questionnaire. The

disadvantages were listed as personal bias of interviewer and the possibility of interviews being given too hastily.

Advantages of the telephone interview, according to Brown (27), were large numbers at low cost and random sampling. Major disadvantages were related to the restricted amounts of information which could be secured and the difficulty in determining age and income. In addition, not everyone has a telephone.

Mailing questionnaires have exhibited the advantage of avoiding the bias of the personal interview, while allowing for a wide distribution of the sample. Also, respondents may take more care in providing information.

Cheskin (31) said that generally a sample size of 600 persons was sufficient for a national brand. Clausen and Ford (32) suggested the following as a means of obtaining a better return: a letter with full explanation of the survey, air mail special delivery, several follow-up letters and maximize interest by asking questions that cover several different subjects in the survey.

A general belief was that greater response could be obtained from unsigned than from signed questionnaires. However, Corey (34), after a study on cheating in college exams, concluded that it would appear that in certain instances at least, even though the attitudes involved were subject to considerable censure, students were about as forthright in their expression when questionnaires were signed as when they were not signed. It would not be

justifiable, of course, to infer that the presence of signatures on attitude questionnaires, no matter what the circumstances, had no effect upon their validity. The results do indicate that the concern of investigators over the invalidating effects of a signature may have been exaggerated.

Drayton (37), in a discussion of the variation of results obtained in using different methods of collecting data, noted considerable difference between the amount of cheese consumed in Canada as reported by the wholesale audit and the consumption reported by questionnaires sent to a sample of the population. Wholesale audit showed 2.5 ounces of cheese per week per person while questionnaire results showed 3.4 ounces per week per person. Drayton pointed out that at least three factors appeared to influence the bias on questionnaires. Those were a willful misrepresentation to impress the interviewer, a natural tendency to telescope time when reporting purchase data and a tendency to report as pounds any weight within several ounces of that amount. To reduce bias Drayton suggested asking for purchase data before the respondent knows which is of prime importance to the study and shorten the time period. Also avoid the use of such questions as "About how often do you use _____?"

Eastman (39) listed five "don'ts" concerning mailing questionnaires in order to reduce bias. He advised, "Don't use a mailing questionnaire if there is the slightest

likelihood that the factor of responsiveness will have any bearing on the result. Don't attach any significance to a mailing questionnaire unless you know the percentage response from different territories and classes of people or business. Don't rely on any aggregate or composite result from a mailing questionnaire, significance, if any, will be in the contrasts between these groups. Don't struggle for simplicity rather for clarity. Don't use mailing questionnaires if you can possibly avoid it. A handful of competent and comprehensive personal interviews are worth more than a room full of mailing questionnaires."

Link (49) concluded that the depth interview gave no more valid responses than other less formal types of interviews. Link said, "There is little or no evidence to support the tacit assumption that the so-called depth interview obtains more valid responses or truer responses from people than do other types."

Payne (55), in his book, "The Art of Asking Questions", stressed the need for careful selection of every word used in the questionnaire. He said the most critical need for attention to wording was to make sure that the particular issue which the questioner had in mind was the particular issue to which the respondent gave his answer. Payne discussed the advantages and disadvantages of four types of questions: free answer, two-way, multiple-choice and nine miscellaneous types. He concluded that there was no one best type for all occasions and that the questioner

had to make the final decision as to which type to use in his particular case.

Reuss (57) discussed the differences between respondents and non-respondents to mailing questionnaires. Using a population of known background (college students whose records showed such information as family background, intelligence, grades and outside interests) he concluded that respondents were more intelligent and had been in college a longer period of time than non-respondents. He also concluded that persons from rural areas responded better than persons from urban areas and that persons with farm backgrounds replied most often, had more initiative and ability and were more sociable while in school.

Generally replies from mailing questionnaires were small being only 10 to 12 percent. However, Robinson (58) combined five so-called essential features to obtain from 60 to 70 percent return. Those features were: a carefully prepared and tested letter, enclosure of 25 cents, and follow-up postcard 5 to 6 days after the original mailing and again about 14 days after the original mailing.

Weilbacher and Walsh (70) concluded from a study conducted among graduates of a university that personalization of the salutation and signature of the transmittal letter had no significant effect on rate of return.

Festinger and Katz (41) said that regardless of the type of survey conducted (whether personal interview, telephone interview or mailing questionnaire) there must first be a decision as to the specific pattern or design which the data collecting will follow. According to these writers basic types of survey designs included the unweighted cross section, the weighted cross section, contrasting samples, successive cross sections and re-interviews.

The unweighted cross section was described as the systematic selection of every nth card from the register of the undergraduates of _____ college which provided the basis for a description of that body as to age, sex, high school record, college entrance test scores, college grades or any of the other items of information which appeared on the sample cards.

Weighted sampling by cross section involved the deliberate oversampling of some sub-group of the designated universe which had special importance for the objectives of the survey but was known to be a relatively small fraction of the total population.

Contrasting samples were drawn from sub-groups which contrasted in the variable most important to the study.

Successive cross sections were used in studies of change. Characterized by before-after and trend studies successive cross section samples require measurements of the same population at successive points in time.

Re-interviews were used when it was necessary to follow the activities or attitudes of the same individuals through a specified time period.

Cochran (33) reported that the advantages of sampling as compared with complete enumeration included reduced cost, greater speed, greater scope and greater accuracy.

Besides the various types of questionnaires used in gathering market information, consumer panels have become very popular as research techniques. Shaffer (62) reported that there were two types of consumer research panels. They were the product opinion and attitude panel and the consumer purchase panel. He defined a consumer research panel as "a group of consumer-reporting units organized for the purpose of serving with some continuity in an advisory, judiciary or fact-finding capacity." In the opinion and attitude panel, Shaffer said, members merely indicated acceptance or preference for certain products. The purchase panel, on the other hand, reported on a periodic basis actual purchases giving the quantity purchased and the price paid for that product.

Store tests of various types have also been quite popular with market researchers. They range from very simple matched-lot tests to very complex Latin-square designs. Brunk (29) described Latin-squares as a technique for minimizing the time and store variable by rotation of goods rather than side-by-side offerings. The Latin-square design is well suited to measuring those practices which

stimulate sales in the short run. The Latin-square does not measure long-run effects. Brunk concluded his discussion by saying that combining surveys and controlled store experiments was probably the best arrangement.

Smith et al. (66) studied four methods of cheese display using matched-lot store tests. The four methods tested were in-store packaged cheese in four weight ranges (6 to 10 ounce, 10.1 to 14 ounce, 16.1 to 22 ounce and 22.1 to 32 ounce); and both in-store and pre-packaged cheese in five weight ranges. Formal and jumbled displays were used in the tests. Results of the tests showed that the combination in-store and pre-packaged display with five weight ranges was the most effective with 20 percent greater sales volume than the average for the other three methods. The most popular pre-packaged weights ranged from 6 to 10 ounces. Type of display, formal or jumbled, showed no effect on sales of cheese.

A staff writer of Food Merchandising (12) recommended that retailers conduct continuous research on sales by a process known as "Shelf-Rent". The formula given for figuring Shelf-Rent was:

gross profit per week = $\frac{\text{cents mark-up} \times \text{units sold}}{\text{square feet of shelf space}}$ then

gross profit per square feet = $\frac{\text{gross profit per week}}{\text{square feet of space}}$

Statistical Analysis

Festinger and Katz (41) suggested the following forms of analysis for information dealing with the behavioral

sciences: a comparison of the behavior and attitudes exhibited by the different groups within the sample (low-high income, young-old age groups, and various educational levels) and a comparison of the attitudes between high-low consumers of the product under study. They then advocated the use of correlation analysis and of the direct question "Why?" in explaining action taken by the various groups.

Larzelere (46), working with consumer opinion and attitude data from consumer panels, used weighted percentages to indicate degree of preference for one sample over another. Those results were then compared for various income groups to determine correlation. The weighted percentages were derived by assigning values to the placing given each sample. In a series with five samples the percentage of first place votes would be multiplied by 5, second by 4, third by 3, etc.

PROCEDURES

The presentation of procedures used in this study is divided into sections devoted to consumer preference panels, consumer survey, survey of grocerymen, package design, keeping quality tests and purchase data from a dairy store.

Consumer Preference Panel

Michigan State University in cooperation with Wayne State University of Detroit, Michigan, conducted a consumer preference panel which met once per month or once per quarter during January, 1956, through February, 1961. Panel members were selected on the basis of questionnaires sent to about 11,700 persons whose names were obtained at random from the Detroit telephone directory. Approximately 2,300 recipients were willing to take part in the panel and their visits were scheduled by telephone. Selection was on the basis of income, age and education in order to give a representative sample of the population of Detroit. Panel members were rotated each meeting to reduce the possibilities of atypical panels. About 70 persons participated at each meeting of the panel.

Panel meetings were conducted at 2 p.m. and 7 p.m. on the same day. After a briefing on the general purpose of the project the panel was asked to rank the samples either in order of preference or on the degree of acceptability of each sample.

Symbols were used to identify each sample such as

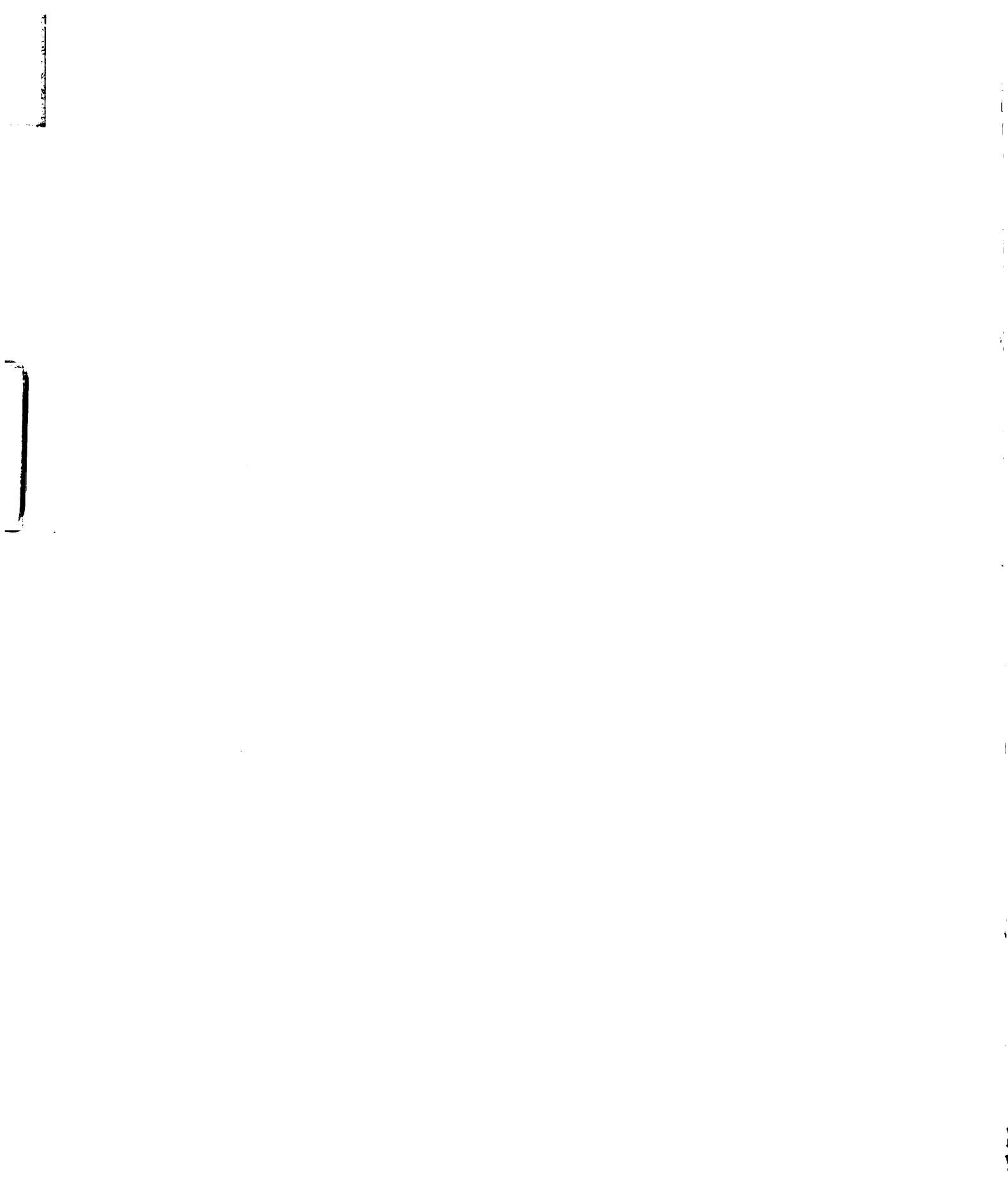
#, %, &, * and (). In some trials the panel members were asked to show acceptability rather than preference for certain products. In these trials samples were ranked according to the following terms: (a) like very much, (b) like, (c) neither like nor dislike, (d) dislike and (e) dislike very much. Figure 1 is an example of the type of card used for reporting by the panel members.

A weighted score was used in tabulation of the data. That score was derived by assigning a value to each placing or ranking. For example, in a series of five samples, the number of first place votes was multiplied by 5, second by 4, third by 3, fourth by 2 and fifth by 1.

When degree of acceptance was the desired information, weighted scores were derived by multiplying the number of panel responses under each of the five degrees by the appropriate value. The values used were 5 points for "like very much", 4 points for "like", 3 points for "neither like nor dislike", 2 points for "dislike" and 1 point for "dislike very much". These values were added to give the weighted score.

Samples were prepared and presented to the panel to test consumer acceptance of shape of cut, type of coating or wrapping material and various specialty cheese items. Tests were conducted during 16 meetings of the consumer panel and all samples used in testing were controlled to 1-pound sizes.

Seven cuts of cheese were presented for selection on



MICHIGAN STATE UNIVERSITY
Consumer's Opinion of Produce Quality

CHEESE

I. & _____ () _____ II. # _____ # _____ () _____ % _____ Name _____	III. # _____ % _____ IV. _____ Like very much Like Neither like nor dislike Dislike Dislike very much Comments _____	<div style="display: flex; justify-content: space-between;"> <div>()</div> <div>#</div> <div>&</div> <div>%</div> </div> <div style="display: flex; justify-content: space-between;"> <div>_____</div> <div>_____</div> <div>_____</div> <div>_____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>_____</div> <div>_____</div> <div>_____</div> <div>_____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>_____</div> <div>_____</div> <div>_____</div> <div>_____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>_____</div> <div>_____</div> <div>_____</div> <div>_____</div> </div>
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Fig. 1.--Example of reporting card used by members of the Detroit Consumer Panel.

the basis of acceptance of shape. The shapes were oval, bar, block, wedge, rectangle, half-moon and sausage (Figure 2). Cheese packaged in the following six different coating or wrapping materials was displayed for ranking according to acceptance. These materials included wax, saran, cryovac, aluminum foil, polyethylene and cellophane. Specialty cheese items in this study were individually wrapped slices, one-half inch cubes of cheese, cheese designed in a holiday motif (Christmas trees, bells and stars), shredded cheese and cheese disks one-inch in diameter (sliced one-quarter inch thick from a sausage shaped cut).

Following the tests to determine acceptability samples were prepared and presented to the panel for selection on the basis of preference for one sample over other samples. Preference studies were conducted using the seven shapes mentioned above. Samples of cheese used to test preferences for coating or wrapping materials were packaged in wax, saran, cryovac, aluminum foil, polyethylene and semi-rigid plastic. Cheese wrapped in red, gold and silver aluminum foil and coated with red and gold wax was used in color preference studies. Cheese specialty items used in the preference studies consisted of $\frac{1}{2}$ -inch cubes of cheese, $1\frac{1}{2} \times \frac{1}{4}$ -inch disks, miniature wedges and variety packs containing three types of cheese (mild Cheddar, Swiss and Dagano).

Cheese packaged in aluminum foil, saran, cryovac and

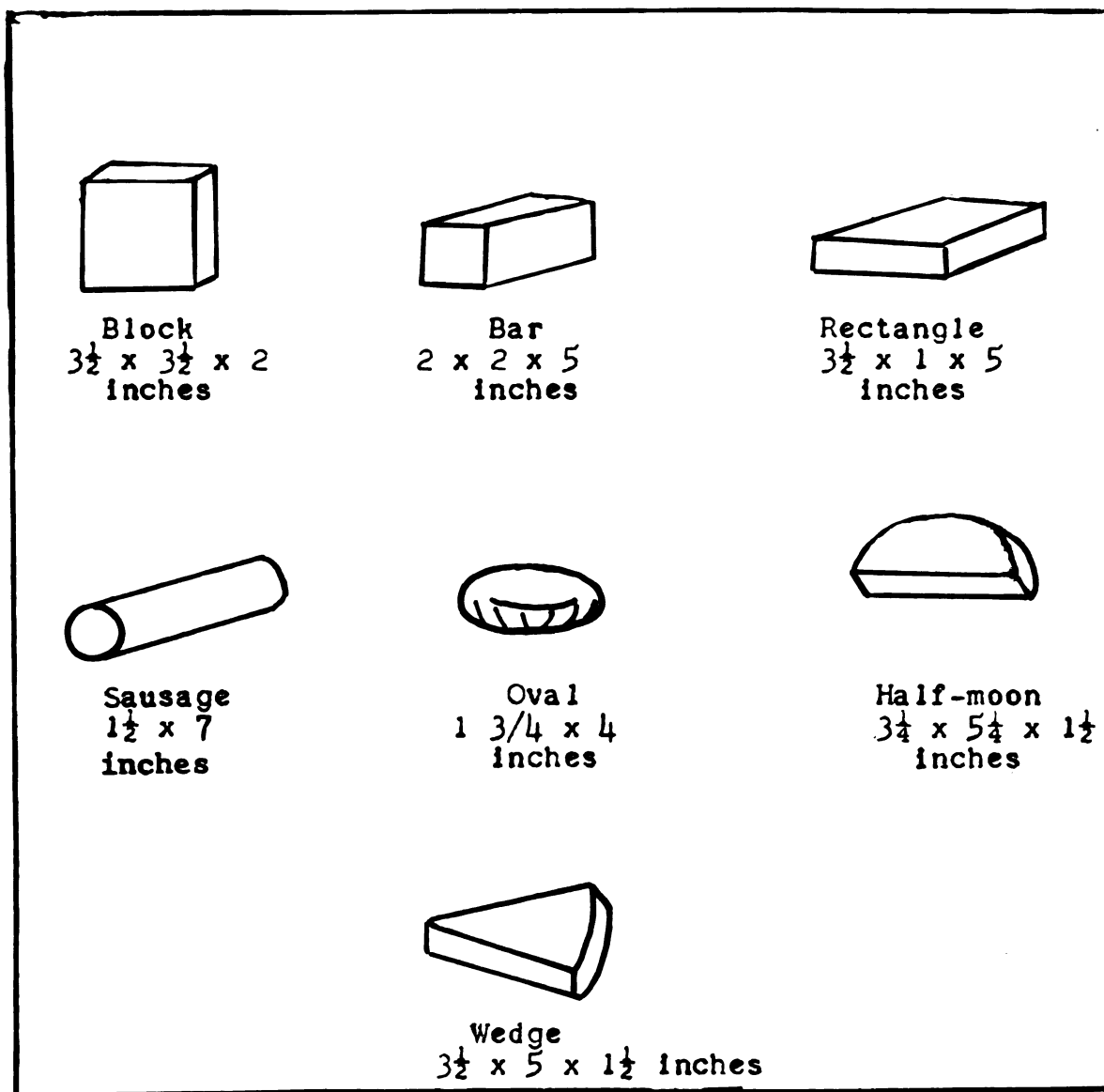


Fig. 2.--Various shapes used in Detroit Consumer Panel tests.

semi-rigid plastic was presented to the panel to determine influence of price on consumer preference. For the afternoon panel meetings price per pound (\$0.65) was held constant on cheese in the four types of packages. However, for the evening panel a \$0.02 per pound premium was placed on cheese packaged in the semi-rigid plastic container. During the next two meetings of the panel a premium of \$0.05 per pound was charged for cheese in the semi-rigid plastic container over cheese packaged in saran. The prices were \$0.65 per pound for cheese packaged in saran and \$0.70 per pound for cheese in the plastic container.

Two display cabinets, one arranged with the cheese placed horizontally on one shelf the entire length of the cabinet, and the other with cheese placed vertically on several shelves in one section of the cabinet were presented to the panel for placing according to preference.

Four grades, AA, Fancy, 93 score and No. 1, were used as identification on 1-pound blocks of cheese packaged in saran and were submitted to the panel for placing in order to determine the extent of consumer knowledge of cheese grades.

Consumer Survey

A mailing list of 5,000 names was compiled by selection of names from current telephone directories of the county-seats and surrounding areas of the 68 counties in lower Michigan. The names were selected by determination of the number required from each directory based on county



population, and then every nth name was chosen to give the desired number out of each directory.

Individuals selected were sent an open-end questionnaire of four pages and an introductory letter which described the purpose of the study. An incentive for return of the completed questionnaire was offered. A postage paid, self-addressed return envelope was included. Appendix Figure 1 shows a copy of the letter and questionnaire. The questionnaire was pre-tested by sending it to 100 persons in the Pontiac area. Six weeks were allowed for response after the final mailing and then the information was coded and tabulated for analysis on IBM electronic data processing equipment.

Answers for coding were selected by using the 12 most frequent answers to each of the questions (Appendix Figure 2). As all respondents could give all 12 answers percentages will not necessarily be equal to 100. Rather, the percentages for each answer were based on the number of respondents replying. Tabulation was on the basis of age, income, education, sex and number in the family.

Survey of Grocerymen

Thirty telephone and personal interviews were conducted with a stratified random selection of the market managers of grocery stores and supermarkets in the Lansing-East Lansing area. A representative from all large supermarkets and from approximately 20 percent of the grocery stores were contacted. The questions used are shown in

Appendix Figure 3.

Package Design

A semi-rigid package of clear plastic was designed. It consisted of a two-piece box, $3\frac{1}{2} \times 3\frac{1}{2} \times 2$ inches, with a tear-tape seal. After opening the top and bottom pieces could be re-closed with a friction seal to reduce moisture loss from the cheese. The package was vacuum molded from 0.024 inch clear modified polystyrene. Figure 3 is a drawing of the re-closable package.

Keeping Quality Tests

Four groups of seven cheese samples each were stored at 33°, 48° and 65° F. for 3 weeks to determine moisture loss from cheese packaged in cellophane coated foil, saran, plastic and with no wrap. One-pound block cuts of cheese were made from a 40-pound block of mild Cheddar cheese. Three of the samples were not wrapped; three were wrapped and heat-sealed in saran; three were wrapped in saran but not heat sealed; three were wrapped and heat sealed in foil; three were wrapped in foil but not sealed; three were sealed in the re-closable plastic containers with tear tape and three were placed in re-closable plastic without the tear-tape seal.

At the end of 3 weeks all samples were removed from storage and observations were made as to mold growth. All samples held at 48° and 65° F. were discarded at the end of this trial period because of surface mold. The 33° F. samples were transferred to the 48° F. temperature for 2

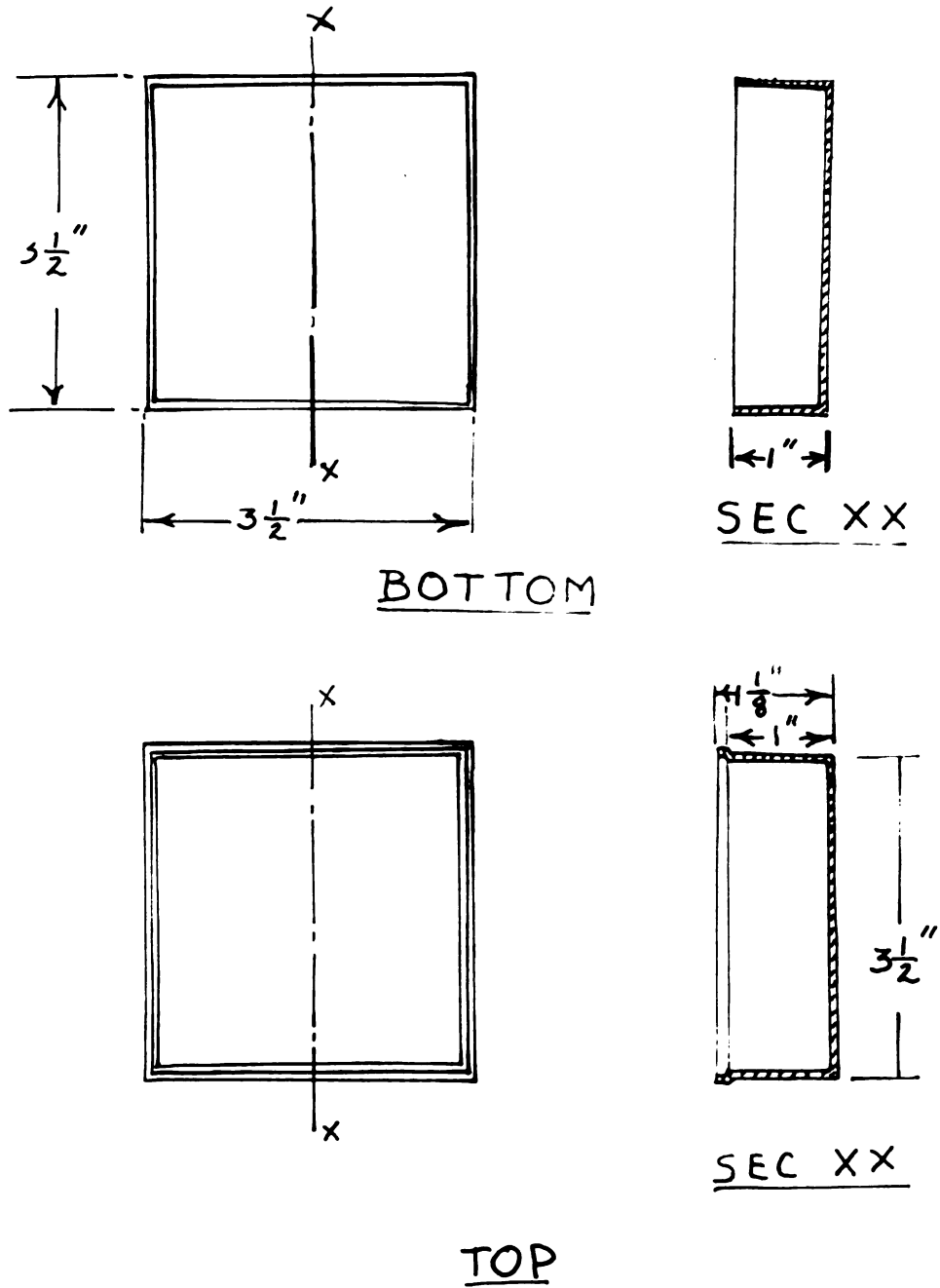


Fig. 3.--Specifications for a re-closable plastic package for cheese.

more.

Dairy Store Purchase Data

A series of matched-lot trials were conducted in the M. S. U. Dairy Store. Cheese packaged in red, gold and silver aluminum foil was placed on sale in order to compare the actual purchase preference among the three colors. Tests were conducted for 3 weeks using 1-pound blocks of mild Cheddar cheese wrapped in the three colors of foil.

Matched-lot trials were also conducted to compare the buying choice for foil or clear wraps. After development of the re-closable plastic container other matched-lot trials were made to compare consumer purchasing preference for clear films or the re-closable package.

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RESULTS

Consumer Preference Panel

Results recorded in Table I show the consumer acceptance of various shapes of cheese rated on a five point scale. In order of increasing acceptability the shapes were rectangle, oval, half-moon, wedge, sausage, bar and block. All shapes received some "like very much" and some "dislike very much" ratings.

TABLE I--Acceptance of shape of cut as determined by consumer panel tests
(average of four trials)

shape	rating scale					weighted score*
	like very much	like	neither like nor dislike	dislike	dislike very much	
rectangle	10	22	44	34	27	365
oval	7	37	55	27	11	413
half-moon	14	33	45	32	13	414
wedge	26	47	33	23	8	471
sausage	32	46	24	27	8	478
bar	48	51	26	6	6	540
block	42	59	26	6	4	540

Highest possible weighted score = 685

* $\chi^2 = 105.8$ Significant at the 1 percent level

Results presented in Table II show the consumer preference as indicated by the panel for shape of cheese cut. The data are presented in the table in order of increasing preference. The rectangle shape was least

preferred. The traditional wedge ranked third, behind the more convenient bar and block shapes.

TABLE II--Preference for shape of cut preferred by the consumer panel
(average of four trials)

shape	placing by panel						weighted score*
	1	2	3	4	5	6	
rectangle	2	4	11	7	24	81	226
oval	13	8	29	31	25	23	400
half-moon	18	25	24	21	25	16	458
wedge	17	32	30	34	13	3	513
bar	35	21	12	26	32	6	523
block	44	41	24	16	2	2	619

Highest possible weighted score = 774

* $\chi^2 = 199.9$ Significant at the 1 percent level

Acceptability of various packaging materials and paraffin wax is recorded in Table III. The least acceptable packaging material was wax and the most acceptable was cryovac.

According to the information presented in Table IV, saran was the most popular of the wrapping materials tested. Polyethylene was second and aluminum foil was third. Least desirable of all packaging materials tested was the colored wax coating which has been traditional on many of the foreign types of cheese.

**TABLE III--Acceptance of packaging materials as determined
by consumer panel tests
(average of eight trials)**

packaging material	rating scale					weighted score*
	like very much	like	neither like nor dislike	dislike	dislike very much	
wax	17	22	35	42	21	383
cellophane	14	23	48	41	11	399
foil	37	31	43	17	9	481
saran	36	63	31	3	4	535
polyethy- lene	42	70	17	1	7	550
cryovac	48	57	26	2	4	554

Highest possible weighted score = 685

* $\chi^2 = 148.2$ Significant at the 1 percent level

**TABLE IV--Type of wrapping material preferred by the
consumer panel
(average of four trials)**

type of wrap	placing by panel				weighted score*
	1	2	3	4	
wax	11	27	35	50	245
cryovac	20	14	44	45	255
foil	34	16	21	52	278
polyethylene	30	55	29	9	352
saran	48	43	26	6	379

Highest possible weighted score = 492

* $\chi^2 = 47.4$ Significant at the 1 percent level

Table V shows a comparison between consumer preference for the cheese with different packaging materials at the

same price and at a \$0.02 per pound premium for re-closable plastic containers and foil wraps. The only change noticed was that at the \$0.02 per pound premium the number of first place selections for both re-closable plastic and foil declined. However, the overall placing remained the same with foil least preferred and re-closable plastic most preferred but sharing the top position with saran wrap

TABLE V--Preference for wrapping materials at equal prices and at \$0.02 per pound premium for plastic and foil

wrapping material	placing by panel									
	equal price				weighted score*	\$0.02 premium plastic, foil				weighted score*
	1	2	3	4		1	2	3	4	
cryovac	19	18	25	16	196	20	23	15	5	184
saran	17	25	24	12	203	22	20	12	9	181
re-closable plastic container	38	11	18	11	232	22	9	18	14	165
foil	10	25	13	30	171	3	13	18	29	116

Highest possible weighted score = 312

252

$\chi^2 = 10.3$

18.7

* Significant at 5% level

1% level

Color preferences for foils and waxes are presented in Tables VI and VII. Gold color was selected over both red and silver, although the preference was not significant and could have been due to chance.

TABLE VI--Color of foil wrapping material preferred by the consumer panel
(average of four trials)

color	placing by panel			weighted score*
	1	2	3	
red	90	64	100	498
silver	91	66	97	502
gold	107	112	35	580

Highest possible weighted score = 762
 $*\chi^2 = 10.4$ Significant at the 1 percent level

TABLE VII--Preference for color of wax coating of cheese as determined by consumer panel tests
(average of four trials)

color	placing by panel		weighted score*
	1	2	
red wax	58	72	188
gold wax	82	48	212

Highest possible weighted score = 260
 $*\chi^2 = .52$ Not significant at the 1 percent level

In Table VIII are the results showing consumer acceptance of various types of specialty cheese items.

The most acceptable item was individually wrapped slices and $\frac{1}{2}$ -inch cubes of cheese was second.

The miniature wedges packaged in a re-closable rigid plastic container were preferred above cheese disks, cubes and a variety pack (Table IX). Attention is called to the fact that the variety pack received the greatest number of first place votes but the concentration of third and fourth place votes brought its weighted score down to third

position.

**TABLE VIII--Acceptance of specialty items as determined
by consumer panel tests
(average of two trials)**

item	rating scale					weighted score*
	like very much	like	neither like nor dislike	dislike	dislike very much	
shredded	19	17	13	15	7	239
sausage	9	25	29	7	1	247
designed	18	28	16	8	1	267
cubed	21	31	17	2	0	284
individual sliced	40	22	5	4	0	311

Highest possible weighted score = 355

* $\chi^2 = 90.7$ Significant at the 1 percent level

**TABLE IX--Preference for specialty cheese items as deter-
mined by consumer panel tests
(average of two trials)**

specialty item	placing by panel				weighted score*
	1	2	3	4	
cubed	11	29	38	66	273
variety pack	51	19	35	39	370
disks	41	53	38	12	411
wedges	49	45	33	17	414

Highest possible weighted score = 576

* $\chi^2 = 36.5$ Significant at the 1 percent level

Mailing Questionnaire

Questionnaires returned from the mail survey totaled 891, or 17.8 percent of the 5,000 mailed. Analysis of the questionnaires showed the most frequent use of cheese was

in snacks. Results in Figures 4 through 11 indicate the use of cheese according to demographic factors of age, income, education, sex and number in family. These results are summarized in Figure 12.

Other than in pizza or macaroni and cheese, very little cheese was used for cooking purposes. Only 10 percent of the respondents used cheese toppings for potatoes, 16 percent made cheese sauce, 4 percent used cheese in souffle and 3 percent in Welsh rabbit. Ten percent indicated a frequent use of cheese with pie.

Results recorded in Figures 13 through 22 inclusive indicate the users and non-users of the various types of cheese according to the demographic factors. Figures 23 and 24 summarize the percentage of "frequent" and "never" users of the various cheeses.

Answers to the question, "Why do you buy cheese", are recorded in Table X. The group below 20 years of age was least concerned with nutrient value and most often "just liked it". They were also most concerned with price and meat substitution.

Within the group with income below \$5,000 per year only 2 percent purchased cheese for convenience but 11 percent in the group with incomes above \$10,000 said convenience was the reason for buying cheese. A positive trend was exhibited when education was used as the criterion for stressing nutrient value. The greater the amount of formal education the more stress was placed on

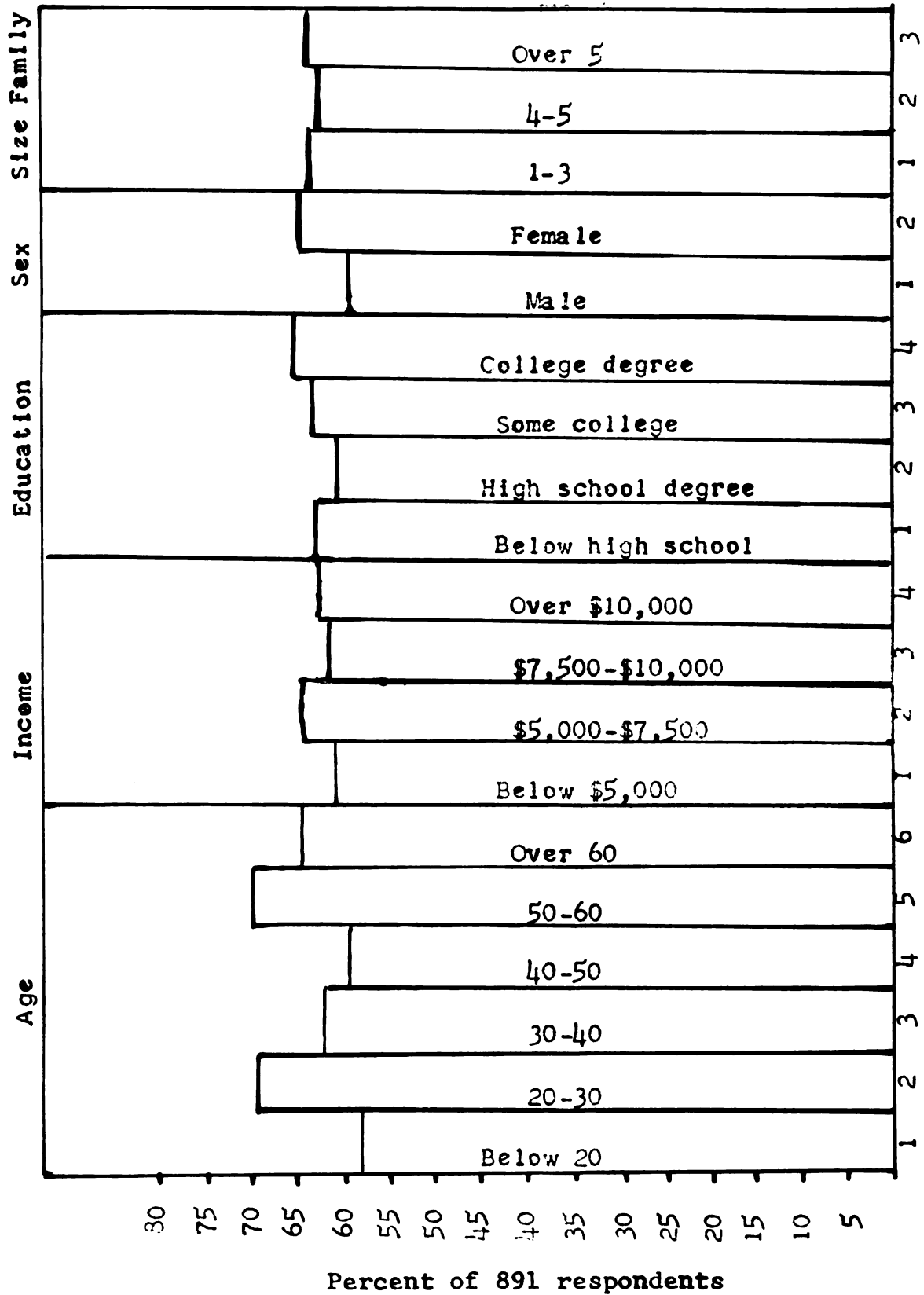


Fig. 4.--Demographic factors influencing frequency of consumption of cheese in snacks.

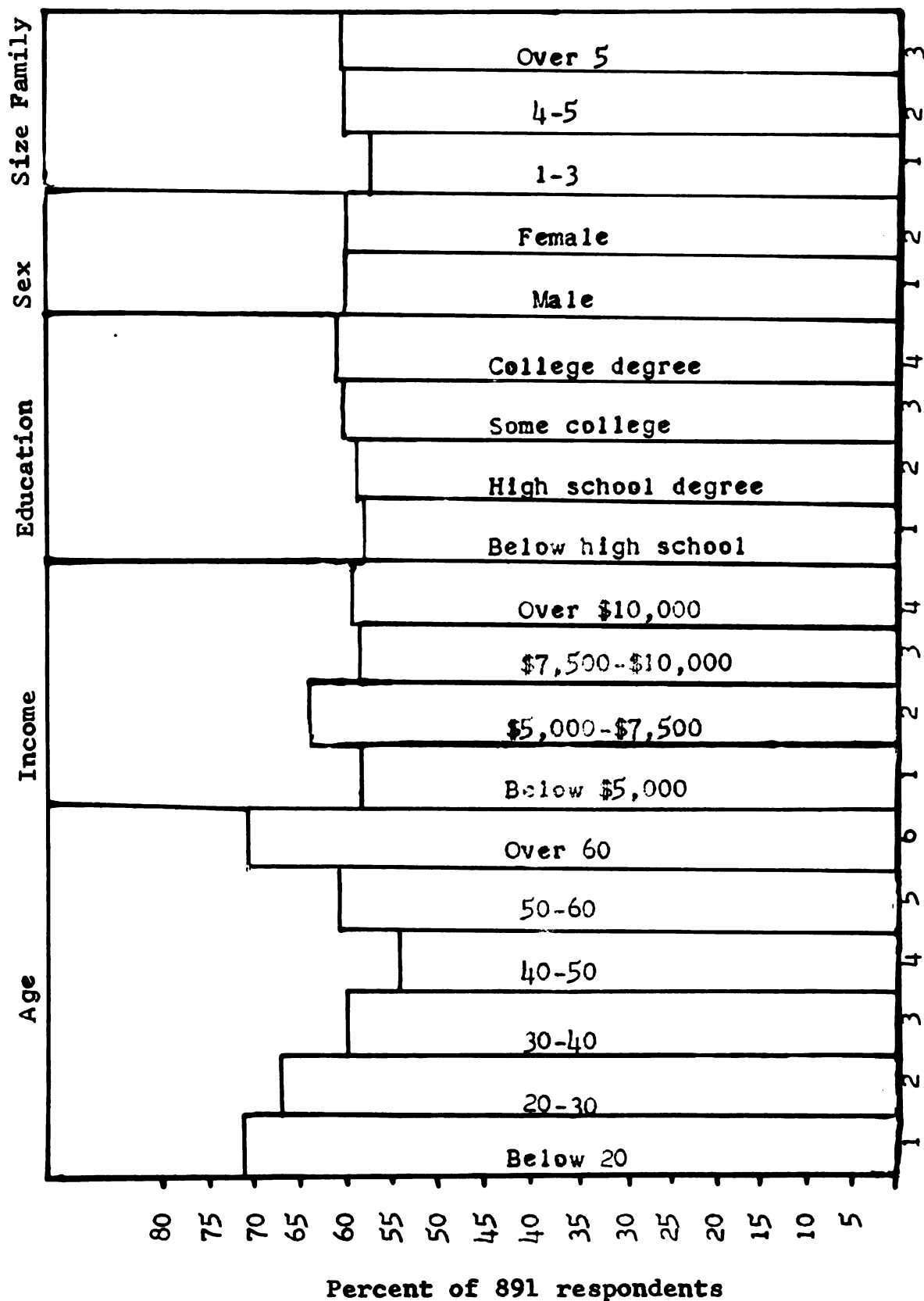


Fig. 5.--Demographic factors influencing frequency of consumption of cheese in sandwiches.

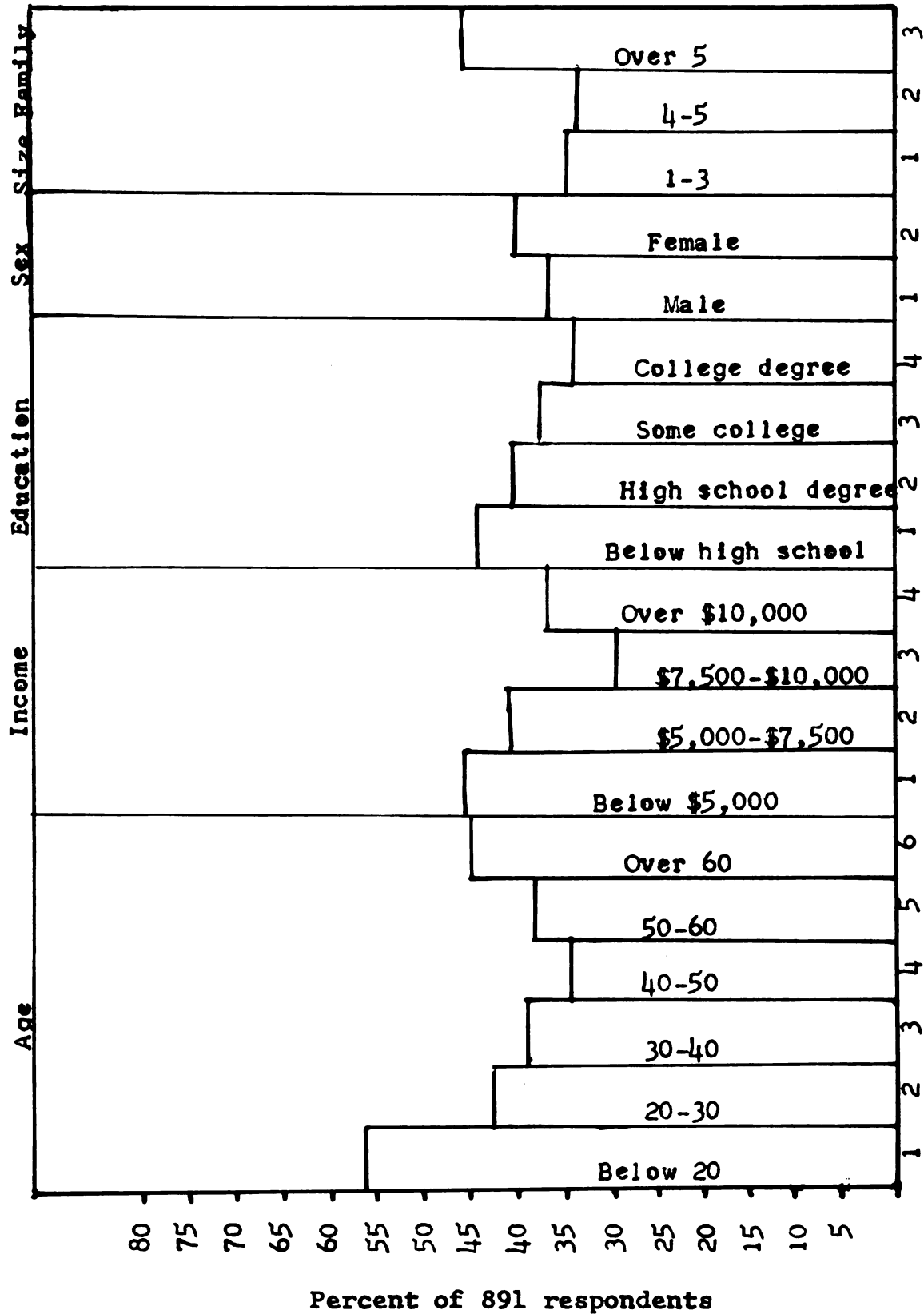


Fig. 6.---Demographic factors influencing frequency of consumption of cheese in macaroni and cheese.

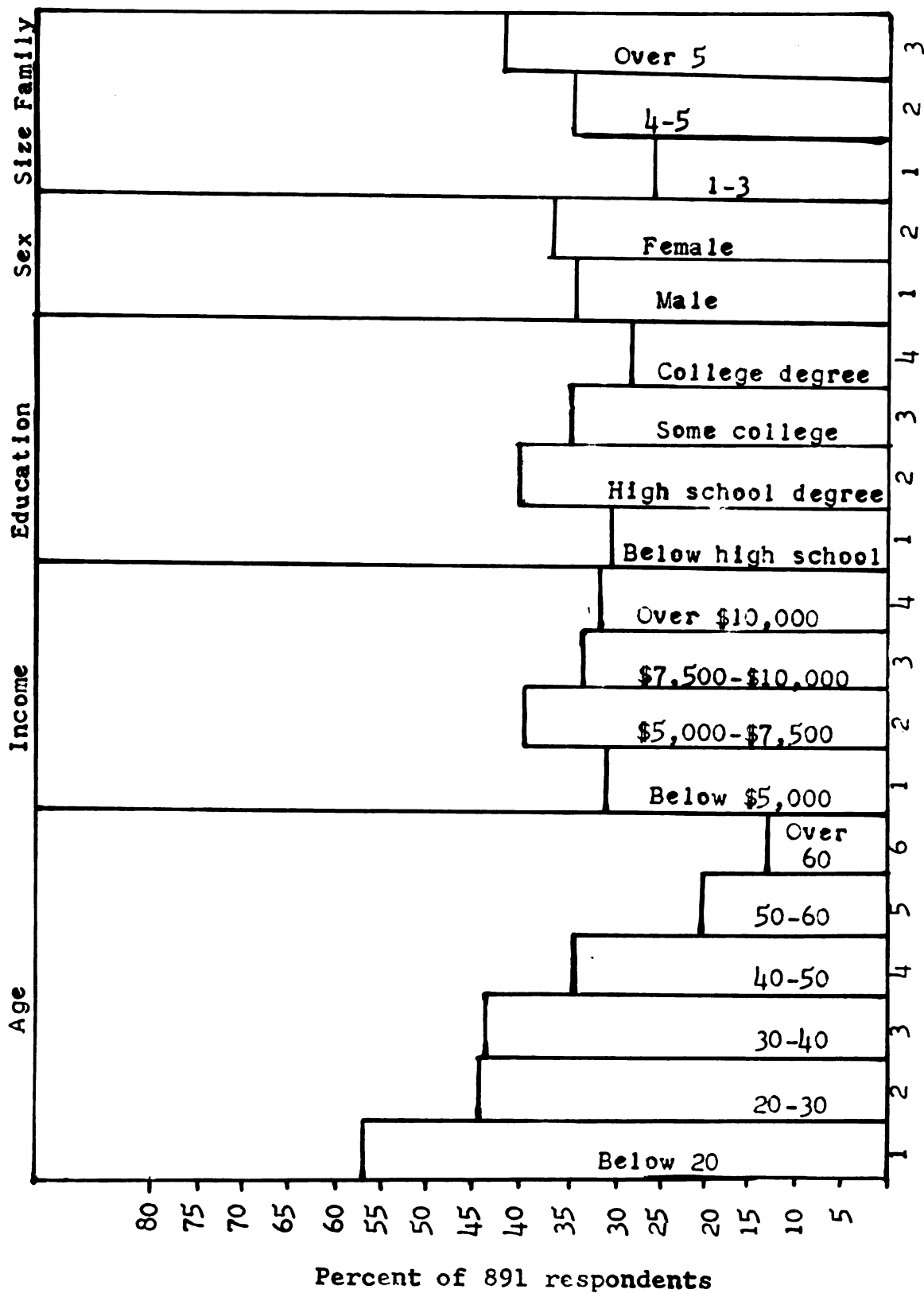


Fig. 7.--Demographic factors influencing frequency of consumption of cheese in pizza and other foreign dishes.

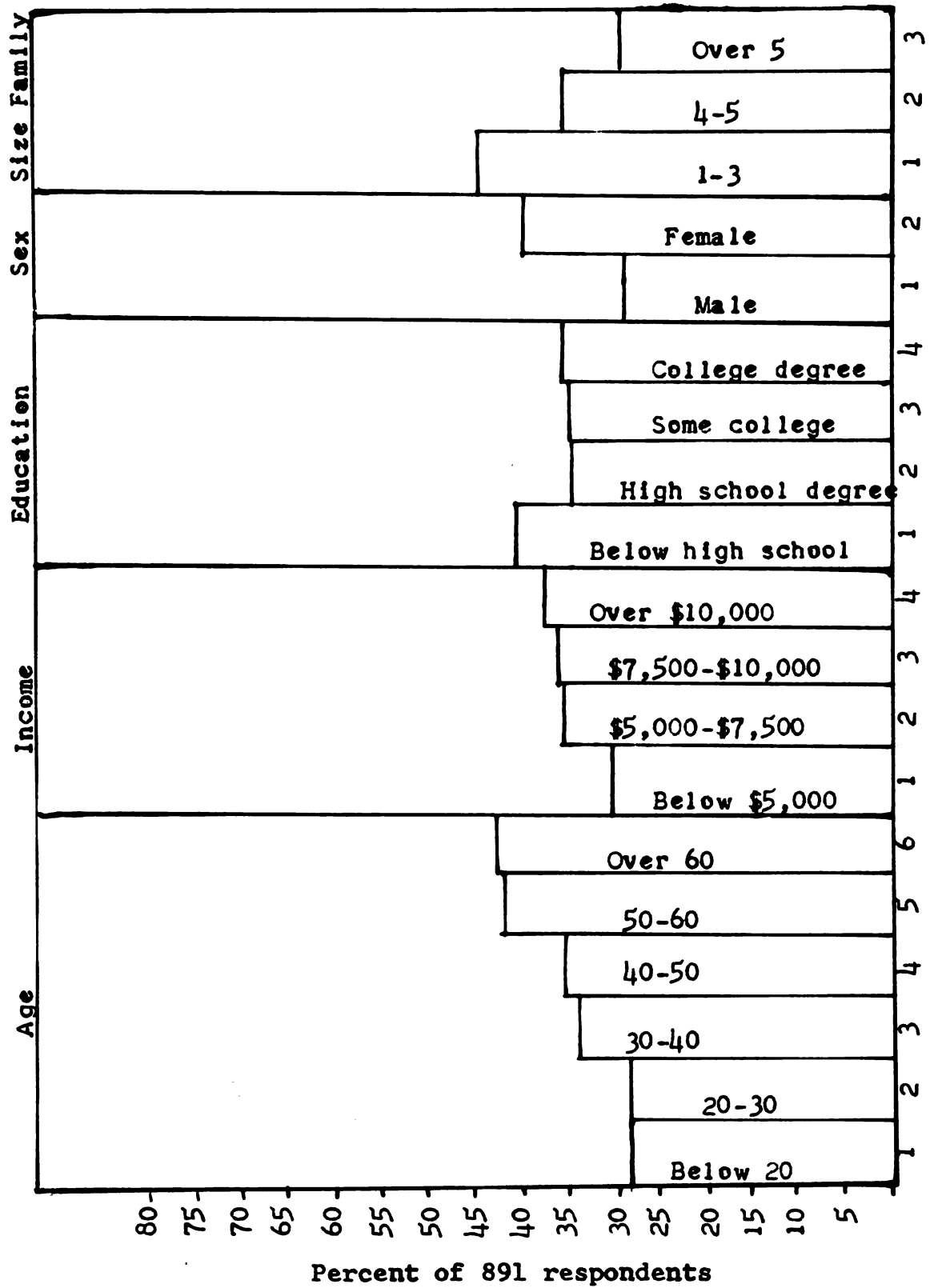


Fig. 8.--Demographic factors influencing frequency of consumption of cheese in relish trays.

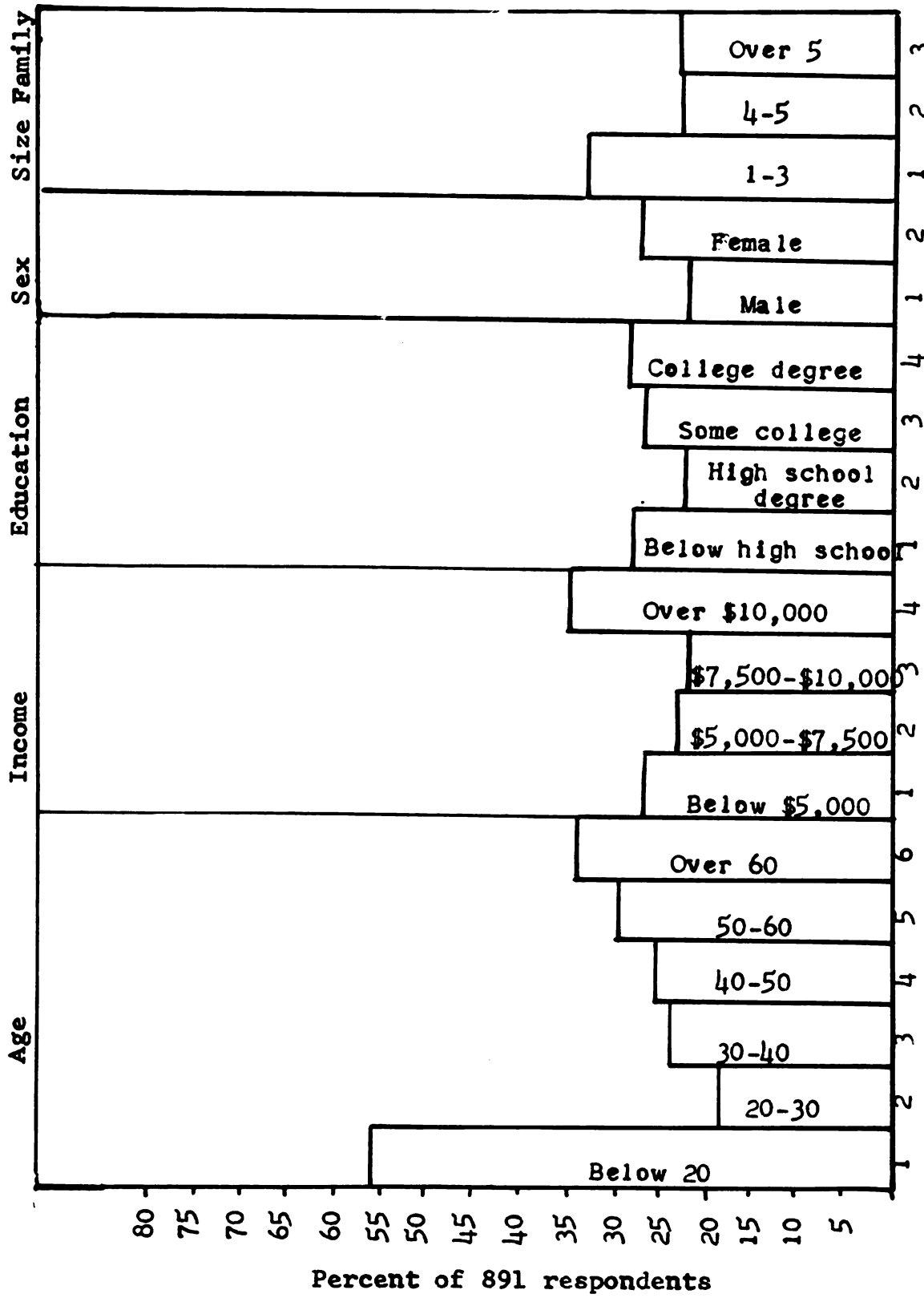


Fig. 9.--Demographic factors influencing frequency of consumption of cheese in salads.

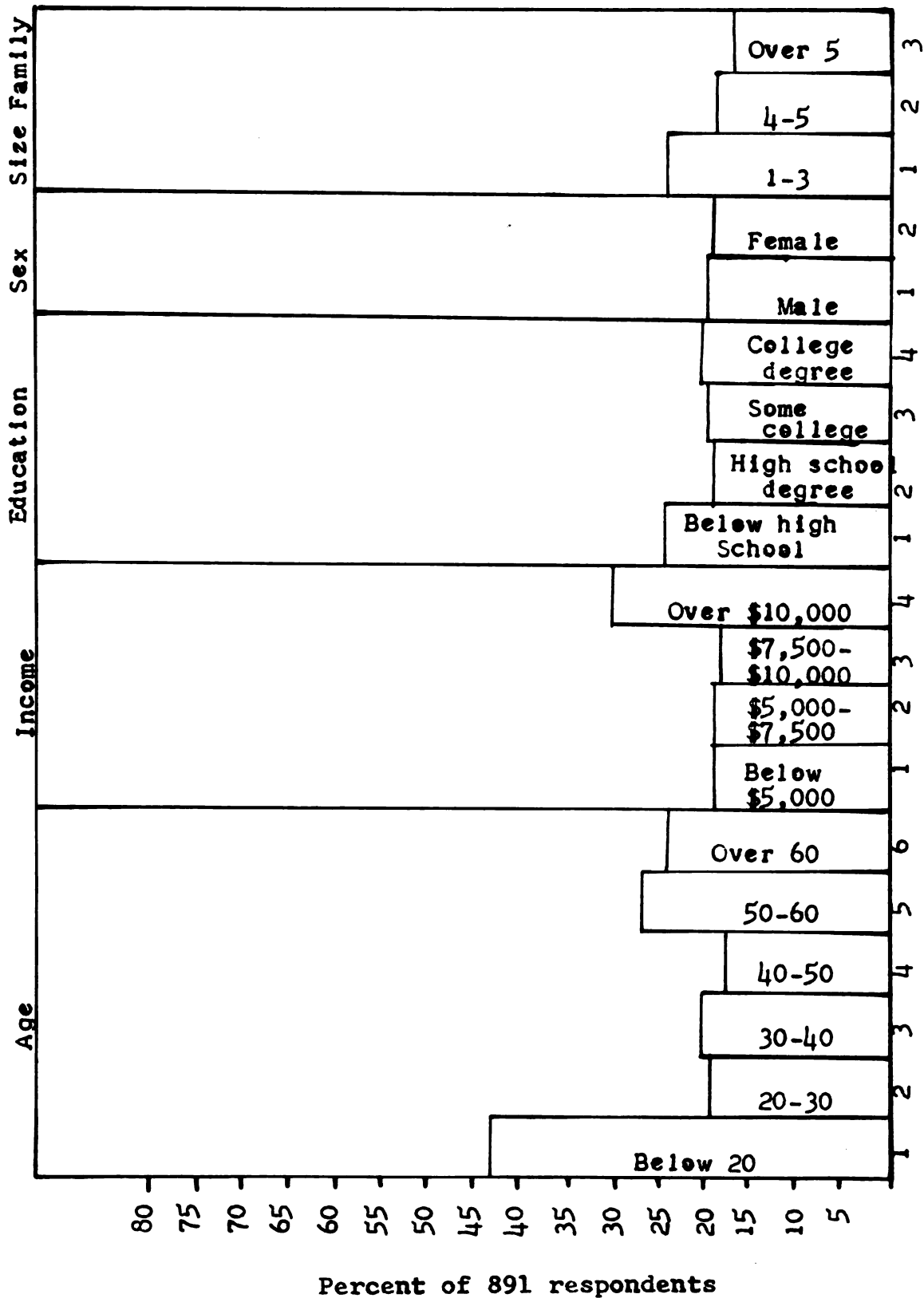


Fig. 10.--Demographic factors influencing frequency of consumption of cheese as a complement to drinks.

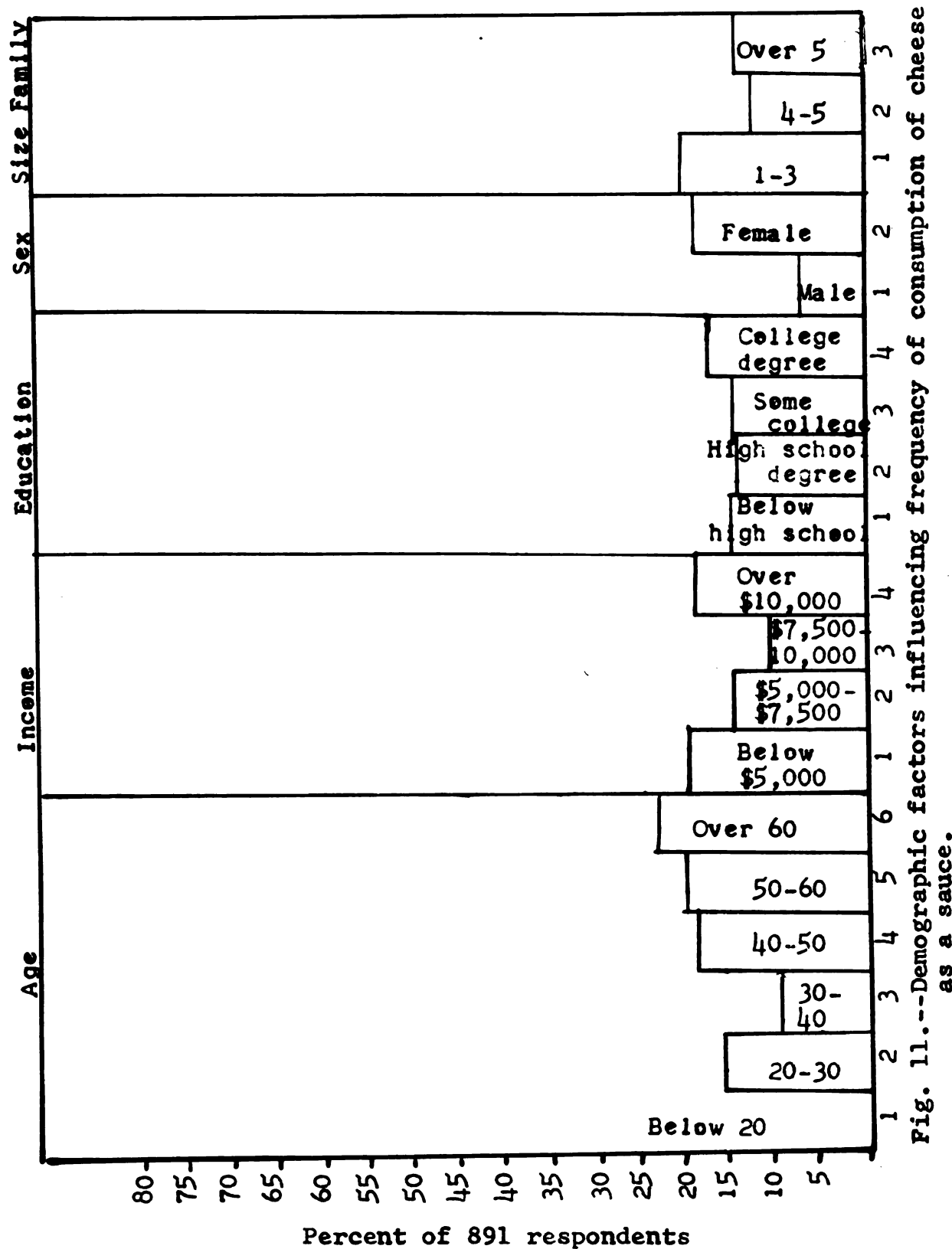


Fig. 11.--Demographic factors influencing frequency of consumption of cheese as a sauce.

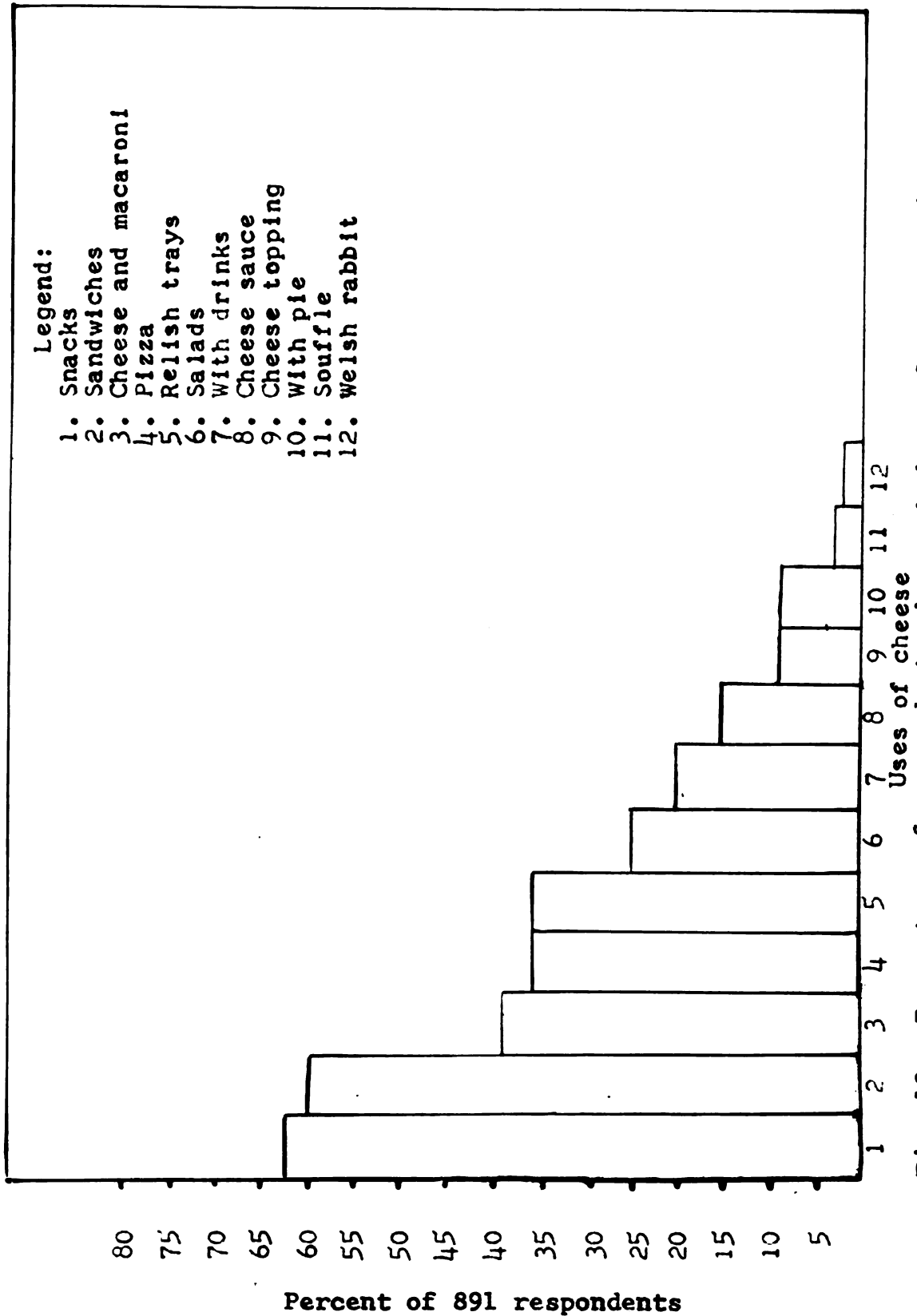


Fig. 12.--Percentage of respondents who used cheese frequently in various ways.

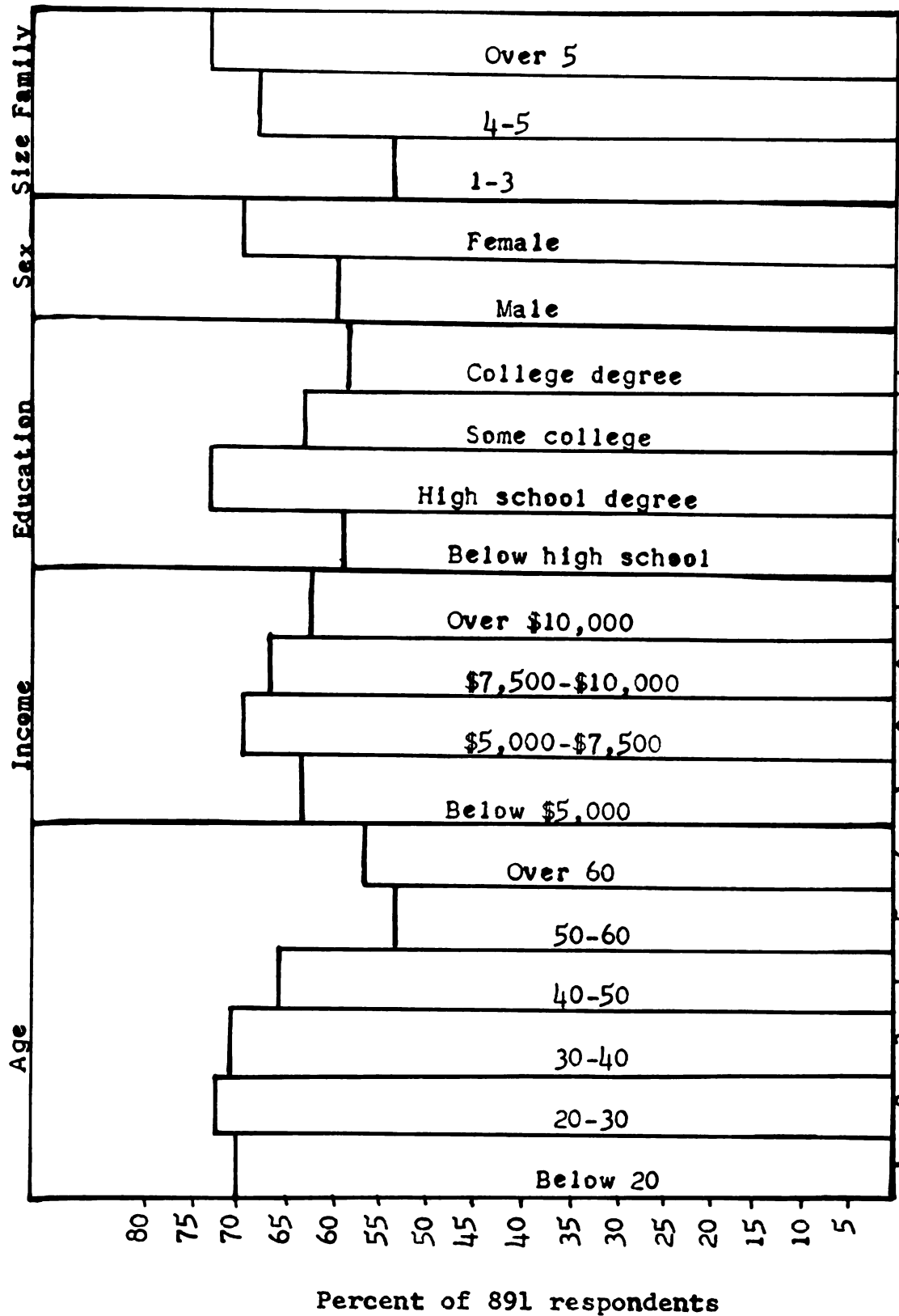


Fig. 13.--Demographic factors influencing frequency of use of mild Cheddar cheese.

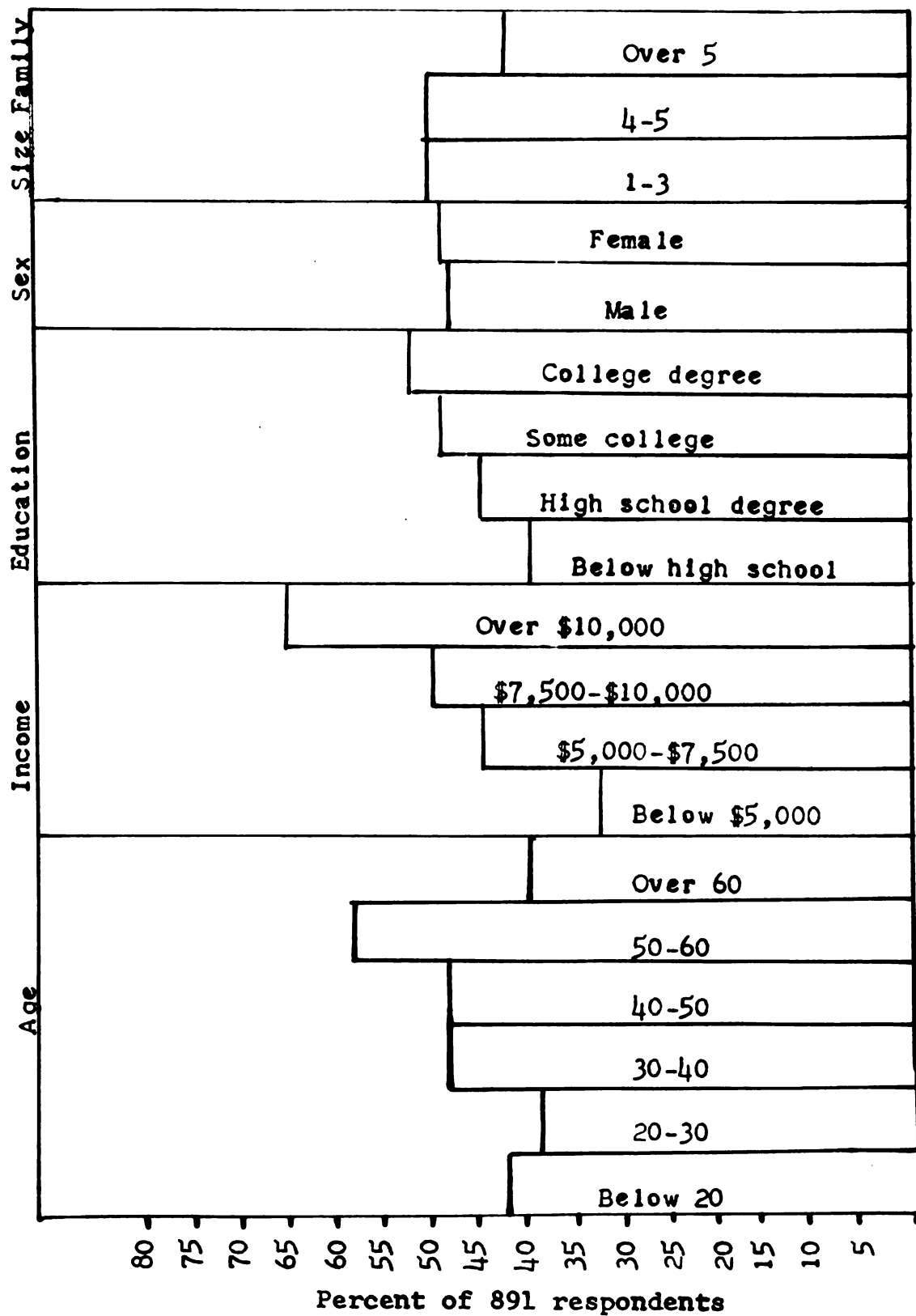


Fig. 14.--Demographic factors influencing frequency of use of Swiss cheese.

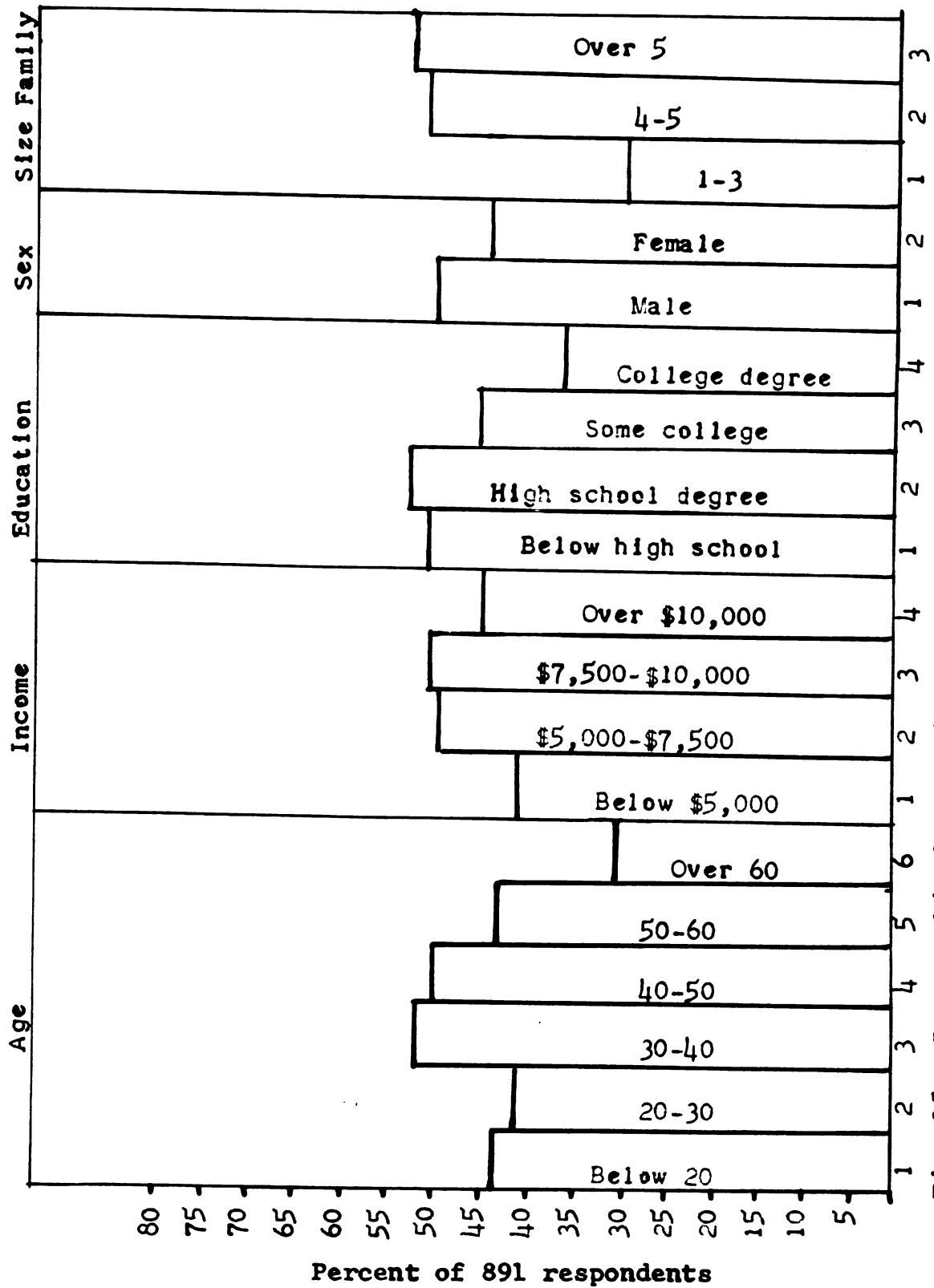


Fig. 15.--Demographic factors influencing frequency of use of Brick cheese.

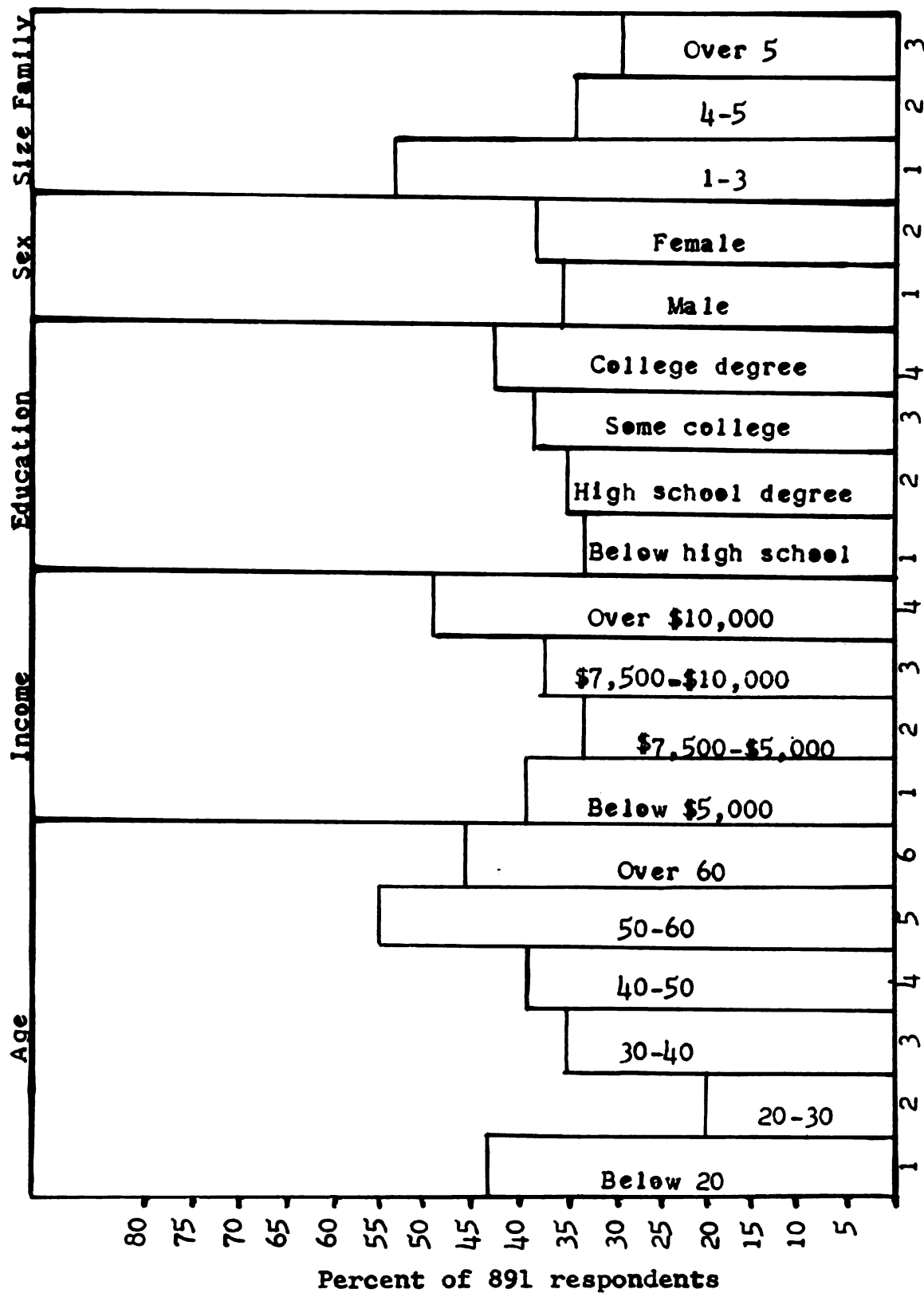


Fig. 16.--Demographic factors influencing frequency of use of aged Cheddar cheese.

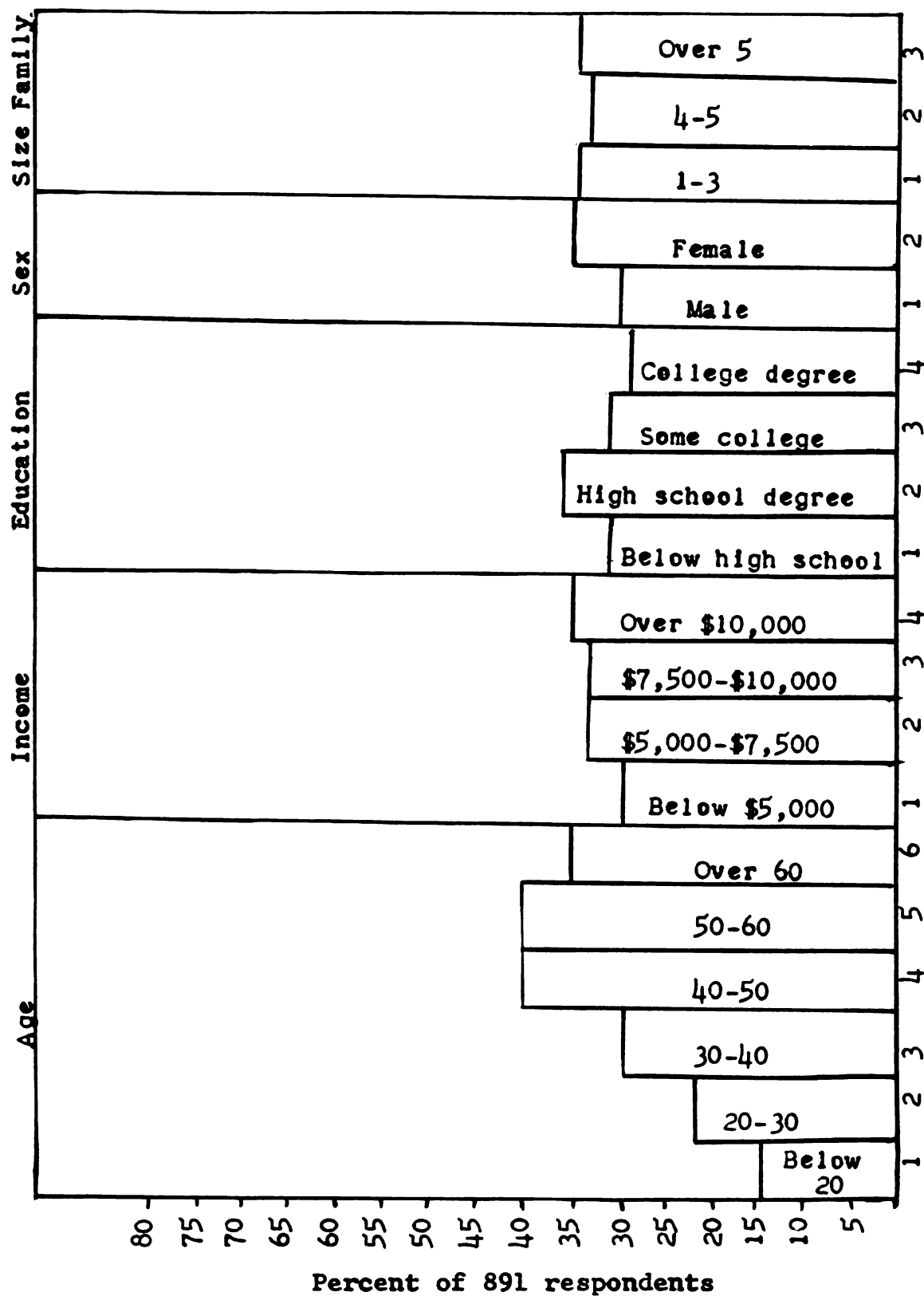


Fig. 17.--Demographic factors influencing frequency of use of Frankemuth cheese.

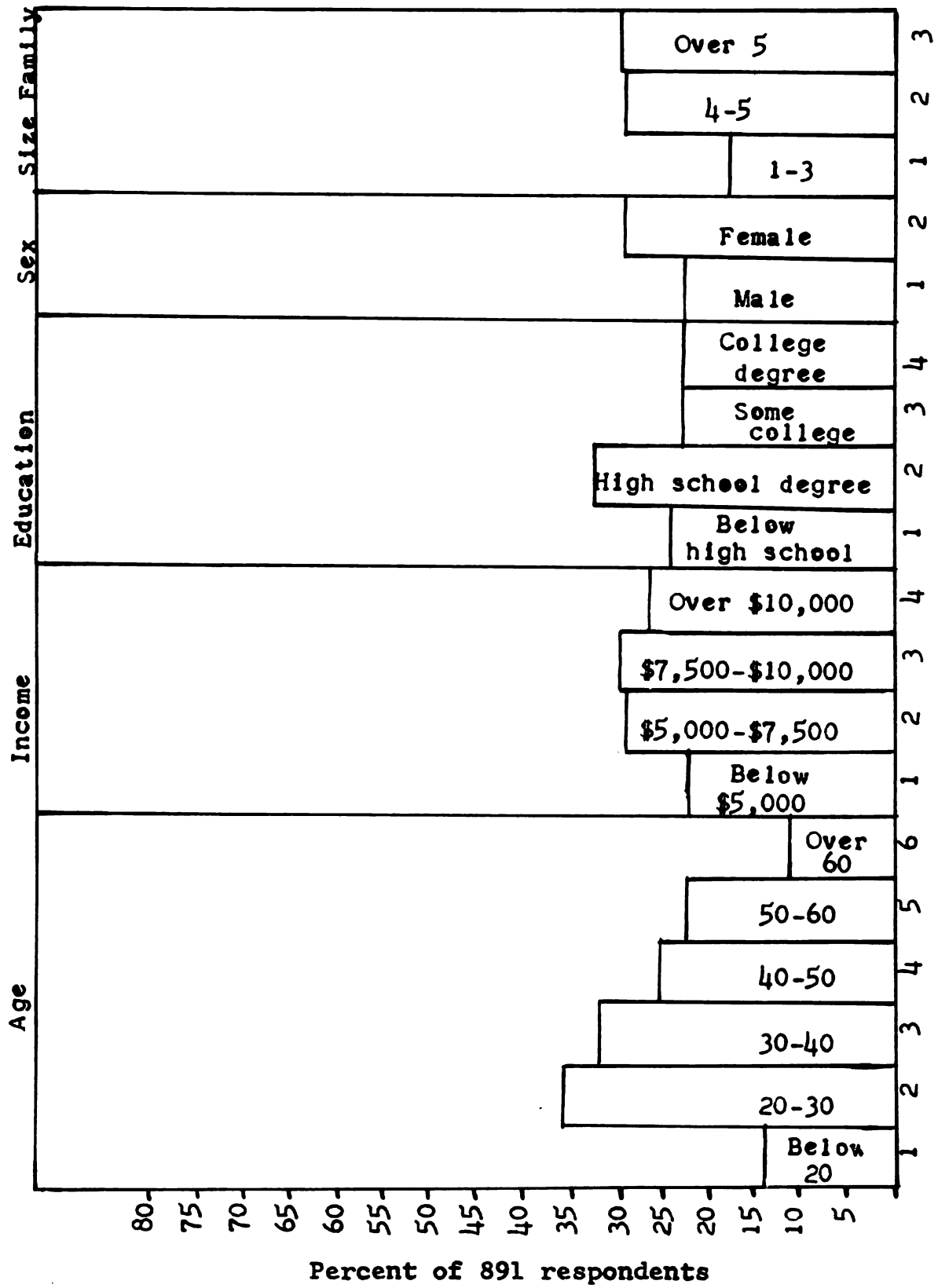


Fig. 18.--Demographic factors influencing frequency of use of Mozzarella cheese.

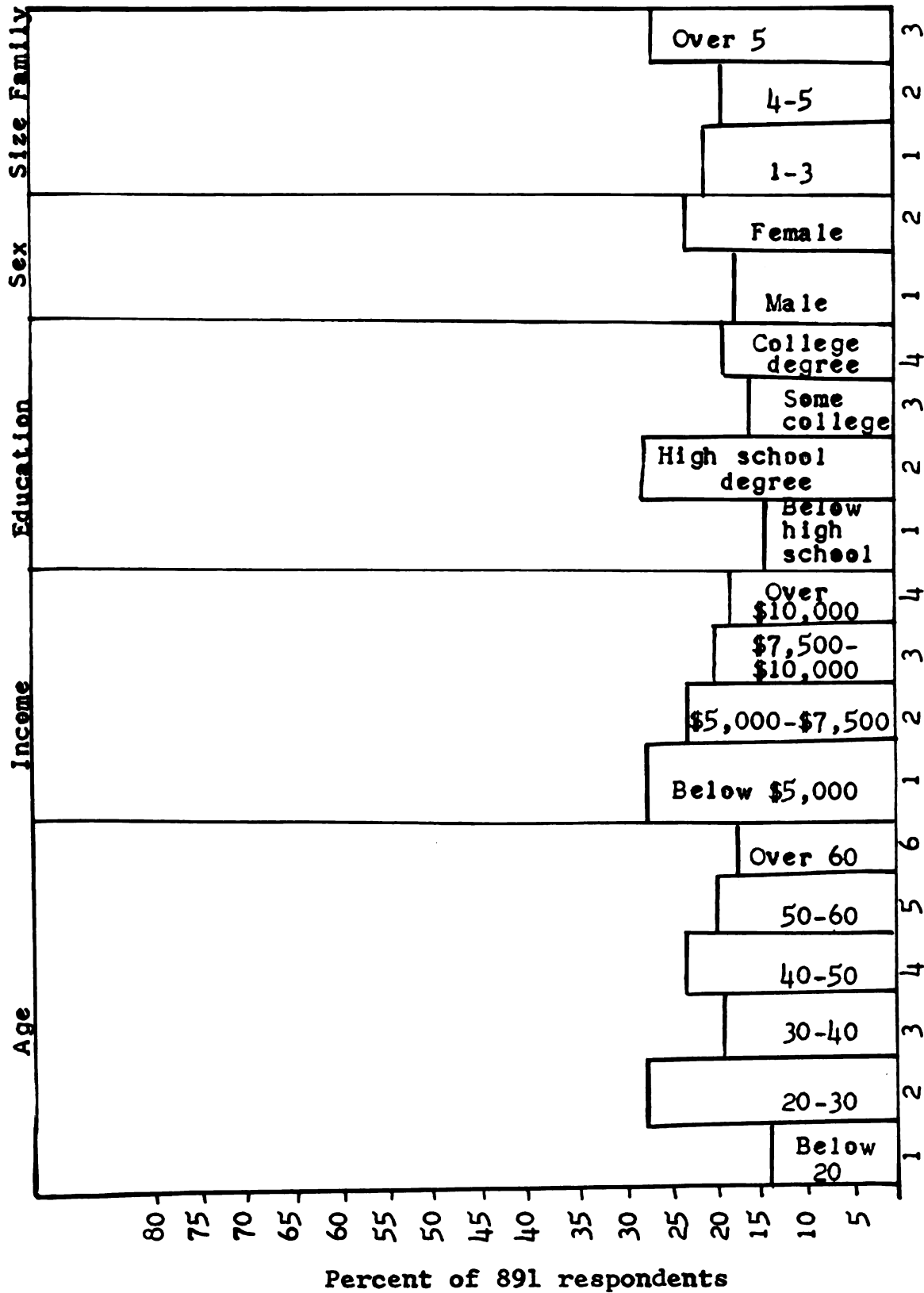


Fig. 19.---Demographic factors influencing frequency of use of Colby cheese.

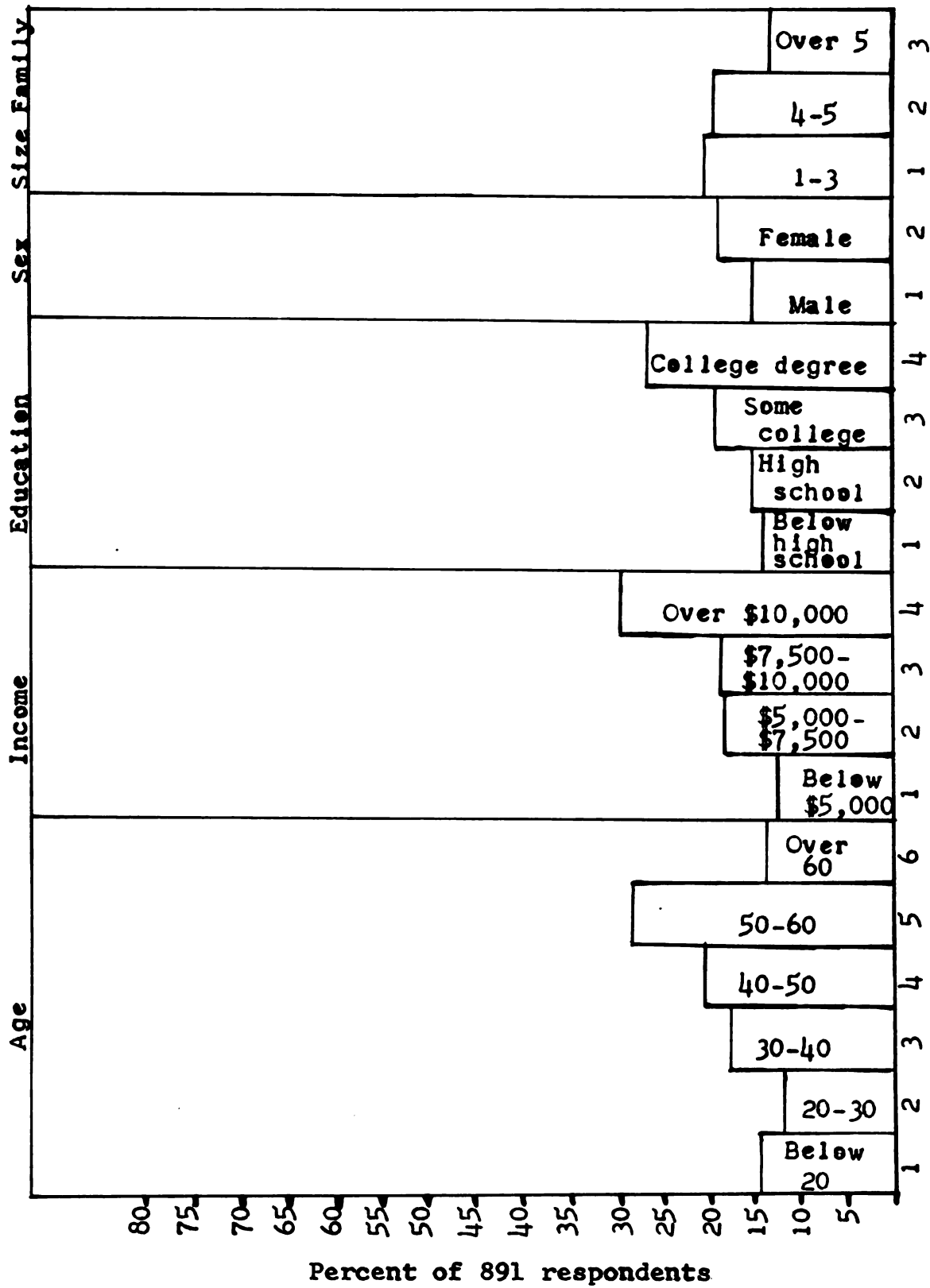


Fig. 20.--Demographic factors influencing frequency of use of Blue cheese.

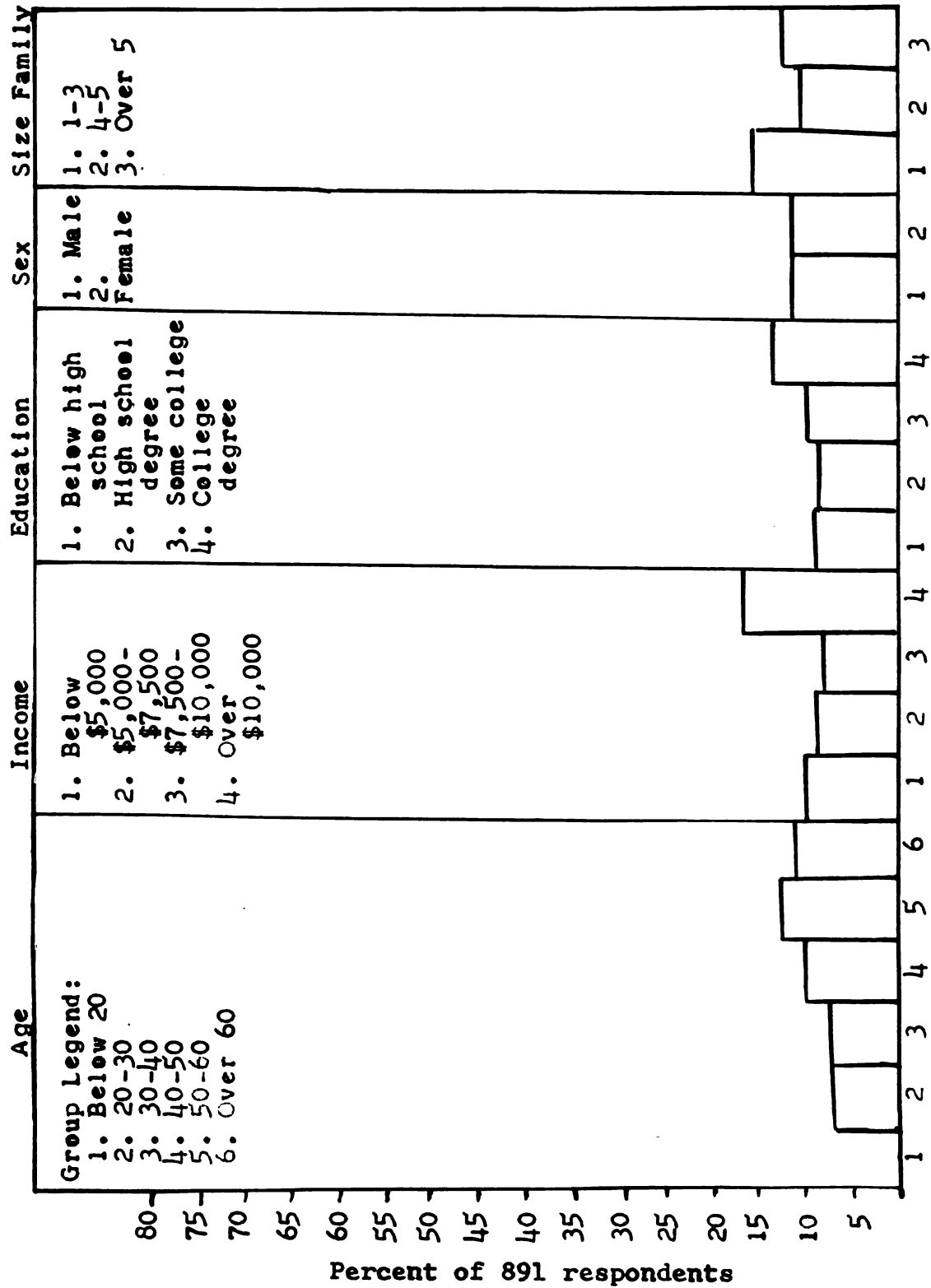


Fig. 21.--Demographic factors influencing frequency of use of Gouda cheese.

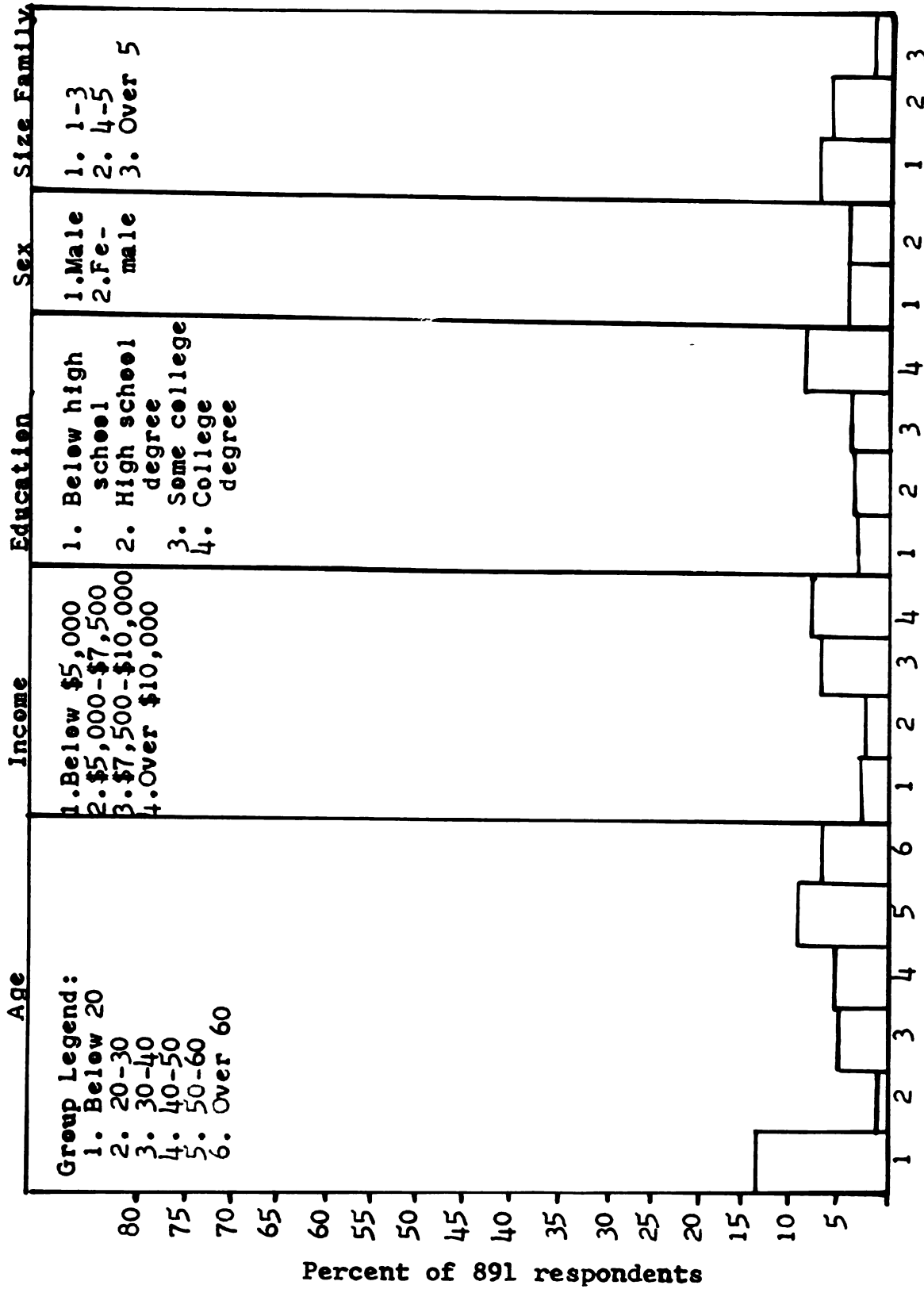


Fig. 22.--Demographic factors influencing frequency of use of Edam cheese.

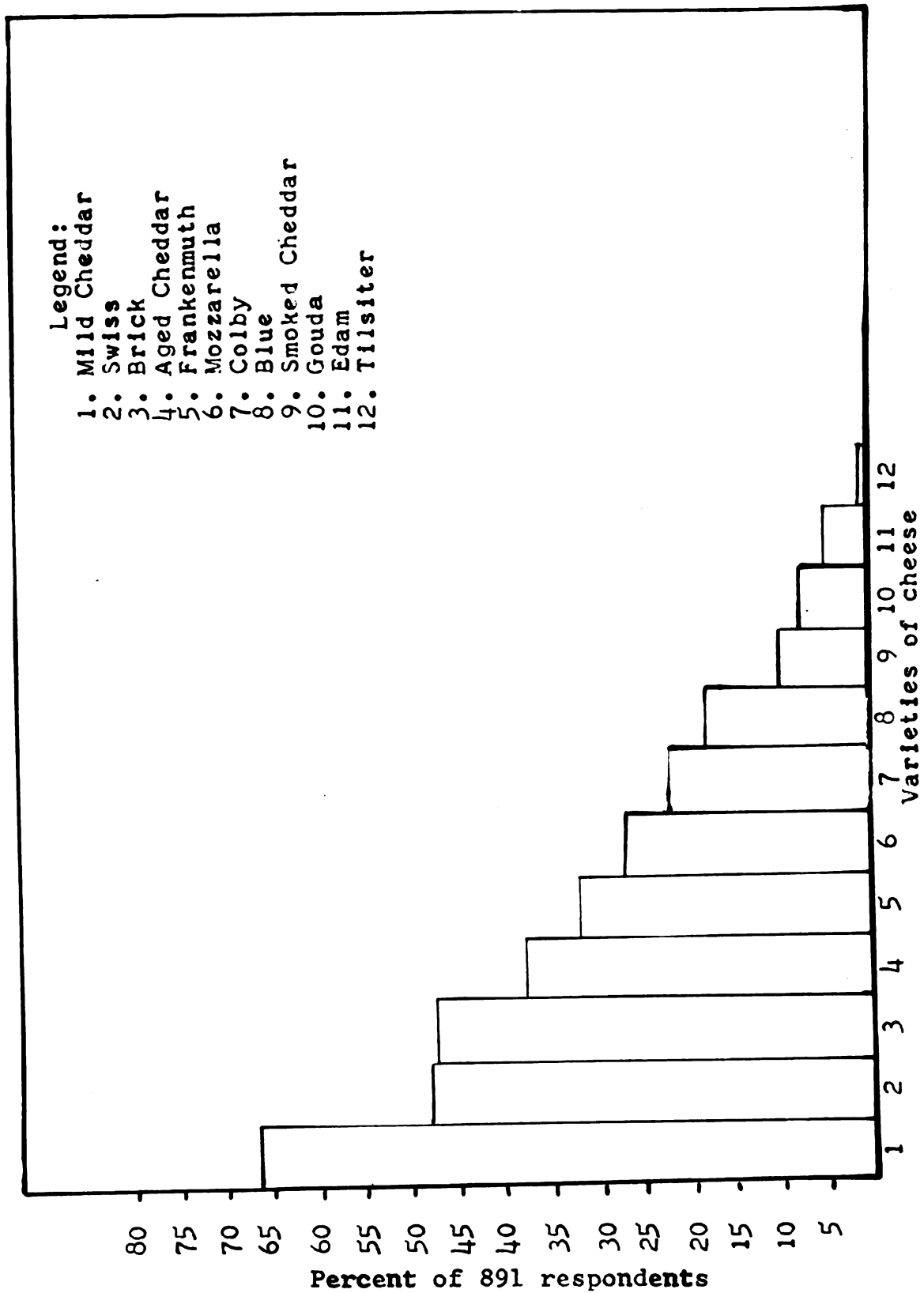


Fig. 23.--Percentage of respondents who were frequent purchasers of a selected list of cheeses.

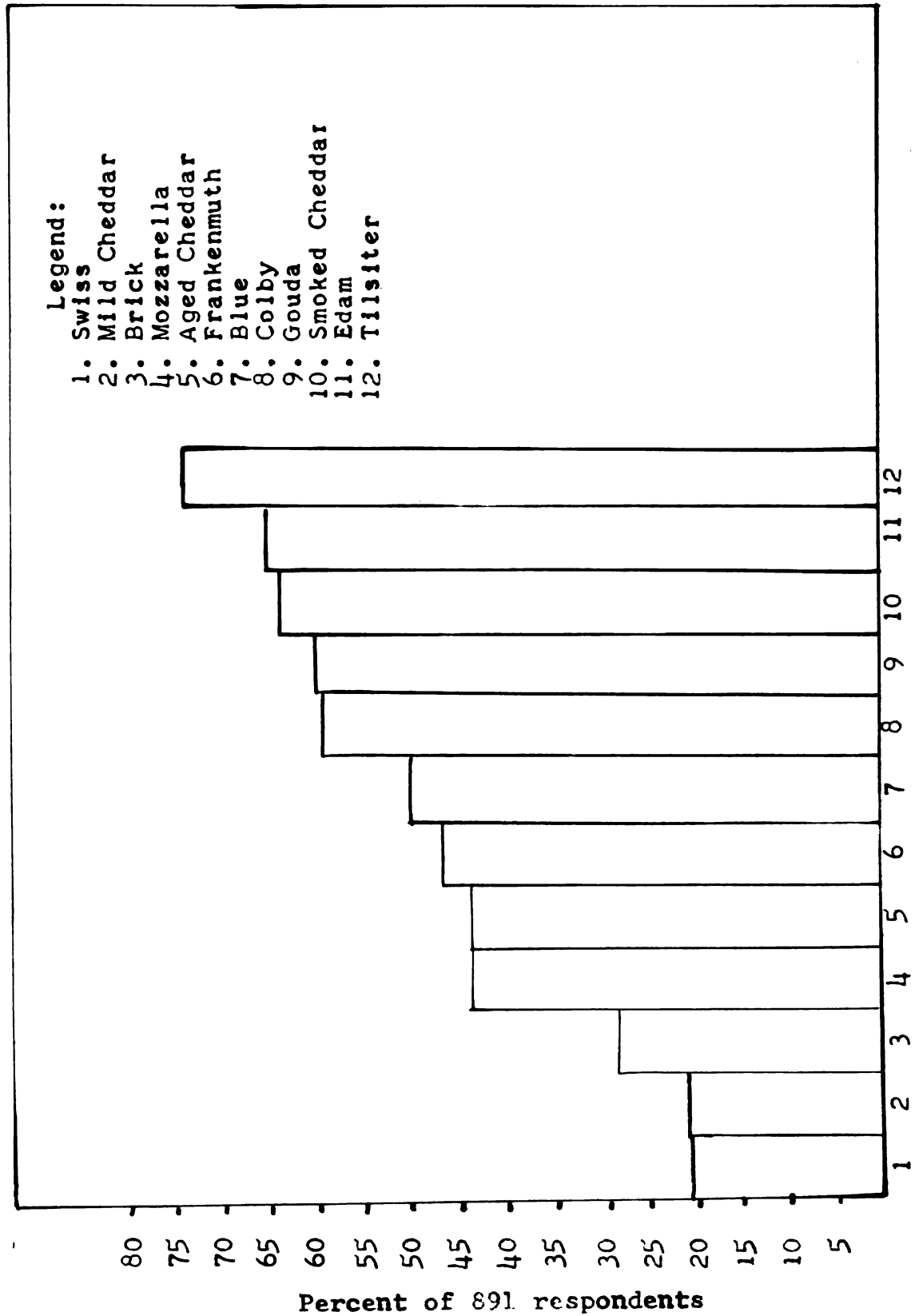


Fig. 24.--Percentage of respondents who never purchased any of the cheeses on the selected list of cheeses.

nutrition. Other positive trends were for convenience, taste and variety. On a percentage basis males were more concerned with taste and convenience than were females. As size of family increased, price, meat substitution and use in cooking all increased as important factors.

TABLE X--Reasons for purchasing cheese
(891 total respondents)

reason	number of responses	respondents (percent)
just like it	410	46
nutrient value	356	40
variety of uses	160	18
variety in meals	89	10
substitute for meat	89	10

The incidence of the response "variety of uses" declined as the size of the family increased.

Question 2, which asked for the quantity of cheese purchased per month, showed that 27 percent of the respondents purchased 5 or more pounds of cheese per month. Age had no influence on the quantity of cheese purchased. As income increased, the quantity of cheese purchased was also found to increase. However, the increase was not directly proportional to the increase in amount of income. No significant difference existed between the quantity of cheese purchased by men or women. A positive relationship existed between quantity of cheese purchased and size of family. However, the quantity per person declined as family size increased.

Results from Question 3 showed 47 percent of the respondents impressed by, 47 percent indifferent to and 6 percent opposed to food sampling in supermarkets.

The major complaints against cheese are recorded in Table XI. Of those responding to the questionnaire 36 percent either said they had no criticism of cheese or omitted an answer.

Questions 5, 8 and 11 which asked for a selection of either meat or cheese at equal price, a premium price for meat, or a premium price for cheese, gave the following results. When sandwich meat and cheese were offered at equal prices (\$0.49 per pound), 58 percent chose meat and 42 percent chose cheese. The reasons listed for choosing meat were: taste preference, 49 percent, and wider variety in luncheon meats, 12 percent. Those individuals preferring cheese listed as their reasons: better nutrient value, 15 percent; taste preference, 40 percent; better keeping quality in lunches, 18 percent and wider variety of uses, 8 percent.

In Question 8, when the price of cheese was increased to \$0.70 per pound and meat retained at \$0.49 per pound, 96 percent of those individuals listing meat as their preference in answer to Question 5 continued to prefer meat. Their reasons were: price, 22 percent, and taste preference, 42 percent. Sixty-six percent of the respondents chose meat in Question 8 with price accounting for 22 percent of their reasons.

Question 11, which listed meat at \$0.70 per pound and cheese at \$0.49 per pound, resulted in a reversal of the previous choices--only 35 percent chose meat with 65 percent choosing cheese. Price accounted for 29 percent of the reasons given for selecting cheese and taste preference dropped to 34 percent of the reasons listed. Of those who preferred cheese when the price was equal with that of meat, 29 percent said they would purchase meat at the \$0.21 per pound differential. Of those who preferred cheese when the price was equal with that of meat, 8 percent said they would buy meat at a \$0.21 per pound premium. When cheese was lower in price than meat, 31 percent of those who originally preferred meat changed their preference.

TABLE XI--Major complaints against cheese
(570 total respondents)

complaint	number of responses	respondents (percent)
dries out too fast	160	28
quality variation	125	22
poor packaging	125	22
mold contamination	62	11
too expensive	53	9
miscellaneous	53	9

Mild, sharp, or smoked Cheddar cheese was listed as the favorite variety by 55 percent of those responding. Swiss was second with 13 percent. Colby or Frankenmuth were each listed as favorites by 5 percent of the respondents.

The more salient answers to the question, "What, in your opinion, could the cheese industry do to sell more cheese?" are recorded in Table XII.

TABLE XII--Consumer suggestions for increasing sale of cheese
(891 total respondents)

suggestions	number of responses	respondents (percent)
educate the consumer	232	26
package more conveniently	232	26
more advertising	151	17
give samples	106	12
reduce price	106	12
better displays	53	6
standardize flavor within variety	36	4

The most frequent reasons listed for not buying foreign types of cheese are recorded in Table XIII.

TABLE XIII--Reasons for not buying foreign types of cheese
(891 total respondents)

reason	number of responses	respondents (percent)
unfamiliarity	454	51
too expensive	294	33
don't like the taste	89	10
not available in all stores	62	7
lack of advertising	27	3

Question 10, which asked for suggested changes in packaging of cheese, received the following answers. The

most frequent suggestion was "make the package easy to open and re-close", 32 percent; 4 percent suggested using some type of container that can be used on the table; 4 percent said, "put all cheese in clear wrappers"; 9 percent said, "package in sliced squares" and 3 percent suggested that more large cuts be made available.

Section Two of the questionnaire described certain food habits of four different ladies and asked that the respondents give their impression of each lady. Mrs. Brown (a frequent server of cheese and macaroni) was described by respondents as a thrifty, middle aged woman who was a good housewife, mother of a large family and operating on a low income. All respondents regardless of age, income, education, sex or size of family regarded Mrs. Brown as thrifty. Persons, who according to the personal data given on the questionnaire were frequent users of cheese and macaroni, saw Mrs. Brown no differently than did those who seldom prepared this food.

The demographic factors of respondents answering that they frequently served cheese and macaroni were: 30-50 years old, between \$5,000-\$7,500 income, high school graduates and had four or five members in the family.

Mrs. Jones (the mother who used cheese for between meal snacks for her children) was considered to be a young, well-educated woman who was concerned with the nutrition of her children. She was regarded as having an above average income.

Mrs. Adams (a lady who frequently served cheese hors d'oeuvres to her guests) was thought to be a late middle-aged woman who had above-average income, was a good hostess and frequent entertainer. Respondents who indicated they frequently served cheese hors d'oeuvres to their guests had the demographic factors: 40-50 years of age, \$5,000-\$7,500 income and were from families with approximately four members.

Mrs. Smith (likes foreign type cheese such as Edam, Gouda, Swiss) was described as a woman of foreign extraction who liked to be different. She was regarded as wealthy, a gourmet, well-educated, well-travelled. In addition she was regarded as snobbish or as a social climber by 10 percent of respondents.

Demographic factors of respondents preferring a foreign type of cheese were: 50 to 60 years of age, over \$7,500 per year income, small families and a college degree.

The most frequent reasons given to the question "Why do some people never buy cheese?" are recorded in Table XIV.

TABLE XIV--Reasons given for never purchasing cheese
(891 total respondents)

reason	number of responses	respondents (percent)
unfamiliarity	374	42
just don't like it	339	38
dietary	98	11
too expensive	45	5

Grocery Survey

Results obtained from telephone or personal interviews with grocerymen indicated that the average "corner grocery" stocked two varieties of bulk cheese. Those were usually Cheddar and one other variety. Six supermarket chains stocked an average of 16 varieties of natural cheese. Decisions as to how many and what varieties to carry were usually based on customer request or chance.

Only one market manager indicated that he knew the gross return from the various varieties stocked. Others indicated that returns from all cheeses were lumped together with no distinction between varieties. None of the managers interviewed used gross profit per square foot as the basis for allocating shelf space to cheese. The managers expressed the attitude that their only criterion for stocking cheese was that if turnover was satisfactory they continued to stock it. Otherwise, they reduced the quantity stocked or discontinued selling that type.

Most market managers said natural cheese accounted for approximately 50 percent of sales with processed cheese making up the other 50 percent. However, more than half the managers did not have more than a guess as a basis for the answer.

Only one market manager said he ordered cheese by grade. Others said it was possible that the warehouse for their company ordered by grade, but, if so, they did not know about it. Most managers indicated that they did not know

that cheese was graded.

Most market managers said that they tried to put packages on the shelf at between 12 and 16 ounces. Some said they aimed at \$0.49 cuts as that seemed to be the fastest mover.

All of the large supermarket managers said they could get all the point-of-purchase advertising they wanted from Kraft, Borden and other large cheese companies. About 50 percent of the small grocery managers said they were provided with no advertising material but would like to have the material available.

The major problems claimed in handling bulk cheese were mold growth, surface drying and the amount of labor involved with in-store packaging. One manager of a chain said getting local managers to promote cheese was his major problem.

Keeping Quality Tests

Results from keeping quality tests indicated that aluminum foil, saran and the re-closable semi-rigid plastic were adequate to maintain the moisture content of cheese at a level sufficiently high to retain the desirable eating qualities of the cheese. No rind formation was noted on any of the wrapped samples stored at 33°, 48° or 62° F. after 5 weeks of storage. Samples stored at 33° F. showed no mold growth after 5 weeks; however, all samples stored at 48° and 62° F. were moldy after a 3-week storage. Control samples which were not wrapped were cracked and dried after

a 2-week storage at 48° and 62° F. The control samples stored at 33° F. had considerable rind formation but still retained sufficient moisture in the center of the piece to be edible.

Dairy Store Purchase Data

Results from Dairy Store sales showed that red foil was the most popular with 35.4 percent of sales. Gold was 35.1 percent of sales and silver was 29.5 percent of sales. These percentages were not significant at the 1-percent level of Chi square and thus may be due to chance.

Matched-lot comparisons of cheese sales of cheese wrapped in foil or saran revealed a very significant preference for the clear film. Cheese wrapped in saran accounted for 90 percent of the purchases. Matched-lot samples comparing the plastic re-closable package and saran showed almost a 50-50 choice between the two packages.

Blue cheese packaged in bar and block form more than doubled in sale in comparison with that normally packaged in wedges. This occurred during a period when other types of cheese dropped slightly in sales.

IMPLICATION OF RESULTS

The cheese industry has been successful in stressing at least five of the 29 appeals listed by Frederick (42). The consumer was aware of the health, appetizing, family affection, economy and substitution aspects of cheese. This study found that the Cheddar cheese industry has been very successful in filling these basic appeals to the consumer. However, it is apparent that the consumer does not think of cheese as one big group within the list of possible foods, but that a clear distinction is made between the "foreign" types and Cheddar.

There appeared to be two distinct images of cheese. Cheddar cheese was considered an economical, very healthful food, unimaginative and adaptable while foreign types of cheese were seen as an expensive, sophisticated delicacy.

The consumer images of cheese and cheese users established through the questionnaire proved to be fairly accurate. For example, respondents who were frequent servers of cheese and macaroni had the same characteristics ascribed to "Mrs. Brown" (Question 1 of Section 2). Also, respondents who purchased foreign type cheeses were of high income and better education just as Mrs. Smith (Question 4 of Section 2) was described. Katona (45) pointed out that attitudes are based largely on past experience and widely distributed information; therefore, it is logical that the consumer image of cheese and cheese users would

be fairly accurate because of individual experiences. Many of the respondents probably attributed to the fictitious ladies those characteristics which they thought were possessed by themselves. Others, perhaps, visualized in each of the ladies someone they knew and ascribed those characteristics to the ladies listed.

Before the cheese industry can expect to increase its sales potential of foreign type cheeses certain decisions must be made. One possibility would be to segregate the market and appeal to the status enhancement for consumers of foreign type cheeses, utilizing the basic appeals of modernity, good reputation, elegance, hospitality, imported and social superiority. Another decision could be to make changes in the traditional manner in which foreign type cheese has been marketed. The latter would have the effect of putting foreign type cheese into the common market. The correct decision is outside the scope of this study but information provided by this research would be useful regardless of the decision.

A decision for status enhancement would suggest that advertising be directed toward the group of over \$7,500 income, 40 years or older, with at least some college training and with relatively small families. This was the group which showed the greatest inclination toward the purchase of foreign types of cheese. This group normally would be the social leaders in a community and, therefore, the logical target for prestige appeal. If social

enhancement is the objective the appeal should be directed to a well-travelled, well-educated, gourmet type of customer.

A decision to put foreign types of cheese in the common market would be best accomplished by changing the package to one that is more conventional and convenient.

Almost without exception the merchandisers of foreign type cheese violate all of the consumer desires according to the results of this study. The cheese is in odd, inconvenient shapes and much is traditionally covered with a wax coating or other non-transparent materials.

This research indicates the package for cheese should be transparent, easy to open and close, block shape and contain approximately 1 pound. In addition, the consumer would need to be educated to the taste and uses of the various types. The results show that the consumer is consistent in his cheese wants. The major uses of cheese were as snacks and sandwiches. The preferred shape is logically block or bar for convenient slicing to go on bread or crackers. Even large users of cheese indicated that they tired of the taste quickly. This would lend weight with the request for a variety pack combining two or three types of cheese.

The results of this study pointed out that two groups (below 30 years and over 60) are the non-users of cheese. That result indicates the groups to which advertising might profitably be directed.

While other competitive industries have introduced many new convenience and luxury items to boost their market, the cheese industry often has been too reluctant to change the merchandising methods. This study has shown that the consumer would like to have, and would be willing to pay for innovations such as table-type containers, variety packs and ready-to-serve items. Other suggestions for boosting the sale of cheese that appeared to have merit are the inclusion of recipes on cheese packages and more complete labeling along with standardization of cheeses by appropriate grades and labels. The consumer desires some method for assuring a selection of uniform cheese among successive purchases. This might take the form of reliable federal or state grading and labeling of consumer portions.

One of the basic pleas by the consumer was for increased keeping quality of cheese. This investigation showed that any of the tested wrapping materials were adequate to maintain cheese in a satisfactory condition over an extended period of time. The housewife needs to be educated to the fact that all she need do to keep her cheese fresh is to re-wrap it in foil or film. This, of course, does not eliminate the mold. She should be told that surface mold is not serious; it can be removed and the cheese used without deleterious effects.

Most dairy display cases are designed for horizontal display of the various products. Yet research showed the vertical display was preferred over the horizontal.

Comments from members of the Detroit consumer panels help explain the reasons for their preference. They indicated that the vertical display was more convenient for making selections and all available types of cheeses could be seen at one time.

The development of the plastic container made possible the easy opening and re-closing of cheese packages for which the consumer had expressed a strong desire. Other characteristics which were incorporated into the plastic container included transparency, approximately 1 pound of cheese and the block shape which had the approximate dimensions of a slice of bread. These features made cheese packaged in the container very convenient for use in sandwiches as well as for snacks and for cooking purposes.

SUMMARY AND CONCLUSION

The objective of this research was to provide the cheese industry with factual information concerning consumer likes, dislikes and attitudes toward cheese and cheese merchandising practices. Four common research techniques, consumer panels, mailing questionnaires, telephone and/or personal interviews and sales in a dairy store were employed in gathering the data.

The cheese market could be expanded by use of more convenient shapes of cuts and by more convenient packaging. Significant preference was shown for block and bar shaped cuts of cheese and for transparent, re-closable and easy to open packages. Consumer interest in convenience cheese items such as cubed, shredded, disks and variety packs was significant. The consumer indicated a willingness to pay at least \$0.02 per pound premium for the convenience and packaging desired. There was no preference for color of cheese wrapping materials.

Approximately 17.8 percent of the mailing questionnaires were completed and returned. The major complaints against cheese or cheese marketing could be alleviated by imaginative packaging and by consumer education as to the taste and uses of the various cheeses. The consumer expressed a desire for a grading system to insure standardization of quality and flavor within a variety.

The consumer image of cheese users corresponded very

closely with reality. Two fairly distinct cheese images exist: (a) in general, a complimentary image for Cheddar and (b) a somewhat derogatory image for foreign types.

When tightly wrapped or sealed, all of the packaging materials tested retained desirable freshness in the cheese during the 5-week test period. No rind formation was evident in any of the samples tested.

Grocerymen employed no systematic or factual approach to planning their cheese displays. Also, the consumer chose a vertical display case arrangement over the horizontal display which is normally employed.

The conclusion based on this study was that the cheese industry has not effectively merchandized its product, especially the foreign types of cheese. Consumer education as to the taste and use of these cheeses has been neglected. In addition, packaging of cheese has been inconvenient and unimaginative.

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APPENDIX

**Appendix Fig. 1.--Mailing questionnaire used in the
consumer attitude survey.**

Sept. 21, 1960

Dear Consumer:

How often have you wished for the opportunity to re-design displays or the packages for food items which you purchase in the supermarket? This is an opportunity for you to help make one of these items more convenient.

The enclosed questionnaire is for the purpose of assisting in the evaluation of present methods of cheese displays and packaging. The information which you provide will be used in a research project by the Department of Food Science, Michigan State University. All information will be handled in strict confidence and will not reveal you as an individual. No signature is needed on the questionnaire.

Please complete the statements as fully as possible and return within the week in the postage paid envelope provided.

Names of persons returning the questionnaire will be used in a drawing for a five pound gift variety box of Michigan State University cheese.

Sincerely,

Robert M. Williams

Robert M. Williams
Dairy Plant
Michigan State University
East Lansing, Michigan

Enc: Questionnaire
Reply Envelope

Please check the ways in which you use cheese:

<u>Use</u>	<u>Often</u>	<u>Occasionally</u>
Sandwiches.....	_____	_____
Macaroni and cheese.....	_____	_____
Topping for potatoes, etc.....	_____	_____
Cheese sauce.....	_____	_____
Cheese souffle.....	_____	_____
Welsh Rabbit.....	_____	_____
Topping for pie.....	_____	_____
Salads.....	_____	_____
Pizza and other foreign foods.....	_____	_____
Cheese and crackers or as snacks....	_____	_____
Relish trays.....	_____	_____
With drinks.....	_____	_____
Others: Please list		

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please check the cheeses which you purchase:

<u>Variety</u>	<u>Often</u>	<u>Seldom</u>
Swiss.....	_____	_____
Brick.....	_____	_____
Tilsiter.....	_____	_____
Edam.....	_____	_____
Gouda.....	_____	_____
Cheddar (American)		
Mild.....	_____	_____
Aged.....	_____	_____
Smoked.....	_____	_____
Colby.....	_____	_____
Frankenmuth.....	_____	_____
Mozzarella.....	_____	_____
Blue.....	_____	_____
Others: Please List		

Please answer the following questions as completely as possible.

1. Why do you buy cheese? _____

2. Approximately how many pounds of cheese do you buy per month?

3. Are you (1) opposed to (2) indifferent to (3) impressed by free samples of food in grocery stores? (1) _____ (2) _____ (3) _____

4. What is your major complaint about cheese? _____

5. Sandwich meats are about \$0.49 per pound, cheese is about \$0.49 per pound. If you could only buy one for use in lunches which would you buy and why? _____

6. What is your favorite variety of cheese? _____

7. What, in your opinion, could the cheese industry do to sell more cheese? _____

8. Sandwich meats are about \$0.49 per pound, cheese is about \$0.70 per pound. If you could buy only one for use in lunches which would you buy and why? _____

9. Only small quantities of foreign type cheese (Edam, Gouda, Swiss) are sold in the United States. In your opinion what is the probable reason for this? _____

10. If you could make one change in the way cheese is packaged, what change would you make? _____

11. Sandwich meats are \$0.75 per pound, cheese is \$0.49 per pound. If you could buy one for use in lunches which would you buy and why? _____

In the following section of this questionnaire some statements will be made about various people. Will you please describe what type of individual you think this person is. (As to income, age, or personality, etc.)

1. Mrs. Brown serves cheese and macaroni very often in her home. Please describe Mrs. Brown _____

2. Mrs. Jones gives her children cheese as a snack. Mrs. Jones is a _____

3. This lady, Mrs. Adams, often serves cheese to her guests. Mrs. Adams is a _____

4. Mrs. Smith's favorite cheese is a foreign type (Edam, Gouda, Swiss). Mrs. Smith is a _____

5. Some people almost never buy cheese. What, in your opinion, would be the reason for this? _____

The following information is needed to help classify the answers given in the questionnaire. Please check the answer which applies.

1. Age Group:
 - Under 20 _____
 - 20-30 _____
 - 30-40 _____
 - 40-50 _____
 - 50-60 _____
 - Over 60 _____
2. Income Level:
 - (Family) Below \$5,000 _____
 - 5,000-7,500 _____
 - 7,500-10,000 _____
 - Over 10,000 _____
3. Educational Level:
 - Less than high school _____
 - High school degree _____
 - Some college work _____
 - College degree _____
4. Sex: Male _____
 Female _____
5. Size of family
 - 2 _____
 - 3 _____
 - 4 _____
 - 5 _____
 - 6 _____
 - Over 6 _____

**Appendix Fig. 2.--Answers to questionnaire selected
for the purpose of coding.**

Section I

Question 1

1. price
2. convenience
3. prestige
4. nutrient value
5. taste
6. just like it
7. variety of uses
8. sandwiches
9. keeps well
10. meat substitute
11. use in cooking
12. as a change of pace

Question 2

1. one pound or less
2. two pounds
3. three pounds
4. four pounds
5. five pounds
6. six pounds
7. seven pounds
8. eight pounds or more

Question 3

1. opposed to
2. indifferent to
3. impressed by

Question 4

1. too large packages
2. slices too thin
3. just don't like cheese
4. flavor varies within variety
5. too expensive
6. dries out too fast
7. variety desired not readily available in all stores
8. odd-shaped packages
9. wrapper does not allow inspection
10. mold
11. dietary reasons
12. packaging not re-closable

Questions 5, 8, 11

1. meat
2. cheese
3. price
4. nutrient value
5. taste preference
6. cheese dries out too fast
7. variety pack
8. more filling
9. better keeping quality and reliability
10. variety of uses
11. convenience

Question 6

1. Cheddar
2. Swiss
3. Brick
4. Frankenmuth
5. Edam
6. Colby
7. Gouda
8. Limburger
9. Others

Question 7

1. educate the consumer
2. better displays
3. more advertising
4. give samples
5. package more conveniently
6. provide variety packs
7. reduce price
8. smaller sizes of foreign type cheese
9. package to prevent drying
10. standardize flavor within varieties
11. put all cheese in blocks
12. label with age, grade, etc.

Question 9

1. unfamiliarity
2. don't like the taste
3. too expensive
4. not available in all stores
5. lack of advertising
6. odd-shaped packages

Question 10

1. use aluminum foil for all packages
2. make packages easy to open and re-close
3. package smaller pieces of expensive types
4. package all cheese in block cuts
5. make package more appealing, giving recipes, etc.
6. package all cheeses in transparent wrappers
7. individually wrapped slices
8. larger packages
9. re-closable packages
10. variety pack
11. content or composition on label
12. table type containers

Section II

Question 1

1. thrifty
2. plump
3. middle aged
4. likes easy to prepare foods
5. catholic
6. good housewife and mother
7. large family
8. lacks originality
9. low income
10. young
11. middle income bracket
12. busy woman (outside activities)

Question 2

1. concerned with nutrition
2. lazy
3. wise mother
4. likes easy to prepare foods
5. young
6. busy with outside activities
7. well educated
8. thrifty
9. above average income
10. middle aged
11. middle income
12. poor mother

Question 3

1. thrifty
2. older woman
3. middle aged
4. frequent entertainer
5. likes to be different
6. wealthy
7. sophisticated or well-educated
8. poor hostess
9. good hostess
10. convenience minded
11. middle income bracket
12. gourmet

Question 4

1. of foreign extraction
2. well-educated, widely travelled, sophisticated
3. parental influence
4. frequent entertainer
5. likes to be different
6. older person
7. snob, social climber
8. middle aged
9. middle income
10. particular
11. wealthy
12. gourmet

Question 5

1. unfamiliarity
2. lack of information
3. just don't like cheese
4. allergy
5. too expensive
6. dries out too fast or molds too rapidly
7. indigestible
8. lack of advertising
9. tried aged cheese, disliked it
10. lack of quality
11. habit

**Appendix Fig. 3.--Telephone questionnaire for
cheese retailers.**

1. How many varieties of cheese do you order by bulk?
2. How is decision made as to how many varieties are carried?
3. Do you know the gross return from the various varieties carried?
4. What is your gross profit per square foot of cheese display case area?
5. Do you allocate shelf space in the dairy case on the basis of return per square foot?
6. If not, how?
7. What percentage of your sales are processed, domestic and foreign types?
8. Do you purchase your cheese from wholesale grocers, from cheese manufacturers or through the cheese exchange? Do you stipulate grade for cheese? What grade?
9. How many sizes of package do you normally display?
10. Do cheese companies make available any point-of-purchase advertising material? If so, do you use the materials supplied? Do you want more or less?
11. What do you consider your major problem of handling cheese?
12. Does the entire chain of stores have the same operation?

Name _____ Store _____

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