SAMPLING AND RESPONSE DIFFERENCES FOR THREE METHODS OF ENUMERATION OBTAINED IN A STUDY OF CONSUMER POTATO PREFERENCES

By

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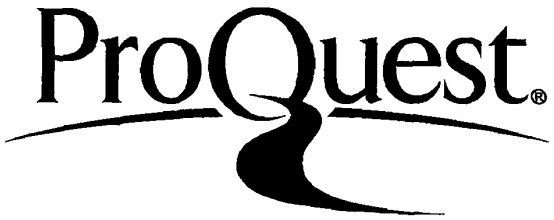

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CHAPTER I

INTRODUCTION

This study includes two phases of research which are of interest to economists. One has to do with methods of gathering research data. This phase deals with problems such as the validity, reliability, comparability, cost and returns obtained when each of the several methods of enumeration are used. It is important not only to economics but to all the social sciences and yet, relatively speaking, not very much work has been done in which two or more of the methods are used simultaneously and conclusions drawn concerning the value of each.

A second phase of research has to do with a study of consumer preferences. In the final analysis it is the consumer who, in a free economy determines many of the economic relationships. More information concerning the characteristics, habits and opinions of consumers is, therefore, invaluable as an aid to understanding the operation of our economic system.

Purpose of the Study

This study was undertaken as a means of determining the comparability and validity of consumer responses to questions of preference and consumption obtained by the following methods: (1) personal interview, (2) mailed questionnaire, and (3) telephone interview. The three methods were tested (1) at the same time, (2) for reporting the same information in each case, and (3) in the same area. The subject matter

around which the methodological study was built had to do with consumer preferences for potatoes, since it is impossible to conduct a study of methodology without reference to some subject. While much has been written on the merits of each particular method, few studies have actually tried using all three methods simultaneously as a means of drawing conclusions as to the representativeness of their results.

A further objective of this study was to compare the results obtained with those reported on previous and current consumer studies of potatoes. Furthermore, this phase had both the advantage of being pertinent in Michigan and also the advantage of the availability of results of other studies on consumer potato preference.

Utility of the Study

The utility of the study is a two-fold one. One potential value of this study lies in evaluating the comparability of the results obtained by the use of the various methods listed above in obtaining data on consumer preferences. A statistical analysis of comparable data obtained by the three methods will show the differences in responses due to methods. In addition, certain conclusions are to be drawn about the cost, advantages, and shortcomings of each method.

The study will also serve as a means of obtaining some information about the characteristics, habits and preferences of consumers of potatoes. The findings will be tabulated, analyzed, and interpreted and the results used in making certain recommendations.

CHAPTER II

REVIEW OF LITERATURE

Literature dealing with the results obtained by the various sampling methods was examined. These findings, as reported by other workers, were found useful in setting up the present study.

Brown 1/ discusses the three methods of obtaining data and the advantages and limitations of each. The personal interview has the following advantages: (1) it allows better control of the sample, (2) more questions can be asked, (3) field work can be done more quickly than with a mail questionnaire, (4) information can be obtained on subjects not covered in a mail questionnaire. It has the disadvantages: (1) of personal bias introduced by the interviewer, and (2) that many of the interviews may be given too hastily.

Using the telephone interview has the advantage of: (1) being able to obtain a large number of interviews quickly and at relatively low cost, and (2) spreading the interviews within an individual city in random fashion. The disadvantages are: (1) the fact that it must be limited to those who have telephones, (2) that only a restricted amount and type of information can be secured, and (3) the difficulty experienced in trying to determine the age, economic condition and occupation of the person giving the information.

The mail questionnaire has the following advantages: (1) it avoids the bias of the personal interview, (2) it allows for a wide distribution of the sample, and (3) respondents may take more care in providing information. However, it has the following disadvantages: (1) the sample

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1/ Brown, L. O., Market Research and Analysis, Ronald Press, 1937.

obtained is not representative of the entire universe, since too great a proportion of certain income levels, educational levels, and respondents interested in the subject distort the representativeness of the sample, (2) there is usually a high cost per return, (3) the questionnaire usually must be short, (4) it requires a longer time to complete the study, and (5) some types of information cannot be obtained.

Hansen and Deming[2/] cite the following as aims in designing samples: (1) operate within the available budget and limitations of time and manpower, (2) operate within other imposed administrative limitations, (3) produce maximum amount of information possible within aims 1 and 2 above, and (4) give results reasonably sure to fall within a certain allowable sampling error.

Cochran[3/] reports that it is possible to use analysis of variance to determine the relative accuracy of various alternative methods of sampling the same population. He illustrates this with an example in which two methods of sampling are compared.

Hochstim and Smith[4/] conducted a series of experiments using a known universe. They concluded that area sampling was more accurate, though more expensive, than quota sampling.

After pointing out the advantages and disadvantages of various

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2/ Hansen, M. H. and W. E. Deming, "On Some Census Aids to Sampling," Journal of American Statistical Association, 1943, 38:353-357.

3/ Cochran, W. G. "Use of Analysis of Variance in Enumeration by Sampling," Journal of American Statistical Association, 1939, 34:492-511.

4/ Hochstim, J. R. and M. K. D. Smith, "Area Sampling or Quota Control? Three Sampling Experiments," Public Opinion Quarterly, 1948, 12:73-80.

types of sampling technique, Brown[5] questions the value of using the 1940 census as a basis for setting up a sample. He reasons that the very rapid changes that took place right after 1940 reduce the applicability of the data.

Eckler and Stuart[6] state that census data for housing and population are useful in two ways: (1) to describe a market with which a particular business organization is in contact, and (2) to provide area and other controls needed for special sampling studies of markets.

Bennett[7] found that local interviewers, when given sound instructions, can be relied upon to obtain reliable information.

Shapiro and Eberhart[8] tried to determine the extent of interviewer bias by training four professional interviewers and letting them work on the same areas each having a random sample. There was a significant difference in answers obtained to 10 of the 34 questions asked by the four interviewers. Most of the difference was ascribed to one of the interviewers. This occurred in spite of the fact that he had been trained with the others. The authors list these different types of interview bias: (1) on attitude questions, (2) difference in success in eliciting factual information, and (3) difference in method of classify-

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5/ Brown, G. H., "A Comparison of Sampling Methods," Journal of Marketing, 1947, 11:331-337.

6/ Eckler, A. R. and E. P. Stuart, "Marketing and Sampling Uses of Population and Housing Data," Journal of American Statistical Association, 1943, 38:87-92.

7/ Bennett, A. S., "How Good are Local Interviewers," Printer's Ink, 1947, 221:70-72.

8/ Shapiro, S. and J. C. Eberhardt, "Interviewer Difference in an Intensive Interview Survey," International Journal of Opinion and Attitude Research, 1947, 1:1-17.

ing respondents' answers.

It was also reported[9/] that interviewer bias varies in degree with the type of question asked. Marked bias was found in the following types of questions: (1) those presenting two alternatives, (2) those where alternatives only were partly stated, (3) those containing three alternatives, and (4) those where lists of alternate choices were shown to the respondent. The least bias was found in "Yes", "No" type of questions.

Jacoby[10/] reports that people are more reluctant to talk about finances than about social or political questions in answering personal interviews. She reports that better results are gotten when the interviewer thoroughly identifies himself and the purpose of the study.

Franzen and Lazarsfeld[11/] compared answers gotten on mail questionnaire with the results of personal interview and found that the results of mail questionnaire showed several consistent and significant biases. Some of these were too small, others were irrelevant and others like education, and size of city, could be overcome by weighting. They further found an advantage of mail over personal interview in that the former contained more detailed answers on cultural questions and greater willingness to admit unusual interests or activities.

Edgerton, Britt and Norman[12/] reported using a continuing mailed

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9/ Calahan, D., V. Tamouris and H. W. Verner, "Interviewer Bias Involved in Certain Types of Opinion Survey Questions," International Journal of Opinion and Attitude Research, 1947, 1:210-230.

10/ Jacoby, Eleanor, "Interviewing Problems in Financial Survey," International Journal of Opinion and Attitude Research, 1947, 1:54-58.

11/ Franzen, R. and P. F. Lazarsfeld, "Mail Questionnaire as a Research Problem," Journal of Psychology, 1945, 20:239-320.

12/ Edgerton, H. A., S. H. Britt and R. D. Norman, "Objective Differences Among Various Types of Respondents to a Mailed Questionnaire," American Sociological Review, 1947, 12:435-444.

survey in which the same group of male high school graduates were polled each year. They found that the group who had the most interest showed the greatest response.

Robinson[13] reports getting returns of 60 - 70 percent on mail questionnaire survey but he used such devices as a carefully prepared and tested letter, an enclosed 25 cent piece, and follow up postcards five to six days after the original mailing.

Colley[14] concludes, on the basis of 50 surveys made by General Electric, that the mail questionnaire can give satisfactory results when used properly. He further shows that returns from mail questionnaire can be as representative as results from personal interview. While he agrees that interested people return the questionnaire, he believes that in consumer preference studies, interest is a virtue and not a handicap. He also points out that a mail questionnaire can be answered at leisure and costs less than the personal interview.

Clausen and Ford[15] state that bias can be minimized in a mail questionnaire by securing as large a response as possible and by making corrections for any bias caused by incomplete returns. He suggests the following as a means of obtaining better returns: (1) a letter with full explanation of the survey, (2) air mail special delivery, (3) several follow-up letters, and (4) maximize interest by asking questions that cover several different subjects in the survey.

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13/ Robinson, Ray, "Five Features Helped This Questionnaire Pull from 60 to 70 Percent," Printer's Ink, February 22, 1946, 214:25-26.

14/ Colley, R. H., "Don't Look Down Your Nose at Mail Questionnaires," Printer's Ink, 1945, 210:21.

15/ Clausen, J. A. and R. N. Ford, "Controlling Bias in Mail Questionnaires," Journal of American Statistical Association, 1947, 42:497-511.

Eastman[16] conducted a personal interview with those who didn't return the mail questionnaire and concluded that it wasn't safe to assume that answers to mail questionnaire can be accepted as indicative of the experience and opinions of those who did not answer.

Brooks[17] made an analysis of a study conducted by 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 groups, certain income groups and certain educational groups. He concludes that mail questionnaires are not reliable to cover a heterogenous universe.

Baxter[18] recommends the simultaneous use of mail and personal interviews in readership research stating that the personal interview by itself is inadequate.

Hansen and Hurwitz[19] suggest that a remedy for the bias introduced in a sample survey might be a combination of call-backs and an increased number of original interviews. They suggest that a follow-up personal interview on non-respondents to mail interview has greater reliability and lower costs than either one used separately.

In a Nation-wide survey conducted by the Bureau of Agricultural

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16/ Eastman, R. O., "Dont's About Mail Questionnaires," Printer's Ink, 1943, 202:24-29.

17/ Brooks, V., "Can You Trust Mail Questionnaires," Printer's Ink, 1947, 220:34-36.

18/ Baxter, R. E., "Use Both Mail-Type and Personal Interview in Readership Research," Printer's Ink, 1947, 219:19-22.

19/ Hansen, M. H. and W. N. Hurwitz, "Problem of Non-Response in Sample Surveys," Journal of American Statistical Association, 1946, 41:517-529.

Economics[20/] among 3300 urban homemakers, the following characteristics were mentioned most frequently by the respondents as being desirable in the outward appearance of potatoes: (1) smooth skin, (2) cleanness, (3) few eyes, (4) no spots or blemishes, (5) firmness, (6) no cuts or bruises, (7) no bumps, and (8) desirable skin color. The question is raised as to whether those characteristics mentioned most often need be those which the respondents consider most important.

The most common reasons for preferring a particular type of potato were: (1) good taste, (2) cooking quality, (3) suitableness for several methods of cooking.

A majority of the homemakers said that they considered quality more important than size or price and size more important than price. There was some evidence that income had an effect on the answers. As income increases, homemakers were less concerned with prices and more concerned with quality and size. The reverse is true for lower income groups.

The average per capita consumption for all the respondents was 2.7 pounds per week. Low income families used about 2.8 pounds per person a week while those with a high income consumed about 2.5 pounds.

About 60 percent of the homemakers said they bought their potatoes from bulk displays.

The methods of preparing potatoes most frequently mentioned by the respondents were: (1) mashing, (2) boiling, (3) frying, (4) baking, and (5) creaming.

20/ U. S. Department of Agriculture, Bureau of Agricultural Economics, Potato Preferences Among Consumers, U. S. Dept. of Agriculture Miscellaneous Publication 667, 119 p., 1948.

CHAPTER III

PROCEDURE AND TECHNIQUES

Place and Time of Study

The area chosen for the study was an area encompassing 50,000 families in the northwestern part of Detroit. It included the area bounded on the north by the city line (8 Mile Road), on the west by the city line, on the south by Joy Road and the east by Livernois; north from Joy Road to Davison, Greenlawn north from Davison to Outer Drive and Schaeffer Highway north from Outer Drive to 8 Mile Road.

This area was chosen for two principal reasons: (1) its relative homogeneity in respect to racial make-up, and (2) its size was such that it could be sampled adequately by each of the three methods with the funds available.

The three parts of the studies were carried on simultaneously over a 12-day period from the 6th to the 18th of December, 1948. The telephone survey was completed in four days. All the mail questionnaires were placed in the stores for distribution during the period December 6 to 10. The personal interview, handled by nine different local interviewers, took 10 days to complete.

Preparation of Questionnaire

Considerable time and effort were spent in drawing up the three questionnaires to be used for the study and in pre-testing them. Since each type of questionnaire causes a different reaction, certain types of questions would be expected to be answered much more readily when asked by one method as compared to another. For this and other reasons it is difficult to make questions comparable.

Sixteen questions were asked, in some form, on all three questionnaires. A comparison of the replies to these questions served as the basis for the response part of the study in methodology. The differences between the means of the answers to comparable questions by the three methods was tested by the analysis of variance. Various grouping were used.

Selection of Samples

Personal Interview. The sample used for the personal interview was drawn up with the help of Dr. Roe Goodman of the Survey Research Center at the University of Michigan. The 1940 census on housing for Detroit was the source of sampling information used.

In this sampling the census tracts within the area tested were listed as were their average rentals and total dwelling units in 1940. The tracts were then grouped into strata according to average rental and geographic location. Some allowance was made in order to have adjoining tracts within each group (stratum). Each stratum contained a varying number of tracts, a minimum of 800 dwelling units. The strata were arranged according to average rental value from the highest to the lowest. Within each stratum the tracts were then listed in consecutive numerical order. The cumulative dwelling units were then determined and it was found that according to 1940 figures there were 49,494 within our area. For the main sample, each tract's total dwelling units were recorded. Using this figure and the one for cumulative dwelling units, every 400th unit was determined. The block within each area containing every 400th unit was determined. The number of dwelling units within the blocks selected were then recorded. In order to cut down on the expense, it was decided to sample half as many blocks but to take two

interviews within a block. Thus, it was possible to cut down interviewer traveling time.

Within each block the interval for interviews was one-half the total dwelling units in that block, making it possible to obtain at least two interviews per block. A random number table was used to pick the actual unit to be interviewed. The interviewer began at the northwest corner of the block and counted all the dwelling units until he came to the one listed. This number plus the interval gave the number of the second dwelling to be sampled and so on. No substitution of addresses other than those selected in this way was permitted.

For the census tracts that had three or less dwellings in 1940, it was thought likely that some building had taken place since the census. In these tracts it was decided to sample twice as many blocks as for the rest of the sample. The sample here was to be the block containing every 200th unit in the 1940 census and to sample every tenth housing unit found in this block. The first dwelling was again picked using a random number table with the number of units sampled depending on the total number of dwelling units. Thus an attempt was made to correct for changes that might have taken place since the census.

Telephone Interview. The telephone interviewees were also selected at random. The names of the exchanges serving the area were obtained from the Michigan Bell Telephone Company. Then every fiftieth page of the Detroit telephone directory was scanned and addresses and telephone numbers for each one of the ten exchanges found in the area were underlined. At the same time all addresses falling outside the area were eliminated. Each exchange was then sampled separately, using every 7th listing. The sample was drawn in three parts. The first part contained

200 listings and each of the subsequent ones only 100. It was, therefore, really three random samples. In this way it was possible to terminate the study at approximately 200, 300 or 400 calls. Furthermore, the first grouping was to be exhausted before starting on the next group. Thus, it was assured that there would be adequate call-backs before an additional sample was introduced.

The telephone numbers and addresses were rechecked and placed on the questionnaires which were to be filled out at the time of the telephone interview.

Mail Questionnaire. The questionnaires for this portion of the study were distributed to consumers through randomly selected retail food stores in the sample area. An individual return-addressed postage-paid envelope was furnished with each questionnaire. A group of chain and independent stores were selected and bundles from 50 to 1000 questionnaires were left at the cash register. Instructions were given in each store for the cashier to place an envelope inside of each consumer shopping bag until all envelopes were distributed. Therefore, it was not necessary for a shopper to buy potatoes in order to be given a questionnaire.

The stores to which questionnaires were distributed were selected from Route Lists of Retail Stores published by the Detroit News and from chain grocery lists. In the Detroit News list the stores are classified into A, B and C, depending on size, retail sales, location and similar factors. It was estimated that A stores and chain super stores did 80 percent of the business, and that the class B and C stores did 20 percent of the business. The questionnaires were then distributed to stores selected in these proportions at random from these groups.

In all, 58 percent of the 11,500 questionnaires were distributed through national and local chains and 42 percent through independent stores.

Obtaining Interviews

Personal Interview. The personal interviews were taken by a group of nine Wayne University students. These interviewers were carefully briefed. They reported to a central office each day to turn in completed questionnaires and to discuss problems. Some of the interviews had to be taken at night since the method of selection forbade the taking of an alternate house when the respondent was not at home during the day. Since the interviewers were well instructed and were paid by the hour, it was believed that departure from this rule was at a minimum.

Telephone Interview. The telephone interviews were taken by the author and full-time employees of the Department of Agricultural Economics at Michigan State College. For the actual interviewing, two private rooms with tables were rented in the Michigan Bell Telephone Building in Detroit. Calls were placed from 9:30 a.m. until 5:00 p.m., with no calls from 11:45 to 1:00 p.m. In order to complete some calls, it was necessary to make them from public telephone booths after 7:00 p.m. at night. The date and time of call were noted on the questionnaire as were the number of times the call was tried and the interviewer making the call. All the calls were completed within the four-day period from December 6 to 9. The average length of time to complete a call was about four minutes. This time varied considerably depending on amount of comments that the interviewee added in answering questions.

Tabulation and Statistical Treatment of Data

After all the various interviews were completed, the information was coded so as to make it suitable for card punching. All answers were listed numerically or given numerical values. Thus, answers to certain questions like "What kind of potatoes do you have on hand?" were coded as follows: 1 for Michigan, 2 for Maine, and 3 for Idaho. Where gradations were indicated, the designations were made from low to high. These numerical designations were used throughout the statistical portion of the study.

In order to be able to compare the results obtained by using various methods, it was thought desirable to test the answers to the compared questions by subgroups based on commonly known and used consumer classification characteristics and to answers to other questions. Those considered were related to: (1) income level, as indicated by median rental data for census tracts in the 1940 census and by the Detroit News classes, (2) kind of potatoes, (3) reported family rate of potato consumption, (4) number of people in the family, (5) kind of store, (6) type of shopping area, and (7) number of blocks to store.

In the comparisons of the three methods two major sources of variation were tested. These were: (1) differences in the samples obtained by the three methods, and (2) differences in the responses to similar questions obtained by the different methods of interviewing, that is -- telephone, personal or mail. To test for the first difference above, the chi-square test was used first for comparisons of the three methods simultaneously and then used to compare each method with the personal interview sample. This latter test was considered desirable because the personal interview sample was thought to be more nearly representative

of the area than either of the other two. In testing the three methods simultaneously, very few cases were found where the samples taken by the three methods yielded a chi-square test that was significant at the .05 level and these differences were not considered large enough to invalidate the results obtained by the use of the analysis of variance.

In testing the results where no significant differences in sampling occurred, a form of analysis of variance suggested by Snedecor[21] for use where the numbers in the sub-classes are not equal was used.

When significant differences were shown by the chi-square test or analysis of variance, the "t" test was applied to determine which group averages were significantly different.

Two other types of "t" tests were also used. One type of "t" test was used for analyzing differences in weighted averages and another type for testing the differences in percentages. They were used for comparisons where the three methods were not directly involved. For instance, comparisons were made between calls completed during the day and those completed at night.

Presentation of Data

For measurable quantities like the number of days, number in family, and the like, the averages used in the analysis of variance were derived directly from the original data. The tables used in discussing these types of data contain these same averages.

For the variables that could not be measured directly such as "kind of potatoes bought", "name of store," and "size preference," arbitrary

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21/ Snedecor, G. W., Statistical Methods, Applied to Experiments in Agriculture and Biology (4th ed.), Iowa State College, 1948.

numbers were assigned when coding these data. The averages used in analysis of variance were derived from this arbitrary designation. In presenting these data, however, the simplest way was to express the actual data in terms of percentage of respondents. Thus, for this particular type of data, the analysis of variance (shown in the appendix) was run on the averages, using arbitrary numbers to designate non-numerical data while the tabular comparisons are presented in terms of percentages.

Definition of Terms and Explanation of Techniques

A few terms and practices used in the study need explaining and clarifying.

Income Areas. The Detroit News classified the City of Detroit into five income areas by bringing 1940 census figures up to date (1948). Only a very small area was classed as very high and none in the very low area. In the analysis, the two highest Detroit News income areas were combined. All the analysis based on income was made on this basis. The three groups then were named "low" (really medium-low); "medium" (same as Detroit News); and "high" (medium-high and high combined). None of the area was classed as low.

Method. The term "method" refers usually to comparisons among the three methods used in obtaining the interview: personal interview, telephone interview and mail questionnaire. Thus, any statement to the effect that "there is no difference due to method" means simply that substantially the same results were obtained using each method.

Chain Store and Independent Store. Stores were classified in two ways. In one designation, all stores were classified as chain stores when they had a central buying organization and two or more of them were

owned and operated by the same company.

The second designation further subdivided chain stores into super markets and others.

Independent store was used when the same concern owned and operated only one store. Since it was impossible to visit every store in the area, the independent stores were not classified.

Number of Blocks. The distance that respondents traveled to shop for their potatoes was calculated using a fixed scale of eight blocks to the mile. On all three questionnaires, the respondents were asked the name and address (to the nearest cross-street) of the store where they made their last purchase. This location was plotted on the map and the distance between it and the respondents' residence was determined from the scale.

Shopping Areas. The Detroit News classification map of major and minor shopping areas was used to designate store location. It was arbitrarily decided to consider major shopping areas as extending five standard sized blocks each way from the intersection along the main street and two blocks each way along the cross-street. Minor shopping areas were considered as extending three standard sized blocks each way from the intersection along the main street and one block each way along the cross-street. Stores falling outside these limits were not considered to be in a shopping district.

Kind or Type of Potatoes. This designation refers to whether or not the potatoes in question were from Michigan, Maine or Idaho. While the respondents' knowledge was probably not infallible, the fact that most potatoes were either in consumer bags or marked on the display is believed to have eliminated most error.

Non-respondents. In Chapter IV, figures are presented to indicate the number of interviews obtained by each of the three sampling methods. All the subsequent discussion deals exclusively with the completed interviews. "Non-respondents" refers to the number of these interviews for which no answer was given or determinable for a particular question. The reason for this void information may have been due to failure to recall, incomplete answers, or refusal to give an answer. For instance, where a respondent failed to give his street address (on the mail questionnaire), it was impossible to determine the number of blocks from his house to the store where shopping was done. He was classified as a non-respondent. Thus, the category of non-respondents was a heterogeneous classification denoting a lack of classifiable information, whatever the reason.

CHAPTER IV

SURVEY FINDINGS - METHODOLOGY

The results of the study will be discussed in two distinct parts. Chapter IV concerns the results from the standpoint of methodology. This includes first of all a discussion of the representativeness of the samples obtained by the three methods. Secondly, it includes instances where the results, using an analysis of variance in which all three methods were considered simultaneously, varied significantly according to the method of obtaining the data. Thirdly, it includes relationships such as the comparison of day and night calls, the effect of possessing a telephone on certain consumer characteristics, etc.

A Comparison of the Costs, Returns and Representativeness of Samples Obtained by the Three Methods

One of the ways in which each of the different methods, telephone, personal interview, and mail questionnaire, differ is in the degree to which information was obtained from all the sampled interviewees. Thus, if a number of families supposedly representative of the area are chosen as a sample and the number of those actually giving information were to vary according to the method, it would seem to indicate the possibility of one not being as representative as the other.

There were 286 families selected and interviewed by the personal interview. Of this number, 277 or 97 percent were completed.

For the telephone interview a 393 family sample was selected for interview. A total of 308 or 78 percent of these interviews were completed. Refusals were 9 percent and disconnections were 3 percent of the total. Those who did not answer their phones made up 10 percent of the total.

Of the 11,500 mail questionnaires distributed through retail stores, only 480 were returned in the following six week period but mostly within the two week period. This represents about 4.2 percent of the total selected interviewees and is in marked contrast to the preceding two. Part of this low return can no doubt be ascribed to the usual causes of non-personal appeal and lack of interest. Another element to be considered here is the fact that questionnaires distributed through some stores had very good returns while in others in similar neighborhoods where the same number of questionnaires were left originally, no questionnaires were returned. There is reason to suspect, therefore, that certain stores did not bother to distribute their allotment after agreeing to do so.

Table 1. A Comparison of the Returns Obtained for the Three Sampling Methods and the Cost per Completed Questionnaire

Type of Survey	Number of Completed Questionnaires	Percent of Sample	Cost per Completed Questionnaire
Personal Interview	277	97	$2.72
Telephone Interview	308	78	.44
Mail Questionnaire	480	4	.54

Comparison of Costs. An important consideration in comparing research methods is that of the cost involved.

The figures presented above include only expenses incurred from the time that the decision as to the number and method of selection of samples were made until the completed interviews were ready for analysis. Since all the questionnaires were prepared simultaneously and subject to constant revisions, the costs of preparing them were considered equal for

the three methods and are not included in the following figures.

The telephone interview was the least expensive, costing only 44 cents per completed questionnaire. The mail questionnaire cost 54 cents and the personal interview cost $2.72 per completed questionnaire. The higher cost for the mail questionnaire than the telephone interview was due in part to the very low returns obtained.

Representativeness of Samples Used in Study. In selecting a stratified random sample for the personal interview, census tract rental information and block statistics from the 1940 census were used. In analyzing the results for comparability, one of the first steps undertaken was a comparison of the distribution of the respondents by rental groups to see whether or not the three methods gave substantially the same result. A chi-square test was made and a value of 14.60 was the result. This was well within the chi-square value of 21.026 needed for significance at the .05 level.

Table 2. Comparison of the Numerical Distribution of the Respondents by Rental Groups

Rental	Personal	Telephone	Mail	Total
	(Number of respondents)			
Under $29	34	20	33	87
$30 - $39	55	44	67	166
$40 - $49	96	79	116	281
$50 - $59	42	39	61	143
$60 - $69	9	18	28	55
$70 - $79	7	11	14	32
$80 and over	3	10	10	23
Total	246	221	329	787

An interpretation of the results of this chi-square test leads to the conclusion that, insofar as the numerical distribution of respondents

among the rental groups was concerned, there was no significant difference among the three samples. It was this fact that suggested the analysis of variance as a means of comparing the results.

There remained the possibility that though the chi-square test, considering all three methods simultaneously, indicated no significant difference, a similar test comparing any two of the methods might yield different results. These comparisons were made using the figures in Table 2. Results of the chi-square test indicated that there were no significant difference between the numerical distribution of the respondents by rental areas when comparing the personal with mail questionnaire or telephone with the mail questionnaire. However, a comparison of the samples used for personal interview and the telephone interview gave a chi-square figure which was significant at the .05 level. This can be interpreted to mean that the two samples are not equally representative of the same population. Since this difference appeared when only two methods were compared, it did not invalidate the use of the analysis of variance which was based on the simultaneous use of all three samples. The information was used as a check on some of the results gotten from the analysis of variance.

In conclusion it can be stated that, when considering all three samples simultaneously, there is no significant difference among the samples obtained by the three methods. The next problem is one of considering the comparability of the results obtained by the three methods. This presents another opportunity for comparing the reliability of the three methods.

Relationships Indicating Statistically Significant Differences When Tested by Analysis of Variance

There were a few relationships for which the analysis of variance indicated a significant difference. This section deals with these results and their interpretation.

Number of Blocks to Store as Related to Rental Area and Method of Obtaining Data. The average distance between the residence and the retail store varied significantly according to the method of gathering the data, the income level, and the rental area. In other words, when the analysis of variance was used, each of the preceding factors yielded "F" values that were very significant.

As far as method is concerned, when considered in conjunction with rental area, the average number of blocks (7.2) for those interviewed by telephone was significantly higher than that for those interviewed by mail questionnaire (4.8), or by personal interview (4.3)

The difference between the averages pertaining to those interviewed by mail and personal interview was significant at the .05 level (Table 3).

As will be noted in comparing Table 2 with Table 3, there is a difference in the numbers of non-respondents. The larger number in Table 2 is due to the fact that non-respondents were made up of those for whom there was no rental information plus those for whom it was impossible to determine the number of blocks to store. This latter eventuality came about when either the address of the respondent or the store address were not given.

There was no evident trend in the average of the number of blocks traveled when progressing from the lowest rental group to the highest.

Table 3. Number of Blocks to Store as Related to Method of Obtaining Data and Rental Groups.

Rental Group	Personal	Telephone (Average)	Mail	Average
Under $30	5.1	10.2	5.6	6.8
$30 - $39	6.6	7.5	5.2	6.3
$40 - $49	3.1	6.1	3.8	4.3
$50 - $59	3.3	6.0	5.8	5.1
$60 - $69	2.9	6.8	6.0	5.3
$70 and over	6.7	10.6	4.5	7.0
Average	4.3	7.2	4.8	5.4
Total respondents	206	204	269	
Nonrespondents	102	73	211	

The average number of blocks traveled was not significantly different when the two lowest groups (average 6.8 and 6.3) below $30 and the highest group (average 7.0 rental over $70) are considered. However, the averages pertaining to these three are each significantly higher than the average for each of the other rental groups ($0 - $49, $50 - $59, and $60 - $69). All differences are highly significant.

A chi-square test failed to show any significant difference due to sampling method, when all three methods were considered simultaneously. Other chi-square tests comparing two methods at a time yielded a chi-square figure that was significant at the .05 level when the personal and telephone or the personal and mail samples were considered. Differences in sampling, therefore, cannot account for the very significant "F" figures that were obtained.

The significantly higher number of blocks found in the case of the telephone interviewers may have been due to the fact that this method gave the respondent less time to answer the question than did the other

two. With little time for thought, it may be that the address (to the nearest cross-streets) of the store where shopping for potatoes was done may have been given too rapidly and thus erroneously. Then, too, the difference may be ascribed to not understanding the question as well when posed in this manner as when asked by the other two methods. Thus, the best explanation seems to be that the very nature of the interview, as compared to the other two, may have led to the significant difference.

Effect of Income and Method. When considering method in the following table, it is found that there was a significant difference among the averages for the three methods. For the personal interview, the average number of blocks was 4.9, for telephone it was 7.3, and for mail it was 5.7. The average for each method was significantly different at the .01 level than either of the other two averages (Table 4).

Table 4. Number of Blocks to Store as Related to Method of Obtaining Information and Income Level

Income	Personal	Telephone (Average)	Mail	Average
Low	5.8	11.1	10.5	9.3
Medium	5.2	7.5	5.6	6.0
High	4.0	6.1	4.9	5.0
Average	4.9	7.3	5.7	5.9
Total respondents	237	234	327	
Non-respondents	40	74	153	

The number of blocks traveled to shop varied significantly by the income level, as measured by the Detroit News. This was indicated by the very high "F" value obtained in the analysis of variance. In this

case, as one goes from low income to high income groups, the average number of blocks decreases significantly. For low income it is 9.3, for the medium it is 6.0, and for the high it is 5.0. In each case the difference between any two of these is significant at the .01 level as indicated by the corresponding "t" tests.

The chi-square figure for the above table was significant at close to the .01 level. Thus, it may be possible that some of the difference fround may be due to difference in sampling. However, the "F" value was much too high to be explained entirely by this difference.

Attempts to explain the difference between the averages for the methods of sampling led to the same procedure and the same results as in the case of rental area and method discussed previously.

There is, however, a discernible trend in regard to income level. As one progresses from low to high income the average number of blocks traveled to shop decreases significantly. One explanation for this may well be that people in medium low income areas, being more conscious of prices, travel farther in order to shop for bargains. The reason for the noticeable trend in this case, whereas none was found when rental areas were considered, may be explained in this manner. More respondents were classifiable by income level than by rental groupings. That is, those who lived on blocks containing three or less houses in 1940 were considered non-respondents for rental but were included in the table for income groups. Including the greater number that were classifiable into high income group decreased the average number of blocks. Thus a trend was discernible.

Comparisons Related to Method of Obtaining Information Where Analysis of Variance was not Used

There were certain relationships thought to have methodological significance. Analysis of variance was not used in testing the differences. Instead, two types of "t" test were used. One type of "t" test was used to analyze differences in weighted averages and another "t" test was used to test differences in percentages (See Appendix A).

The relationships tested and discussed include: (a) comparison of telephone interviews completed during the day with those completed at night, (b) comparisons of personal interviews completed on first calls and those for which call backs were necessary, (c) the effect of possessing a telephone on answers given to the personal interview, and (d) comparison of answers given to the telephone interview with the answers given by respondents to the personal interview who had telephones.

Each of the above is discussed in relation to: (1) consumption, (2) number in the family, (3) type of potato, (4) type of store where shopping was done, and (5) distance traveled to shop.

Comparison of the Answers Obtained in Telephone Interviews Completed During the Day with Those Completed at Night.

When the telephone was not answered during the day, interviewing in the evening was necessary to complete the prescribed sample. This section compares those respondents who were not available during the day to those who were at home during the daytime.

Potato Consumption. Consumption, as measured by pounds per person per day, was little different for persons interviewed during the day and those completed at night. In the first case the average daily consumption per person was 0.33 pounds while for those completed at

night the average consumption was 0.38 pounds. A "t" test indicated that this difference was not significant (Table 5).

Table 5. Consumption of Potatoes as Related to Time the Telephone Interview was Completed

Consumption (Pounds per day)	Completed day (Percent of respondents)	Completed night (Percent of respondents)
Up to .29	55	35
0.30 to 0.49	25	40
0.50 to 0.69	11	19
0.70 and over	9	6
Total	100	100
Average per person per day	0.33	0.38
Total respondents	244	43
Non-respondents	17	4

Table 6. Number in Family as Related to Time the Telephone Interview was Completed

Number in Family	Completed day (Percent of respondents)	Completed night (Percent of respondents)
2 and under	23	51
3 - 5	68	47
6 and over	9	2
Total	100	100
Average	3.6	2.8
Total respondents	256	45
Non-respondents	5	2

Number in Family. The size of family of those respondents who were interviewed during the evening was significantly smaller than for those

interviewed during the day. For those interviewed during the day, the average was 3.6 persons, while for those interviewed at night it was 2.8 persons. The difference is statistically significant at the .01 level (Table 6).

Type of Potatoes Used. Both groups, those completed during the day and those during the evening, had about the same percentage of users of each type of potato. In both cases, Michigan users made up about 40 percent of the responses with Maine and Idaho about 30 percent each (Table 7). The differences were not statistically significant.

Table 7. Type of Potatoes Respondents Use as Related to Time Telephone Interview was Completed

Type potatoes used	Completed day	Completed night
	(Percent of respondents)	
Michigan	38	39
Maine	28	33
Idaho	33	26
Other	1	2
Total	100	100
Total respondents	231	43
Non-respondents	30	4

Type of Store. There was no significant difference between the answers from daytime and evening interviews regarding the type of store in which potatoes were bought. In both cases, about 44 percent of the respondents shopped in super chain stores, 31 percent shopped in neighborhood stores, 10 percent in the "other" chain stores, and 9 percent from sources such as roadside market farms and peddlers (Table 8).

The differences were not statistically significant.

Table 8. Type of Store Shopped as Related to Time Telephone Interview Completed

Kind of Store	Completed day	Completed night
	(Percent of respondents)	
Super chain stores	45	41
Other chain stores	12	9
Independent stores	34	41
Roadside, Peddler, Farm	9	9
Total	100	100
Total respondents	227	44
Non-respondents	34	3

Table 9. Distance Traveled to Shop as Related to Time Telephone Interview was Completed

Number blocks	Completed day	Completed night
	(Percent of respondents)	
2 and under	40	43
3 - 5	23	11
6 - 8	14	6
9 - 12	5	11
13 - 16	4	3
Over 16	14	26
Total	100	100
Average	7.0	9.4
Total respondents	197	35
Non-respondents	64	12

Number of Blocks to Store. The average distance traveled by the respondents to the telephone interview was greater for those interviewed in the evening compared with those interviewed during the day.

For those interviewed during the day, the average number of blocks to the store was 7.0 while for the night interviews the figure was 9.4 blocks. This difference is due principally to those respondents who traveled over 16 blocks and is statistically significant at the .01 level (Table 9).

Location of Store Where Potatoes Bought. There was almost no difference reported in the location of stores whether the telephone interview was completed during the day or in the evening. In either case, about 56 percent of the respondents shopped in stores considered outside of a shopping area. There were about 35 percent who shopped in stores located in minor shopping areas and about 9 percent who did their shopping in stores located in major shopping areas. Results of the "t" test indicate no significant difference between day and night calls (Table 10).

Table 10. Store Where Shopping was Done as Related to Time the Telephone Interview was Completed.

Type Shopping Area	Completed day	Completed night
	(Percent of respondents)	
Major shopping area	10	6
Minor shopping area	35	35
Outside of either	55	59
Total	100	100
Total respondents	195	34
Non-respondents	66	13

Summary of Comparisons Between Day and Night Telephone Interviews. The respondents interviewed during the day and those interviewed at night gave almost identical results insofar as type of store they shop,

location of store, type of potatoes they use, and consumption. There were significant differences in the number in the family and number of blocks traveled to shop. Those interviewed during the day traveled about 7.0 blocks to the retail store and had an average of 3.6 persons in the family. Those interviewed at night traveled on the average 9.4 blocks to the store and had an average of 2.8 persons in the family. Both differences were significant at the .01 level.

Comparison of Personal Interviews Completed on the First Call with Call-Backs.

A comparison was made between those personal interviews completed on the first call and those for which the absence of the respondent from the home necessitated one or more call-backs.

The objective here was to try to determine whether or not the respondents interviewed on call-backs were different than other respondents. If the answer was in the negative, one might wonder how important it was to undertake the extra time and cost of several call-backs to complete a selected interviewee.

Table 11. Consumption as Related to the Number of Calls made to Complete Personal Interview

Consumption (Pounds per person per day)	First call (Percent of respondents)	Call-backs (Percent of respondents)
Up to 0.29	50	37
0.30 - 0.49	29	35
0.50 - 0.69	11	14
0.70 and up	10	14
Total	100	100
Average	0.36	0.37
Total respondents	191	80
Non-respondents	14	2

Consumption of Potatoes. There was no significant difference between the two groups in consumption per person, both groups consuming about 0.4 pounds of potatoes daily. There was a slight difference in the distribution of the respondents relative to consumption (Table 11).

Number in Family. The number of people in the family was the same for the personal interviews completed on the first call as for those on which call-backs had to be made. The average for both was 3.7 persons per family (Table 12).

Table 12. Number in Family as Related to Number of Calls Made to Complete Personal Interview

Number in family	First calls	Call-backs
	(Percent of respondents)	
2 and under	22	30
3 - 5	70	62
6 and over	8	8
Total	100	100
Average	3.7	3.7
Total respondents	195	76
Non-respondents	10	6

Type of Potatoes. The interviews completed on the first call gave almost identical results to those requiring additional calls. In both cases almost half the interviewees used Michigan potatoes. None of the differences were statistically significant (Table 13).

Type of Store. There were no differences in the type of store where potatoes were purchased between those personal interviews completed on the first call and those completed in more than one call. In both cases about 60 percent of the respondents shopped in super chain stores, 10

percent in "other" chain stores, and 30 percent in independent stores (Table 14).

Table 13. Type of Potato Used as Related to Number of Calls Made to Complete Personal Interview

Type of potatoes	First call	Call-backs
	(Percent of respondents)	
Michigan	47	46
Maine	27	32
Idaho	25	18
Other	1	4
Total	100	100
Total respondents	187	77
Nonrespondents	18	5

Table 14. Type of Store Shopped as Related to Number of Calls Made to Complete Personal Interview

Kind of store	First call	Call-backs
	(Percent of respondents)	
Super chain store	59	65
"Other" chain store	10	6
Independent store	31	29
Total	100	100
Total respondents	177	68
Non-respondents	28	14

Number of Blocks to Store. The average number of blocks between the residence and the store was 4.8 for those personal interviews completed on the first call and 5.5 for those for which more than one call had to be made. The difference is not statistically significant (Table 15).

Table 15. Number of Blocks Traveled to Shop as Related to Number of Calls Made to Complete Personal Interview

Number of blocks	First call	Call-backs
	(Percent of respondents)	
2 and under	47	42
3 - 5	26	26
6 - 8	12	11
9 - 12	7	13
13 - 16	4	6
Over 16	4	2
Total	100	100
Average	4.8	5.5
Total respondents	171	66
Non-respondents	34	16

Summary of Comparisons Between Interviews Completed on First Call and Call-backs. There were no significant differences in the responses gotten by the two groups. Both groups consumed an average of about 0.36 pounds of potatoes and had an average of 3.7 persons in the family. They shopped in the same kind of store, used the same types of potatoes, and traveled about five blocks to shop.

The Effect of the Possession of a Telephone on the Answers Given to Personal Interview.

The respondents to the personal interview were divided into those with and those without telephones in order to compare their responses to selected questions.

Consumption of Potatoes. The respondents to the personal interview who had telephones consumed on the average 0.36 pound per person daily. Those who had no telephones had an average daily consumption of 0.39

pounds. The average consumption per person was not significantly different between the two groups (Table 16).

Table 16. Consumption of Potatoes as Related to Whether or not Family has Telephone

Consumption (Pounds per person per day)	With telephone (Percent of respondents)	Without telephone (Percent of respondents)
Up to 0.29	48	31
0.30 to 0.49	30	28
0.50 to 0.69	11	23
0.70 and over	11	8
Total	100	100
Average	0.36	0.39
Total respondents	252	13
Non-respondents	4	0

Table 17. Number in Family as Related to Whether or Not Respondent has Telephone

Number in Family	With telephone (Percent of respondents)	Without telephone (Percent of respondents)
2 and under	23	38
3 - 5	68	54
6 and over	9	8
Total	100	100
Average	3.6	3.2
Total respondents	256	13
Non-respondents	0	0

Number in Family. The average number of persons in the family was 3.6 for those respondents to the personal interview who had telephones

compared to 3.2 for those respondents who had no telephones (Table 17).

Type of Potato. Michigan potatoes were used by 77 percent of the respondents without a telephone and by 44 percent of those having telephones. Equally great differences can be seen for Maine potatoes. There were 30 percent of those with telephones who used Maine potatoes while there were only 8 percent of those without telephones who were Maine potato users. Both these differences are statistically significant at the .01 level.

There was no significant difference in the percentage of those who reported the use of Idaho potatoes (Table 18).

Table 18. Type of Potatoes Used as Related to Whether or not Family has Telephone

Type of potatoes	With telephone	Without telephone
	(Percent of respondents)	
Michigan	44	77
Maine	30	8
Idaho	23	15
Other	3	-
Total	100	100
Total respondents	248	13
Non-respondents	8	0

Type of Store. There was no significant difference between the respondents possessing a telephone and those not possessing a telephone in regard to the type of store where they bought their potatoes (Table 19).

Number of Blocks to Store. The average number of blocks from residence to retail store was 5.0 for those respondents who possessed a telephone and 5.8 for those not having telephones. This difference was not

statistically significant (Table 20).

Table 19. Type of Store in Which Respondents Shop as Related to Whether or not Family has Telephone

Type of Store	With telephone	Without telephone
	(Percent of respondents)	
Super chain store	55	67
Other chain store	8	8
Independent store	30	25
Peddler, Roadside, etc.	7	0
Total	100	100
Total respondents	247	12
Non-respondents	9	1

Table 20. Number of Blocks to Store as Related to Whether or not Family has Telephone

Number of blocks	With telephone	Without telephone
	(Percent of respondents)	
2 and under	46	30
3 - 5	26	20
6 - 8	11	20
9 - 12	8	20
13 - 16	4	0
Over 17	5	0
Total	100	100
Average	5.0	5.8
Total respondents	222	10
Non-respondents	34	3

Type of Area Where Store Located. About one-half of the respondents having telephones and only 18 percent of those not having telephones shopped in neighborhood stores. Shopping was done in stores located in

minor shopping areas by 37 percent of the respondents who had telephones and 73 percent of those who had no telephones. In both cases, the "t" test indicated the difference to be significant at the .01 level.

Approximately 10 percent of both types of respondents shopped in stores located in major shopping areas (Table 21).

Table 21. Type of Area Where Store was Located as Related to Whether or not Family has Telephone

Type of area	With telephone	Without telephone
	(Percent of respondents)	
Major shopping area	11	9
Minor shopping area	37	73
Outside of either	52	18
Total	100	100
Total respondents	218	11
Non-respondents	38	2

Summary - Comparisons of the Answers Given by Those Respondents to Personal Interview Who had and Those Who did not have Telephones. Both groups traveled about five blocks to shop, shopped in the same type of stores, consumed an average of .35 pounds of potatoes per person daily and averaged about 3.5 persons to the family. None of the differences found in the above cases were significant.

There were significant differences in regard to location of retail store and type of potato used. More than half of those with telephones shopped in neighborhood stores while over 70 percent of those without telephones shopped in stores located in minor shopping area. Both of these differences are significant at the .01 level.

Those without telephones contained a significantly higher percentage of Michigan users and a significantly lower percentage of Maine or Idaho users than did those who had telephones. It may be that the people who did not feel like, or could not afford, to spend money for a telephone also felt that it was not worth while to pay a higher price for Maine or Idaho potatoes. This may explain why a significantly higher percentage of them purchased Michigan potatoes.

Comparison of the Answers Obtained in the Telephone Interview with Those Given by Respondents to Personal Interview Who had Telephones.

The answers obtained on the telephone interview were compared with those given by the respondents to the personal interview who had telephones. This section deals with the results of this comparison for various factors.

Table 22. Consumption of Potatoes by Respondents to Telephone Interviews Compared with Respondents to Personal Interview that had Telephones

Pounds per Person per day	With telephone - Personal interview	Telephone interview
	(Percent of respondents)	
Up to .29	48	51
0.30 - 0.49	30	28
0.50 - 0.69	11	12
0.70 and over	11	9
Total	100	100
Average	0.37	0.37
Total respondents	252	290
Non-respondents	4	18

Consumption of Potatoes. Those interviewed by telephone consumed an average of 0.35 pound of potatoes per person per day while the respondents

to the personal interview who had telephones consumed 0.37 pounds daily. The slight difference in averages was not statistically significant (Table 22).

Number in Family. The respondents to the personal interview questionnaire who had telephones had about the same number of persons in the family as did the respondents interviewed by telephone. The average for the former was 3.5 persons while the latter was 3.6 persons (Table 23). The difference in averages was not statistically significant.

Table 23. Number in Family for the Respondents to the Telephone Interview as Compared to the Respondents to the Personal Interview who Had Telephones

Number in family	With telephone Personal interview	Telephone interview
	(Percent of respondents)	
2 and under	23	27
3 - 5	68	65
Over 6	9	8
Total	100	100
Average	3.6	3.5
Total respondents	256	305
Non-respondents	0	3

Type of Potato. The respondents to the telephone interview and those respondents to the personal interview who had telephones compared very favorably in type of potato they used. About 40 percent of both groups were Michigan potato users while 30 percent used Maine potatoes. Idaho users made up about 27 percent of the respondents. There were no significant differences in the type of potatoes reported

used by those with telephones who were questioned by personal interview and those included in the telephone interviews (Table 24).

Table 24. Type of Potato Used by Respondents to Telephone Interviews as Compared with those Respondents to the Personal Interview that had Telephones

Type of potato	With telephone Personal interview	Telephone interview
	(Percent of respondents)	
Michigan	44	39
Maine	30	29
Idaho	23	30
Others	3	2
Total	100	100
Total respondents	247	287
Non-respondents	9	21

Table 25. Type of Store Where Shopping Was Done by Respondents to Telephone Interviews as Compared to Those Respondents to the Personal Interview That Had Telephones

Type of Store	With telephone Personal interview	Telephone interview
	(Percent of respondents)	
Super chain store	55	43
Other chain store	8	11
Independent store	30	36
Peddler, roadside, etc.	7	10
Total	100	100
Total respondents	247	291
Non-respondents	9	17

Type of Store. When comparing those respondents to the personal interview who had telephones, it was found that 43 percent of them

shopped in super chain stores while 55 percent of the respondents to the telephone interview did likewise. This difference was significant at the .05 level.

In both cases about 9 percent of respondents shopped in "other" chain stores, about 30 percent in neighborhood stores and about 9 percent from miscellaneous sources such as farmers, peddlers and roadside markets (Table 25).

Table 26. Number of Blocks Traveled in Order to Buy Potatoes by the Respondents to the Telephone Interview Compared with Those Respondents to Personal Interview That Had Telephones

Number of blocks	With telephone Personal interview	Telephone interview
	(Percent of respondents)	
2 and under	46	40
3 - 5	26	22
6 - 8	11	12
9 - 12	8	6
13 - 16	4	4
Over 16	5	16
Total	100	100
Average	5.0	7.3
Total respondents	222	232
Non-respondents	34	76

Number of Blocks to Store. Those respondents to the personal interview who had telephones traveled on the average 5.0 blocks to shop. The corresponding figure for those interviewed by telephone was 7.3 blocks. Results of the "t" test indicate that the difference in the averages is statistically significant at the .01 level. Much of the difference can be ascribed to the high percentage of those interviewed

by telephone who reported that they shopped in stores 16 or more blocks away from their residence (Table 26).

Summary - Comparisons between Telephone Interview and those Respondents to the Personal Interviews who had Telephones. The answers given by the two groups compared very favorably. Each group averaged about 3.5 persons per family and consumed, on the average, about 0.4 of a pound of potato per person daily. Their habits in regards to type of store they shop and kind of potatoes they use are almost identical, as judged by the percentage distribution of the respondents. None of the differences were significant for any of the above.

Insofar as number of blocks between the store and the residence, the ones interviewed by telephone averaged 7.3 blocks while the respondents to the personal interview averaged 5.0. This difference was significant at the .01 level. The findings here concur with those reported on page 25 where a significant difference was found between results of the personal and the telephone interview. Leaving out the respondents to the personal interview that had no telephones did not alter this relationship.

CHAPTER V

SURVEY FINDINGS - CONSUMER PRACTICES AND OPINIONS

This Chapter discusses findings that are important primarily from the standpoint of potato marketing. It is divided into two parts. Part I deals with relationships that, when tested by analysis of variance, failed to show any significant differences. These relationships are presented in summary tables in the text while the actual tables and analysis are to be found in the Appendix.

Consumption Habits and Consumer Preferences for Potatoes

Consumption. The average consumption of potatoes by the respondents to the study was about 0.36 pounds per person per day. The method of gathering the data, income level (Appendix tables 24 and 25) and kind of potatoes (Appendix table 26) had no significant effect on this average.

Table 27. Income Level as Related to Number of Pounds per Person per Day.

Income level	Number of respondents	Average pounds
Low	53	0.37
Medium	636	0.35
High	243	0.37
Total	932	0.36
Non-respondents	144	

Is the Kind of Potatoes on Hand the Same as That Usually Bought?

For eighty-three percent of the respondents the kind of potato they had on hand (Michigan, Maine, Idaho, etc.) were the kind they reported that they usually bought (Table 28).

Table 28. Answers to Question, Is the Kind of Potatoes on Hand the Same as That Usually Bought?

	Number of Respondents	Percent of Respondents
Yes	843	83
No	174	17
Total	1017	100
Non-respondents	48	

A similar ratio was found by each method obtaining data, and for respondents in all income areas (Appendix tables 1 and 7).

Type of Potatoes on Hand. When asked what kind of potatoes they had on hand, the answers were distributed in the following manner: Michigan, 42 percent; Maine, 27 percent; Idaho, 29 percent; and other, 2 percent (Table 29).

Table 29. Type of Potatoes on Hand

Type of Potatoes	Number of Respondents	Percent of Respondents
Michigan	425	42
Maine	269	27
Idaho	292	29
Other	25	2
Total	1011	100
Non-respondents	54	

No significant difference existed in this proportion when determined by the three methods where they were tested at different area levels of income (Appendix table 3 and 21), type of potato usually

bought (Appendix table 1), type of store (Appendix table 27), location of store (Appendix table 12), type of container (Appendix table 2), and size of family (Appendix table 10).

Does Grocer Usually Have the Type of Potatoes Desired? About nine out of every ten respondents said that their grocers usually had the type of potatoes they desired (Table 30).

Table 30. Answers to Question, Does Grocer Usually Have Kind Desired?

	Number of Respondents	Percent of Respondents
Yes	846	89
No	100	11
Total	946	100
Non-respondents	119	

This was true regardless of method of obtaining information, income area level of respondents (Appendix table 6).

Table 31. Kind of Container for Last Purchase

Kind of Container	Percent of Respondents
Bulk	39
Packaged	61
Total	100
Total respondents	1,028
Non-respondents	37

Kind of Container Potatoes Purchased in. Sixty percent of the respondents purchased packaged potatoes the last time. Forty percent

of the respondents had purchased their potatoes from bulk lots (Table 31).

When tested statistically it was found that none of the following had any significant effect on the percentages expressed above: (1) method of gathering data, and area income level (Appendix table 4 and 9), (2) kind of potatoes used (Appendix table 2), (3) location of store (Appendix table 11), and (4) number in family (Appendix table 19).

Reported Average Cost per Pound - Effect of Type of Potatoes. The average reported cost per pound paid for Michigan potatoes was 4.0 cents, for Maine it was 4.8 cents and for Idaho 5.6 cents. Results of the "t" tests indicated that the differences between the averages for any two of the above are significant at the .01 level.

The average cost did not vary significantly between the three methods (Table 32).

A chi-square test on the numerical distribution of the respondents yielded a figure close to significance at the .05 level. However, this was not great enough to invalidate the analysis of variance.

Table 32. Comparison of Methods of Obtaining Data and Type of Potato to Cost per Pound

Type of Potato	Personal	Telephone	Mail	Average
		(Average cents)		
Michigan	4.1	4.2	3.9	4.0
Maine	4.7	4.5	4.9	4.8
Idaho	5.5	5.7	5.6	5.6
Average	4.7	4.7	4.6	4.6
Total respondents	191	131	334	
Non-respondents	86	177	146	

The results obtained are in line with the actual situation usually found in Detroit stores. Michigan farmers, since they have the advantage of location, can sell their potatoes for less and still receive the same or greater net farm price. Maine and Idaho farmers have to transport their potatoes great distances and can only afford to send their very best potatoes. In order to be able to ship their product a long distance, they must get a higher price for their product. The table and analysis bear this out.

The average cost per pound of potatoes for all the respondents to the study was 4.6 cents. This figure was not significantly affected by method or income area (Appendix table 22 and 23), kind of store (28), or number in family (Appendix table 29).

Table 33. Type of Store Where Potatoes Were Purchased

Type of Store	Number of Respondents	Percent of Respondents
Chain	654	67
Independent	250	25
Roadside, farm, peddler	80	8
Total	984	100
Non-respondent	81	

Type of Store Where Potatoes Purchased. It was found that 67 percent of respondents made their last purchase of potatoes from local or national chain stores while 25 percent of them purchased from independent retail stores and 8 percent from other sources such as roadside markets (Table 33).

This relationship held regardless of rental area (Appendix table 21), location of store (Appendix table 12), type of container (Appendix

table 9), number in family (Appendix table 16), or type of store (Appendix table 28). That is to say, none of the above variables had any significant effect on the relative percentages stated above.

Location of Store Where Last Purchase of Potatoes Was Made. Of the respondents to the study, 45 percent of them shopped for potatoes in stores considered to be in a minor shopping area. Approximately the same percentage shopped in a neighborhood store located outside a shopping area, as defined by the Detroit News classification of 1948. Only 11 percent of the respondents had made their last purchase of potatoes from a store located in a major area (Table 34).

Table 34. Location of Store Where Potatoes Purchased

Type Shopping Area	Number of Respondents	Percent of Respondents
Major shopping area	92	11
Minor shopping area	386	45
Outside shopping area	372	44
Total	850	100
Non-respondents	215	

The relationship was not significantly different regardless of the method of collecting data when compared by the following classifications: area income level (Appendix table 20), number of people in family (Appendix table 19), and type of potatoes on hand (Appendix table 12).

Number in Family. The average number of persons in the family was 3.6.

The following variables did not cause any significant difference from this average: area income level or method (Appendix table 5 and 8),

kind of store (Appendix table 16), cost per pound (Appendix table 29), kind of potatoes on hand (Appendix table 10), and location of store (Appendix table 19).

Table 35. Income Level as Related to Number in Family

Income Level	Number of Respondents	Average
Low	54	3.8
Medium	613	3.6
High	255	3.5
Total	922	3.6
Non-respondents	143	

Summary - Those Relationships Showing No Significance. There were no significant differences between methods of obtaining the data for any of the following:

1. Number in Family. The average number of persons in the family was 3.6.

2. Consumption. Average consumption of potatoes by the respondents to the study was 0.36 pounds per person per day.

3. Type of Potatoes on Hand. Among the respondents to the study there were 42 percent Michigan users, 27 percent Maine users, and 29 percent Idaho users.

4. Purchasing Habits. When asked whether the potatoes they had on hand were the kind they usually bought, 83 percent of the respondents answered "yes" and 17 percent "no".

5. Satisfaction with Choice of Potatoes in Store. Nine out of ten respondents stated that their grocers usually had the kind of potato they desired.

6. Type of Store Purchased from. There were 69 percent of the respondents to the study who shopped in chain stores, 25 percent who shopped in independent stores.

7. Store Location. As far as location of the store where shopping was done, 11 percent of the respondents shopped in stores located in major areas, 45 percent in stores located in minor areas and 44 percent in stores located outside a shopping area.

8. Kind of Container. Sixty percent of the respondents purchased packaged potatoes the last time they had shopped and 40 percent purchased their potatoes from bulk lots.

Respondents' Quality Ratings of the Potatoes They Had on Hand

The respondents were asked to rate the potatoes they had on hand in regard to certain factors. They were to rate them as "good", "average", or "poor". No attempt was made to define or have them define the three ratings.

The percentage of the users of a particular type of potato who rated it "good," "average" or "poor" was calculated. A "t" test was used to compare differences in the percentage of respondents who rated their potatoes as "good". Any of the three percentage figures could have been compared. Comparing all three in turn seemed unnecessary and confusing since each percentage was dependent on the other two. The actual tables, from which the summary table presented in the text is drawn, are included in the Appendix.

Cooking Quality. Only 66 percent of the Michigan users rated their potatoes as "good" for cooking quality while there were 84 percent of the Maine users and 88 percent of the Idaho users who gave their potatoes this highest rating. The percentage figure for Michigan users was

significantly lower at the .01 level than that for the other two.

Color after Cooking. The percentage of users of Michigan potatoes who rated their potatoes "good" was significantly lower at the .01 level than that for either the Maine or the Idaho potatoes. Michigan potatoes were rated "good" for color after cooking by 59 percent of their users compared to 83 percent of the Maine users and 95 percent of the Idaho users.

The percentage for Idaho potatoes was significantly higher at the .01 level than that for the other two.

Table 36. Percentage of the Respondents Who Gave Their Potatoes a Rating of "Good" for Various Quality Factors*

Type of Potato & Rating	Cooking Quality	Color After Cooking	Taste	Blemishes & Defects	Size	Cleanliness	General Desirability	Average
	(Percent of respondents who rated)							
Michigan Good	66	59	71	47	54	59	55	59
Maine Good	84	83	82	72	63	74	81	77
Idaho Good	88	95	91	78	77	88	87	86

Taste. The percentage of the Michigan users who rated their potatoes as "good" for taste was significantly lower at the .01 level than the corresponding percentage for Maine and Idaho users. There were 71 percent of the Michigan users, 82 percent of the Maine users and 91 percent of the Idaho users who rated their potatoes as "good". The average percentage for Idaho potatoes was also significantly higher at the .01 level than that of the Maine users.

* For actual data see Appendix tables 30 - 36

Blemishes and Defects. Michigan users again gave their potatoes the lowest rating. Only 47 percent of the respondents rated Michigan "good" while 72 percent of the Maine users and 71 percent of the Idaho users gave their potatoes this highest rating. The percentage for the Michigan potatoes was significantly lower than that for Maine and Idaho potatoes.

Size. When asked how they rated their potatoes for size, 54 percent of the Michigan users, 63 percent of the Maine users and 77 percent of the Idaho users rated their potatoes as "good".

The percentage for the Michigan users was significantly lower at the .01 level than that for both the Maine and Idaho users.

Cleanliness. Michigan potato users were least satisfied with their potatoes in regard to cleanliness. Only 59 percent of them rated them "good" while the comparable figures were 74 percent for Maine and 88 percent for Idaho. The percentage figure for Michigan potatoes was significantly lower at the .01 level than that for either Maine or Idaho potatoes.

The difference in percentages between the Idaho and Maine was also significant at the .01 level.

General Desirability. The respondents were also asked to rate their potatoes in regard to "general desirability". The objective, in this case, was to attempt to have the consumers rate their potatoes but not on any one characteristic alone. Instead, they were to give their own evaluation of their potatoes. No attempt was made to define for them or to have them define what characteristics, or to what extent certain characteristics, influenced their rating.

The result here verified the previous individual findings. Michi-

gan users again gave their potatoes the lowest rating. Only 55 percent of them rated Michigan potatoes "good" compared to 81 percent of the Maine users and 87 percent of the Idaho users. Here again, the percentage for Michigan was significantly lower at the .01 level than that for either the Maine or Idaho potatoes.

Results of a Simultaneous Comparison of the Seven Factors Discussed. The average percentage for each type of potato was derived from the table 36. There percentages were 59 for Michigan, 77 for Maine and 86 for Idaho. An analysis of variance was run on the table to see if these differences, in average percentages, were significant. Results of the analysis of variance indicate that the average percentage of the users of Michigan potatoes who rated them "good" was significantly lower at the .01 level than the corresponding percentage of Maine and of Idaho users. The percentage of Idaho users who rated the potato "good" was significantly higher at the .05 level than that of Maine users (Appendix A).

It can be concluded that the users of Michigan potatoes were least pleased while those who used Idaho were most pleased. All this based on what percentage of the users rated them "good".

Factor Considered Most Important. The mail and the personal interview respondents were asked which factor they considered most important. Cooking quality, taste, and color after cooking were given most frequently by the respondents to the personal interview. In the case of the mail questionnaire over 50 percent of the respondents gave more than one factor as being important. Of these combinations cooking-quality and taste; cooking-quality and color after cooking; and taste and color after cooking were given most often.

Table 37. Factors Considered Most Important

Quality	Personal	Mail
	(Percent)	
Cooking quality	34	27
Taste	34	9
Color after cooking	12	5
Blemishes and defects	4	5
Cleanliness	4	1
General desirability	3	1
Size	2	*
Combination of above	7	52
Total	100	100
Total correspondents	249	333
Non-respondents	38	144

* Less than one-half of one percent.

Rating Given by Respondents to the Potatoes They Had on Hand When Prepared in Various Ways.

The respondents to all three questionnaires were also asked to rate their potatoes as "Good", "Average", or "Poor" when prepared in different ways. This section reports the results.

Boiled. For this method of preparation, 83 percent of the Maine users and 68 percent of the Michigan and the Idaho users rated their potatoes as good. The percentage for Maine was significantly higher at the .01 level than for the other two.

Mashed. The percentage of the users who rated Michigan potatoes "good" was significantly lower at the .01 level than either of the other two. For Michigan 71 percent of their users rated them "good" while the comparable percentages were 86 percent for the Maine users and 83 percent for the Idaho users.

Fried. For this method of preparation all three types of potatoes

were given about the same rating by their users. About 70 percent of the users of all three types of potatoes rated them "good". There was no significant difference in the ratings between any two types of potatoes.

Table 38. Percentage of Respondents Who Rated their Potatoes "Good" when Prepared in Various Ways*

Type of Potato and Rating	Manner in which prepared				Average
	Boiled	Mashed	Fried	Baked	
	(Percent of respondents who rated)				
Michigan					
Good	68	71	71	51	65
Maine					
Good	83	86	73	61	76
Idaho					
Good	68	83	76	98	81

Baked. Idaho had highest rating for this method of preparation since 98 percent of the Idaho users rated their potatoes as "good" while the comparable figures were 61 percent for Maine and 51 percent for Michigan. The percentage for Idaho was significantly higher at the .01 level than that of the other two.

The percentage of Maine users (61 percent) who rated them good for baking was significantly higher at the .01 level than that of the Michigan potatoes (51 percent).

Results of a Simultaneous Comparison of the Four Methods of Preparation. Maine potatoes were rated highest of the three for boiling, and got about the same rating as did the Idaho when the respondents

* For actual data see Appendix tables 37-40.

served them mashed. Idaho potatoes were rated tops for baking. All three types received about the same rating when it came to serving them fried.

The average percentage for each type of potato was again derived from Table 38. These percentages were 65 for Michigan, 76 for Maine and 81 for Idaho. An analysis of variance was run on the table to see if these differences, in average percentages, were significant. Results of the analysis of variance indicate that the difference between the three averages was not significant. Thus, when considering the average rating given the three types of potatoes for the various methods of preparation, Michigan potatoes compared a little more favorably with the other two types.

This result was at variance with that obtained when "cooking quality" alone was considered (Table 36). Actually, the variation in the results is due to the difference in the two questions and also the difference in the treatment of the data. "Cooking quality" was not defined in any way and thus became a subjective valuation based on each respondent's ideas and experiences. Analyzing the results of this subjective valuation, by using a "t" test on the percentages of the users of each type of potato who rated them "good", it was found that Michigan potatoes were given a significantly lower rating than that for the other two types of potatoes.

The result of an analysis of variance, when the ratings for the four methods of preparation were considered simultaneously, indicated no significant difference between the three types of potatoes. What the analysis of variance compared were the averages derived from combining four separate valuations. Actually, when each method of prepa-

ration was considered separately, there were significant differences and these were indicated in the preceding discussion. Considering all four ratings simultaneously allowed for the averaging out of these differences and explains the recurringly contradictory results.

CHAPTER VI

IMPLICATIONS OF THE STUDY

The economist is continually searching for better and less expensive ways of obtaining data, particularly as it relates to the action of consumers or consuming units. It is costly and difficult to obtain representative and reliable data about consumers and their consumption habits, beliefs and opinions. More research in this area should be done. It would increase the value and reduce the cost of a major research need.

The present study was undertaken with the twofold objective of comparing the methods and of determining some consumer preferences and actions as they relate to potatoes. The results will be discussed under these two headings.

Methodology

In the present study, a section of Detroit comprising about 12 percent of the dwelling units listed in the 1940 census was sampled. The area, containing 50,000 dwelling units, was racially homogeneous. It was of above average income, as compared to the rest of the city and had a certain degree of economic homogeneity. This is evidenced by the fact that though the range in listed 1940 rentals was from $14 to over $110, 75 percent of the respondents had rentals varying from $30 to $59.

A chi-square test was used to test for differences between the samples obtained by the three methods. The samples were broken down according to rental groups based on the 1940 census. When all three methods were considered simultaneously there were no significant differences between the sampling methods. It was this fact that

suggested the analysis of variance as a way to test for differences between similar information obtained by the three methods.

By testing only two of the three methods at a time, it was found that the differences between telephone and personal were significant at the .05 level. There were no statistically significant differences between any of the other combinations of two methods.

The data obtained by the three methods was also comparable. In only one case, that of number of blocks traveled to shop, did the analysis of variance indicate any significant differences between the results obtained by the three methods. For such variables as consumption, number in the family, type of store, and type of potatoes bought, there were no significant differences.

Thus, it is possible to assume that when sampling a relatively homogeneous area or population, certain types of information can be obtained with about the same degree of accuracy, by any of the three methods.

Other factors need to be considered along with the comparability of the results. The most important of these factors is the cost. The average cost per completed questionnaire was $2.72 for the personal interview, 54 cents for the mail interview and 44 cents for the telephone interview. The cost for the mail interview was relatively high because of the very small return obtained by this method.

In terms of the percentage of the original sample, 97 percent of the personal interview, 78 percent of the telephone interview and 4 percent of the mail interview was obtained.

The high return for the first two can be partly ascribed to making call-backs including some interviewing at night. The very low return

for the mail questionnaire was due principally to the absence of any special appeal or rewards for answering the questionnaire. Faulty distribution of the questionnaires by some store managers was also a contributing factor. Even though some stores distributed all the questionnaires, the highest return from any one store was about 8 percent.

The telephone interview was completed in four days and required the full-time services of two persons. The personal interview required 12 days to complete using nine local part-time interviewers. The bulk of the mail questionnaires were returned within two weeks of the date they were placed in the stores. However, some of them were not sent in until three or four weeks after this date. It would seem that the greater speed with which the telephone interview was completed, made it possible to describe a given situation more accurately by using this method. For example, people interviewed on the first day may have been speaking about a situation quite different from the one existing when those interviewed eight days later were contacted. Thus, though they may both be answering the same questions, the answers may be different because each is speaking about a different situation. This difficulty is partially eliminated when the interviewing is confined to a short period.

On the basis of the evidence presented above, the writer feels that under certain conditions, telephone interview is preferable to either the personal interview or the mail questionnaire. It is less expensive, faster, and more convenient than the personal interview. The percentage of the sample is much greater and the costs less than when using a mail questionnaire.

The telephone interview method is most efficient in a situation such as that found in this study where almost all the respondents owned telephones. Assuming the stratified random sample of the area used for the personal interview to be representative of the area, it was found that 95 percent of the respondents to the personal interview had telephones. Furthermore, for certain variables such as consumption, type of potato and number in the family, the same results were obtained when the telephone interview and those respondents to the personal interview who had telephones were considered. In other words, the omission from the sample of those without telephones did not significantly change the results.

The telephone interview when used: (1) in an area where almost all the families have telephones, (2) for asking certain types of questions, and (3) in connection with a questionnaire that is not too long or too involved, offers a very satisfactory tool for consumer research.

However, due to the restrictions listed above, the telephone interview is limited in its application and the other two methods cannot be summarily dismissed. Both the mail questionnaire and the personal interview can be used for studies in areas where, using the telephone directory listings would not give a truly representative sample. The limit as to the type of question that can be asked and the necessity for brevity are drawbacks to the telephone interview that are not encountered when the other two methods are used. The higher costs, the longer period required to complete a given number of interviews and the bias introduced by using numerous interviewers should not be overlooked in using the personal interview. The mail interview

can be used to gather certain types of marketing information for which neither the telephone or personal interview are adequate.

Thus, the problems encountered when any one method is considered are many. More research needs to be done using all three methods separately and in combination. More needs to be done in determining the comparability, reliability, and validity of the results obtained when the three methods are used. Until then any conclusion regarding the relative merits of each can only be tentative and quite limited in scope.

Marketing of Michigan Potatoes

In conjunction with a nation-wide study conducted by the Bureau of Agricultural Economics,[22/] results were presented for three cities, Chicago, Boston and Los Angeles. Of these three, Boston has a market situation in regard to potatoes that most nearly approximates the conditions found in Detroit. A comparison of the results reported for respondents living in Boston with results obtained in the present study will be made.

The results reported for Boston included the following: (1) average personal consumption was 2.8 pounds a week, (2) 45 percent of the homemakers bought their potatoes from bulk displays and 51 percent purchased packaged potatoes, (3) 72 percent stated that they were usually able to obtain the type of potato they wanted, (4) the most common reasons for selecting a potato were good taste, cooking quality and suitableness for several methods of cooking, and (5) 92 percent of

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22/ U. S. Department of Agriculture, op. cit.

the respondents considered quality more important than price in purchasing potatoes.

In the present study, the average personal consumption was 2.5 pounds a week. There were 60 percent of the respondents who purchased packaged potatoes the last time they bought potatoes. Eighty-three percent of the respondents stated that their grocers usually had the type of potato they wanted. The factors considered most important in buying potatoes were cooking quality and good taste. All of these results compare closely with those reported above.

Other findings of the present study included the fact that about 90 percent of the respondents stated that their grocers usually had the type of potato they wanted on hand. Almost as many stated that the type of potato on hand was the type usually bought. About 66 percent of the respondents shopped in chain stores and 25 percent in independent retail stores. Shopping was done in stores located in minor shopping areas by 45 percent, in stores located in a major shopping area by 11 percent, and in stores located outside a shopping area by 44 percent of the respondents to the study. Michigan potatoes were used by 42 percent, Maine by 27 percent and Idaho by 29 percent of the respondents.

Average weekly consumption for the respondents to the study was 2.5 pounds a week and there was an average of 3.6 persons in the family. Thus, approximately 9 pounds of potatoes were consumed weekly per family. The average reported price by the consumers for potatoes during the period the survey was taken was 4.0 cents for Michigan, 4.8 cents for Maine and 5.6 cents for Idaho. Translated to a per family basis, this meant that, on the average, Michigan users spent 36 cents, Maine users

43 cents and Idaho users 50 cents weekly for potatoes during the period of the study.

In spite of the differences in these reported prices paid for potatoes, less than half of the respondents reported that they purchased Michigan potatoes. This would seem to indicate that the price of potatoes is not the most important factor in determining which type of potato is purchased. It agrees with the findings of the U. S. Department of Agriculture study previously presented in which the respondents considered quality much more important than price in purchasing potatoes.

The average ratings for various characteristics given by the users of each type of potato bears out this relationship. When the respondents were asked to rate the potatoes they used for such characteristics as cooking quality, color after cooking, taste, size, blemishes and defects, and cleanliness, the users of the Michigan potato gave them the lowest rating in every case with the Idaho usually having the highest rating. The average rating for Michigan potatoes, based on the average of all the above characteristics was significantly lower at the .01 level than that for the other two. Michigan potatoes compared a little more favorably with the other two types when prepared in various ways.

These findings point out two ways in which the Michigan potatoes might be improved. There is a need for better grading and handling of potatoes. This is based on the fact that the users of Michigan potatoes, as reported in Chapter V, gave their potatoes a significantly lower rating for such characteristics as blemishes and defects, cleanliness and size, than did the users of Maine or Idaho potatoes.

Secondly, there is room for improvement in the quality of the Michigan potato. Again, this is based on the respondent's ratings for the potatoes they had on hand. Michigan potatoes were given a significantly lower rating by their users than were the Maine and Idaho potatoes for such characteristics as cooking quality, color after cooking and taste.

A program such as that proposed in the Michigan Seal of Quality Act of 1949,[23/] had it been adopted, would have been helpful in improving the marketing of Michigan potatoes. This act provided for voluntary participation by the growers and for establishment of grades at least as high as the Federal grades. It was to be supervised by the director of Michigan Department of Agriculture. Certain requirements made of members were stated as were penalties for infractions. The grades themselves were to be set by members of the commodity committee appointed by the director. There was to be a committee for each commodity.

As can be seen, the Act had its shortcomings. These included the voluntary nature of the program, the rather light penalties for infractions and the rather indefinite provisions for the establishment of grades, and fees to be charged. However, as a first effort in the field it had much to recommend it. The writer feels that efforts to initiate such a program should be continued.

The second area in which Michigan potatoes might be improved has to do with bettering their quality. As was seen in the preceding dis-

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23/ Michigan Seal of Quality Act, House Bill No. 192, Michigan 65th Legislature, 1949.

cussion, consumers usually consider quality more important than price when purchasing potatoes.

There is generally believed to be a direct relationship between yield and quality of potatoes. Accepting this premise, the Department of Field Crops at Michigan State College initiated and sponsored the "300 Bushel Club". This venture has been carried on for the past 25 years. Its aims are to encourage the production of high yields and together with this, better quality potatoes. Membership is gained by having an average yield of 300 bushels on five tested acres. Judging by the ever-increasing number of members, the program is a successful one.

Another phase, dealing with improving the quality of Michigan potatoes, has to do with the greater use of certified seed. Here again, the Department of Field Crops has taken a leading role, both in certifying seed and in encouraging its use by the growers.

The actual and proposed programs presented above are by no means panaceas nor does their adoption mean a complete solution to the problems. Actually, the problems involved in the marketing of potatoes are many and complex. No one study on any one phase can hope to do more than offer limited information and suggestions for future research. Before any very definite answers can be interpreted in terms of a positive policy, research far beyond the scope of this study must be undertaken.

CHAPTER VII

SUMMARY AND CONCLUSIONS

The objectives of the study were:

1. To compare data obtained by the three methods, personal interview, mail questionnaire and telephone interview.

2. In conjunction with the above, to obtain information regarding consumer preferences and opinions about the potatoes they use.

The study was carried out in the northwest portion of Detroit from 6th to 18th of December, 1948. For the personal interview a stratified random sample based on rental areas according to the 1940 census was used. The sample for the telephone interview was drawn from the Detroit telephone directory taking every 7th listing on every 50th page for the exchanges found in the area. The mail questionnaires were distributed through retail stores in the area, selected on the basis of size, sales and location.

The percent return for each method was 97 percent for the personal interview, 78 percent for the telephone interview and 4.2 percent for the mail questionnaire.

In the matter of cost per completed questionnaire it was $2.72 for the personal interview, 44 cents for the telephone and 54 cents for the mail questionnaire.

Analysis of variance was used for the simultaneous comparison of data obtained by the three methods. For other types of comparisons, two variations of the "t" test were employed, one to compare differences in percentages and another to compare differences in weighted averages. These included relationships which also had methodological importance such as time the interview was completed and number of call required

to obtain an interview.

The following are the most pertinent results obtained in the study.

1. Methodology. A chi-square test on the distribution of respondents among the various rental groups failed to show any significant difference when the three methods were considered simultaneously. However, there was a significant difference between the samples used for personal and telephone interviews when these two alone were considered. This did not invalidate the use of analysis of variance which was based on the simultaneous analysis of results obtained by the three methods.

2. The analysis of variance indicated a significant difference, both between methods of obtaining the data and rental groups insofar as number of blocks traveled to shop. When considered in conjunction with rental area the respondents to the personal interview averaged 4.3 blocks, those to the telephone interview averaged 7.2 blocks and those to the mail questionnaire averaged 4.8 blocks. The average for each method was significantly different from the other two. Similar differences were found in regard to rental area although there was no visible trend. Those with rentals over $70 both averaged about 7 blocks. Those with rentals between $40-$69 all traveled a significantly lower number of blocks. The average number of blocks varied significantly according to which of the Detroit News income areas (classified 1948) the respondents lived. Those living in low income area averaged 9.3 blocks, those in medium income area averaged 6.0 blocks and those in high income area averaged 5.0 blocks.

3. The cost per pound of potatoes varied significantly with the

type of potato. Idaho potatoes cost the respondents an average of 5.6 cents per pound, for Maine it was 4.8 cents and for Michigan it was 4.0 cents. The difference in average cost between any two of these was significant at the .01 level.

4. Analysis of variance run on combinations of the following failed to reveal any significant difference between the methods of obtaining the data and: (a) type of potatoes, (b) type of container, (c) whether the type of potato on hand is type usually bought, (d) whether grocer usually has type of potato desired, (e) cost per pound, (f) number in family, (g) consumption, (h) type of store, (i) type shopping area store located, (j) number of blocks traveled to shop, (k) rental area, and (l) income levels.

5. Comparisons were made of the percentage of the users of each type of potato who rated them "good" for characteristics such as color after cooking, size, taste, blemishes and defects, and cooking quality. Almost invariably Idaho ranked first, Maine second and Michigan third. For many of these characteristics the differences in the percentages between the three types of potatoes were significant. Considering all the above factors simultaneously, the average percentage for Michigan was significantly lower, at the .01 level, than that of Maine or Idaho. At the same time, the percentage for Idaho was significantly higher at the .05 level than that for Maine.

Conclusion. The results of the study indicate that it is possible to obtain comparable information by the three sampling methods. Some of this comparability can no doubt be explained on the basis of the rather homogeneous group and limited area to which the study was confined.

One shortcoming of this study was the limited number of similar

questions asked on all three questionnaires. Part of this was due to the fact that it was felt that some questions might be answered on one type of questionnaire but not the other. The varying lengths of the questionnaires in conformity with the manner of obtaining the interview was also a handcap. The necessity for expressing each question in various ways according to the type of interview may also be considered a shortcoming.

Another shortcoming of the study was the fact that the 1940 census information used as basis for sampling and analysis was not representative of the actual situation in 1948 and adjustments had to be made.

A third shortcoming was the fact that the limitation of funds made interviewing of non-respondents impossible.

The writer recommends the use of the telephone interview for sampling an area where most of the families have telephones and where certain types of information are sought. This method was found to give results comparable with those derived from using a personal interview or a mail questionnaire. The return from the telephone interview was quite satisfactory and it had the lowest cost per completed questionnaire. The telephone interview was also completed faster than the other two. However, the telephone interview has its drawbacks and the other methods cannot be discarded.

Results of the subject matter portion of the study indicated that Michigan potatoes were ranked lowest by their users when compared to Maine and Idaho for certain characteristics such as blemishes and defects, size, cooking quality, color after cooking and taste, among others. The conclusion reached from a discussion of the above and other facts is that Michigan needs to improve the marketing of its

potato crop if it is to compete successfully on its own markets with potatoes grown in Maine and Idaho. Two suggestions are proposed as means of improving the marketing of Michigan potatoes. One has to do with improving their grading and handling. The other suggestion calls for a continuance of programs designed to encourage increased yields and by so doing, improving the quality of the potato.

There is a need for further research dealing with both phases of this study. Research dealing with methodology or with consumer preference supplies information that is useful in understanding some of our potato marketing problems. The data obtained in this study, together with information on both phases supplied by further research, will go a long way toward helping to explain many of our economic relationships.

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APPENDIX A

Statistical Appendix

Includes explanation of statistical techniques used and actual analysis of variance and "t" where significance was indicated.

APPENDIX A

METHOD OF OBTAINING DATA

Rental Area	Personal	Telephone	Mail	Total Average
Under $30	32a 22.5c 5.1b 114.8d	18a 22.2c 10.2b 226.4d	24a 29.3c 5.6b 164.1d	74-Ar 6.8-B 505.3-D
$30 - $39	47a 44.3c 6.6b 292.4d	41a 43.9c 7.5b 329.2d	58a 57.8c 5.2b 300.6d	146-Ar 6.3-B 922.2-D
$40 - $49	80a 76.2c 3.1b 236.2d	77a 75.4c 6.1b 459.9d	94a 99.4c 3.8b 377.7d	251-Ar 4.3-B 1073.8-D
$50 - $59	33a 35.5c 3.3b 117.2d	34a 35.1c 6.0b 210.6d	50a 46.3c 5.8b 268.5d	117-Ar 5.1-B 596.3-D
$60 - $69	7a 14.3c 2.9b 41.5d	17a 14.1c 6.8b 95.9d	23a 18.6c 6.0b 111.6d	47-Ar 5.3-B 249.0-D
$70 & over	7a 13.3c 6.7b 89.1d	17a 13.2c 10.6b 139.9d	20a 17.4c 4.5b 78.3d	44-Ar 7.0-B 307.3-D
Total	206Ap 891.2Dp	204Ap 1461.9Dp	269Ap 1300.8Dp	679-T 3653.9-Td
Average	4.3_{Bp}	7.2_{Bp}	4.8_{Bp}	

Correction Term = $\frac{(Td)^2}{T} = \frac{(3653.9)^2}{679} = 19662.7$

Total Sum Square =
$\frac{(114.8)^2}{22.5} + \frac{(292.4)^2}{44.3} \ldots + \frac{(78.3)^2}{17.4} = 21830.0 - 19662.7 = 2167.3$

Sum Square Method =
$\frac{(891.2)^2}{206} + \ldots \frac{1300.8}{209} = 20622.0 - 19662.7 = 959.3$

Sum Square for Rental Area =
$\frac{505.3}{74} + \ldots \frac{307.3}{44} = 20373.7 - 19662.7 = 711.0$

Table of Variance

Source	d.f.	Corrected Sum of Squares	Mean Square	F
Total	678	2167.3		
Between method means	2	959.3	479.6	76.1**
Between group means	5	711.0	142.2	22.6**
M x R	10	497.0	49.7	7.9
Error	661	4181.5*	6.3	

APPENDIX A

Explanation of Symbols

a - Number of respondents
b - Average number of blocks traveled by those respondents
c - Expected number $\frac{74}{679} \times 206$
d - Product of b x c

Ar - Number of respondents with rental under $30
Br - Average number of blocks traveled by respondents with given rental - $\frac{Dr}{Ar}$
Dr - Sum of "d's" for given rental

Ap - Number of respondents to the personal interview
Bp - Average number of blocks traveled by respondents to personal interview
Dp - Sum of "d's" for personal interview

T - Total number of respondents
Td - Total of all "d's"

Correction Term = $\frac{(Td)^2}{T}$ Error Term = $\frac{\Sigma x^2}{T}$

"t" test for testing difference where F is significant = $t = \frac{m_1 - m_2}{\sigma_{(m_1 - m_2)}}$

"t" test for method - Comparison of Personal and Telephone =

$$t = \frac{m_1 - m_2}{\sigma_{(m_1 - m_2)}}$$

$$\sigma_{m_1 - m_2} = \sqrt{\sigma^2_{m_1} - \sigma^2_{m_2}} = \sqrt{6.3\left(\frac{1}{206} + \frac{1}{204}\right)} = \sqrt{.0630} = .25$$

$$t = \frac{7.2 - 4.3}{.25} = \frac{2.9}{.25} = 11.6^{**}$$

Same type of "t" test carried on between other method averages and between rental areas. The derived "t" values were:

Personal and mail - 2.1*
Telephone and mail - 10.0**

Under $30 and $30 - $39 - 1.4
$30 - $39 and $40 - $49 - 7.7**
40 -$49 and $50 - $59 - 3.0**
$50 - $59 and $60 - $69 - 0.46
$60 - $69 and $70 and over - 3.2**
Under $30 and $70 and over - 0.42
$40 - $50 and $70 and over - 6.6**
$50 - $60 and $70 and over - 4.3**

APPENDIX A

The following indicates how the data for all the relationships tested by use of analysis of variance were handled.

Analysis of Variance for Table 32 in text: Comparison of Methods of Obtaining Data and Type of Potato to Cost per Pound

Type Potato	Personal Cents	Personal No. Cases	Telephone Cents	Telephone No. Cases	Mail Cents	Mail No. Cases	Average
Michigan	4.1	99	4.2	51	3.9	148	4.0
Maine	4.7	57	4.5	39	4.9	89	4.8
Idaho	5.5	35	5.7	41	5.6	97	5.6
Average	4.7	191	4.7	131	4.6	334	

Table of Variance

Source	d.f.	Corrected Total Sum of Squares	Mean Square	F
Total	655	284.5		
Between method means	2	0.2	.01	--
Between group means	2	274.4	137.2	41.6
M x G	4	10.9	2.7	--
Error	647	2147.8	3.3	--

Result of "t" tests between types of potatoes:

Michigan and Maine - 2.4**

Michigan and Idaho - 9.4**

Maine and Idaho - 4.0**

Chi-square = 9.32

Need 9.488 for significance at .05.

APPENDIX A

Analysis of Variance for Table 4 in Text: Comparison of Methods of Obtaining Data and Income Level Area to Number of Blocks to Store

	Personal		Telephone		Mail			
Income	Avg. Blocks	No. Cases	Avg. Blocks	No. Cases	Avg. Blocks	No. Cases	Avg. Blocks	No. Cases
Low	5.8	20	11.1	12	10.5	10	9.3	42
Medium	5.2	170	7.5	149	5.6	227	6.0	546
High	4.0	47	6.1	73	4.9	90	5.0	210
Average blocks	4.9		7.3		5.7		5.9	
Total No. cases		237		234		327		798

Table of Variance

Source	d.f.	Corrected Total: Sum of Squares	Mean Square	F
Total	797	1518.8		
Method	2	718.0	359.0	46.0
Income Level	2	664.1	332.0	42.6
M x I	4	136.7	34.2	4.4
Error	789	6181.5	7.8	

"t" test values:

Low and High Income - 9.0**
Low and Medium - 7.3**
High and Medium - 3.8**

Personal and Mail - 3.1**
Personal and Telephone - 9.6**
Telephone and Mail - 6.1**

Chi-square value for table - 14.88

Chi-square needed for significance at .01 - 13.277

APPENDIX A

Illustrations of the two types of "t" tests used to analyze differences in the study:

a) "t" test used to analyze difference in percentages

$$\sigma_{(p_1 + p_2)} = \sqrt{\frac{(p_1)(1.00-p_1)}{n_1} + \frac{(p_2)(1.00-p_2)}{n_2}}$$

$$t = \frac{p_1 - p_2}{\sigma_{(p_1 + p_2)}}$$

Example - Percentage of people who rated their potatoes "good" for cleanliness (See Text Table 36).

Michigan - $p_1 = 74$ $n_1 = 240$

Idaho - $p_2 = 59$ $n_2 = 378$

$$\sigma_{(p_1 + p_2)} = \sqrt{\frac{.74 \times 26}{240} + \frac{.59 \times .41}{378}} = .037$$

$$t = \frac{.15}{.037} = 4.1^{**}$$

b) "t" test used to analyze differences in numerical averages

$$t = \frac{a_1 - a_2}{\sqrt{(\sigma_{a_1})^2 + (\sigma_{a_2})^2}}$$

$$\sigma_{a_1} = \sqrt{\frac{\Sigma fx^2 - \frac{(\Sigma x)^2}{n}}{n - 1}}$$

Example - With or Without Telephone to Number of blocks to Store (See Text Table 20).

	With Telephone	Without Telephone
Average no. blocks	5.0	5.8
Total no. of cases	222	11
Σx	1103	64
Σfx^2	12.173	614

$$a_1 = \sqrt{\frac{12.173 - \frac{(1103)^2}{222}}{221}} = \sqrt{30.3} = 5.5$$

$$a_2 = \sqrt{\frac{614 - \frac{(64)^2}{11}}{10}} = \sqrt{24.2} = 4.9$$

$$\sigma_{a_1} = \frac{5.5}{\sqrt{222}} = 1.17 \qquad \sigma_{a_2} = \frac{4.9}{\sqrt{11}} = 1.48$$

$$t = \frac{5.8 - 5.0}{\sqrt{(1.17)^2 + (1.48)^2}} = \frac{0.8}{1.9} = .42$$

APPENDIX B

Includes all tables referred to in the text where analysis of variance was used but no significance was found. The actual analysis is not shown.

APPENDIX B

Appendix Table 1. Method of Obtaining Data to Whether Last Potato Purchase was of the Kind Usually Bought by Respondents of Different Income Levels.

Income Group	Whether Kind Usually Bought	Personal: Percent*	Personal: No. of Cases	Telephone: Percent*	Telephone: No. of Cases	Mail: Percent*	Mail: No. of Cases	Average
Low								
	Yes	77		78		92		81
	No	23		22		8		19
Total		100	22	100	18	100	12	100
Medium								
	Yes	88		79		79		82
	No	12		21		21		18
Total		100	190	100	192	100	260	100
High								
	Yes	86		90		86		87
	No	14		10		14		13
Total		100	52	100	83	100	111	100
Total respondents			264		293		383	
Non-respondents			13		15		97	

* Percent of respondents.

APPENDIX B

Appendix Table 2. Comparisons of Methods of Obtaining Data on Kind of Potatoes and Kind of Container

Kind of Potatoes	Kind of Container	Personal		Telephone		Mail		Average
		Per-cent*	No. of Cases	Per-cent*	No. of Cases	Per-cent*	No. of Cases	
Michigan								
	Bulk	41		47		42		43
	Packaged	59		53		58		57
Total		100	123	100	114	100	184	100
Maine								
	Bulk	30		26		16		23
	Packaged	70		74		84		77
Total		100	76	100	84	100	108	100
Idaho								
	Bulk	38		49		49		47
	Packaged	62		51		51		53
Total		100	55	100	90	100	138	100
Total respondents			254		288		429	
Non-respondents			23		20		51	

* Percent of respondents.

APPENDIX B

Appendix Table 3. Comparisons of Methods of Obtaining Data for Kind of Potatoes used by Consumers at Different Income Levels.

Income	Kind of Potatoes Used	Personal: Percent*	Personal: No. of Cases	Telephone: Percent*	Telephone: No. of Cases	Mail: Percent*	Mail: No. of Cases	Average
Low								
	Michigan	62		47		46		53
	Maine	24		35		31		29
	Idaho	14		18		23		18
	Other	-		-		-		-
Total		100	21	100	17	100	13	100
Medium								
	Michigan	44		41		43		43
	Maine	31		28		24		27
	Idaho	22		30		31		28
	Other	3		1		2		2
Total		100	189	100	189	100	262	100
High								
	Michigan	55		33		40		41
	Maine	22		30		26		26
	Idaho	21		36		29		30
	Other	2		1		5		3
Total		100	53	100	81	100	112	100
Total respondents			263		287		387	
Non-respondents			14		21		93	

* Percent of respondents.

APPENDIX B

Appendix Table 4. Comparison of Method of Obtaining Data and Income Level to Kind of Container.

Income Group	Kind of Container	Personal: Percent*	Personal: No. of Cases	Telephone: Percent*	Telephone: No. of Cases	Mail: Percent*	Mail: No. of Cases	Average
Low								
	Bulk	36		39		33		36
	Packaged	64		61		67		64
Total		100	22	100	18	100	12	100
Medium								
	Bulk	37		41		38		39
	Packaged	63		59		62		61
Total		100	191	100	196	100	262	100
High								
	Bulk	46		48		40		44
	Packaged	54		52		60		56
Total		100	56	100	83	100	113	100
Total respondents			270		297		387	
Non-respondents			7		11		93	

* Percent of respondents.

APPENDIX B

Appendix Table 5. Comparison of Method of Obtaining Data and Income Level to Number of People in Family.

Income Level	Personal (Average)	Telephone (Average)	Mail (Average)	Average
Low	3.1	4.4	4.0	3.8
Medium	3.7	3.5	3.6	3.6
High	3.2	3.3	3.7	3.5
Average	3.5	3.5	3.6	3.6
Total respondents	269	258	395	
Non-respondents	8	50	85	

APPENDIX B

Appendix Table 6. Comparisons of Method of Obtaining Data by Rental Areas as to Whether Grocers Have Kind Usually Desired.

Rental Areas	Do Grocers Have Kind Usually Desired?	Personal		Telephone		Mail		Average
		Percent*	No. of Cases	Percent*	No. of Cases	Percent*	No. of Cases	
Under $30	Yes	94		91		87		91
	No	6		9		13		9
Total		100	31	100	22	100	30	100
$30 - $39	Yes	92		86		86		88
	No	8		14		14		12
Total		100	48	100	44	100	58	100
$40 - $49	Yes	94		92		85		90
	No	6		8		15		10
Total		100	89	100	82	100	108	100
$50 - $59	Yes	91		88		85		87
	No	9		12		15		13
Total		100	32	100	40	100	55	100
$60 - $69	Yes	100		100		81		90
	No	-		-		19		10
Total		100	8	100	18	100	26	100
$70 - $79	Yes	100		91		92		93
	No	-		9		8		7
Total		100	6	100	11	100	13	100
$80 & over	Yes	50		100		100		94
	No	50		-		-		6
Total		100	2	100	4	100	10	100
Total respondents			216		221		300	
Non-respondents			61		87		180	

* Percent of respondents.

APPENDIX B

Appendix Table 7. Comparisons of Methods of Obtaining Data by Rental Areas to Whether Kind Usually Bought.

Rental Areas	Whether Kind Usually Bought	Personal		Telephone		Mail		Average
		Per-cent*	No. of Cases	Per-cent*	No. of Cases	Per-cent*	No. of Cases	
Under $30	Yes	77		83		78		79
	No	23		17		22		21
	Total	100	35	100	24	100	32	100
$30 - $39	Yes	86		86		76		82
	No	14		14		24		18
	Total	100	52	100	52	100	63	100
$40 - $49	Yes	87		80		86		84
	No	13		20		14		16
	Total	100	90	100	94	100	113	100
$50 - $59	Yes	89		95		78		86
	No	11		5		22		14
	Total	100	37	100	42	100	59	100
$60 - $69	Yes	100		74		86		84
	No	-		26		14		16
	Total	100	8	100	19	100	28	100
$70 - $79	Yes	75		83		79		80
	No	25		17		21		20
	Total	100	5	100	12	100	14	100
$80 & over	Yes	100		86		90		90
	No	-		14		10		10
	Total	100	3	100	7	100	10	100
Total respondents			230		250		319	
Non-respondents			47		58		161	

* Percent of respondents.

APPENDIX B

Appendix Table 8. Comparisons of Method of Obtaining Data by Rental Areas to Average Number of People in Family

Rental	Personal		Telephone		Mail		Average
	Average	No. of Cases	Average	No. of Cases	Average	No. of Cases	
Under $30	3.3	35	3.7	26	3.9	33	3.7
$30 - $39	3.6	52	3.6	52	3.4	66	3.5
$40 - $49	3.8	92	3.4	94	3.7	115	3.6
$50 - $59	3.1	37	3.6	45	3.5	61	3.4
$60 - $69	3.6	9	3.4	20	4.0	28	3.7
$70 - $79	3.2	6	3.4	13	3.5	14	3.4
$80 & over	3.0	3	3.0	7	3.7	10	3.3
Average	3.5		3.5		3.6		3.6
Total respondents		234		257		327	
Non-respondents		43		51		153	

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Appendix Table 9. Comparisons of Method of Obtaining Data by Rental Areas to Kind of Container.

Rental Areas	Kind of Container	Personal Per-cent*	Personal No. of Cases	Telephone Per-cent*	Telephone No. of Cases	Mail Per-cent*	Mail No. of Cases	Average
Under $30	Bulk	34		35		28		32
	Packaged	66		65		72		68
	Total	100	35	100	26	100	32	100
$30 - $39	Bulk	46		46		33		41
	Packaged	54		54		67		59
	Total	100	52	100	52	100	64	100
$40 - $49	Bulk	32		36		50		40
	Packaged	68		64		50		60
	Total	100	92	100	94	100	113	100
$50 - $59	Bulk	49		54		31		43
	Packaged	51		46		69		57
	Total	100	39	100	43	100	61	100
$60 - $69	Bulk	56		45		38		43
	Packaged	44		55		62		57
	Total	100	9	100	20	100	26	100
$70 - $79	Bulk	17		54		43		42
	Packaged	83		46		57		58
	Total	100	6	100	12	100	14	100
$80 & over	Bulk	33		43		30		35
	Packaged	67		57		70		65
	Total	100	3	100	7	100	10	100
Total respondents			236		254		320	
Non-respondents			41		54		160	

* Percent of respondents.

APPENDIX B

Appendix Table 10. Comparisons of Method of Obtaining Data and Kind of Potatoes to Number of People in Family.

Kind of Potatoes	Personal	Telephone (Average)	Mail	Average
Michigan	3.7	3.6	3.9	3.8
Maine	3.5	3.6	3.6	3.6
Idaho	3.4	3.5	3.2	3.3
Average	3.6	3.6	3.6	3.6
Total respondents	254	291	436	
Non-respondents	23	17	44	

APPENDIX B

Appendix Table 11. Comparisons of Method of Obtaining Data and Location of Store to Kind of Container

Inside and Outside Shopping Area	Kind of Container	Personal		Telephone		Mail		Average
		Percent*	No. of Cases	Percent*	No. of Cases	Percent*	No. of Cases	
Major	Bulk	36		32		24		29
	Packaged	64		68		76		71
	Total	100	25	100	22	100	45	100
Minor	Bulk	36		39		34		36
	Packaged	64		61		66		64
	Total	100	91	100	83	100	212	100
Neighborhood Store	Bulk	33		38		43		38
	Packaged	67		62		57		62
	Total	100	115	100	130	100	121	100
Total respondents			231		235		378	
Non-respondents			46		73		102	

* Percent of respondents

APPENDIX B

Appendix Table 12. Comparisons of Method of Obtaining Data and Location of Store to Kind of Potatoes

Inside and Outside Shopping Area	Kind of Potatoes	Personal		Telephone		Mail		Average
		Percent*	No. of Cases	Percent*	No. of Cases	Percent*	No. of Cases	
Major Area	Michigan	44		23		37		36
	Maine	36		36		30		33
	Idaho	20		41		33		31
	Total	100	25	100	22	100	43	100
Minor Area	Michigan	52		30		39		40
	Maine	26		35		30		30
	Idaho	22		35		31		30
	Total	100	85	100	75	100	202	100
Outside of Area	Michigan	44		36		37		39
	Maine	37		28		20		28
	Idaho	19		36		43		33
	Total	100	109	100	124	100	116	100
Total respondents			219		221		361	
Non-respondents			58		87		119	

* Percent of respondents.

APPENDIX B

Appendix Table 13. Relation of Method of Obtaining Data and Income Level to Outside Shopping Area

Income Level	Area	Personal		Telephone		Mail		Average
		Per-cent*	No. of Cases	Per-cent*	No. of Cases	Per-cent*	No. of Cases	
Low	Major	10		-		27		12
	Minor	55		67		27		51
	Neighborhood	35		33		46		37
	Total	100	20	100	12	100	11	100
Medium	Major	13		12		14		13
	Minor	34		27		49		38
	Neighborhood	53		61		37		49
	Total	100	167	100	150	100	229	100
High	Major	2		6		3		4
	Minor	50		45		76		61
	Neighborhood	48		49		21		35
	Total	100	46	100	71	100	96	100
Total respondents			233		233		336	
Non-respondents			44		75		144	

* Percent of respondents.

APPENDIX B

Appendix Table 14. Comparisons of Methods of Obtaining Data by Rental Areas to Kind of Store

Rental Areas	Kind of Store	Personal		Telephone		Mail		Average
		Per-cent*	No. of Cases	Per-cent*	No. of Cases	Per-cent*	No. of Cases	
Under $30	Chain	70		50		85		70
	Independent	30		50		15		30
	Total	100	33	100	20	100	26	100
$30 - $39	Chain	70		62		79		71
	Independent	30		38		21		29
	Total	100	49	100	45	100	58	100
$40 - $49	Chain	67		60		82		70
	Independent	33		40		18		30
	Total	100	82	100	85	100	100	100
$50 - $59	Chain	58		64		85		72
	Independent	42		36		15		28
	Total	100	33	100	36	100	53	100
$60 - $69	Chain	100		76		87		85
	Independent	-		24		13		15
	Total	100	7	100	17	100	23	100
$70 - $79	Chain	60		78		100		85
	Independent	40		22		-		15
	Total	100	5	100	9	100	12	100
$80 & over	Chain	67		33		100		65
	Independent	33		67		-		35
	Total	100	3	100	9	100	8	100
Total respondents			212		221		280	
Non-respondents			65		87		200	

* Percent of respondents.

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Appendix Table 15. Comparisons of Methods of Obtaining Data and Kind of Store to Kind of Container

Kind of Store	Kind of Container	Personal		Telephone		Mail		Average
		Per-cent*	No. of Cases	Per-cent*	No. of Cases	Per-cent*	No. of Cases	
Chain	Bulk	31		38		34		34
	Packaged	69		62		66		66
	Total	100	167	100	159	100	303	100
Independent	Bulk	46		40		42		42
	Packaged	54		60		58		58
	Total	100	74	100	103	100	59	100
Total respondents			241		262		362	
Non-respondents			36		46		118	

* Percent of respondents.

Appendix Table 16. Comparison of Method of Obtaining Information and Kind of Store to Number in Family

Kind of Store	Personal	Telephone (Average)	Mail	Average
Chain	3.6	3.6	3.6	3.6
Independent	3.4	3.3	3.7	3.5
Average	3.5	3.5	3.6	3.6
Total respondents	240	262	362	
Non-respondents	37	46	118	

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Appendix Table 17. Comparisons of Method of Obtaining Information by Income Level to Kind of Store

Income Level	Kind of Store	Personal		Telephone		Mail		Average
		Percent*	No. of Cases	Percent*	No. of Cases	Percent*	No. of Cases	
Low	Chain	66		69		91		73
	Independent	34		31		9		27
	Total	100	21	100	13	100	11	100
Medium	Chain	69		60		87		74
	Independent	31		40		13		26
	Total	100	174	100	168	100	230	100
High	Chain	69		62		79		71
	Independent	31		38		21		29
	Total	100	48	100	79	100	98	100
Total respondents			243		260		339	
Non-respondents			34		48		141	

* Percent of respondents.

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Appendix Table 18. Comparisons of Method of Obtaining Data and Kind of Potatoes to Whether Kind Usually Bought.

Kind of Potatoes	Whether Kind Usually Bought	Personal		Telephone		Mail		Average
		Per-cent*	No. of Cases	Per-cent*	No. of Cases	Per-cent*	No. of Cases	
Michigan	Yes	81		79		71		76
	No	19		21		29		24
	Total	100	122	100	96	100	186	100
Maine	Yes	89		84		93		89
	No	11		16		7		11
	Total	100	76	100	70	100	104	100
Idaho	Yes	98		81		91		90
	No	2		19		9		10
	Total	100	54	100	78	100	138	100
Total respondents			252		244 (285)		428	
Non-respondents			25		64 23		52	

* Percent of respondents.

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Appendix Table 19. Comparisons of Methods of Obtaining Data and Location of Store to Number in Family.

Inside and Outside Shopping Area	Personal Average	Personal No. of Cases	Telephone Average	Telephone No. of Cases	Mail Average	Mail No. of Cases	Average
Major Area	3.3	25	3.6	22	3.3	45	3.4
Minor Area	3.6	89	3.5	83	3.6	210	3.6
Outside of Area	3.5	116	3.6	130	3.6	125	3.6
Average	3.5		3.6		3.6		3.6
Total respondents		232		235		380	
Non-respondents		45		73		100	

Appendix Table 20. Comparison of Method of Obtaining Data and Whether Inside or Outside Shopping Area to Kind of Store

Shopping Area	Kind of Store	Personal (Percent of respondents)	Telephone (Percent of respondents)	Mail (Percent of respondents)	Average (Percent of respondents)
Major	Chain	96	73	87	86
	Independent	4	27	13	14
	Total	100	100	100	100
Minor	Chain	79	78	94	87
	Independent	21	22	6	13
	Total	100	100	100	100
Neighborhood	Chain	61	58	69	63
	Independent	39	42	31	37
	Total	100	100	100	100
Total respondents		233	235	384	
Non-respondents		44	73	96	

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Appendix Table 21. Comparisons of Methods of Obtaining Data by Rental Areas to Kind of Potatoes Used

Rental Areas	Kind of Potatoes	Personal		Telephone		Mail		Average
		Per-cent*	No. of Cases	Per-cent*	No. of Cases	Per-cent*	No. of Cases	
Under $30	Michigan	55		46		56		53
	Maine	26		25		22		24
	Idaho	18		25		22		21
	Other	1		4		-		2
	Total	100	34	100	24	100	32	100
$30 - $39	Michigan	55		41		49		48
	Maine	21		38		14		24
	Idaho	20		19		33		25
	Other	4		2		4		3
	Total	100	51	100	52	100	63	100
$40 - $49	Michigan	38		41		37		39
	Maine	37		28		27		30
	Idaho	23		31		33		29
	Other	2		-		3		2
	Total	100	92	100	92	100	113	100
$50 - $59	Michigan	50		33		46		42
	Maine	24		33		28		29
	Idaho	24		31		23		26
	Other	2		3		3		3
	Total	100	34	100	42	100	60	100
$60 - $69	Michigan	62		20		43		38
	Maine	38		40		14		27
	Idaho	-		40		36		32
	Other	-		-		7		3
	Total	100	8	100	20	100	28	100
$70 - $79	Michigan	50		50		43		47
	Maine	17		8		22		16
	Idaho	33		42		28		34
	Other	-		-		7		3
	Total	100	6	100	12	100	14	100
$80 & over	Michigan	34		42		30		32
	Maine	33		29		20		26
	Idaho	33		29		40		37
	Other	-		-		10		5
	Total	100	3	100	7	100	10	100
Total respondents			228		249		320	
Non-respondents			49		59		160	

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Appendix Table 22. Comparisons of Methods of Obtaining Data and Income Level to Cost Per Pound

Income Level	Personal cents	Personal Number	Telephone cents	Telephone Number	Mail cents	Mail Number	Average Cents
Low	5.0	20	5.8	4	4.7	11	5.1
Medium	4.4	138	4.9	90	4.7	210	4.6
High	4.6	44	4.8	38	4.6	88	4.7
Average	4.5		4.9		4.7		4.7
Total respondents		202		132		308	
Non-respondents		75		176		172	

Appendix Table 23. Comparisons of Methods of Obtaining Data by Rental Areas to Cost per Pound

Rental Areas	Personal cents	Personal Number	Telephone cents	Telephone Number	Mail cents	Mail Number	Average Cents
Under $30	4.5	31	4.8	7	4.6	28	4.6
$30 - $39	4.3	38	4.6	26	4.8	47	4.6
$40 - $49	4.5	61	4.8	40	4.8	93	4.7
$50 - $59	4.7	29	4.3	21	4.5	44	4.5
$60 - $69	4.0	8	4.1	11	4.5	23	4.3
$70 & over	5.4	5	5.2	7	4.5	17	4.8
Average	4.5		4.6		4.7		4.6
Total respondents		172		112		252	
Non-respondents		105		196		228	

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Appendix Table 24. Relation of Method of Obtaining Data and Rental Area to Number of Pounds Per Person Per Day

Rental Areas	Personal		Telephone		Mail		Average
	pounds	number	pounds	number	pounds	number	
Under $30	.42	34	.54	26	.39	31	.44
$30- $39	.37	52	.37	52	.44	63	.40
$40 - $49	.34	91	.31	87	.36	112	.34
$50 - $59	.35	37	.35	42	.39	55	.37
$60 - $69	.38	8	.29	19	.46	26	.39
$70 & over	.39	9	.31	21	.35	22	.34
Average	.40		.35		.39		.38
Total respondents		231		247		309	
Non-respondents		46		61		171	

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Appendix Table 25. Comparison of Method of Obtaining Data and Income Level to Number of Pounds Per Person Per Day.

Income Level	Personal	Telephone (Pounds)	Mail	Average
Low	.40	.40	.33	.37
Medium	.36	.36	.33	.35
High	.39	.31	.41	.37
Average	.37	.35	.35	.36
Total respondents	268	291	373	
Non-respondents	9	17	107	

Appendix Table 26. Comparisons of Methods of Obtaining Data and Kind of Potatoes to Pounds Per Person Per Day

Kind of Potatoes	Personal		Telephone		Mail		Average
	pounds	number	pounds	number	pounds	number	
Michigan	.37	125	.36	115	.36	189	.36
Maine	.36	76	.34	84	.35	109	.35
Idaho	.37	56	.30	92	.36	142	.34
Average	.37		.34		.36		.35
Total respondents		257		291		440	
Non-respondents		20		17		40	

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Appendix Table 27. Comparisons of Methods of Obtaining Data and Type of Potatoes to Kind of Store.

Type of Potatoes	Type of Store	Personal	Telephone	Mail	Average
		(Percent of respondents)			
Michigan	Chain	70	54	77	67
	Independent	30	46	23	33
	Total	100	100	100	100
Maine	Chain	74	64	92	76
	Independent	39	36	8	24
	Total	100	100	100	100
Idaho	Chain	62	68	86	72
	Independent	38	32	14	28
	Total	100	100	100	100
Total respondents		229	240	366	
Non-respondents		48	68	114	

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Appendix Table 28. Comparisons of Methods of Obtaining Data and Type of Store to Reported Cost Per Pound of Potatoes

Type of Store	Personal	Telephone	Mail	Average
	(Cost per pound in cents)			
Chain	4.5	4.8	4.8	4.7
Independent	4.6	4.8	5.1	4.9
Average	4.6	4.8	4.9	4.7
Total respondents	183	122	285	
Non-respondents	94	186	195	

Appendix Table 29. Comparisons of Methods of Obtaining Data and Number in Family to Reported Cost per Pound of Potatoes

Number in Family	Personal	Telephone	Mail	Average
	(Cost per pound in cents)			
Under 2	4.9	4.7	5.0	4.9
3 - 5	4.4	4.6	4.7	4.6
6 and over	4.6	4.0	4.3	4.2
Average	4.5	4.7	4.7	4.6
Total respondents	202	138	349	
Non-respondents	75	170	131	

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Appendix Table 30. Comparison of Methods of Obtaining Data and Kind of Potatoes to Color After Cooking.

Kind of Potatoes	Personal		Telephone		Mail		Average
	Percent	Number	Percent	Number	Percent	Number	
Michigan							
Poor	9	11	11	13	20	29	13
Average	26	33	14	16	32	45	28
Good	65	81	75	86	48	69	59
Total	100	125	100	115	100	143	100
Maine							
Poor	4	3	-	-	3	3	2
Average	8	6	11	9	25	21	15
Good	88	67	89	74	72	62	83
Total	100	76	100	83	100	86	100
Idaho							
Poor	-	-	-	-	-	-	-
Average	4	2	3	3	7	8	5
Good	96	53	97	88	93	99	95
Total	100	55	100	91	100	107	100
Total respondents		256		289		336	
Non-respondents		21		19		144	

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Appendix Table 31. Comparison of Methods of Obtaining Data and Kind of Potatoes to Rating for Cleanliness.

Kind of Potatoes	Personal		Telephone		Mail		Average
	Percent	Number	Percent	Number	Percent	Number	
Michigan							
Poor	6	8	2	2	11	16	7
Average	30	37	17	20	52	71	34
Good	64	80	81	93	37	51	59
Total	100	125	100	115	100	138	100
Maine							
Poor	3	2	4	3	4	3	3
Average	8	6	15	13	46	37	23
Good	89	68	81	68	50	40	74
Total	100	76	100	84	100	80	100
Idaho							
Poor	4	2	1	1	-	1	1
Average	7	4	1	1	22	22	11
Good	89	49	98	89	78	77	88
Total	100	55	100	91	100	99	100
Other							
Poor	-	-	-	-	10	1	5
Average	28	2	25	1	10	1	19
Good	72	5	75	3	80	8	76
Total	100	7	100	4	100	10	100
Total respondents		263		294		327	
Non-respondents		14		14		153	

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Appendix Table 32. Comparisons of Methods of Obtaining Data and Kind of Potatoes to Rating for Size.

Kind of Potatoes	Personal		Telephone		Mail		
	Percent	Number	Percent	Number	Percent	Number	Average
Michigan							
Poor	2	3	-	-	15	20	6
Average	43	54	24	27	50	67	40
Good	55	68	76	87	35	46	54
Total	100	125	100	114	100	133	100
Maine							
Poor	1	1	-	1	4	3	2
Average	29	22	31	26	44	34	35
Good	70	53	69	57	52	40	63
Total	100	76	100	83	100	77	100
Idaho							
Poor	-	-	2	2	4	4	2
Average	18	10	14	13	29	27	21
Good	82	45	84	76	67	63	77
Total	100	55	100	91	100	94	100
Other Potatoes							
Poor	14	1	20	1	9	1	14
Average	28	2	20	1	18	2	23
Good	58	4	60	2	73	8	64
Total	100	7	100	4	100	11	100
Total respondents		263		292		315	
Non-respondents		14		16		165	

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Appendix Table 33. Comparisons of Methods of Obtaining Data and Kind of Potatoes to Rating for Blemishes and Defects.

Kind of Potatoes	Personal		Telephone		Mail		Average
	Percent	Number	Percent	Number	Percent	Number	
Michigan							
Poor	11	13	6	7	24	28	14
Average	40	50	24	28	53	61	39
Good	49	61	70	80	23	27	47
Total	100	124	100	115	100	116	100
Maine							
Poor	1	1	3	2	2	1	2
Average	20	15	20	17	44	23	26
Good	79	60	77	65	54	28	72
Total	100	76	100	84	100	52	100
Idaho							
Poor	2	1	2	2	2	1	2
Average	20	11	16	14	48	30	27
Good	78	43	82	74	50	31	71
Total	100	55	100	90	100	62	100
Other Potatoes							
Poor	14	1	-	-	-	-	5
Average	14	1	25	1	14	1	17
Good	72	5	75	3	86	6	78
Total	100	7	100	4	100	7	100
Total respondents		262		293		237	
Non-respondents		15		15		243	

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Appendix Table 34. Comparisons of Methods of Obtaining Data and Kind of Potatoes to Rating for Taste

Kind of Potatoes	Personal		Telephone		Mail		
	Percent	Number	Percent	Number	Percent	Number	Average
Michigan							
Poor	2	3	6	8	4	6	5
Average	14	17	11	12	46	62	24
Good	84	103	83	95	50	66	71
Total	100	123	100	115	100	134	100
Maine							
Poor	1	1	2	2	4	3	3
Average	4	3	12	10	30	21	15
Good	95	72	86	71	66	47	82
Total	100	76	100	83	100	71	100
Idaho							
Poor	-	-	3	2	-	-	1
Average	2	1	4	4	16	14	8
Good	98	54	93	83	84	74	91
Total	100	55	100	89	100	88	100
Othe Potatoes							
Poor	14	1	-	-	-	-	5
Average	-	-	-	-	18	2	9
Good	86	6	100	4	82	9	86
Total	100	7	100	4	100	11	100
Total respondents		261		291		304	
Non-respondents		16		17		176	

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Appendix Table 35. Comparisons of Methods of Obtaining Data and Kind of Potatoes to Cooking Quality.

Kind of Potatoes	Cooking Quality	Personal		Telephone		Mail		Average
		Per-cent*	No. of Cases	Per-cent*	No. of Cases	Per-cent*	No. of Cases	
Michigan	Poor	2		6		10		6
	Average	24		17		39		28
	Good	74		77		51		66
	Total	100	24	100	115	100	158	100
Maine	Poor	1		-		3		2
	Average	9		6		26		14
	Good	90		94		71		84
	Total	100	76	100	83	100	95	100
Idaho	Poor	-		2		2		2
	Average	16		5		11		10
	Good	84		93		87		88
	Total	100	55	100	91	100	109	100
Total respondents			255		289		362	
Non-respondents			22		19		118	

* Percent of respondents.

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Appendix Table 36. Comparisons of Methods of Obtaining Data and Kind of Potatoes to Rating for General Desirability.

Kind of Potatoes	Personal		Telephone		Mail		
	Percent	Number	Percent	Number	Percent	Number	Average
Michigan							
Poor	3	3	6	7	16	17	9
Average	38	37	22	25	49	51	36
Good	59	57	72	83	35	37	55
Total	100	97	100	115	100	105	100
Maine							
Poor	2	1	2	2	3	2	2
Average	4	2	16	13	29	18	17
Good	94	51	82	68	68	42	81
Total	100	54	100	83	100	62	100
Idaho							
Poor	-	-	1	1	-	1	-
Average	9	4	11	10	17	12	13
Good	91	39	88	79	83	59	87
Total	100	43	100	90	100	71	100
Other Potatoes							
Poor	-	-	-	-	-	-	-
Average	28	2	-	-	29	2	22
Good	72	5	100	4	71	5	78
Total	100	7	100	4	100	7	100
Total respondents		201		292		245	
Non-respondents		76		16		235	

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Appendix Table 37. Comparisons of Methods of Obtaining Data and Kind of Potatoes to Rating on Quality - Mashed.

Kind of Potatoes	Personal		Telephone		Mail		
	Percent	Number	Percent	Number	Percent	Number	Average
Michigan							
Poor	2	2	6	6	9	16	6
Average	27	34	7	8	29	50	23
Good	71	88	87	94	62	105	71
Total	100	124	100	108	100	171	100
Maine							
Poor	1	1	1	1	1	1	1
Average	6	4	8	6	23	23	13
Good	93	69	91	71	76	76	86
Total	100	74	100	78	100	100	100
Idaho							
Poor	4	2	-	-	7	8	4
Average	8	4	11	9	17	21	13
Good	88	46	89	71	76	92	83
Total	100	52	100	80	100	121	100
Total respondents		250		266		392	
Non-respondents		27		42		88	

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Appendix Table 38. Comparisons of Methods of Obtaining Data and Kind of Potatoes to Rating on Quality - Baked.

Kind of Potatoes	Personal		Telephone		Mail		
	Percent	Number	Percent	Number	Percent	Number	Average
Michigan							
Poor	17	16	13	9	19	27	17
Average	37	35	8	6	40	59	32
Good	46	43	79	56	41	60	51
Total	100	94	100	71	100	146	100
Maine							
Poor	3	2	8	5	9	8	7
Average	32	21	23	15	38	35	32
Good	65	43	69	45	53	48	61
Total	100	66	100	65	100	91	100
Idaho							
Poor	-	-	-	-	-	-	-
Average	2	1	-	-	4	5	2
Good	98	50	100	84	96	119	98
Total	100	51	100	84	100	124	100
Total respondents		211		220		361	
Non-respondents		66		88		119	

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Appendix Table 39. Comparison of Methods of Obtaining Data and Kind of Potatoes to Rating on Quality - Fried.

Kind of Potatoes	Personal		Telephone		Mail		
	Percent	Number	Percent	Number	Percent	Number	Average
Michigan							
Poor	2	2	6	6	6	9	5
Average	14	14	8	7	40	58	24
Good	84	82	86	79	54	79	71
Total	100	98	100	92	100	146	100
Maine							
Poor	-	-	3	2	1	1	1
Average	9	6	10	6	27	23	16
Good	91	62	87	54	72	61	73
Total	100	68	100	62	100	85	100
Idaho							
Poor	-	-	2	1	2	2	2
Average	22	9	13	8	27	27	22
Good	78	31	85	51	71	70	76
Total	100	40	100	60	100	99	100
Total respondents		206		214		330	
Non-respondents		71		94		150	

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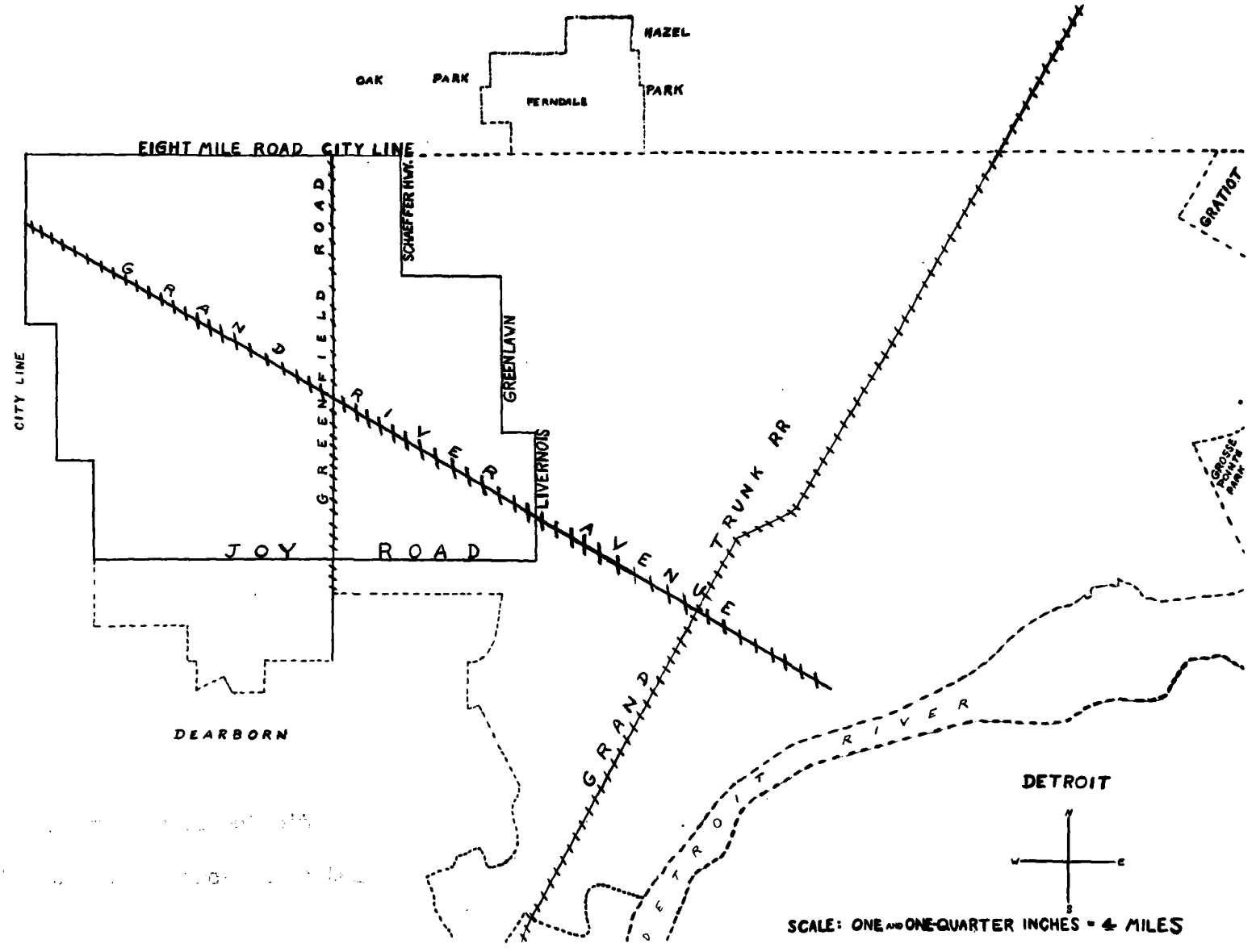
Appendix Table 40. Comparison of Methods of Obtaining Data and Kind of Potatoes to Rating on Quality - Boiled.

Kind of Potatoes	Personal		Telephone		Mail		
	Percent	Number	Percent	Number	Percent	Number	Average
Michigan							
Poor	5	6	7	8	11	19	8
Average	22	27	12	14	33	57	24
Good	73	91	81	92	56	95	68
Total	100	124	100	114	100	171	100
Maine							
Poor	1	1	-	-	4	4	2
Average	11	8	10	8	23	23	15
Good	88	67	90	73	73	73	83
Total	100	76	100	81	100	100	100
Idaho							
Poor	9	5	3	2	8	10	7
Average	12	6	23	19	31	37	24
Good	79	42	74	61	61	73	68
Total	100	53	100	82	100	120	100
Total respondents		253		277		391	
Non-respondents		34		31		84	

APPENDIX C

Includes map of area and questionnaires used in survey.


HAZEL
PARK
OAK
PARK
FERNDALE
EIGHT MILE ROAD CITY LINE
SCHAEFFER HWY.
GREENFIELD ROAD
GREENLAWN
LIVERNOIS
GRATIOT
CITY LINE
GRAND RIVER AVENUE
GRAND TRUNK RR
JOY ROAD
GROSSE POINTE PARK
DEARBORN
GRAND RIVER
DETROIT RIVER
DETROIT
N
W
E
S
SCALE: ONE AND ONE-QUARTER INCHES = 4 MILES

MICHIGAN STATE COLLEGE
East Lansing, Michigan

Dwelling address _____ Date _____ Hour _____

Number of calls ☐ ☐ ☐ If no interview why? _____

Does your store have the choice of potatoes that you prefer? _____

What is the name and address (nearest cross street) of the store where you made your last purchase of potatoes?

Store name _____ Address _____

At what store do you buy most of your food?

Store name _____ Address _____

If purchased potatoes at store other than rest of food, why not at same place?

_____

Did you ☐, husband ☐, son ☐, daughter ☐, other ☐ make the last potato purchase?

Were they from bulk display? ☐; or were they already packaged? ☐

How many pounds were there? _____ lbs.

About how many days will that many potatoes last you? _____ days.

About how much did the potatoes cost? _____ ¢

Were they the kind you usually buy? Yes ____ No____ If yes, about how long have you been buying this kind? _____.

For size, do you prefer potatoes

Mixed sizes ☐ Small ☐ Medium ☐ or Large ☐

Do you know what state the potatoes which you now have are from? (Would you like to go look on the bag?) (Check as many states as you have on hand)

Idaho ☐ Maine ☐ Michigan ☐ Other ☐ Don't know ☐

What were your reasons for selecting them? (If from two states indicate reasons on each).

_____

_____

We would like to have you rate the potatoes on hand as "Good", "Average", or "Poor" (Interviewer indicate what state potatoes are from): Use Maine or Michigan whenever consumer has them on hand.

Idaho ☐ Maine ☐ Michigan ☐ Other ☐ Don't know ☐

How was:	Good	Average or Fair	Poor
Cooking Quality	☐	☐	☐
Color after cooking	☐	☐	☐
Cleanliness	☐	☐	☐

How was:	Good	Average or Fair	Poor
Size	☐	☐	☐
Blemishes or defects	☐	☐	☐
Taste	☐	☐	☐

And how would you rate them for general desirability or quality when considering everything?

What factor in potatoes do you consider the most important? _____

How would you rate them on quality, cooked as follows:

Method of Cooking	Good	Average	Poor	Not Cooked This Way
How rate them when Boiled	☐	☐	☐	☐
How rate them when Mashed	☐	☐	☐	☐
How rate them when Baked	☐	☐	☐	☐
How rate them when Fried	☐	☐	☐	☐

Other ways _____

If you were to make one criticism of your grocer's choice of potatoes what would it be? _____

AND now for some information to compare with potato use.

About how many bunches or lbs. of carrots did you use last week ☐; stalks or bunches of celery? ☐.

About how much was your grocery bill, including milk, last week $ ☐.

Including yourself, how many people are in your family (eat with you) ☐.

About how long have you lived in this neighborhood? ☐ ears.

Do you have a telephone? Yes ☐ No ☐

What is your husbands occupation? _____.

In what country was your husbands Father born _____ Race: white___ other___

Family income range per week: Under $55 ___ $55-$90 ___ Over $90 ___.

Address _____

MICHIGAN STATE COLLEGE

Michigan State College is cooperating with your neighborhood grocers in trying to find your likes and dislikes in potatoes. We would like for you to answer these few questions to help us get you better potatoes.

Name _____ Address _____

Phone No. _____ Date _____ Hour _____

Does your grocery store have the kind of potatoes that you prefer? _____

What is the name and address of the store where your potatoes were bought?

(To the nearest cross street) _____

Did you ☐; your husband ☐; son ☐; daughter ☐; don't know ☐; other ☐; make the last purchase.

Were they from bulk? ☐ Or were they packaged? ☐

How many pounds were there ☐ lbs.

About how long will this many potatoes last you? ☐ days.

How much did the potatoes cost? ☐ ¢

Were they the kind you usually buy? Yes ☐; No ☐

For size, do you prefer your potatoes mixed ☐, small ☐, medium ☐, or large ☐

Do you know what state the potatoes you have on hand now are from?
Maine ☐; Idaho ☐; Michigan ☐; Other ☐. Don't know ☐.

What were your main reasons for selecting this particular kind? _____

_____.

We would like to have you rate the type of potatoes on hand. (Interviewer indicate here if it is Maine ☐; Michigan ☐; Idaho ☐; Or Other ☐ _____.

How would you rate them on the following characteristics?	How was: Good	Average	Poor
Cooking quality	( )	( )	( )
Color after cooking	( )	( )	( )
Cleanliness	( )	( )	( )
Size	( )	( )	( )
Blemishes and defects	( )	( )	( )
Waste	( )	( )	( )
General desirability	( )	( )	( )

How would you rate them on quality when:	Good	Average	Poor	Not cooked this way
Boiled	( )	( )	( )	( )
Mashed	( )	( )	( )	( )
Baked	( )	( )	( )	( )
Fried	( )	( )	( )	( )
_____	( )	( )	( )	( )

Including yourself how many people in your family (eat with you) _____.

About how much was your grocery bill, including milk, last week $_____.

(ANY COMMENTS OVER)

BETTER POTATOES

This store is cooperating with Michigan State College in a study to find what you want in potatoes. Will you help them and yourself by giving us your answers to these few questions? We would appreciate it. *Don't* sign your name, unless you want to. Even if you don't answer all the questions, please return the questionnaire.

What kind of potatoes do you have on hand now? (If none, check here ☐ and show last used.)

Maine ☐ Idaho ☐ Michigan ☐ ..... ☐ Don't know ☐

What size are they? Mixed Size ☐ Small ☐ Medium ☐ Large ☐

Are they the kind you usually buy? Yes ☐ No ☐

Did you buy your last potatoes already packaged? ☐ Or from bulk? ☐

About how many pounds of potatoes did you buy last time?.....lbs.

About how much did your last package of potatoes cost you?.....¢.

About how many days will a purchase of the amount you have now last?.....

What were your main reasons for selecting them? (Check two or three reasons.)

Satisfactory experience with them..... ☐
Recommended by someone..... ☐
Convenient package ..... ☐
Good appearance ..... ☐
Price..... ☐
Color..... ☐
Size..... ☐
Cleanliness ..... ☐
Some other reason..... ☐

By the way, do you remember the name and address of the store they were bought at? (To the nearest cross street.)

.....

Does your food store usually have the kind of potatoes you prefer? Yes ☐ No ☐

Including yourself, how many people are there in your family?.....

About how often do you buy potatoes?.....days.

POTATO QUALITY

Please CIRCLE the phrases below that describe the potatoes you are rating.	Please rate Good, Average, or Poor on Quality Factors. Good	Average	Poor
COOKING QUALITY..... Cook mealy; firm when boiled; cook soggy; fall apart; cook unevenly; cook slowly; cook easily.	☐	☐	☐
COLOR AFTER COOKING..... Cook white; dark streaks; dark spots; cook dark.	☐	☐	☐
CLEANLINESS..... Clean; fairly clean; slightly dirty; dirty.	☐	☐	☐
SIZE..... Size O.K.; too small; too large; too variable or mixed; too few medium.	☐	☐	☐
BLEMISHES OR DEFECTS..... Rotten spots; soft rot; bruises; holes; scabs; bad or hollow centers; wrinkled; sprouts; streaks inside; spots inside.	☐	☐	☐
TASTE..... Sweet; neutral, tasteless; bitter.	☐	☐	☐
GENERAL DESIRABILITY.....	☐	☐	☐

Which of the above do you consider the most important?.....

How would you rate them on quality when cooked as follows:

	Good	Average	Poor
Boiled.....	☐	☐	☐
Mashed.....	☐	☐	☐
Baked.....	☐	☐	☐
Fried.....	☐	☐	☐
Other.....	☐	☐	☐

The next time you buy potatoes will you try to buy the same kind described above? Yes ☐ No ☐

Please give your street address to nearest cross street.....

.....

Any comments?.....

.....

.....

(If you wish to write more, turn the page over and write on the back.)

THANK YOU FOR YOUR HELP.
Michigan State College East Lansing

JUST PUT THIS BACK IN THE ENVELOPE AND MAIL. NO STAMP NEEDED.