TELEPHONE INTERVIEWING AS A PRIMARY MEANS OF COMMUNICATION WITH A CONSUMER PANEL

Thesis for the Degree of M. A.
MICHIGAN STATE UNIVERSITY
MARTIN BLOCK
1969

ABSTRACT

TELEPHONE INTERVIEWING AS A PRIMARY MEANS OF COMMUNICATION WITH A CONSUMER PANEL

By

Martin Block

The purpose of this study was to explore the feasibility of using telephone interviews for recruiting consumer panel members and for the subsequent periodic collection of data. Telephone interviewing should provide a cost saving over personal interviewing and a time saving over mail interviewing. This study is intended to be primarily exploratory and descriptive.

The hypotheses in the study are:

I: No difference exists in panel mortality between a panel using telephone recruitment and a similar panel using personal interview recruitment.

II: No difference exists in panel mortality between a panel using telephone diary pick-ups and a similar panel using a mail diary return.

III: Operating a consumer panel using all telephone interviewing results in a dollar cost savings over a panel using personal interview recruitment and a mail diary return.

IV: No difference exists in diary reporting in a panel using only telephone interviewing and a panel using a personal recruitment interview and a mail diary return.

Data were collected from two portions of the Michigan State Student Consumer Panel during the Summer of 1968. Two panels, one using only the telephone interviewing (no personal face-to-face contact) and one using an initial personal interview followed by subsequent mail diary returns were compared in terms of mortality, cost and diary reporting.

The findings of the study indicate that personal interviewing facilitates the initial recruiting of a larger proportion of the original sample. Telephone diary pick-ups, however, reduced the mortality rate after the recruitment interview as compared to the mail diary return.

Telephone recruiting was cheaper than personal recruiting, but diary collection by telephone was more expensive than by mail. After five weeks, the cost of the telephone panel nearly surpassed that of the personal-mail panel.

The major difference in reporting in the two panels, is the lack of reporting of large items in the telephone panel. Other differences can be explained by demographic and socio-economic differences between the two panels.

The conclusion of the study is that, under certain circumstances, the use of the telephone as a primary means of communication in operating a consumer panel may be feasible.

TELEPHONE INTERVIEWING AS A PRIMARY MEANS OF COMMUNICATION WITH A CONSUMER PANEL

By

Martin Block

A THESIS

Submitted to

Michigan State University

in partial fulfillment of the requirements

for the degree of

MASTER OF ARTS

Department of Advertising

1969

Accepted by the faculty of the Department of Advertising, College of Communication Arts, Michigan State University, in partial fulfillment of the requirements for the Master of Arts degree.

Gordon E. Miracle

Director of Thesis

ACKNOWLEDGMENTS

I am indebted for the help I received from Professor Gordon E. Miracle in nearly every phase of the panel project and the writing of the thesis.

I am grateful to Mr. Keith J. Hess, who began the project and developed the diary and questionnaires; to Mrs. Joyce Butler who typed and edited the final manuscript; and finally to my wife, Rosemary Fox Block who helped with coding, interviewing and patience.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Purpose

The purpose of this study is to explore the feasibility of using telephone interviews for recruiting consumer panel members, and for the subsequent periodic collection of data. The use of telephone interviewing should involve substantial cost saving over personal interviewing, and time saving over personal and mail interviewing. This study is intended to be primarily exploratory and descriptive with the intent of stimulating further research.

Problem Definition

As Shaffer[1] pointed out over 17 years ago, "...under most circumstances, it would appear that the personal contact is to be preferred to the telephone contact in the recruitment of panel members. This has, however, not been proven empirically and is an area in which some experimental work might well be done, since the use of the phone for just part of the panel recruiting could effect considerable saving." Empirical evidence is still lacking.

The use of the telephone in consumer panel operation has been restricted primarily to pre-recruitment interviewing, or simply making the arrangements for the personal interview recruitment with some brief explanation as to the nature of the project for the benefit of the

[1] James D. Shaffer. Methodological Bases for the Operation of a Consumer Purchase Panel. Unpublished Ph.D. Dissertation, Michigan State College, 1952. p. 277.

prospective panel member. Telephone interviewing is also used in emergency problems, in answering questions, or even asking a limited number of additional questions that may have been forgotten or added since the last personal visit. The telephone plays a secondary role to personal interviewing, even though telephone interviewing can be used in many situations that the personal interview can be used.

The Michigan State Student Consumer Panel, the panel used in this study, was designed to test a number of methodological questions including the use of telephone interviewing as a primary means of communication. The telephone was used for the recruitment interview and the subsequent diary pick-ups, for a portion of the panel. Such use of telephone interviewing in consumer panel operation is not evident in the relevant literature. Just as Shaffer stated long ago, telephone interviewing seems to be only considered as a supplementary means of communication along with either personal interviewing or mail interviewing in the primary role.

The large consumer panels, such as the panel administered by the Chicago Tribune or the Market Research Corporation of America (MRCA) do not use telephone interviewing as a primary means of communication with panel members. Consumer panels, at least those reported in the literature, generally employ personal interviewing for the initial recruitment. When the panel is geographically widely distributed, a mail recruitment tends to be used. Subsequent interviewing tends to be either personal or mail depending again upon geography, amount of data to be collected, frequency of collection, and other considerations. Telephone interviewing is rarely used in either recruitment interviews or subsequent data collection interviews.

Telephone interviewing should be much less expensive than personal face-to-face interviews even if nothing more than travel expenses are

saved. Telephone interviewing would also avoid the time delay in mail interviewing. Hopefully such savings would in a modest way make the consumer panel technique applicable to more problems. That is, problems that would have before been considered too small to warrant the expense of a consumer panel.

Hypotheses

The primary focus of this study is in answering the question: Is telephone interviewing a feasible alternative as a means of administering recruitment interviews and subsequent data collection interviews in consumer panel operation?

Consumer panel methodologists probably have in the past relied primarily upon the personal interview because of their concern for reducing mortality rates and maximizing the quantity and quality of reporting. The mail interview is used only when the personal interview is not feasible because of cost considerations. The primary reasons, as stated by Shaffer and others for not using telephone interviewing in a primary role in consumer panel operation are the fears of poorly established rapport and a lack of face-to-face feedback.

Formulating hypotheses in terms of some of these concerns and stating them in their null form:

Hypothesis I: There is no difference in panel mortality, or the percent cooperating of the initial sample after N weeks, between a panel using a telephone recruitment interview and a similar panel using a personal face-to-face interview.

Hypothesis II: There is no difference in panel mortality between a panel using a telephone interview diary pick-up and a similar panel using a mail

return diary pick-up.

Hypothesis III: There is no significant cost difference in administering a panel using all telephone interviewing and a similar panel using a personal recruitment interview and a mail diary return.

Hypothesis IV: There is no difference in the quantity and quality of diary reporting in a panel using only telephone interviewing, i.e. no personal contact, and a similar panel using a personal recruitment interview and a mail diary return.

The expectation is that the first null hypothesis will be rejected because personal interviewing should facilitate the recruiting process (because of the advantages of the rapport established in the face-to-face interview). But, the differences between the personal interview and the telephone interview should not be pronounced enough to reject the telephone interview as a feasible means of recruitment. The second null hypothesis is likely to be rejected as well because the telephone call placed every time reminding the panel member to turn in his diary might be expected to lessen the mortality effect as compared to the mail return which leaves the remembering entirely up to the respondent.

The third null hypothesis is also expected to be rejected because, as already discussed, telephone interviewing should be cheaper than personal interviewing. However, the telephone diary pick-up, i.e. data collection interview, may not be cheaper than a mail return at the cost of a postage stamp per return.

The last, and most important, null hypothesis deals with the quantity and quality of diary reporting. It is expected that this hypothesis will be accepted. If so, the telephone interview is to be considered as a

feasible alternative to other methods of collecting diary data. The data gathered by the telephone are expected to be very comparable with any data that might be collected using any other technique. The problem is reliability. The question that needs answering in order to defend telephone interviewing as a feasible alternative is: Does the telephone interview recruitment and diary pick-up provide reliable data from a consumer panel?

Sources of Data

Data will be utilized from the two portions of the MSU Student Consumer Panel that were operated during the Summer of 1968. The samples in this study are both small, and of limited generalizability because they consist entirely of college students.

The two panels, of slightly less than fifty members, one using the personal interview recruitment and mail diary return, and the other using all telephone interviewing, both running for five weeks, will be compared. Panel members were recruited through an interview during which a demographic and socio-economic "classification" questionnaire was administered. The respondents were then asked to keep a diary of their purchases, which then was either "delivered" over the telephone to the interviewer or dropped in the mail.

The two panels will be compared for (1) quantitative mortality at three different stages, (2) qualitative mortality in terms of the differences between panel members and the MSU student population based upon university records, and the differences between panel members and panel losses, (3) the variable costs of administration of each panel, and (4) quantitative and qualitative diary reporting, in terms of mean expenditures per day, expenditures within specific product categories, and weekly purchase patterns.

CHAPTER II

CONSUMER PURCHASE PANELS

After a search of the relevant literature, sources of two general types were found, (1) those that deal with non-panel communication problems, i.e. interviewing techniques, and (2) those that deal with panel operation problems other than the communications problem. With the exception of the dissertation of James D. Shaffer[2], the literature does not contain substantial discussion of alternatives to personal and mail interviews with respect to consumer panel operation.

The Uses of Consumer Panels

A consumer panel is a tool for the collection of a wide variety of market data. A consumer panel is a sample of "consumers", i.e., individuals or organizations who use products and services, who are interviewed more than once and usually on a regular basis. The example of a consumer panel discussed in this study is a consumer purchase panel which involves frequent (daily or weekly), regular, and continuous reporting from the consumer sample of their purchasing behavior.

There are three common usages of consumer panels in collecting market data:[3]

1. Audience Measurement. The number and types of individuals who view TV programs, listen to radio programs and read newspapers and magazines, constitute valuable information for the marketer and advertiser.

[2]Shaffer. Methodological Bases.

[3]Harper W. Boyd, Jr., and Ralph L. Westfall. An Evaluation of Continuous Consumer Panels as a Source of Marketing Information. American Marketing Association, 1960. pp. 7-11.

Some examples of this type of consumer panel are the A. C. Nielson Radio-Television Index which measures the size and nature of the television and radio audience using a mechanical recording device attached to the TV set or radio of the panel member, and the American Research Bureau's (ARB) TV Panel which records TV viewing by means of a self-administered diary.

2. Product Testing. Consumer panels, usually set up as a product usage test, can determine the reaction of consumers to a new product or to a modification of an old product. This particular use of the consumer panel technique is similar to a before-after experimental design. The panel is recruited, an initial measurement taken, the new product introduced, and another measurement is taken. This procedure can be continued forming a chain, using one panel to test many products.

3. Purchase Behavior Measurement. Measuring purchase behavior is considered by many (e.g. Boyd and Westfall) as the greatest single asset of the consumer panel technique. The continuous recording of consumer expenditures can provide valuable insights into consumer expenditure patterns through time. Such recording can be used to draw market profiles, i.e., the number and kinds of households (consumers) who comprise a market, which kinds of consumers are light users or heavy users of a given product, which families have tried a given product, discontinued the product's use or have become loyal regular buyers. Consumer panels can provide insights into major consumer shifts, such as a move to the suburbs, or the effect of the first child in family on food purchasing behavior, as two examples. Consumer purchase panels can indicate through time; (1) size of the market, (2) composition of the market, (3) brand or store share of market, and (4) seasonality or other patterns.

Advantages of Consumer Panels

Most of the advantages of the consumer panel technique are contingent upon the fact that the panel design is dynamic, a through-time or longitudinal measure of change and trends; rather than a one-time static, or cross-sectional survey. Some of these advantages are:

1. Changers and Non-Changers can be readily identified. Over a period of time those individuals who change with respect to some variable can be isolated from those who do not, and the data can be analyzed or compared individually.

2. A succession of variables can be introduced into the panel, or portions of the panel as described above in the section on product testing. The entire panel can be divided into experimental groups, and control groups, employing the before-after with control group experimental design.

3. Panel members, because they are familiar with the system after being a panel member for a period of time, may be more willing to submit to "exacting" interviews than they would be for a one-time interviewer, who probably would be unfamiliar in both person and technique to the respondent. Generally panels can collect more data from a given respondent than can other survey techniques.

4. If self-enumerative techniques, such as a diary, are employed, the data tend to be more accurate because the respondent relies less upon his memory in recording the data.

5. Panels have a cost advantage over repeated personal interviews, especially if the data are desired at frequent intervals. This applies only to those situations of comparable size and budget.

Problems in Consumer Panel Operation

As a guide to consumer panel operating technique, Shaffer and Quackenbush have proposed four problem areas in consumer panel operation:[4] (1) the sampling problem, (2) the communication problem, (3) the reporting problem, and (4) the tabulating problem. The focus of this study is on the communication problem.

The Communication Problem in Panel Operation

The communication problem in consumer panel operation as described by Shaffer[5] consists of five phases: (1) establishing contact with potential respondents, (2) establishing sufficient initial cooperation and rapport to get respondents to listen with interest, (3) asking the questions in a way that are understood by respondents, (4) maintaining sufficient cooperation and rapport so as to stimulate accurate response, and (5) receiving and accurately recording the responses.

These phases can be shortened to two essential tasks, (1) the recruitment effort and getting initial cooperation, and (2) maintaining cooperation and collecting or picking-up the data. Each of these tasks directly involve communicating with respondents. As already mentioned, there are three ways of communicating with respondents: (1) the personal face-to-face interview, (2) the telephone interview, and (3) by mail.

Shaffer discusses personal interviewing in terms of fulfilling both tasks. Personal interviewing is most widely used during the first task, or recruitment effort. Personal contact is generally thought to be the

[4] James D. Shaffer and G. G. Quackenbush. "Cooperation and Sampling in Four Years of M.S.U. Consumer Panel Operation" Quarterly Bulletin. 38 (August 1955) p. 85.

[5] Shaffer. Methodological Bases. pp. 229-230.

preferred method, and is used wherever possible. The major exception being the use of mail in large national panels.

Maintaining cooperation can also be accomplished through the personal interview, according to Shaffer.[6] Periodic visits to check on the respondent, "to see how they are doing," has been used most effectively. Personal contact can also be used as a means of picking up data by having the interviewer make a visit at the end of each reporting period. Personal pick-ups run into the problem of finding the panel member frequently not at home, causing expensive call-backs, but provides the advantage of maintaining a greater degree of cooperation.[7]

The decision to use the telephone method of interviewing, Shaffer claims[8], is essentially economic. Shaffer goes on to say that telephone interviewing can generally be used wherever personal contact can be used, and is normally much less expensive. Shaffer[9] describes three important disadvantages or problems of recruiting panel members using the telephone method: (1) more difficult to hold the respondent's attention, (2) more difficult to establish rapport, and (3) interviewers lack the advantages of interpersonal face-to-face feedback in handling the interview. The main advantage of telephone interview recruitment is that the telephone facilitates contact with some families that are difficult to reach through a personal interview. Although, as Shaffer points out, the preference for the personal interview is clear, this preference is not founded in data.

Telephone contacts are commonly used in the pre-recruitment phase, not as the sole interviewing method, but to facilitate later personal

[6]Ibid. p. 246.

[7]Ibid. p. 250.

[8]Ibid. p. 274.

[9]Ibid. p. 276.

contact.[10] The telephone also finds frequent use in the post-recruitment or maintenance phase.[11] The telephone can be used for; (1) encouraging regular reporting, (2) for acquiring additional information, (3) for communicating instructions and answering questions, and (4) for building and maintaining rapport. Typically telephone interviewing is not used to pick up data, and is generally regarded as a facilitating tool rather than a primary interviewing technique.

Interviewing by mail, according to Shaffer[12], is used primarily in the pre-recruitment and post-recruitment phases. The introductory letter is a common example of mail used in the pre-recruitment phase. Letters of welcome, newsletters, answers to personal inquiries, are all fairly common examples of the use of mail in the post-recruitment phase.[13]

Mail is used extensively in recruiting in large national samples.[14] Mail offers the advantage of being able to cover a wide geographic area, which is the primary distinction of a national panel. Mail however presents the problem of low return rates, which greatly raise the cost of each panel member recruited. Normally, a mail recruitment effort includes an elaborate mail pre- and post-recruitment plan and some material incentive plan.

The Communication Problem in Non-Panel Surveys

As is the case in panel surveys, the personal interview is held as the standard method of interviewing in most of the literature dealing

[10] Ibid. p. 282.

[11] Ibid. pp. 283-286.

[12] Ibid. p. 289.

[13] Ibid. p. 306.

[14] Ibid. p. 308.

with non-panel surveys. The other techniques, telephone and mail, are generally discussed in terms of their comparability to the personal interview.

Baeza[15] lists four advantages of the personal interview: (1) it allows better control of the sample, (2) more questions can be asked, (3) field work can be done fairly quickly, and (4) much more information can usually be obtained by the use of the personal interview. The disadvantages Baeza[16] lists are: (1) personal bias introduced by the interviewer, and (2) interviews tend to be given too hastily.

Looking for alternatives to the personal interviewing technique, Hochstim[17] conducted a survey using all three techniques and found that the return rate was high for all three methods, questionnaire completeness was high for all, costs were highest for the personal interview, with telephone and mail significantly lower in cost with telephone being only slightly more costly than mail, and most important, very little difference in terms of validity between the three methods. Cahalan[18] found high response rates, but found the refusal rate for a telephone interview was more than twice that of a similiar personal interview.

[15]Marco A. Baeza. Sampling and Response Differences For Three Methods of Enumeration Obtained in a Study of Consumer Potato Preferences. Unpublished Ph.D. Dissertation, Michigan State College, 1950. p. 3.

[16]Ibid. p. 3.

[17]Joseph R. Hochstim. "Alternatives to Personal Interviewing" Public Opinion Quarterly. 27 (Winter 1963) 629-630.

[18]Don Cahalan. "Measuring Newspaper Readership by Telephone: Two Comparisons with Face-to-Face Interviews" Journal of Advertising Research. 1 (December 1960) 1-8.

Despite Hochstim's optimism, telephone interviewing seems to encounter a problem of higher refusal rates than personal interviewing. Schmiedeskamp[19] says about his experience with telephone interviewing, that in many instances the personal and telephone data cannot be distinguished from each other, and that in many cases there is no evidence that the more than 20% non-response in the telephone portion made a significant difference in the results.

Perry[20] found that using a telephone directory for a sampling frame allows for the possibility of arriving at a precise estimate of the error involved. He suggests that, while the use of telephone directories has been assailed among social scientists, it may be worthwhile to consider the possibility of using the telephone directory. Sampling may not be any more of a problem for the telephone survey than it is for the personal interview survey.

Shaffer[21] lists the major advantages of the telephone interview in cross-sectional surveys as follows: (1) low per unit cost, (2) ease of getting interviews with upper income groups, (3) the rapidity with which the data can be obtained, and (4) the simplicity of the procedure. Baeza[22] adds that the telephone interviewing technique also offers the advantage of spreading interviews within an individual city in random fashion.

[19]Jay W. Schmiedeskamp. "Reinterviews by Telephone" Journal of Marketing. 26 (January 1962) p. 32.

[20]Joseph B. Perry, Jr. "A Note on the Use of Telephone Directories as a Sample Source" Public Opinion Quarterly. 32 (Winter 1968-1969) p. 695.

[21]Shaffer. Methodological Bases. p. 275.

[22]Baeza. p. 3.

Shaffer lists the disadvantages of the telephone interview as follows:[23] (1) no truly representative cross-section of the public can be obtained, (2) any decision about how to classify "not-at-homes" will be misleading, (3) there is no adequate way to handle "busy" signals, (4) it is frequently difficult to hear and understand telephone conversations, and (5) the questionnaire must be short. Baeza[24] adds two more disadvantages, (1) only a restricted amount and type of information can be secured, and (2) the difficulty experienced in trying to determine the age, economic condition and occupation of the respondent.

Shaffer[25] in discussing the relative merits of a personal interview versus a mail interview, says that the personal interview is better, and in a study conducted by him found personal interview results to be statistically significant from mail interview results. The question, according to Shaffer, is: Is the personal interview better enough to warrant the additional cost?

Nuckols[26], in a comparison of a personal interview and a mail panel, found that the reporting of total family income tended to be higher, as well as the reporting levels of education, in the mail panel. There were not significant differences found between the reporting of age between the mail panel, the personal interview, or the census estimate for the two samples. Mail surveys tend to exhibit an education and income bias, that is people with higher education levels and incomes seem more likely to respond.

[23]Shaffer. p. 275

[24]Baeza. p. 3.

[25]James D. Shaffer. "Estimating Population Characteristics by Mail Survey" Journal of Farm Economics. 41 (November 1959) 833-837.

[26]Robert C. Nuckols. "Personal Interview Versus Mail Panel Survey" Journal of Marketing Research. 1 (February 1964) 11-16.

Low return rates are one of the most serious problems with the mail technique. Baeza[27] reports return rates of 97% for the personal interview, 78% for the telephone interview, and only 4.2% for the mail questionnaire. This low return rate for mail questionnaires, according to Larson and Catton[28], contributes to a mail-back bias. Larson and Catton also point out that the difference between early and late returns are indicators of differences between returns and non-returns.

Suchman and McCandless[29] report that: (1) as interest and familiarity with the topic under investigation increase, so does the return rate, and (2) the greater the education of the respondent, the greater the return rate. Education and interest seem to be very important factors in considering the use of a mail interviewing technique.

Shaffer[30] lists the following advantages for the use of the mail technique in cross-sectional surveys: (1) low per unit cost, (2) a wide geographic distribution of respondents possible, (3) useful in reaching specific classes of people, (4) there is no interviewer bias, and (5) no identification of respondents is necessary making it possible in some cases to obtain more honest replies. Benson[31] adds that mail interviewing; (1) may provide more reliable answers in certain subject areas, and (2) if the opinions of all members of a household are required, this can

[27]Baeza. p. 70.

[28]Richard F. Larson and William R. Catton, Jr. "Can the Mail-Back Bias Contribute to a Study's Validity?" American Sociological Review. 24 (April 1959) p. 245.

[29]Edward A. Suchman and Boyd McCandless. "Who Answers Questionnaires?" Journal of Applied Psychology. 24 (December 1940) 758-769.

[30]Shaffer. Methodological Bases. pp. 289-290.

[31]Lawrence E. Benson. "Mail Surveys Can Be Valuable" Public Opinion Quarterly. 10 (Summer 1946) pp. 234-235.

be accomplished more easily through a mail questionnaire. Baeza[32] claims that respondents take more care in providing information in a mail survey.

The disadvantages of a mail survey as described by Shaffer[33] are: (1) it is difficult to obtain a really representative list of the universe required, (2) those who reply are probably not typical members of the list, (3) the questionnaire must be short, (4) it is difficult to obtain detailed qualitative answers or know precisely the offered verbal responses meanings, and (5) it is impossible to know whether the intended person answered and whether or not he consulted others. Benson[34] adds that (1) less educated people fail to return questionnaires, (2) a proportionately greater number of replies may come from those biased in one direction, i.e., those who may hold extreme views or strong opinions relative to some topic, (3) informational questions attempting to determine areas of ignorance cannot be used, (4) the value of question sequence is destroyed because the respondent may review the questionnaire, and (5) it is difficult to get full and complete reactions or opinions, and questions concerning vital statistics are usually quite limited. Baeza[35] mentions two other disadvantages; (1) there is usually a high cost per return, and (2) a mail survey requires a longer time to complete.

[32]Baeza. p. 3.

[33]Shaffer. Methodological Bases. p. 290.

[34]Benson. p. 235.

[35]Baeza. p. 4.

Given the advantages and disadvantages of each of the three survey methods, Baeza[36] concludes that it is possible to obtain comparable information by the three methods.

Other Panel Problems

Bucklin and Carman[37] mention three kinds of panel problems; mortality bias, conditioning bias, and reporting bias. These three problems, plus a fourth dealing with the cost problem, comprise the major concerns of the panel methodology literature.

1. Cost. Most consumer panels tend to be large, high-cost operations, that require large samples, large well-trained staffs, and large budgets. Consumer panels generally make extensive use of personal interviewing, either material or monetary incentives, and sophisticated data processing techniques. All of these things make the consumer panel technique impossible for the low budget researcher. To quote Bucklin and Carman, "undertaking marketing research by means of a panel is a highly expensive proposition."[38] Cost is a very serious problem when considering using the panel technique.

2. Mortality Bias. Deviations from the originally drawn sample, whether random or not, can occur in three places or "stages" when dealing with a consumer panel; (1) selected individuals refuse to cooperate at the time of recruitment, (2) shortly after recruitment, or (3) sometime later in the panel. The problem of mortality bias is then much more

[36]Ibid. p. 72.

[37]Louis P. Bucklin and James M. Carman. The Design of Consumer Research Panels: Conception and Administration of the Berkeley Food Panel. Berkeley, 1967. pp. 14-20.

[38]Ibid. p. 66.

severe when using a panel technique than when using a cross-sectional survey, simply because the respondent has more opportunities to "drop" out of the study.

As Bucklin and Carman[39] explain, panel mortality can occur at any of the three stages already mentioned. First-stage mortality includes those individuals who refuse at the time of recruitment. Also included in first-stage mortality would be potential respondents who cannot be reached to be interviewed, i.e. non-contacts, and those who for some reason are considered as being ineligible for the study. Second-stage mortality includes those individuals who agree to participate, but fail to do so in the first few weeks, usually around three, or the first "month".

Third-stage mortality, or steady-state mortality, occurs after the panel has stabilized and usually can be attributed to "natural causes" such as death, hospitalization and relocation. Panel members who make it into the third-stage are generally interested enough in the study that they will not drop out for reasons of lack of interest, or forgetting, or not enough time, which are the typical excuses given for people leaving in the second stage.

In Table 1, a summary of most of the published data on diary, i.e. self-enumerative, consumer purchase panel mortality, indicates for example that first-stage mortality averages about 40%. Second-stage mortality typically runs about 15%, leaving a stable panel of between 40 and 50% of the original sample. Bucklin and Carman[40] point out that third stage mortality runs about 1 to 2% per month of the original sample.

[39]Ibid. pp. 14-16.

[40]Ibid. p. 15.

Table 1

SUMMARY OF PUBLISHED STATISTICS ON DIARY CONSUMER PANEL MORTALITY

Name of Panel, Author, Year, (Source Number).	Refusals 1st. Stage	Dropouts during first three weeks 2nd. Stage	Reporting after third week 3rd. Stage
MRCA, New York, MRCA, 1953, (59).	43	8	49
MRCA, Early National, Stoneborough, 1942, (83)	42	10	48
MRCA, Mature, Sudman, 1959, (86)	37	10	53
Pittsburgh, Lewis, 1948, (55)	80	10	10
Harvard, Allison, Zwick and Brinser, 1958, (2)	70	15	15
Michigan SRC I, Sobol, 1959, (81)	15	26	59
Michigan State, Quackenbush and Shaffer, 1955, (80)	47	12	41
Decatur, Illinois, Ferber, 1953, (28)	20	17	63
New York Sun, Black, 1948, (10)	17	16	67
Chicago Savings, Ferber, 1959, (27)	22	17	61
University of Illinois, Com. Student Econ's, 1961, (84)	35	8	57
Berkeley Food, Bucklin and Carman, 1967, (12)	64	6	30
Average	41	13	46

*Table taken primarily from Bucklin and Carman. p. 15.

The high mortality rates found in the first two stages are explained by at least three factors. Lack of interest, according to Bucklin and Carman[41], is one of the major predictors of mortality. The respondent who does not get interested in the project, and does not keep the diary regularly, generally drops in the second stage. Other studies, such as the one reported by Sobol[42], confirm the importance of getting the respondent interested in the topic under study. Shaffer refers to this process as rapport building.

Another predictor is age. Bucklin and Carman point out that old-age seems to be a predictor of mortality. In Table 2, the ages of panel members are presented from the study reported by Sobol, which indicates that individuals at both extremes, the very young or under 25, and the old or over 65, tend to drop out of the panel more frequently than do people with ages in between. Over an extended period of time, this could introduce a serious age bias.

Low education is another predictor of non-response. The illiterate and poorly educated are traditionally among the most difficult to reach for the survey researcher. If income and occupation can be interpreted as some index of education level, Sobol found that the unskilled laborer tended to drop out of the panel much faster than the professional person, as is evident in Table 2. The higher the income level, the greater the chance of the respondent remaining in the panel, again according to Table 2.

If this is the case, then consumer purchase panels tend to concentrate on the more educated, and higher income families. This bias is

[41] Ibid. p. 17.

[42] Marion Gross Sobol. "Panel Mortality and Panel Bias," American Statistical Association Journal. 54 (March 1959) 52-68.

Table 2

PUBLISHED STATISTICS COMPARING PANEL MEMBERSHIP AND PANEL LOSSES

OCCUPATION (1)	Panel Members	Panel Losses	Difference
Professional	10%	7%	+3%
Self-Employed	15	14	+1
Clerical & Sales	12	11	+1
Skilled	36	34	+2
Unskilled	12	16	-4
Retired	6	7	-1
Housewives	6	6	-1
Others	1	1	
Not Ascertained	1	1	
AGE (2)			
Under 25	4	7	-3
25-34	20	19	+1
34-44	25	21	+4
45-54	22	19	+3
55-64	17	17	
65 and over	10	15	-5
Not Ascertained	2	2	
INCOME (3)			
Under $2,000	10	14	-4
2,000 - 4,999	44	43	-1
5,000 - 7,499	27	22	+5
7,500 and over	16	12	+4
Not Ascertained	3	9	-6

*Table from Marion Gross Sobol, "Panel Mortality and Panel Bias," American Statistical Association Journal. 54 (March 1959), (1) p. 59, (2) p. 57, (3) p. 60.

(Percentages do not add to 100 because of rounding error)

critical for the consumer purchase panel because of the link between income and expenditures or purchases.

All of the authors already discussed - Shaffer, Bucklin and Carman, Sobol and Ferber[43] - emphasize the importance of incentive plans and other rapport building techniques as a partial solution to this problem. Incentives are generally considered to be most helpful in curtailing some of the panel mortality loss.

Stoneborough[44] in analyzing the reasons why people drop out of a panel found that they can be classified into four categories: (1) subjective factors, rare in later months or third stage, usually caused by misjudging of the nature of the work, i.e. diary keeping, (2) factors operating in the home, lack spouse permission or difficulty in getting family cooperation, (3) external factors, such as the natural causes mentioned earlier usually found in later months or the third stage, and (4) the functionally illiterate, who are unable to submit usable reports.

The kinds of individuals who become panel members, according to Glock[45], and who participate continuously have different characteristics from those who fail to become panel members or, becoming a member, fail to participate continuously. In addition to the differences already demonstrated by Sobol, Glock points out the group who participates in the panel continuously exhibit different attitudes, opinions and behavior towards and in respect to the panel topic, than the group who fails to

[43]Robert Ferber. Collecting Financial Data By Consumer Panel Techniques. Urbana, 1959.

[44]Thomas H. W. Stoneborough. "Fixed Panels in Consumer Research," Journal of Marketing. 7 (October 1942) p. 135.

[45]Charles Young Glock. "Participation Bias and Re-Interview Effect in Panel Studies" Dissertation Abstracts. 12 (1952) 756.

participate continuously. Glock also claims that these differences are not accounted for by variations in the sex, age, education, and family size of the groups.

The mortality problem is most complex. The precise nature of the two groups, participating and non-participating, in a consumer panel can have a profound effect on the generalizability of the findings.

3. Conditioning Bias. A person who originally may not have a clearly defined attitude on the topic under study, may receive motivation, under repeated interviewing, to formulate a clear position that he otherwise might not. This most commonly manifests itself as the panel member viewing himself as an "expert" and acting the way he thinks experts should act, rather than the way he normally would act himself.

This problem, the conditioning effect, is not nearly as crucial as is the mortality problem. As Sudman[46] points out, while conditioning effects may at times be detected by delicate analysis of variance tests, they have proved to be of no real importance in affecting diary panel reports. Although it is possible to induce conditioning by deliberately calling attention to a specific product, this effect usually wears off in one or two months. Conditioning, in the area of actual reporting is not a very important problem.

Glock[47] calling the conditioning problem the re-interview effect, finds no evidence of a re-interview effect on level of interest in amount of exposure to information about, or level of knowledge of the panel topic. Glock points out that his results show no evidence of an effect of re-interviewing on the consistency of response to the same question asked repeatedly

[46]Seymour Sudman. "Maintaining a Consumer Panel" Proceedings of the American Marketing Association, 42nd National Conference. June 1959. p.326.

[47]Glock. p. 756.

from one interview to the next. Glock does mention that re-interviewing influences the panel to resolve controversial issues and to do so more quickly than the population it is intended to sample.

Bucklin and Carman[48] observe that the interest in the conditioning bias problem is great, but the empirical evidence is not. The theory of conditioning bias, as is pointed out, is clear enough, but according to the data the effect of conditioning, if any, is slight indeed.

4. Reporting Bias. Sloppy responses, consistently-biased, randomly-biased responses; as well as recalling and recording behavior may contribute to reporting bias. Sloppy responses usually occur when the respondent loses interest in the project and fails to report accurately, or write in a legible hand. Consistently-biased responses may be caused by the form of a question, or the method of administration, or a constant bias located in the personality of the respondent. Memory decay also plays a very important role.

The reporting problem is more difficult than the conditioning problem. According to Bucklin and Carman[49] the topic or reporting has been adequately dealt with in the literature, and is not necessary to report all of the findings here. Important here is the differences in quantity and quality of reporting, or "completeness" of diary reports. Lewis[50] found that the reporting is significantly better if the reporting period is weekly

[48]Bucklin and Carman. p. 18.

[49]Ibid. p. 20.

[50]Harrie F. Lewis. "A Comparison of Consumer Responses to Weekly and Monthly Purchase Panels" Journal of Marketing. 12 (April 1948) 449-454.

rather than monthly. Allison, Zwick and Brinser[51] confirmed these findings. Other manipulations in panel methodology, other than variations in the questionnaire and diary forms themselves, have not been dealt with to any great extent.

Completeness of diary reports, for example, have been related to the interest of the respondent by Bucklin and Carman[52]. Sloppy reporting has been related to lack of interest in much the same way as lack of interest in the panel topic has been related to panel mortality. The effect of rapport-building techniques on sustaining interest in the panel, thus maintaining a relatively high degree of completeness in the reporting in the diary forms is implied in the literature, but not as clearly shown in terms of data.

The relationship of the communication problem in consumer panel operation to the reporting problem for the most part is clearly "theoretical," and in need of verification through data.

[51]Harry E. Allison, Charles J. Zwick and Ayres Brinser. "Recruiting and Maintaining a Consumer Panel" Journal of Marketing. 22 (April 1958) 377-390.

[52]Bucklin and Carman. p. 19.

CHAPTER III

THE MICHIGAN STATE STUDENT CONSUMER PANEL

The Michigan State University Student Consumer Panel was established to study the income and expenditure patterns of Michigan State University students. The panel is a sponsored study, directed by Professor Gordon E. Miracle, Department of Advertising, and conducted over a two year period, 1967-69.

General Panel Objectives and History

The panel study concentrates on the general objective of describing student income and expenditure patterns. In particular, the panel focuses on several aspects of income and expenditures of Michigan State University (MSU) students; (1) the amount each student has available to spend, and the sources of this amount, (2) the amount spent in the greater East Lansing area, (3) the specific purchasing behavior with respect to day of week, product category, and specific store if in the East Lansing area, and (4) any predictable purchase patterns with respect to demographic, economic, or other variables.

Administratively the panel study has been divided into a series of "special projects" or sub-panels with respect to time of year, and to the various methodological manipulations that were made. The time of the year varied with the terms, the study running from Spring Term 1968 to the beginning of Spring Term 1969 in nine special projects. The methodological manipulations consist primarily of manipulations of the reporting period and of the communication method.

The reporting period manipulation involves the use of a "one day per week" design and an "every day per week" design. In the "one day per week" design the reporting period is shortened from the week as suggested by Lewis and others, to one day. Each respondent keeps the diary only for one specified day during the week, every week that the panel operates. The validation of this unique methodology will appear elsewhere, but preliminary analysis indicates the diary reports are very similar to those kept for the entire week (for that day). However, there is a distinct advantage in making the respondent's task easier, namely to keep him in the panel longer.

Manipulation of communication method for purposes of this thesis focuses on two of the sub-panels. The first of these, denoted as Panel 1, consists of a personal interview recruitment and a mail diary return, the second, or Panel 2, consists of a telephone recruitment and a telephone diary return.

Panel 1 and Panel 2

Both of these panels ran for five weeks during the Summer Term 1968, and both used the one day per week design discussed above. Panel 1 received an introductory letter, and Panel 2 received an introductory letter plus a set of questionnaires, diary instructions and diary forms in a pre-recruitment mailing.

The panels were drawn from the registrar's Summer Term enrollment lists using numbers drawn at random and comparing those numbers with the last digit in the six digit student number. The sample drawn from the registrar's data was then divided and assigned to either Panel 1, the personal interview recruitment, or Panel 2, the telephone recruitment.

Interviewers consisted of the 19 members of the senior advertising research class taught during the Summer Term, who were given the interviewing assignment as a classroom assignment. The interviewers were not paid, but were provided with additional incentive in that their final assignments were a critique of the panel project.

Interviewers were assigned approximately ten names for each panel: ten to be contacted in person, and ten to be contacted by telephone only. The interviewers were trained, including practice interviews, prior to conducting the interviewing.

Data Collection Plan

After prospective respondents received the introductory letter, and other materials in the case of Panel 2, the interviewers telephoned to make arrangements for the recruitment interview. They were instructed to make five calls before giving up the attempt to contact each respondent. In the case of Panel 1, the interviewers made an appointment for a personal interview. In the case of Panel 2, the interviewers either made the recruitment interview at this time or an appointment to call back and administer the recruitment interview at a later time.

In the recruitment interview, in both Panel 1 and Panel 2, the Classification Questionnaire was administered. The Classification Questionnaire is primarily a demographic questionnaire intended to "classify" respondents according to certain demographic characteristics. The interviewers also explained the project, explained how to keep the diary, what day to keep the diary, and when to begin keeping the diary. The Supplemental Data Questionnaire, a questionnaire designed to gather data relative to sources of income, was briefly explained and left with the respondent to be picked up at the post-recruitment interview.

Table 3

Data Collection Plan

Panel 1 Activity	Panel 2 Activity	Dates
Mail Introductory Letter	Mail Packet: Introductory Letter Classification Questionnaire Supplemental Data Questionnaire Diary Instructions Diaries	July 6, 1968
Recruit Respondents and Initial Interview	Telephone Recruitment and Initial Interview	July 9-13, 1968
Personal Pick-up of Diary Information		July 15-21, 1968
	Begin Telephone Pick-up of Diary Information	July 15, 1968
Campus Mail Diary Return Beginning		July 22, 1968
End of Study	End of Study	August 18, 1968

The post-recruitment interview was made the following week, in person for Panel 1, and over the telephone for Panel 2. During the post-recruitment interview the Supplemental Data Questionnaire was picked up along with the first Diary sheet. Any questions the respondent might have, or errors in filling out the diary that the interviewer would detect, could be answered or corrected. Panel 1 was left with envelopes and instructed to return the remaining four diary pages through the campus mail.

Panel 2 was called each week, with the panel member reading the diary page to the interviewer over the telephone. Panel 2 never received a personal visit from any panel representative, while Panel 1 received two visits.

Follow-up telephone calls were made to approximately half of the panel members of both panels and asked questions relative to the ease or difficulty of keeping the diary and participating in the panel. These calls were not made by the original interviewers. The follow-up questionnaire, and all of the other questionnaires and materials are found in the appendix.

The interviewers were also asked to keep a record of their hours and the number of calls and interviews they made. This record is the basis for the calculation of cost which will appear later. A careful record was also kept of panel members in terms of diary page receipt and questionnaire completion.

The Diary

The diary is the most important data collection form since it is the source of all of the data relative to student expenditure and purchase patterns. Panel members were asked to record each purchase made on their

reporting day, recording the date, the product category, the store name, the store location, and the amount of each purchase.

The panel was aimed at store patronage behavior rather than brand loyality or switching. Stores are recroded as opposed to brands which are typically recorded in a consumer purchase panel.

The product categories are explained fully in the Diary Instruction booklet and appear in abridged form at the beginning of each diary form, and at the top of every diary page. The product categories are briefly: (1) Books and Supplies, (2) Drugs, Medical Care, Personal Care, Cosmetics, and Toilet Articles, (3) Home Furnishings, (4) Laundry and Cleaning, (5) Magazines and Newspapers, (6) Packaged and Fresh Foods, Groceries, Meats, Beverages, All Bakery Goods, Restaurant Meals, Liquor, Beer and Wine, (7) Recreation and Entertainment, (8) Rent, Utilities and Related, (9) Tobacco, Tobacco Products and Related, (10) Tuition, Board and Room, and Related Payments to MSU, (11) Wearing Apparel, (12) Transportation Expense, (13) Monetary Contributions to Church and/or Charity, (14) Miscellaneous Articles, and (15) Income and Other Money Received. A more complete explanation of these categories can be found in the Diary Instructions in the Appendix.

These categories are both simple, and mutually exclusive. Little difficulty is encountered in determining which category a given purchase belongs in. The diary is both comprehensive, and simple to keep.

CHAPTER IV

SAMPLE MORTALITY

The discussion of sample mortality will focus on three points: (1) the quantitative mortality at each of the three stages described by Bucklin and Carman, (2) a comparison of the characteristics of the samples with the characteristics of the population, and (3) qualitative mortality in terms of a comparison between the characteristics of panel members and the characteristics of those who were lost.

Quantitative Mortality: Contact and Response Rates

Sample or panel mortality is most often discussed in terms of the quantitative loss, or the number of respondents participating and, the number contacted but not participating. Tables 4 and 5 show the contact and response rates for Panel 1 and Panel 2 respectively.

The names assigned correspond to the initial mailing of the introductory materials for both panels as described in Chapter III. Panel 2 has approximately fifty more names because a higher mortality rate was anticipated because of the telephone interviewing.

Unavailables include those ineligible and those not contacted. Eligibility required that the respondent be either an undergraduate student carrying 10 or more credit hours or a graduate student. A part-time undergraduate, carrying nine hours or less, was ineligible. It was also a requirement that the student remain for the entire 10 week session, and not leave after the first five weeks of the term. About 30% of the students registering at the beginning of the Summer Term do not remain on campus for the entire 10 week term, which accounts for the high

ineligibility rates for Panel 1 and Panel 2.

Noncontacts are those individuals selected in the original sample who either do not have a telephone or an available telephone number, or who after five attempts could not be contacted by telephone. For the most part interviewer integrity can be assumed, but a few respondents were classified as noncontacts because of the failure of the interviewer to do a proper job. The noncontact rate is about the same for both panels, 50% for Panel 1 and 52% for Panel 2.

Refusals were encountered primarily during the initial telephone contact. The most common reason for refusing to cooperate in granting the initial interview was that it would be "too time consuming." The next most common reason for refusing to cooperate was not wanting to divulge "confidential" information. The refusal rate for Panel 2, 36% of the eligible contacts, is nearly twice the refusal rate for Panel 1, which is 21% of the eligible contacts Respondents appear to be almost twice as likely to decline to cooperate over the telephone than they are in person. The personal face-to-face interview appears as though it has the rapport-building advantages described in Chapter II.

It should be noted, however that Panel 2 received all of their materials in one packet along with their introductory letter. The task of keeping the diary probably appeared more imposing to the prospective respondent, than it would with the Panel 1 respondents who received the letter only. The refusal rate differential already mentioned might in part at least be explained by the amount of material received in the mail, as well as the different communications techniques. As a suggestion for future panels it might be well to do the mailing in stages, which would make the project appear less ominous.

Table 4

CONTACT AND RESPONSE RATES FOR PANEL I
(PERSONAL-MAIL)

	Number		Percent of total names selected for the sample		Percent of eligible contacts	
Names Assigned to Interviewers		173		100		
Unavailable						
Ineligible	32		19			
Noncontact	54	86	31	50		
Eligible contacts		87		50		100
Refusals		18				21
Initial sample size		69				79
Dropouts						
Week 1	2				2	
Week 2	5				6	
Week 3	2				2	
Week 4	6				7	
Week 5	9	24			10	27
Final panel size		45				52

Table 5

CONTACT AND RESPONSE RATES FOR PANEL 2
(TELEPHONE ONLY)

	Number		Percent of total names selected for the sample		Percent of eligible contacts	
Names Assigned to Interviewers		226		100		
Unavailable						
Ineligible	36		16			
Noncontact	70		31			
Mail return	12	118	5	52		
Eligible contacts		108		48		100
Refusals		39				36
Initial panel size		69				64
Dropouts						
Week 1	15				14	
Week 2	2				2	
Week 3	3				3	
Week 4	3				3	
Week 5	3	26			3	25
Final panel size		43				39

The first stage mortality, the number agreeing to participate, for Panel 1 is 79% of the eligible contacts, and 64% for Panel 2. (The difference is statistically significant, t=3.09 df=86). This compares with the average reported from the literature of 41%. The important comparison here however is the difference between Panel 1 and Panel 2, not differences between either Panel 1 or Panel 2 and other panel studies.

Second stage mortality consists of the dropouts during the first three weeks after the initial recruitment, as described by Bucklin and Carman. After three weeks, Panel 1 lost 10% of the eligible contacts and Panel 2 lost 18%. If second stage mortality is extended to five weeks, Panel 1 loses 27% and Panel 2 loses 25%. The difference in second stage mortality is that the telephone pick-up, or Panel 2, lost most of its people during the first week; whereas the mail pick-up, or Panel 1, encountered a progressively larger loss in later weeks. This difference in mortality frequency by week (from Tables 4 and 5) is statistically significant using a Chi Square with Yates correction for continuity.[53] The Chi Square here equals 14.91 with 4 degrees of freedom, which is significant at the .01 alpha level.

This can be explained by the fact that the telephone contact serves as a reminder to the respondent to complete the diary page and report the information. The second stage mortality is more severe for the mail return than for the telephone return. In both cases, the second stage mortality is less than the second stage mortality reported in most of the literature. This latter statement can probably be attributed to the one day per week design employed in both Panel 1 and Panel 2 as described earlier.

[53]Chi Square formula using Yates corrections.

$$\chi^2 = \sum \frac{(O-E-\frac{1}{2})^2}{E}$$

The third stage mortality is assumed to be the number of respondents who are not reporting after the third week, or 100% minus the sum of the first and second stages. The third stage corresponds to the "steady state" described by Bucklin and Carman outlined in Chapter II. Panel 1 after five weeks had 52% of the eligible contacts still reporting, with 69% after three weeks. Panel 2 after five weeks had 39% of the eligible contacts still reporting, with 45% reporting after three weeks. As Table 4 and 5 show, Panel 1 appears never to stabilize, i.e. lose only a small proportion of respondents each week because of natural causes, not lack of interest; whereas Panel 2 seems to stabilize immediately after the first week. Note the difference from week 3 to week 5 with Panel 1 losing 17%, and Panel 2 only 6%.

The additional control of the telephone diary collection method in Panel 2 however was not enough to overcome the higher initial refusal rate encountered through the use of only the telephone; as already pointed out Panel 2 had 39% reporting after five weeks. Panel 1 with its lower initial refusal rate had 52% of the eligible contacts reporting after five weeks. These figures compare with the average of 46% reporting after three weeks in the literature.

The Panel Sample Versus the Student Population

Population data are available from the university on certain demographic characteristics, such as age, class standing, marital status, sex, academic major and home residence. Such information allows the computation of a population distribution.

The formula

$$s_e = \frac{s_p}{\sqrt{n}}$$

allows the calculation of the standard error of the estimate, s_e, from the standard deviation of the population, s_p, and the size of the sample, n. In similar fashion the formula

$$s_p = \sqrt{\frac{PQ}{n}}$$

allows the calculation of the standard error of the proportion, s_p, from the proportion in the population, P, the proportion not possessing the characteristic, Q, and the sample size, n.

Applying these formulas and the appropriate population and sample data as shown in Table 6 and 7, the sample distributions can be compared with their respective sampling or expected distributions.

With respect to age, the mean age of the population is 24.971 years. The mean age of Panel 1 members (those cooperating through all five weeks) is 22.511 years. Panel 1 age is 2.4 (see Table 6) standard errors away from the population mean, indicating a significant difference at the .05 level between the population and the sample means. Panel 1 then is significantly younger than the university population.

Panel 2 exhibits a mean age for its members as 23.930 years (see Table 7). Panel 2 is approximately one standard error below the population mean with respect to age, and does not differ significantly.

The other characteristics used to compare Panel 1 and Panel 2 with the population are expressed as proportions. As shown in Table 6, Panel 1 demonstrates significantly fewer graduate students; fewer, although not significant, married students, and more females than the population

Table 6

COMPARISON OF PANEL I AND THE POPULATION

	$\bar{P}$	s_e	$\bar{S}$	$\bar{S} - \bar{P}$	s_e from $\bar{P}$
Mean Age	24.971	1.014	22.511	-2.460	-2.426*
	P%	s_p	S%	S% - P%	s_p from P%
Graduate Students	47.98	7.45	31.11	-16.87	-2.264*
Married Students	38.17	7.25	26.67	-11.50	-1.586
Female Students	39.86	7.30	48.89	+9.03	+1.237
Outside Mich. Residents	26.87	6.61	22.22	-4.65	-0.703

*Significant at .05 level

$\bar{P}$ = Population Mean

s_e = Standard Error of the Estimate

$\bar{S}$ = Sample Mean

P% = Population Proportion

s_p = Standard Error of the Proportion

S% = Sample Proportion

Note: Population Data from the Registrar's Office for Summer Term, 1968.

Table 7

COMPARISON OF PANEL 2 AND THE POPULATION

	$\bar{P}$	s_e	$\bar{S}$	$\bar{S} - \bar{P}$	s_e from $\bar{P}$
Mean Age	24.971	1.037	23.930	-1.040	-1.003
	P%	s_p	S%	S% - P%	s_p from P%
Graduate Students	47.98	7.61	41.86	-6.12	-0.804
Married Students	38.17	7.41	46.51	+8.34	+1.126
Female Students	39.86	7.46	35.26	-4.60	-0.617
Outside Mich.	26.87	6.76	6.98	-19.89	-2.942*

*Significant at .05 level

$\bar{P}$ = Population Mean

s_e = Standard Error of the Estimate

$\bar{S}$ = Sample Mean

P% = Population Proportion

s_p = Standard Error of the Proportion

S% = Sample Proportion

Note: Population Data from the Registrar's Office for Summer Term, 1968.

proportion. The proportion of outstate residents is about the same for both Panel 1 and the university population.

Panel 2, as shown in Table 7, demonstrates a significantly lower proportion of outstate residents. Panel 2 has a slightly larger, although not significant proportion of married students, and about the same proportion of graduate students and female students as the population.

With the exception of outstate residents, Panel 2 appears to be a more representative sample of the university student population than does Panel 1. This can be accounted for by the fact that Panel 2, through the use of the telephone, was able to reach a large off-campus sample. Panel 1 was restricted because the interviewers could not be provided with adequate funds to pay expenses in going very far off campus, so Panel 1 is primarily an "on-campus" sample. The differences are approximately the differences that would be expected in on-campus students, who with the exception of married housing students, tend to be underclassmen living in dormitories; and off-campus students who tend to be upperclassmen and graduate students living in apartments and other housing. The telephone method provided greater flexibility and a more representative panel than the personal interview method.

Panel Members Versus Panel Losses

The qualitative dimension of panel mortality is more complex than the quantitative dimension. Ignoring first stage mortality because of the lack of data concerning the characteristics of those individuals who refused to participate, the analysis here concentrates on the differences between second and third stage mortality with respect to four demographic characteristics; age, housing, class standing, and marital status.

Referring to Table 8[54], the proportion of the panel members, or those individuals completing all five weeks, is presented as a proportion of the total panel for Panel 1 and Panel 2. Panel 2 exhibits very little difference in the proportion of panel members and the proportion of panel members plus panel losses. Panel dropouts or losses are those individuals who agree to cooperate but do not return all five diary pages. Panel 1, on the other hand, exhibits slightly more variation in each of the categories; age, housing, class standing and marital status.

With respect to age, the characteristics of each panel as previously discussed become apparent, Panel 1 has 24% age 19 or under, whereas Panel 2 has no members age 19 or under. Panel 2 has 54% age 23 or over, whereas Panel 1 has only 33% age 23 or over.

Panel 1, as shown in Table 9, yields a Chi Square larger than did Panel 2, a Chi Square that could occur by chance 70% of the time. Panel mortality may have made some difference with respect to age distribution in Panel 1, but certainly not a significant difference.

Panel 2, using the Chi Square technique as shown in Table 10 and comparing the frequency of ages within the given categories for the

[54]Note the "n" for the "members plus losses" columns is different from the "n" for initial panel size for both Panel 1 and Panel 2. The "n" for the initial panel size was obtained from interviewer reports at the time of administration of the panel. The"n" for Table 8 is based upon a count of completed classification questionnaires. The larger "n" for Panel 1, 74 versus 69, indicates that 5 people agreed to answer the questions on the Classification Questionnaire, but later refused to participate in the panel, i.e. not returning any diaries or Supplemental Data Questionnaire. The difference for Panel 2, 59 versus 69, might indicate that there was a problem getting respondents to complete the Classification Questionnaire over the telephone. Apparently when respondents were first contacted, they agreed to participate in the panel, but later did not permit the interviewer to complete the initial interview. This discrepancy might also be attributed to lack of diligence on the part of the interviewers.

Table 8

COMPARISON OF PANEL MEMBERS PLUS LOSSES, WITH PANEL MEMBERS ONLY

	P1-Personal-Mail		P2-Telephone Only	
	Members+ Losses	Members Only	Members+ Losses	Members Only
AGE				
17-19	33.7%	24.4	0.0%	0.0
20-22	40.5	42.2	44.1	44.1
23-25	12.1	13.3	23.7	23.2
26-28	5.4	6.6	23.7	25.5
29 and over	8.1	13.3	8.4	6.9
*N for All Percents	*74 (1)	*45	*59 (1)	*43
HOUSING				
Dormitory	54.1%	64.4	6.8%	9.3
Off-Campus	17.6	13.3	61.0	62.8
Married Housing	20.3	22.2	16.9	14.0
Other	0.0	8.0	15.3	14.0
CLASS STANDING				
Freshman	23.0%	17.8	0.0%	0.0
Sophomore	17.6	11.1	1.7	2.3
Junior	20.3	20.0	10.1	14.0
Senior	14.9	20.0	39.0	37.2
Masters	16.2	17.8	20.3	20.9
Doctoral	9.5	13.3	22.0	20.9
MARITAL STATUS				
Single	77.0%	73.3	50.9%	53.5
Married	23.0	26.7	49.1	46.5

(1) The N's are based upon the number of completed Classification Questionnaires. These vary slightly from other mortality estimates based on interviewer reports.

sample of panel members and the sample of panel members and panel dropouts, yields a Chi Square that could occur by chance 99% of the time. With respect to age, panel losses then made no difference in the age distribution of Panel 2.

Examining the differences between the members and the members plus losses shows that in the case of Panel 1 the proportion of respondents age 19 and under decreased from 34% to 24%, which accounts for most of the Chi Square for Panel 1 already mentioned. Panel 1 also lost freshmen, having 23% before panel losses, and about 18% of the panel members completing all five weeks. These findings are consistent with the findings of Sobol, that is a slight age bias favoring ages away from the extremes of both young and the old.

The other characteristics, such as housing shows 64% of the panel members of Panel 1 living in dormotories, compared with 9% of the panel members of Panel 2. About 31% of Panel 1 are graduate students, compared with 42% of Panel 2, and 73% of Panel 1 are single, compared with 54% of Panel 2.

Most important, however, is that with respect to the four other characteristics discussed in comparing Panel 1 and Panel 2, neither Panel 1 or Panel 2 appears to have a serious problem of bias because of the attrition of initial panel members.

Panel 1, relying on a mail return, experienced a more serious loss in terms of quality than did Panel 2, relying on a weekly telephone call. In terms of mortality then, Panel 2 or the telephone only panel, seems to afford more control over the sample in terms of retrieving the diary information and maintaining the distribution of demographic characteristics through time, than does Panel 1, with the important exception of the first stage or initial response.

Table 9

CHI SQUARE COMPARISON OF THE EFFECT OF PANEL LOSSES ON THE AGE COMPOSITION OF THE PANEL

FOR PANEL 1

Age	Panel Members plus Losses	Panel Members Only	
17-19	25 / 22.3*	11 / 13.7*	36
20-22	30 / 30.4*	19 / 18.6*	49
23-25	9 / 9.3*	6 / 5.7*	15
26-28	4 / 4.3*	3 / 3.7*	7
29 and over	6 / 7.4*	6 / 4.6*	12
	74	45	119

df = 4 χ^2 = 1.256 Pr. = 70% by chance/ not significant

*Expected Frequency: $\frac{36 \times 74}{119} = 22.3$

Table 10

CHI SQUARE COMPARISON OF THE EFFECT OF PANEL LOSSES ON THE AGE COMPOSITION OF THE PANEL

FOR PANEL 2

Age	Panel Members plus Losses	Panel Members Only	
17-19	0 0*	0 0*	0
20-22	26 26.1*	19 18.9*	45
23-25	14 13.9*	10 10.1*	24
26-28	14 14.5*	11 10.5*	25
29 and over	5 4.6*	3 3.4*	8
	59	43	102

df = 4 χ^2 = .040 Pr. = 99% by chance/not significant

*Expected Frequency: $\frac{45 \times 59}{102} = 26.1$

CHAPTER V

COSTS

Determining the dollar cost involved in weighing the relative merits of different methodologies is very important. However, using interviewers that are doing the interviewing as a classroom project instead of being paid, presents a problem in calculating costs. But, since the interviewers were required to record the hours they spent working on their interviewing assignments, such hours can be converted into a cost. The emphasis here will be on the variable costs involved between the various methods, ignoring the fixed costs which are assumed to be the same for both panels.

Recruitment Costs

In addition to the postage costs for both panels, which are shown in Table II, the major cost in both Panel 1 and Panel 2 was the cost of the interviewers. Assuming that interviewers could be obtained for $1.75/hour, which was the going rate at MSU at the time of the study, "constructed" interviewing costs were computed.

Panel 1 required the placing of 521 telephone calls to the 173 in the original sample to make appointments for 74 personal interviews, taking approximately 77.5 hours at a cost of $135.46. The second interview, to pick up the first diary and the Supplemental Data Questionnaire in person, required an additional 35.0 hours to make the required 69 collections.

Panel 2 interviewers made a total of 931 telephone calls to the panel during the recruitment week and the following five weeks. A total

of 69 recruitment interviews were made over the telephone requiring 49.75 hours at a cost of $87.06. The introductory mailing cost $0.16 per unit for Panel 2, versus the usual $0.06 per unit for the letter only required for Panel 1.

As would be expected, Panel 1 recruitment costs exceeded those of Panel 2. The cost differential, however, is not nearly as great as would be expected. The estimate, as shown on Table II, is very low for Panel 1 or personal interviewing. The personal interviewing that was done in recruiting Panel 1 was in concentrated geographic area, i.e. the MSU campus, which greatly reduced travel time between interviews as well as travel expense, if any were paid. The estimate then for the personal interviewing recruitment is very low.

Pick-up Costs

The first diary was picked up in person for Panel 1, as already discussed. The following four returns, week two through five, were through the campus mail at no cost to the project. However, the diaries could have easily been returned through the U.S. Mail at a unit cost of $0.06. For Panel 1, there were 221 mail returns for a total cost of $13.26, assuming $0.06 per return.

Panel 2 required the placing of 244 telephone calls taking a total of 53.75 interviewer hours. Total cost for the diary pick-ups for Panel 2 then was $94.06.

The recruitment effort was more costly for Panel 1 with the personal contact, but the pick-ups were more costly for Panel 2 because of the time spent placing the calls. Considering the effect of the differential mortality rates, that is dividing the total cost, recruitment plus pick-up, by the number of respondents still cooperating after five

Table 11

COST SUMMARY FOR PANEL 1 AND PANEL 2

Panel 1: Personal Interview - Mail Pick-Up

Recruitment:	Mailing 173 Introductory Letters ..... 173 @ 0.06	$ 10.38
	Interviewing, 74 respondents[(I)] taking 77.5 hours ..... 77.5 @ 1.75*	135.46
		146.01
Pick-Up:	1st Week, Personal pick-up, 69 diaries, 35.0 hours.. 35.0 @ 1.75*	61.25
	2nd through 5th Weeks, mail pick-up, 221 returns ... 221 @ 0.06	13.26
N = 45, Cost per completed interview $4.90		$220.52

Panel 2: Telephone Only

Recruitment:	Mailing Introductory Letters and Materials, 226 ..... 226 @ 0.16	$ 36.16
	Telephone Interviewing, 49.75 hours ..... 49.75 @ 1.75*	87.06
		123.22
Pick-Up:	Telephone pick-ups, 244 taking 53.75 hours ..... 53.75 @ 1.75*	94.06
N = 43, Cost per completed interview $5.05		$217.28

*$1.75 going student labor rate at MSU, Summer, 1968.

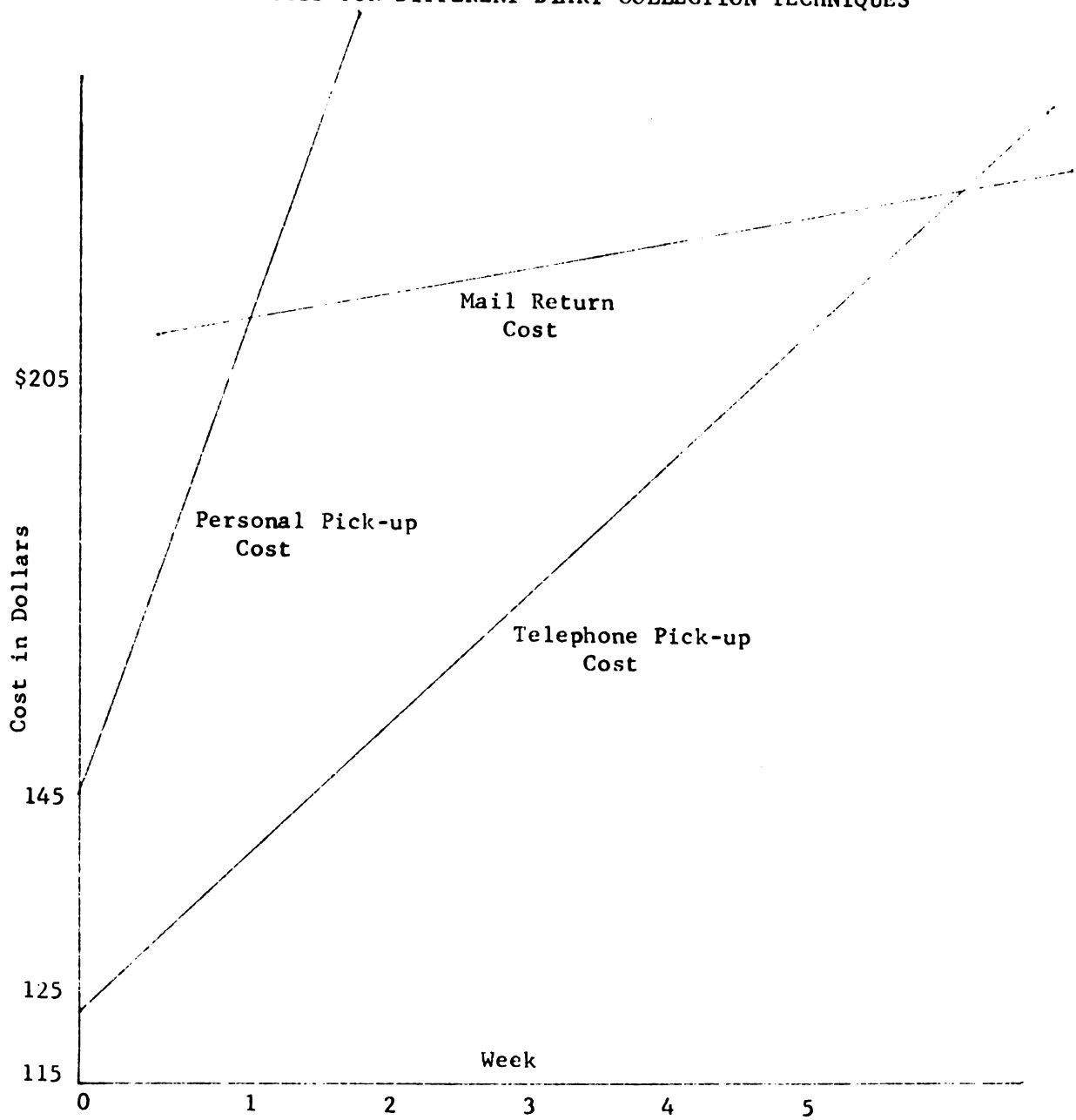
(I) Note 5 respondents did not complete the second phase of the interview.

weeks, the cost per completed interview can be computed. Panel 1 cost $4.90 per completed interview, i.e. all interviews combined, slightly less than Panel 2 at a cost of $5.05 per completed interview. The initial advantage of Panel 1 in terms of mortality, and the fact that the cost estimate for Panel 1 is unusually low, account for the relative positions of this ratio, i.e. cost per completed interview. Probably, Panel 2 would be expected to be the one lower in cost.

Table 12 and the accompanying graph show the relative costs for each of three diary collection techniques, based upon the experience in operating Panel 1 and Panel 2. Note that the personal pick-up, data from the first week of Panel 1, has the greatest per unit cost. and contributes the most to the total cost in completing the panel study. Telephone recruitment nearly follows a 45° line, and has much lower per unit cost than personal pick-ups. The mail return has the lowest cost, but suffers from the most severe mortality problem. The mortality problem contributes to the per completed interview cost in mail returns, but not nearly enough to challenge mail return's position as the least expensive technique. The personal pick-up averaged about $0.91 per return, the telephone averaged about $0.38 per return, with the mail costing only $0.06, the cost of a first class postage, per return.

Table 12

CUMULATIVE COSTS FOR DIFFERENT DIARY COLLECTION TECHNIQUES



Week	Panel 1 (Personal-Mail) N	Cost	Cum. Cost	Panel 2 (Telephone) N	Cost	Cum. Cost
0	74	146.16	146.16		123.22	123.22
1	67	61.25*	209.26	54	20.79	144.01
2	62	3.71	210.97	52	20.03	164.04
3	60	3.59	214.56	49	18.81	182.85
4	54	3.23	217.89	46	17.68	200.53
5	45	2.69	220.52	43	16.55	217.28

*Personal Pick-up

CHAPTER VI

PANEL DATA

Panel data, for purposes of the discussion in this Chapter, are the data reported on the diary (See Appendix). The diary includes an itemization of expenditures by product category, date, store, and store location. An analysis of the differences and similarities between reporting found in Panel 1 and Panel 2 should include a discussion of the differences in expenditures in terms of the other variables reported on the diary page, such as product category, date, store, and store location. Differences in mean expenditures of total pruchases, expenditures within product categories, and expenditure patterns through the week will be considered here.

Mean Expenditures

The mean expenditure, per day per panel member was $9.82 for Panel 1; and $8.67 for Panel 2. In terms of total reporting, the telephone panel reported more the one dollar less per day than did the personal-mail panel. The standard deviation for Panel 1 is $18.55; for Panel 2 it is $7.99. The difference suggests that Panel 1 has more variability in reported expenditures than Panel 2. Using a "t" test, the difference between the two means, Panel 1 at $9.82, and Panel 2 at $8.67, is significant (t=2.54 -- see "t" formula, page 54. Note that a t of 1.96 would be significant at the .05 level).

To facilitate the computer analysis, all of the variables were reduced to two-column fields, or a two digit code. Coding expenditures

in fifty cent intervals, all expenditures of over $49.50 are placed in the same category, i.e. code 99. The effect should be to lower the mean expenditures because all large expenditures will be coded as $49.50.

The coded mean expenditure, per day per panel member, is $3.90 for Panel 1, and $4.95 for Panel 2, reversing the order. Panel 1 reported more large purchases or expenditures than did Panel 2; Panel 1 had a total of seven purchases reported of over $49.50, while Panel 2 had only three. The product categories in which these large expenditures are recorded are: Household Furnishings, Rent and Utilities, Tuition and Related Payments to MSU, Wearing Apparel, Miscellaneous, and Transportation.

The fact that Panel 1, the personal recruitment - mail return panel had more reporting of large expenditures, may indicate that respondents are more willing to record such purchases on a mail diary page, than to report them over the telephone. This difference might also be accounted for by the failure of the respondent to associate from memory large expenditures with a specific day of the week. For example, a respondent may think of his rent payment in terms of the month of April, and not in terms of Thursday, even though he may have made the payment on his reporting day. Respondents must rely more upon their memory when making their reports over the telephone. If the respondent fails to remember in the mail panel, he probably would not submit a diary page, whereas in the telephone panel the respondent is asked to report something, even though he may have forgotten to record all of the expenditures on his diary page. From memory then, he may be less likely to think of large expenditures in terms of last Thursday, and consequently not report them. Some empirical evidence is needed here to decide which of these two explanations is the more plausible, hesitancy to remember large expenditures in terms of a specific day, or failure to report large expenditures over the telephone.

Referring back to Chapter IV, Panel 1 consists primarily of younger students living on campus, and Panel 2 consists primarily of older students living off campus with a much higher proportion of these being married. Panel 2 would naturally be expected to have a higher mean daily expenditure than Panel 1, because of the demographic and socio-economic characteristics of the two samples. Given this, the explanation of the reversal of the means after coding seems best explained by the reporting of large expenditures more often in Panel 1 because of the communication technique employed, rather than demographic differences in the panels.

Applying the formula, as has already been done earlier in this chapter:

$$t = \frac{\bar{X} - \bar{Y}}{s_{(\bar{x}-\bar{y})}}$$

where $\bar{X}$ is the mean daily expenditure of Panel 1, and $\bar{Y}$ is the mean daily expenditure of Panel 2, and $s_{(\bar{x}-\bar{y})}$ is the standard error of the difference, to obtain the statistic "t". The standard error of the difference is accomplished by the vector addition of the standard error of the respective means, which are obtained by dividing the standard deviation of the sample by the sample size minus one. The coded standard deviation for Panel 1 is $8.65 and Panel 2 is $9.85.

Applying this formula to the coded mean daily expenditures, $3.90 and $4.95, a t of 3.43 is obtained, which could occur only .7% of the time by chance. This difference is significant at the .01 alpha level.

As pointed out before, the panels are significantly different with respect to certain demographic characteristics, notably age. If all of those panel members who live in dormitories are dropped out of the sample, Panel 1 mean daily expenditure raises to $5.25, but the panel

size drops to a scanty 16. Panel 2, dropping the dormitories, raises the mean daily expenditure to $6.05, with a panel size of 39. The t here is 1.07 which could occur slightly more than 30% of the time by chance. Although any inference here should be made with extreme caution, because of the very small sample size of Panel 1, it appears that when the panels are closer in terms of demographic characteristics, i. e. all off-campus, the mean daily expenditures converge as would be expected. The off-campus mean daily expenditures cited here are coded, as will all other mean expenditures mentioned in the remainder of this chapter.

Although differences exist between Panel 1 and Panel 2 in terms of the mean daily expenditure, the differences can be explained in part by the demographic differences in the panel. It appears that the major difference in reporting found between the two panel methodologies is that Panel 1 had more reporting of very large purchases than did Panel 2. Because of the very small sample sizes, Panel 1, $n = 45$, Panel 2, $n = 43$, inferences regarding these means should be made with caution because of the large effect extreme purchases have upon means based on such a small number of observations.

Expenditures Within Product Categories

Because the panels are both small, any breakdown of the data should be done only with caution. Most of the product categories divide the data into very small pieces, too small for any stability.

Food is the most frequent of the product categories reported in both panels. Panel 1 had 278 food purchases out of a total of 631 purchases reported. Panel 2 had 188 food purchases reported out of 531. In terms of purchase frequency then, Panel 1 had 44.05% of all purchases in the food category, and Panel 2 had 34.50%.

The average size of purchase in the food category for Panel 1 was $1.90, and for Panel 2 was $2.35. The total amount of food purchases for Panel 1 was $528.20, out of $2,460.90 reported for all categories. For Panel 2, $441.80 was reported for food purchases out of the total of $2628.45. The percentage in terms of the amount spent on food purchases for Panel 1 was 21.46%, and for Panel 2 was 16.80%.

Applying the formula:

$$t = \frac{P_1 - P_2}{\sqrt{P_T Q_T \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

where t is the test statistic, P_1 and P_2 are respective proportions for two independent groups, P_T is the population proportion, $Q_T = 1-P_T$, and n_1 and n_2 are the degrees of freedom for each of the two groups. This equation is simply a t - test for proportions. P_T here is a pooled estimate based on both groups.

Comparing Panel 1 and Panel 2, the proportions of purchase frequency in the food product category yield a t of 1.80; and the proportions of purchase amount in the food product category, a t of 1.02. At the .05 alpha level, the critical t is 1.99. Neither t is significant.

The conclusion here is that the proportion spent in any product category, in terms of dollar amount or purchase frequency, is not different for Panel 1 and Panel 2. Examination of other product categories would have little meaning because of the small sample size.

Expenditure Patterns by Day of Week

Panel 1 and Panel 2 had different panel sizes for each day of the week. For example, Panel 1 had seven reporting on Monday, while Panel 2 had only two reporting on that day. This difference makes any day by day comparisons difficult.

By computing the mean for each day, that is dividing either total purchase frequency or purchase amount by the number of respondents reporting for that day, the effect of different daily panel sizes is removed. The comparisons made here are based upon the means for each day, and not the raw data. Note that these daily panel sizes are very small.

Table 13 is the comparison of mean daily purchase frequency by proportion of total purchases. The comparison is to show that the relative numbers of purchases reported for Panel 1 and Panel 2 are about the same with respect to the rest of the week.

Table 14 presents the mean frequency times the mean size of expenditure expressed as a proportion, or relative dollar amounts of purchases. Using the t-test as described earlier, significant differences are found in terms of purchase frequency between Panel 1 and 2 for Wednesday (Table 13). In terms of the amount of purchase (Table 14), significant differences exist for Wednesday, Thursday and Friday.

These differences can in part be explained by the demographic differences in the two panels. For example, Wednesday is probably an important shopping day for the off-campus married students. Thursday, and especially Friday are important days for the on-campus student in terms of transportation expense, i.e. between home and East Lansing. Of course, the panels here are very small, and one or two individuals

could have a large effect. However, the direction of the differences overlap, that is Panel 2 is the larger proportion in terms of amount and frequency on Wednesday, and Panel 1 is the largest with respect to amount on Thursday and Friday. There does not seem to be a pattern which can be attributed to the communication technique alone.

Using the formula:

$$r = \frac{\Sigma xy}{\sqrt{\Sigma x^2 - \Sigma y^2}}$$

where x andy are the respective deviations for observations (daily means) in Panel 1 and Panel 2, the product-moment correlation, r, can be calculated.

The product-moment correlation, using the daily mean purchase frequency in Table 13, gives a correlation of 0.45. This correlation is significant from zero.[54] The product-moment correlation based on Table 14, or mean daily purchase amount, yields a correlation of -.01, or no correlation whatsoever.

This difference in correlation, a positive (although not impressive) relationship between mean daily purchase frequency, and no relationship in mean daily purchase amount, can be explained again by demographic differences. Panel 2 members, the off-campus panel, tend to make larger purchases on certain days, notably Wednesday, which is probably reflecting such things as grocery purchases or rent and utility payments. The difference is not in the frequency of reporting, but in the amount of reporting in dollars.

Off-campus students spend more per purchase than on-campus students thus accounting for the difference observed here. The reporting of

[54]Using the formula: $t = \frac{r\sqrt{n-2}}{\sqrt{1 - r^2}}$ $t = 2.52$ df 86 Significant at .05 level.

Table 13

COMPARISON OF DAILY PROPORTIONS OF DAILY MEAN PURCHASE FREQUENCY FOR PANEL 1 AND PANEL 2

Frequency for 5 weeks

Day	Panel 1			Panel 2			Panel 1 Proportion	Panel 2 Proportion	t
	Raw Frequency	Panel Members	Mean Frequency	Raw Frequency	Panel Members	Mean Frequency			
Monday	124	7	17.7	36	2	18.0	18.06	18.29	0.06
Tuesday	87	8	10.9	55	7	7.9	11.12	8.02	1.05
Wednesday	59	5	11.8	45	2	22.5	12.04	22.86	2.65*
Thursday	55	4	13.8	84	9	9.3	14.08	9.45	1.35
Friday	120	7	17.1	127	9	14.1	17.44	14.32	0.80
Saturday	118	9	13.1	98	8	12.3	13.36	12.51	0.24
Sunday	68	5	13.6	86	6	14.3	13.87	14.53	0.18
Total	631	45	98.0	531	43	98.4			

*Significant at .05 level, Critical t = 1.99. df = 86.

Table 14

COMPARISON OF DAILY PROPORTION OF PURCHASE AMOUNT
FOR PANEL 1 AND PANEL 2

Amount based on 5 weeks

Day	Panel 1			Panel 2			Panel 1 Proportion	Panel 2 Proportion	t
	Mean Frequency	Mean Size	Amount	Mean Frequency	Mean Size	Amount			
Monday	17.7	3.80	67.26	18.0	4.80	86.40	17.34	15.39	0.52
Tuesday	10.9	2.20	23.98	7.9	4.60	36.34	6.18	6.47	0.11
Wednesday	11.8	3.85	45.43	22.5	9.85	221.63	11.71	39.49	5.95*
Thursday	13.8	5.15	71.07	9.3	2.45	22.79	18.33	4.06	4.20*
Friday	17.1	5.70	97.47	14.1	5.75	81.08	25.13	14.44	2.48*
Saturday	13.1	3.45	45.19	12.3	4.65	57.20	11.65	10.19	0.43
Sunday	13.6	2.75	37.40	14.3	3.90	55.77	9.64	9.93	0.09
Total	98.0		387.80	98.4		561.21			

*Significant at .05 level, Critical t = 1.99. df = 86.

number of purchases however, is not as different. Probably these differences can be accounted for by demographic characteristics and should not be attributed to the different communication techniques employed. The differences observed here are in the direction that would be expected if comparing on and off-campus students.

The major problem is lack of experimental control. The panels are too small to use any randomization technique, or even matching. Another study with larger samples needs to be conducted.

Follow-Up Telephone Calls

Follow-up telephone calls were placed during the last week of the panels (week five) to approximately half each of Panel 1 and Panel 2. The questionnaire administered is shown in the appendix, and the questions correspond to those that appear in Table 17.

The findings can be summarized in that the panel members found the mail return slightly more burdensome than the telephone interview diary pick-up; the mail return required slightly more effort on the part of the panel member. However, the members of the telephone panel, Panel 2, were not as willing to keep the diary again as those who returned their diaries by mail, Panel 1. The relative unwillingness to keep the diary is probably indicative of the lack of rapport established in the telephone only panel, as compared to the personal interview panel which had the benefit of a personal interview recruitment. Thus, Panel 2 members were less willing to keep the diary for a longer period of time, even though they found it less burdensome to keep. Although this can be interpreted as a lack of rapport established by using the telephone, it is also possible that it may be due to the "bother" caused by the interviewer's weekly telephone call.

The telephone respondents also indicated a reluctance to keep the diary for a longer period of time, again pointing to the lack of rapport established via the telephone.

Table 15

RESULTS OF FOLLOW-UP TELEPHONE CALLS

Question	Panel 1		Panel 2	
Did you find it burdensome?	f	%	f	%
YES	3	13%	0	0%
NO	19	87	23	100
Would you keep it again?				
YES	21	95%	22	96%
NO	1	5	1	4
Would you keep it for a longer period?				
YES	15	68%	13	56%
NO	7	32	10	44
Was the interviewer courteous?				
YES	22	100%	23	100%

CHAPTER VII

SUMMARY AND CONCLUSIONS

Summary

1. There is a difference in the quantitative mortality rate between the telephone panel and the personal-mail panel, with the latter having a slightly lower mortality rate. The personal interview recruitment seemed to decrease the initial first wave mortality rate, but the telephone diary collection seemed to afford better control after the panel began, lessening the subsequent mortality for the telephone panel. This latter reversal, however, was not great enough after five weeks to overcome the lower first week mortality demonstrated by the personal-mail panel, leaving the telephone panel with a slightly higher overall mortality rate.

2. The telephone panel recruited a much more representative sample than did the personal-mail panel. The geographic flexibility of the telephone interview removed the distance barrier allowing the recruitment of more off-campus students. Off-campus students tend to be older, upperclassmen, and more likely to be married than the primarily on-campus sample obtained by the personal-mail panel. The personal-mail panel was restricted to on-campus students, those close by, giving a younger sample residing in dormitories.

3. In terms of qualitative mortality, the personal-mail panel showed a greater difference, although not significant, between its members and losses than did the telephone interview. The telephone interview, after the panel had been recruited, demonstrated better

control not only by minimizing the number of losses but also by preserving the representativeness of the sample.

4. The cost of telephone recruiting was less than the personal interview recruiting, but the mail diary pick-up was enough cheaper than the telephone interview pick-up to make the telephone panel slightly more expensive than the personal-mail panel in terms of the cost-per-completed interview. The cost data obtained for the personal interviews are not representative of most personal interviewing costs because of the very close geographic distribution of the potential respondents in the panel studied here, and because the interviewers were not paid for their travel expenses.

5. The mean daily expenditure for the personal-mail panel was higher than the mean daily expenditure for the telephone panel. However, if the expenditures are coded allowing no purchases over $49.50 the mean daily expenditures reverse in order with the telephone panel having the highest mean. The most probable explanation is that the telephone technique seemed to inhibit the reporting of very large purchases or expenditures, but reporting of smaller items seemed to be about the same.

6. The proportion of purchases in terms of both frequency and amount did not differ significantly in the food product category.

7. The weekly purchase patterns, in terms of daily purchase frequency, was positively correlated between the two panels. The proportion of the amount in dollars of purchase (in terms of weekly patterns) did not correlate. This may be in part attributed to the demographic differences in the panels.

8. Follow-up telephone calls indicated that respondents found the telephone diary less burdensome to keep, but indicated slightly more reluctance to keep the diary for a longer period of time. Perhaps this

reluctance indicates a slight difference in rapport established between the two recruitment methods, personal interview and telephone interview.

Conclusions

Because of the problem of small panel sizes, Panel 1 N=45, and Panel 2 N=43, demographically or socio-economically matched samples were unobtainable. This makes it extremely difficult to be sure that the differences and similarities discussed here can in fact be attributed to the different treatments of primary communication with the panels themselves. Therefore the conclusions should be viewed as suggestive rather than conclusive; they offer hypotheses and guidelines for future research. Although the small sample size greatly limits the kinds of conclusions that can be made, this fact should not rule out the evidence that has been accumulated here as providing some ideas as to the status of the hypotheses.

With respect to Hypotheses I, the evidence indicates that this null hypothesis should be rejected; personal interviewing does facilitate the recruiting of a larger proportion of the original sample into the panel. Hypothesis II would be rejected as well; the telephone interview diary pick-up reduced the mortality rate after the initial week because it no doubt served as a reminder to the panel members.

Hypothesis III would also be rejected, but with reservations. Telephone recruiting was cheaper than personal recruiting, but telephone interview diary collection was more expensive than the mail diary return, raising the cost per completed interview. That is, after five weeks of the telephone panel, the cost nearly surpassed that of the personal-mail panel.

Hypothesis IV would be accepted, but again with some reservation. The major difference between the reporting between the two panels was in the lack of reporting of large items in the telephone panel. Other differences in proportional amounts of purchase can in part at least, be explained by demographic and socio-economic differences in the two panels. Purchase frequency reporting patterns throughout the week were positively correlated, but not highly. Again this deficiency is best explained by differences in the panel samples.

The conclusion is that the use of the telephone as a primary means of communication in operating a consumer panel is feasible. Telephone recruiting, while having the disadvantage of providing fewer panel members initially, has the advantage of being able to provide a panel, regardless of the geographic distribution of the sample, relatively quickly. The slightly higher initial mortality rate with recruiting by telephone is not sufficiently high to remove the technique from consideration as a viable alternative, especially when all of the advantages of telephone interviewing are considered.

Telephone diary collection provides a lower mortality rate, and better control over the panel than does the mail return, but at higher cost. Telephone interviewing cost advantage comes primarily in the recruitment interview.

Although there is a definite need for more evidence and research, it appears that the use of the telephone interview both to recruit panel members and to pick-up diaries, can facilitate the application of the consumer panel technique to marketing and advertising data collection problems.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Adams, F. Gerard. "Prediction with Consumer Attitudes: The Time Series - Cross Section Paradox" The Review of Economics and Statistics. 47 (November 1965) 367-378.

2. Allison, Harry E., Charles J. Zwick and Ayres Brinser. "Recruiting and Maintaining a Consumer Panel" Journal of Marketing 22 (April 1958) 377-390.

3. Backstrom, C. H. and G. D. Hursh. Survey Research. Northwestern University Press. 1963.

4. Baeza, Marco A. Sampling and Response Differences For Three Methods of Enumeration Obtained in a Study of Consumer Potato Preferences. Ph.D. Thesis, Michigan State College. 1950.

5. Banks, Seymour. "Designing Marketing Research to Increase Validity" Journal of Marketing. 28 (October 1964) 32-40.

6. Barnette, W. Leslie, Jr., "The Non-Respondent in Questionnaire Research" Journal of Applied Psychology. 34 (December 1950) 397-398.

7. Baxter, Robert E. "Use Both Mail-Type Questionnaire and Personal Interviews in Readership Research" Printers Ink. 203 (May 7, 1943) 24ff.

8. Bennett, E. M., R. L. Blomquist and A. C. Goldsyein. "Response Stability in Limited-Response Questioning" Public Opinion Quarterly. 18 (Summer 1954) 218-223.

9. Benson, Lawrence E. "Mail Surveys Can Be Valuable" Public Opinion Quarterly. 10 (Summer 1946) 234-241.

10. Black, Thomas W. "Using the Consumer Panel to Measure Department Store Buying" Journal of Retailing. 24 (December 1948) 151-157.

11. Boyd, Harper W. and Ralph L. Westfall. An Evaluation of Continuous Consumer Panels as a Source of Marketing Information American Marketing Association, Chicago. 1960.

12. Bucklin, Louis P. and James M. Carman. The Design of Consumer Research Panels: Conception and Administration of the Berkeley Food Panel. Institute of Business and Economic Research Special Publication, University of California. 1967.

13. Cahalan, Don. "Measuring Newspaper Readership by Telephone: Two Comparisons with Face-to-Face Interview" Journal of Advertising Research. 1 (December 1960) 1-8.

14. Cannell, Charles F. and Morris Axelrod. "The Respondent Reports on the Interview" American Journal of Sociology. 62 (September 1956) 177-181.

15. Cannell, Charles F. and Floyd J. Fowler. "Comparison of Self-Enumerative Procedure and a Personal Interview: A Validity Study" Public Opinion Quarterly. 27 (Summer 1963) 250-265.

16. (The) Chicago Tribune Consumer Panel. Chicago: Chicago Tribune Advertising Department. 1966.

17. Churchman, C. West, Russell L. Ackoff and Murray Wax. Measurement of Consumer Interest. University of Pennsylvania Press. 1947.

18. Clausen, John A. and Robert N. Ford "Controlling Bias in Mail Questionnaires" American Statistical Association Journal. 42 (December 1947) 497-511.

19. Cohen, Samuel E. and Benjamin Lipstein. "Response Errors in the Collection of Wage Statistics by Mail Questionnaire" American Statistical Association Journal. 49 (June 1954) 240-250.

20. Cunningham, Ross M. "Brand Loyalty - What, Where, How Much?" Harvard Business Review. 34 (January-February 1956) 116-128.

21. Day, Alice B. "Consumer Panels React Well to Friendly, Personal Letters" Printers Ink. 225 (November 26, 1948) 38 -.

22. Dommermuth, William P. and Philip R. Cateora. "Can Refusals by Respondents be Decreased?" Journal of Marketing. 27 (July 1963) 74-76.

23. Donald, Marjorie N. "Implications of Nonresponse for the Interpretation of Mail Questionnaire Data" Public Opinion Quarterly. 24 (Spring 1960) 99-114.

24. Edsall, Richard L. "Getting Not-at-Homes to Interview Themselves" Journal of Marketing. 23 (October 1958) 184-185.

25. Ehrenberg, A. S. C. "A Study of Some Potential Biases in the Operation of a Consumer Panel" Applied Statistics. 9 (March 1960) 20-27.

26. El-Badry, M. A. "A Sampling Procedure for Mailed Questionnaires" American Statistical Association Journal. 51 (June 1956) 209-227.

27. Ferber, Robert. Collecting Financial Data by Consumer Panel Techniques. Bureau of Economic and Business Research, University of Illinois. 1959.

28. Ferber, Robert. "Observations on a Consumer Panel Operation" Journal of Marketing. 17 (January 1953) 246-259.

29. Ferber, Robert. "On the Reliability of Responses Secured in Sample Surveys" American Statistical Association Journal. 50 (September 1955) 788-810.

30. Ferber, Robert. "Order Bias in a Mail Survey" Journal of Marketing. 17 (October 1952) 171-178.

31. Ferber, Robert. "The Problem of Bias in Mail Returns: A Solution" Public Opinion Quarterly. 12 (Winter 1948-49) 669-676.

32. Ferber, Robert. The Reliability of Consumer Reports of Financial Assets and Debts. Bureau of Economic and Business Research, University of Illinois. 1966.

33. Ferber, Robert. Statistical Techniques in Market Research. McGraw-Hill. 217-257.

34. Ferber, Robert and H. G. Wales. The Effectiveness of Pharmaceutical Promotion. Bureau of Economic and Business Research, University of Illinois. 1958.

35. Fleishman, Edwin A. "An Experimental Consumer Panel Technique" Journal of Applied Psychology. 35 (April 1951) 133-135.

36. Frankel, Lester R. "How Incentives and Subsamples Affect the Precision of Mail Surveys" Journal of Advertising Research. 1 (September 1960) 1-3.

37. Franzen, Raymond and Paul F. Lazarsfeld. "Mail Questionnaire as a Research Problem" Journal of Psychology. 20 (October 1945) 293-320.

38. Frazier, George and Kermit Bird. "Increasing the Response of Mail Questionnaire" Journal of Marketing. 23 (October 1958) 186-187.

39. Glock, Charles Young. "Participation Bias and Re-Interview Effect in Panel Studies" Dissertation Abstracts. 12 (1952) 756.

40. Goldfard, Nathan. Longitudinal Statistical Analysis. The Free Press of Glencoe, Illinois. 1960.

41. Granbois, Donald H., James F. Engel, Francesco M. Nicosia, Robert W. Pratt, Jr., and Alan R. Andreasen. "Longitudinal Analysis" Proceedings of the American Marketing Association, 48th Annual Conference. September 1965. 203-275.

42. Greenberg, Allan and Manuel N. Manfield. "On the Reliability of Mail Questionnaires in Product Tests" Journal of Marketing. 21 (January 1957) 342-345.

43. Gullahorn, John T. and Jeanne E. Gullahorn. "Increasing Returns from Non-Respondents" Public Opinion Quarterly. 23 (Spring 1959) 119-121.

44. Hancock, John W. "An Experimental Study of Four Methods of Measuring Unit Costs in Obtaining Attitude Toward the Retail Store" Journal of Applied Psychology. 24 (April 1940) 213-230.

45. Highman, Arthur. "The Audited Self-Administered Questionnaire" Journal of Marketing. 20 (October 1955) 155-159.

46. Hochstim, Joseph R. "Alternatives to Personal Interviewing" Public Opinion Quarterly. 27 (Winter 1963) 629-630.

47. "How to Organize Your Own Consumer Panel" Sponsor. 18 (June 29, 1964) 33-35.

48. Industrial Surveys Company. Problems of Establishing a Consumer Panel in the New York Metropolitan Area. United States Department of Agriculture Market Research Report No. 8. Washington: United States Government Printing Office. 1952.

49. Ito, Rikuma. "An Analysis of Response Errors: A Case Study" Journal of Business. 36 (October 1963) 440-447.

50. Jaeger, Carol M. and Jean L. Pennock. "An Analysis of Consistency Response in Household Surveys" American Statistical Association Journal. 56 (June 1961) 320-327.

51. Juster, F. Thomas. "Consumer Buying Intentions and Purchase Probability: An Experiment in Survey Design" American Statistical Association Journal. 61 (September 1966) 658-696.

52. Lansing, John B., Gerard P. Ginsberg and Kaisa Braaten. An Investigation of Response Error. Bureau of Economic and Business Research, University of Illinois. June 1961.

53. Larsen, Otto N. "The Comparative Validity of Telephone and Face-to-Face Interviews in the Measurement of Message Diffusion Leaflets" American Sociological Review. 17 (August 1952) 471-476.

54. Larson, Richard F. and William R. Catton, Jr., "Can the Mail-Back Bias Contribute to a Study's Validity?" American Sociological Review. 24 (April 1959) 243-245.

55. Lewis, Harrie F. "A Comparison of Consumer Responses to Weekly and Monthly Purchase Panels" Journal of Marketing. 12 (April 1948) 449-454.

56. Longworth, Donald S. "Use of a Mail Questionnaire" American Sociological Review. 18 (June 1953) 310-313.

57. Lorie, J. H. and H. V. Roberts. Basic Methods of Marketing Research. McGraw-Hill. 1951.

58. Lubin, Bernard, Eugene E. Levitt and Marvin Zuckerman. "Some Personality Differences Between Respondents and Nonresponders to a Survey Questionnaire" Journal of Consulting Psychology. 26 (April 1962) 192.

59. Market Research Corporation of America. Establishing a National Consumer Panel from a Probability Sample. United States Department of Agriculture Marketing Research Report No. 40. Washington: United States Government Printing Office. 1953.

60. Mayer, Edward N., Jr. "Postage Stamps Do Affect Results of Your Mailing" Printers Ink. 217 (October 4, 1946) 91.

61. Namias, Jean. "Intentions to Purchase Compared with Actual Purchases of Household Durables" Journal of Marketing. 24 (July 1959) 26-30.

62. Neter, John and Joseph Waksberg. "Conditioning Effects from Repeated Household Interviews" Journal of Marketing. 28 (April 1964) 51-56.

63. Newman, Sheldon W. "Differences Between Early and Late Respondents to a Mailed Survey" Journal of Advertising Research. 2 (June 1962) 37-39.

64. Nuckols, Robert C. "Personal Interview Versus Mail Panel Survey" Journal of Marketing Research. 1 (February 1964) 11-16.

65. O'Dell, William F. "Personal Interviews or Mail Panels" Journal of Marketing. 26 (October 1962) 34-39.

66. Ortengren, John. "When Don't Research Panels Wear Out?" Journal of Marketing. 21 (April 1957) 442.

67. Parten, M. B. Surveys, Polls and Samples. Harper & Brothers. 1950.

68. Perry, Joseph B. "A Note on the Use of Telephone Directories as a Sample Source" Public Opinion Quarterly 32 (Winter 1968-1969) 691-696.

69. Plog, Stanley C. "Explanations for a High Return Rate on a Mail Questionnaire" Public Opinion Quarterly. 27 (Summer 1963) 297-298.

70. Politz, Alfred and Richard Brumbach. "Can Advertiser Believe What Mail Surveys Tell Him?" Printers Ink. 219 (June 20, 1947) 48ff.

71. Quackenbush, G. G. and J. D. Shaffer. Collecting Food Purchase Data by Consumer Panel. Methodological Report on the MSU Consumer Panel. 1951-1958. Michigan State Agricultural Experiment Station, Technical Bulletin 279. 1960.

72. Robinson, R. A. and Philip Agism. "Making Mail Surveys more Reliable" Journal of Marketing. 15 (April 1951) 415-424.

73. Ruch, Floyd L. "Effects of Repeated Interviewing on the Respondents Answers" Journal of Consulting Psychology. 5 (May-June 1941) 179-182.

74. Sandage, C. H. "Do Research Panels Wear Out?" Journal of Marketing. 20 (April 1956) 397-401.

75. Schmiedeskamp, Jay W. "Reinterviews by Telephone" Journal of Marketing. 26 (January 1962) 28-34.

76. Shaffer, James Duncan. "Differences in Costs and Returns of Stamped and Business Reply Envelopes in a Mail Survey" Journal of Farm Economics. 41 (May 1959) 268-271.

77. Shaffer, James Duncan. "Estimating Population Characteristics by Mail Survey" Journal of Farm Economics. 41 (November 1959) 833-837.

78. Shaffer, James Duncan. Methodological Bases for the Operation of a Consumer Purchase Panel. Ph.D. Thesis, Michigan State College. 1952.

79. Shaffer, James Duncan. "The Reporting Period for a Consumer Purchase Panel" Journal of Marketing. 19 (January 1955) 252-257.

80. Shaffer, J. D. and G. G. Quackenbush. "Cooperation and Sampling in Four Years of MSU Consumer Panel Operation" The Quarterly Bulletin. Michigan State University Agricultural Experiment Station. 38, 1 (August 1955) 85-104.

81. Sobol, Marion Gross. "Panel Mortality and Panel Bias" American Statistical Association Journal. 54 (March 1959) 52-68.

82. Stanton, Frank. "Notes on the Validity of Mail Questionnaire Returns" Journal of Applied Psychology. 23 (February 1939) 95-104.

83. Stoneborough, Thomas H. W. "Fixed Panels in Consumer Research" Journal of Marketing. 7 (October 1942) 129-138.

84. Student Economics at the University of Illinois. The University Committee on Student Economics. February 1961. Urbana, Illinois.

85. Suchman, Edward A. and Boyd McCandless. "Who Answers Questionnaires?" Journal of Applied Psychology. 24 (December 1940) 758-769.

86. Sudman, Seymour. "Maintaining a Consumer Panel" Proceedings of the American Marketing Association, 42nd National Conference. June 1959. 322-326.

87. Sudman, Seymour. "On the Accuracy of Recording of Consumer Panels" I. Journal of Marketing Research. 1 (May 1964) 14-20. and II. 1 (August 1964) 69-88.

88. United States Department of Commerce, Bureau of the Census. Methodology of Consumer Expenditure Surveys. by Robert B. Pearl. Working Paper #27. Washington: United States Government Printing Office. March 1968.

89. United States Department of Commerce, Bureau of the Census. Response Errors in the Collection of Expenditure Data by Household Interviews. by John Neter and Joseph Waksberg. Technical Paper #11. Washington: United States Government Printing Office. 1965.

90. United States National Health Survey. Comparison of Hospitalization Reporting in Three Survey Procedures. Public Health Service Publication No. 584 - D8. Washington: United States Government Printing Office. 1963.

91. Vaughn, Charles L. and William A. Reynolds. "Reliability of Personal Interview Data" Journal of Applied Psychology. 35 (February 1951) 61-63.

92. Waksberg, Joseph and Robert B. Pearl. "The Effects of Repeated Household Interviews in the Current Population Survey" Proceedings of the American Marketing Association 47th National Conference. June 1964.

93. Wales, H. G. and R. Ferber. Basic Bibliography on Marketing Research. American Marketing Association Bibliography Series, No. 2. 1963.

94. Wallace, David. "A Case For and Against Mail Questionnaires" Public Opinion Quarterly. 18 (Spring 1954) 40-52.

95. Wax, Murry and Leopold J. Shapiro. "Repeated Interviewing" American Journal of Sociology. 62 (September 1956) 215-217.

96. Weilbacher, William M. and H. Robert Walsh. "Mail Questionnaires and the Personalized Letter of Transmittal" Journal of Marketing. 16 (January 1952) 331-336.

97. Zimmer, Herbert. "Validity of Extrapolating Nonresponse Bias from Mail Questionnaire Follow-Ups" Journal of Applied Psychology. 40 (April 1956) 117-121.

APPENDIX

APPENDIX A
CLASSIFICATION QUESTIONNAIRE

Michigan State University
Department of Advertising

PERSONAL AND CONFIDENTIAL

(FOR OFFICE USE)

Your Student Number _____ (7-16)

1. According to my record your full name is: _____

   Is that correct? IF NOT, RECORD NAME CORRECTLY.

2. What is your age?_____ 2._____ (17-18)

3. According to my record your local address is: _____

   Is that correct? IF NOT, RECORD ADDRESS CORRECTLY.

4. What type of residence is this? (CHECK ONE) 4._____ (19)

   Dorm . . . . . _____(1) Off-campus Apartment or House . . _____(5)

   Fraternity . . . _____(2) Married Housing . . . . . _____(6)

   Sorority . . . . _____(3) Parent's or Guardian's House . . _____(7)

   Co-op . . . . . _____(4) Other: Specify _____(8)

5. What is your local telephone number?_____(1)

   Doesn't have phone _____(2) 5._____ (20)

6. What is your student number? _____

7. What is your home town (city and state)? _____ 7._____ (21-22)
   City State

8. Do you have a telephone at home? yes _____(1) 8._____ (23)

   no _____(2)

9. What is your class standing? (CHECK ONE) 9._____ (24)

   Freshman . . . . _____(1) Masters . . . . _____(5)

   Sophomore . . . _____(2) Doctoral . . . _____(6)

   Junior . . . . . _____(3) Other: Specify _____(7)

   Senior . . . . . _____(4)

10. What is your marital status? (CHECK ONE) 10._____ (25)

   Single . . . . . _____(1) Divorced . . . _____(4)

   Married . . . . _____(2) Other: Specify _____(5)

   Separated . . . _____(3)

11. (IF RESPONDENT IS MARRIED, ASK THIS QUESTION; OTHERWISE SKIP TO Q. 12)

11._____ (26)

a. Do you have any children? No_____(1) (IF NO SKIP TO Q. 12)

b. How many children are: (CIRCLE PROPER RESPONSE)

5 years old or younger?	0	1	2	3	4	_____ (27)
	5	6	7	8	9	
Between 6 and 12 years old?	0	1	2	3	4	_____ (28)
	5	6	7	8	9	
Between 13 and 18 years old?	0	1	2	3	4	_____ (29)
	5	6	7	8	9	
19 years old or older?	0	1	2	3	4	_____ (30)
	5	6	7	8	9	

12. Who is your permanent residency with? (CHECK ONE)

12._____ (31)

Both of your parents? _____(1) Your legal guardian? _____(4)

Your mother? . . . . ._____(2) On your own? . . . . _____(5)

Your father? . . . . ._____(3) Other? Specify . . . _____(6)

13. a. How many children do your parents (or guardians) have that are living at home, or that are supported financially (50% or more) by them, including yourself (if applicable)? (CIRCLE PROPER RESPONSE)

13a._____ (32-33)

00 01 02 03 04

05 06 07 08 09

More than 9; Specify #_____

(IF RESPONDENT IS MARRIED, ASK THE FOLLOWING QUESTION; OTHERWISE SKIP TO Q. 14)

b. How many children do your wife's (or husband's) parents (or guardians) have that are living at home, or that are supported financially (50% or more) by them, including your wife (or husband) (if applicable)? (CIRCLE PROPER RESPONSE)

13b._____ (34-35)

00 01 02 03 04

05 06 07 08 09

More than 9; Specify #_____

14. What is the occupation of the chief wage earner of your parent's (or guardian's) family? Specifically, what kind of work does he (she) do? (PROBE IF OCCUPATION IS NOT SELF-EXPLANATORY) 14._____ (36-37)

_____

_____

_____

15. Would you please look at this card and tell me the letter of the group which your parent's (or guardian's) total family income was in last year (1968)? (CIRCLE LETTER RESPONSE GIVEN) 15._____ (38-39)

A.	(01)	Under $5,000	F.	(06)	15,000-17,499
B.	(02)	5,000- 7,499	G.	(07)	17,500-19,999
C.	(03)	7,500- 9,999	H.	(08)	20,000 or more - Specify
D.	(04)	10,000-12,499			approximate amount $_____
E.	(05)	12,500-14,999	I.	(00)	Don't know, no response

IF RESPONDENT IS MARRIED ASK QUESTION 16 and 17. OTHERWISE SKIP TO QUESTION 18.

16. What is the occupation of the chief wage earner of your wife's (or husband's) parent's (or guardian's) family? Specifically, what kind of work does he (she) do? (PROBE IF OCCUPATION IS NOT SELF-EXPLANATORY) 16._____ (40-41)

_____

_____

_____

17. Would you please look at this card again and tell me the letter of the group which your wife's (or husband's) parent's (or guardian's) total family income was in last year (1968)? (CIRCLE LETTER RESPONSE GIVEN) 17._____ (42-43)

A.	(01)	Under $5,000	F.	(06)	15,000-17,499
B.	(02)	5,000- 7,499	G.	(07)	17,500-19,999
C.	(03)	7,500- 9,999	H.	(08)	20,000 or more - Specify
D.	(04)	10,000-12,499			approximate amount $_____
E.	(05)	12,500-14,999	I.	(00)	Don't know, no response

18. Would you please tell me what your major area of study is? 18._____ (44-45)

_____

19. Do you have a car or other motor vehicle, or a bicycle for use at school? 19._____ (46)

No (1) _____ IF NO, CONCLUDE INTERVIEW - - SEE BELOW

Yes (2) _____ IF YES, ASK: What kind of vehicle do you have?

(1) _____ Car
(2) _____ Truck
(3) _____ Motorcycle, motor scooter or motorbike
(4) _____ Bicycle
(5) _____ Other (please identify _____)

_____ (47)

20. Sex: (CHECK) Male _____(1) Female _____(2) 20._____ (48)

Thank you for your time and patience in completing this questionnaire. Of course, the names of all the respondents will remain strictly confidential. Only code numbers, not names, will be kept in our permanent file.

If you have any questions pertaining to this study, please call Dr. Gordon Miracle, 353-3862.

Thank you, again.

APPENDIX B
SUPPLEMENTAL DATA QUESTIONNAIRE

Michigan State University
Department of Advertising

(FOR OFFICE USE)

PERSONAL AND CONFIDENTIAL

Your Student Number _____ (7-16)

1. Do your parents (or guardians) pay any of your college expenses?

(CHECK) 1.(A)_____ (19)

No_____(1) (IF YOU ARE MARRIED, GO TO QUESTION 4; OTHERWISE SKIP TO QUESTION 7.) 1. _____ (20-22)

Yes_____(2) If Yes, indicate approximately what percentage they pay_____%

2. Please record the amount of the monthly allowance (if any) which you receive from your parents (or guardians) $_____per month. 2. _____ (23-25)

3. Please record the amount of money you received from your parents (or guardians) at the beginning of this term for tuition, board and room, books, supplies and living expenses. $_____ 3. _____ (26-28)

(IF YOU ARE MARRIED PLEASE ANSWER THE FOLLOWING QUESTIONS; OTHERWISE SKIP TO QUESTION 7)

4. Do your spouse's parents (or guardians) pay any of your college expenses?

(CHECK) 4.(A)_____ (29)

No_____(1) (IF NO, SKIP TO QUESTION 7)

Yes_____(2) If Yes, indicate approximately what percentage they pay_____% 4. _____ (30-32)

5. Please record the amount of the monthly allowance you receive from your spouse's parents (or guardians) $_____. 5. _____ (33-35)

6. Please record the amount of money you received from your spouse's parents (or guardians) at the beginning of this term for tuition, room and board, books, supplies and living expenses. 6. _____ (36-38)

7. Are you presently employed either on or off campus (do not include assistantships)?
(CHECK) 7. _____ (39-41)

No_____(1) (IF NO AND YOU ARE MARRIED GO TO QUESTION 8; OTHERWISE SKIP TO QUESTION 9)

Yes____(2) If Yes, please record your take-home earnings per week $_____per week.

(IF YOU ARE MARRIED ANSWER THE FOLLOWING QUESTION: OTHERWISE SKIP TO QUESTION 9)

8. Is your spouse presently employed either on or off campus (do not include assistantships)?

(CHECK) 8. _____ (42-44)

No_____(1) (IF NO, SKIP TO QUESTION 9)

Yes____(2) If Yes, please record your spouse's take-home earnings per week $_____per week.

9. Are you presently on any type of scholarship, fellowship or assistantship?

(CHECK) 9. _____ (45-47)

No____(1) (IF NO AND YOU ARE MARRIED, GO TO QUESTION 10; OTHERWISE SKIP TO QUESTION 11)

Yes___(2) If Yes, please record the amount of support you receive from this source for the school year $_____per school year.

(IF YOU ARE MARRIED, ANSWER THE FOLLOWING QUESTIONS; OTHERWISE SKIP TO QUESTION 11)

10. Is your spouse on any type of scholarship, fellowship or assistantship?

(CHECK) 10. _____ (48-50)

No_____(1) (IF NO, SKIP TO QUESTION 11)

Yes____(2) If Yes, please record the amount of support your spouse receives from this source, for the school year $_____per year.

11. Did you borrow any money, for educational and other expenses for this school year, that is due after next June 7?

(CHECK) 11. _____ (51-53)

No_____(1) (IF NO AND YOU ARE MARRIED, GO TO QUESTION 12; OTHERWISE SKIP TO QUESTION 13)

Yes____(2) If Yes, please record the total amount you borrowed $_____.

(IF YOU ARE MARRIED, ANSWER THE FOLLOWING TWO QUESTIONS; OTHERWISE SKIP TO QUESTION 14)

12. Did your spouse, or you and your spouse jointly, borrow any money, for educational and other expenses for this school year, that is due after next June7?
(CHECK) 12. _____ (54-56)

No_____(1) (IF NO, ANSWER THE FOLLOWING QUESTION)

YES____(2) If Yes, please record the combined total amount of money borrowed by your spouse, or you and your spouse jointly $_____.

13. Do you receive any interest, dividends, rents or profits from your own investments, savings, property or business holdings?

(CHECK) 13. _____ (57-59)

No_____(1) (IF NO AND YOU ARE MARRIED, GO TO QUESTION 14; OTHERWISE SKIP TO QUESTION 15)

Yes____(2) If Yes, please record the estimated total combined income which will be received by you from these sources during the 1968-1969 academic year $_____.

14. Does your spouse, or you and your spouse jointly, receive any interest, dividends, rents or profits from his (or your) own investments, savings, property or business holdings?

(CHECK) 14. _____ (60-62)

No_____(1) (IF NO, ANSWER THE FOLLOWING QUESTION)

Yes____(2) If Yes, please record the estimated total combined income which will be received by your spouse, or you and your spouse jointly, from these sources during the 1968-1969 academic year $_____.

15. Do you receive any money from any sources not previously covered (such as G. I. Bill, payment for ROTC or reserves, state or federal grants-in-aid, etc.)?

(CHECK) 15. _____ (63-65)

No_____(1) (IF YOU ARE MARRIED, ANSWER THE LAST QUESTION; IF YOU ARE SINGLE YOU HAVE COMPLETED THE QUESTIONNAIRE)

Yes____(2) If Yes, please record the combined total of such money that you will receive during the 1968-1969 academic year $_____.

16. Does your spouse receive any money from any sources not previously covered (such as G. I. Bill, payment for ROTC or reserves, state or federal grants-in-aid, etc.)?

(CHECK) 16. _____ (66-68)

No_____(1)

Yes____(2) If Yes, please record the combined total of such money that your spouse will receive during the 1968-1969 academic year $_____.

THANK YOU for your time in filling out this questionnaire and your cooperation in recording this information accurately. Remember, your name will not be associated with this information in our permanent file and no information on individual students will ever be released.

APPENDIX C

Michigan State University
Department of Advertising

Please record entries in this

diary every _____.
Use campus mail to return
your diary pages every week,
the day after your recording day.

MSU STUDENT CONSUMER PANEL DIARY

Personal and Confidential

ALL INFORMATION SUPPLIED BY YOU IN THIS DIARY WILL BE KEPT STRICTLY CONFIDENTIAL. Your diary information will be put together with the diary information of other students to obtain a general overview of student income and expenditure patterns at MSU. No information about you as an individual will be released. Your thoroughness when completing this is vitally important to the success of this study and the reliability of the patterns obtained. You may find it helpful to carry a small note pad wherever you go and note the information needed for filling out this diary as you buy things or receive income. Then, all you'll have to do in the evening is record the information from your notes into the diary without having to remember what you purchased.

Please use a separate line for each different store or establishment in recording your entries except as noted in the instruction book. BE SURE YOU READ THE DETAILED INSTRUCTIONS IN THE INSTRUCTION BOOK BEFORE BEGINNING TO RECORD IN THIS DIARY.

At the top of each diary page you will find a listing of the various categories into which you are to separate your purchases. A brief listing of these categories, and examples of some of the items to be included in each, follows. Refer to the instruction booklet for more detailed information.

1. Books and Supplies: Text books, notebooks, pencils, pens, art pads, typing paper, paperback books, writing equipment, stationery, calenders, typewriters, etc.

2. Drugs, Medical care, Personal care, Cosmetics and Toilet Articles: Vitamins, prescriptions, suntan lotions, sanitary napkins, cotton pads, rental of medical equipment, lipstick, eye make-up, hair preparations, toothpaste, razors, toilet soap, deodorant, toilet and facial tissues, baby supplies, professional medical services, health insurance, haircut, hairdresser and beauty parlor, including such articles purchased from vending machines. In the case of vending machine purchases write - VENDING MACHINE - in the STORE column of the diary.

3. Home Furnishings: Refrigerators, vacuum cleaners, toasters, fans, indoor furniture, outdoor furniture, floor coverings, yard goods, curtains, bedding, linens, lamps, bookends, silverware, glassware, chinaware, pots, bread boxes, gardening tools, household tools, baby equipment, notions, ladders, appliance rental, appliance repairs, kitchen paper products, household waxes, polishes, cleaners, insecticides and disinfectants.

4. Laundry and Cleaning: Laundry soaps, mops, brooms, bleaches, starch, cleaning brushes, laundry bags, washing, drying and dry cleaning services. In the case of vending machine purchases, write - VENDING MACHINE - in the STORE column of the diary.

5. Magazine and Newspapers: Magazines, newspapers, programs, pamphlets, journals and other reading materials purchased by subscription or at a store. Subscription costs entered should be only those new or renewed that are paid on one of your reporting days.

6. Packaged and Fresh Foods, Groceries, Meats, Beverages, All Bakery Goods, Restaurant Meals, Liquor, Beer, and Wine: Baby foods, baked goods, snack foods, butter, margarine, cereals, cheese, condiments, candy, nuts, desserts, ice creams, frozen foods, canned goods, eggs, coffee, tea, orange juice, cooking ingredients, meat, fowl, seafoods, meat sauces, nutritional and supplementary foods, mixes, relishes, rice, soups, spaghetti, sugar, spreads, sweeteners, toppings, vegetables, fruits, liquid soft beverages, restaurants, dining and night clubs, beer, ale, wines, and liquors, including such articles purchased from vending machfines. In the case of vending machine purchases, write - VENDING MACHINE - in the STORE column of the diary.
NOTE: If the total amount paid was contributed by two or more people, in the "Total Amount Paid" column list the total paid and the number of people contributing, i.e., $27.50/4. Attach grocery cash register tapes to your diary page, but only those tapes that pertain to the food purchases reported on that page.

7. Recreation and Entertainment: Spectator fees - movie, sports events, etc., participation fees - golf green fees, bowling fees, amusement rides, etc., boats, motors and equipment, camping equipment, fishing equipment, arms, ammunition, golf equipment, games, toys, sunglasses, binoculars, lenses, musical instruments, radio, TV sets, phonographs, phonograph records, tape recorders, tapes, sheet music, photographic supplies and equipment, pets and pet equipment, packaged pet food, luggage, trunks, recreation dues, rental of recreation equipment, equipment repairs.

8. Rent, Utilities and Related: Rent, telephone, electric, water, mortgage, etc.

9. Tobacco, Tobacco Products and Related: Cigarettes, cigars, pipe tobacco, other tobacco products, pipes, pipe supplies, lighters, flints, cigarette cases, etc., including such articles purchased from vending machines. In the case of vending machine purchases, write - VENDING MACHINE - in the STORE column of the diary.

10. Tuition, Board & Room and Related Payments to MSU: Tuition, dorm fees, dorm dues, gym fees, music fees, bus passes, book fines, etc. Please itemize all such payments and identify them. The amount listed should only be for one of these payments per line. In the STORE column, indicate the nature of the payment, such as TUITION TO MSU; LAB FEE TO MSU, etc. Please do not list a total amount paid and then in the STORE column show the amount covering several different categories--list each separately.

11. Wearing Apparel: Men's clothing and footwear, men's accessories, boys' clothing and footwear, women's clothing and footwear, women's accessories, girls' clothing and footwear, infants' clothing and footwear, clothing rental, tailoring, shoe shine, shoe waxes, clothing brushes, etc.

12. Transportation Expense: Fares (except MSU bus passes), auto tolls, gasoline, oil, tires, repairs, parking expense, traffic tickets, car purchase, auto insurance.

13. Monetary Contributions to Church and/or Charity.

14. Miscellaneous Articles: Life insurance, other insurance (except health, auto), lawyer fees, all other professional services, classified newspaper ads, catering, interest on loans, notes, bank service charges, charge account service and/or interest charges, etc.

15. Income and Other Money Received: Job earnings, money received from loans, parents, assistantships, fellowships, value of meals earned, interest, rents received, etc.

16. Deductions from income (other than expenditures for products or services): Money lost or stolen, money loaned to others (when a loan is repaid, record as income in category 15).

If you have any comments or questions, please note them on the back of the diary sheet you are sending in. They will be gratefully received and answered, if necessary.

USE AS MANY REPORTING LINES AS YOU NEED EACH DAY. START KEEPING THE DIARY ON THE LAST PAGE SO IT CAN BE TORN OFF EASILY. IF YOU MADE NO PURCHASES ON SOME DAYS, PLEASE MAKE A SINGLE ENTRY FOR SUCH DAYS, INDICATING THE DATE AND WRITING IN "NO TRANSACTIONS" IN THE STORE COLUMN. USE UP ALL THE LINES ON ONE PAGE BEFORE GOING ON TO THE NEXT. ONE DIARY PAGE MAY CONTAIN ENTRIES FOR MORE THAN ONE DAY. IF YOU RUN OUT OF DIARY PAGES, PLEASE CALL DR. MIRACLE, 353-3862.

~~FOR EACH ENTRY, RECORD~~ DATE OF PURCHASE, PRODUCT CATEGORY (from list below), ~~TOTAL~~ AMOUNT PAID, ~~STORE IDENTIFICATION~~, AND CITY AND STATE (if not Michigan) WHERE STORE IS LOCATED; or DATE MONEY RECEIVED, CATEGORY, TOTAL AMOUNT RECEIVED, SOURCE OF FUNDS, LOCATION OF SOURCE.

PRODUCT CATEGORIES

1. Books and Supplies
2. Drugs, Medical care, Personal care, Cosmetic and Toilet Articles
3. Household Furnishings
4. Laundry and Cleaning
5. Magazines and Newspapers
6. Packaged and Fresh Foods, Groceries, Meats, Beverages, All Bakery Goods, Restaurant Meals, Liquor, Beer, Wine
7. Recreation and Entertainment
8. Rent, Utilities and Related
9. Tobacco, Tobacco Products and Related
10. Tuition, Board & Room and Related Payments to MSU
11. Wearing Apparel
12. Transportation Expense
13. Monetary Contribution to Church and/or Charity
14. Miscellaneous Articles
15. Income and Other Money Received
16. Deductions From Income (other than expenditures for products or services)

REPORTING DAY _____ _____(1-16)

Date	Category	Total Amount	Store	Store Location (City and State)	FOR OFFICE USE ONLY				
					19-24	25-26	27-32	33-37	38-39
		$							
		$							
		$							
		$							
		$							
		$							
		$							
		$							
		$							
		$							

APPENDIX D
FOLLOW-UP QUESTIONNAIRE

Name of respondent and Student no. _____ Survey no. _____

Hello...my name is _____. I'm working on a survey for Dr. Miracle in the Advertising Department, regarding a study of student income and expenditure patterns.

1. Did you keep a diary one day a week for the last five weeks?

_____yes _____no
Comment:_____

2. If yes:
   A. Did you find it burdensome to keep the diary?

_____yes _____no
Comment:_____

   B. Knowing how it is to keep a diary, would you have kept it if you had to make the choice again?

_____yes _____no
Comment:_____

   C. Do you think it would be reasonable to ask students to keep a diary one day a week for 15 weeks, through a term break, or longer?

_____yes _____no
Comment:_____

   D. Was the interviewer courteous and able to explain your part in the project satisfactorily?

_____yes _____no
Comment:_____

Thank you very much.